TAIWAN GLASS IND. CORP.

2024
ESG Report

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About the report

Taiwan Glass Industry Corporation has always been committed to supporting the growth of the glass industry with innovation and new product development while recognizing its corporate social responsibilities as a global citizen since it was founded in 1964. The "2024 Sustainability Report" is the 12th sustainability report issued by TGI since we began compiling the Corporate Social Responsibility Report in 2013. Starting from 2021, in response to international trends and government regulations, we have renamed the report as "Sustainable Development Report" (ESG Report) and published it in both Chinese and English. Through this report, we hope to convey to the general public and other stakeholders TGI's respect for duties as a social citizen and its resolve to pursuing sustainable growth and sharing the outcome of sustainable management practices. This report is divided into six main themes, including: [Sustainability Communication], [Integrity Governance], [Products & Services], [Green Practices], [Safe Workplace], and [Social Care]. It discloses TGI's efforts and performance outcomes with respect to sustainability indicators such as the economy, the environment, public interest, employee care and growth, and product responsibilities in 2024. Relevant data was gathered to provide explanation in detail.

TGI has created an "ESG" section on its website to provide the general public and stakeholders with better understanding and more communication channels about the measures adopted by TGI. In this section, visitors are able to download this report and receive regular updates on sustainable development goals, strategies, and outcomes. An online stakeholder questionnaire has also been created to serve as a communication channel with stakeholders.

This report will refer to Taiwan Glass (TGI) Industry Corporation using abbreviations such as "TGI, the Company, and we"; other key terminology and acronyms used throughout the report will be explained in footnotes on the respective page.

Scope of report and basis of calculation

This report covers TGI's sustainability performance from January 1, 2024 to December 31, 2024. Some of the content also traces back or extends to events before and after 2024. Future policies, goals and plans are also partially explained.

This report covers the scope of content and performance data primarily within Taiwan, including the headquarters and all manufacturing sites (Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory). Subsidiaries are not included in the scope of disclosure; indicators related to other regions are described separately in the report. The data in this report is presented using internationally recognized indicators, and any estimations are noted in the corresponding chapters. The financial data has been audited and verified by Ernst & Young and is reported in New Taiwan Dollars. Compared with the "2023 Sustainability Report", there have been no significant changes to the scope and boundaries of disclosures this year.

Preparation principles and guidelines

TGI has prepared the "2024 ESG Report" in line with international standards, using "GRI Standards 2021" published by the Global Reporting Initiative (GRI) on October 5, 2021. Analytical models were adopted to identify and prioritize sustainability topics that were of concern to stakeholders, and to analyze the sustainability topics, strategies, goals, and measures to disclose in this report. The Company was then able to observe relevant guidelines for the preparation of report.

The following guidelines and initiatives were taken into consideration:

- "GRI Standards" issued by the Global Reporting Initiative (GRI)
- United Nations Sustainable Development Goals (SDGs)
- Earth Charter, Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
- AA 1000 SEC Stakeholder Engagement Standards (version 2015)
- International Standard on Assurance Engagements - ISAE 3000
- The UN Global Compact
- ISO 26000 Social Responsibility Guidance Standard
- "Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies"
- Task Force on Climate-related Financial Disclosures (TCFD)
- Sustainability Accounting Standards Board (SASB)

Preparation and verification procedures of the sustainability report

For the preparation of this report, TGI has assembled an "ESG Task Force" to plan, communicate, coordinate, consolidate data, and edit the report content. The Administration Department is responsible for assembling the task force; task force members are consisted of representatives from factories and relevant departments.

All data and statistics of the report were gathered by employees of various departments and handed over to the task force for draft preparation. Members of the task force then reviewed and amended the details that pertained to their areas of responsibility. Once the chosen indicators have been validated by an independent third party, the finalized content was presented to the board of directors for review according to administrative procedures before publication.

This report has been entrusted to Ernst & Young Taiwan, an independent and credible accounting firm, to conduct limited assurance in accordance with Assurance Standard No. 3000 "Assurance Engagements Other than Audits or Reviews of Historical Financial Information" on our 2024 Sustainability Report. Upon completion of the assurance work, the relevant results were fully communicated with the governance body. For details on the scope and conclusion of the assurance, please refer to the Independent Assurance Report in the appendix of this report.

1. The ESG Committee assembles and establishes an ESG Task Force (referred to as Task Force below).
2. The Task Force calls the heads of relevant units into identifying material sustainability issues that concern the Company's operations and interests of stakeholders.
3. The Task Force analyzes key stakeholders and material issues for the Company, and coordinates with the heads of relevant units to gather information for the preparation of ESG Report. The Task Force also ensures that the report content conforms with the requirements of GRI Standards 2021, TCFD, SASB, and "Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies."
4. The Task Force makes annual data planning for report preparation, and examines the completeness, accuracy, transparency, and verifiability of data submitted by various departments.
5. The Task Force consolidates documents prepared by various departments and compiles data into a complete ESG Report. The preliminary draft of the ESG Report is then reviewed and amended by the respective departments before being submitted for approval by the ESG Committee.
6. The Task Force discusses with a third-party assurance provider to determine the assurance boundary.
7. The Task Force consolidates data and provides supporting proofs of the assurance boundary, thereby allowing the third-party assurance provider to proceed with validation and issue an independent assurance report.
8. The ESG Committee presents the completed ESG Report for approval by the board of directors before public disclosure.
9. The Task Force makes official filing of the internally approved and externally validated ESG Report by uploading it before the deadline.
10. ESG Report and supporting data are kept in an appropriate manner.

Reporting period and cycle

TGI publishes "ESG Report" on a yearly basis

Current issue: August 2025

Previous issue: August 2024

Click TGI's official website in Chinese, or scan the QR code

Contact information

Through this report, we hope to provide the general public and stakeholders with a better understanding of TGI's sustainable development efforts. Please contact us if you have any suggestions or queries regarding the "2024 ESG Report." Contact information:

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Message from the Chairman

The global economy faced numerous uncertainties in 2024, and the market widely expects an easing cycle to begin. However, since taking office, US President Trump has introduced a number of tariff policies, shrouding the global economic and industrial development in uncertainties and high risks. Countries around the world have adopted different response measures, making global trade full of tricky and complex situations.

The government is requested to study its strategy for coping with the economic changes in Sino-US relations under the US tariff policy. With foreign trade as its main focus, Taiwan should actively negotiate for a Taiwan-US Investment Protection Agreement and continue to promote cross-strait economic and trade exchanges to maintain its market share. At the same time, the government should accelerate the upgrading and transformation of traditional industries, encourage the development of new business models, adjust supply chain configurations, diversify its layout and expand the market. It should prudently respond to issues such as customer order transfers, overcapacity, and export products squeezing out the domestic market that may be caused by tariffs, to mitigate the impact on the industry, and improve relevant supporting policies to ensure competitiveness in the international market. Looking back at TGI in 2024, the Group's consolidated revenue reached NT$42.5 billion, with a net loss after tax of NT$1.57 billion. The following report is provided for each product category:

Regarding flat glass, the use of low-emissivity (Low-E) glass in residential applications has increased, reflecting rising market demand for high-performance building materials. In response to rising raw material, industrial water, and electricity costs, various factories have responded to clean energy policies. In addition to installing waste heat recovery boiler systems to effectively utilize excess heat from kilns, Lukang Plant has set natural gas as the primary fuel for the kiln, with heavy oil as backup fuel. The replacement rate has reached 90%. Factories are also increasing production automation and digitization, adding AI application analysis to achieve optimal production and energy consumption parameters. To pursue growth, the Company continues to focus on emerging application areas, such as smart cities and net-zero carbon emission policy industry development, which may increase product demand.

For the mainland China market, despite the continued release of revitalization policies to drive the recovery of real estate and domestic demand markets, structural challenges still exist. Demand growth in the construction sector remains weak. The rise of new energy vehicles and smart homes is expected to drive the supply of high-end application products such as ultra-thin and optoelectronic glass in the future.

In the fiber business, information transmission has entered the era of high frequency and high speed. Printed circuit boards (PCBs) used in network communication equipment must use low dielectric (Low DK) materials and special specifications of low coefficient of thermal expansion (Low CTE) fiberglass cloth to effectively meet the performance requirements of high frequency, high speed and AI intelligent applications. TGI's first and second generation low-dielectric Low DK fiberglass cloth and low-expansion coefficient Low CTE fiberglass cloth have all passed customer certification and adoption. The Company continues to refine and improve its product development and makes the latest adjustments in response to industry market demand. In terms of the kitchenware brand, the domestic market remains stable, and heat-resistant products for export are highly recognized by customers for their excellent quality. Foreign customers all possess strong brand influence and channel advantages in the market, which have increased order volumes and profits.

Regarding external and regulatory environmental risks, Taiwan will implement a carbon fee system that differs from the global one, which may create resistance to domestic industrial transformation. The design of the carbon fee system will not only affect the industry, but also should comprehensively consider the impact on the economy and society. Minimum wages, electricity costs and other costs will be raised simultaneously, which will create a burdensome financial impact on the industry. In the future, corporate operations will inevitably have to incorporate carbon costs into their assessments, actively adopt energy-saving measures, and improve energy efficiency to reduce cost pressures. The government also needs to comprehensively consider the impact of Taiwan's carbon fee on international trade and supply chains, and encourage companies to invest in low-carbon technologies and green energy. Further measures are provided, including investment incentives, tax credits, and financial interest subsidies.

In terms of corporate sustainability, TGI has received the TCSA Taiwan Sustainability Award - [Traditional Manufacturing Industry Silver Award] for 10 consecutive years, and simultaneously received the [Corporate Sustainability Award - Outstanding Performance] and [Circular Economy Leadership Award] as individual performance awards in 2024. The company's total greenhouse gas emissions have decreased by a cumulative 136,690 tons (-18.4%) over the past three years. Heavy oil usage has been reduced by 44.28%, LPG by 77.45%, and purchased electricity by 39 million kWh (-8.1%). Factories collectively saved 6.67 million kWh of electricity. Both overall and individual performance have received widespread recognition.

Looking ahead, with AI applications, big data analytics, and automation technologies now in a phase of rapid growth, they are also critical for maintaining corporate competitiveness. We will continue to invest resources and accelerate our green transition, optimizing our business model to align with international standards, enhance production efficiency, and improve market responsiveness, ensuring we maintain a competitive edge in the global market. TGI will continue to uphold the principles of prudent operations to meet future challenges and opportunities.

Chairman of Taiwan Glass Industry Corporation

Lin, Por Fong

2024 performance highlights

Sustainability performance and honors

TCSA Corporate Sustainability Report Award - Silver

TGI won TCSA's Corporate Sustainability Report Award - Silver in the "Conventional Manufacturing" category for 10 consecutive years

TCSA Corporate Sustainability Award - Outstanding Performance Award

TGI has won the Taiwan Enterprise Sustainability Award for Outstanding Performance for 10 consecutive years.

TCSA Circular Economy Leadership Award

TGI won "Single Category Performance - Circular Economy Leadership Award" during the 2024 TCSA

Awarded the 2024 Annual Outstanding Business Operator in Using Electronic Invoices by the Ministry of Finance

Won the Ministry of Finance's "Outstanding Business Operator in Using Electronic Invoices" award, supporting digitalization policies with concrete actions

Sustainability highlights

Sustainable management

- Environmental protection expenditure in 2024 amounted to approximately NT$238 million
- In 2024, total greenhouse gas emissions decreased by approximately 9.44%, a reduction of 57,486.7581 tons compared to 2023

Supply chain and environment

- All flat glass products are 100% compliant with EU CE, US ANSI, Taiwan CNS and other relevant standards
- All fiberglass products are 100% compliant with RoHS and REACH regulations
- All food container glass products are 100% compliant with Taiwan's food container and packaging hygiene standards, FSSC 22000 certification

"Excellent Breastfeeding Room" certification awarded by the Health Bureau

We have been awarded the "Taipei City Government Health Bureau's Excellent Breastfeeding Room Certification", and will continue to create a friendly breastfeeding environment in the future.

Friendly Breastfeeding Room Certification

Changpin Plant was awarded the "Changhua County Friendly Breastfeeding Room" certification by the Changhua County Public Health Bureau

Won for five consecutive years Excellent Performer in Over-quota Employment of Persons with Disabilities for three consecutive years

Lukang Plant was awarded the Changhua County's 2024 Excellence Award for "Excellent Employers for Exceeding the Quota of Persons with Disabilities". By continuously optimizing workspaces and equipment, it allows employees with disabilities to find employment with peace of mind, affirm themselves, and realize their potential and stable value

TGI's Taoyuan Plant won the Ecovadis Bronze Award in 2024

In 2024, TGI's Taoyuan Plant responded to the value chain sustainability initiative and won the bronze award in Ecovadis, ranking in the 73rd percentile among all companies that received the bronze award.

Social inclusion

- Since 2000, the TGI Cultural and Educational Foundation has awarded scholarships to 3,019 college students, totaling NT$34.31 million
- TGI's entry-level employees were paid 155% of the local minimum salary on average
- The average monthly hiring of people with disabilities is around 95, exceeding the legal requirement by more than 250%
- We employed 32 indigenous employees, demonstrating our commitment to diversity in hiring.

chapter 1

Sustainability Communication

1.1 TGI's sustainable management practice 14

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Sustainability Management Performance of 2024

Silver Award

TGI won Corporate Sustainability Report Award - Silver in the [Conventional Manufacturing] category for 10 consecutive years

8 main categories

TGI has identified 8 categories of stakeholder, including shareholders/investors/financial institutions, employees, corporate customers, suppliers, contractors, outsourcing agencies, dealers, and government agencies/authorities

12 issues

In 2024, TGI directed attention to 12 major sustainability issues and devised effective management solutions for each issue

1.1 TGI's sustainable management practice

Being the leader of the glass industry, TGI embraces sustainable development as its core vision and addresses environmental, social, and governance (ESG) issues when planning business strategies. While striving to grow the glass business, we remain mindful of stakeholders' interests and find ways to cater to society's wellbeing and mitigate environmental impact.

TGI operates with four core values in mind: business integrity, environmental sustainability, social care, and friendly workplace. These values have been deeply incorporated into our goals "to provide top-quality products and comprehensive service at reasonable prices to customers' satisfaction, while at the same time delivering returns to shareholders, caring for employees, and giving back to society, all the while providing the foundation for TGI's sustainability practices."

Our directors diligently fulfill their fiduciary duties, overseeing company operations to implement our corporate social responsibility initiatives, reviewing implementation effectiveness, and continuously improving our efforts across all aspects. To fulfill its corporate sustainability obligations and corporate social responsibilities, the Board of Directors has taken the following actions:

1. Establish a corporate social responsibility mission and sustainability vision, and formulate corporate sustainability policies, systems, or related management guidelines.

2. Integrate sustainability into the Company's operations and development strategy, and approve concrete implementation plans for the three aspects of ESG.

3. Ensure the timeliness and accuracy of corporate sustainability-related information disclosure.

The four main approaches to ESG management

Enforcement of business integrity

Business integrity is TGI's core value and makes up a significant part of its commitment and responsibility to shareholders, employees, and stakeholders. The board of directors and the management not only adhere strictly to rules concerning business integrity, recusal from conflicts of interests, and anti-corruption, but also work together to enforce total risk management.

Enhancement of environmental sustainability

Taiwan Glass complies with environmental protection regulations, and is committed to reducing the impact of its production processes on the environment. The Company also plans to have a waste recycling procedure to properly handle the waste generated after production to avoid environmental pollution and reduce wasted resources. Meanwhile, we continue to improve our work environment and focus on green energy issues for energy conservation and carbon reduction, and innovate green products to achieve our goal of sustainable management.

Care for the society

As a social citizen, TGI cares for and gives back to society by participating in charity events and engaging locals in ways that facilitate community development. By granting scholarships to employees' and dealers' children, we aim to grow alongside our stakeholders.

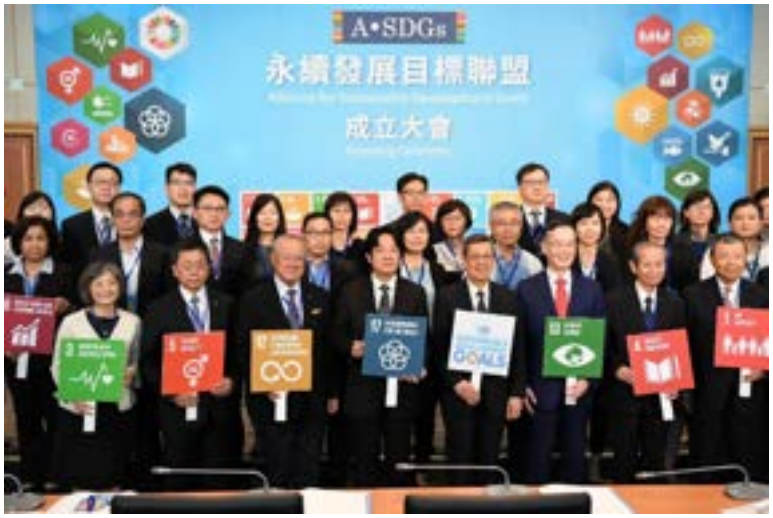
Friendly workplace

TGI values the harmony of its employment relations and devotes significant attention to employees' treatment, welfare, workplace safety, wellbeing, physical and mental health, rights, gender equality, and skill and career development. By implementing a broad diversity of communication channels with employees and the union, TGI aims to create a culture of mutual benefit between the management and labor.

TGI's strategic roadmap for UN SDGs

TGI takes the SDGs (United Nations Sustainable Development Goals) as the core of its sustainability strategy, actively responds to the relevant regulations of the Alliance for Sustainable Development Goals (A・SDGs), and uses its corporate influence to promote sustainable transformation in the industry. To deepen cross-sector collaboration, TGI joined the "Alliance for Sustainable Development Goals" in August 2018, which is composed of the Taiwan Institute for Sustainable Energy, Taiwan Center for Corporate Sustainability, and a variety of stakeholders including businesses, governments, academia, and non-governmental organizations. The alliance uses "globalization", "integration", "partnership", "corporate engagement", and "education" as its driving strategies. Through the global common language of SDGs, it unites all sectors of society to work together to build a shared society and sustainable environment.

For details on TGI's specific actions in response to the SDGs goals, please see Appendix V: SDGs Comparison Table.



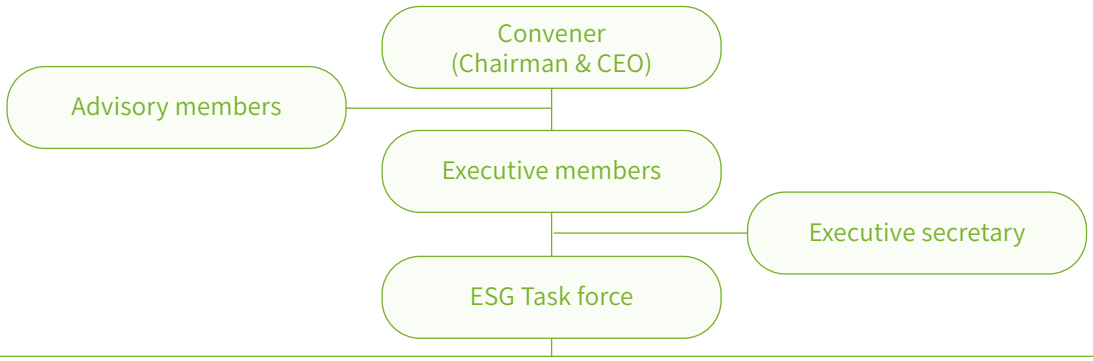
Composition of the Sustainable Development Committee

TGI has assembled an "ESG Committee" to facilitate the enforcement and management of corporate social responsibilities. The Chairman and CEO serve as conveners for the Committee, whereas independent directors assume the roles of advisory member and executive member. TGI's ESG Committee meets every six months, with flexible adjustments if necessary, but it should be held at least once a year, with a total of two meetings in 2024. It included the preparation schedule for ESG reports and the tracking of sustainable development performance, such as energy and power-saving measures at each factory. This also covered the upgrading of waste gas treatment equipment at Hsinchu Factory and the conversion of the kiln to dual-fuel operation with natural gas and heavy oil, achieving a replacement rate of 80% and targeting 100% by 2025, as well as renewable energy construction and greenhouse gas inventory planning.

Click here to visit TGI's ESG webpage

Date of meeting	Agenda of 2024 ESG Committee meetings
2024.05.13	1. Report on the timeline for preparing the 2023 ESG sustainability report. 2. Report on the ESG sustainability performance of TGI's Taiwan factories. 3. Report on greenhouse gas control regulations and inventory reduction targets. 4. TGI's greenhouse gas inventory report for the past three years. 5. Report on the installation of renewable energy (solar power generation system) at TGI's Taiwan factories.
2024.11.04	1. Complete and report on the 2023 Sustainability Report and TCFD Climate-related Financial Disclosure Report. 2. In accordance with the greenhouse gas information disclosure schedule planned by the Financial Supervisory Commission, the 2023 greenhouse gas inventory information of the parent company (Taiwan factory) was disclosed and had been verified by an external third-party SGS in accordance with ISO 14064-1:2018. 3. Incorporate sustainability information management into the Company's internal control system and annual audit plan. 4. In accordance with the "Taiwan's Blueprint for Adopting the IFRS Sustainability Disclosure Standards", we are implementing plans and making progress for the introduction of IFRS Sustainability Disclosure Standards. 5. Report on the ESG sustainability performance of TGI's Taiwan factories. 6. In accordance with the Climate Change Response Act and related sub-acts announced by the Ministry of Environment, the objectives of carbon fee collection and voluntary reduction plans will be discussed. 7. Calculate the carbon costs of each TGI's Taiwan factories in 2023 and compare their own reduction targets.

Organization of the ESG Committee



Environmental Protection and Energy Conservation Task Force

- Strengthening EnergyManagement
- Reducing Greenhouse Gas Emissions
- Decreasing Product Carbon Footprint
- Enhancing Water Resource Management
- Promoting Circular Economy
- Reducing Waste andWastewater Pollution
- Utilizing Renewable Energy
- Product Innovation and Green Design

Employee and Social Care Task Force

- Enhancing Talent Retention
- Compensation and Benefits
- Zero Occupational Accidents and a Safe Workplace
- Promoting Sports and Athletic Spirit
- Promoting Art Education Activities

Corporate Governance Task Force

- Economic Performance
- Strengthening Corporate Governance Evaluation
- Integrity and Anti-Corruption Practices
- Information Security and Privacy Protection
- Product and Service Quality Management
- Regulatory Compliance
- Sustainable Supply Chain Management

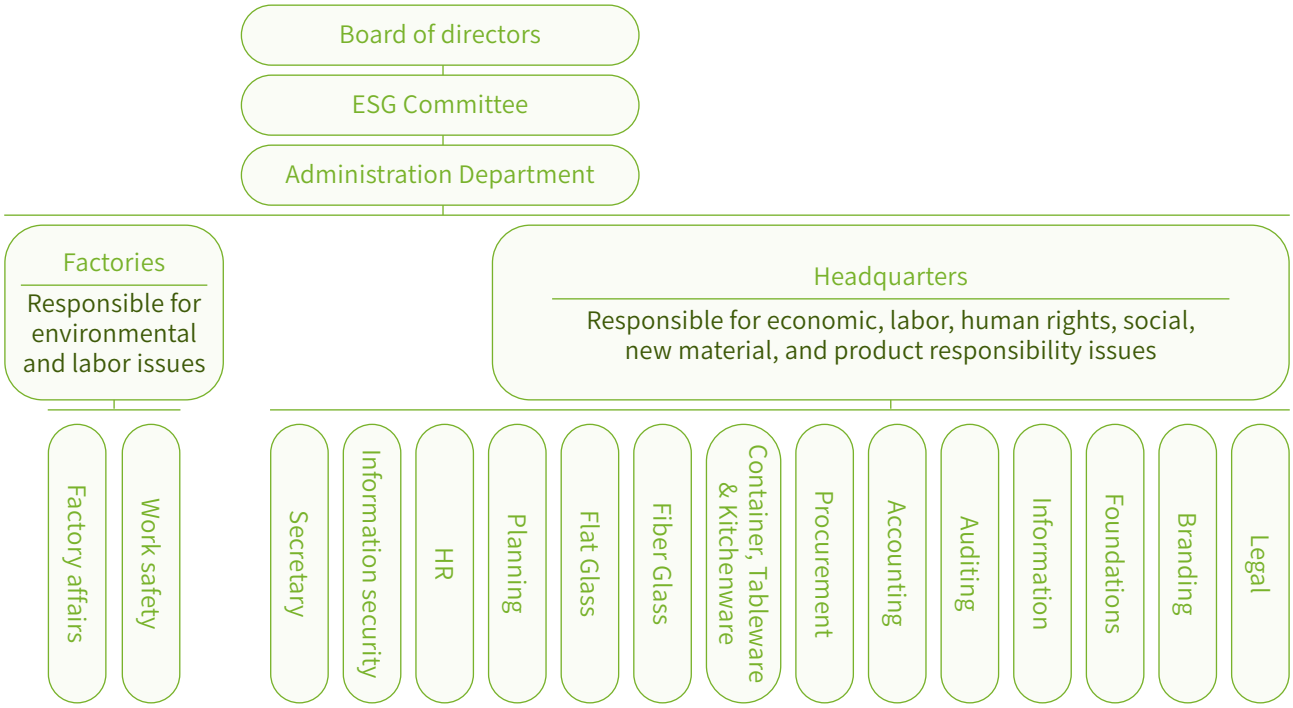
ESG Committee members

Taiwan Glass Industry Corporation ESG Committee members			
Designation	Name	Gender	Concurrent duty within the Company
Convener	Lin, Por-Fong	Male	Chairman
Convener	Lin, Por-Shih	Male	CEO
Advisory member	Wang, Yu-Che	Male	Independent Director
Executive Members	Hsieh, Chin-Hsing	Male	President of Container, Tableware & Kitchenware Division
Executive Members	Chen, Chi-Ying	Female	Vice President of Flat Glass Division
Executive Members	Tsai, Wei-Hsin	Male	Vice President of Fiber Business Unit
Executive Members	Tsai, Tseng-Ming	Male	Vice President of Procurement Headquarters
Executive Members	Hung, Yo-Chin	Male	Vice President of Administration Headquarters
Executive Secretary	Chuo, Yu-Rong	Male	ESG Stock Leader

Responsibilities of the ESG Sustainability Promotion Team

We have further created an "ESG Task Force" under the ESG Committee to oversee planning of sustainability strategies, resource integration, and data consolidation and thereby ensure accomplishment of economic, social, and environmental performance targets. The Administration Headquarters is responsible for the coordination and execution of resources.

Structure of the ESG Task Force



Aside from preparing reports, task force members also actively take part in corporate sustainability-related courses, including those organized by Center for Corporate Sustainability (CCS) and workshops by Industrial Resources Integration and Development Association. Through these courses, the Company hopes to learn the sustainability practices of prominent businesses as well as the industry's future outlook, and gain more knowledge on the topic of sustainability while at the same time identify future trends and potential obstacles to ultimately improve preparation skills and risk management awareness.

Sustainability-related education and training for directors and independent directors in 2024

Course name	Training hours
How to integrate into international carbon trading and promote corporate innovation	3.0
New trends in circular economy and sustainable management	3.0
Carbon Risk Management Strategies for Enterprises in the Carbon Pricing Era	3.0
[ESG] Principle of Fair Treatment of Customers and Ethical Corporate Management	3.0
2024 Cathay Sustainability Finance and Climate Change Summit	6.0
Innovative business models and business opportunities in the era of the green supply chain	3.0
The 36th TCCS Board Meeting and CEO Lecture	2.0
Tax governance and the latest changes in international tax laws and environments and how to respond	3.0

Sustainability-related education and training for general employees in 2024

	Course hours	Participants
Greenhouse gas survey training 2024	3	50

Corporate sustainability development efforts and outcomes

TGI has won the TCSA Taiwan Corporate Sustainability Award - [Traditional Manufacturing Silver Award] for 10 consecutive years. In 2024, it also won the [Corporate Sustainability Award - Outstanding Performance] and the [Circular Economy Leadership Award] for individual performance. Whether in terms of comprehensive sustainability performance or individual performance, TGI has actively responded to relevant actions.

TGI is committed to enforcing sustainable practices, and duly discloses progress and future outlooks to provide stakeholders with a better understanding of TGI's dedication to sustainability responsibilities. In terms of operating strategy, we have aligned our ESG focus with the United Nation's SDGs, and adopted the approach to exert positive influence in economic and social aspects. Through ESG practices, TGI hopes to ensure business continuity and grow alongside stakeholders to become the sustainable leader in the glass industry.

TCSA Corporate Sustainability Report Award - Silver Award for Traditional Manufacturing

TCSA Enterprise Sustainability Award - Outstanding Performance

TGI and Taiwan Institute for Sustainable Energy: Brightening Children's Future through Sustainability Education

At a time when environmental issues are gathering the world's attention, education becomes critical in guiding the next generation toward a green future. To enforce sustainability in education, TGI cooperated with Taiwan Institute for Sustainable Energy and jointly organized "2024 Taiwan Sustainability Education Award" and "2024 Sustainability Education Forum" with the hope of planting seeds of sustainable growth in every child.

This award attracted participation from many workers in the education sector, and was intended to bring inspiration to school administrators and teachers, thereby supporting sustainability education in campus. TGI promises to continue supporting promotion of sustainability education in the future, and will work with a greater number of educational institutions to benefit more schools and children.

Towards international standard verification, strengthening carbon management and the competitiveness of low-carbon products

We passed external verification of the parent company's 2023 greenhouse gas inventory for the first time in 2024

In 2024, TGI's parent company completed and obtained its first external third-party certification for the 2023 ISO 14064-1:2018 greenhouse gas inventory. The certification covers Scope 1, Scope 2, and some Scope 3 emissions from the parent company's operational activities. In the future, TGI will continue to strengthen the accuracy and credibility of greenhouse gas data management, expand the scope of verification across the entire group, and lay the foundation for formulating carbon reduction strategies and achieving net zero goals.

The first product to complete external carbon footprint verification

In 2024, TGI's Taoyuan Plant's first chopped glass strand product successfully obtained the ISO 14067:2018 product carbon footprint external third-party verification certificate. By fully calculating greenhouse gas emissions at every stage of the product life cycle and verifying them against international standards, we ensure the transparency and credibility of carbon footprint information. TGI continues to extend carbon management to the product level, promoting low-carbon product design, strengthening green supply chain management, and enhancing international market competitiveness.

External verification certificate for TGI's greenhouse gas inventory

External verification certificate for TGI's fiberglass product carbon footprint

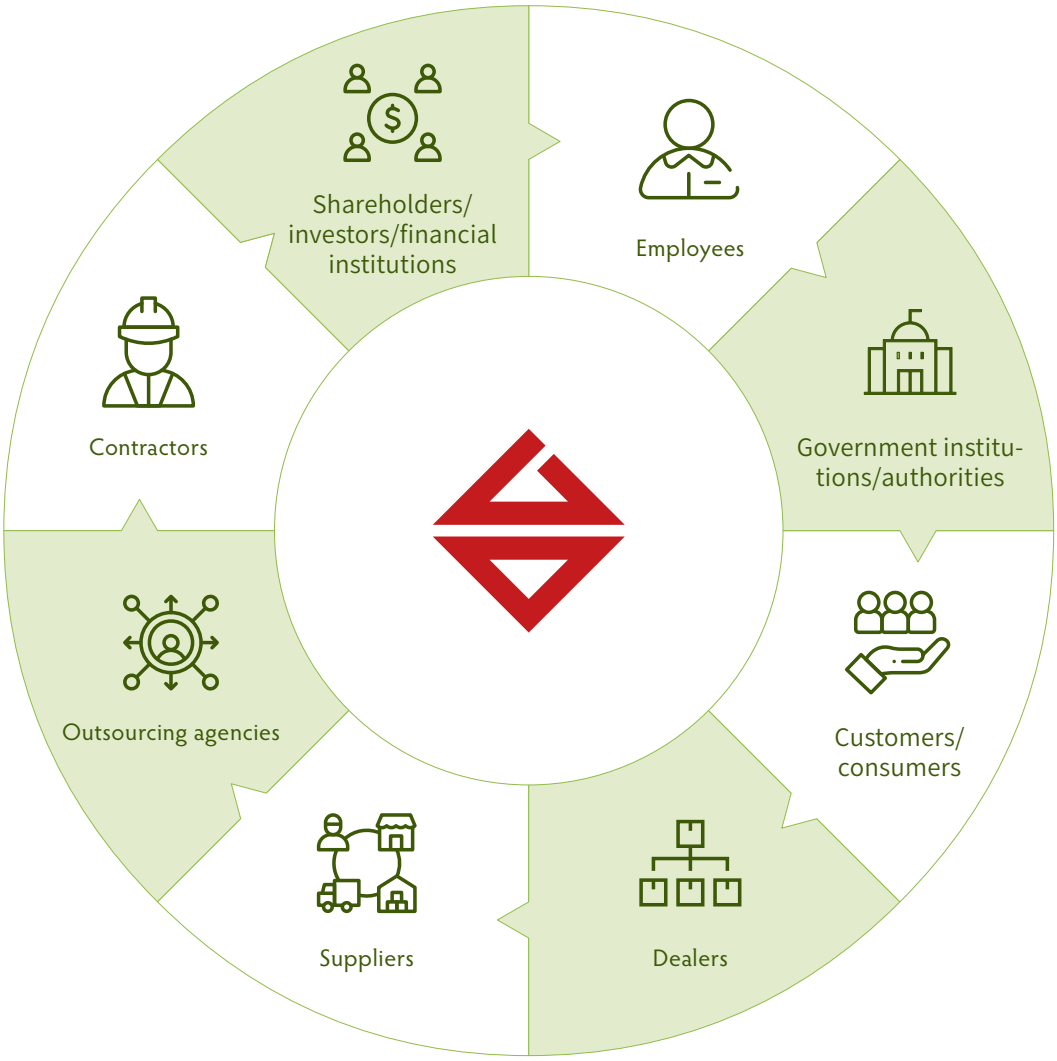
1.2 Stakeholder communication and identification of material issues

Taiwan Glass (TGI) Industry observes GRI Standards and AA 1000 SES Stakeholder Engagement Standards for the identification and analysis of stakeholders and sustainability-related issues. The "ESG Committee" distributes questionnaires to identify stakeholders and material issues each year. By gathering opinions from within and outside the organization, TGI ensures that sustainability disclosures are relevant to the Company's growth and conform with the expectations of internal and external stakeholders.

Stakeholder identification process

TGI evaluates the importance of each stakeholder based on the five main aspects of AA 1000 Stakeholder Engagement Standard (AA 1000 SES), namely "Dependency," "Responsibility," "Tension," "Influence," and "Diversity," for which the ESG Committee issues internal questionnaires to gather response, and a total of 25 valid questionnaires were received from different departments. After evaluating the responses, TGI has determined the five most important stakeholders as: employees, government institutions/authorities, customers/consumers, dealers, and suppliers.

TGI's eight main stakeholders



Material issue identification process

1 Gather corporate sustainability issues

We determine our sustainability issues based on the GRI Standards, issues of concern to domestic and foreign peers, and major global sustainability trends

24 sustainability issues

2 Issue material issue questionnaires

Based on the 24 sustainability issues identified, TGI designed questionnaires and distributed them to the eight stakeholders as well as internal departments.

No. of valid external questionnaires: 76

No. of valid internal questionnaires: 25

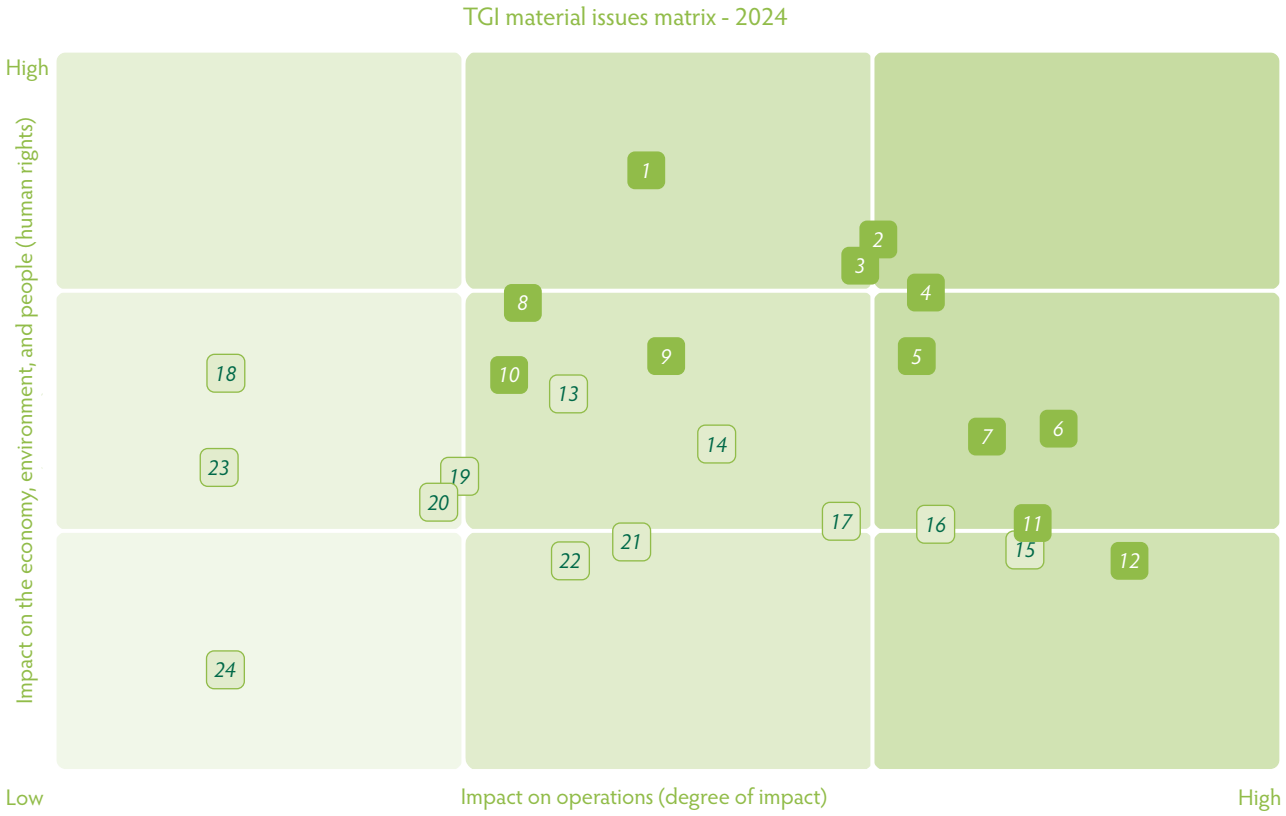
3 Analyze and evaluate actual and potential impact of material issues

TGI adopts EU's double materiality principle to analyze how each sustainability issue impacts the external environment and corporate operations, and ranks them according to materiality.

4 Identify material issues for the year and develop management solutions

12 material issues

TGI material issues matrix - 2024



1	Talent retention, salary, and welfare	13	Supply chain management
2	Economic performance	14	Response to climate change
3	Occupational safety and health	15	Ethics and integrity
4	Renewable energy	16	Corporate governance
5	Service quality management	17	Product innovation and green design
6	Waste management, recycling, and reuse	18	Talent development
7	Product quality management	19	Anti-corruption
8	Greenhouse gas and energy management	20	Collective bargaining agreement
9	Raw materials management	21	Workers' human rights
10	Business continuity management	22	Risk management
11	Legal Compliance	23	Social influence
12	Water resource management	24	Biodiversity

Ranking of material issues

Material issue	2024 ranking	2023 ranking	Change
Talent retention, salary, and welfare	1	11	↑
Economic performance	2	2	=
Occupational safety and health	3	5	↑
Renewable energy	4	4	=
Service quality management	5	6	↑
Waste management, recycling, and reuse	6	1	↓
Product quality management	7	10	↑
Greenhouse gas and energy management	8	7	↓
Raw materials management	9	12	↑
Business continuity management	10	15	↑
Legal Compliance	11	14	↑
Water resource management	12	3	↓
Supply chain management	13	17	↑
Response to climate change	14	8	↓
Ethics and integrity	15	16	↑
Corporate governance	16	13	↓
Product innovation and green design	17	9	↓
Talent development	18	20	↑
Anti-corruption	19	18	↓
Collective bargaining agreement	20	24	↑
Workers' human rights	21	19	↓
Risk management	22	21	↓
Social influence	23	22	↓
Biodiversity	24	23	↓

Material Issue Management Policy

TGI's value chain

Raw material purchase 1

Design and manufacturing 2

Quality control 3

Delivery to customers 4

Talent retention, salary, and welfare

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	TGI views employees as its biggest asset, which is why the Company is dedicated to introducing favorable benefits and work conditions as a way to strengthen unity among employees, and raise employees' and customers' satisfaction for the sustainability of the organization.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	Low fertility rate and changes in the job environment may deny the Company of suitable talents, and negatively affect operations.
Resources invested in 2024	• Resources have been committed to increase exposure of open positions at various employment platforms in order to attract job applications. • Introduced health checkups that are more favorable than what the laws require, discounted health checkups for employees' family members, and other welfare policies. • Provided employees with birthday leave, festive cash, Labor Day cash, new year cash etc.
Policies and commitments	TGI ensures that the salary package it offers remains competitive on the market, and examines employee turnover on a yearly basis to maintain the stability of its workforce. TGI also listens to employees' voices and strives to become the preferred employer by introducing better benefits.
Short-term goals (1 year)	1. Examine salary standards of the labor market on a yearly basis to provide reference for salary adjustment 2. Provide employees with a platform where they can communicate and exchange opinions, and increase employee benefits as well as lifestyle assurances

Medium- and long-term goals (3-5 years)	1. Keep employee attrition rate below 15% 2. Strive for business continuity and share profits with employees toward becoming the preferred employer
Corresponding standards	• GRI 401: Employment Relations (2016) • SDG 3 Good Health and Well-being • SDG 4 - Quality education
Corresponding chapter	5.1 Human resources and welfare
Value chain	2, 3

Economic performance

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	1. Driven by goals toward sustainable management, TGI makes persistent improvements to product strategy and strives to increase production capacity in ways that accomplish financial excellence, support growth of the domestic economy, and create job opportunities. 2. By maintaining or improving economic performance, the organization will have more resources available for research, development, upgrades, and environmental protection, and increase employee welfare to help combat inflation, which in turn minimizes attrition and supports operations in a favorable manner.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	A deterioration in economic performance would undermine stakeholders' confidence in the Company and negatively affect funding and purchase orders, decrease the amount of investments in research, development, upgrades, and carbon reduction, lower employee welfare, increase production cost, or even lead to the attrition of employees that are detrimental to sustainability management.
Resources invested in 2024	TGI has tightened annual budget assessment since 2024 and conducts regular reviews to control cost.
Policies and commitments	Faced with the uncertainties and challenges caused by the pandemic and political conflicts around the world, TGI will continue responding to the needs of customers and the market by exploring ways to lower cost, shorten the R&D cycle, and increase product value. Securing business opportunities will ultimately improve the Company's competitiveness with respect to sustainable management.
Short/medium/long-term goals	Raise product value and increase collaboration and exposure opportunities with international partners for improved profitability and economic performance.
Corresponding standards	• GRI 201: Economic Performance (2016) • SDG 8 - Decent work and economic growth
Corresponding chapter	2.1 About TGI
Value chain	1, 2, 3, 4

Occupational safety and health

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	TGI has assembled a dedicated management unit in accordance with laws to plan and supervise factory operations and to prevent accidents and occupational hazards, so that employees may work in a safe environment to deliver optimal efficiency and product quality.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	Occurrences such as work accident may result in accident, injury, death, additional production cost, or attention or penalty from government authorities.
Resources invested in 2024	1. Work safety officers of each factory are required to take part in safety committee meetings at the head office on a regular basis, during which they would brief on occupational safety and health-related matters for the current quarter for review. 2. For every work accident occurred, the Company would analyze and report the event to prevent recurrence. 3. TGI continues to organize occupational safety and health training on a yearly basis. 4. TGI conducts environment testing of the work environment on a yearly basis; the 2024 test results all conformed with standards. 5. Health checkups are arranged on a regular basis.
Policies and commitments	TGI's occupational hazard management practices are inspired by the "zero hazard" goal, which provides the basis for all safety campaigns, indicators, and efforts within factory premise.
Short-term goals (1 year)	1. TGI sets a goal of zero workplace accidents for occupational safety management, aiming for a 20% reduction in both the Disability Injury Rate (FR) and Disability Injury Severity Rate (SR) by 20%. 2. Hsinchu, Taichung, and Changpin Factory all aim to achieve 100 days without any work-related injuries. Signs displaying the cumulative number of injury-free days are set up to motivate employees to be prepared daily. 3. Lugang Fiberglass Plant: Occupational injury frequency ≦ 0.2 hours per person. year 4. Lugang Flat Panel Plant: Occupational injury frequency rate ≦ 0.04 hours per person. year 5. Taoyuan Plant: Occupational injury frequency ≦ 0.02 times per person. year
Medium- and long-term goals (3-5 years)	1. All factories have set goals to achieve zero work injury. 2. All factories are able to win the zero work injury award. 3. Health seminars and occupational safety courses are organized on a yearly basis.
Corresponding standards	• GRI 403: Occupational Health and Safety (2018) • SASB Labor Health and Safety • SDG 3 - Good health and well-being • SDG 8 - Decent work and economic growth
Corresponding chapter	5.3 Occupational Safety and Health
Value chain	2

Renewable energy

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	Development and use of renewable energy are closely related to a business' carbon reduction awareness, and are critical to TGI's efforts of bringing circular economy into the value chain. This practice not only conforms with the global sustainability trend, but also supports the domestic government's plans to develop renewable energy.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	Failure to plan for the adoption of renewable energy sources may incur significant amounts of carbon fee or carbon tax in the future, and pose heavy burden on production cost.
Resources invested in 2024	All factory areas have completed the solar panel installation plan, achieving an installed capacity of 8,784 KW. In 2024, the total power generation from solar panels across all factories reached 11.48 million kWh.
Policies and commitments	TGI will fulfill its environmental commitments and continue to increase the percentage of renewable energy sources used while taking actions to minimize environmental impacts.
Short-term goals (1 year)	1. Changpin Factory plans to build facilities to enhance the production of large-size panels in the future to increase solar photovoltaic power generation.
Medium- and long-term goals (3-5 years)	1. Continuously assess the expanded installation of solar panels at each factory. 2. Increase the percentage of solar power relative to total power usage.
Corresponding standards	• GRI 302: Energy (2016) • SASB energy management • SDG 13 - Climate action
Corresponding chapter	4.2 Energy/resource management
Value chain	1, 2

Service quality management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	1. With the support of a solid brand image and strong product quality, TGI hopes to provide good experience to customers and improve supply chain relationship in customers' best interest. 2. Strong customer relation helps secure purchase orders and maintain equipment utilization, which are especially important for glass production as the process continues non-stop for 24 hours a day.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	1. Poor service quality may cause customers to change suppliers or packaging materials, and ultimately affect company operations or result in the curtailment of employee size. 2. Unsatisfactory service experience and below-expectation product quality will affect TGI's brand image, undermine customers' confidence, and impact profitability.

Resources invested in 2024	Through practices such as routine satisfaction survey, abnormality feedback, and monitoring of response timeliness, TGI ensures smooth exchange of opinions between parties.
Policies and commitments	TGI strives to provide customers with a full range of services, which is why it engages customers in frequent communication to learn consumers' needs and expectations of TGI. By having complete knowledge of the market, TGI is able to improve service quality consistently over time.
Short/medium/ long-term goals	TGI persists in making the finest glass products, and continues to work with Japanese designer Naoto Fukasawa on the development of new products. Through this collaboration, TGI aims to introduce a total of 200 products and convey its outstanding brand spirit by creating classic glassware collections that reflect Taiwan's culture.
Corresponding standards	• GRI 417: Marketing and Labeling (2016) • GRI 418: Customer Privacy (2016) • SDG 17 - Partnerships for the goals
Corresponding chapter	3.2 Product quality 3.4 Customer service
Value chain	3, 4

Waste management, recycling, and reuse

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	Global supply of energy and resources continues to decline despite rising demand. By improving the efficiency of existing procedures and introducing green production, TGI aims to minimize waste and ultimately accomplish its goals toward sustainable management and environment friendliness.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	Failure to manage, recycle, and reuse waste according to laws not only puts the Company at risk of penalties from the authority, but also compromises corporate image and incurs additional costs for remedy.
Resources invested in 2024	1. In 2024, the total amount of general industrial waste was 16,702.17tons, a decrease of 16.68 tons compared to the previous year, with a waste density of 0.03; the waste recycling and reuse rate reached over 80% in 2024. 2. In 2024, TGI achieved total economic benefits of NT$716,490,149from the recycling of waste, wastewater, and waste glass. The economic benefits from waste recycling amounted to NT$27,726,382 in raw material cost savings or increased recycling revenue. The economic benefits from waste glass recycling amounted to NT$660,042,942 in savings on raw material costs or increased recycling revenue. 3. TGI has established a recycled glass processing center at its Hsinchu Factory, which is responsible for cleaning, crushing, and sorting purchased and internally generated waste glass, and then introducing it into the production processes of various factory areas for reuse. We also cooperate with Spring Pool Glass to recycle broken glass from downstream customers and put it into production after metal testing.
Policies and commitments	We continually implement environmental improvement solutions and are dedicated to increasing the efficiency at which energy and resources are used for glass production. By implementing energy conservation measures, we strive to reduce operating costs and lessen environmental impact at the same time.

Short-term goals (1 year)	TGI implements different measures and projects each year to increase production efficiency and lessen waste.
Medium- and long-term goals (3-5 years)	TGI continues to implement measures and projects to increase production efficiency, lessen waste, and progress toward resource recycling.
Corresponding standards	• GRI 301: Materials (2016) • GRI 306: Waste (2020) • SASB waste management • SDG 12 Responsible Consumption and Production • SDG 13 - Climate action
Corresponding chapter	4.3 Green production management
Value chain	2

Product quality management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	1. Providing customers with high-quality and reliable products and protecting consumers' interests help maintain TGI's brand image, support economic growth, and strengthen corporate competitiveness. 2. Quality is the best form of advertisement. Products of the container, tableware, and kitchenware segment all come into contact with food, and enforcing quality management helps reduce customer complaint and minimize chances of injury to consumers.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	1. Poor quality management may give rise to customer complaint or cause injury to consumers, leading to financial losses or even product recall. 2. Failure to deliver the level of quality management required by the market will lead to a loss of brand image, market demand, and profits.
Resources invested in 2024	Our facilities are 100% certified with ISO 9001 and ISO 14001 standards.
Policies and commitments	TGI actively introduces product quality, product safety, environment/safety/health, and transportation safety management systems to support its product quality enhancement and risk control efforts. TGI ensures that all products are backed by valid certificates or pass relevant quality, manufacturing safety, and food safety certifications local and abroad.
Short-term goals (1 year)	Review quality standards according to customers' feedbacks, and strive to provide better quality products that contribute to brand value.
Medium- and long-term goals (3-5 years)	1. Continue to implement quality management systems for each product line, CNS standards, and US ANSI standards 2. To obtain certification for electronic grade ultra-thin glass products

Corresponding standards	• GRI 416: Customer Health and Safety (2016) • SASB Product Design and Life Cycle Management • SDG 12 - Responsible consumption and production
Corresponding chapter	3.1 TGI products 3.2 Product quality
Value chain	1 2 3 4

Greenhouse gas and energy management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	Lowering greenhouse gas emission, reducing environmental pollution, and increasing energy efficiency not only help raise TGI's corporate image, lower production cost, mitigate climate change risk, and increase product competitiveness, but also ensure compliance with government and international laws. The reduction in product selling risk strengthens customers' attachment.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	1. Transformation of existing equipment may be limited by the external environment, the energy structure, and the R&D timeline. Furthermore, given the imposition of carbon fees and carbon taxes, it is critical for TGI to transfer additional costs. 2. Failure to reduce greenhouse gas emission and increase energy efficiency will compromise TGI's sustainability image and increase difficulties and risks when selling products.
Resources invested in 2024	1. All factories conducted Scope 3 greenhouse gas survey to identify carbon emission hotspots. 2. In 2024, TGI's factories significantly implemented energy conservation and carbon reduction initiatives, achieving a total electricity saving of 5,320,268 kWh. 3. In order to reduce energy costs, air pollution, and carbon emissions, Hsinchu Factory invested NT$67 million to convert its kilns to a dual-fuel system using natural gas as the primary fuel. The factory aims to complete the introduction of cleaner natural gas as the primary energy source by the end of 2024, with an estimated annual carbon reduction of 17,350 tons of CO_2.
Policies and commitments	TGI will actively follow the government's net zero plans and outline its own carbon reduction roadmap. Meanwhile, attention will be directed toward optimizing the energy footprint of all TGI products and developing energy-saving glass for improved competitiveness.
Short-term goals (1 year)	1. Adopt ISO 14067 Carbon Footprint Standards for flat glass, fiber glass, and glass container products, and make arrangements for third-party verification. 2. Complete Scope 3 third-party verification for the parent company and all factory sites. 3. Reduce greenhouse gas emission by 1% a year.
Medium- and long-term goals (3-5 years)	1. Each factory plans to introduce a carbon management platform in the future to improve energy resource utilization efficiency. 2. Complete Scope 1 and Scope 2 greenhouse gas survey for all consolidated subsidiaries. 3. Adopt SBTi (science-based targets initiative).

Corresponding standards	• GRI 302: Energy (2016) • GRI 305: Emissions (2016) • SASB energy management • SDG 13 - Climate action
Corresponding chapter	4.2 Energy/resource management
Value chain	1 2

Raw materials management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	The most important raw materials for glass production are limestone, dolomite, silica sand, soda ash and kaolin, which are indispensable raw materials for production. Except for limestone, most of them are imported from abroad. We adopt "safety stock management" as a way to support production needs and maintain the consistency of product quality, and enforce appropriate procurement strategies and management practices to secure supply of raw materials. Due to uncertainties of demand, TGI makes flexible adjustments to the safety stock level, actively explores secondary suppliers, and adopts effective control over the volume, cost, and quality of its purchases.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	Glass production is highly sensitive to changes in formula. All raw materials fed into the furnace must be strictly controlled, as incorrect use of formula will result in heavy losses.
Resources invested in 2024	1. Rigorous warehousing control 2. Regular sample check on the content of raw materials stored on site 3. Personnel training 4. Raw materials are stored at separate locations, and any change of location is subject to prior approval 5. Item name is duly labeled on the external package and inspections are properly performed
Policies and commitments	TGI values product quality and adopts pro-active raw material management to produce high-quality products while minimizing potential errors in the production process.
Short-term goals (1 year)	1. No incorrect input of raw materials. 2. Increase use of renewable materials and reduce use of minerals to prevent damage to the environment. 3. Improve the quality of renewable materials recycled and tighten the screening standards.
Medium- and long-term goals (3-5 years)	Continue to seek environmentally friendly alternative raw materials and technologies to create a circular economy.
Corresponding standards	• GRI 301: Materials (2016) • GRI 416: Customer Health and Safety (2016) • SASB Product Design and Life Cycle Management • SDG 12 - Responsible consumption and production
Corresponding chapter	3.1 TGI products 3.2 Product quality
Value chain	1 2 3 4

Business continuity management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	Strengthening operational continuity management enhances risk resilience, stabilizes supply and delivery schedules, and ensures customer trust and revenue stability.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	Failure to establish BCM may lead to operational disruptions in disasters, epidemics, or emergencies, resulting in delivery delays and significant losses.
Resources invested in 2024	Conduct an information disaster response drill
Policies and commitments	We are committed to introducing operational continuity management to ensure that major disruption risks are controllable and recoverable, and to safeguard employee safety and customer rights.
Short-term goals (1 year)	Completed risk assessments and draft contingency plans for major factory areas, and conducted at least one drill.
Medium- and long-term goals (3-5 years)	Established a comprehensive BCM system and regular testing mechanism to enhance the factory's ability to respond to and quickly recover from operational disruptions.
Corresponding standards	• GRI 308 Supplier Environmental Assessment • SDG 9: Industry, Innovation and Infrastructure
Corresponding chapter	2.3 Risk management
Value chain	2, 3

Legal Compliance

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	Strengthening regulatory compliance helps reduce operational risks, enhance customer trust, and promote corporate governance and market competitiveness.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	If regulatory updates are ignored, risks such as fines, production line shutdowns, reputational damage, and international trade barriers arise.
Resources invested in 2024	TGI provides comprehensive education and training for new employees and requires them to sign the "Employee Integrity Code". It also regularly conducts education, training, and outreach to relevant personnel so that all employees fully understand the importance of maintaining the Company's integrity in operations. In 2024, no corruption, bribery, or extortion was committed by any TGI employee.

Policies and commitments	As a multinational corporation, TGI operates throughout the Asia-Pacific region. Therefore, we must comply with the laws and regulations of numerous countries and establish corresponding compliance systems to avoid operational risks and, more importantly, to protect the fundamental rights and interests of our employees.
Short-term goals (1 year)	1. We conduct employee education and training on government regulations, strengthen labor law functions, and enable employees to identify, respond to, and comply with regulations. 2. We establish compliance procedures for government regulations to ensure that the Company's operations comply with legal requirements.
Medium- and long-term goals (3-5 years)	1. No major violations (fines exceeding NT$1 million) have occurred. 2. We regularly hold annual labor-management meetings and new employee training.
Corresponding standards	• GRI 2-27: Legal Compliance
Corresponding chapter	2.2 Integrity of TGI
Value chain	1 2 3 4

Water resource management

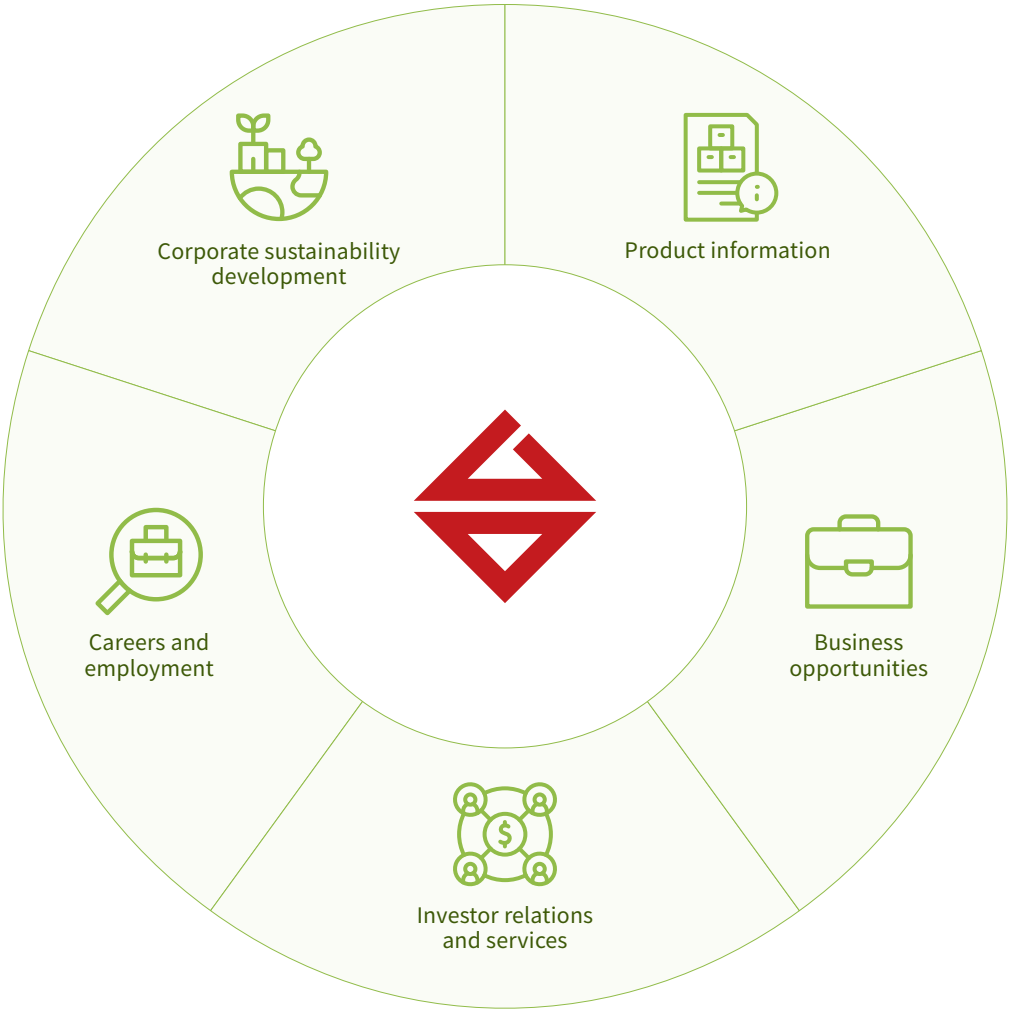
Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	Uses and recycling of water resources and carbon emissions have become common issues of concern around the world and given the current state of climate change. TGI uses large volumes of water during the production process, which therefore makes optimal water resource utilization an issue of high concern for TGI.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	TGI uses large volume of water in glass production activities such as glass edging, blanking, boring etc.; a water shortage would impact production activities.
Resources invested in 2024	1. The total recycled + recovered water volume in 2024 was 222,513,714 tons. 2. Taoyuan Plant recycled wastewater from backwashing of TT1,7 resin softening tank for cleaning of TT1 E/S SYS. A total of 92,977 tons of water was recycled in 2024. 3. In 2024, Hsinchu Factory switched the water used in TS3 and TS8 waste gas treatment systems to effluent water, with an investment of NT$1 million, and completed the installation and testing. It can reduce groundwater extraction by 3,000 tons per month and reduce effluent discharge by 3,000 tons per month.
Policies and commitments	TGI continues to recycle and reuse water resources in the production process, and encourages employees to conserve water where possible. The Company examines its water recycling system and conservation measures on a yearly basis, and continually explores ways to reduce water discharge and increase the volume of water reclaimed.
Short-term goals (1 year)	1. Reduce wastewater volume by 1% per year. 2. Optimize the wastewater treatment system to increase use of recycled water. 3. Increase water recycling rate (R2) by 1% across all factories

Medium- and long-term goals (3-5 years)	1. Continually increase the percentage of production water recycled. 2. Enhance employees' awareness to reduce the volume of water used in living activities.
Corresponding standards	• GRI 303: Water and Effluents 2018 • SASB water management • SDG 6 - Clean water and sanitation
Corresponding chapter	4.2 Energy/resource management
Value chain	2, 4

Stakeholder engagement

TGI has identified eight main categories of stakeholder, including customers, suppliers, contractors, dealers, outsourcing agencies, government institutions, employees, and shareholders (including investors and financial institutions). TGI has various communication and grievance channels in place to enforce integrity, resolve issues, and address queries. The Sustainability Committee is authorized by the Board of Directors to regularly review the progress and effectiveness of various corporate social responsibility-related businesses, and to propose strategic plans and implement measures based on performance evaluations to achieve effective two-way communication with stakeholders.

Topics communicated between TGI and stakeholders



TGI listens to the voices of stakeholders; we take all opinions under advisement and make improvements immediately to meet the public's expectations. At TGI, we consider harmonious relationship with stakeholders to be the first step toward fulfilling corporate responsibilities.

The communication channels and detailed contact information of the Company's stakeholders have been fully disclosed on the official website: Contact TGI

Customers/consumers

Meeting customers'/consumers' product requirements has been TGI's operational and innovative goals

Concerned issues

- Legal Compliance
- Corporate governance
- Product quality management

Corresponding chapter

- 2.1 About TGI
- 2.2 Integrity of TGI
- 3.1 TGI products
- 3.2 Product quality

Communication channels and frequency

- Questionnaire survey (once every six months/once a year)
- Customer service email (unscheduled) | Contact email: tgi@taiwanglass.com
- Customer satisfaction survey (once every six months/once a year)
- Participation in relevant product exhibitions (once every two years/once every year)
- Customer factory visit, on-site inspection, audit, questionnaire, unscheduled meeting etc. (unscheduled)

Suppliers

Suppliers are important business partners of Taiwan Glass, and their operations affect the products and shipments of Taiwan Glass. Therefore, assisting our suppliers in paying attention to risk changes and reducing operational risks is an important goal for Taiwan Glass

Concerned issues

- Talent retention, salary, and welfare
- Response to climate change
- Occupational safety and health
- Water resource management

Corresponding chapter

- 2.1 About TGI
- 2.2 Integrity of TGI
- 2.3 Risk management
- 3.2 Product quality
- 3.3 Innovative R&D
- 4.2 Energy/resource management
- 5.1 Human resources and welfare
- 5.3 Occupational Safety and Health

Communication channels and frequency

- Telephone, fax, E-mail (unscheduled; once message is received, the Company will coordinate with users to resolve the problem)
- Supply audit (once every quarter)
- Contact: Procurement Department | Contact email: dp@taiwanglass.com

Contractors

TGI maintains close communication with contractors to ensure that both parties have a common understanding about the construction project and work safety

Concerned issues

- Renewable energy
- Waste management, recycling, and reuse
- Water resource management
- Workers' human rights

Corresponding chapter

- 2.1 About TGI
- 2.2 Integrity of TGI
- 4.2 Energy/resource management
- 4.3 Green production management
- 5.1 Human resources and welfare

Communication channels and frequency

- Questionnaire survey (once a year)
- Face-to-face discussion/phone communication (unscheduled)
- Construction contractors are required to complete a [Safety Commitment] and [Work Environment and Hazard Notice], and circulate them among workers to ensure that details are properly conveyed (every time workers perform work at factory site)
- Health and safety training for contractors (unscheduled)
- Contact: Procurement Department | Contact email: dp@taiwanglass.com

Dealers

TGI maintains good relationship with dealers to ensure the quality of products and services delivered

Concerned issues

- Collective bargaining agreement
- Waste management, recycling, and reuse
- Water resource management

Corresponding chapter

- 2.2 Integrity of TGI
- 2.3 Risk management
- 3.2 Product quality
- 3.3 Innovative R&D
- 3.4 Customer service
- 4.2 Energy/resource management
- 4.3 Green production management
- 5.1 Human resources and welfare

Communication channels and frequency

- Visits (personal visit, call visit, E-mail) are made to learn customers' needs and to assist in solving problems (unscheduled)
- Project briefing, wind pressure deflection, glass tensile strength design, glass product planning, examination of standards etc. (unscheduled)
- Assist in order processing, sample, customer complaint, quality, equipment maintenance, technical service etc. (unscheduled)
- Customer satisfaction survey (once a year)
- Participation in Taipei Building Show (once a year)
- Participation in JEC World and China Composites Expo (once a year)
- Contact: Business Unit | Contact email: tgi@taiwanglass.com

Outsourcing agencies

Outsourcing agencies are TGI's business partners; it is part of TGI's product requirement to ensure that Outsourcing agencies deliver the level of quality that is consistent with TGI's products

Concerned issues	Corresponding chapter
Renewable energy Water resource management Waste management, recycling, and reuse	3.2 Product quality 4.2 Energy/resource management 4.3 Green production management

Communication channels and frequency

- Questionnaire survey (once a year)
- Outsourcing agencies evaluation (unscheduled; Taichung Factory: once every quarter)
- Outsourcing agencies grievance hotline, fax, digital platform or E-mail (unscheduled; once message is received, the Company will coordinate with users to resolve the problem)
- Contact: Procurement Department | Contact email: dp@taiwanglass.com

Government institutions/authorities

As the leading glass manufacturer, TGI maintains good relationship with the authority and considers it an obligation to duly communicate and comply with regulations of the authority

Concerned issues	Corresponding chapter
Ethics and integrity Corporate governance	2.1 About TGI 2.2 Integrity of TGI 4.3 Green production management 5.3 Occupational Safety and Health

Communication channels and frequency

- Public hearings held by the authority (unscheduled)
- Official correspondence with case handlers (unscheduled)
- Official correspondence and project discussion meetings with local authorities (unscheduled)
- Press conference on factory operations and launch of energy-saving products (unscheduled)
- Contact: Spokesperson of the Company
  Contact number:(02)2713-0333 | Contact email: tgi@taiwanglass.com

Employees

Human capital is what drives TGI's operations, which is why TGI considers it a responsibility to care for and develop employees

Concerned issues

- Talent retention, salary, and welfare
- Product quality management
- Legal Compliance
- Product innovation and green design
- Corporate governance

Corresponding chapter

- 2.1 About TGI
- 2.2 Integrity of TGI
- 3.1 TGI products
- 3.2 Product quality
- 3.3 Innovative R&D
- 5.1 Human resources and welfare
- 5.2 Talent development and training
- 5.3 Occupational Safety and Health

Communication channels and frequency

- Internal messaging system (e.g.: Intranet, online announcement) (unscheduled)
- Occupational Safety and Health Committee meetings (every three months)
- Labor-management meetings (every three months)
- Education/training/awareness/grievance hotlines, fax lines, and e-mail (unscheduled; employees have access to raise complaints regarding sexual harassment, and all reports received are referred to dedicated handlers)
- Contact: Human Resources Department | Contact email: pn@taiwanglass.com
- Face-to-face communication between workers' and management's representatives (once a year)

Shareholders/investors/financial institutions

Shareholders, investors, and financial institutions are the pillars that support TGI's operations, and the best return to them is to deliver consistent growth

Concerned issues

- Economic performance
- Corporate governance
- Legal Compliance

Corresponding chapter

- 2.1 About TGI
- 2.2 Integrity of TGI

Communication channels and frequency

- Report of revenue information (monthly)
- Annual financial statements and separate financial statements (once a year)
- Convention of annual general meetings (once a year)
- Appointment of Spokesperson and Acting Spokesperson (unscheduled)
- Contact number: (02)2713-0333 | Contact email: tgi@taiwanglass.com
- "Information Disclosure" section of the corporate website (yearly, unscheduled)
- (e.g.: financial statements, annual reports, shareholder service, audit, and material information)
- Investor seminar (unscheduled)

chapter 2

Pragmatic Business Management and Integrity Governance

2.1 About TGI	42
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2.3 Risk management	67

Corporate Governance Performance of 2024

12 sessions

In 2024, a total of 12 information security education and training seminars were held, with 330 participants

6 sessions

A total of 6 board meetings were held in 2024

NT$8.6 million

In 2024, TGI invested a total of NT$8,592,657 and four internal employees in information security management and protection.

0 case

No case of corruption, bribery, or extortion had occurred within TGI in 2024

2.1 About TGI

TGI's management philosophy, goals, and quality policy

TGI was founded in 1964, and for more than half a century, we have adhered to founder Mr. Lin, Yu-Chia's pragmatic and professional approach toward glass making, which contributed significantly to Taiwan's prominent accomplishments in the global glass industry. In the future, TGI will continue adhering to its quality policy: "To deliver products to customers' satisfaction by adopting advanced technologies and organization-wide quality management," and make persistent improvements to R&D, raw material supply, capacity allocation, distribution, and service. By developing capacity in terms of sustainable management and social engagement, we hope to thrive against competitors in the global market.

To deliver exceptional performance with a global mindset, consistent operating strategies, and robust financial position.

Corporate philosophy

To provide top-quality products and comprehensive service at reasonable prices for customers' satisfaction, while at the same time deliver returns to shareholders, care for employees, and give back to the society.

Corporate goals

To deliver products to customers' satisfaction by adopting advanced technologies and organization-wide quality management.

Quality policy

Introduction to TGI

Taiwan Glass Industry Corporation	
Market type	Overseas Chinese or foreign company/public-listed company
Stock code	TGI (1802)
Industry category	Glass and ceramics
Main business activities	Manufacturing and sale of flat glass
	Manufacturing and sale of glass fabric and fiber glass reinforced filament
	Manufacturing and sale of glass containers
Time of establishment	August 25, 1964
TWSE listing date	July 15, 1973
Capital	NT$ 29,080,608 thousand
Revenues	NT$ 13,101,893 thousand
Employee count	Taiwan-based employees: 3,861
Headquarters	11F Taiwan Glass (TGI) Building, No. 261, Section 3, Nanjing East Road, Songshan District, Taipei City

TGI milestones

Please refer to TGI's major events for further information TGI Company History.

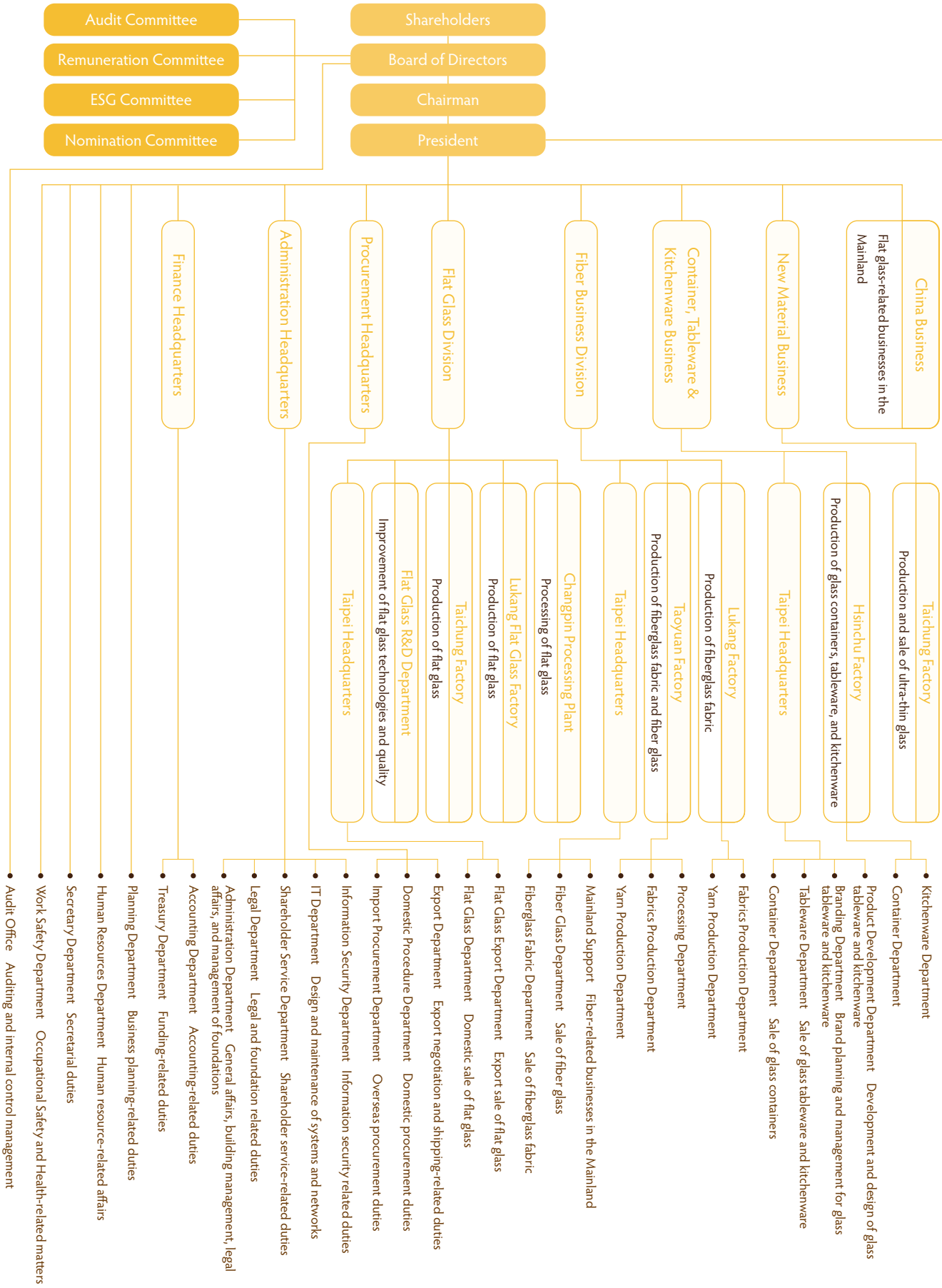
Location of production sites

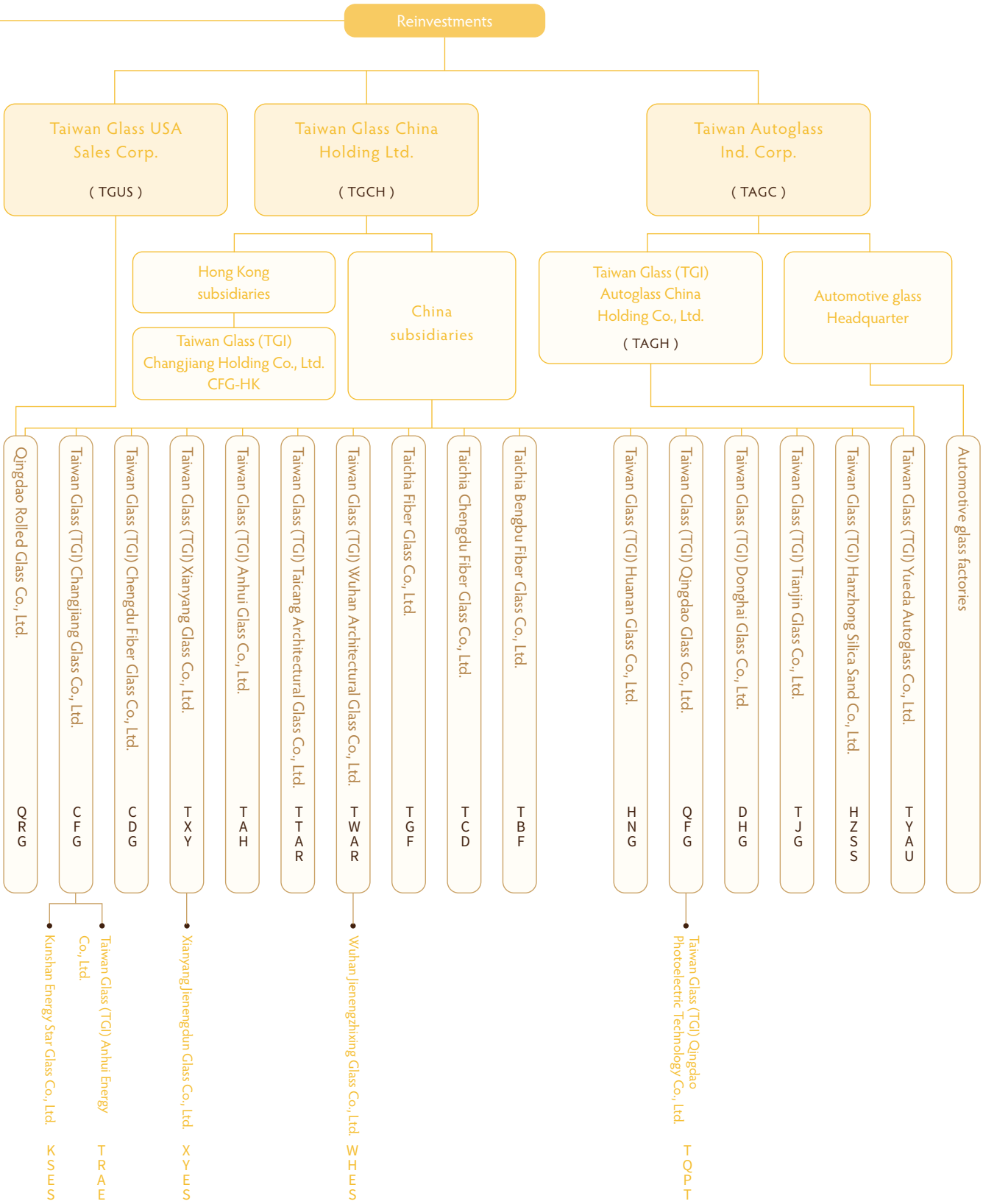
Headquarters	01	Taiwan Glass Industry Corporation
Flat Glass	02	Taichung Factory
	03	Changpin Factory
	04	TG Qingdao Glass Co., Ltd.
	05	TG Changjiang Glass Co., Ltd.
	06	TG Kunshan Glass Co., Ltd.
	07	TG Chengdu Glass Co., Ltd.
	08	TG Huanan Glass Co., Ltd.
	09	TG Donghai Glass Co., Ltd.
	10	TG Tianjin Glass Co., Ltd.
	11	TG Xianyang Glass Co., Ltd.
	12	TGI TAICANG ARCHITECTURAL GLASS CO., LTD.
	13	TG ANHUI GLASS CO., LTD.
	14	TG WUHAN ARCHITECTURAL GLASS CO., LTD.
	15	QINGDAO ROLLED GLASS CO., LTD.
	16	LUKANG FLAT GLASS FACTORY

FIBERGLASS REINFORCED, FIBERGLASS FABRIC	17	LUKANG FACTORY
	18	TAOYUAN FACTORY
	19	TAICHIA GLASS FIBER CO., LTD.
	20	TAICHIA CHENGDU GLASS FIBER CO., LTD.
	21	TAICHIA BENGBU GLASS FIBER CO., LTD.
ULTRA-THIN GLASS	22	TAICHUNG ULTRA-THIN GLASS FACTORY
Glass Container Tableware & Kitchenware	23	HSINCHU FACTORY
AUTOMOTIVE GLASS	24	TAIWAN AUTOGLASS IND. CORP.
	25	TG YUEDA AUTOGLASS CO., LTD.
SILICA SAND	26	TG HANZHONG SILICA SAND CO., LTD.
SODA ASH	27	Shihlien Chemical Industrial Jiangsu Co., Ltd.
	28	HUAIAN SHIHYUAN BRINE CO., LTD.

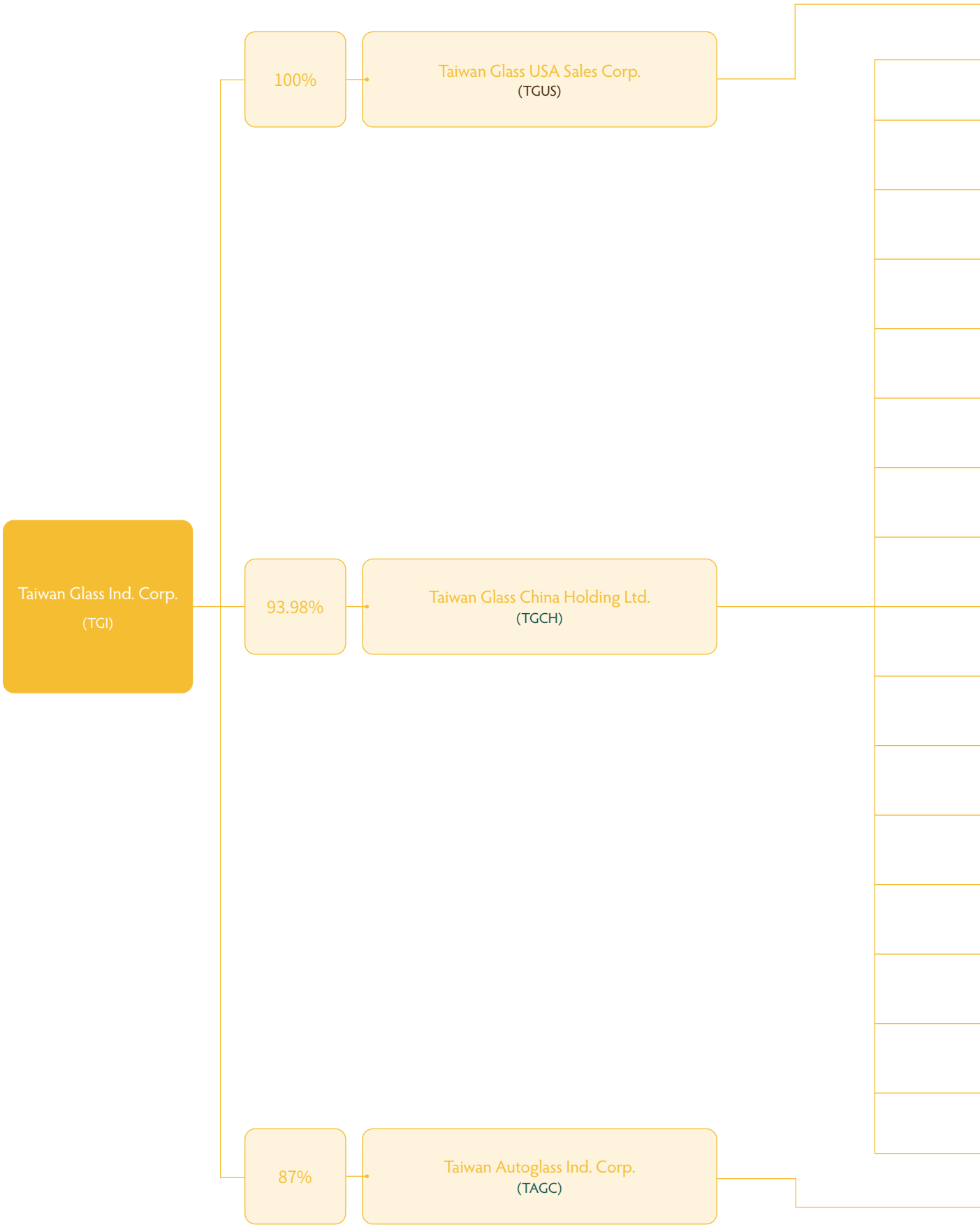
Note: TG Yueda Solar Mirror Co., Ltd. was liquidated and disposed of in April 2024.

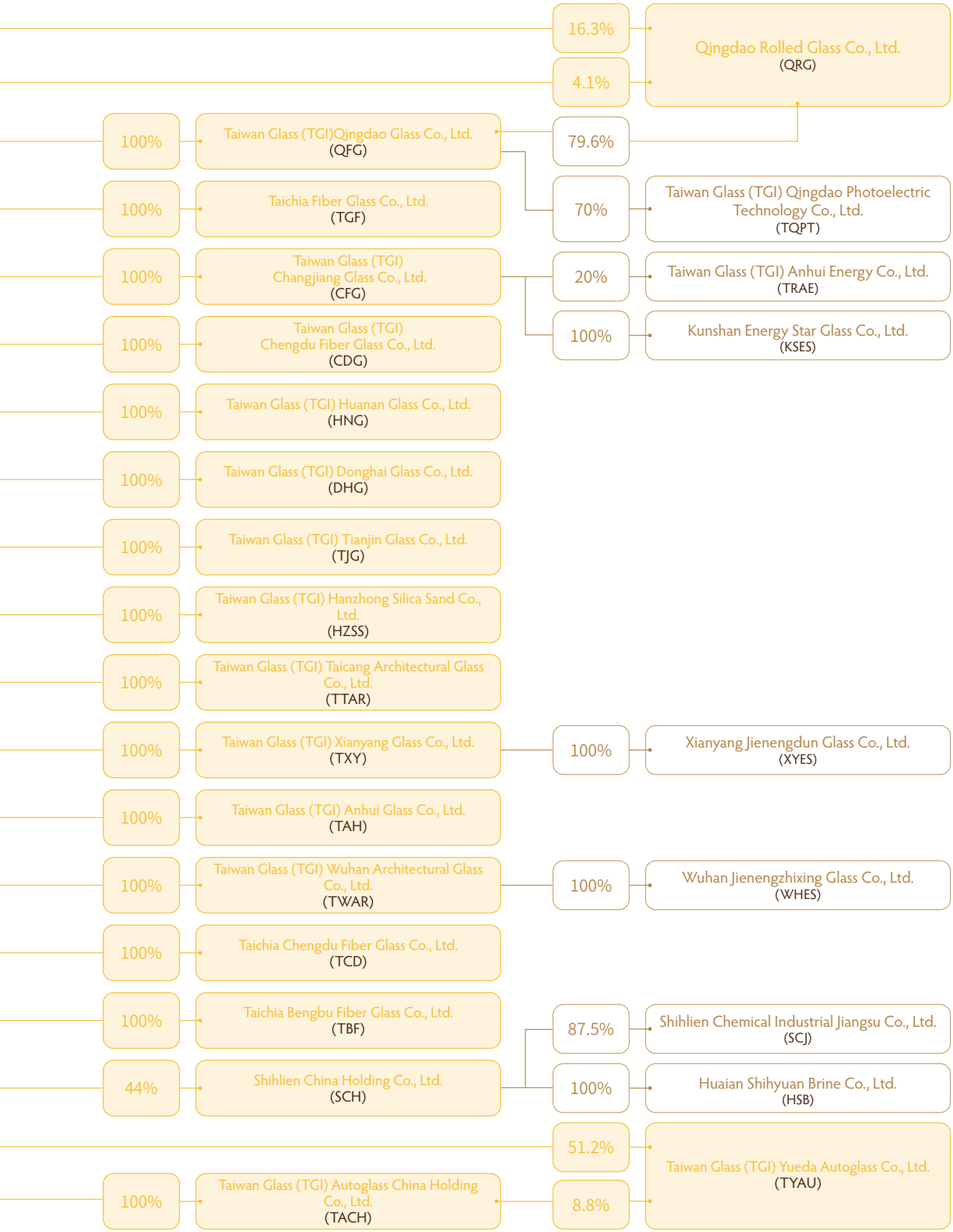
Organizational system and responsibilities of major departments



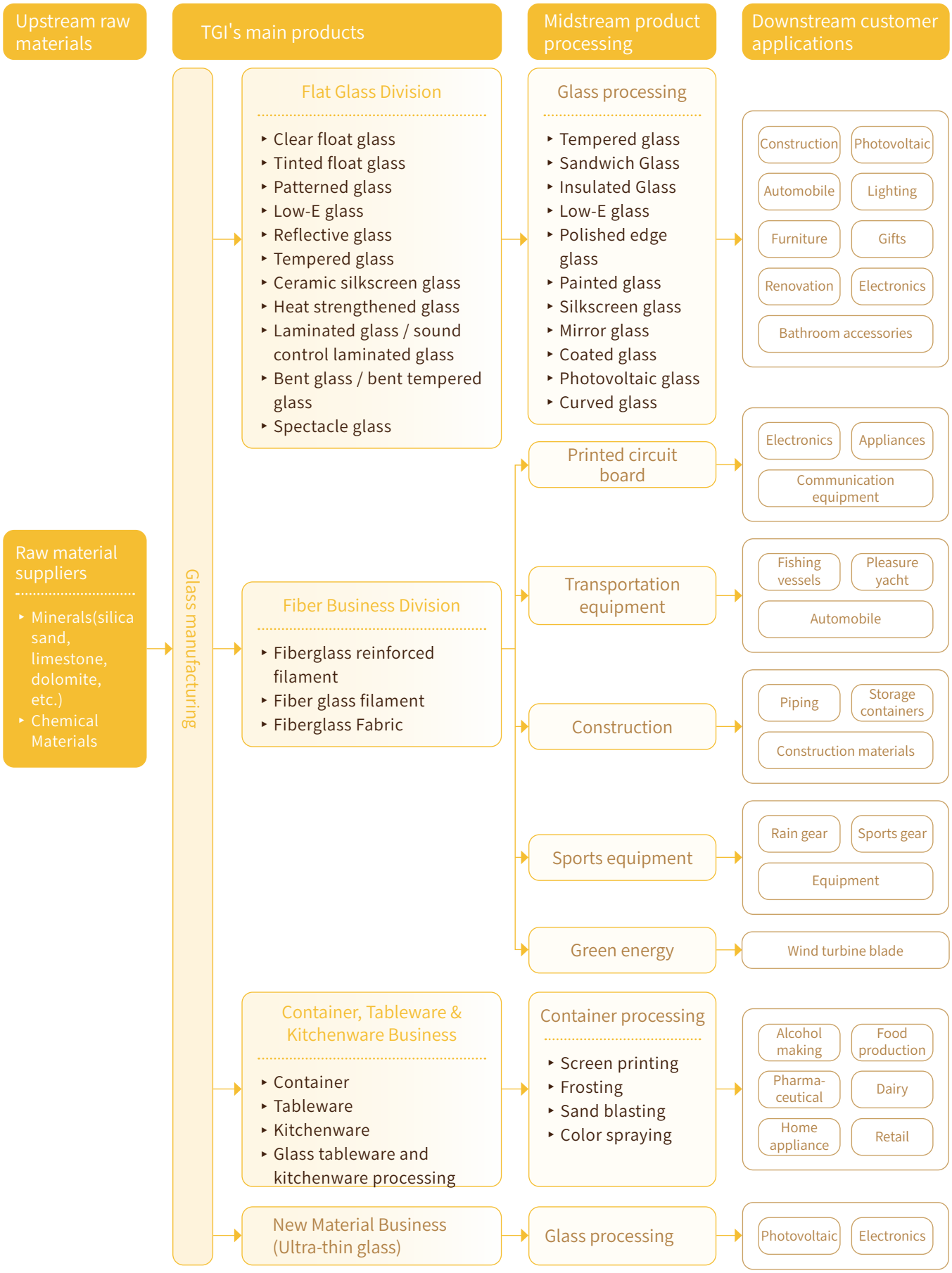

Reinvestments
Taiwan Glass USA Sales Corp. (TGUS)
Taiwan Glass China Holding Ltd. (TGCH)
Taiwan Autoglass Ind. Corp. (TAGC)
Hong Kong subsidiaries
Taiwan Glass (TGI) Changjiang Holding Co., Ltd. CFG-HK
China subsidiaries
Taiwan Glass (TGI) Autoglass China Holding Co., Ltd. (TAGH)
Automotive glass Headquarter
Qingdao Rolled Glass Co., Ltd. QRG
Taiwan Glass (TGI) Changjiang Glass Co., Ltd. CFG
Taiwan Glass (TGI) Chengdu Fiber Glass Co., Ltd. CDG
Taiwan Glass (TGI) Xianyang Glass Co., Ltd. TXY
Taiwan Glass (TGI) Anhui Glass Co., Ltd. TAH
Taiwan Glass (TGI) Taicang Architectural Glass Co., Ltd. TTAR
Taiwan Glass (TGI) Wuhan Architectural Glass Co., Ltd. TWAR
Taichia Fiber Glass Co., Ltd. TGF
Taichia Chengdu Fiber Glass Co., Ltd. TCD
Taichia Bengbu Fiber Glass Co., Ltd. TBF
Taiwan Glass (TGI) Huanan Glass Co., Ltd. HNG
Taiwan Glass (TGI) Qingdao Glass Co., Ltd. QFG
Taiwan Glass (TGI) Donghai Glass Co., Ltd. DHG
Taiwan Glass (TGI) Tianjin Glass Co., Ltd. TJG
Taiwan Glass (TGI) Hanzhong Silica Sand Co., Ltd. HZSS
Taiwan Glass (TGI) Yueda Autoglass Co., Ltd. TYAU
Automotive glass factories
Kunshan Energy Star Glass Co., Ltd. KSES
Taiwan Glass (TGI) Anhui Energy Co., Ltd. TRAE
Xianyang Jienengdun Glass Co., Ltd. XYES
Wuhan Jienengzhixing Glass Co., Ltd. WHES
Taiwan Glass (TGI) Qingdao Photoelectric Technology Co., Ltd. TQPT

TGI's affiliated enterprises




16.3%
4.1%
Qingdao Rolled Glass Co., Ltd. (QRG)
100%
Taiwan Glass (TGI)Qingdao Glass Co., Ltd. (QFG)
79.6%
100%
Taichia Fiber Glass Co., Ltd. (TGF)
70%
Taiwan Glass (TGI) Qingdao Photoelectric Technology Co., Ltd. (TQPT)
100%
Taiwan Glass (TGI) Changjiang Glass Co., Ltd. (CFG)
20%
Taiwan Glass (TGI) Anhui Energy Co., Ltd. (TRAE)
100%
Taiwan Glass (TGI) Chengdu Fiber Glass Co., Ltd. (CDG)
100%
Kunshan Energy Star Glass Co., Ltd. (KSES)
100%
Taiwan Glass (TGI) Huanan Glass Co., Ltd. (HNG)
100%
Taiwan Glass (TGI) Donghai Glass Co., Ltd. (DHG)
100%
Taiwan Glass (TGI) Tianjin Glass Co., Ltd. (TJG)
100%
Taiwan Glass (TGI) Hanzhong Silica Sand Co., Ltd. (HZSS)
100%
Taiwan Glass (TGI) Taicang Architectural Glass Co., Ltd. (TTAR)
100%
Taiwan Glass (TGI) Xianyang Glass Co., Ltd. (TXY)
100%
Xianyang Jienengdun Glass Co., Ltd. (XYES)
100%
Taiwan Glass (TGI) Anhui Glass Co., Ltd. (TAH)
100%
Taiwan Glass (TGI) Wuhan Architectural Glass Co., Ltd. (TWAR)
100%
Wuhan Jienengzhixing Glass Co., Ltd. (WHES)
100%
Taichia Chengdu Fiber Glass Co., Ltd. (TCD)
100%
Taichia Bengbu Fiber Glass Co., Ltd. (TBF)
87.5%
Shihlien Chemical Industrial Jiangsu Co., Ltd. (SCJ)
44%
Shihlien China Holding Co., Ltd. (SCH)
100%
Huaian Shihyuan Brine Co., Ltd. (HSB)
51.2%
Taiwan Glass (TGI) Yueda Autoglass Co., Ltd. (TYAU)
100%
Taiwan Glass (TGI) Autoglass China Holding Co., Ltd. (TACH)
8.8%

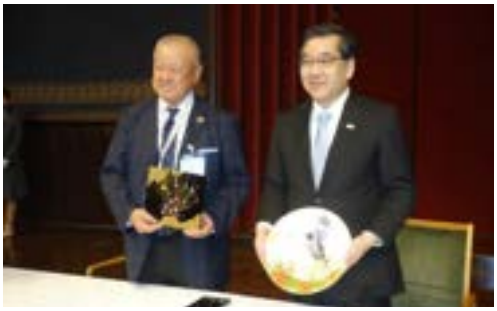
Our main products and value chain



Public associations and group participation

TGI maintains close interaction with nationwide industrial/commercial development groups as well as cross-strait exchange, regional trade, industry, and sustainability organizations. Through participation in various events, exhibitions, conferences, and multi-lateral meetings, we engage and share successful experiences with peers and contribute to the sustainable growth of the business world.

Furthermore, TGI has been working closely with Japanese companies for many years. Chairman Lin Po-Feng has also been engaged in long-term exchanges with public associations in related industries in Japan to promote the improvement of economic and trade relations between Taiwan and Japan. As a result, in 2019, he was awarded the "Order of the Rising Sun" by the Emperor of Japan, laying a solid foundation for the international visibility and friendliness of Taiwan's industrial and commercial circles.



Chairman Mr. Lin, Por-Fong received "Kyokujitsusho Medal" from the Ministry of Foreign Affairs of Japan

Organization	Role
1. Industrial and commercial enterprise groups	
Council for Industrial and Commercial Development in the Republic of China (Taiwan)	Chairperson
Chinese National Federation of Industries	Director
Taiwan Chamber of Commerce & Industry	Director
The Third Wednesday Club	Vice Chairperson
2. Cross-strait exchange organizations	
Straits Exchange Foundation	Director
Straits Economic & Cultural Interchange Association	Standing Director
Cross-Strait CEO Summit	Chairperson
3. Regional economic and trade organizations	
Chinese East Asia Economic Association	Director
Chinese International Economic Cooperation Association	Member
Taiwan-Africa Business Association	Member
4. Industry-related companies and associations	
Taiwan Glass Industry Association	Chairperson
Chung-Hwa Railway Industry Development Association	Member
Taiwan Fire Safety & Material Association	Member
Taiwan Composites Association	Standing Director
Taiwan Weaving Industry Association	Member
Taoyuan City Guanyin Industrial Park Manufacturers' Association	Member
Hsinchu City Industrial Association	Member
Taichung Harbor Related Industrial Park Manufacturers' Association	Member
Changhua Coastal Industrial Park Manufacturer Association	Member
Taiwan Printed Circuit Association	Member
5. Organizations related to environmental sustainability	
Center for Corporate Sustainability (CCS)	Consulting director
Taiwan Green Building Council	Member

Operating performance

Financial performance in the past three years

Unit: NT$ thousand

Category	Item/Year	2022	2023	2024
Financial performance	Operating revenues	12,595,543	12,278,353	13,101,893
	Operating costs	(10,611,170)	(11,028,041)	(10,563,166)
	Gross profit	1,984,373	1,250,312	2,538,727
	Operating expenses	(2,084,039)	(1,844,020)	(1,908,272)
	Operating profit (loss)	(19,569)	(514,657)	708,518
	Non-operating income and expenses	(466,467)	556,772	(2,240,624)
	Pre-tax profit/loss	(486,036)	42,115	(1,532,106)
	Current net income (loss)/ current net income from continuing operations	(720,576)	34,594	(1,571,562)
	Other comprehensive income	407,309	(917,711)	2,453,176
	Total comprehensive income for the current period	(313,267)	(883,117)	881,614
	EPS (NTD) after retrospective adjustment	(0.25)	0.01	(0.54)
Economic values distributed	Operating costs	10,611,170	11,028,041	10,483,964
	Employee salary and welfare	3,073,262	2,778,506	2,931,855
	Payments to capital contributors	4,782,942	448,300	1,981
	Payments to government authorities	88,116	325,815	47,085
	Social donations	10,370	11,488	13,728
Subtotal		18,565,860	14,592,150	13,478,613

Remark:
1. The above annual financial statements have been audited and certified by CPAs.
2. The Company has adopted International Financial Reporting Standards since 2013.
3. According to the Act on Promoting Industrial Upgrading, the five-year corporate income tax exemption (2014-2018) applies for the following factories: Changpin Plant, Hsinchu TS-7 Kiln and Taoyuan TT-1 Kiln
4. In 2024, undistributed earnings were offset by NT$641,739 in accordance with the Industrial Innovation Act.

Income tax information

Unit: NT$ thousand, %

Year		2022	2023	2024	Average
Net profit before tax (A)		(486,036)	42,115	(1,532,106)	(658,675)
Income tax recognized in profit or loss	Current income tax	250,813	3,644	(10,574)	81,294
	Deferred income tax	(16,273)	3,877	50,030	12,545
	Income tax expense (B)	234,540	7,521	39,456	93,839
Effective tax rate (%) (B)/(A)		-48.26%	17.86%	-2.58%	-10.99%
Income tax paid (C)		45,756	244,154	(8,599)	93,770
Cash tax rate (%) (C)/(A)		-9.41%	579.73%	0.56%	190.29%

Note: The above values are based on income tax-related financial figures in the Company's individual financial statements.
Other: The financial figures of TGI's individual financial statements are used. Net profit before tax (7900) and income tax expense (7950) are calculated using the individual comprehensive income statement, and income tax paid (A33500) is calculated using the individual cash flow statement.

Production volume and value

unit: tons for volume; NTD thousands for value

Year	2023			2024		
Product	Production capacity	Production volume	Production value	Production capacity	Production volume	Production value
Flat Glass	368,835	291,170	2,829,881	340,000	258,807	2,547,955
Fiber Glass	100,000	46,537	3,619,043	80,000	46,845	3,924,908
Glass container	165,400	148,654	3,084,453	165,400	143,661	2,931,069
Total	634,235	486,361	9,533,377	585,400	449,313	9,403,932

Note: The production values are based on the boundaries of Taoyuan, Hsinchu, Taichung, Lukang, Lukang Flat Glass, and Changpin Factories.

Production performance - 2024

Product	Taiwan		Mainland		Total	
	Furnace	ton(s)	Furnace	ton(s)	Furnace	ton(s)
Float flat glass	2	340,000	11	2,771,000	13	3,111,000
Glass fabric	-	-	4	125,000	4	125,000
FRP (fiber glass reinforced filament)	1	80,000	-	-	1	80,000
Glass container	6	165,400	-	-	6	165,400
Total	9	585,400	15	2,896,000	24	3,481,400

Low-E production volume - 2024

Product	Taiwan		Mainland China		Total	
	Production line	Thousand M^2	Production line	Thousand M^2	Production line	Thousand M^2
Low-E glass	1	4,000	9	41,000	10	45,000

Total automotive glass production capacity in 2024

Product	Taiwan		Mainland China		Total	
	Production line	Thousand units	Production line	Thousand units	Production line	Thousand units
Auto glass	1	300	2	2,270	3	2,570

Main product sales information in 2024

Serial No.	Product category	Percentage of domestic sale	Percentage of export sale	Revenue weight	Sales destination
1	Flat Glass	97.15%	2.85%	35.52%	Asia, Central/South America, Australia, Europe, Africa, North America
2	Glass fabric and fiber glass	26.51%	73.49%	34.04%	Europe, USA, China, Japan, Korea, The Middle East, Southeast Asia, New Zealand, Australia
3	Glass container	62.77%	37.23%	29.15%	USA, New Zealand, Australia, China, Germany
4	Glass tableware	100.00%	0%	0.05%	India, Korea, Germany, Australia
	Glass kitchenware	35.27%	64.73%	0.68%	Mainland China
5	New materials (ultra-thin glass)	9.11%	90.89%	0.56%	Mainland China

Note: Product sales information in the above chart excludes TGI's subsidiaries

Market share in the past three years

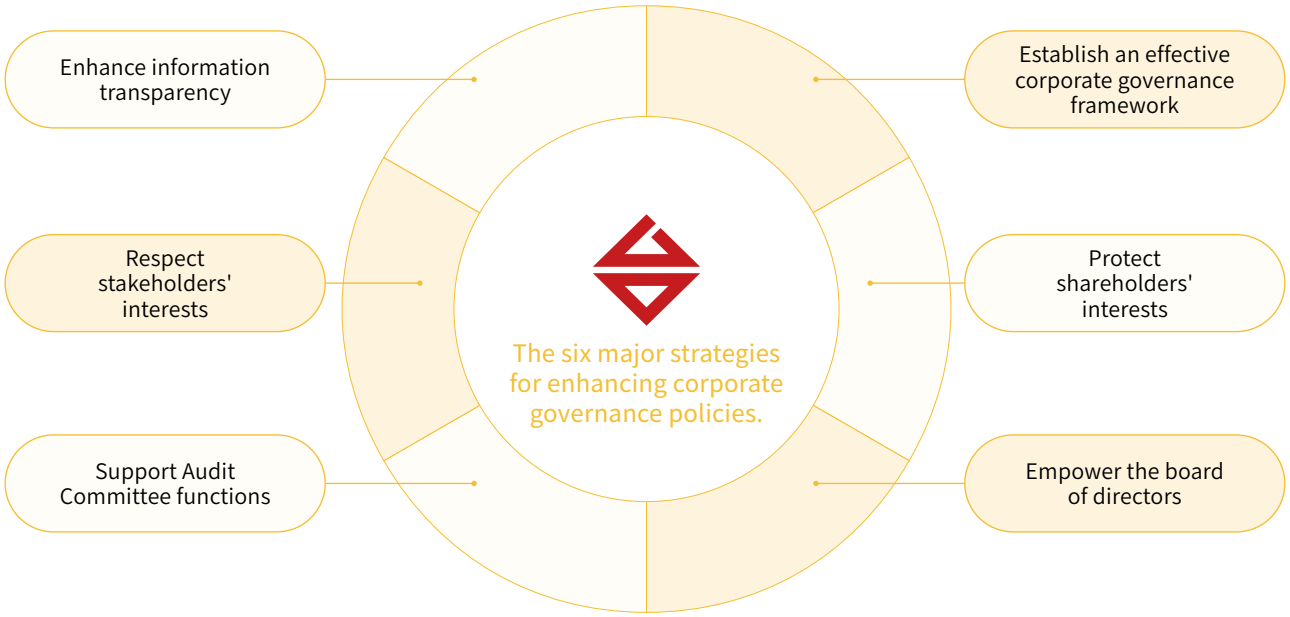
Serial No.	Product category	2022	2023	2024
1	Flat Glass	65%	75%	75%
2	Glass fabric	35%	35%	35%
3	Fiber glass	55%	55%	55%
4	Glass container	35%	60%	60%
5	Glass tableware/kitchenware	10%	10%	10%
6	New materials (ultra-thin glass)	China 10%	-	-

Note: The New Material Division has ceased production following a resolution from the board of directors.

2.2 Integrity of TGI

Board of Directors

TGI values the interests of its shareholders and investors, and considers the presence of an honest, transparent, and efficient board of directors to be the foundation of a benchmark business. We believe that sound corporate governance fosters growth and enables us to bring high-quality products and services to the market in ways that increase long-term value and set model examples. We have devised our corporate governance policy in accordance with "Corporate Governance Best-Practice Principles for TWSE/TPEX Listed Companies" and related laws, which incorporate six main strategies:



The board of directors serves as TGI's highest governance unit. The Audit Committee, Remuneration Committee, ESG Committee, and Nomination Committee have been assembled to assist the board of directors with supervisory duties. All committees have had their charters approved by the board of directors, and the chief of each committee makes regular reports to the board regarding activities and resolutions.

The board of directors is the maker of TGI's major operational decisions; its duties include:

- Appointment and supervision of the management
- Overseeing performance of the Company and offering guidance to the management team
- Reviewing the management's quarterly reports on the state of economy, environmental protection, and factory operations
- Maintaining close communication with the management: the management proposes growth strategies while the board of directors examines and evaluates the outcome and expected results, offering advices as deemed appropriate

TGI appointed a corporate governance officer in accordance with laws back in 2019 to oversee "matters relating to board of directors and shareholder meetings," "preparation of board meeting and shareholder meeting minutes," "assistance with directors' duties and ongoing education," "provision of information that is relevant to directors' duties," and "assistance with directors' compliance." The corporate governance officer completed 12 hours of mandatory training in 2024.

Composition of the board of directors

TGI's board of directors had a total of 15 directors in 2024. All directors and corporate director representatives are highly experienced either in corporate management or academics. There were also 3 independent directors on the board. We rely heavily on directors' knowledge, insight, and business judgment for our sustainable management efforts. The term of office of TGI's directors is three years. Qualified directors are elected by the shareholders' meeting and may be re-elected. The directors elect one of their own as chairman, who represents the Company in all business operations and does not concurrently serve as the Company's CEO.

Name	Designation	Date on board	Gender	Concurrent employment at the Company
Lin, Por-Fong	Chairman	1967-09-16	Male	Yes
Lin, Por-Shih	Director	1967-09-16	Male	Yes
Lin, Por-Chain	Director	1976-04-21	Male	No
Lim, Han-Ton	Director	2009-06-10	Male	No
Peng, Cheng-Hao	Director	2018-06-13	Male	No
Hsu, Li-Lin	Director	2015-06-09	Female	No
Lin, Chia-Hung	Director	2000-04-28	Male	Yes
Hsieh, Chin-Hsing	Director	2024-10-06	Male	Yes
Lin, Chia-Yu	Director	2004-10-06	Male	Yes
Lin, Charles Ming	Director	2006-06-09	Male	Yes
Tsai, Tseng-Ming	Director	2017-10-26	Male	Yes
Lien, Sheng-Wu	Director	2021-07-02	Male	No
Lin, Sheng-Chung	Independent Director	2021-07-02	Male	No
Lin, Zui-Yeh	Independent Director	2021-07-02	Male	No
Wang, Yu-Che	Independent Director	2021-07-02	Male	No

For detailed information on TGI's Board of Directors, please refer to p.14 of the 2024 annual report

Major resolutions of the board of directors in 2024

Name of motion
The 21st Board of Directors Candidates
TGI Group plans to conduct transaction with a related party

The Board of Directors will meet at least once a quarter. In 2024, a total of six board meetings were held, with an average attendance rate of 93%. The Company holds two types of shareholder meeting: the annual general meeting and extraordinary shareholder meeting. The annual general meeting is held once a year within six months after the end of an accounting period, whereas extraordinary shareholder meetings may be held whenever deemed necessary, subject to compliance with relevant laws.

	Professional knowledge and skills					
	Glass industry	Finance and banking	Import and export trade	Commerce and management	Finance	International businesses and trade
	V			V		
	V			V		
	V			V		
		V		V		
			V	V		
				V		
	V			V		
	V		V	V		V
	V			V		
	V	V		V	V	
	V		V	V		V
		V		V	V	
				V		V
			V	V		V
				V		

	Motion details	Execution progress
	Re-election of the Board of Directors in 2024	Processed according to the results of the shareholders' meeting
	In 2025, TGI Group intends to engage in transactions with related parties, which must be reported to the Board of Directors for approval in advance	Approved in accordance with the resolution

Implementation of diversity on the Board of Directors

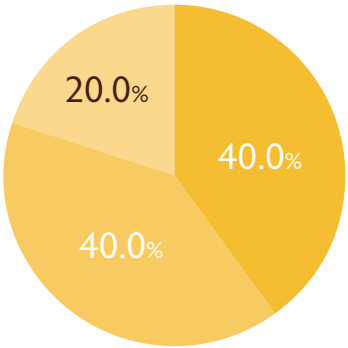
TGI has implemented a "Board Member Diversity Policy" and disclosed details on the corporate website. Board members are selected based on professional capacity and level of commitment while taking into consideration a broad number of diversity criteria including but not limited to gender, age, cultural and educational background, ethnicity, professional experience, skills, knowledge, and duration of service. The average age of TGI's current Board of Directors is 65.1 years old, and female directors account for 7%. Article 20 of the "Corporate Governance Best Practice Principles" also states that the Board of Directors should possess the following capabilities: operational judgment, accounting and financial analysis skills, business management skills, crisis management skills, industry knowledge, international market perspectives, leadership skills, and decision-making capabilities.

In the future, the Company will nominate independent directors in line with long-term growth targets and functions of the Audit Committee and Remuneration Committee, while taking into consideration whether the candidates complement each other to improve overall skills, experiences, and knowledge of the board. Candidates of relevant expertise will be nominated to meet the Company's board diversity targets.

Management goals for board diversity policy

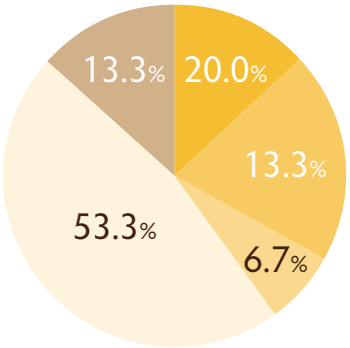
	Management objectives	Current situation	Achievement status
Gender diversity	At least **one** female director	Director Hsu Li-Ling is female director of the current Board of Directors	V
Age diversity	The directors are of all ages, and **one-third** of them are under **60 years old**	The age of directors is evenly distributed across all age groups, with one-third of them under 60 years old	V
Diverse backgrounds	**At least one** director has an **academic background**	Independent Director Lin Sheng-Chung is a distinguished professor at Chung Yuan Christian University, and Independent Director Wang Yu-Che is an associate professor and director of the Global Business Degree Program at Chinese Culture University, both have academic backgrounds.	V

Composition of the board of directors



- Ordinary directors (6 seats)
- Corporate directors (6 seats)
- Independent directors (3 seats)

Age distribution of board members



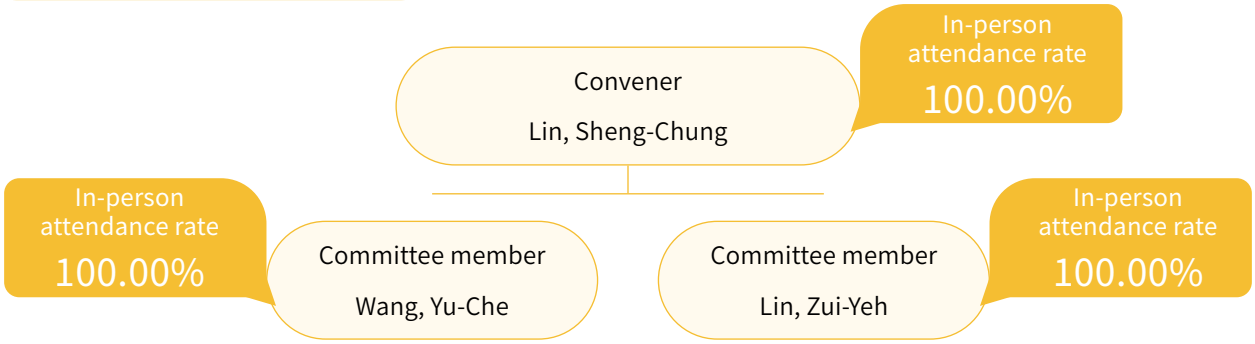
- 41-50
- 51-60
- 61-70
- 71-80
- Age 81 and above

Details of the board diversity policy and implementation are explained in the "ESG" section of the corporate website

Audit Committee

For the implementation of sound corporate governance, the Company has observed "Regulations Governing the Exercise of Powers by the Audit Committees of Public Companies" and assembled the Audit Committee since August 2015 that comprises all 3 independent directors, including at least one with accounting or financial expertise.

Audit Committee members



Assists the board of directors in supervising fair presentation of the Company's financial statements, appointment/dismissal and independence/performance review of financial statement auditors, implementation of internal control system, compliance with relevant laws and rules, and management/control of existing or potential risks.

Main focuses of the Audit Committee:

- Helping the board of directors supervise fair presentation of financial statements
- Appointment and dismissal of CPAs and their responsibility, independence, and performance
- Effective implementation of internal control system
- Compliance with regulations and rules
- Control of current and potential risks

The Audit Committee held 4 meetings in 2024 to address the following issues:

- Annual assessment of financial statement auditors' independence.
- Amendment of Asset Acquisition and Disposal Procedures, Derivatives Trading Procedures, Endorsement and Guarantee Procedures, and External Party Lending Procedures.
- Amendment of internal control system.
- Lending to subsidiaries and endorsement/guarantee for subsidiaries.
- Auditing of financial statements.
- Establishment of annual audit plan.
- Review of annual business report.

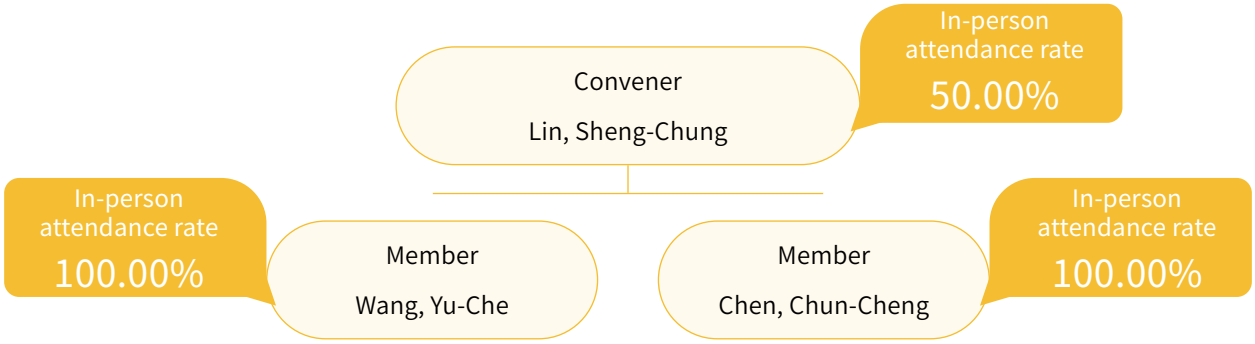
For details on the operation of the Audit Committee, please refer to P.22 of the 2024 annual report.

In 2024, the independent directors communicated with CPAs twice. In addition to discussing the results of the financial statement audit, quality control, and updates on securities regulatory regulations, they also communicated on "latest developments in sustainability disclosure standards". In 2024, the independent directors also communicated with the head of internal audit four times. The communication topics included: the internal audit business implementation report for this year, the assessment of effectiveness of the internal control system in 2023 and "Statement of Internal Control", and the 2025 audit plan.

Remuneration Committee

A Remuneration Committee has been assembled in accordance with "Regulations Governing the Appointment and Exercise of Powers by the Remuneration Committee of a Company Whose Stock is Listed on the Taiwan Stock Exchange or the Taipei Exchange" to support a robust salary and compensation system for directors and managers. The committee comprises 3 members including 2 independent directors.

Remuneration Committee members



Duties of the Committee are to evaluate the salary and compensation policy for TGI's directors and managers in the utmost professionalism and objectivity. The Committee then presents its recommendations to the board of directors on issues such as:

- Regular examination of committee charter
- Review of annual and long-term performance targets for directors and managers of the Company, as well as their salary/compensation policy, system, standard, and structure
- Regular assessment on the accomplishment of performance targets by directors and managers, and details and amounts of individual compensation for decision-making.

The Remuneration Committee held two meetings in 2024 and discussed the following matters:

Meeting	Date	Discussions	Resolutions
6th meeting of the 5th Remuneration Committee	2024-03-11	Distribution of 2023 compensation to TGI's directors and managers	Discussed and approved by all Remuneration Committee members
1st meeting of the 5th Remuneration Committee	2024-08-13	Proposal for election of the convener of the 6th Remuneration Committee	Committee member Lin Sheng-Chung was elected as the convener
		Routine review of the "Director and Manager Compensation Policy"	Discussed and approved by all Remuneration Committee members

For detailed information on the operation of the Remuneration Committee, please refer to P.29 of the 2024 annual report.

Board of Directors'remuneration system

Directors' compensation includes cash compensation, warrants, stock dividends, retirement benefits, severance pay, allowances of all kinds, and any incentives of material value. This definition is consistent with the scope of directors', supervisors' and managers' compensation stated in "Regulations Governing Information to be Published in Annual Reports of Public Companies."

Directors' remuneration is allocated in accordance with Article 26 of the Articles of Incorporation and linked to the Company's profit and operational performance. Profits concluded from a year are subject to employee remuneration of 1.5% and director remuneration of no higher than 1.5%. However, profits must first be taken to offset against cumulative losses, if any.

Aside from the above, no other compensation program, retirement benefit, severance pay, or clawback arrangement was applicable to directors.

In 2024, the Company did not directly solicit opinions from stakeholders on its salary policy, nor did it hire a remuneration consultant. In the future, the Company will consider the participation of stakeholders and incorporate their opinions for reference and filing. Sustainability performance has not yet been linked to the remuneration of directors or senior executives, and relevant measures will be studied in the future.

Remuneration system for senior managers

The Company has established its Senior Managers Compensation Management Policy in accordance with internal rules. Senior managers' compensation determined based on job duty, responsibilities, performance, management capabilities, and current market levels. Managers' compensation includes monthly fixed salary, bonuses, and pension. The performance evaluation system has been reviewed and approved by the Remuneration Committee, and implemented with the resolution of the board of directors.

For details on the performance-related relationships between the Company's directors, independent directors, and managers, please refer to P.19 of the 2024 annual report.

Nomination Committee

A Nomination Committee has been assembled in accordance with Corporate Governance Best-Practice Principles for TWSE/TPEX Listed Companies since 2016 to support the director nomination system. The Nomination Committee has a total of 6 members. The Nomination Committee operates under the delegation of the board of directors and helps the board with the search, review, and nomination of director candidates. The committee also contributes to the development of a robust board structure, and ensures optimal composition of board members. When determining board composition, the Nomination Committee would consider diversity from a number of perspectives including but not limited to gender, age, culture, education, ethnicity, professional expertise, skills, knowledge, and duration of service to ensure that the board has the diversity needed to support sustainable and balanced growth.

For detailed operations of the Nomination Committee, please refer to P.30 of the 2024 annual report.

Nomination Committee members

Convener
Lin, Por-Fong

Attendance rate
100.00%

Committee member
Lin, Por-Shih

Committee member
Lin, Por-Chain

Committee member
Lin, Sheng-Chung

Committee member
Lin, Zui-Yeh

Committee member
Wang, Yu-Che

Please visit the TGI website for the Nomination Committee, the Audit Committee, and Remuneration Committee Charters and a detailed description of their duties

Board of directors' performance assessment

In an attempt to enforce sound corporate governance practices and procedures and to empower the board of directors for more sophisticated duties, TGI passed a set of "Board of Directors Self-assessment or Peer Assessment Policy" in 2021 that serves as guidance for the evaluation of board of directors' and functional committees' performance. The Company also issues performance self-assessment questionnaires to individual directors and functional committee members, and gathers opinions from peers as well as outside experts to establish individual directors' understanding of corporate issues and determine how the board operates as a whole. The policy was renamed "Board of Directors Performance Evaluation Policy" late in 2022, and it requires internal performance evaluations to be conducted by the board on its performance as a whole, as individual directors, and by functional committees on a yearly basis, and external evaluation is to be conducted by professional institutions, experts, or scholars at least once every 3 years. Outcomes of the performance evaluation will be presented to the board of directors to serve as reference for decisions regarding compensation, nomination, and renewal, and to facilitate goal-setting for improved board efficiency.

Board of directors internal self-assessment

The evaluation indicators for the Board of Directors cover six major aspects: understanding of company goals and tasks, understanding of directors' responsibilities, level of participation in company operations, internal relationship management and communication, directors' professionalism and continuing education, and internal control, totaling 23 evaluation indicators. The evaluation indicators for functional committees (the audit committee and remuneration committee) cover five major aspects: understanding of functional committee responsibilities, improving the quality of functional committee decision-making, level of participation in company operations, internal control, and the composition and election of functional committee members. The overall evaluation result for 2024 was "Excellent". In the future, we will actively improve plans with lower average scores, such as the number of hours for board training.

Outcomes of the 2024 board internal assessment, the Audit Committee members performance assessment, and Remuneration Committee members performance assessment were reported during the board of directors meeting held in the first quarter of 2025. Performance scores are explained below:

Assessment aspect	No. of assessment indicators	Assessment score (out of 5)
Board internal performance assessment	23	4.81
Audit Committee	22	4.92
Compensation Committee	19	4.97

Board external performance assessment

To ensure the objectivity and validity of board of performance assessment, TGI engaged "Taiwan Institute of Ethical Business" to conduct external assessment on board performance for 2022. The Company then followed the Institute's recommendations to devise and implement measures aimed at optimizing current practices. No external performance assessment was conducted in 2024 (to be conducted once every 3 years).

The four major aspects of external performance evaluation include the board's professional functions, the board's decision-making effectiveness, the board's emphasis on and oversight of internal controls, and the board's attitude towards sustainable operations. The "board's attitude towards sustainable operations" includes evaluation indicators such as the disclosure of ESG information, talent development and succession planning, and actions towards sustainable operations. For details on the board's evaluation, please refer to P.21 of the 2024 annual report.

Functionality of TGI's board of directors

Item	Description
Board independence and avoidance of conflict of interest	**Avoidance of conflict of interest** The Company has established a recusal system for directors as part of its "Board of Directors Conference Rules." Directors are required to disassociate from all discussion and voting, but may express opinion and reply, on any board meeting motion that poses a conflict of interest between the Company and themselves or the entities they represent. Furthermore, they are prohibited from exercising voting rights on behalf of other directors on such proposals. Directors are expected to uphold a high level of discipline, and voluntarily recuse themselves from discussing and voting on any board meeting motion that poses a conflict of interest between the Company and themselves. Furthermore, they are prohibited from exercising voting rights on behalf of other directors. Directors are expected to exercise self-discipline and refrain from supporting each other in inappropriate ways. In addition, we have independent directors in place to provide objective views based on their professional experience when deciding on future strategies. These opinions are fully taken into consideration during board discussions, and the reasons for any agreement or disagreement with such opinions are recorded in meeting minutes. This conflicting interest principle serves to protect the Company's interests. Directors' independence criteria and conformity with such criteria are explained in detail in P.12-13 of the annual report.
Directors' ongoing education	In 2024, board members participated in advanced training courses organized by several external professional organizations, including the Chinese National Association of Industry and Commerce, Taiwan Institute for Sustainable Energy, The Greater Chinese Financial Development Association and Taiwan Listed Companies Association, Securities and Futures Institute, Taiwan Cooperative Securities Co., Ltd., Taiwan Academy of Banking and Finance, Taiwan Stock Exchange, Taiwan Corporate Governance Association, etc. The participating courses included corporate mergers and acquisitions, international carbon trading, M&A trends, new trends in circular economy and sustainable operations, AI big data, carbon risk management, artificial intelligence, prevention of insider trading, ESG, corporate integrity management, information security governance, sustainable finance, climate change, green supply chain, digital technology, etc.
Board of directors election system	TGI has established a "Directors Election Policy" in accordance with The Company Act and Articles of Incorporation. The election is carried out by way of a candidate nomination system using registered votes. Votes may be registered using shareholder ID instead. Under the nomination system, shareholders will elect from a list of candidates that best protect their interests. Directors' term of service may be renewed if re-elected. TGI directors serve a term of three years. The directors elect a chairman from among themselves to represent the Company in all business dealings.

Shareholder communication and shareholders' interests

The Company values communication with shareholders and devotes significant attention to shareholder service as part of its response to stakeholders. TGI holds two types of shareholder meeting: the annual general meeting and extraordinary shareholder meetings. The annual general meeting is held once a year within six months after the end of an accounting period, whereas extraordinary shareholder meetings may be held whenever deemed necessary, subject to compliance with relevant laws. TGI has created an "ESG" section on its website to disclose financial, business, and corporate governance information in a timely manner. Furthermore, contact information is provided to shareholders and investors to facilitate routine communication and to address shareholders' suggestions.

Please refer to the "ESG" section of TGI's website

Integrity management and anti-corruption

TGI values business integrity as part of its corporate culture, and has implemented "Business Integrity Code of Conduct," "Illegal, Unethical, and Dishonest Conducts Reporting Policy," and "Employee Service Integrity Code of Conduct" with board of directors' approval to enforce integrity. The Company has also developed robust corporate governance and risk management practices to ensure continuity of its business activities.

The Company has a legal affairs unit and an internal audit unit in place. Responsibilities of the two units are to ensure compliance with laws such as The Company Act, Securities and Exchange Act, Anti-Corruption Act, Government Procurement Act, regulations applicable to TWSE/TPEX listed companies, and other regulations on business dealings across all internal departments while carrying out various duties. This compliance serves as the prerequisite for business integrity. Conduct that employees are bound to comply with include but are not limited to the following:

(1) Reject vendors' benefits and gifts as a principle.

(2) Acceptance of vendors' benefits must be reported and approved in advance; any money and gifts received must be immediately reported and surrendered.

(3) Refrain from exploiting the vested authorities for private monetary dealings with vendors.

Employee service integrity code of conduct

TGI handles all external donations and sponsorships in accordance with applicable laws and internal standard operating procedures to prevent offering and acceptance of bribe and making of illegal political donations.

Annual integrity management implementation

TGI has a human resources unit that is responsible for organizing regular internal training on business integrity as well as orientation training for new recruits, so that all employees may comprehend what is expected of them. The HR unit also makes regular disclosures on the execution of Business Integrity Code of Conduct over the Company's website, annual report, and prospectus. In 2024, no TGI employees engaged in any corruption, bribery, extortion, or other acts that violate integrity.

All employees had signed the "Employee service integrity code of conduct" as of November 2015. All 206 new permanent employees recruited in Taiwan in 2024 had signed the document, representing a 100% completion rate. The Company also conducted training on business integrity-related topics in 2024 (Including employee handbook, policies, and corporate social responsibilities), which received a total of 1,125 enrollments and delivered 1,034 training hours. In addition, directors and independent directors also took relevant courses to prevent insider trading in 2024 to ensure that all TGI employees can adhere to the core values of integrity.

	No. of completions	Training hours
Business integrity training and awareness	1,125	1,034 hours

	No. of new recruits signed	Completion rate
Employee service integrity code of conduct	206	100 %

Directors and independent directors' continuing education courses in 2024

Course name	Training hours
2024 Insider Trading Prevention Seminar	3.0
How Can Companies and Directors Avoid Insider Trading	3.0

Business integrity training

Course name	Content	No. of participants	Photo
Anti-corruption and promotion of business secrecy awareness	In 2024, TGI invited the Ministry of Justice Investigation Bureau to conduct publicity work at the Company to strengthen its awareness of corruption risks and introduce the concepts of internal control and ethical management to prevent the occurrence of illegal activities such as corruption and bribery. At the same time, we assist companies in understanding the regulations and obligations of the Personal Information Protection Act, promote a sound personal data management system, and avoid illegal collection, processing, or use of personal data.	31	
Personal data protection awareness	By simulating personal information leakage scenarios, we strengthen the response mechanism and reporting process, and enhance the coordination and response capabilities of relevant personnel in handling emergencies.	31	

Whistleblower system and complaint mechanism

TGI implements Article 20 of its "Ethical Corporate Management Best Practice Principles". In 2018, the Board of Directors approved the "Measures for the Report on Illegal, Unethical and Dishonest Acts" which clearly discloses the reporting unit, reporting channels, and handling procedures. We post employee complaint email addresses and hotlines on our internal website, and establish external communication channels for email, hotlines, and written reports. Complaints and suggestions can be made at any time, and the identity of the reporter and the content of the report will be kept confidential. TGI commits to protecting the safety of whistleblowers. If the whistleblower is the Company's employee, it promises to protect the whistleblower from suffering improper treatment due to the report. Personnel handling reports must strictly maintain confidentiality regarding the identity of the reporter and the details of the report. Any violation of the preceding two paragraphs will result in internal disciplinary action by the Company, depending on the severity of the violation. TGI received no report on violation of business integrity in 2024, whether through internal or external channels.

For the abovementioned "Ethical Corporate Management Best Practice Principles", "Measures for the Report on Illegal, Unethical and Dishonest Acts", and "Business Conduct for Employees Performing Their Duties", please refer to TGI's official website

E-mail

Audit Office
ad@taiwanglass.com

Human Resources Department
pn@taiwanglass.com

Grievance hotline

Audit Office
02-2715-8051

Human Resources Department
02-2715-8060

Grievance via written correspondence

11F, No. 261, Section 3, Nanjing East Road, Songshan District, Taipei City

Legal Compliance

TGI has established legal and audit departments to assist all units in complying with relevant laws and regulations, with the goal of preventing any major violations (fines exceeding NT$1 million) from occurring. In 2024, TGI reported no major violations.

The following table lists TGI's regulatory violations and fines in 2024. The relevant units are requested to implement improvements in the follow-up of these incidents:

Event	Amount of penalty
Violations of health and safety regulations related to products and services	None
Incidents of non-compliance with regulations and/or voluntary codes concerning marketing communications (including advertising, promotion and sponsorship)	None
Incidents of non-compliance concerning product and service information and labeling	None
Fines for violation against Occupational Safety and Health Act	NT$730,000
Fines for violation against Labor Standards Act	None

Note 1: For detailed incident description and subsequent improvement measures, please refer to 5.3 Occupational Safety and Health
Note 2: The table shows the amount of fines imposed for regulatory violations that occurred during the reporting period

Internal audit

TGI's Audit Office operates independently under the board of directors. In addition to making routine reports at board of directors meetings, internal auditors also present reports to the Chairman, the Audit Committee, and independent directors on a regular basis and at times deemed necessary. A total of 34 internal audits were completed in 2024, and no abnormality was found.

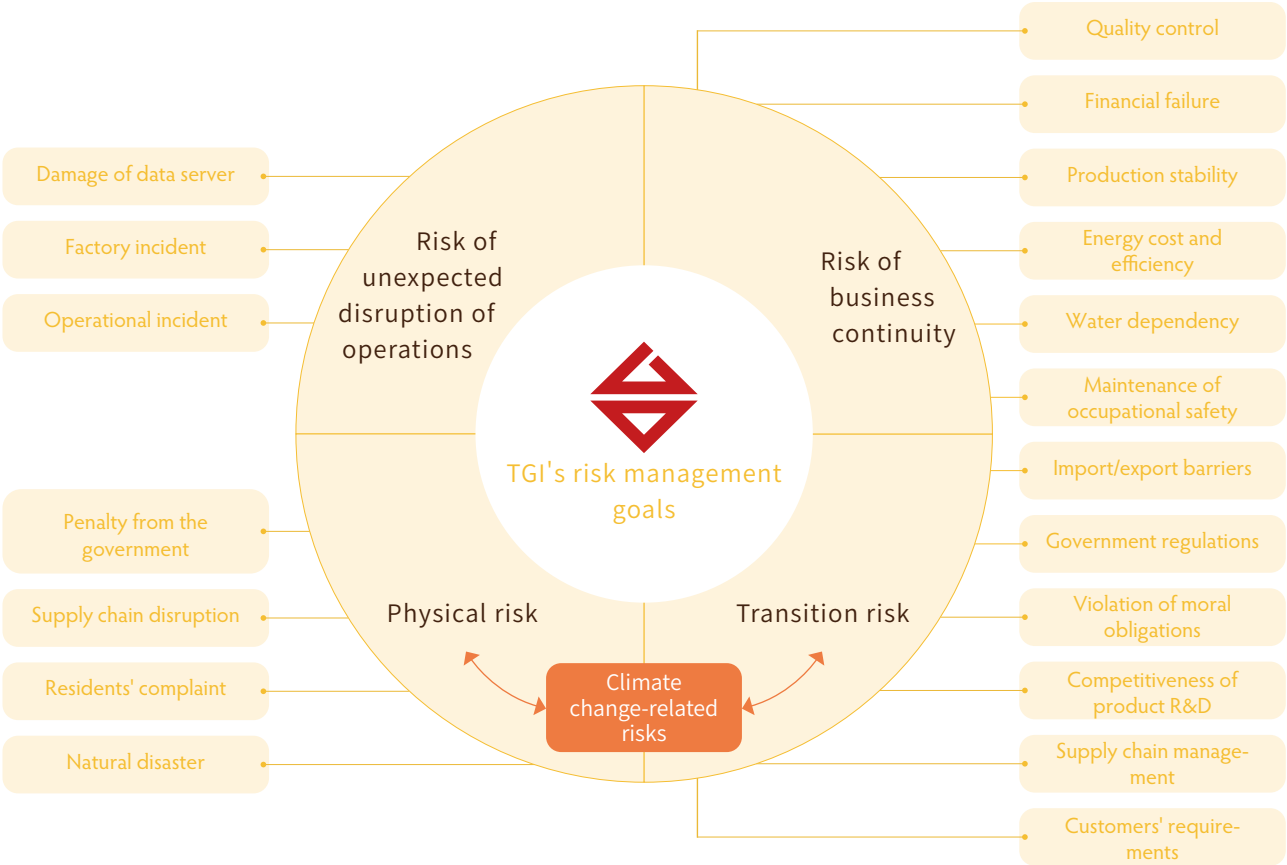
TGI has devised internal audit implementation rules in accordance with "Regulations Governing Establishment of Internal Control Systems by Public Companies" to facilitate the review and assessment of internal control system, operational results, and efficiency, so that improvements and suggestions can be raised in time to ensure that the internal control system continues to be effective. The scope of internal audits cover all operations of the Company and subsidiaries. Based upon the risks identified through regular or special audits, the Company is able to evaluate the effectiveness of its internal control system and issue Declaration of Internal Control System.

Beginning in 2025, in response to regulations and policies, TGI will introduce an internal control system for sustainable information. The scope of the 2025 internal audit of sustainable information will be TGI's parent company, and it is expected to be conducted in December in accordance with relevant internal control documents. TGI conducted environmental, safety and health audits on its factories in 2018 and 2019. These are irregular audits and are included in the legal compliance audit items. The audit content is based on the relevant regulations of the factory.

A total of **34** internal audits were completed in 2024, and **no abnormality was found**.

2.3 Risk management

To strengthen corporate governance and promote sound operations and sustainable development, TGI's Board of Directors oversees risks, while the ESG Committee is responsible for overall corporate risk management. Each department regularly reviews various issues and implements corresponding risk management measures to reduce the probability of occurrence and mitigate the impact of identified risk items.



Strengthen risk management operations

Reduce operational risk exposure

Improve crisis management capabilities

Achieve sustainable business operations

Risk Management

Financial risk	
Financing risk	
Description of impact	Uncertainties associated with financing, such as currency, repayment term, lending conditions etc., may give rise to losses.
Risk management system/response	Maintain banking limits and negotiate with banks for more preferential financing rates to reduce funding cost and maintain optimal capital structure.
Opportunities	A favorable financing rate contributes to the productive circulation of capital.
Responsible unit	Accounting
Liquidity management risk	
Description of impact	Failure to obtain adequate funding in time to meet payment obligations that have or are about to fall due.
Risk management system/response	Increase interest income from liquid capital and optimize yield and availability of liquid capital.
Opportunities	Maximizing liquidity with minimal funding cost.
Responsible unit	Accounting
Interest rate risks	
Description of impact	Failure to secure favorable interest rate will increase funding costs.
Risk management system/response	TGI has always maintained a strong financial position and used it as a strong leverage to bargain and negotiate with financial institutions for favorable terms. The Company also maintains close communication with banks to gain access to preferential borrowing rates.
Opportunities	Minimal funding costs.
Responsible unit	Accounting
Risks of exchange rate change	
Description of impact	Exchange variation may give rise to extra losses.
Risk management system/response	Exchange rate risks associated with purchases and sales denominated in non-functional currencies are offset against each other, therefore the Company is not exposed to significant exchange rate risk.
Opportunities	-
Responsible unit	Accounting
High-leverage investment risk	
Description of impact	Risky financial conducts may put the Company in higher financial risk.
Risk management system/response	The Company did not engage in high-risk or highly leveraged investments in 2024, and neither did it lend capital to external parties. Loans, guarantees, and endorsements were granted only to Mainland subsidiaries for factory construction or working capital.
Opportunities	
Responsible unit	Accounting

Business risks	
Legal risks	
Description of impact	TGI is required to comply with Regulation Governing Reporting of Greenhouse Gas Emission, Reclaimed Water Resources Development Act, Water Supply Act, Water Act, and other laws concerning employment dispute and occupational hazards.
Risk management system/response	• TGI checks regulatory updates on a monthly basis to ensure compliance with relevant laws. • In light of tightened internal control requirements, TGI has implemented a legal affairs system along with a collateral management system, enforced a contract management policy, and established procedures for operational policies to ensure effective review and control of legal documents as well as proper creation of legal charge over collaterals.
Opportunities	Improving compliance efficiency, reducing legal risks and strengthening internal control management can promote the Company's stable operation and enhance its reputation.
Responsible unit	Legal Affairs
Compliance risk	
Description of impact	Business units that do not act according to rules may impact the Company in ways that are beyond control.
Risk management system/response	• TGI devises audit plans for the upcoming year in accordance with "Regulations Governing Establishment of Internal Control Systems by Public Companies" while taking into consideration the outcomes of current year's audit. Audit plans are duly executed on a monthly basis, and any defects or abnormalities discovered within the internal control system are fully disclosed in the audit report and subsequently followed up at least on a quarterly basis until rectified. • Additionally, TGI organizes special audits on an ad-hoc basis to gain insight into specific business activities or issues.
Opportunities	Eliminate or reduce adverse impacts to the Company from failing to act according to rules.
Responsible unit	Auditing
Procurement risk	
Description of impact	• Material shortage
Risk management system/response	• Internal control and audit systems have been implemented to enhance internal risk prevention and control. • Procurement and tender information is made transparent online. • All procurement orders and contracts are reviewed and verified by Legal Affairs. • TGI conducts investigations on suppliers' brand, reputation, size, performance, and ability to accommodate with ad-hoc requests. The quality control department and the department-in-use will visit suppliers if necessary to learn and evaluate whether they meet the quality, delivery capacity, technology capability, after-sale service capacity, and price expectations of the company. • All factories maintain a minimum inventory of raw materials (2-3 months for foreign supplies and 2-4 weeks for domestic supplies); supply of important raw materials is secured using long-term contracts; vendors have been instructed to make deliveries at the timing and in quantities needed by various factories.
Opportunities	A comprehensive and robust supply chain system minimizes risk of material shortage and delay.
Responsible unit	Procurement

Business risks	
Cost risks	
Description of impact	• International conflicts and climate change present many variables to the price and supply of raw materials, which affect production costs and delivery timing and pose significant impacts to the Company and customers. A rise in cost would force TGI to price its products at a less competitive level. • The government plans to impose a carbon tax, which increases cost and makes products less competitive. • Suppliers continue to raise prices due to the imposition of water conservation charge and carbon tax, as well the rising price of energy and resources.
Risk management system/response	• TGI evaluates how new regulation affects costs, and explores ways to save costs and expenses. Examples: Imposition of water conservation charge and carbon tax, supply and safety of products and raw materials, and impact of globalization on raw material supply and competition. • Search for qualified suppliers within the local area and build a short supply chain. • Explore possible carbon reduction measures to lower product carbon emissions.
Opportunities	1. Speed up the switch to a hybrid fuel system (oil + gas) to lessen dependency on a single energy source while taking advantage of the stable price of natural gas for favorable cost control. 2. Production units used to draw water through pumps, but now draw water using in-factory pressure differential. These improvements have the potential to increase the water conservation rate, and have been completed to date. 3. Changpin Factory draws water mainly for glass washing. It has the ability to adjust water requirements within a flexible range and uses recycled water for preliminary washing. Fresh water and EDI are used depending on the wash requirements. 4. With regards to electricity, TGI will closely monitor minimum power requirement during equipment standby and make arrangements to produce products of the same series in the same run.
Responsible unit	Business units
Risk of customer complaint	
Description of impact	• Most products of the container, tableware, and kitchenware segment are used as food packaging material, and therefore present risk of injury to consumers. • Consumers are increasingly demanding quality; products that pass quality standards may still attract complaints, which impacts the brand image.
Risk management system/response	• Examine quality standards and implement rigorous rules on the quality issues reflected by customers in order to produce higher quality products for customers. • TGI renews non-life insurance coverage on a yearly basis and progressively increases premiums to expand scope of coverage. • TGI actively communicates with customers to keep up-to-date on market trends and demand, and maintains tight control over product quality.
Opportunities	1. Active prevention and control of damage help improve corporate image. 2. Builds customers' trust and loyalty. 3. Improved brand value, avoidance of price competition, and increased unit product profit.
Responsible unit	Business units
Product recall risk	
Description of impact	Tightening requirements of the U.S. FDA increases risk of product recall.
Risk management system/response	Additional insurance coverage has been purchased to minimize the impact of product recall risk.
Opportunities	Creates differentiation from competitors
Responsible unit	Business units

Business risks	
Information security risks	
Description of impact	• Malicious information from outside the organization • High volume of data at risk and leak of confidential documents
Risk management system/response	• In addition to establishing information security protection measures for its network and computers, the Company has joined "Taiwan Computer Emergency Response Team / Coordination Center (TWCERT/CC)," to receive and transmit information security intelligence with "National Institute of Cyber Security" in real time, and is also a member of several information security organizations such as "Taiwan Chief Information Security Officer (CISO) Alliance" and "Information Service Identity Association of R.O.C. (CISA)." These engagements with outsiders help increase both the depth and breadth of information security defense. To ensure effective protection against hackers, illegal intrusion of the Intranet, and any activities that undermine the Company's business performance, financial position, reputation, and interests, such as theft of confidential information and personal data, implant of ransomware etc., the Company will continually examine and evaluate and appropriateness and effectiveness of its information security policies and procedures, while at the same time undertake the following information security protection measures. In doing so, we hope to reduce the damage of potential information security risks, maintain normal business operations of the Company, and protect the interests of customers, shareholders, suppliers, employees, and other key stakeholders. 1. Enhanced network firewall and network management. 2. Enhanced detection, protection, and virus scanning at terminals. 3. Strengthen information security education and training and social engineering drills to enhance employees' information security awareness. 4. Introduction of an automated defense system to strengthen the information security platform. 5. Engaged a third-party information security consultant to help strengthen information security management practices.
Opportunities	Improved protection and security for the network environment, servers, and user terminals.
Responsible unit	Information Security Director
Human resources risk	
Description of impact	• Difficulty in recruiting talents • Low talent retention rate
Risk management system/response	• TGI offers salary packages that are more favorable than the laws require, and makes adjustments based on regular reviews of the labor market. • TGI uses a wide range of channels to recruit suitable talents. • A robust training system has been established based on organizational strategies and analysis of needs to help adapt to the changing environment.
Opportunities	TGI introduced a 'Counselor system for new recruits' in which the Company assigns experienced employees to guide and teach new recruits. By enabling mutual assistance between employees, the Company hopes to shorten the learning curve and ultimately increase employees' retention rate.
Responsible unit	HR
Production risk	
Description of impact	1. Extreme weather causes shortages of the energy and resources needed for production. 2. The need to adopt uninterrupted designs for the supply of raw materials, fuel, and energy to ensure continuity of the production line.
Risk management system/response	1. Raw materials: Set safety stock levels 2. Fuel: TGI has taken the initiative to design a natural gas combustion system that runs concurrently with and as a backup to the existing oil-based system. 3. Energy: TGI primarily uses electricity and has an uninterrupted power supply available to support critical equipment. 4. Water resources: Improve the water circulation mechanism within the factory, so that water from each line can be recycled to individual production lines and then recycled after comprehensive treatment in the water treatment plant.
Opportunities	Ensures uninterrupted operations and maximizes production capacity.
Responsible unit	Factory

Business risks	
Raw materials risk	
Description of impact	1. Placing raw materials in the incorrect warehouse or contamination of the materials storage site may lead to formula error and output of non-conforming products. 2. Glass production is highly sensitive to changes in formula. All raw materials fed into the furnace must be strictly controlled, as incorrect use of formula will result in heavy losses.
Risk management system/response	• Rigorous warehousing control • Regular sample check on the content of raw materials stored on site • Personnel training • Raw materials are stored at separate locations, and any change of location is subject to prior approval • Item name is duly labeled on the external package and inspections are properly performed
Opportunities	Minimizes errors in the production process.
Responsible unit	Factory
Environment and safety risk	
Description of impact	Environmental incidents and safety emergencies may affect production or cause injury and death.
Risk management system/response	The Work Safety Section devises emergency response plans and investigates environmental incidents to address possible environmental and safety-related emergencies at factory premises. The Factory Affairs Section plans training programs and assists internal units with the execution. Each factory has established its own "Emergency Response Plan" to address accidents such as fire, failure of waste treatment facility, air pollution, major leakage of oil or chemical substance, explosion etc, The Work Safety Section may amend the Emergency Response Plan depending on the state of each factory. **Level 1** Incident Occurs ▼ Emergency Response Implemented On-Site ▼ Assess whether the Incident can be effectively and immediately controlled ▼ **Level 2** Switchboard or security guards issue an emergency broadcast notification ▼ Complete emergency response team assembly and implement emergency response ▼ Assess whether the Incident can be effectively and immediately controlled ▼ **Level 3** Request external support ▼ Carry out rescue missions and disaster management ▼ Disaster management completed, emergency re-sponse plan terminated ▼ Review
Opportunities	Emergency response and investigation and analysis of incidents help prevent similar occurrences on a later date
Responsible unit	Factory safety and facilities

Climate risk	
Physical risk	
Description of impact	Heavy rain floods certain factories, earthquake damages equipment and products, whereas weather anomalies make it difficult to store raw materials, semi-finished goods, and finished goods.
Risk management system/response	• TGI started paying attention to climate-related risks in 2021, and has since adopted the framework of TCFD. • Observe climate change and the effects it has on weathers and disasters, keep up to date on current affairs for possible scenarios, and follow ISO 14001(8-ES-B10) on emergency response. • For any unexpected disaster occurred, our factories would first follow the emergency response plan and conduct environmental incident investigations to keep equipment damage to the minimum and ensure the safety of employees; next, they will evaluate damage to raw materials and inventory and take actions to resume delivery of goods in the shortest time possible. • In light of the ongoing climate changes, we have taken the initiative to monitor the mediation measures imposed in countries around the world, and help local authorities and industrial parks implement training and measures in response to potential climate risks.
Opportunities	Improves response and adaptation to risks.
Responsible unit	Work safety Factory affair
Transition risk	
Description of impact	Transition risk may pose additional risks to the Company, whereas the imposition of carbon fees and tightening of regulations may suppress or change customers' purchasing preference, and ultimately affect sales orders.
Risk management system/response	• Although it is time-consuming to develop new products, the Company still takes the initiative to learn low-carbon transformation needs of its customers and the market as well as changes in preference for materials. Meanwhile, pro-active efforts are being committed to keep track of progress and provide the market with the products needed. • TGI pays close attention to regulatory change and adopts responses ahead of time to ensure the sustainability of its growth. • In 2024, TGI also used the TCFD management mechanism to conduct scenario simulations and analyses of climate risks (for details, please refer to 4.4 Climate Action and TGI's 2024 TCFD Report). By assessing our own climate risks, we can conduct strategic planning and response preparations in advance to reduce operational impacts.
Opportunities	TGI is committed to the research and development of innovative and low-carbon products, and persistently explores ways to improve energy efficiency in factories. Certificate of Cleaner Production Assessment and Green Building Certificate for Lukang Factory and Taoyuan Factory, Lukang Factory, and Taoyuan Factory, for example, are some of the preparations that we have made to facilitate transition into a low-carbon economy/society and to better respond to regulatory or policy changes in the future.
Responsible unit	Business units

Intellectual property management

TGI has devised intellectual property strategies in line with operational goals to support its search for new glass applications and development of high value-adding products and production technologies. The Company has progressively introduced new measures to manage intellectual properties since 2021, and an "Intellectual Property Rights Management Policy" has been established to guide the management of intellectual properties within the group. Meanwhile, intellectual property management plans and targets have been established in association with operational goals to optimize IP investment, IP planning, IP contracting, and raise IP awareness.

TGI's intellectual property management goals

To develop, implement, and maintain an intellectual property acquisition/protection/management/utilization system that is suitable given the Company's size and form.	To provide adequate resources needed to effectively implement and maintain the intellectual property management system.
To monitor internal and external risks or opportunities associated with intellectual property management, and take appropriate responses.	To plan and implement perpetual improvement practices to ensure that the intellectual property management system performs in line with the Company's expectations.

Legal Affairs is responsible for the maintenance and use of patents and trademarks. The department takes regular count, maintains records, and examines the validity of patents and trademarks, and applies for extensions as needed to ensure rightful claim over patents and trademarks, and to identify and prevent possible disputes ahead of time.

The Legal Affairs Department may be required to cooperate with a law firm that specializes in intellectual property rights to protect TGI's trademarks, patents, and production procedures. Depending on the requests of internal units, the Company may engage the law firm to search and apply for patent/trademark registration locally and abroad, and perform subsequent maintenance works. The information security department will be involved and internal work rules will be amended to prevent leak of intellectual property. The Company's annual intellectual property management implementation status is reported to the Board of Directors by the implementing unit on a regular basis each year in "Intellectual Property Management Plan and Implementation Status". The 2024 results were as follows:

Intellectual property	Number acquired						Application in progress
	Taiwan	China	Japan	Germany	USA	Total	
Patent	35	544	3	1	4	587	85
Trademark	84	94	0	0	0	178	0

Information security management

TGI assembled an "Information Security Management Committee" in 2023 to: oversee execution of information security plans, establishment of appropriate management framework, review of information security policy and level-4 documents, assignment of security responsibilities, and coordination of information security measures throughout the Company, thereby ensuring the effectiveness of the information security management system.

To strengthen information security management, we have established information asset and regulatory compliance systems to ensure the confidentiality, integrity, and availability of the Company's information assets and comply with relevant regulatory requirements. This protects them from internal and external threats, whether intentional or accidental, and prevents unauthorized access, use, control, disclosure, damage, tampering, destruction, or other infringements of information or information systems. Appropriate management mechanisms have been established to maintain the sustainable operation of our various business operations.

In addition, TGI has established the "ISMS-0-IS-A01 Information Security Policy", "ISMS-0-IS-B02-03 Information Security Effectiveness Measurement Report", "ISMS-0-IS-B16 Information Security Incident Management Procedures", and related document specifications for all employees to follow. TGI did not encounter any major information security event in 2024 that resulted in losses.

Structure of the Information Security Management Committee

Designation	Responsibilities
Convener	Headed by the Chairman and CEO, whose responsibilities are to make decisions and coordinate resources for important matters concerning information security.
Information Security Management Representative	Headed by the Chief Information Security Officer, whose responsibilities are to: convene meetings annually or as needed, review information security-related matters, convene resource coordination meetings across departments when in need, and allocate resources needed for information security management.
Information Security Task Force	Members of the Information Security Management Committee are responsible for the planning and execution of information security tasks. A "Strategy and System Planning Team," an "Information Security Protection and Response Team," and a "Performance Management and Review Team" have been established to carry out various duties.
Emergency Response Team	Responsible for assembling, contacting, coordinating, and supervising responsible persons of critical business processes toward executing proper responses in the occurrence of major information security incidents, as well as the allocation of available resources and external communication.

Information Security Monthly Meetings

The Information Security Department is responsible for formulating, promoting and implementing relevant policies such as information security and risk management, and reviewing the effectiveness of the Company's information security management, information security-related issues, and directions. The Department currently has one information security director, one information security supervisor, and two information security officers.

Chair of monthly meeting	Information Security Director
Participants	Members of the Information Security Department and the network administrator
Discussions in 2024	Information security protection planning and execution for 2024.

TGI follows the PDCA (Plan → Do → Check → Act) management cycle to review the appropriateness of information security policy, protection measures, and execution outcome. Appropriate information security technologies and equipment are introduced at the proper time to support compliance with regulations and keep up with the latest information security protection requirements.

Information Security Management Strategy

P

Plan

Plan an information security management system in line with the Company's business development requirements that aims to protect against information security risks and minimize security threats for business continuity.

D

Do

The Company has built a multi-level information security protection system as we continue to enhance the integration of information security defense technology and control mechanisms to ensure that important operational processes for business, production, procurement, finance, stock affairs, human resources, and documents can operate normally, ensure the confidentiality, integrity, and availability of the Company's important assets.

C

Check

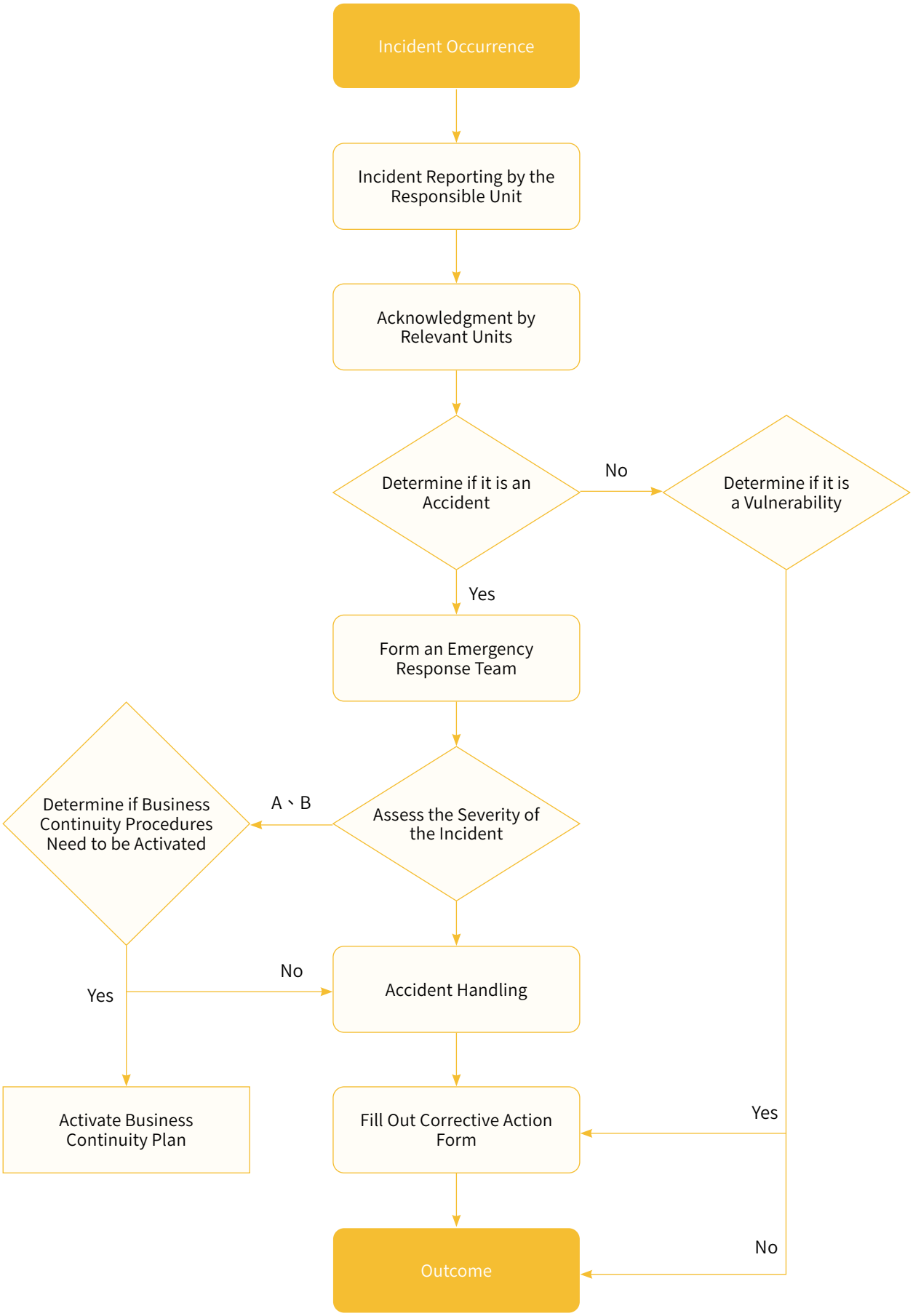
Enforce evaluation as well as internal and external audits and supervision; examine information security weaknesses based on audit findings and make enhancements accordingly.

A

Act

Actively monitor information security management performance to ensure that current practices continue to be effective; organize regular training and conduct drills on cyber attacks to raise employees' awareness to information security protections.

Whistleblowing procedures



Management practices

In 2024, TGI continued its ISO 27001 implementation plan and established an ISMS management framework to enhance customer and stakeholder trust in information security, strengthen information security risk management, comply with regulatory requirements, and optimize information security business processes to control and reduce the threats and impacts brought about by information security incidents.

We promote information security management through seven management guidelines, covering six major areas: "Information environment equipment security", "Core system security management", "Network communication security", "Information system development security", "Information system operation continuity management", "Data security management", and "Information security education, training and promotion" measures.

Security management for the information environment and equipment	1. Choose secure and appropriate locations for server deployment; arrange protections for important information equipment; minimize potential dangers of fire, flood, earthquake etc.; and record and control personnel access to server rooms. 2. Ensure that the power supply conforms with equipment specifications and requirements and is supported by essential stabilizers that are tested on a regular basis; provide a backup power source or make use of an uninterrupted power supply for critical information/communication equipment.
Security management for core systems	1. Conduct annual vulnerability scans and enhance security patching. 2. Install MDR to actively collect activity information at terminals; compare data with MITRE ATT&CK® to identify threats and defend against unknown attacks in a timely and effective manner. 3. Incorporate antivirus and deep learning solutions to provide total security protection against attacks of malicious software.
Network and communication security management	1. Authorize dedicated personnel to manage network equipment and monitor network condition at all times. 2. The SecuTex Network Protection advanced threat prevention system records all network traffic, increasing network visibility. The SOC security monitoring service provides real-time network traffic analysis and suspicious activity alerts, providing immediate notification of intrusions. This system can also be used as an investigation tool after an incident. 3. Implement next-generation firewall (NGFW) and antivirus protection for equipment that connects to the Internet, which improves defense against application-level threats, prevents leaks in network and communication, and strengthens detection of malicious software. 4. The network server runs clean of unnecessary services and programs, and is always updated to the latest software version.
Security management for the development of Information and communication systems	1. Enhance security requirements in proprietary information systems or existing systems, and purchase genuine software. 2. Configure user passwords and restrict access rights to applications. 3. Conduct rigorous assessments of potential security risks before outsourcing information services, and sign information security agreements with vendors to outline security management responsibilities.
Continuity management of information/communication system	1. Identify and evaluate the Recovery Time Objective (RTO), Recovery Point Objective (RPO), and Maximum Tolerable Period of Disruption (MTPD) for all information and communication systems/services. Plan disaster recovery strategies for information and communication systems/services accordingly. 2. Establish continuity plans for information/communication systems, networks, and server rooms. 3. Organize regular business continuity drills on critical information and communication systems/services to strengthen business resilience.
Data security management	1. Enforce routine backups and strengthen the redundancy and recovery mechanism to ensure quick recovery in the event of a disaster. 2. Scrap equipment according to the scrapping procedures; all storage media are thoroughly examined before scrapping to ensure complete removal of confidential/sensitive data and licensed software. 3. Prevent network users from capturing network data using unauthorized instruments, equipment, software, or tools.
Information security training and awareness	1. Organize regular information security training courses for employees to explain the implications of information security and raise awareness toward protecting information security. 2. Take proper response to information security risks and incidents; share information relating to information security and response measures through announcement. 3. Organize social engineering drills and phishing tests on an unscheduled basis to raise information security awareness.

TGI organizes regular information security training to raise employees' alertness and defense against network security threats. In 2024, a total of 12 information security education and training seminars were held at the Taipei Headquarters and various factories, with a total of 330 participants.

Information Security Education and Training Seminar

Implementation Results

Resources committed

In 2024, TGI invested a total of NT$8,592,657 and four internal employees in information security management and protection.

Expenditure items	Amount in 2024 (NT$)
Information security consulting fees	1,300,000
Procurement costs of information security software and hardware equipment	5,205,148
Maintenance costs of Information security software and hardware equipment	2,087,509
Total	8,592,657

Information security management projects and execution

The following projects have been implemented:

Project	Purpose
Information Security Management System Tutoring and Migration	Implemented and verified ISO 27001 information security management system.
Cloud training platform rental	Established an education and training platform.
Established SecuTex Soc	Improved intranet visibility and security protection.
CCTV installation in each factory's computer room	Strengthened the physical security of computer room.
Information system computer server update	Updated virtualization environment hosts.
Application for a five-year SSL certificate for TGI's official website	Strengthened the information security of TGI's official website.

Items currently being implemented:

Project	Purpose
Information security review and social engineering drills	Optimized enterprise network architecture and configuration settings.

Information security protection measures and execution progress

Information security management project	Frequency of execution.	Execution Method	Current progress
Social engineering drill	Once a year	Email	Fair
Continuity drill of information/ communication system	Once a year	Recovery of AD server	Fair
Identification and risk evaluation of information assets	Once a year	Identification of information assets	Fair
Information security training	Twice a year	Education and training	Fair
Information security reporting drill	Once a year	Recovery of AD server	Fair
Information security meeting	Once a month	Physical meeting	Fair
Management review meeting	Once a year	Physical meeting	Fair

Information-related energy conservation solutions

Energy conservation solutions	Execution Method	Before execution	After execution
Reduction of machinery energy consumption	Construction of cold/hot channels for server room to improve air conditioning efficiency	Equipment crashed frequently under high heat, increasing energy consumption of the air conditioning system	The separation of cold and hot channels increased efficiency of air conditioning
Reduction of server energy consumption	Server virtualization	Only one system may run on one server	Virtual server saves cost and power
Reduction of server energy consumption	Use of Office365 for mail service	Operation of own mail exchange server	Using the cloud mail service of Office365 saves cost and electricity associated with server management

Implementation of the Tecom Carbon Footprint Platform System

In 2024, TGI introduced Tecom Carbon Footprint Platform System, aiming to use digital management methods to achieve more efficient recording and tracking of carbon reduction achievements. By setting carbon reduction targets and conducting effective monitoring and management, we will respond to global carbon tariffs and Taiwan's carbon fees and other regulatory policies.

Schematic diagram of the carbon inventory management system

Goal setting and attainment

The six major information security goals and their achievement status in 2024 were as follows:

Item No.	Goals	Measurement target	Frequency	Competent Authority	Achievement status
1	Duly enforce the information security management system and ensure confidentiality, integrity, and usability of information assets.	Account access to be checked at least once a year.	Yearly	Information Technology Department	Inventory completed
		At least one of the core systems is selected for backup restoration drill once a year to ensure the integrity and correctness of data stored.	Yearly	Information Technology Department	ERP AP server drill completed
		No more than 2 unplanned disruptions with RTO exceeding the designated threshold in six months.	Six months	Information Technology Department	No abnormal interruption in the last six months
2	Ensure continuity of the Company's key business operations.	Business continuity drills to be conducted on information systems at least once a year.	Yearly	Information Technology Department	ERP AP server drill completed
3	Ensure that all information security risks are duly identified, assessed, and handled	Identify and evaluate risks associated with information assets at least once a year.	Yearly	Information Security Department	The information asset inventory and risk assessment were completed from October to December 2024
4	Ensure that employees are adequately informed and trained to carry out routine tasks in a secure manner.	Employees of the Company undergo information security training at least once a year.	Yearly	Information Security Department	Three education and training sessions were carried out with the assistance of external consultants
5	Ensure that information security incidents are handled swiftly when they occur, thereby protecting the interests of the Company, shareholders, and stakeholders.	Information security reporting drills are held at least once a year.	Yearly	Information Security Department	ERP AP server drill completed
6	Ensure that information security management measures meet the needs of all parties concerned.	Management review meetings are held at least once a year to discuss the execution of information security tasks.	Yearly	Information Security Department	A management review meeting was held on March 26, 2025

Protection of customers' confidential information

The Company has established "Personal Data Security Management Policy" along with relevant rules in accordance with the "Personal Data Protection Act" to enforce personal data security management. Furthermore, all new recruits are required to undergo orientation upon commencing duty, during which they are taught on the protection of personal data. As for internal instructors, they are required to undergo training on information security every six months and training on personal data protection every year to minimize potential legal risks, protect customers' interest, and improve employees' ability to deal with information security incidents.

In addition, we provide regular information security training to our employees and strengthen computer password usage, which also meets the standards set out in Section 11, Paragraph 3 of the AEO certification criteria. In 2024, TGI Group did not receive any major complaints or violations involving violations of customer privacy or loss of customer information. Please see section 5.2 Talent development and training for details on talent development and training.

chapter 3

Service Excellence and Product Innovation

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Product Responsibility Performance of 2024

0 case

TGI committed no violation against product health, safety, labeling, or marketing regulations in 2024

100%

All flat glass products are 100% compliant with EU CE, US ANSI, Taiwan CNS and other relevant standards

100%

100% of fiber glass products had complied with RoHS and REACH requirements

100%

100% of glass container products had complied with Sanitation Standard for Food Utensils, Containers and Packages in Taiwan and the FSSC 22000 standards

-30%

Low-E glass products reduce air conditioning energy consumption by 30%,

21%

We continue to advance lightweight bottle technology, with approximately 1,450 container product lines currently available, of which lightweight bottles account for 21%.

0 case

TGI encountered no violation of customers' privacy or loss of customers' data in 2024 that resulted in complaint

26.2%

TGI Group's own brand: TG, revenue in 2024 was expected to grow by 26.2% compared to the previous year

3.1 TGI products

TGI's main products include flat glass, fiberglass, glassware, and food containers. In recent years, the Company has continued to actively invest in the research and development and manufacturing of new products. Taiwan and Mainland China are the two major production and manufacturing regions of TGI, and its products are sold all over the world, including Taiwan, Mainland China, Japan, South Korea, North America, the Middle East, Australia, Europe, South Africa and other regions. In recent years, in response to the trend of environmental sustainability, we have implemented packaging material reduction and recycling/reuse. We are reducing the amount of packaging materials used, including bulk bags, iron packaging racks for domestic sales, and empty sand tubes for export. We are also replacing the original cardboard boxes (trays) and wooden pallets with plastic partitions and pallets to facilitate reuse and reduce the environmental impact of packaging materials. None of TGI products were found to have violated product health, safety, labeling, or marketing regulations in 2024, and no product was banned from sale. TGI was not involved in any legal proceedings involving anti-competitive behavior, antitrust and monopoly measures in 2024.

Item	Description	Photo
Reduction of packaging materials (Repurchase of domestic packaging materials)	By collaborating with Elite Material to promote pallet repurchase and reuse, we can effectively extend the service life of packaging materials and reduce the use of disposable packaging materials	
Reduction of packaging materials (Buyback of exported air hose)	Through cooperation with Tai Jia Fiberglass Co., Ltd., we have implemented an air hose repurchase mechanism to recycle and reuse packaging spools, reduce waste generation, and extend the life cycle of packaging materials.	

Private brand - TG

TGI's food container production technology has reached the level of internationally renowned brands. It has established its own brand TG, targeting the new generation of people who value good lifestyle. To create our brand image and establish our product style, we invited international design master Naoto Fukasawa to blend the spirit of Japanese craftsmanship with his observations of Taiwanese culture. He carefully felt the relationships between people and incorporated the genuine feelings he felt from Taiwanese people, such as "kindness", "gentleness", and "naturalness" into his designs. Combined with his in-depth observations of Taiwanese culture, he breathed new life into our glassware.

Since 2019, TGI has been producing a line of stylish, heat-resistant glassware for water, coffee, and alcohol that aims to promote Taiwan's local culture. Made with techniques accumulated for more than half a century, these glassware products are being marketed under a new brand and have been tasked with the mission to compete in the global market. In the future, we aim to work with Taiwanese designers and artists from different fields to bring local culture into the "TG" brand, and create a broader range of glassware featuring classic designs that reflect Taiwan's culture.

The TG brand includes products such as water glass, coffee mug, wine decanter, tea pot, dining utensil, and home decorations; they are made with materials including glass, ceramics, stainless steel, and acacia. The number of product items under TG was increased from 129 to 134 in 2024, and the Company has plans to expand product portfolio to more than 200 items.

New products in 2024

Alcohol accessories

Heat-resistant glass sake barrel 660ml

Heat-resistant glass sake pot and cup set 270ml

Tableware

White porcelain Chinese round vegetable juice plate 175mm

White porcelain Chinese round vegetable juice plate 250mm

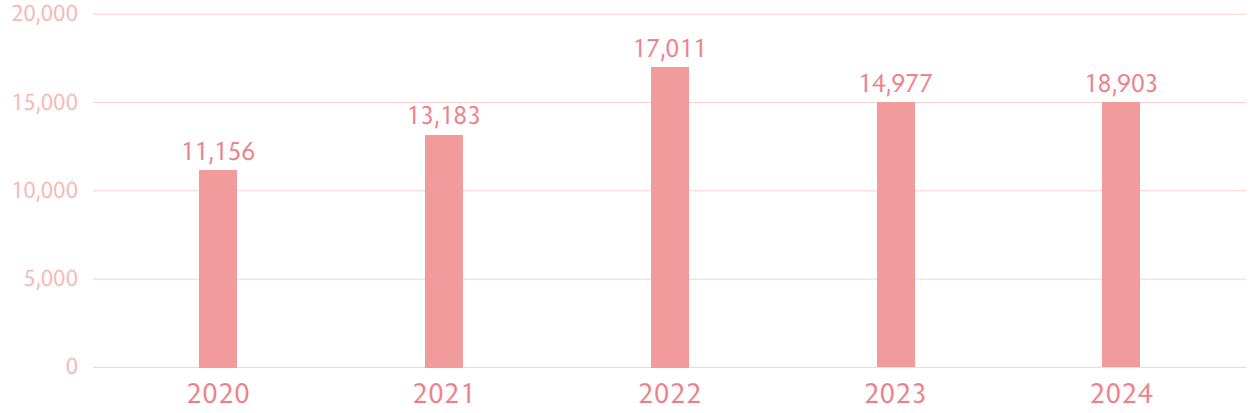
Home decorations

White porcelain diffuser bottle

Brand revenues

TGI's TG brand revenue over the years

Unit: NT$ thousand



TG flagship store

The TG flagship store opened on December 15, 2020 on the first floor of Taiwan Glass (TGI) Building on Nanjing East Road. The interior space design was jointly completed by Naoto Fukasawa from Japan and architect Jen-Suh Hou of Ho+Hou Studio Architects from Taiwan. Naoto Fukasawa even designed a new glass collection, labels, packaging, and indoor layout specifically for the flagship store, making it Fukasawa's first retail store project in the world that he has designed from head to toe. The display window showcases photographs of TG products produced by Tamotsu Fujii, reputable commercial photographer from Japan.

TGI even established a new "Loobah Restaurant" in 2021 where consumers are able to try out TG tableware for themselves, and offered consumers an experience space that combined glass aesthetics and gourmet food.

The restaurant uses "have a nice meal" as its core concept with the most familiar national delicacy of Taiwan, braised pork rice, and adds Taiwanese hand-cut pork with skin, shallots, brown sugar, and premium soy sauce to stir fry the rice until it melts in your mouth. It is served with the perfect combination of Chen Sie He Chi Shang Rice's grainy and chewy rice for a satisfying culinary experience. The tableware and the space jointly designed and created by Taiwan Glass brand "TG" and Naoto Fukasawa has a comfortable dining atmosphere that allows people to "have a nice meal" at "Loobah Restaurant," making the most simple and purest ordinary food as the first step into the aesthetics of life.

Improved product packaging and design

TGI values the sustainable value of its products. All TGI product packaging uses environmentally friendly soybean ink and packaging materials that are free of heavy metals. TGI products have also obtained a certificate from the professional SGS inspection agency for the use of environmentally friendly inks. TG product packaging won Red Dot Design Awards in 2021 due to the use of excellent materials, outstanding designs, strong emphasis on eco-friendly features, and absence of any materials that contain environmental hormones, emit plastic particles, or have concealed cladding.

Red Dot Design Awards

Eco-friendly ink certificate

Awards and Recognition

The TG brand has won several awards, including the 32nd Taiwan Excellence Award for the Design Selection-Waterware Series, Tableware Series, Wine/Home Décor Series, Tea Series, and Coffee Series. In addition, its Full Series of Products won the 2021 Japan Good Design Award, was shortlisted for the Best 100 Special Award, and continued to be showcased at Japan Good Design exhibitions. The brand also participated in the 2024 European Image Exhibition, allowing the world to recognize the TG brand.

Red Dot Design Awards
TG's "All product series" won the 2021 Red Dot Design Awards

Japan Good Design

- "All product series" won 2021 Japan Good Design
- Nominated for the Best 100 Special Award

32nd Taiwan Excellence Award

Being Taiwan's most iconic glass manufacturer, TGI is dedicated to perfecting consumers' lifestyle, which is why it has collaborated with renowned designer Naoto Fukasawa from Japan to create a new line of products under the proprietary brand TG, by combining more than half a century of glass-making experience with the world's best design aesthetics.

The TG wine series is made from safe and stable materials and offers an intuitive design: the borosilicate heat-resistant glass used can withstand instantaneous temperature differences of 150° C and is dishwasher-safe. In addition, the glass is only two millimeters thin, making it surprisingly light when picked up, while the material is more durable. Lipless cup technology reduces turbulence and oxygen exposure during pouring. Each wine glass is designed with weight balance as the priority. The U-shaped bottom corner is visually beautiful and convenient to use, making it easier to use and less likely to tip over. It seems inconspicuous, but every inch of the curve is the result of careful consideration. It is a delicate design that can only be appreciated after using it.

Design Selection-Wine Vessels/Home Decor Series

2024 Tokyo Good Design

2024 European Image Exhibition

Taiwanese Local Culture-Yingge Ceramics

To promote the local culture of Taiwan, TG combined its excellent designs with Yingge's ceramics to launch a series of Yingge ceramic products that includes coffee cups and plates, Chinese rice bowls, salt and pepper shakers, teapots, bouillon cups and plates, and ceramic tea cups. Every ceramic utensil relies on decades of experience and strict standards, and an insistence on using hand fettling to refine the details.

White porcelain espresso cup and plate set

The unique grip "earlobe" design can relieve the weight on the knuckles, making the espresso cup stable and comfortable to hold in the hand.

White porcelain teapot

The heat transfer and heat preservation characteristics of the ceramic whiteware teapot is appropriately achieved, making the occurrence of chemical reactions with the tea very unlikely.

Ceramic tea cup

It is light and transparent without any pattern, with good heat dissipation and breathability, making it suitable for appreciating the color of tea in the cup and the warmth it conveys.

Brand value

The Company currently has a total of two direct sales in Taiwan: the Taiwan Glass Flagship Store and Xinyi Eslite. There are approximately 40 domestic and foreign entities and online channels in cooperation with the Company, which includes global e-commerce platform for design products Wallpaper Store, Kaohsiung Museum of Fine Arts and National Taiwan Museum of Fine Arts Stores, Tsutaya Bookstore, Store Marais, Xiaoqi, funfuntown, Everyday ware & co., 30Select, OR Coffee, PEKOE, 61 note, LE CLUB, Pinkoi, momo, and Udesign.

In 2024, TGI actively cooperated with shopping malls, enterprises, government agencies and overseas stores to provide gift boxes and utensils, etc., and display them in shopping malls, events, international exchange occasions, overseas stores, etc.

Form of collaboration	Partner	Progress	
Japanese brand "SOU. SOU"-Customized salad bowl	Hola	SOU from Kyoto. SOU uses unique fabric patterns, combines traditional materials with handmade memories, and reinterprets the beauty of Kyoto through design.	
Gifts from foreign guests	China Airlines		
Customized red wine gift box	Taoyuan Airport	Exclusive gifts for Taoyuan Airport guests	
Xiangshan Wetland Art Festival exclusive products	Hsinchu City Government		
Customized glass tea cup	Honesty Insurance Broker	Special gifts for internal corporate activities	
Glass container	WEcreation studio	Cooperating with WEcreation studio to sell at Taichung Opera House	
Glass container	Japan IDEE Shop		
Glass container	Japan Think of Things		
Glass container	Cosha Store		

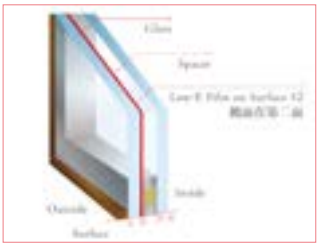
Flat Glass

All of TGI's flat glass products are 100% compliant with relevant standards such as EU CE, US ANSI, and Taiwan CNS. Low-E insulated glass has excellent thermal insulation, and can effectively block infrared heat from entering the room while maintaining transmittance of visible light, and greatly reducing the energy consumption of air conditioning equipment and creating the most comfortable indoor spaces. In recent years, due to the growing demand in the construction market, plans are underway to produce OBL ocean blue glass at Taichung Plant and SCL superior white transparent glass at TF4 Plant. TGI will emphasize the sale of large Low-E flat glass over the long term and aims to raise users' environmental awareness and improve the popularity of Low-E glass. At the same time, we actively promote the need to add a heat soak process to tempered glass to reduce the risk of instantaneous glass breakage. Laminated glass offers greater safety, shock resistance, and anti-theft and explosion-proof properties compared to other forms of glass because a strong and adhesive interlayer in laminated in between, which makes the glass less penetrable and the shards less likely to scatter when cracked.

Sales destination: Taiwan, Asia, Australia, Europe, North America, Oceania, etc.

Downstream customers

- Construction
- automobile
- furniture
- renovation
- photovoltaic
- bathroom accessories
- lighting equipment
- gifts
- electronics



Structural diagram of dual-layer Low-E glass

For more explanations on flat glass, visit the official website or scan QR Code

Flat glass-related certifications

CE (Europe) CNS (Taiwan) ISO 9001 ISO 14001/SGS IGCC

Technological collaboration

1980 – 1984

Introduced physical vapor deposition (sputtering) technology for reflective glass from LEYBOLD (Germany).

Introduced float glass production equipment and technology from PILKINGTON (UK)

1999 – 2003

Introduced sputtering technology for double silver low-E glass from VON ARDENNE (Germany).

Introduced sputtering technology for reflective glass and double silver low-E glass from APPLIED FILMS (USA).

2012 – 2017

Developed sputtering technology for triple silver low-E glass; mass production is expected to commence in the following year.

Collaborated with TECO Nanotech Co. Ltd. on the development of continuous vacuum glass production technology.

2018 – 2022

2022 - Collaborated with ITRI on the "Scenario construction and environmental parameter gathering project for low-E energy-saving glass"

Signed a technology licensing, manufacturing, and supply agreement with U.S. company - Owens Corning (NYSE: OC).

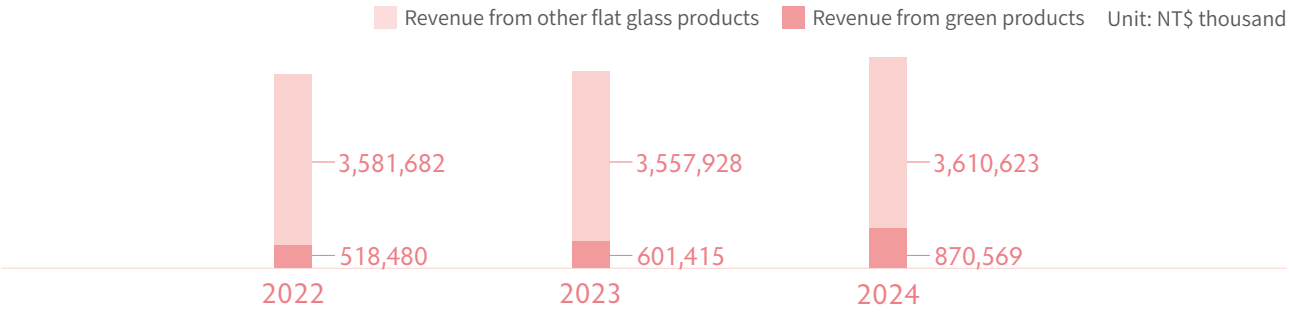
Green products - flat glass

New-generation Low-E composite glass products are the optimal choice for energy-saving glass today. They effectively block infrared radiation from sunlight while maintaining excellent light transmittance, resolving the conflict between daylighting and heat insulation while also significantly reducing air conditioning energy consumption. TGI's Low-E composite glass products carry the CNS mark, ISO 9001 international quality assurance certification, and have passed the IGCC (Insulating Glass Certification Council) quality certification in the United States. They are widely used in buildings with high energy-efficiency requirements.

Taiwan Glass Group uses the most advanced coating technology to develop its single-piece Low-E glass: the Jie Neng (JN) series. Compared to general Low-E coating, the JN series layered structure uses a hard semiconductor nano-glass to greatly reduce the radiance of the glass surface. The JN series has excellent thermal insulation, and the Low-E layer has high hardness, wear resistance, and oxidation resistance for zero oxidation and film deterioration issues when exposed. The creation of the JN series has enhanced the multi-application characteristics for Low-E glass.

The JN series is used with sandwich glass for safety glass properties and excellent thermal conductivity. The JN series is used with Low-E insulated glass to further reduce the U value of Low-E insulated glass, and effectively reduce even more energy consumption and improve indoor comfort.

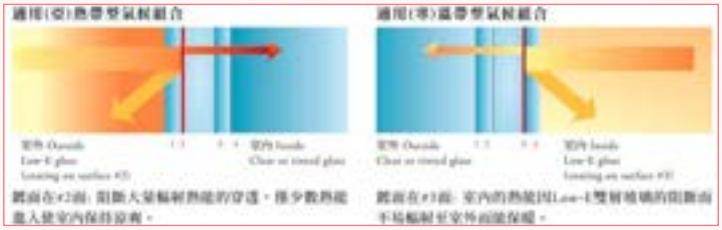
Revenues of flat glass green products in the last 3 years

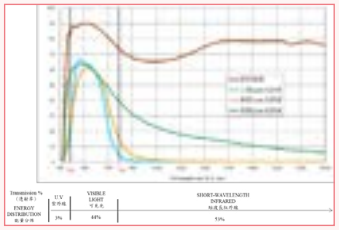


Product name	Product description
Low-E insulated glass High Performance Green Building Material Mark	TGI's low-emissivity composite glass, with its excellent thermal insulation performance and high visible light transmittance, combined with low infrared transmittance, has become the best thermal insulation glass product on the market. Its emissivity can reach an industry-leading 0.02, which can effectively reduce the air-conditioning load by more than 50%, significantly improve indoor comfort and temperature stability, and at the same time has excellent sound insulation performance. This product complies with the requirements of environmental protection, energy saving, green building materials, and green buildings, and provides a variety of specifications to meet the application needs of various buildings.
Triple-silver Low-E glass	With world-class light and heat selectivity, it provides the best ratio of natural light penetration and solar heat control, and is available in a variety of specifications, making it the best choice for energy-saving glass.
Double-silver Low-E glass	Suitable for high thermal insulation requirements, excellent natural light penetration, solar heat blocking and outdoor heat insulation, and available in a variety of specifications, it is an ideal choice for energy-saving glass.
Single silver Low-E glass	It provides effective solar heat blocking and good thermal insulation performance, and is available in various specifications to suit the flexible design of various buildings.
Energy-saving (JN) Low-E glass	The glass features a specially designed Low-E coating that stays stable when exposed to air. The coating can be applied to single-layer glass, insulated glass, sandwich glass, etc. to further improve heat insulation performance. Available in JN88 and JN48 specifications
Reflective glass	Reduces the direct transmission of solar heat to provide good heat insulation for better indoor comfort and cost-saving benefits. It can be customized to match the color tone and exterior of the building.

Click to view an introduction of Low-E glass

TGI knowledge base





What is Low-E glass

Low-E glass is coated with one or more layers of nano-level coating on the glass surface, thereby reducing the emissivity (ε)* of the glass surface to below 0.2.

TGI's Low-E glass utilizes advanced vacuum magnetron sputtering coating technology, which stacks multiple nano-scale layers on the glass surface. This not only reduces the glass's surface emissivity to below 0.2 (down to 0.03), but also allows the glass to block most infrared radiation while maintaining a certain level of visible light transmittance (triple-silver Low-E glass can block approximately 95% of infrared heat energy).

When combined with a double-glazing structure, Low-E glass is the optimal choice for energy conservation and carbon reduction in buildings. Its unique double-layer structure significantly reduces the thermal transmittance (U-value) of glass from 5.8W/m^{2}K of standard glass to a minimum of less than 1.2W/m^{2}K, thereby blocking heat transfer between the building's interior and exterior. This lowers indoor temperatures in the summer and reduces cooling energy consumption, while maintaining warmth in the winter and reducing heating energy consumption, and also solves the annoying problem of condensation on glass.

*Note: Emissivity value refers to an object's ability to radiate the thermal energy absorbed at certain temperature. The higher the value, the higher the thermal radiation absorption and the greater the heat dissipated; the lower the value, the lower the thermal radiation absorption and the less heat dissipated. The lower the emissivity (ε value), the better the thermal insulation. Low-E glass blocks solar radiation through the use of special glass coating. According to national standard - CNS, only coated glass with ε value of less than 0.20 can be called Low-E.

Scenario Construction and Environmental Parameter Collection Plan for Low-E Energy-Saving Glass

Working with ITRI, TGI made use of the resources of "SPINLab - subtropical green building technology development test bed" to conduct tests relating to Low-E glass as well as the energy-saving benefits and comfort it brings to the users. This collaboration provides further insight into the real benefits of multi-layer Low-E glass in practical applications. In this project, we pitted sandwich glass against multi-layer Low-E glass that conforms with green building standards, and gathered and compared data on energy consumption and comfort under the same timeframe and environment.

The plan results showed that Low-E energy-saving double-glazing can effectively reduce air-conditioning energy demand by approximately 50% while maintaining indoor comfort and stability.

SPINLab exterior image

Room A - Low-E glass with 100% transparency

Room B - Laminated glass with 100% transparency

▲ SPINLab replaced Room A with energy-saving glass, and Room B with the original laminated clear glass

TGI is committed to helping customers build green buildings with Low-E low-emissivity energy-saving glass products

As demand for energy-saving buildings rises, businesses are starting to recognize the benefits of advanced green buildings, for they not only improve sustainability and energy efficiency but also promote corporate image. Use of TGI's Low-E glass in new buildings has increased progressively in recent years. The product not only helps customers acquire green building labels of higher tier, but also delivers energy-saving benefits for decades to come, thereby contributing to Taiwan's net zero goals. In recent years, Cathay Landmark and Nanshan Plaza have used Low-E glass produced by TGI and have been recognized with Gold Green Building/LEED Gold Certification and Diamond Green Building/LEED Gold Certification, respectively.

TGI has long adopted the mission of developing glass with better energy-saving properties. By offering the newest Low-E glass to construction companies, architects, and the general public, TGI contributes to the energy-saving design of buildings and opens up the possibility of sustainable and energy-efficient solutions in the construction industry.

For more Low-E glass,click to visit Low-E official website or scan QR Code

Fiber Glass

Glass Fiber

Compared to metallic weight-bearing materials, fiber glass has excellent anti-corrosion and weather-resistant properties and offers advantages such as low cost, high tensile-strength-to-weight ratio, and longer lifespan.

Direct Roving

Conventional Roving

Woven Roving

Chopped Strand Mat

Chopped Strand

Sales destination: Europe, the United States, China, Hong Kong, Japan, South Korea, the Middle East, Southeast Asia, India, New Zealand and Australia, etc.

Downstream customers

- Electronics
- appliances
- communication equipment
- fishing vessels
- pleasure yacht
- automobiles
- Piping
- storage containers
- construction materials
- rain gear
- plastics processing

Glass Fabric

Glass fabric products are highly diversified in terms of structure and characteristics. They are also widely used for heat retention, thermal insulation, fire proofing, and material enhancement.

With the advent of the 5G era, global information transmission has entered an era of high frequency and high speed. In order to meet the high bandwidth and high speed requirements of 5G, it is essential to make printed circuit boards (PCB) for networking and communication equipment using Low DK materials. TGI was the world's 3rd manufacturer, after U.S. and Japanese counterparts, to successfully develop Low DK glass fabrics for high-end PCBs; these products have been certified by domestic and foreign equipment manufacturers for use on 5G equipment. As 5G deployments continue around the world, more and more automakers are investing in electric vehicle production. The demand for fiberglass cloth is expected to enter a period of rapid growth. TGI will continue to meet customer needs, increase production of low-DK and ultra-thin cloth, and continue to develop thinner, higher-value-added products. At the same time, it will expand its business scope, maintaining existing customers while actively adding new customers in Southeast Asia, India, and the United States.

White Fiberglass Fabric has passed the REACH Substances of Very High Concern (SVHC) concentration test

Fiber glass filament

Glass fabric

Sales destination: Europe, the United States, China, Hong Kong, Japan, South Korea, the Middle East, Southeast Asia, India, New Zealand and Australia, etc.

Downstream customers

- Electronics
- appliances
- communication equipment
- fishing vessels
- pleasure yacht
- automobiles
- Piping
- storage containers
- construction materials
- rain gear
- plastics processing

Through raw material management, process management, and finished product management, TGI ensures that all products are 100% compliant with RoHS and REACH regulations. With regards to food grade glass products, the Company applies for certification in different countries depending on customers' needs, and currently has 4 products that comply with US FDA regulations, 8 products that pass EU 10/2011 and BfR certification for drinking water in Germany, and 2 products that meet the CAS drinking water requirements in France. These products conform with CNS, and the labels indicate conformity with RoHS depending on customers' requirements.

Risiken erkennen – Gesundheit schützen

Technological collaboration

TGI and Owens Corning (hereinafter referred to as Owens Corning), a leading global fiberglass manufacturer, have restarted their technology licensing cooperation and signed a technology licensing and manufacturing supply agreement.

Through this agreement with Owens Corning, TGI will gain access to the world's most advanced glass fiber slurry formulas and technical guidance. Through its own high-quality glass fiber manufacturing factory, it will be able to provide customers with higher-performance and more environmentally friendly products. This will effectively reduce production costs, enhance the overall competitiveness of domestic composite materials products and markets, and create a win-win situation.

TGI has maintained a strong business relationship with Owens Corning for many years. This agreement further deepens the strategic partnership between the two parties in the field of composite materials. TGI's fiberglass technology and quality have always been the Company's core competitiveness. It will continue to invest in research and development to produce low-cost, high-strength, high-performance fiberglass, create a development niche, and meet customer needs with superior quality.

Product name:

IN-CS, OFF-CS
(glass chopped strand)

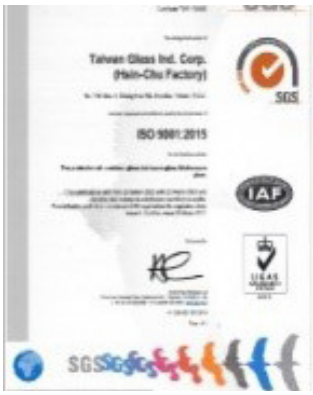
Collaboration year:

2023-2024

For more fiberglass information, click to visit the official website, please scan the QR code

Glass container

Glass containers offer excellent transparency that truly represent the colors of the inner content. Other properties such as ease of seal, long preservation time, heat resistance, and suitability for microwave heating make glass containers an essential item for the modern population. All of TGI's glass container-making factories have passed certification for ISO 9001 - Quality Management System and FSSC 22000 - Food Safety System, and 100% of products have conformed with Sanitation Standard for Food Utensils, Containers and Packages. TGI also has the ability to supply products that pass RoHS and REACH standards if requested by customers. Our heat-resistant product series includes baby bottles that comply with the latest EU EN 14350 test and coffee makers with heat-resistant temperature ranges marked on the outer box according to customer specifications. We have been developing specialized bottles of high unit price, such as alcohol decanters, since 2020, and continue to improve quality in line with customers' food safety requirements. In the heat-resistant container segment, we continue to grow our presence and explore new customers in the market of nurser bottles.



Sales destination

Container	The United States, New Zealand, Australia, China, Germany, etc.
Tableware	India, Korea, Germany, Australia
Kitchenware	China

Customers

- Alcohol making
- food production
- pharmaceuticals
- dairy production
- home appliances
- retailing

Container

Decanters

Food-related

Beverage-related

Drug-related

Tableware

Dinnerware

Water glass

Alcohol glass

Glass with handle

Colored glass

Glass canister

Candle glassware

Kitchenware

Tea glass

Pot

Crystal ball

Jar

Coffee pot

Glass cover

Green Products - Glassware

Taiwan Glass is committed to conserving raw materials and energy, and also contribute towards environmental protection to meet the market demand for green and eco-friendly products while maintaining product strength, and ensure that the products match the future trends of glass containers.

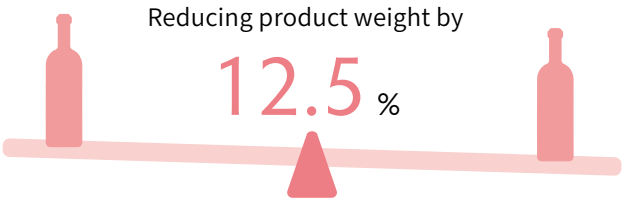
TGI first introduced the NNPB process from Germany back in 1983 to produce lightweight bottles that have even thickness and pleasing aesthetics. In recent years, the Company has actively collaborated with Germany's Heye-Glass Group on technology to develop over 100 lightweight bottle types, with an annual production capacity of over 200 million bottles. The low weight of these lightweight bottles reduces production costs for customers, and the Company has continued to optimize its lightweight bottle blowing technology. For example, in 2024, the Company reduced the weight of a 750ml wine bottle to just 395 grams, with the goal of reducing the weight to 365 grams by 2025.

Advantages of lightweight bottle:

1. Saves raw materials
2. Reduce energy consumption and carbon emissions
3. Reduces production cost for customers
4. 100% recyclable and reusable

A 1L liqueur bottle has a usual weight of 540g NNPB lightens it to 480g

Reducing product weight by



In addition to lightweight bottles, TGI continues to explore ways to minimize the environmental impact of its production activities. The Company also works with the Industrial Development Bureau to promote recycling and reuse of limited resources, and to produce green products that meet international standards. Hsinchu Factory obtained "Certificate of Green Recycled Product" in 2019 and later renewed validity of the certification in 2022.

A total of 1,012 resource-recycled green products meet the criteria for the resource-recycled green product project, including 148 food items, 513 wine bottles, 285 beverage items and 66 medicine bottles. The recycled glass addition rate in 2024 increased to 55.62%, higher than the previous year. Increasing the use of recycled glass not only reduces raw material usage, but also allows for the effective reuse of waste resources, reduces the burden of waste disposal, minimizes the impact on the natural environment, and reduces the risk to human health, achieving a win-win situation for both the economy and the environment.

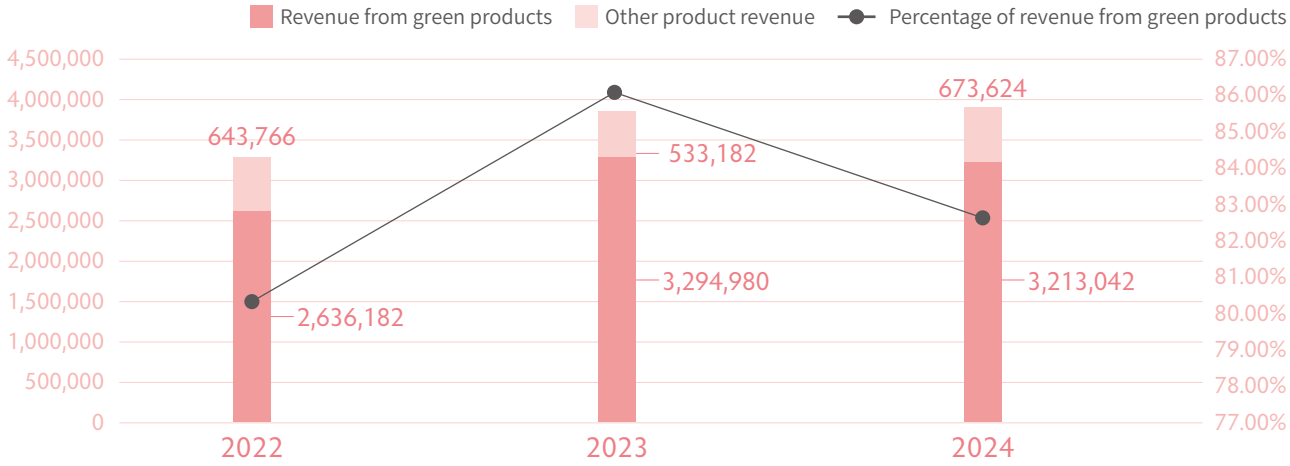
Green certificate for recycled products

Definition of green products

Referring to Article 2 of the Ministry of Economic Affairs' Green Product Review and Certification Regulations for Recycled Resources, it states that products using a certain percentage or more of recycled materials, and that their production processes are energy-efficient and resource-efficient, with minimal pollution, increase social benefits, or reduce social costs…", the ratio of recycled materials used in products should comply with the following standard values. However, debris and defective products generated in the factory process and returned to the original process as material usage are not included in the usage ratio calculation:

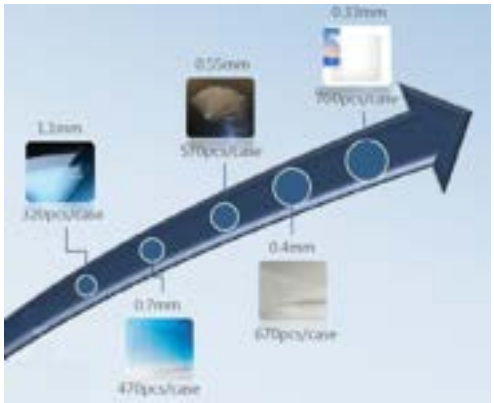
(1) Glass grains (sand): 100%.
(2) Glass containers: more than 25%.

Container, tableware, and kitchenware green products' revenue and proportion over the years



For more explanations on glass containers, visit the official website or scan QR Code

Ultra-thin glass



The Taichung Factory is TGI's latest production line for ultra-thin touchscreen glass. It features a fully automated production management system and has advanced equipment including cleanroom and robotic arms. Officially put into production in November 2014, the Company is capable of mass-producing ultra-thin glass with thicknesses ranging from 0.33 to 1.1mm. In 2019, the Company successfully developed ultra-thin glass with an increased aluminum oxide content (2.3% → 3%), with a target of 4% for 2020 to meet the demand for thinner, lighter, and higher-strength display devices. Processing with TGI's proprietary AR Coating technology can reduce reflectivity to 0.5% to 1%, enhancing visual clarity and reducing glare and ghosting. This glass has been used in specialty medical equipment and for display applications (art galleries, department store windows, etc.). Additionally, 0.55~1.1mm glass products can be used for ITO touch panels, with the main markets being mainland China and India; 0.33~0.4mm glass products can be used for screen protectors for 3C products. All products are rigorously tested to ensure that the quality meets international standards and that the products are accepted by domestic and foreign manufacturers for the production of premium consumer electronics.

3.2 Product quality

TGI actively introduces product quality, product safety, environment/safety/health, and transportation safety management systems to provide the responses it needs to foster financial growth, promote sustainability of the environment, build a healthy and inclusive workplace, reduce risks, and minimize impacts.

During the production process, based on the requirements of ISO 9001, quality control is implemented from raw materials, production process to finished products to ensure that the final product meets customer requirements. At each production stage, products (raw materials, semi-finished products, finished products) that fail quality inspection must be labeled and isolated. Through contract review with relevant units, appropriate handling measures for non-conforming products are identified, such as rejection, separate inspection, special use, scrapping, etc. Finally, the responsible unit will analyze the causes of non-conforming conditions and make corrective improvements.

Production controlled based on ISO 9001

Incoming material

Incoming material inspection confirms that the raw materials used meet the requirements

Production

Production is carried out in accordance with the various control requirements of the process flow, and products are inspected and verified to ensure they meet the process control requirements

Final inspection

Verification ensures that product quality characteristics (such as basis weight, LOI, tensile strength, warp and weft density, long fiber, moisture, etc.) meet customer requirements before shipment

Course of Action for the Excellent Products and Services of Taiwan Glass

The Three Lines of Defense for Product Safety

Line of Defense 1: Quality System

All Plants have passed the ISO 9001 Quality management system certification

Flat Glass

- CNS Mark from the Bureau of Standards, Metrology and Inspection of the Ministry of Economic Affairs
- Green Building Material Mark of the Ministry of the Interior
- CSi Safety Glass Certification
- IGCC Insulated Glass Certification
- Taoyuan Factory passed ISO 16949 - Automotive Quality Management System
- The Zhangbin Plant passed the certification of SGCC tempered glass and sandwich glass, and IGCC insulated glass

Fiber Glass

- DNV and GL certification
- Suppliers sign environmental management material guarantee/submit test reports from third-party notarization units
- The existing process complies with RoHS requirements. If the process needs to be changed, RoHS requirements must also be considered
- We entrust SGS to test the content of harmful substances in glass fiber every year to ensure the effectiveness of harmful substance management

Line of Defense 2: Product Health and Safety System

- The Hsinchu Factory continues to pass FSSC 22000 Food Safety System Certification
- The Taoyuan Plant obtained Lloyd's Register Shipbuilding Safety Certification
- The Taoyuan Plant obtained TZW Food Container Manufacturing Safety Certificate

Line of Defense 3: Product Transportation Security System

- As an excellent import and export firm, the Company obtained the Certified Mark in 2014, issued by the Ministry of Economic Affairs Bureau of Foreign Trade, and obtained substantial and convenient customs clearance benefits
- In 2018, the Company once again obtained the AEO Safety Certification from the Ministry of Finance Customs Administration.
- Enterprise approved by the Ministry of Finance that has a Secure Supply Chain with Excellent Contributions

Two-level Sustainable Enterprise

Level 1: Environmental, Health and Safety System

- All Plants have passed ISO 14001 Environmental Management System certification
- All factories have passed ISO 14064-1 organizational greenhouse gas emissions inventory verification
- Hsinchu Plant passed ISO 45001 Occupational Safety and Health Management System certification
- Actively introduced the latest version of the ISO Systems and continue to pass certifications
- Hired a UK industrial safety consultant to improve workplace safety

Level 2: Energy Management System

The Taoyuan, Hsinchu, Taichung and Lukang flat glass factories have passed ISO 50001 Energy Management System certification and continues to make improvements every year

※ For more information on TGI's environmental protection and workplace safety initiatives, please refer to Chapters 4 and 5 of this report

List of certifications attained by factory facilities:

factory / Certification	Head-quarters	Taoyuan Factory	Hsinchu Factory	Taichung Factory	Lukang Factory	Lukang Flat Glass Factory	Changpin Factory	Certificate coverage rate
AEO certificate	All locations have obtained the Safety Certification Quality Enterprise (AEO) certificate							100%
ISO 9001 Certificate expiry	-	2026/ 7/26	2026/ 3/22	2025/ 11/9	2028/ 4/15	2026/ 12/8	2026/ 12/8	86%
ISO 14001 Certificate expiry	-	2026/ 10/14	2026/ 9/14	2026/ 9/14	2026/ 03/18	2025/ 6/18	2025/ 05/13	86%
ISO 14064-1 Certificate expiry	Certifi-cation has been arranged	Regular reviews are con-ducted on a yearly basis	Regular reviews are con-ducted on a yearly basis	Regular reviews are con-ducted on a yearly basis	Regular reviews are con-ducted on a yearly basis	Regular reviews are con-ducted on a yearly basis	Regular reviews are con-ducted on a yearly basis	100%
ISO 50001 Certificate expiry	-	2026/ 12/30	2026/ 11/27	2023/ 11/20	-	2027/ 12/08	-	57%
ISO/IATF16949 Certificate expiry	-	2027/ 4/22	-	-	-	-	-	14%
FSSC 22000 Certificate expiry	-	-	2027/ 12/23	-	-	-	-	14%
ISO 45001 Certificate expiry	-	-	2025/ 08/31	-	-	-	-	14%

Hsinchu Factory ISO 50001 Energy Management System

Taichung Plant ISO 50001 Energy Management System

ISO 9001 Quality Management System for Lukang Plant and Lukang Flat Panel Plant

Taichung Plant ISO 14001 Environmental Management System

Taoyuan Plant TZW food container manufacturing safety certification

Product recall

In 2024, there was a total of 1 voluntary product recall. Due to the discovery of carcass deformation in 26 oz Pasta, a total of 476,650 pieces of this batch of products were proactively recalled from customers.

Digital management system

Related systems

Production analysis data system

Implementation time:2022

Purpose of implementation

Connecting front-end and back-end processes to improve management efficiency and data analysis capabilities

Future planning description

Using data analysis to shorten abnormality improvement time and improve retention and output value, two more systems will be introduced in 2025

Bottle coding system

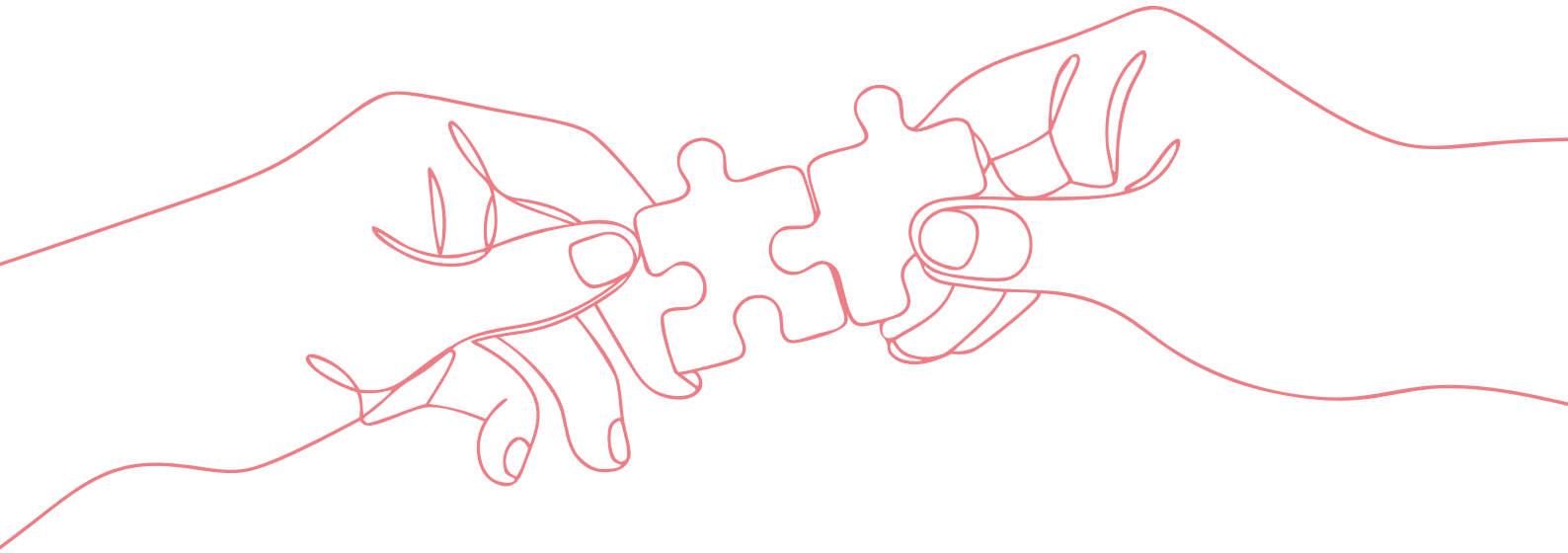
Implementation time:2024

Purpose of implementation

Providing a basis for process improvement and quality tracking to enhance product operation and management efficiency

Future planning description

We continue to promote the addition of coding designs to old products to maximize system benefits and continue to introduce them to other production lines. In 2024, coded bottles accounted for approximately 20% of the total production items for the year, and communication with customers is ongoing



3.3 Innovative R&D

Innovative culture

- Employees are encouraged to express ideas
- Resources are being committed into R&D of new technologies and new products
- Vertical integration of organizational structure
- Ongoing implementation of employee training program
- Integration of advance technologies from international leaders
- Establishment of business partnership with international businesses

In addition to increasing R&D and equipment capacity and achieving efficiency breakthroughs across product lines, TGI also draws innovations and resources from outside the organization, such as engaging foreign research institutions for the development of aluminosilicate glass with enhanced properties, inviting foreign technicians to give instructions on-site, and introducing new production technologies. TGI has also been collaborating with China University of Science and Technology, Southern Taiwan University of Science and Technology, and Plastics Industry Development Center on researching applications of thermoplastic fiber composites.

In 2020, TGI joined National United University's "Advanced Specialty Glass Technology and Manufacturing Alliance" where it is able to engage academic institutions in conferences, consultation, and knowledge exchange. Furthermore, TGI sponsored the creation of Glass and Optical Materials Research Center at the university by providing glass samples for display.

TGI's innovative R&D achievements

TG brand

TG brand household utensils develops 10-15 new products every year to enhance product added value and officially enter the B2C market. Almost all of the 200+ products have been awarded product patents and are being sold directly through physical channels as well as online platforms. See section 3.1 TGI Products for more details on new products launched in 2024.

Flat Glass

TGI continues to invest in flat glass product innovation and energy-saving technology research and development, actively expanding its takeaway coated large-panel product line to increase its market share of energy-saving glass.

The newly added PLE and PSL series of coated large panels have a total of 6 colors, providing the market with more diverse high-efficiency and energy-saving glass options. Furthermore, TGI's double-silver Low-E large panel products are also fully coated with heat-absorbing film on the coated surface. In addition to improving storage stability, it also effectively shortens the subsequent heat treatment heating time, demonstrating TGI's research and development results in product optimization.

Anti-mold paper reduction

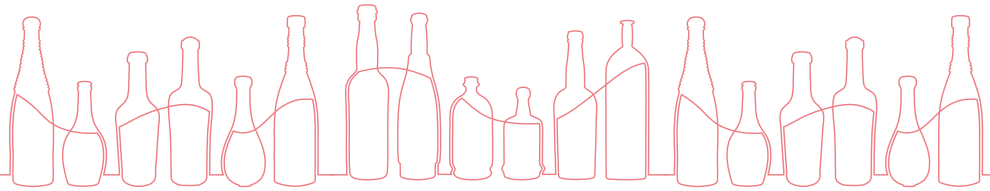
To reduce the generation of waste after the use of raw glass sheets, we inform customers that, where the storage environment permits, we prioritize shipping raw glass sheets without anti-mold paper. The proportion of anti-mold paper used in shipments of clear float glass has dropped to approximately 50%. The proportion of anti-mold paper used in colored glass shipments has dropped to about 65%.

Fiber Glass

- TGI has made successful breakthroughs in the development of Low DK fiber glass for high-end PCBs. Being able to meet the high bandwidth and high speed requirements of 5G will help secure market presence and create values.
- A more lightweight glass fabric, #1017, passed customers' certification and commenced sale in 2020.

Glass container

- Heat-resistant nurser bottles and lab bottles have consistently improved in quality Technological improvements are being made to container products; by adopting a problem-solving approach and making trial productions of specialized models, the Company is trying to switch mold material from metal to composites. Additionally, we also develop high-white liquor bottles and portable bottles, and developed 51 new products in 2024, most of which are packaging materials for liquor.
- The lifting of COVID restrictions has enabled private consumption to recover and business operations to resume, which in turn increased supply of recycled glass. Average rate of increase was approximately 55.62% in 2024.
- To improve kiln melting and process efficiency, TGI plans to hire professional consultants to provide technical advice and strengthen energy management and operational efficiency on the manufacturing side.

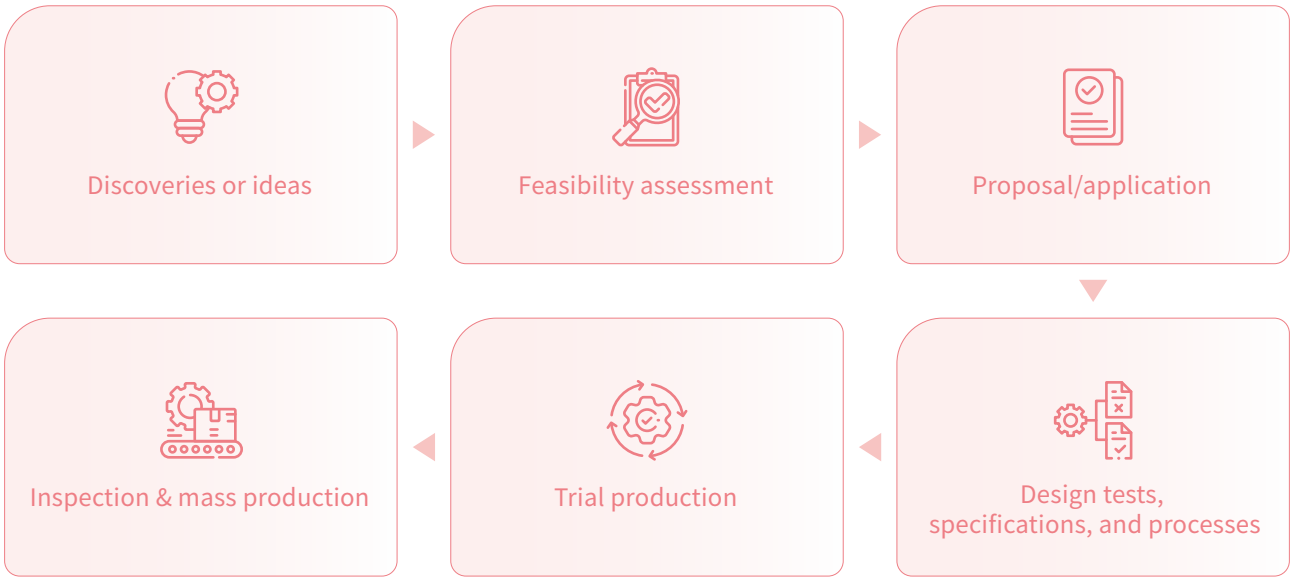


TGI's short/medium/long term R&D plan

Department	Short-term	Medium-term	Long-term
TG Brand	Reduce production and procurement costs.	Completed 200 products designed by Naoto Fukasawa	Increase performance by 50%
Flat Glass	1. Expanded the tempered triple-silver Low-E product line to provide more energy-saving glass options. 2. Promoted the digitization of equipment and improve the efficiency of real-time data analysis and production feedback. 3. Upgraded equipment stability and uniformity to enhance product quality and application market. 4. Added 6 new colors of PLE and PSL coated large panels to increase market share. 5. Double silver Low-E products are coated with a heat-absorbing film to extend shelf life and shorten heat treatment time	1. Explore improvements to the glass coating materials and structure, and develop energy-saving products that offer better performance and workability. 2. Introduce AI-assisted software and monitoring platform, and perform dynamic analyses to obtain the optimal parameters for quality, cost, and energy consumption (carbon emission). 3. Develop low-carbon production procedures and introduce low-carbon equipment to reduce product carbon footprint.	1. Persistently develop glass products of different features based on the market's needs, and make ongoing optimizations to glass product features. 2. Continually explore ways to improve product carbon footprint and quality for increased competitiveness. 3. Increase the level of production automation and digitalization; make more extensive use of AI to provide real-time optimal production parameters that help reduce human errors.
Fiber Glass	Improve existing product slurries and processes to enhance product performance.	Optimize production line for improved production efficiency and product quality.	Increase level of production automation.
	Glass cloth development strategy Continue to focus on the development of LDK low-dielectric glass fiber cloth, starting from LDK generation 1 and LDK generation 2, and continue to develop LDK generation 3. We are also simultaneously developing Low CTE fabric (low coefficient of thermal expansion). Used in semiconductor production. TGI's LDK and Low CTE glass cloth utilize proprietary R&D technologies to continuously expand production capacity and market share. Sales regions include Taiwan, mainland China, Japan, South Korea, Southeast Asia, and Europe, and customers are mainly in the electronics, automotive, and aerospace industries.		
Glass container for food	We continue to collect lightweight samples and promote the advantages of lightweighting to customers. In 2024, as new products were concentrated on spirit bottles, customers focused on appearance and heaviness, resulting in lightweight bottles accounting for only 8% of new products that year	New product development adopts a lightweight bottle design (target proportion of 50%)	Lightweight bottles to account for 45% of the production in 2030. As of the end of 2024, approximately 1,450 product items were produced, with lightweight bottles accounting for 21%

To encourage TGI employees to actively provide feedback on production technology, quality, environmental protection, safety, or business administration, we award proposal improvement incentives. For major R&D projects, bonuses are awarded to project members based on their contribution to R&D results. This helps enhance employee recognition and cohesion, reduce costs, improve the work environment, and increase productivity and quality levels. We also give credit and reward those who make special contributions to production technology or business management that are ultimately implemented.

Product development procedures



TGI's R&D and innovation expenditures (NT$) in the past three years and manpower

Year	Amount (NTD thousands)	Commitment of internal manpower
2022	42,067	46
2023	49,843	75
2024	57,598	70

3.4 Customer Service

Customer service management policy

TGI has always valued customers' opinions and feedback for more than 50 years since it was first incorporated. With each service, we hope to strengthen customers' trust and satisfaction and build a professional image that can withstand the test of time. We hold the conviction that trust and satisfaction stem from the foundation of product excellence, which is why TGI has implemented policies to build interactive channels, improve production terms, enhance training, and evaluate customers' satisfaction across all business segments including new materials, flat glass, containers, and fiber glass. In doing so, we hope to maintain competitive advantage and earn customers' support.

Customer satisfaction survey

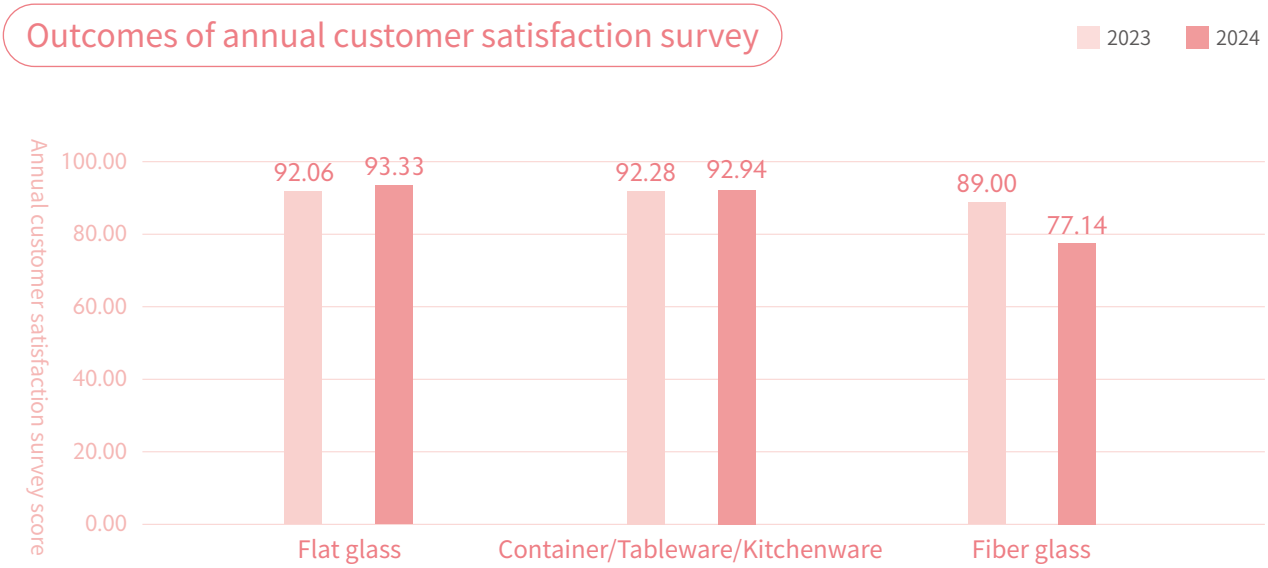
The Company regularly conducts a "Customer Satisfaction Survey" every year. The evaluation content covers a variety of assessments, including "Speed and Accuracy of Complaint Handling Timeliness", "Speed and Accuracy of Information Feedback", "Shipment Accuracy and Delivery Stability", "Sales Personnel Attitude", "Cooperation with Urgent Orders", "Professional Capabilities", and "Quality Stability", etc., in order to stay close to customer needs and improve them. In addition, based on customer responses, various indicators are analyzed and reviewed to facilitate subsequent meetings to implement response and improvement measures, thereby fulfilling the purpose of customer satisfaction feedback and enhancing the Company's service competitiveness and image.

In 2024, the Company conducted a customer satisfaction questionnaire survey on various departments and products, and a total of 152 domestic and foreign customer questionnaires were collected in 2024. We also improved and enhanced communication with customers on our shortcomings, and look forward to improving customers' satisfaction with our service and trust in our quality.

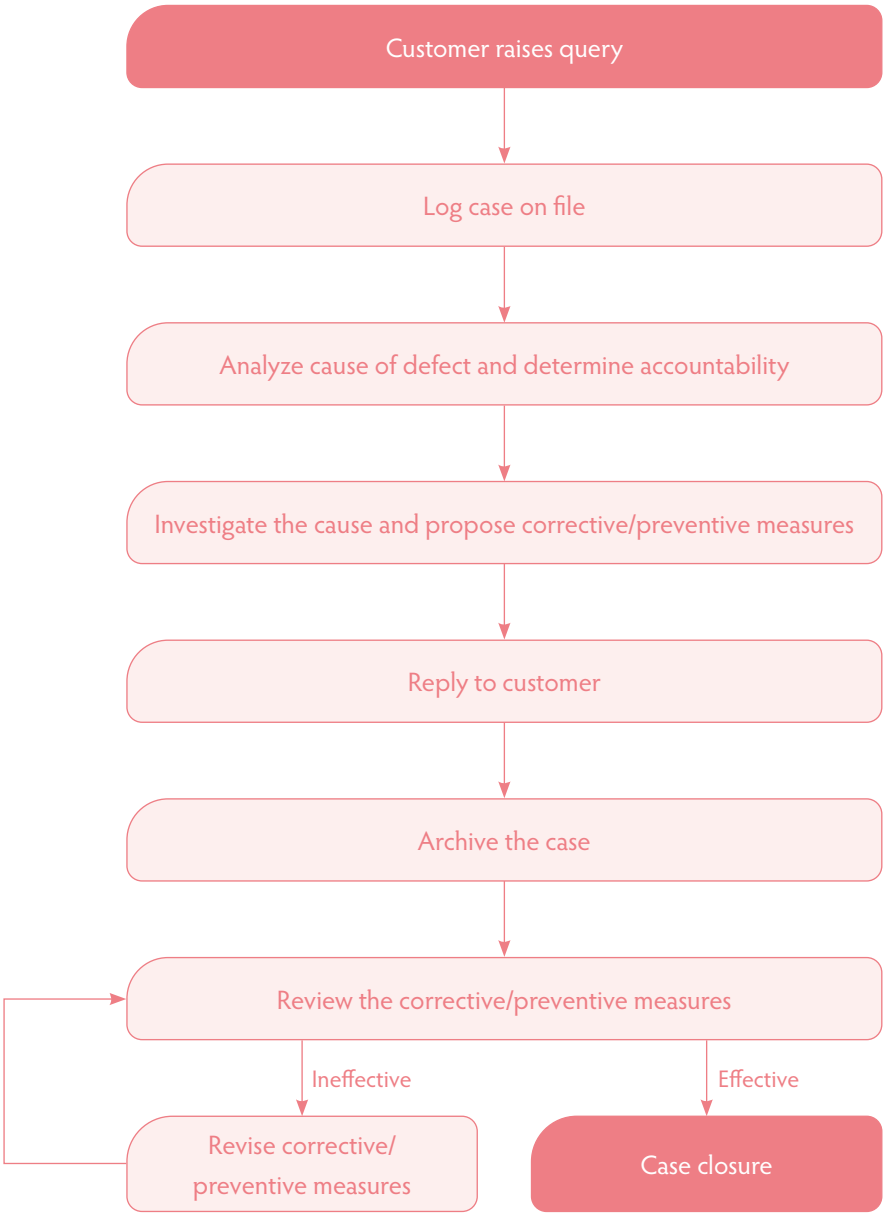
Outcome of customer satisfaction survey

Business segment	Container, Tableware & Kitchenware	Flat glass	Fiber glass
Total questionnaires	84	46	22
Percentage of response from domestic customers	82%	78%	18%
Percentage of response from foreign customers	18%	22%	82%

Outcomes of annual customer satisfaction survey



Resolution workflow for customers' queries



Improve Customer Ordering Experience and Service Efficiency

TGI launched online ordering APPs on two major platforms in 2021 for distributors of the Flat Glass Division. They allow customers to place orders online using mobile devices instead of telephone, fax, and e-mail, thereby reducing the need for manual input. Overall, the APPs help reduce error rate, shorten order turnaround time, speed up shipment, improve dealers' service quality, and increase service efficiency.

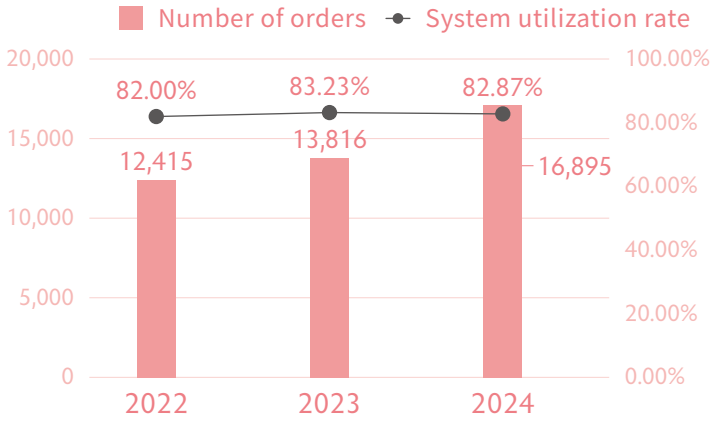
The flat glass order placement APP allows customers to place orders more easily, quickly, and accurately all-day, everyday. Since the launch of the raw panel APP ordering system in 2021, the usage rate has increased to more than 80%; the installation of the flat panel processing electronic ordering system was completed in 2022, and the current customer usage rate also exceeds 80%. Through the online ordering system, customer service communication costs can be greatly simplified and business accuracy can be improved.

Execution progress

Year	2022	2023	2024
Raw panel Ordering APP	• The flat glass order placement APP was commissioned and achieved more than 80% utilization rate from customers	• The system maintained a customer usage rate of 83.23% • The number of orders increased by 11.3% compared to the previous year	• The system usage rate for the whole year was 82.87% • The number of orders increased by 22.3% compared to the previous year
Flat panel processing electronic ordering system	• Completed the installation of electronic ordering system for flat panel processing	• The system usage ratio reached 68.93% • The number of orders increased by 64.9% compared to the previous year	• The system usage rate reached 86.06%. • The number of orders increased by 76.4% compared to the previous year

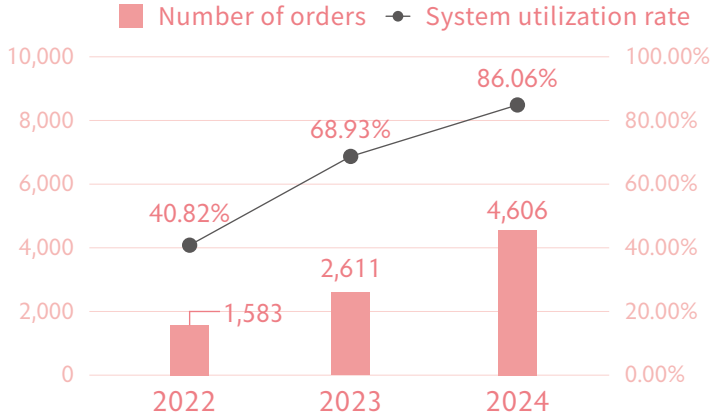
Order placement homepage on mobile APP

Execution progress of the flat glass order placement APP



Flat glass ordering page

Execution progress of the online ordering system for flat glass processing



Customer Relations Management and External Sales

All of TGI's business segments take the initiative to pay regular visits to customers or participate in exhibitions. By creating opportunities to engage customers and communicate with the public, we are able to demonstrate the competitive advantage of Taiwan's industries. In 2024, TGI continued to participate in the Taipei Building Show, the largest building materials and products exhibition in Taiwan. It will also expand overseas, participating in the Meet Design Exhibition in Japan and the Paris JEC World, and holding exhibitions and sales at the RK Gallery in Shanghai, promoting the TG brand internationally and allowing more people to see our products and the innovative concepts and design ingenuity in our products.

2024 Taipei Building Show

The 2024 Taipei Building Show brought together more than 500 domestic and foreign building materials manufacturers, setting up more than 2,400 standard booths, and the exhibition scale reached a record high. The exhibition was divided into nine zones based on product attributes, including "Doors, Windows and Hardware Building Materials", "Green Buildings and Green Building Materials", "Smart Buildings", "Integrated Building Materials", "Furniture and Home Decor", "Bathroom and Kitchenware", "Lighting Fixtures", "Floor and Wall Materials and Decorative Building Materials", and "Overseas Exhibition Area", presenting diverse and professional exhibition content.

The exhibition attracted companies from nine countries including the United States, Japan, Finland, and South Korea, showcasing the international connections and market potential of Taiwan's building materials industry. During the exhibition, experts from industry, government and academia were invited to engage in in-depth exchanges, focusing on sustainable architecture, innovative construction methods and future challenges, creating a forward-looking dialogue and cooperation platform for the industry.

Meet Design Exhibition (Japan)

We participated in the 2024 Furniture Living Exhibition in Japan as one of the 38 participating companies, conveying the high-quality insistence of the TG brand and the warmth and vitality of Taiwanese culture to the public.

JEC World

We participated in the JEC World International Composites Exhibition in France to promote the application of glass fiber and expand our new customer base

Shanghai Composite Materials Exhibition

We participated in the China Shanghai Composite Materials Exhibition to promote the application of glass fiber, understand the R&D/sales status of peers, and expand our new customer base.

3.5 Sustainable Supply Chain

Suppliers are important stakeholders and partners to sustainability. TGI is dedicated to raising the overall performance of its supply chain and achieving conformity with international standards. We look forward to engaging suppliers in a partnership that delivers mutual benefits. Through the creation a sustainable supply chain, TGI works with suppliers toward ensuring sustainability of the business and the environment, thereby contributing to the progress of the society and the economy.

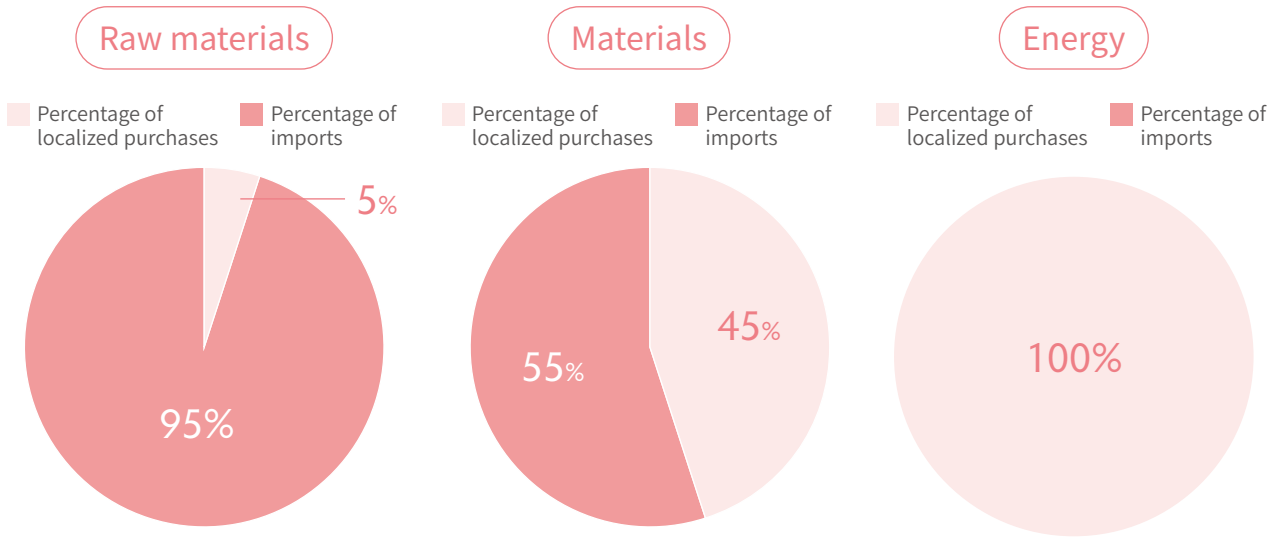
Procurement policy and management strategy

Starting in 2022, TGI has publicly released procurement and bidding information on its official website, ensuring that factories receive qualified, reasonably priced, secure, and environmentally friendly raw materials with low pollution and low hazards in a fair, just, and transparent way. Every quarter, we conduct price, delivery, and quality evaluations on suppliers that may impact quality, which will serve as a reference for subsequent purchases.

Limestone, dolomite, silica sand, sodium carbonate, and kaolin clay are the key raw materials purchased by TGI; they are essential for product-making, and almost all of which are imported from overseas except limestone, as no mine site exists in Taiwan. We adopt "safety stock management" as a way to support production needs and maintain the consistency of product quality, and enforce appropriate procurement strategies and management practices to secure supply of raw materials. Due to uncertainties of demand, TGI makes flexible adjustments to the safety stock level, actively explores secondary suppliers, and adopts effective control over the volume, cost, and quality of its purchases.

TGI's main procurement items include three categories: raw materials, materials, and energy. In 2024, there were approximately 1,788 domestic suppliers and approximately 223 foreign suppliers that had transactions with all TGI's domestic factories, mainly local suppliers in Taiwan. TGI's current factories source limestone from the Hualien area. The remaining key raw materials (silica sand, soda ash, kaolin, dolomite, etc.) are all imported from abroad because there are no mines in Taiwan. Domestic procurement accounts for only about 5% of the raw material purchase amount, while imports account for about 95%. In terms of material procurement, the proportion of purchases from domestic suppliers is about 55%, and about 45% is imported; in terms of energy, except for high-grade diesel purchased from Formosa Petrochemical, the remaining fuel oil, natural gas and LPG are purchased from CPC. The electricity is 100% supplied by Taipower, so all energy comes from Taiwanese suppliers. In addition to considering supply flexibility and rapid response, TGI also supports the stability of Taiwan's industrial economy through local procurement. This not only provides local jobs and employment opportunities, promotes local prosperity, and saves transportation energy, but also enhances and guides suppliers' quality and environmental awareness and capabilities.

Proportion of domestic and foreign procurement amount



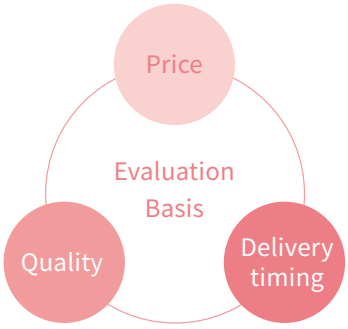
Green purchase

Currently, TGI has not yet registered its green procurement on the government platform, but it still purchased equipment with energy-saving/environmental protection labels in 2024 to implement low-carbon operations.

Procurement items	Procurement amount in 2024 (NT$)
Air conditioning	522,005
Refrigerator	18,675
Total	540,680

Supplier eligibility, audit, and evaluation

TGI's supply chain partners can be divided into "suppliers", "outsourcing agencies", and "contractors" (engineering construction, design, etc.) based on their attributes. The Company's suppliers are required to undergo evaluations on a regular basis to ensure that they continue to meet our requirements and maintain high-quality long-term cooperative relationships.

Time of evaluation	• Quarterly evaluations: Conducted in March, June, September, and December each year and completed before the 15th of the following month. • Yearly evaluations: Conducted at the end of December each year and completed before the 20th of the following month.
Basis of evaluation	We evaluate key suppliers who may impact our service and quality quarterly based on the "Supplier Evaluation Form" in terms of delivery time, price, and quality. This serves as a reference for future purchases and helps build mutual trust with our supplier partners. 
Attribution of evaluation responsibilities	Quarterly supplier evaluations are jointly executed by several departments, each of which conducts rigorous reviews of suppliers' performance. 1. The quality control unit or the department-in-use is responsible for quality issues; 2. The requesting department or warehousing department is responsible for deliveries; 3. The procuring department is responsible for evaluating prices, consolidating totals, and keeping records to be used as a reference for recurring purchases.
Tier-based supplier management	TGI requires its suppliers to be rigorous in selecting quality outputs and prioritizes purchases from suppliers that are low-risk and of high quality (tier A or tier B). Suppliers are divided into three tiers (A, B, and C) Maintain relationship: Score ≥ 90 Observe: Score ≥ 70 and <90 Reject: Score <70
Presentation of evaluation outcome	• Quarter evaluation results: To be retained by the procuring department for reference. Procurement personnel would make statistical analyses on the evaluation data and plot results in charts. Data is analyzed and compared every six months, and any negative trend discovered will be investigated upon to facilitate improvements or to determine the appropriateness and effectiveness of the existing procurement system. • Yearly evaluation results: To be presented to the Chairman or CEO

Management procedures for supplier quality incidents

The procuring department notifies the supplier to make improvements.

In the case of severe quality defect, the supplier will be required to analyze the underlying cause and produce a report on the correction measures to be taken.

The quality control unit will be involved to identify the products affected and determine the scope of impact for the quality defect.

The quality control unit will continue tracking supplier's improvement, and may take the initiative to conduct on-site audit at the supplier to ensure the effectiveness of corrective measures and enforce ongoing improvements.

Outcomes of annual supplier audit

The overall performance of suppliers in 2024 was acceptable

with approximately 77% of A-tier suppliers, 23% of B-tier suppliers, and no C-tier suppliers.

No. of suppliers evaluated by quarter				
	Q1	Q2	Q3	Q4
Tier A	145	152	164	151
Tier B	41	38	69	36
Tier C	0	0	0	0
Total	186	190	233	187

Percentage of suppliers evaluated by quarter				
	Q1	Q2	Q3	Q4
Tier A	78%	80%	70%	81%
Tier B	22%	20%	30%	19%
Tier C	0%	0%	0%	0%

Sustainable supply chain management

The Company adopts a supply chain management policy that not only imposes high standards on quality, delivery timing, and pricing but also enforces sustainable practices throughout partners. All business partners are required to observe principles of fair trade and uphold environmental protection, occupational safety, and human rights standards. We look forward to improving ESG performance through the influence of the supply chain, and upstream and downstream suppliers to create sustainable value for the enterprise.

Sustainable Supply Chain Management Policy

TGI has a "Sustainable supply chain management policy" and "CSR Code of Conduct for Suppliers" in place to address five key aspects of sustainability, namely: worker and human rights, environmental protection, occupational safety and health, ethical standards, and business administration system. The Company expects suppliers to duly fulfill corporate social responsibilities and requires suppliers to comply with the code of conduct during contract establishment and renewal, particularly with regards to: prohibition against child labor; employees' salary and welfare; completion of environmental assessment and permit; prevention against use of hazardous substances; control over solid pollutants, wastewater, and exhaust; emergency response; and design of safety procedures to protect employees' safety. It is our hope to create sustainable values within the supply chain.

TGI reviews suppliers' sustainability practices on a yearly basis and introduces a guidance system to improve suppliers' performance in economic, social, and environmental aspects. By supporting suppliers' sustainability efforts, we hope to work with them toward improving ESG performance in the future.

Labor and human rights	1. Prohibition against child labor 2. Free choice of profession 3. Work hours 4. Salary and benefits	5. Humane and fair treatment 6. Non-discrimination 7. Freedom of association
Environmental protection	1. Environmental permit and report 2. Pollution prevention and resource conservation 3. Dangerous or hazardous substances	4. Solid waste and exhaust emissions 5. Use of energy and greenhouse gas emission
Occupational safety and health	1. Occupational safety 2. Emergency response and preparation 3. Work-related injury and occupational illness 4. Industrial health	5. Physical labor 6. Machinery protection 7. Environmental health, food, and accommodation 8. Health and safety communication
Ethical guidelines	1. Integrity management and anti-corruption and anti-bribery 2. Absence of improper gains 3. Information disclosure 4. Intellectual Property	5. Fair trade 6. Privacy and identity protection 7. Conflict mineral
Operational management	1. Company's commitment 2. Management duties and responsibilities 3. Legal and customer requirements 4. Risk assessment and management 5. Improvement goals	6. Training and communication 7. Employees' opinions, complaints, and participation 8. Review and assessment 9. Corrective measures 10. Documentation and filing 11. Suppliers' responsibilities

Statement on conflict minerals

Regarding conflict mineral management, TGI also cooperates with suppliers to issue relevant declaration documents on the non-use of conflict minerals such as gold (Au), tantalum (Ta), tungsten (W), cobalt (Co) and tin (Sn). It promises not to purchase conflict minerals mined through human rights violations or armed coercion, and to avoid using conflict minerals from the Democratic Republic of Congo and its neighboring countries and regions.

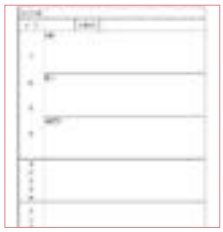
Supplier's protection and career guidance for workers under 18 (IWAY clause)

TGI complies with the IWAY clause

TGI's statement on the absence of conflict minerals

Eligibility of environmental protection partners and auditing/evaluation practices

Every year, the Environmental Cooperation Association accepts evaluation and review of companies based on "Environmental Cooperation Association Evaluation Form". Any supplier found to have committed a major violation of environmental protection, worker safety, or health issue within evaluation cycle will be reported to the senior manager immediately and have qualified supplier status revoked. We actively issue certificates and provide suppliers with training to help them accomplish the tasks assigned. When signing the initial contract, factory affairs personnel would also visit waste disposal service providers to learn how waste is handled, the operating environment, and the validity of service provider's permit to ensure that the Company's waste is disposed of properly using appropriate procedures. A tri-party agreement is signed for each of the arrangements made.



Environmental Protection Partner Evaluation Worksheet

Supply chain ESG evaluation

TGI has implemented "Supply Chain ESG Evaluation" since 2015. The Company conducts annual evaluations on how certain new suppliers and existing suppliers perform with regards to environmental protection, labor practice, human rights, social practice, and product responsibilities/impacts using consistent standards. Through this process, we hope to determine whether suppliers are able to make voluntary improvements and share social responsibilities on an ongoing basis.

Five major aspects of supplier sustainability evaluation

- Environmental assessment
- Labor practice
- Human rights assessment
- Social impact
- Product responsibility impact

Outcomes of annual supply chain ESG evaluation

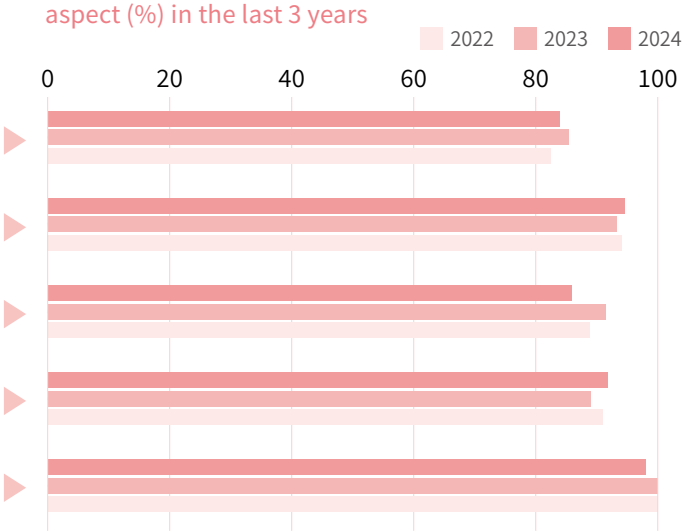
TGI evaluates suppliers' sustainability practices by way of questionnaire and assigns ratings based on questionnaire responses. Suppliers' responses are analyzed on five major aspects and the outcomes are used to generate an overall score.

Assessment outcomes are as follows:

Suppliers' overall score (%) by aspect

Aspect	2024	2023	2022
Environmental (EN)	83.83	85.36	82.46
Labor (LA)	94.58	93.20	94.14
Human rights (HR)	85.90	91.50	88.75
Social (SO)	91.70	89.00	91.00
Product respon-sibilities (PR)	97.95	100.00	100.00

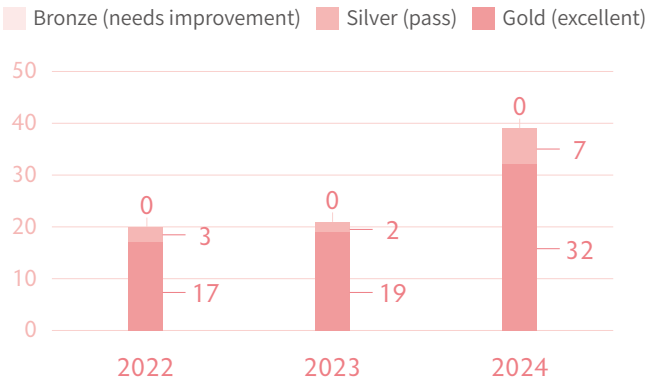
Supply chain sustainability evaluation scores by aspect (%) in the last 3 years



Supplier's total score analysis

Grade	Score range	No. of firms	Percent-age
Gold (excellent)	100~85	32	82.1%
Silver (pass)	84~60	7	17.9%
Bronze (needs improvement)	<60	0	0.00%
Total		39	100%

Analysis of outcomes of supply chain ESG evaluation for the last 3 years



Note: ESG management evaluations are only conducted on suppliers with whom the Company has frequent dealings (including qualified suppliers, equipment suppliers, engineering contractors, and labor service providers).

Improvement actions based on supply chain ESG evaluation

Based on the above overall supplier sustainability evaluation results, although the number of gold-level excellent suppliers in TGI's supply chain decreased from 90.5% last year to 82.1% this year, because supplier sustainability evaluations were conducted on more suppliers this year, it was identified that more suppliers' actions need to be strengthened going forward. Judging by the evaluation aspects, environment and human rights were the two low-scoring aspects that required attention, for which TGI has identified two main defects, implemented improvement plans, and is tracking improvement progress.

Issue	Main issues	Improvement actions for ongoing supply chain management
Environmental assessment	Water conservation	Increase the scale of water conservation equipment and the volume of wastewater recycled and reused
	Under-utilization of renewable materials	Increase the use of renewable materials
Human rights assessment	No relevant rules or measures exist	Add human rights clauses into the procurement or investment contract
	Employees' awareness of the human rights policy	Arrange to have employees undergo training on human rights policy

chapter 4

Sustainable, Energy Conservation, and Green Practices

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4.4 Climate action 146

Taiwan Glass is committed to promoting the concept of sustainable management of coexisting with the environment, and firmly understands the importance of environmental protection and sustainable development. Therefore, TG encourages the implementation of energy conservation and water conservation strategies at each Plant every year, and uses a good management model to continuously carry out the management of energy resources.

Green Production Performance of 2024

NT$238 million

TGI's environmental protection investment exceeded NT$238 million in 2024

NT$33.14 million

In 2024, Taichung Plant built natural gas hydrogen production equipment with an investment of NT$33.14 million. It is estimated to be completed in 2025, and the annual carbon reduction can reach 1,292 tons.

-38%

In 2024, Hsinchu Factory's kiln was converted to dual-fuel system with an investment of NT$67 million, reducing heavy oil usage by 38%.

11.48 million degrees

In 2024, the total power generation from solar panels across all factories reached 11.48 million kWh.

NT$80 million

In 2024, Lukang Flat Panel Plant invested NT$80 million to build a waste heat recovery steam boiler, which is expected to be completed in the second half of 2025.

-9.44%

Total greenhouse gas emissions in 2024 decreased by 9.44% compared with the previous year, and total carbon emissions have declined for three consecutive years.

54.69%

In 2024, the recycling and reuse rate of container glass reached 54.69%, and the use of recycled materials exceeded 50%.

-2.0%

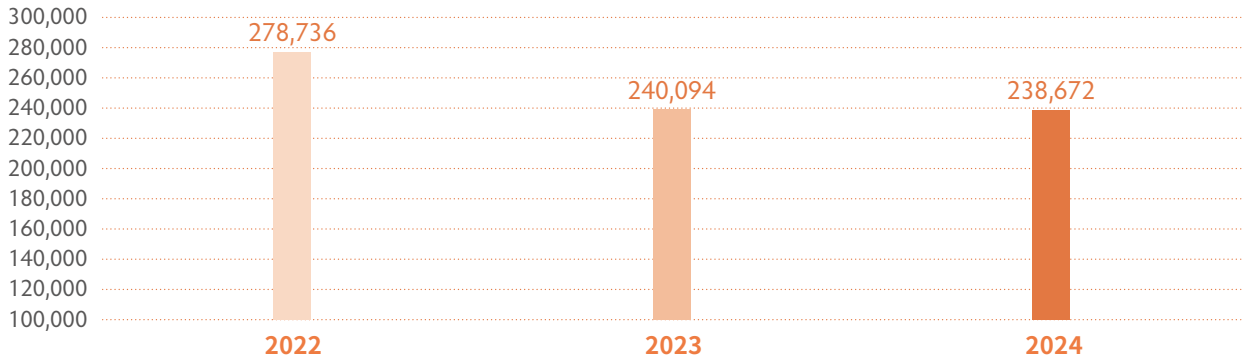
In 2024, the greenhouse gas emission intensity per unit of output decreased by 2.0% compared with the previous year, and carbon emission intensity has declined for three consecutive years.

4.1 Sustainable management strategy

In 2024, TGI invested more than NT$238 million in environmental protection expenditures at each of its factories. Regardless of annual profit, it continues to invest in equipment and improve processes to enhance energy efficiency or reduce pollution. In 2024, TGI actively implemented energy management policies, with a total of 11.48 million kWh of solar power generated across all plants. Additionally, the Company has continued to invest in environmental management systems and provide environmental training for relevant personnel to achieve compliance with environmental regulations, reduce pollution, and enhance sustainable environmental management.

Environmental protection spending in the last 3 years

Unit: NTD thousands



Environmental Sustainability Strategy

Taiwan Glass adheres to ethics and awareness of environmental protection, and especially invests in protection measures to combat the impact and challenges of climate change. Taiwan Glass believes that enterprises should take responsibility for mitigating environmental impact, and actively calls for members of the supply chain to join the cause. All of TGI's factories in Taiwan (i.e. Taoyuan Factory, Hsinchu Factory, Taichung Factory, Taichung Flat Glass Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory) operate while observing environmental sustainability as the main principle, and make it a priority not to cause significant impact to the local ecosystem.

Circulation and reuse of water resources	The total circulating water volume and total recovered water volume of each factory in 2024 were 222,513,714 tons
Persistent recycling and reuse of scrap glass	In theory, smelting scrap glass only requires 50% of energy compared to smelting raw materials, which helps save energy and reduces greenhouse gas emission.
Energy conservation and carbon reduction	TGI conducts ongoing greenhouse gas surveys across factories to keep up to date on emissions, so that actions can be taken to reduce emissions. Meanwhile, plans are being implemented to reduce the volume of energy used in production activities, which in turn contributes to lower energy intensity. Each Plant continues to conducts certifications for its energy management systems, and established carbon reduction targets every year to improve its energy efficiency. They have also proposed numerous advancement measures with the sustainable development of the Group as the goal.
Energy-saving products	TGI continues to develop and produce Low-E glass, and tries to reduce use of supplies such as product labels and pallets where possible during packaging, shipment, and recycling.
Green purchase	The Company prioritizes purchase of green, energy-saving products; motors used in production activity are upgraded to high efficiency variants, and most forklifts are electric powered.
Investment into renewable energy source	TGI's various production sites continue to promote the use of renewable energy and invest in the installation of solar panels. In the future, we will evaluate increasing the use of renewable energy in our production sites. At the same time, the use of natural gas in production processes will be increased in order to reduce dependence on fossil fuels and shift to low-carbon energy economy.

Illustration of TGI's environmental inputs and outputs in 2024

Unit: tons

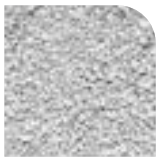
Raw material input

Silica sand

245,680

Dolomite

62,648

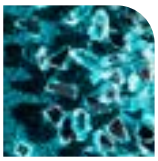


Limestone

24,231

Sodium carbonate

69,372



Scrap glass (including external purchase)

179,931

Kaolin clay

19,761

Gerstley borate

1,348

Use of energy

Heavy oil	Diesel	Natural gas	LPG	Electricity
18,272	**640,940**	**102,670,635**	**36,300**	**445,590,834**
Kilo liters	**Liter**	**Cubic meters**	**kg**	**KWH**
Comparison to the previous year	Comparison to the previous year	Comparison to the previous year	Comparison to the previous year	Comparison to the previous year
-49.23%	**-3.39%**	**11.74%**	**91.98%**	**0.04%**

Production

Unit: tons

Flat Glass

258,807

Fiber Glass

46,845

Glass Containers

143,661

Total

449,313

Air pollutants

Unit: kg

NOx	SOx	VOCs	Particulate matter
448,060	152,993	41,322	35,199

Total water consumption was
1,196,148.75 tons

Wastewater discharge
1,012,756 tons from various factories

Total circulating water volume and total recovered water volume
222,513,714 tons for all factories

Total waste

Unit: tons

General industrial waste	Hazardous industrial waste
16,702.17	76.16

CO_2 emissions

Scope 1	Scope 2
338,453.4652 tons of CO_2e	213,039.9011 tons of CO_2e

Note 1: Scope 1 and Scope 2 CO_2 emission cover Taipei Headquarters, Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory
Note 2: Calculations for items other than total waste and CO_2 emissions only include the entire production factory area (Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory). Taipei Headquarters is not included in the calculations as it is not a factory area.

Legal compliance with environmental laws

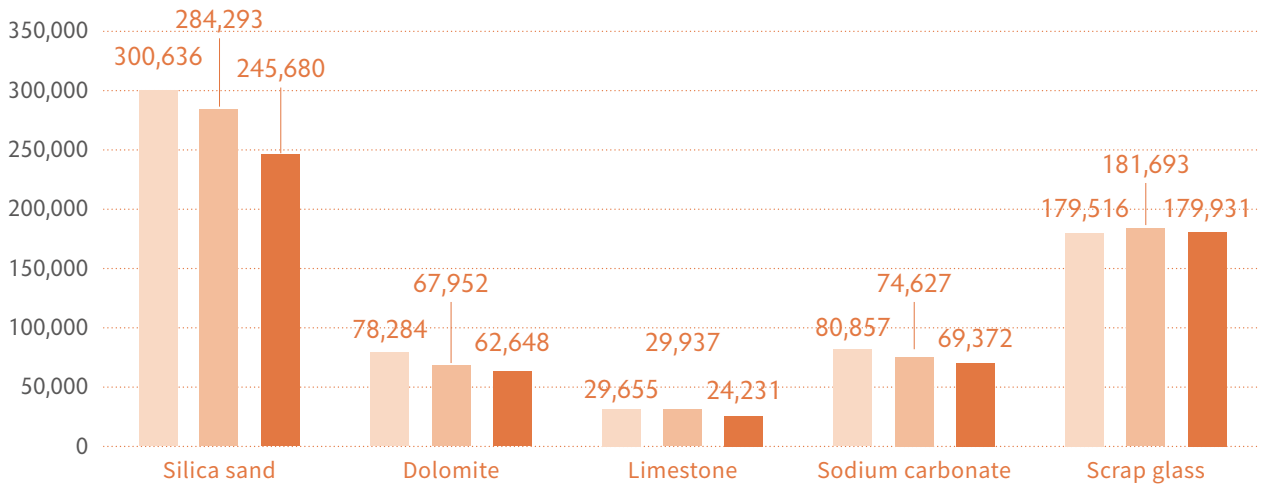
Taiwan Glass' goal is "zero pollution and zero disasters," and its compliance with government laws and regulations is an important business foundation as the Company's principle is "environmental protection first, and industrial safety first." TGI surpasses government regulations for the bare minimum of social responsibilities that a business is bound to fulfill. Any major amendments will be immediately communicated to relevant internal departments and examined so that optimizations can be made to prevent violation. None of TGI's factory sites encountered any major leakage or complaint regarding environmental impact in 2024.

4.2 Energy/resource management

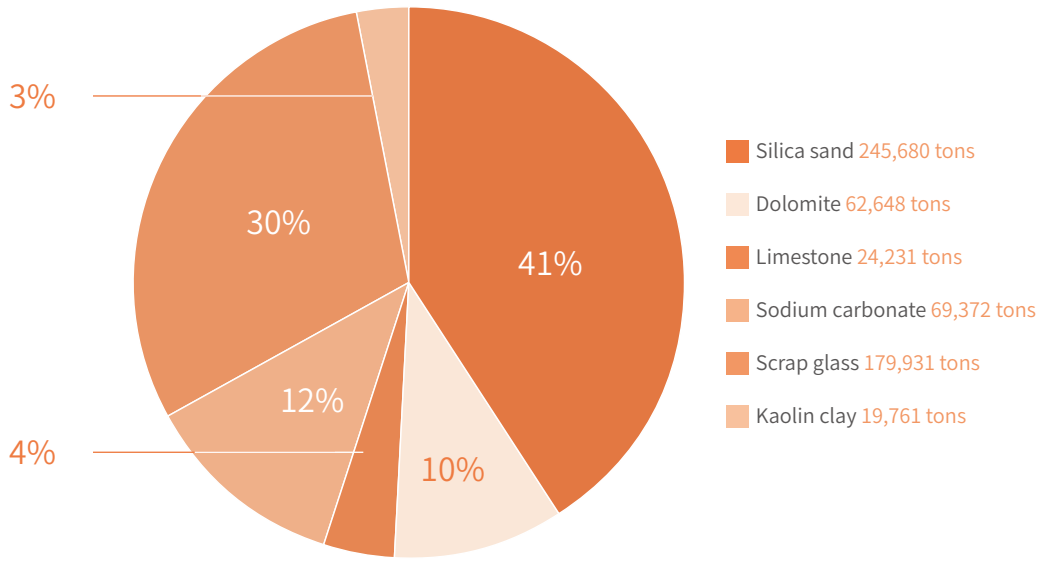
Raw materials management

TGI's main products are flat glass, glass fiber and glass containers. Its main raw materials are mainly silica sand, limestone, dolomite, soda ash and recycled glass. In 2024, silica sand was the largest raw material used, accounting for 40.74%, with a total of approximately 280,000 tons. Percentage of raw materials used:

Volume of key raw materials used in the last 3 years



Volume of raw materials used in 2024 (percentage)



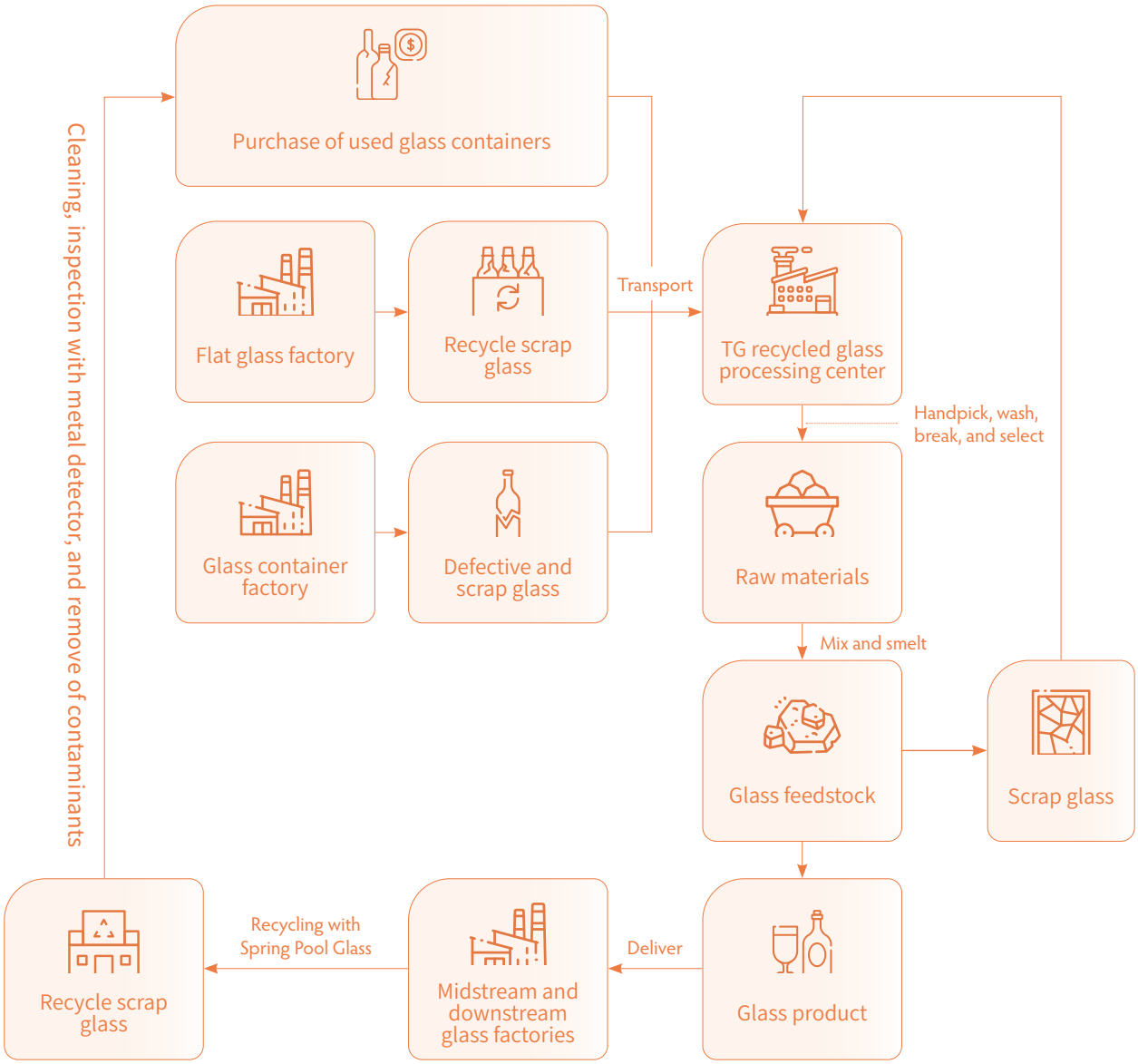
Note 1: Other raw materials such as gerstley borate and nepheline accounted for a smaller percentage and were not listed here.
Note 2: Calculation of raw materials covers only the production facilities (namely Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory); Taipei Headquarters is not a production site and has therefore been excluded

Glass recycling and reuse

Glass is a material that helps reduce pollution to the environment. It is widely used by the general public and even international organizations and governments around the world have recognized the recyclability and reusability of glass. Scrap glass is not treated as waste in the glass industry, but an essential raw material for glass production. This is why TGI has established a recycled glass processing center to clean and reuse the recycled glass, regularly send samples to SGS to verify lead content, and reuse the recycled waste glass in large amounts in the production procedures at various factories. For example: the flat glass factory accepts recycled scrap glass as reusable materials, whereas the glass container factory recycles defective and waste products and smelts them along with other raw materials to reduce the use of silica sand and minerals for lower environmental impact.

In addition to recycling waste glass from factory facilities, TGI also purchases used glass containers from the market, gathers waste glass at the recycling station, and engages recyclers to transport the recycled goods to Hsinchu Factory where they are selected, washed, broken, and remade into raw materials, and thereby reduce the amount of minerals used. For the recycling of broken glass produced by customers after the sale of flat glass, we cooperate with Spring Pool Glass to recycle the broken glass by selling it to mid-stream and downstream glass factories, clean it, and inspect it with metal detectors to remove most metal contaminants such as stainless steel, aluminum, copper and tin, thereby improving production quality.

TGI's Waste Glass Recycling Cycle Chart



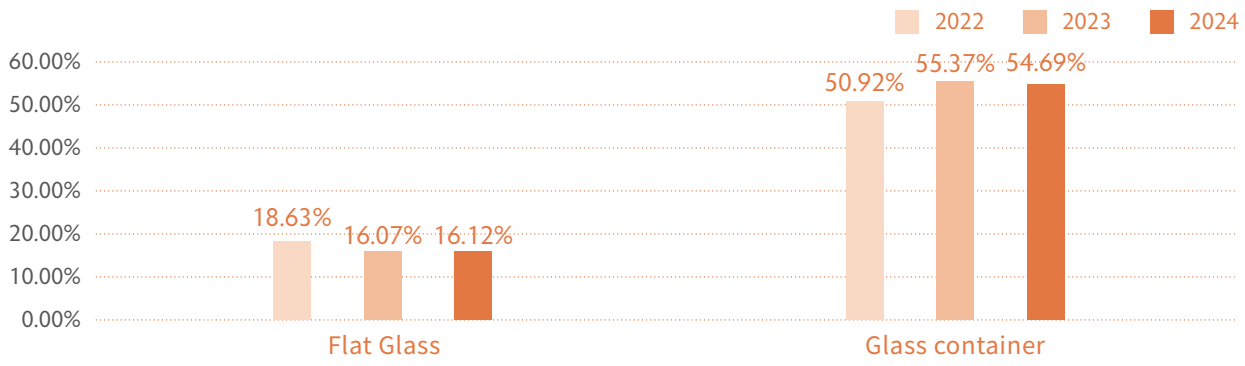
TGI has strict requirements for the quality of recycled glass. Hsinchu Factory has established "Acceptable Standards for Controlling the Content of Heterogeneous Glass and Heavy Metals in Waste Glass Containers" to examine the quality of glass and use these standards to determine the quality. If the quality of the recycled glass is lower than Grade A, the recycling price will be deducted according to the number of kilograms recycled. If the heavy metal content falls below Grade A, a warning will be issued, and the recycler will bear the inspection fee and reduce the amount entering the factory. If the content exceeds the standard, it may be refused entry to the factory. This ensures that the quality of recycled glass materials is stable and consistent, effectively improving product quality when they re-enter the production line, and promoting environmental protection and resource recycling.

In 2024, the recycling and reuse rates of flat glass and container glass reached 16.12% and 54.69%, respectively. The glass recycling and reuse rate has steadily increased. TGI continues to improve the glass reuse rate and create circular economy value.

Percentage of recycled glass used by TGI

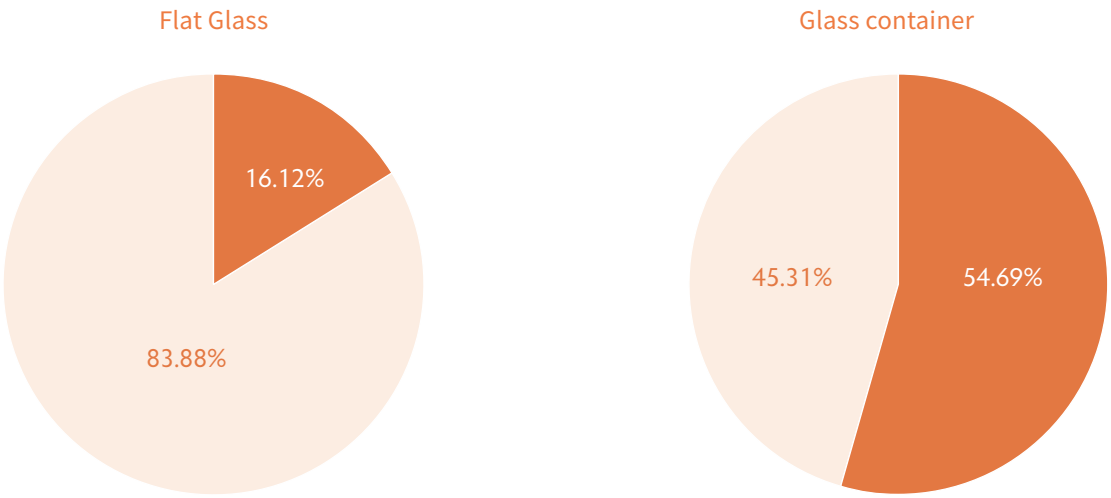
Unit: %

Year \ Product	Flat Glass	Glass container
2022	18.63%	50.92%
2023	16.07%	55.37%
2024	16.12%	54.69%



Percentage of recycled glass used in 2024

Recycled glass Other key materials Unit: %



Energy management

Taiwan Glass has installed regenerators for heat exchange using furnaces to improve energy efficiency in the glass production process, and also uses energy conservation measures such as pure oxygen combustion tank furnaces with optimal control technology to reduce the environmental impact of operating costs. In 2024, our plants optimized energy use by gradually replacing kilns with a dual-fuel system, which drastically cut heavy oil consumption by 49.23%. As a result of actively promoting better energy and resource efficiency, diesel consumption also saw a slight decrease of 3.39%.

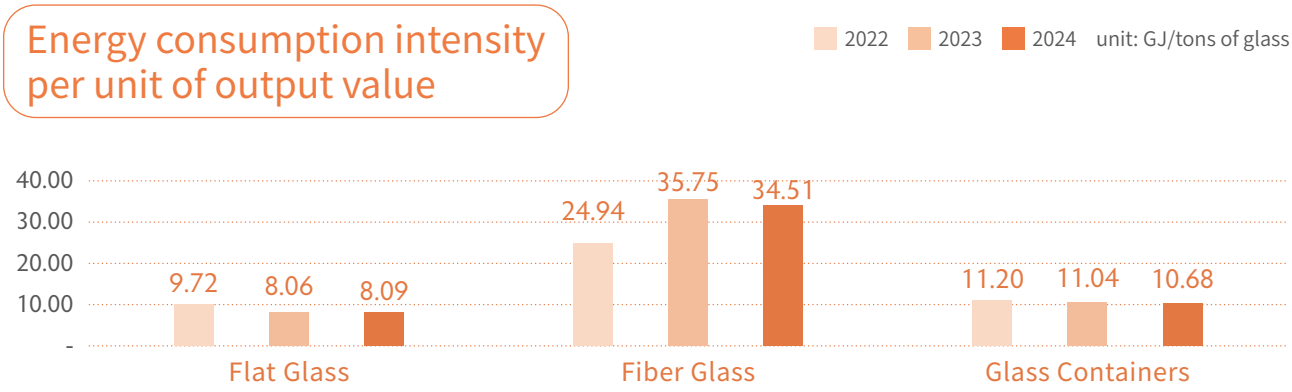
The main types of energy used by TGI include electricity, heavy oil, natural gas, and diesel; no energy source (electricity, heat, cold, steam etc.) was sold. Use of energy sources in past years is explained bellow:

Energy consumption in previous years

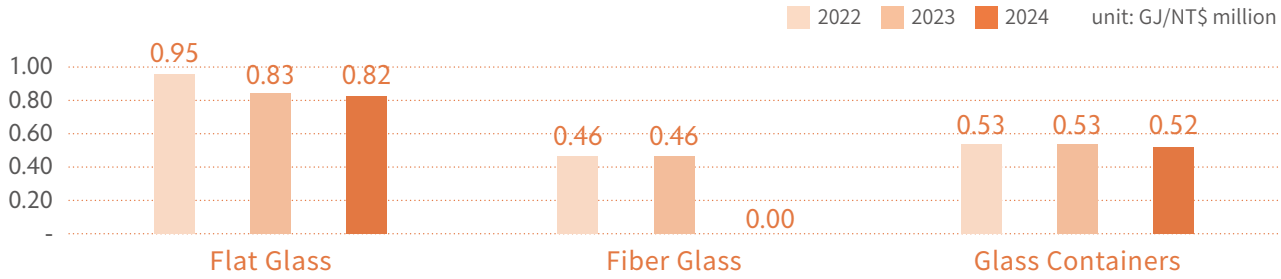
Year \ Energy		Heavy oil (kiloliters)	Diesel (liters)	Natural gas (M^3)	LPG (KG)	Electricity (kWh)	Percentage of electricity
2022	Total	64,592	637,319	69,720,056	83,847	484,668,284	26.03%
	Calorific value (GJ)	2,595,668	22,410	2,334,785	4,234	1,744,786	
2023	Total	35,989	663,433	91,882,345	18,908	445,407,156	28.37%
	Calorific value (GJ)	1,446,600	23,333	2,577,566	955	1,603,830	
2024	Total	18,272	640,940	102,670,635	36,300	445,590,834	30.60%
	Calorific value (GJ)	734,402	22,541	2,880,071	1,833	1,604,415	

Note 1: Calorific values per unit of fuel were based on the Energy Heat Value Chart published by Bureau of Energy, Ministry of Economic Affairs, which were: (1) Heavy oil (residual oil): 9,600 Kcal/L; (2) Diesel: 8,400 Kcal/L; (3) Natural gas: 6,700 Kcal/M3; (4) Liquefied petroleum gas (LPG): 6,635 Kcal/L, LPG 1Kg=1.818L; and (5) Electricity: 860 Kcal/ kWh
Note 2: Based on the LPG unit conversion of 1kg=1.818L announced by the Energy Administration, Ministry of Economic Affairs, the LPG calorific value data in the 2021 and 2022 reports had been corrected.
Note 3: Conversion of energy unit: 1 Kcal = 0.0000041868GJ (Gigajoule)
Note 4: TGI's energy calculations only include the entire production factories (Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory), and do not include Taipei Headquarters.

Energy consumption intensity per unit of output value



Energy consumption intensity per unit of output value



Note 1: The calculation scope for flat glass includes Taichung Factory, Lukang Flat Glass Factory, and Changpin Factory; the calculation scope for glass container includes Hsinchu Factory; the calculation scope for glass fiber includes Taoyuan Factory and Lukang Factory.
Note 2: The calculation method for energy intensity has been updated this year. The carbon emission intensity per unit of output is calculated as GJ/tons of glass, and the carbon emission intensity per unit of output is calculated as GJ/NT$ million.
Note 3: Energy intensity is calculated based on the organization's internal energy consumption, including heavy oil, diesel, natural gas, liquefied petroleum gas, and purchased electricity.

Introduction of energy/resource management system

To comply with regulatory trends, improve energy efficiency, and reduce operating costs, TGI's factories plan to continue implementing the energy management system by 2025 and establish a mechanism for regular greenhouse gas emission inspections. Through this energy/resource management system, factories are able to monitor and analyze energy consumption in real time, so that any abnormal or wasteful use of energy can be identified early to reduce carbon emissions and improve environmental protection performance.

Taichung Plant installed natural gas hydrogen production equipment

Taichung Plant currently uses water electrolysis to produce hydrogen, but due to the long service life of the equipment and the large amount of carbon emissions generated during the manufacturing process, it is planned to install natural gas hydrogen production equipment to improve production efficiency while also reducing hydrogen production costs and carbon emissions. Taichung Plant plans to complete the construction of the hydrogen manufacturing system in March 2026 and complete the system verification before June of the same year. This project is expected to achieve a carbon reduction of 1,176.5 metric tons (CO_2e/year).

Green House Gases Management

Greenhouse gas survey policy

All employees take part in reducing energy, carbon, and greenhouse gas emission, and actions are being taken to promote awareness toward green production and to track emissions on a regular basis. Each of TGI's production sites conducts and completes inventory checks in accordance with the Ministry of Environment and the Sustainable Development Roadmap for TWSE/TPEx Listed companies, and reports the information to the Board of Directors every quarter. In 2024, TGI's parent company completed the Scope 1, 2, and 3 audits of Taipei Headquarters and its various production sites, and passed a third-party verification. It also completed the Scope 1 and 2 audits of greenhouse gas emissions for its subsidiaries in the consolidated financial statements in 2024.

Short-term goals

- Reduce greenhouse gas emissions by 1% a year
- Reduce carbon emission intensity by 1% each year
- Completed third-party verification of Scope 1 and 2 greenhouse gas emissions of subsidiaries in the consolidated financial statements

Medium/long-term goals

- Completed the review of Scope 3 greenhouse gas emissions of subsidiaries in the consolidated financial statements
- Adopt SBTi (science-based targets initiative)

TGI calculates greenhouse gas emissions by including key emission sources such as heavy oil, diesel, natural gas, LPG, electricity, dolomite, limestone, and sodium carbonate. Emissions are distinguished between direct and indirect emissions; direct emissions arise from the various energy sources used in production (such as heavy oil, diesel, natural etc.), whereas indirect emissions arise from purchased electricity. Direct carbon emissions in 2024 were approximately 338,000 tons of CO_2e, a decrease of 12.59% from 2023; indirect carbon emissions were approximately 213,000 tons of CO2e, a decrease of 4.02% from 2023; total emissions from flat glass were approximately 225,000 tons, a decrease of 11.83% from 2023; total carbon emissions from glass containers were approximately 143,000 tons, a decrease of 12.22% from 2023; and total carbon emissions from fiberglass were approximately 182,000 tons, a decrease of 3.95% from 2023. Over the past three years, TGI has achieved significant reductions in both Scope 1 and 2 greenhouse gas emissions and intensity, demonstrating outstanding emission reduction results.

Scope 1 and 2 carbon emissions of each TGI factories in 2024

Measurement / Factory	Scope 1 carbon emissions	Scope 2 carbon emissions	Total carbon emissions
Taipei Headquarters	200.6649	165.7306	366.396
Taoyuan Factory	34,317.5994	51,724.3968	86,041.996
Hsinchu Factory	101,767.7789	41,334.6960	143,102.475
Taichung Factory	75,364.3186	18,191.9304	93,556.249
Flat Panel Plant No. 3	160.6914	2,143.8072	2,304.595
Lukang Factory	23,841.5773	72,576.2758	96,417.853
Lukang Flat Glass Factory	102,515.9586	16,831.5002	119,347.459
Changhua Coastal Industrial Park Plant	284.8761	10,071.5641	10,356.440
Total	338,453.4652	213,039.9011	551,493.366

Note 1: Greenhouse gas emissions are calculated using the operational control method, using activity data * emission factor * GWP (calorific value calculation this year has been changed to supplier calorific value in accordance with Ministry of Environment's regulations, and GWP value is based on the IPCC Fifth Assessment Report (2013)). Greenhouse gases include CO_2, CH_4, N_2O, and HFCs. PFCs, SF_6, and NF_3 are not included

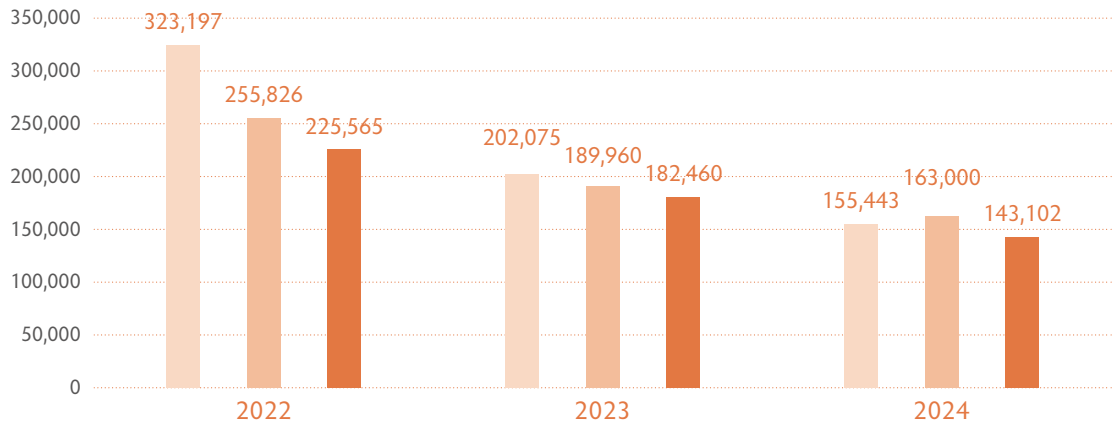
Carbon emission by product in previous years

Unit: ton(s) CO_2e

Year / Product	2023		2024		Carbon emission changes
	Direct emissions	Indirect emissions	Direct emissions	Indirect emissions	
Flat Glass	201,574.6133	54,253.0200	178,325.8447	47,238.8019	-11.83%
Fiber Glass	65,123.5403	124,836.3579	58,159.1767	124,300.6726	-3.95%
Glass Containers	120,304.4049	42,695.8272	101,767.7789	41,334.6960	-12.21%
Total	608,979.424		551,493.366		-9.44%

Note 1: Flat glass calculations cover Taichung Factory, Changpin Factory, and Lukang Flat Glass Factory; fiber glass calculations cover Taoyuan Factory and Lukang Factory; glass container calculations cover Hsinchu Factory.
Note 2: Each year, TGI commissions a third-party institution to conduct greenhouse gas inventory for the previous year. The inventory data is logged on the Ministry of Environment's National Greenhouse Gas Platform and uploaded to the MOPS in accordance with the law.

Emission by product category



TGI officially launched greenhouse gas inventory plan

To strengthen the review of carbon emission hotspots and actively reduce greenhouse gas emissions, TGI officially launched the Scope 3 inventory plan in 2023. It conducted Scope 3 greenhouse gas inventory in accordance with ISO 14064-1:2018 standards. The inventory scope included Taipei Headquarters and all production sites. It also identified significant indirect greenhouse gas emission sources, including those from purchased products and services, fuel and energy-related activities, upstream transportation and distribution, waste generated during operations, downstream transportation and distribution, and emissions from downstream leased assets. TGI has completed the 2024 Scope 3 greenhouse gas inventory for Taipei Headquarters and all its production sites, and passed a third-party verification.

TGI's Scope 3 greenhouse gas emissions

Unit: ton(s) CO_2e

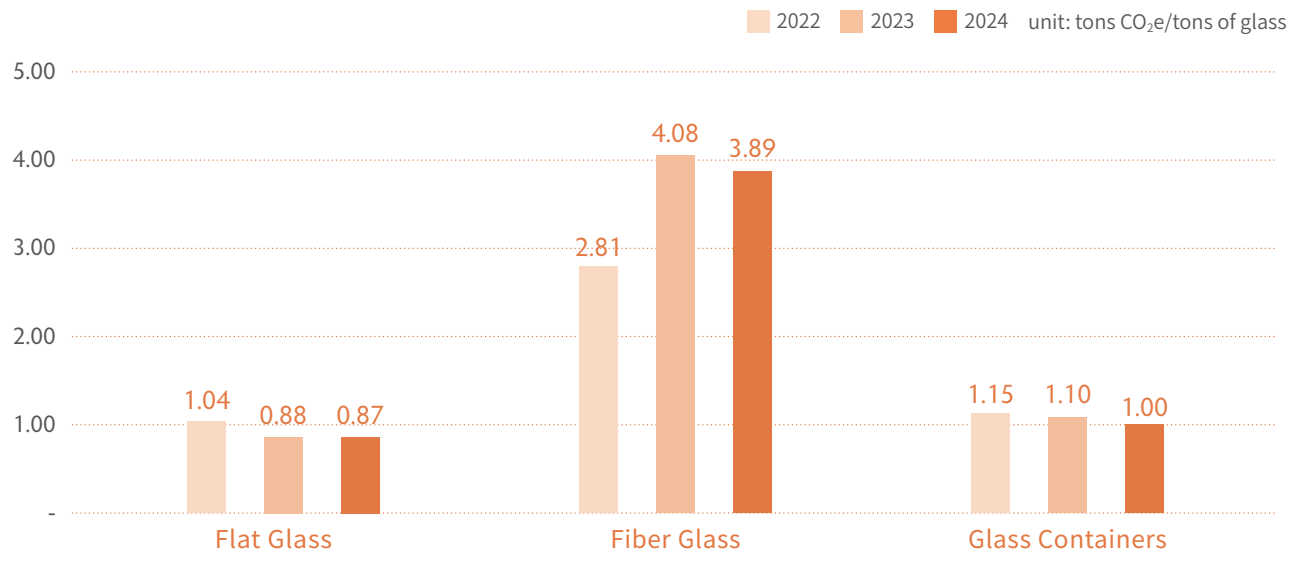
Category		2023	2024	Carbon emission changes
Scope 3 Greenhouse gas emissions from transportation	Upstream transpo rtation and distribution	6,802.9420	5,051.4719	-25.75%
	Downstream transportation and distribution	10,336.3250	10,055.9739	-2.71%
Scope 4 Greenhouse gas emissions from product use by organizations	Procurement of products and services	217,713.6930	113,356.6928	-47.93%
	Fuel- and energy-related activities	119,412.6820	111,476.3579	-6.65%
	Waste generated during operations (waste disposal)	747.5052	2,538.4271	239.59% Note 3
	Waste generated during operations (waste from transportation)	198.5350	159.4673	-19.68%
Scope 5 Greenhouse gas emissions from the organization's products	Downstream leased assets	112.7875	117.9943	4.62%
Total		355,324.4697	242,756.3852	-31.68%

Note 1: The scope of Category 3 emissions inventory includes Taipei Headquarters, Taoyuan Factory, Hsinchu Factory, Taichung Factory, Flat Glass Factory No. 3, Lukang Factory, Lukang Flat Panel Factory, and Changpin Factory.
Note 2: Scope 3 greenhouse gas inventory adopted the new version of ISO 14064-1:2018 standard and commissioned SGS to conduct a third-party external inspection.
Note 3: The increase in emissions from this plan in 2024 was due to the inclusion of wastewater treatment in this year's calculation.

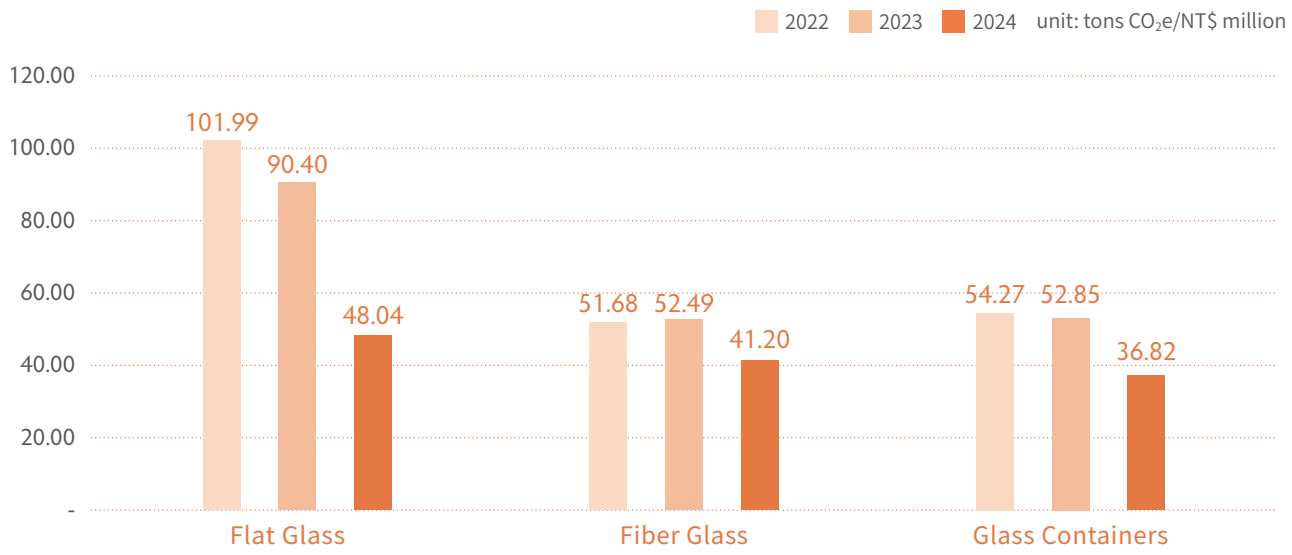
TGI encourages all employees to contribute to energy and carbon reduction, and invites them to take part in the common goal of reducing greenhouse gas emission. Energy/carbon reduction plans and actions are being implemented across all factories to promote green production awareness, enforce regular tracking of carbon emissions, and ultimately reduce the amount of greenhouse gas emissions from production and activities.

Taichung Factory, Hsinchu Factory, Taoyuan Factory, and Lukang Flat Glass Factory have passed certification for ISO 50001 - Energy Management System since 2014 and continues to maintain certification to date. By creating an energy management system, TGI hopes to improve energy efficiency closely in line with operational strategies and goals over time. The system is further supported with PDCA (Plan-Do-Check-Action) practices to ensure ongoing improvements in energy utilization across the organization.

Carbon emission intensity per unit of output value



Carbon emission intensity per unit of output value



Note 1: Carbon emission intensity per unit of output is calculated as tons CO_2e per ton of glass, and carbon emission intensity per unit of output is calculated as tons CO_2e per NT$ million.
Note 2: Intensity ratio calculations include Scope 1 and Scope 2 greenhouse gas emissions.

Energy conservation and carbon reduction performance of each factory

In 2024, TGI's factories implemented energy-saving and carbon-reduction plans with significant results, saving a total of 5,320,268 kWh of electricity, reducing heavy oil usage by 49.23%, and diesel usage by 3.39%. Total carbon emissions were reduced by 57,519.1262 tons compared to 2023, with Scope 1 decreasing by 48,774.2857 tons and Scope 2 by 8,929.8370 tons.

Taoyuan Factory

- Reuse of waste silk instead of landfill reduced the amount of landfilled materials by 7,242.67 tons in 2024, thus reducing environmental impact.
- Wastewater from backwashing of the resin softening tank was recycled and used for cleaning of the TT1 E/S SYS., saving a total of 92,977 tons of water
- Improved electricity consumption of finished fabric CR-1 IR, saving 72,680 kWh of electricity in 2024
- Fabric inspection saves HVAC electricity, saving 295,798.49 kWh in 2024
- In 2024, the total solar power generation capacity was 2,322,796 kWh, reducing carbon emissions by 1,101 ton

Hsinchu Factory

- TS-2, TS-6, TS-7, and TS-8 kilns were converted to natural gas and heavy oil combined combustion system
- In 2024, the waste gas treatment systems installed at TS2 and TS7 switched to using effluent water, reducing groundwater extraction and wastewater discharge by 3,000 tons per month
- In 2024, the total solar power generation capacity was 1,530,399 kWh, reducing carbon emissions by 725 tons
- The three mobile air compressors used for the discharge port were stopped and replaced with the combustion air from TS-6, saving a total of 70,810 kWh of electricity
- The roots blower used in the effluent water discharge system was upgraded to an air flotation turbo blower with variable frequency control, saving a total of 226,008 kWh of electricity

Taichung Factory

- Strengthening the sealing of tin bath reduces the use of protective gas (hydrogen) by 50,913 m^3/hr, saving 234,200 kWh of electricity
- Recycling waste glass from the factory back into the furnace can save up to 26,958.782 tons of raw glass materials
- A solar photovoltaic power generation system was built, and the generated electricity was integrated into the system, reducing the need to purchase external electricity. The annual power generation reached 2,344,546KWH, reducing carbon emissions by 1,111 tons

Lukang Flat Glass Factory

- We plan to introduce the TECO energy and resource management system to optimize the energy use of the factory
- Water resource recovery rate (reuse rate) R1 reached 99.57%
- The amount of recycled waste glass accounted for about 13% of the raw material input
- Invested NT$80 million to build waste heat recovery boiler system to effectively utilize excess heat from kiln exhaust gas
- The solar photovoltaic system generated 1,007,736 KWh of electricity in 2024, reducing carbon emissions by 477 tons

Lukang Factory

- CF cloth washing water recycling in 2024, total recycling volume of 133,628m^2
- The solar photovoltaic system generated 4,284,374 KWh of electricity in 2024, reducing carbon emissions by 2,030 tons

Changpin Factory

- Large ceiling fans were installed and small fans were reduced. 17 ceiling fans were added to the entire factory, saving an estimated 318,240 kWh
- The wastewater treatment system recycled a total of 145,408 tons of water in 2024
- Factory lighting was replaced by 200W LED lighting instead of 500W, saving 300W per lamp
- The multilayer film washing machine heater was turned off when not in production, saving 23,670 kWh of electricity in 2024

In 2024, TGI's energy-saving measures reduced carbon emissions by a total of 500.7 tons. The energy-saving and carbon-reduction measures and results of each TGI factory are shown in the following table:

Item / Factory	Energy conservation measures	Type of energy saved	Power saving (kWh)	CO_2 reduction (tons)
Taoyuan Factory	Improved power consumption of finished fabric CR-1 IR	Electricity (KWH)	72,680	34.5
	HVAC electricity savings through fabric inspection	Electricity (KWH)	295,798	140.2
Hsinchu Factory	The three mobile air compressors used for the discharge port were stopped and replaced with the combustion air from TS-6	Electricity (KWH)	70,810	33.6
	The roots blower used in the effluent discharge wastewater system was upgraded to an air flotation turbo blower with variable frequency control	Electricity (KWH)	226,008	107.1
Taichung Factory	Strengthen the sealing of tin bath and reduce the use of protective gas (hydrogen)	Electricity (KWH)	234,200	111.0
Changpin Factory	Increase the number of large ceiling fans and reduce the number of small fans	Electricity (KWH)	106,080	50.3
	Replacement of factory lighting, changing the overhead lighting to LED lighting	Electricity (KWH)	27,000	12.8
	The multilayer film washing machine heater is turned off when not in production	Electricity (KWH)	23,670	11.2
Total carbon reduction across all factories			1,056,246	500.7

Results of Implementing Solar Panels in the Plants

TGI's environmental sustainability policy actively promotes energy conservation, carbon reduction, and the use of renewable energy. The Company also complies with the Ministry of Economic Affairs' "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity," which stipulates that power users with a contracted capacity above 5000KWH are obligated to implement renewable energy equivalent to 10% of their contracted capacity. Taiwan Glass is committed to promoting the implementation of solar panels in the Plants, and will establish management regulations for renewable energy power generation equipment in response to the announcement of the Ministry of Economic Affairs for power users with a certain contracted capacity, and maximize energy conservation.

TGI has completed its annual solar panel installation plan, achieving a capacity of 8,784 kW at total cost of NT$380 million. In 2024, the total electricity generated by solar panels at all plants reached 11.48 million kWh, saving NT$40.42 million in electricity costs. This replaced purchased electricity, reduced carbon emissions from energy use, and contributed to environmental sustainability.

Implementation of Solar Panels in Taiwan Glass Plants

Solar power generation performance at each TGI's factory

Factory	2023	2024		
	Total power generation (kWh)	Total power generation (kWh)	Electricity costs saved (NTD)	Carbon reduction (tons)
Taoyuan Factory	2,233,168	2,322,796	7,316,807.40	1,101.0053
Hsinchu Plant	1,592,298	1,530,399	4,728,932.91	725.4091
Taichung Plant	1,849,734	2,344,546	6,635,065.18	1,111.3148
Lukang Factory	4,230,683	4,284,374	13,924,215.50	2,030.7932
Lukang Flat Glass Factory	984,998	1,007,736	3,275,142.00	477.6668
Total	10,890,881	11,489,851	35,880,163	5,446

Note 1: Electricity savings are calculated by multiplying the total power generation by the cost of purchased electricity. Each factory site uses the average cost per kilowatt-hour of electricity from its 2024 electricity bill as the calculation basis.
Note 2: The costs of purchased electricity in 2024 were as follows: Taoyuan Factory NT$3.15/kWh, Hsinchu Factory NT$3.09/kWh, Taichung Factory NT$2.83/kWh, Lukang Factory NT$3.25/kWh, and Lukang Flat Glass Factory NT$3.25/kWh.

Water resource reduction management

Water resource policy

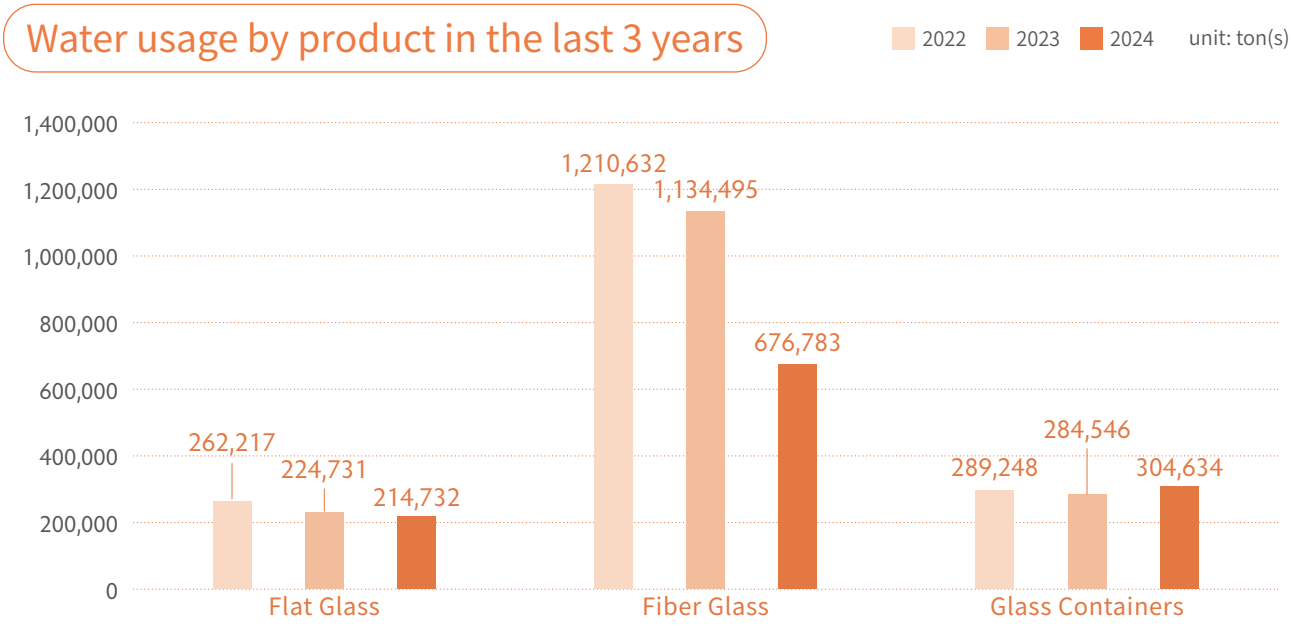
TGI has established a water resource reduction management policy, actively improving water use efficiency in accordance with the United Nations Sustainable Development Goals (SDGs 6), prioritizing the purchase of water-saving equipment, strengthening green production awareness, and recycling water resources.

TGI uses large volume of water in glass production activities such as glass edging, blanking, boring etc. TGI persistently improves water-saving technologies at various factories and explores feasible ways to reduce water usage for the sustainability of water resources. Factories use water for three main purposes: production activities, living activities, and others (some of which is used for the exhaust system). By using reclaimed water instead of fresh water, TGI is able to reduce the amount of water drawn from the public water supply. The water withdrawal of TGI's factories does not have a significant impact on local water sources and is supervised by the competent authorities and industrial zones. The water withdrawal locations are shown in the table below.

Taoyuan Factory	Hsinchu Factory	Taichung Factory and Taichung Flat Glass Factory	Lukang Factory and Lukang Flat Glass Factory	Changpin Factory
Taiwan Water Corporation - The 2nd water supply area	Taiwan Water Corporation - Tung Hsing Water Distribution Factory of the Third Branch	Taiwan Water Corporation - 1st water supply area of the Fourth Branch	Taiwan Water Corporation - The 11th water supply area	Taiwan Water Corporation - The 11th water supply area

In 2024, the total water consumption of TGI's factories was approximately 1.69 million tons, and the water discharge was 1.01 million tons. Since 2017, some processes have been improved to use recycled water as dilution water. The recycled water system has gradually been improved, and the growth rate of water consumption has declined year by year.

Water usage by product in the last 3 years



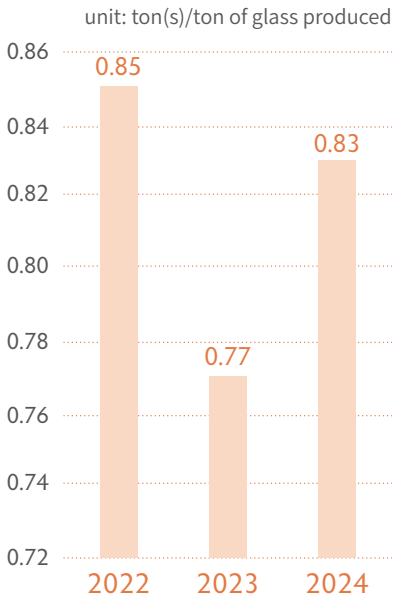
TGI's water usage in the last 2 years

Year	2023	2024
Actual water consumption (CMM) - water source		
Fresh water supply	1,398,750.00	1,416,650.00
Extraction of surface water	242,017	262,163.00
Extraction of groundwater	0.00	0.00
Rain water	246.00	298.00
Desalinated water	0.00	0.00
Other water sources	0.00	15,718.00
Total	1,641,013.00	1,694,829.00
Discharged water (million liters)		
Discharge volume	0.942	1.018

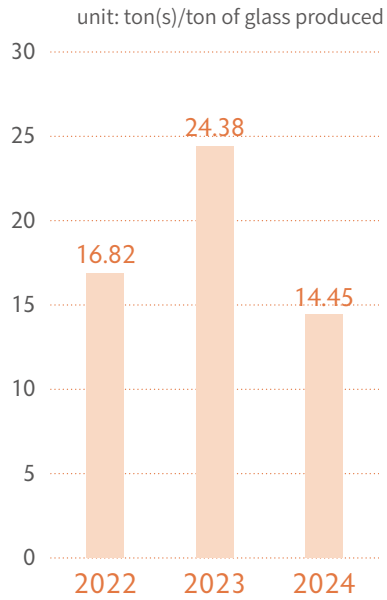
Note 1: Due to splash losses during the production process and splash and evaporation of cooling circulating water, the water consumption and discharge volume of Changpin Plant were inconsistent.
Note 2: The water discharge volume of Lukang Flat Panel Plant was obtained from actual meter readings. The wastewater volume was combined with that of Lukang Plant and then split into two plants based on costs, so there were slight differences.
Note 3: Taichung Plant shares water a meter with Taiwan Autoglass Industry Corporation (TAG). The water meter is managed by TAG and therefore will not be disclosed.
Note 4: After internal inspection, it was found that the amount of tap water and surface water in 2023 was incorrectly stated, so it was corrected in this year's report.

In 2024, TGI's water usage intensity for flat glass was 0.83 tons of water per ton of glass produced; for glass fiber, it was 14.45 tons of water per ton of glass produced, a decrease of nearly 10 tons compared to 2023; and for glass containers, it was 2.12 tons of water per ton of glass produced.

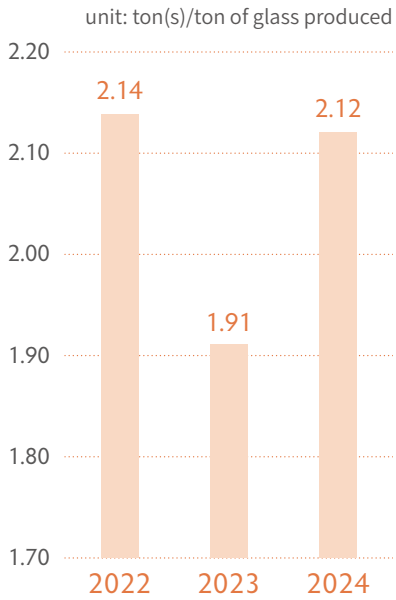
Water intensity of flat glass



Water intensity of fiber glass



Water intensity of glass containers



Note 1: The calculation scope for flat glass includes Taichung Factory, Lukang Flat Glass Factory, and Changpin Factory; the calculation scope for fiberglass includes Taoyuan Factory and Lukang Factory; the calculation scope for glass container includes Hsinchu Factory.
Note 2: Water intensity is calculated using the annual output of the year as the denominator, and the calculation formula and unit are tons/tons of glass.

Previous environmental protection awards won by TGI

Year	Factory	Environmental protection accomplishments
2020	Taoyuan Factory	Obtained Certificate of Cleaner Production Assessment from the Industrial Development Bureau
	Hsinchu Factory	Won "Award of Excellence in Water Conservation Improvement" from Water Resources Agency, Ministry of Economic Affairs
2021	Taoyuan Factory	Named "2021 Excellent Firm for the Reduction of Industrial Greenhouse Gases" by the Industrial Development Bureau, Ministry of Economic Affairs, and received medal of accomplishment
	Hsinchu Factory	Won "Bronze Award" in the 3rd Annual Enterprises Environmental Protection Awards - Manufacturing Industry Category
2022	Taoyuan Factory	Named "2022 Excellent Firm for the Reduction of Industrial Greenhouse Gases" by the Industrial Development Bureau, Ministry of Economic Affairs, and received medal of accomplishment
		Named "Taoyuan City Excellent Contributor to Air Pollution Prevention"
		Passed review for Green Factory Label and was awarded certificate
	Hsinchu Factory	Received Resource Cycling Foundation Label - "Non-plastic Waste Container"

TGI's award highlights

Taoyuan Factory switched furnace fuel from heavy oil to natural gas; this change significantly reduced greenhouse gas, and for which the factory was named "2022 Excellent Firm for the Reduction of Industrial Greenhouse Gases" by the Industrial Development Bureau, Ministry of Economic Affairs.

In support of the local environmental protection policy, Taoyuan Factory made significant progress in the reduction of air pollutants by replacing heavy oil-based boilers with natural gas-based boilers, which is estimated to reduce carbon by 3,079 tons a year, and for which it was named "Taoyuan City Excellent Contributor to Air Pollution Prevention" by Taoyuan City Department of Environmental Protection.

Taoyuan Factory changed conventional fluorescent tubes to LED tubes, including 3,220 tubes in the green building area. This replacement was expected to save 420,589 kWh of electricity and reduce carbon by 214 ton(s). The Factory also acquired Clean Production Label in 2020 and Green Building Label in 2021, and passed Green Factory Label review and received certificate in 2022

Hsinchu Factory took part in the "Mandatory Waste Recyclers Evaluation" organized by the Environmental Protection Administration, Executive Yuan. The evaluation covered four main aspects including "environmental image," "operational quality," "fire and workplace safety," and "materials," and the factory was awarded the Resource Cycling Foundation Label for "Non-plastic Waste Container."

Reuse of water resources

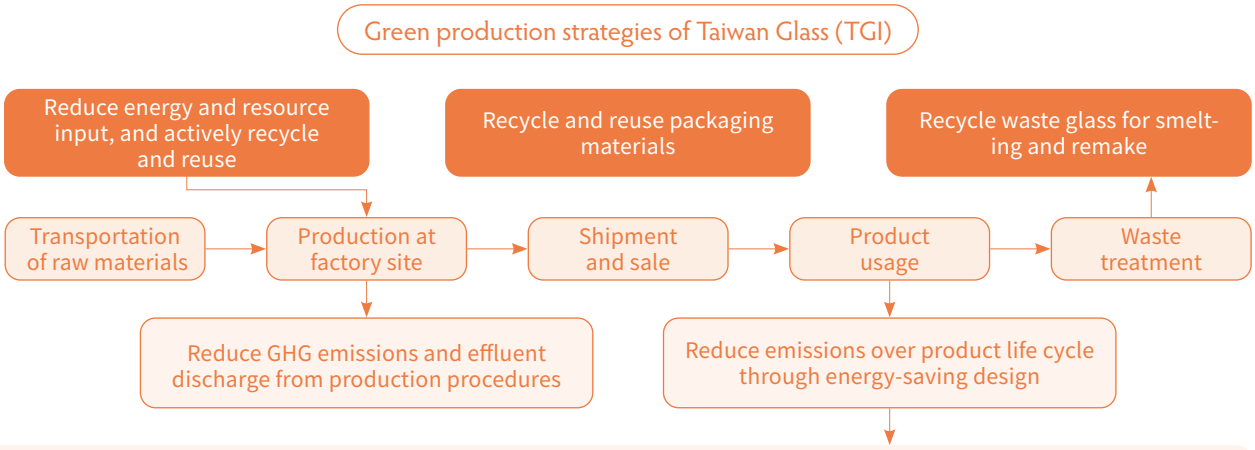
Given the prevalence of extreme weather, water management has become a critical issue to all industry participants. TGI has been promoting water conservation measures across all factories for many years. By improving the water resource system, reducing water usage per unit of product made, and conveying change of water usage behavior among employees, TGI has made significant progress. The total recycled and recovered water volume in 2024 was 222,513,714 tons. The recycling volume and recovery rate of each factory in 2024 were as follows:

Volume (cubic meters) and percentage of water recycled by factory site in 2024

Measurement / Factory	Total volume of water circulated	Total volume of water recycled	Circulation within cooling tower	Discharge volume	Recycling rate (reuse rate)
Taoyuan Factory	59,608,913.00	114,701.00	57,366,048.00	348,504	99.17%
Hsinchu Factory	35,189,064.00	526,449.00	35,189,064.00	197528	99.10%
Taichung Factory	10,612,368.00	67,605.00	10,612,368.00	59,549	99.27%
Changpin Factory	14,010,551.00	175,507	1,2499,557	29,985	99.52%
Lukang Factory	89205655.00	303438.00	51199204.00	371,475	99.25%
Lukang Flat Glass Factory	12,648,960.00	50,503.00	12,648,960.00	11,269.00	99.57%

Note1: Volume of water circulated: refers to the volume of water used and recycled by a water user for reuse by the same water user.
Note2: Volume of water recycled: refers to the volume of water used and recycled by a water user (system) for reuse by a different water user (system).
Note3: Recycling rate (reuse rate): (total volume of water circulated+recycled) / total water usage*100%

4.3 Green production management



Taiwan Glass (TGI) is committed to improving the efficiency at which raw materials, energy, and resources are used and re-ducing the environmental cost of production activities as a response to rising environmental protection awareness around the world and manufacturers' shift toward green production procedures. Meanwhile, Taiwan Glass (TGI) maintains and analyzes environmental data, keeps track of resource consumption, and evaluates greenhouse gas intensity, air pollution, wastewater, and the waste associated with its production activities. By imposing rigorous requirements and enforcing the clean production philosophy, Taiwan Glass hopes to contribute to the sustainability of Earth's environment.

Management of packaging materials

TGI's packaging materials management policy demands effective control and management over the use and recycling of packaging materials for glass, and encourages reduction in the use of packaging materials. Furthermore, TGI promotes implementation of a recycling system to ensure that glass packaging materials are properly recycled and reused. Through recycling of packaging materials, TGI hopes to effectively reduce environmental impact, minimize resource wastage, and promote circular economy.

TGI's packaging material recycling volume in the past two years

Packaging material	Recycling policy	2023		2024	
		Volume of packaging materials used	Quantity recycled	Volume of packaging materials used	Quantity recycled
Pallets	Pallets used in internal sales are recycled for thermal treatment or reuse	3,905 tons + 3,339 pieces	3,606 tons + 2,005 pieces	3,766 tons + 2,986 pieces	3,461 tons + 2,090 pieces
Paper tube	Repurchase and recycling of paper tube	22,503pcs	2,666pcs	21,786pcs	3,156pcs
PE fabric	PE fabric leftovers are moved to junkyard for recycling	4 ton(s)	4 ton(s)	5 ton(s)	4 ton(s)

Note 1: Due to differences in factory activity, recycling of packaging materials was calculated only for Taoyuan Factory, Hsinchu Factory, Changpin Factory, and Lukang Factory.
Note 2: Lukang Fiber Glass Factory uses paper tubes and pallets that have different dimensions; packaging materials are presented in pieces instead as the weight can not be estimated reliably.

In 2024, the total recycling volume of TGI's packaging materials and pallets reached 3,461 tons, with a pallet recycling rate of 91.9% and a paper tube recycling rate of 14%, which is enough to demonstrate TGI's active efforts to reduce plastic in packaging materials.

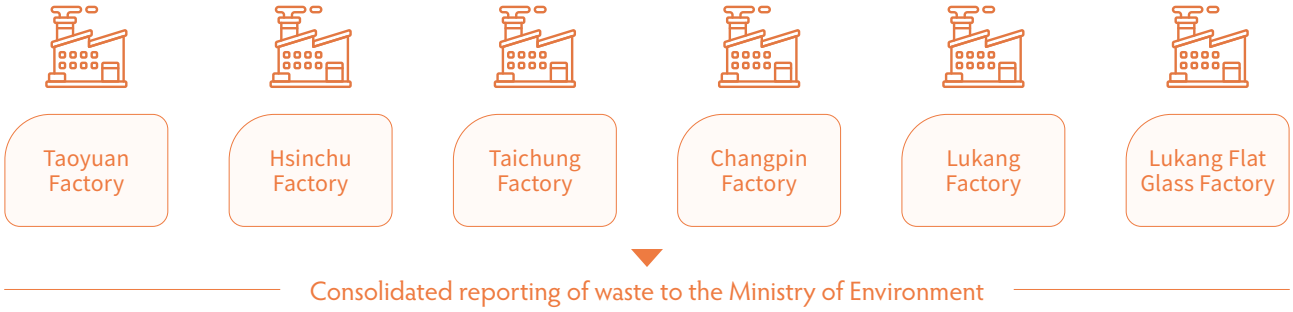
Waste management

Taiwan Glass (TGI) has established two principles for waste disposal: improve production yield and reduce waste volume, and recycle reusable waste.

All recyclable waste is handed over to qualified recyclers for disposal; reusable pallets and packaging materials are also recycled and reused for the production procedure. This not only reduces the cost, but also reduces the impact on the environment as the selection of raw materials and packaging materials contribute towards the Company's fulfillment of CSR. The Taiwan Glass Plants will also continue to sort garbage, recycle, and reduce waste.

Qualified waste treatment companies are commissioned to handle non-recyclable wastes, which is then handed over to the local environmental protection bureau incineration plants and landfills for treatment. The Company also commissions qualified treatment firms for the treatment and recycling of the sludge generated from the wastewater treatment. The disposal of non-recyclable industrial waste is handled by qualified treatment firms after filling out the "Commission Form for Joint Treatment and Management of Industrial Waste" online, and then handed over to qualified treatment sites for disposal. Taiwan Glass continues to carry out waste management, and work towards the goal of recycling and waste reduction.

Taiwan Glass Plants Implementation of Waste Management

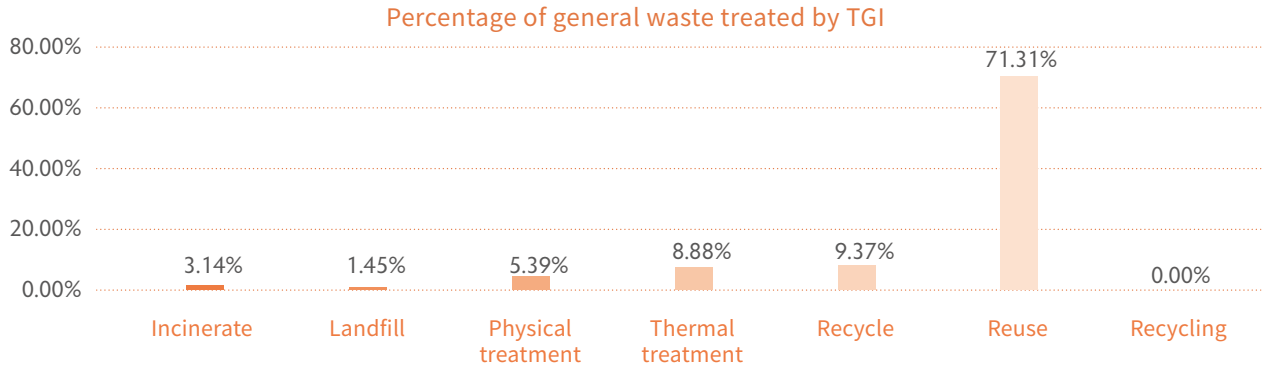


TGI actively responds to waste recycling. In 2024, the total amount of general industrial waste was 16,702.17 tons, a decrease of 16.68 tons compared to the previous year, and the waste intensity was 0.03. In addition, the proportion of waste recycling and reuse in 2024 exceeded 80%, demonstrating the effectiveness of TGI's active investment in waste reduction. TGI treated hazardous industrial waste by ways of incineration and landfill; no amount or percentage was recycled.

TGI's waste weight

Unit: Tons

	General industrial waste	Hazardous industrial waste	Total weight
2022	22,340.76	46.17	22,386.93
2023	16,718.85	72.08	16,790.93
2024	16,702.17	76.16	16,778.34



Taiwan Glass Waste Disposal Volume in 2024 (tons)

General industrial waste								
Treatment Method	Waste composition	Taoyuan Factory	Hsinchu Factory	Taichung Factory	Changpin Factory	Lukang Factory	Lukang Flat Glass Factory	Total
Incinerate	Waste from living activities, waste plastics mixture, waste rubber mixture, waste paper mixture, waste wood mixture, waste fiber, or other cotton and fabric mixture	123.24	315.5304	6.66	24.3	53.93	3.1	526.7604
Landfill	Other waste glass, ceramic, brick, tile, and clay mixtures	0	242.69	0	0	0	0	242.69
Physical treatment	Lubricating oil, construction waste mixture, waste oil mixture, waste sandwich/insulated glass, compost, waste thermal insulation materials, and waste refractory	3.47	237.17	0	520.47	142.6	0	903.71
Thermal treatment	Organic sludge, waste oil mixture, inorganic sludge	807.81	479.62	6.68	66.8	129.79	0	1,490.7
Recycle	Non-hazardous waste EP ash or EP ash mixtures, waste wooden materials, waste plastics	0	0	0	1,572.65	0	0	1,572.65
Reuse	Waste glass, waste wooden materials, non-hazardous waste EP ash or EP ash mixtures, other waste glass, ceramic, brick, tile, and clay mixtures	7,309.71	1,525.053	140.21	0	2,625.78	364.7	11,965.453
Recycling	Waste lubricating oil	0	0	0	0	0	0.21	0.21
Hazardous industrial waste								
Treatment Method	Waste composition	Taoyuan Factory	Hsinchu Factory	Taichung Factory	Changpin Factory	Lukang Factory	Lukang Flat Glass Factory	Total
Incinerate	Selenium and compounds, other corrosive industrial waste mixture	0	43.0844	0	0	0	0	43.0844
Landfill	Other waste mixtures that contain toxic heavy metals and exceed leaching standards	0	0	0	0	0	33.08	33.08

Note: TGI reported no waste leakage incidents in 2024.

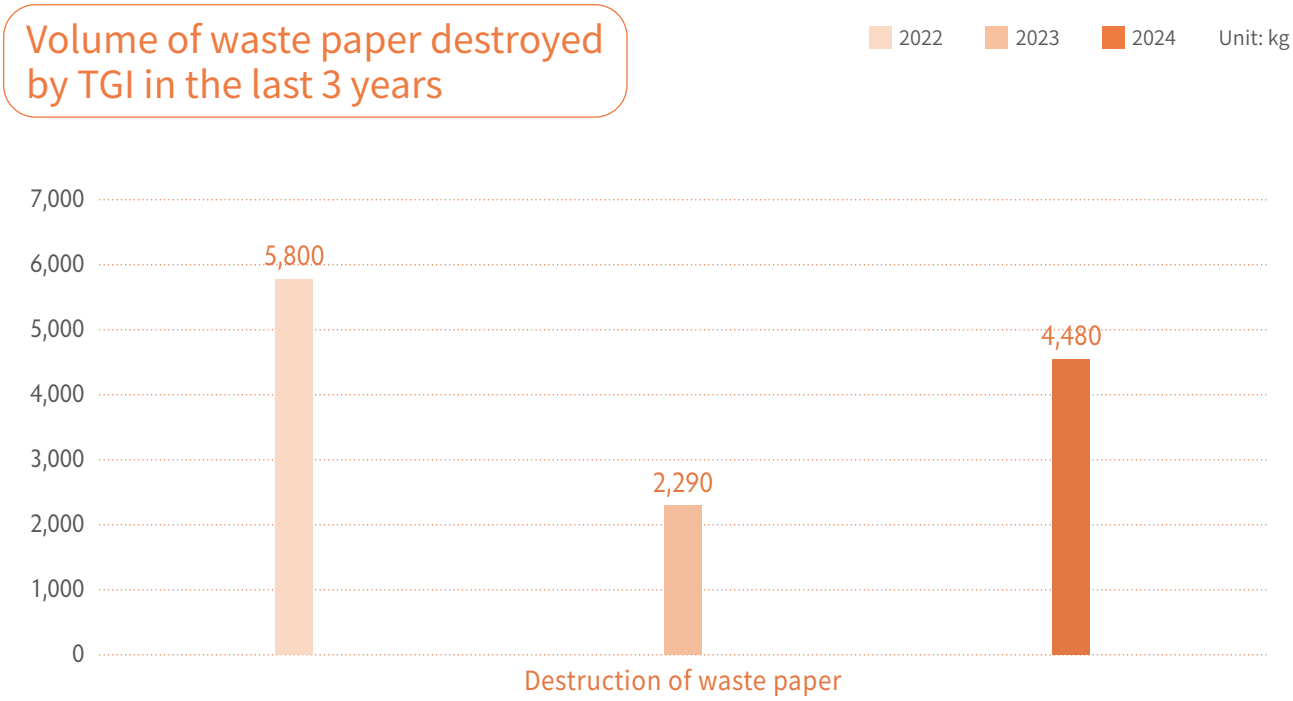
Total	General industrial waste	Hazardous industrial waste
	16,702.17 tons	76.16 tons

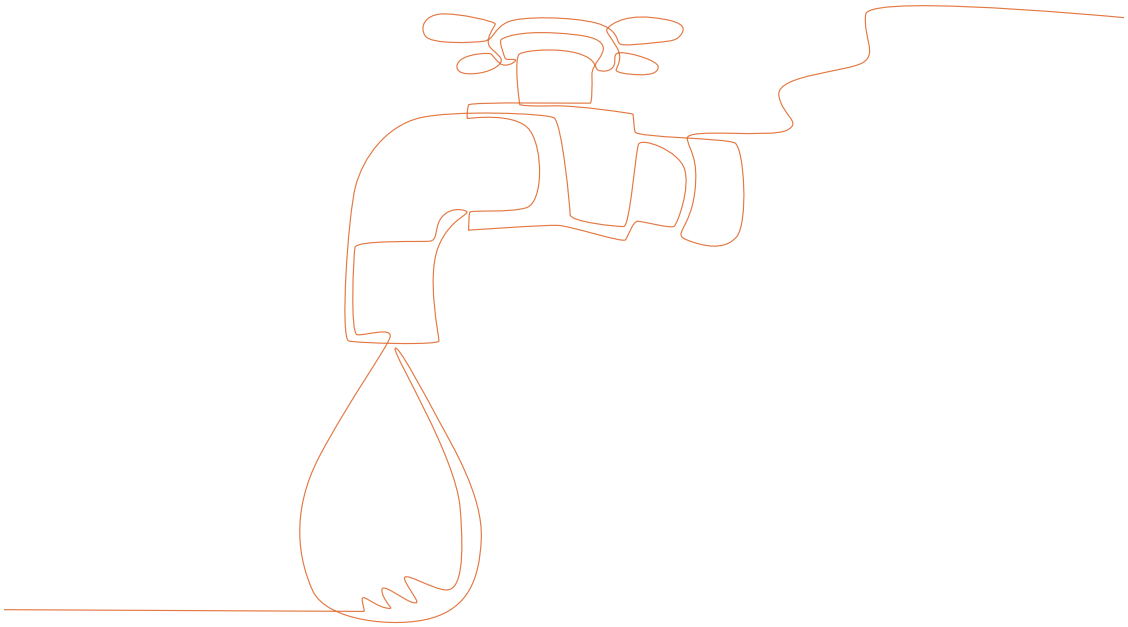
Destruction of waste paper

TGI engages Cheng Loong, a professional recycling service provider, to destroy confidential documents on a regular basis. These documents are gathered and delivered to the paper mill at times that match the operating cycle of the pulp tank, where the documents are poured into for the renewal process. The mill uses a pulping machine that shreds paper into pulp at high speed. The process quickly destroys confidential documents in high volume, and the pulp can then be turned into reclaimed paper or other paper products. This not only decreases the need to cut down trees but also prevents leak of confidential documents and contributes to the protection of the environment. In 2024, the weight of waste paper sold was 4,480 kilograms, an increase of 95.63% compared to the previous year, demonstrating TGI's outstanding achievements in paper reduction.

TGI is also actively promoting paper reduction. In the past, the traditional workflow relied on manual processing of paper documents. Now, computer maintenance notices are processed electronically to minimize paper usage.

Volume of waste paper destroyed by TGI in the last 3 years





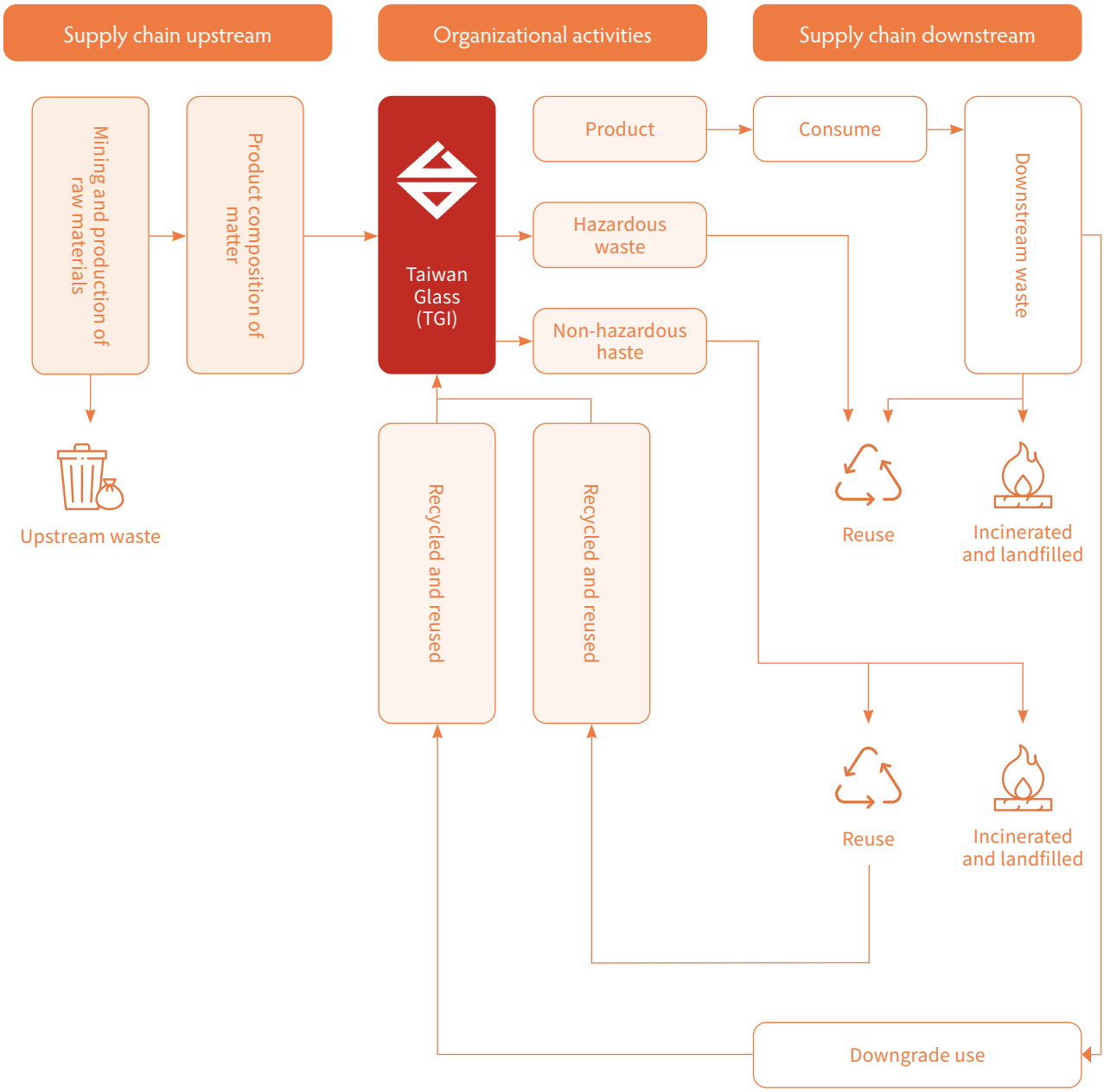
Circular Economy

The concept of circular economy encourages and enables the recycling and reuse of waste within the glass industry. Glass is a material that can be infinitely recycled. Recycling and reuse of waste glass helps reduce consumption of raw materials and energy by a significant extent. Doing so also lessens the industry's dependency on natural resources, reduces the volume of energy used, and minimizes negative impact on the environment.

TGI continually improves the sustainability of its products by targeting product design and the manufacturing process. Optimization of product design, such as using less materials and making use of biodegradable materials, helps reduce the volume of waste generated. Circular economy also encourages use of greener and renewable energy sources for glass production, which contributes further to the reduction of carbon emission and environmental impact.

Circular economy brings new opportunities and creates new value chain for TGI. Furthermore, the waste glass recycled has the potential to be turned into new products such as glass containers and construction materials. This greatly expands TGI's industry value chain and promotes growth of green economy.

TGI's Circular Economy Value Chain



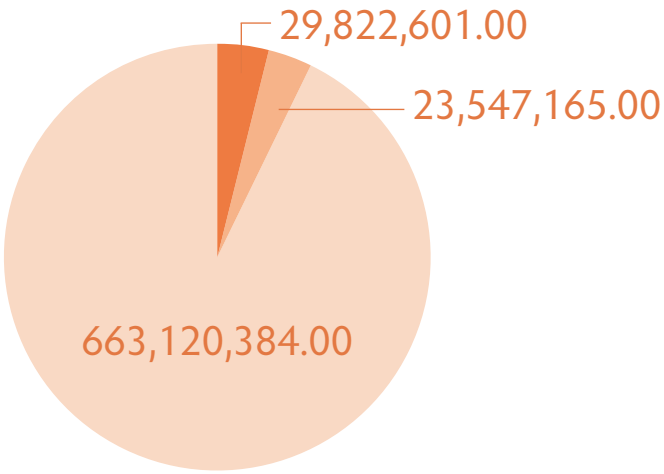
Economic benefit assessment of circulation/recycling

TGI implements total circulation and recycling policy for waste, wastewater, and waste glass. According to the outcome of assessment, waste recycling lessens dependency on landfill and reduces risk of pollution to the environment. Next, wastewater recycling allows TGI to make more efficient and repeated use of water to lessen consumption of water resources. Lastly, by recycling, smelting, and remaking glass, TGI cuts down on the use of raw materials while at the same time reduces energy consumption and carbon emission.

In 2024, TGI achieved total economic benefits of NT$716,490,149from the recycling of waste, wastewater, and waste glass. The economic benefits of waste recycling include saving raw material costs or increasing recycling revenue of NT$29,822,601; the economic benefits of wastewater recycling include saving water costs of NT$23,547,165; and the economic benefits of waste glass recycling include saving raw material costs or increasing recycling revenue of NT$663,120,384. Overall, TGI's circulation and recycling measures have accomplished prominent results whether in terms of economic performance, environmental protection, and resource efficiency.

Economic benefits from recycling - 2024

Waste Wastewater Scrap glass Unit:NTD



Note 1: Taoyuan Factory and Lukang Factory did not recycle waste glass, and waste of Lukang Flat Glass Factory was counted into Lukang Factory.
Note 2: Waste recycling benefits included the price of scrap metal, waste paper, and waste wood, as well as the price of valuable waste sold to buyers. Tap water is calculated based on the average water rate for each factory; and waste glass is calculated based on the basic price of NT$1.02 per kilogram.

Heat recycling

TGI actively supports the development of heat recycling systems. By redirecting the heat generated from production activities, the Company is able to turn heat into viable energy source and therefore reduce the need for external energy sources. In addition to saving energy costs, this solution also helps lower emission of carbon and other hazardous gases to mitigate adverse impacts on the environment.

Waste heat recovery steam boiler at Lukang Flat Panel Plant

Lukang Flat Panel Plant invested NT$80 million to install a waste heat recovery steam boiler. To effectively utilize excess heat from kiln exhaust, a heat recovery boiler system was built to generate hot water and steam for production use. This saves 100,000 cubic meters of natural gas per month and reduces carbon emissions by approximately 208 metric tons per month. The factory was completed and began operation in 2024. Future plans include continued recovery of exhaust heat to reduce fuel and electricity consumption. In 2023, Taichung Plant also invested NT$9.7 million in the design of a waste heat recovery system for ECT+ORC power generation to reduce natural gas usage, and it is expected to be implemented simultaneously with the TF-2 cold repair project in 2026.

Air pollution control

TGI's primary goals are to meet the emission standards set by the Environmental Protection Administration, and progressively lower emissions of pollutants based on actual measurements. TGI's improvements begin with production procedures; by replacing heavy oil and diesel with natural gas and using specialized equipment to treat pollutants, the Company is able to reduce air pollution and use of fossil fuel for the sake of employees' health.

We observe ISO 14001 for air pollution management and duly enforce air pollution prevention practices. All equipment are regularly serviced and maintained depending on their characteristics, and inspected by the accountable department. Any abnormality in air pollution control or emissions would trigger an emergency response, in which employees are required to investigate the cause and regain control in the shortest time possible to reduce pollution from production activities.

Taoyuan Factory tests pollution sources regularly for air pollutants to maintain air quality, and any finding that exceeds standard will have to be improved upon immediately. With regards to the different pollution sources: furnaces are tested twice a year whereas boilers are tested once a year. Outcomes of the 2024 test were entirely compliant with legal standards.

Emission intensity of air pollutants for each product is shown in the figure below. Taiwan Glass will carry out stricter control for various types of air pollutants to hopefully reduce pollutant emissions while increasing production capacity, and do its part to protect the global environment and public health.

TGI's air pollutant emissions over the years (total for all factories)

Unit: kg

Year / Air pollutant test	2022	2023	2024
NOx	892,107	448,060	399,679
SOx	198,901	152,993	188,941
VOCs	65,397	41,322	40,726
Particulate matter	32,447	35,199	38,544

Note 1: Since Taichung Flat Panel Plant No. 3 ceased production in 2023, no air pollution has been generated in the factory area.
Note 2: TG Glass's air pollution emissions calculation method and selected coefficients are based on the "Calculation Methods for Air Pollutant Emissions from Fixed Sources in Public and Private Facilities" announced by the Ministry of Environmental Protection, and air pollution emissions are reported to the competent authority annually.
Note 3: The conversion factor for emission concentration of each air pollutant is in grams per liter (g/NL). NOx: 2.05 g/NL, Sox: 2.86 g/NL, VOCs: 0.71 g/NL, Particulate matter: calculated based on the coefficient reported by the competent authority.

Air pollutant control highlights of each factory

Taichung Factory: Purification and reuse of dust containing heavy metal

Taichung Plant is collaborating with the Industrial Technology Research Institute on a project to purify and reuse heavy metal-containing dust ash. The heavy metals in the dust ash are removed and the remaining purified and recovered for use as raw materials. In the future, heavy metal-containing products discharged from the first phase will be purified and recycled again for use as colorants, making the dust ash recycling method more extensive.

Hsinchu Factory: Kiln installed with natural gas and heavy oil combustion switching systems

To reduce energy costs, air pollution, and carbon emissions, Hsinchu Factory invested NT$67 million to convert its kilns to a dual-fuel system using natural gas as the primary fuel. The TS2, TS8, TS3, TS6, and TS7 kilns will be equipped with natural gas and heavy oil combustion switching systems. The factory completed the introduction of cleaner natural gas as the primary energy source in 2024, with an estimated annual carbon reduction of 17,350 tons of CO_2.

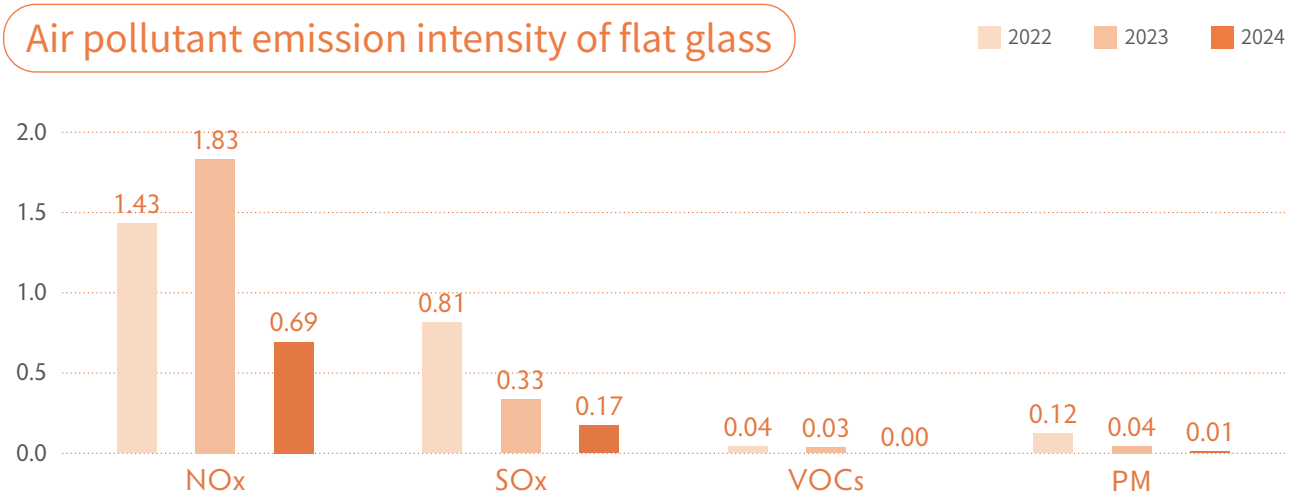
Lukang Flat Glass Factory: Addition of washing system to contain spread of air pollutant

To improve air pollution caused by the drift of particulate matter, Lukang Flat Panel Plant has invested NT$2 million to build a car wash platform. The platform will be equipped with advanced cleaning machines that can effectively remove pollutants from vehicles and equipment, thereby significantly reducing the amount of air pollution particulate matter entering the atmosphere, improving air quality within the factory, and reducing the negative impact of industrial production on the environment. The equipment was completed in June 2024.

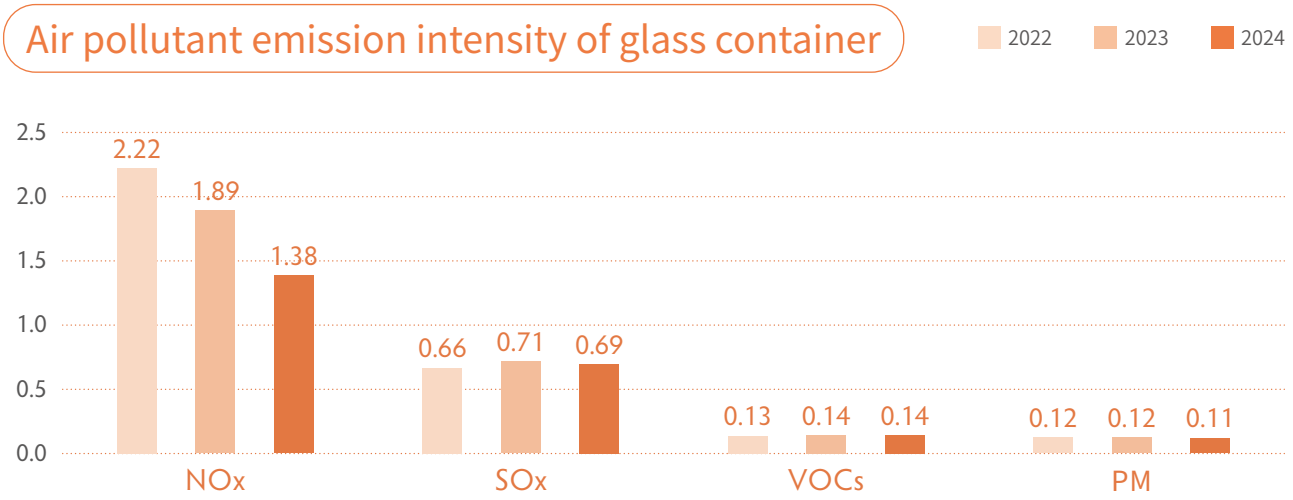
Lukang Flat Glass Factory: 90% of furnace fuel has been replaced with clean energy alternatives

Lugang Flat Panel Plant actively responds to the clean energy policy and uses natural gas as the primary fuel for its glass kilns, reducing CO_2 emissions by approximately 63.558 metric tons per day. The factory aims to achieve a 100% replacement rate in the future, with heavy oil serving as backup fuel. As of 2024, the replacement rate reached 90%, and future plans will increase the replacement rate to 100% after the environmental protection permit is changed.

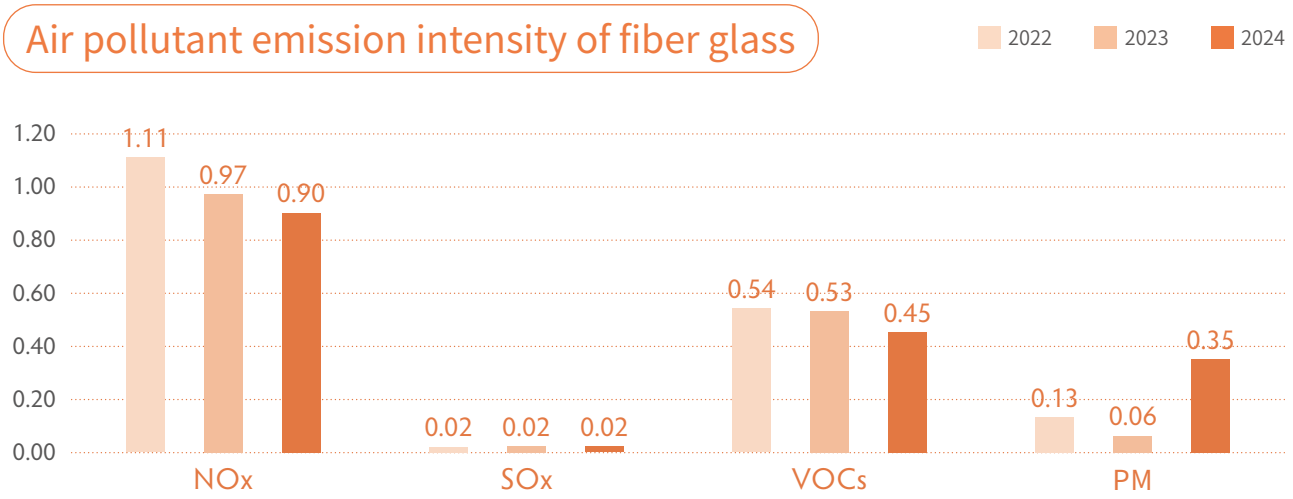
Air pollutant emission intensity of flat glass



Air pollutant emission intensity of glass container



Air pollutant emission intensity of fiber glass

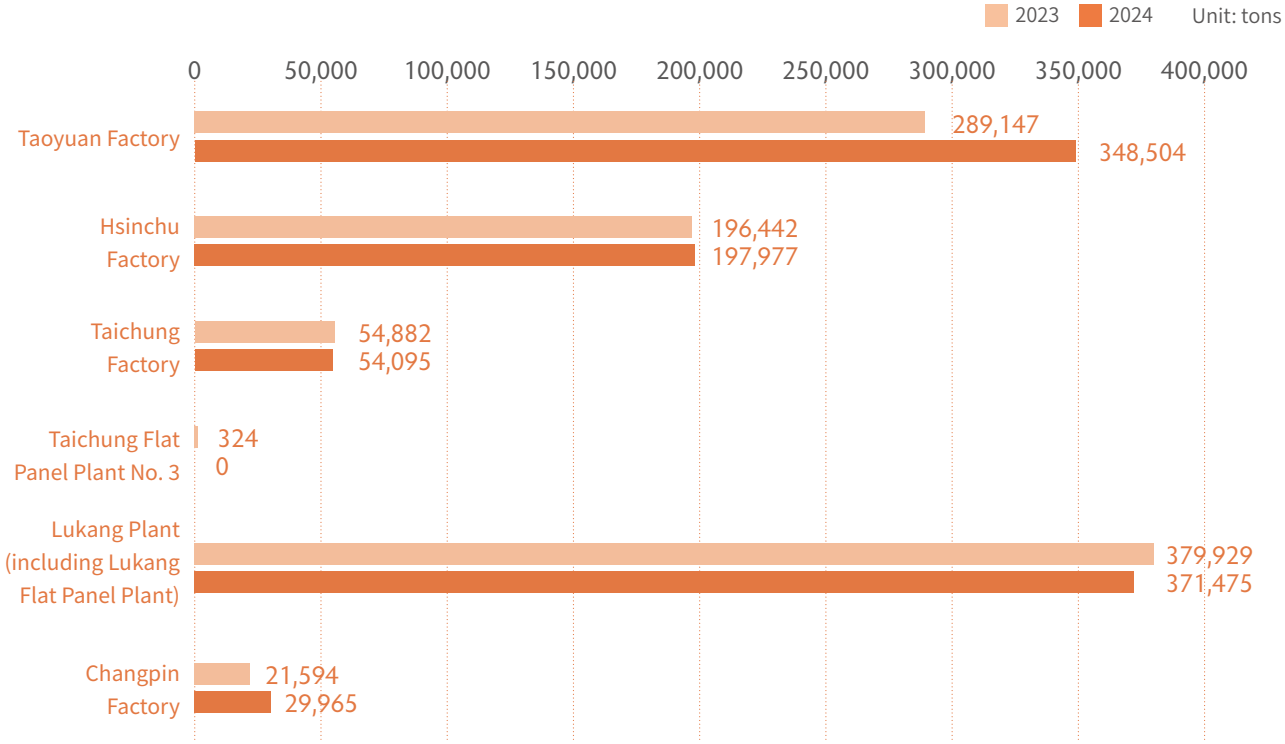


Note: The calculation method for air pollutant emission intensity has been updated this year, with the annual output of current year as the denominator, and the calculation formula and unit are kg/tons of glass.

Water pollution management

All TGI factories have installed wastewater treatment equipment to reduce the amount of pollutants contained in industrial wastewater below the local wastewater discharge standards, and thereby prevent production pollutants from entering the water body. Wastewater from living activities is also treated and discharged into the water body only if it meets the legal standards. In 2024, the total amount of wastewater discharged by TGI's various production sites was 1,002,016 tons. TGI's various production sites actively implemented water conservation policies and wastewater recycling to address the increasingly severe water shortage problem and reduce environmental pollution. Among them, Taoyuan Plant will recycle the wastewater discharged from the backwash of TT1,7 resin softening tank for cleaning the TT1 E/S SYS. The total amount of recycled water in 2024 was 92,977 tons.

Wastewater volume from TGI's factories in the past two years



Note1: TGI's wastewater statistics are presented based on the discharge volume paid by each factory. Taichung's Flat Panel Plant No. 3 completely ceased production in 2024, while Changpin Plant included TGI's Teco Vacuum Insulated Glass Corporation.
Note2: Since Lukang Flat Panel Plant outsourced wastewater treatment and monitoring to Lukang Plant, the information was disclosed together.

Use of effluents for exhaust treatment system

In order to improve the utilization rate of wastewater recycling, Hsinchu Factory switched the water used in the TS3 and TS8 waste gas treatment systems to recycled effluent water in 2024, with an investment of NT$1 million, and completed the installation and testing. It can reduce groundwater extraction by 3,000 tons per month and reduce effluent discharge by 3,000 tons per month.

Optimize the wastewater discharge outlet system

In 2024, the Hsinchu Factory upgraded the Roots blower used in the wastewater discharge system to an air-bearing turbo blower with variable frequency control, with an investment of NT$1.4 million. This is estimated to save NT$610,000 in electricity costs per year, while reducing energy expenses and maintaining stable air pressure control through equipment upgrades. Moving forward, the Company will continue to invest in equipment optimization. In 2025, we plan to invest NT$1.2 million in upgrading the Roots blower in the wastewater system of system A to an air-bearing turbo blower with variable frequency control, expected to save an additional NT$230,000 in annual electricity costs.

Locations of wastewater discharge and related regulations and standards

Factory	Location of discharge	Related regulations and standards
Taoyuan Factory	Guanyin Industrial Park Operations Center	Water quality standards of Guanyin Industrial Park sewage
Hsinchu Factory	Sanxinggong River	Effluent standard
Taichung Factory (including Taichung Processing Factory)	Discharged into the sewer system of the Related Industrial Park	Water quality standards of Taichung Port Special District Water Resource Recycling Center
Lukang Factory (including Lukang Flat Glass Factory)	Sewers of Chang Hua Coastal Industrial Park	Management policy on use of Chang Hua Coastal Industrial Park Sewer
Changpin Factory	Sewers of Chang Hua Coastal Industrial Park	Management policy on use of Chang Hua Coastal Industrial Park Sewer

Monitoring values of water discharge from each factory in 2024

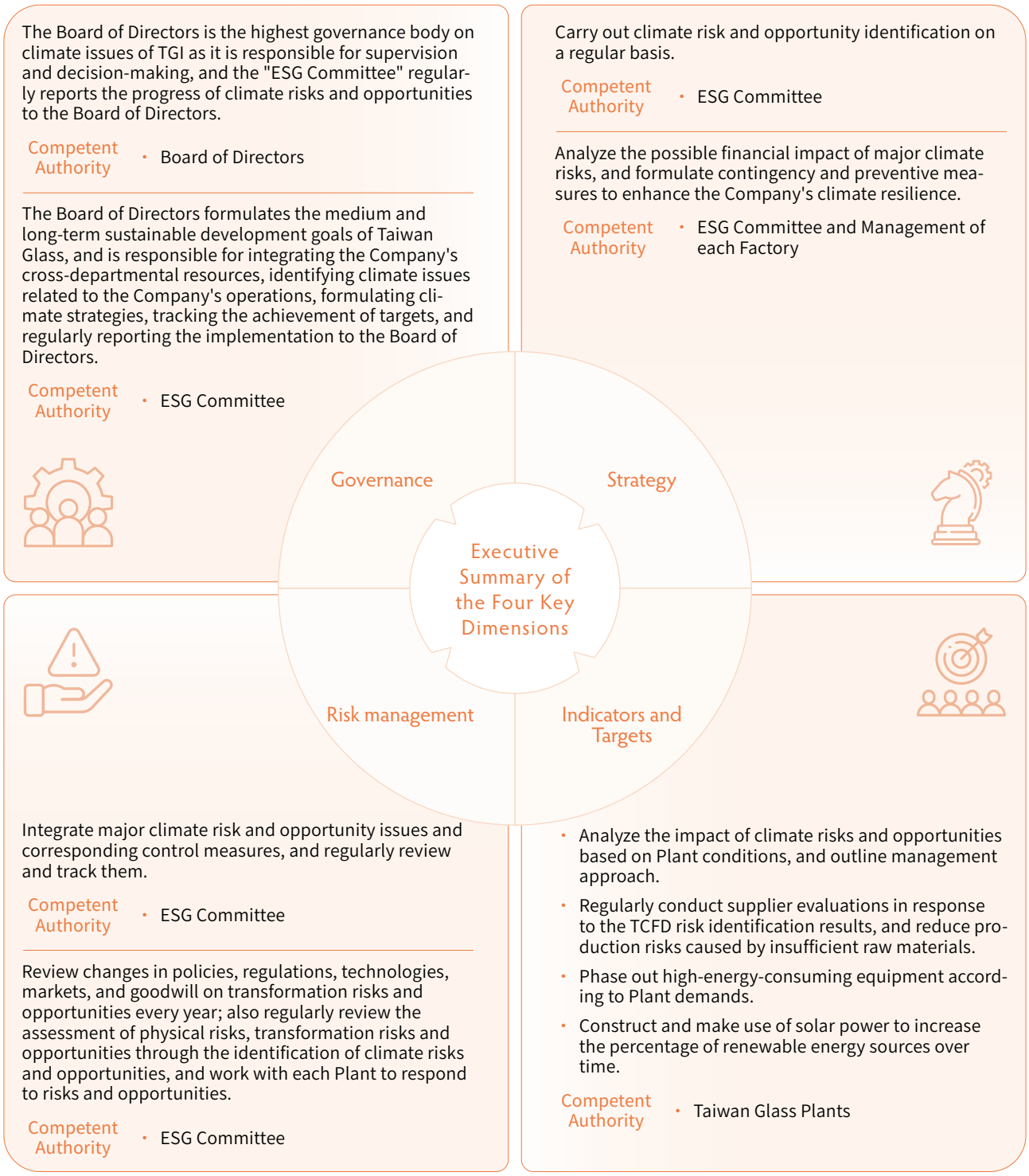
Water pollution test/ Factory		Taoyuan Factory	Hsinchu Factory	Taichung Factory	Lukang Factory (including Lukang Flat Glass Factory)	Changpin Factory
Chemical oxygen demand (COD) (mg/l)	Test value	166.25	D01:32.85 D02:0	17.09	70.13	43.99
	Emission standard	560	<100	800	<640	<640
Suspended solids (SS) (mg/l)	Test value	11.72	D01:5.76 D02:2.78	12.058	13.54	14.73
	Emission standard	480	<50	600	<400	<400

Note1: TGI is charged for the amount of wastewater discharged; with the exception of Hsinchu Factory, which reports wastewater volume and is charged once every six months, all other factory sites will have their wastewater tested and discharge volume calculated by the industrial zone on a monthly basis. TGI also complies with the "Water Pollution Control Measures and Test Reporting Management Regulations" of the Environmental Protection Administration by engaging a third-party institution to make sample tests and file reports every six months.
Note2: The monitoring values presented in this report are based on the average of quarterly outsourced inspections for Hsinchu Factory, and the average of monthly industrial zone monitoring values for other factories.
Note3: Since Lukang Flat Panel Plant entrusted Lukang Plant to carry out effluent treatment and monitoring, the information is disclosed together.

4.4 Climate action

Taiwan Glass TCFD Core Framework

Reports from the Global Economic Forum in recent years indicated that extreme weather events and climate action failure are among the top five global risks, and they have been ranked as the top 2 risks in the past 4 years. Therefore, Taiwan Glass introduced TCFD (Task Force on Climate-Related Financial Disclosures) framework with the four aspects of "governance," "strategy," "risk management," and "indicators and targets" to formulate strategies and actions for climate change, which will hopefully mitigate the impact of climate risks.



Identify Climate Change Risks and Opportunities

TGI worked together with external consultants and experts to distribute surveys to employees of each Factory, and carried out rigorous analysis after collecting the surveys. Matrix analysis was used based on the two parameters of "occurrence frequency" and "degree of impact," and a total of 9 major climate change risks and 7 high potential future climate opportunities were identified.

Description of Identification Process

The Company will use the TCFD's physical risks, transition risks, and climate change opportunities as the direction of interviews, and meetings with external consultants and the directors of various Plants and departments of Taiwan Glass to jointly identify possible climate change risks and opportunities. The focus is then placed on the actual climate change risks that the Company will face and potential future opportunities during daily operations, and the design and distribution of surveys to analyze major climate change risks and opportunities to formulate an appropriate climate change management policy for the Company.

Identify potential climate risks

Discuss with heads of accountable departments about the daily operations of each factory and department, and help identify potential climate risks

1

Evaluate the impact and frequency of climate risk

Create TCFD risk and opportunity questionnaires and have them completed by accountable departments, including their assessments on the impact and frequency of climate risks and opportunities

2

Analyze climate risks and opportunities

Gather questionnaire responses and analyze major climate change-related risks and opportunities that are relevant to the Company; present findings in the form of a matrix for better understanding

3

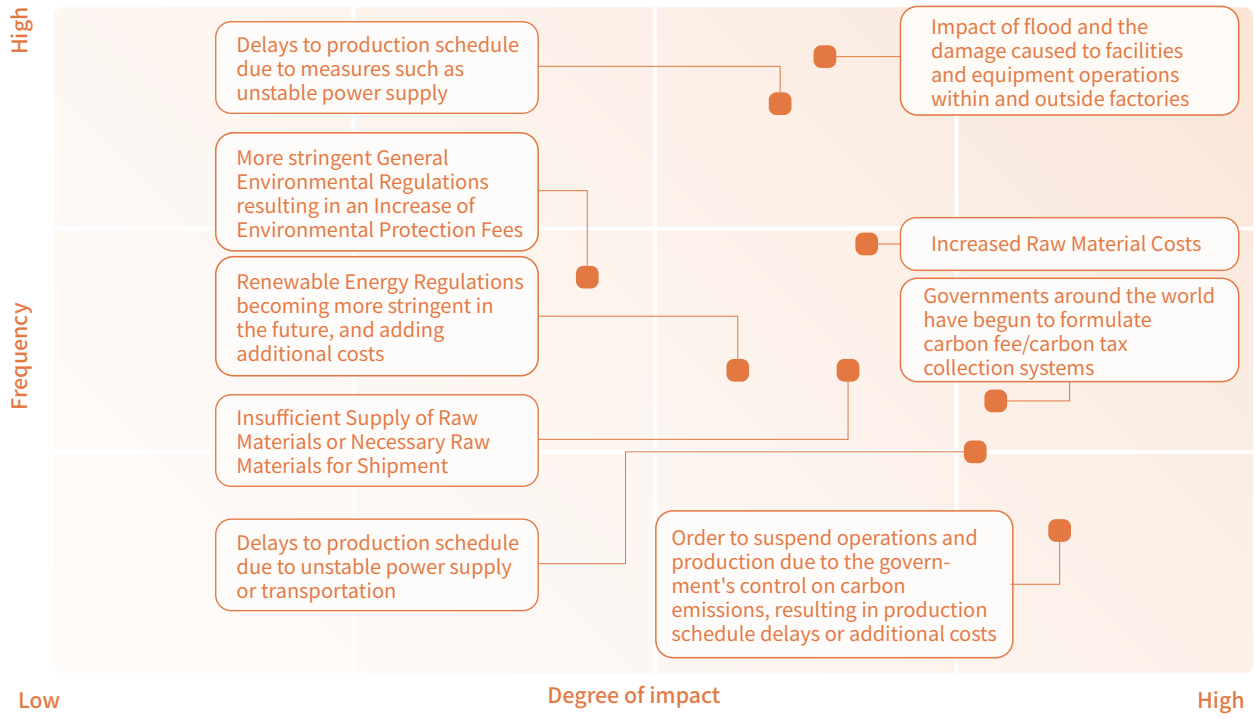
Respond to climate risks and opportunities

Raise suggestions for each major climate change-related risk and opportunity identified, and discuss with heads of accountable departments about climate indicators and targets for the year.

4

Climate change risks of TGI

Climate change risks matrix



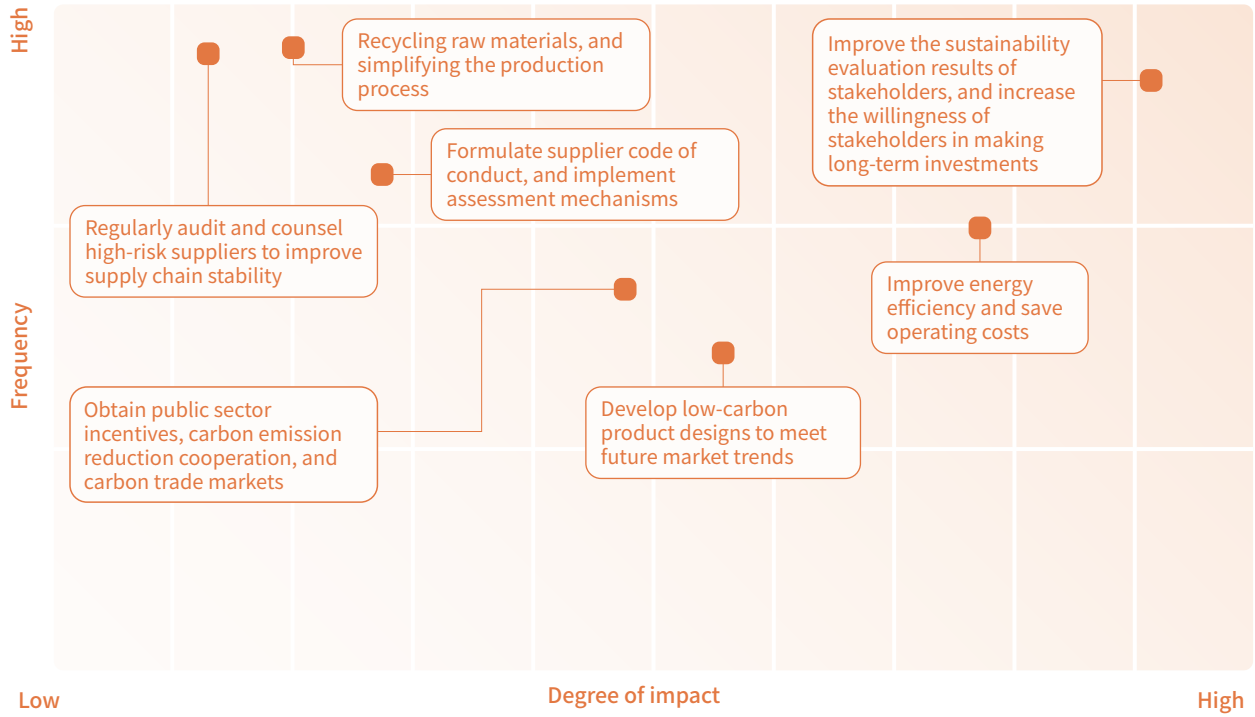
Description of Climate Change Risk

Physical risk	
Issue ▶ Impact of flood and the damage caused to facilities and equipment operations within and outside factories	
Description of Risk Impact	Extreme weathers such as Typhoon and heavy rain are starting to cause disasters at unprecedented scale. These disasters have the potential to damage buildings, operations, and information equipment.
Financial impact	Risingcosts ▲ Capital expenditures ▲
Actions	• Conduct regular checks on flood prevention equipment at factory sites, and make sure that they are usable when needed • Observe ISO 14001(8-ES-B10) for emergency response.
Issue ▶ Delays to production schedule due to measures such as unstable power supply	
Description of Risk Impact	Unstable power supply has affected production operations and reduced glass yield, resulting in scrapped glass and untimely deliveries.
Financial impact	Risingcosts ▲ Delivery delays ▼
Actions	• Each factory has implemented a Uninterruptible Power Supply System and tests them regularly as they are activated when power is unstable or shut off, other unnecessary energy consumption is turned off at the same time to minimize production risks.
Issue ▶ Delays to production schedule due to unstable power supply or transportation	
Description of Risk Impact	Forklifts (diesel) were unavailable for use as large sheets or extra-heavy glass could not be delivered after they were produced, which possibly hinders production.
Financial impact	Delivery delays ▼ Decline in credibility ▼
Actions	• Improvement of power source exclusively for the switch to LPG supply • Imposition of load limit for electric forklifts

Issue ▶ Insufficient Supply of Raw Materials or Necessary Raw Materials for Shipment	
Description of Risk Impact	Shortage of stock for upstream suppliers due to climate change, resulting in no raw materials available for production. Those with minor shortages will reduce production, and those with severe shortages will suspend production. Restarting the furnace for production after a suspension may take up to half a year.
Financial impact	Order loss ▼ Revenue decline ▼
Actions	• Increase inventory level of key raw materials to 60 days and evaluate feasibility of alternative suppliers • Adopt demand forecasting and information sharing as part of supply chain management
Transition risk	
Issue ▶ Renewable Energy Regulations becoming more stringent in the future, and adding additional costs	
Description of Risk Impact	The increase in operating costs due to changes in regulations resulted in situations such as payments of cash or transfer for administrative execution.
Financial impact	Risingcosts ▲ Capital expenditures ▲
Actions	• Complete installation of solar panels at factory premise and commence power generation • Install upgraded mega panels at Changpin Factory to increase green power capacity
Issue ▶ More stringent General Environmental Regulations resulting in an Increase of Environmental Protection Fees	
Description of Risk Impact	After the implementation of the total greenhouse gas control regulations, the increase in greenhouse gases will be controlled by the competent authority. This will result in restrictions to orders and production, which will result in increased operating costs.
Financial impact	Decreased profits ▼
Actions	• Hsinchu Factory installed SCR desulfurization equipment (including electrostatic dust collection equipment) to improve particulate matter removal efficiency • Formulate relevant issues such as water and energy conservation, and continually improve production yield and reduce output of waste glass.
Issue ▶ Governments around the world have begun to formulate carbon fee/carbon tax collection systems.	
Description of Risk Impact	Taiwan Glass is a leading glass enterprise and may be listed as a priority subject for taxation by the government, which will result in the overall increase of production costs for its products.
Financial impact	Risingcosts ▲
Actions	• All factory sites are progressively replacing furnaces with hybrid combustion alternatives in order to take advantage of the low emission potential and favorable pricing of natural gas. • Increase the use of natural gas by at least 50%.
Issue ▶ Order to suspend operations and production due to the government's control on carbon emissions, resulting in production schedule delays or additional costs	
Description of Risk Impact	Taiwan Glass is an energy-heavy industry and when regulations require the control of carbon emissions, the Company may face risks of partial suspension and shutdown.
Financial impact	Risingcosts ▲ Revenue decline ▼
Actions	• Introduce energy and resource management system to lower energy consumption and make ongoing improvements to energy efficiency in factories • Continually promote Certificate of Cleaner Production Assessment and Green Building Certificate for Lukang Factory and Taoyuan Factory
Issue ▶ Increased Raw Material Costs	
Description of Risk Impact	Raw material suppliers have increased carbon emission costs (carbon fees or carbon taxes), energy costs and logistics costs to meet low-carbon requirements, which is further reflected in the price of raw materials.
Financial impact	Decreased profits ▼ Decreased financial flexibility ▼
Actions	• Regularly conduct supplier evaluations to ensure stable supply of raw materials, assess the carbon footprint of the raw materials, and carry out planning for carbon reduction by the suppliers • Increase the ratio of waste glass used in production and reduce the amount of raw material used; aim to increase by 2% a year

Climate opportunities and implementation strategies

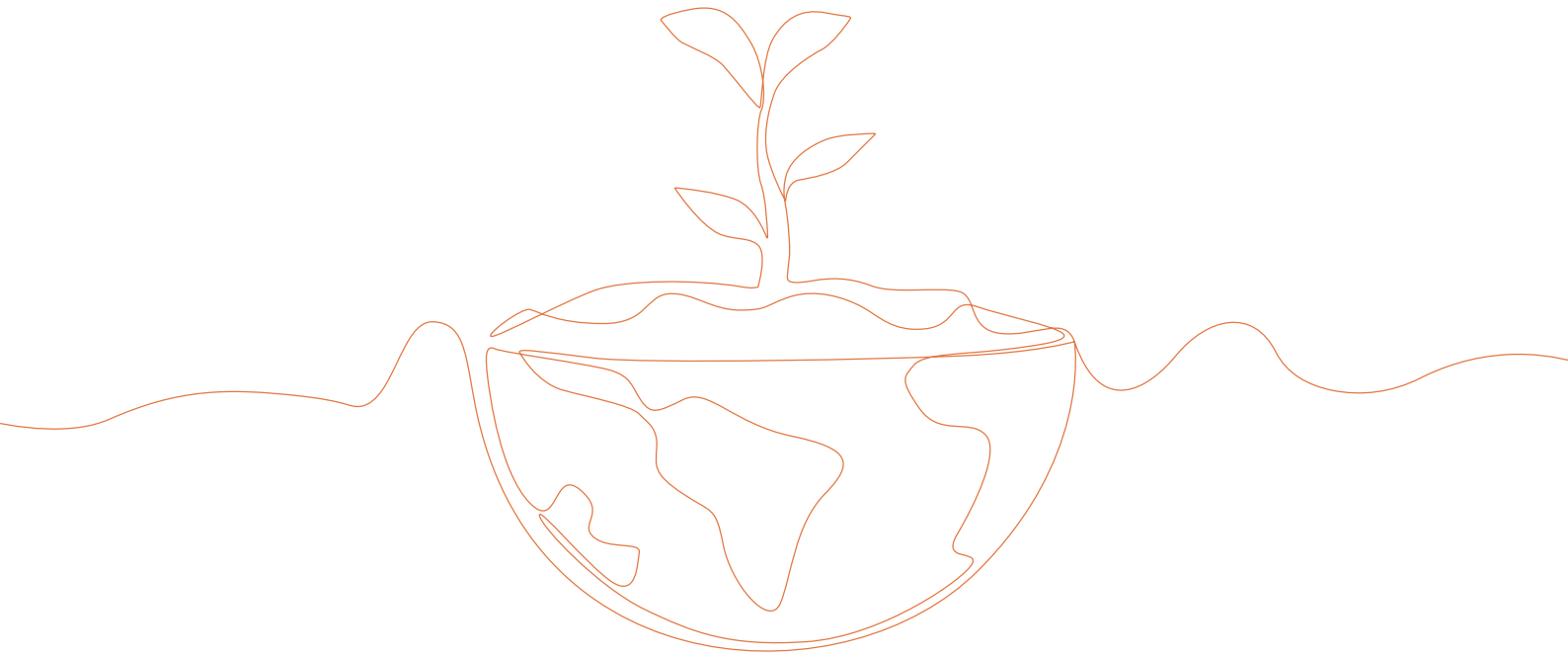
Climate change opportunities matrix



Explanation on climate change opportunities

Issue ▶ Improve the sustainability evaluation results of stakeholders, and increase the willingness of stakeholders in making long-term investments	
Description of Risk Impact	Disclosure of net zero carbon emission schedule and strategy helps build investors' confidence in sustainable practices of the Company.
Financial impact	Increased funding ▲ Rising investor confidence ▲
Actions	• Establish a carbon reduction schedule and goals according to the government's Net Zero Emissions Roadmap • Establish supply chain ESG evaluation
Issue ▶ Recycling raw materials, and simplifying the production process	
Description of Risk Impact	Search for reusable raw materials within factories and make use of them to reduce waste disposal costs.
Financial impact	Reduced costs ▼
Actions	• Increase the amount of purchased cullet and increase the addition rate of recycled cullet • Promote recycling of packaging materials and reduce waste treatment expenses
Issue ▶ Regularly audit and counsel high-risk suppliers to improve supply chain stability	
Description of Risk Impact	Maintain consistent product quality and reduce risk of supply chain changes.
Financial impact	Stable supply ▲ Increased orders ▲
Actions	• Regular audit, evaluation, and counseling of high-risk suppliers • Find new suppliers for alternative supply

Issue ▶ Improve energy efficiency and save operating costs	
Description of Risk Impact	Improve energy efficiency to reduces cost and carbon emissions.
Financial impact	Reduced costs ▼ Reduced carbon fee ▼
Actions	• Cooperate with ITRI to introduce AI-assisted furnace solutions that improve quality and save energy • Introduce energy and resource management system to lower energy consumption • Replace outdated equipment and prioritize purchase of energy efficiency-certified products
Issue ▶ Formulate supplier code of conduct, and implement assessment mechanisms	
Description of Risk Impact	Ensure that suppliers abide by the code of conduct so that TGI may maintain the quality and supply of its products.
Financial impact	Stable supply ▲ Increased orders ▲
Actions	• Every year, Eco-friendly Subcontractors will undergo the Company's evaluation and audit according to the "Evaluation Form for Eco-friendly Subcontractors" • Supplier evaluation norms have been included in the ISO procedure, and quarterly evaluations are carried out
Issue ▶ Obtain public sector incentives, carbon emission reduction cooperation, and carbon trade markets	
Description of Risk Impact	Follow the trend of net zero emissions, and build the Company's corporate image.
Financial impact	Increased orders ▲
Actions	• Install heat recycling equipment according to the Bureau of Energy's heat recycle subsidy project • Regularly renew high energy-consuming and high carbon emission equipment
Issue ▶ Develop low-carbon product designs to meet future market trends	
Description of Risk Impact	Increase production of energy-conserving glass, as low-carbon products help grow market presence and raise competitiveness.
Financial impact	Increased revenue ▲ Reduced carbon fee ▼
Actions	• Continue technical collaborations with foreign firms to guide customers toward adopting lightweight bottle products • Increase purchase of low-carbon materials and continue development of energy-saving glass



Analysis of climate change risk scenarios

TGI is prone to the high risk of climate change. The high elevation difference in Taiwan combined with drastic changes in climate have resulted in uneven precipitation, causing more frequent water shortages in dry seasons in certain regions and more frequent floods during wet seasons. Furthermore, environmental regulations have tightened progressively, and TGI may incur significantly higher expenses in the future due to additional costs and controls relating to carbon emission. Whether it is "physical risk" or "transition risk," we will evaluate thoroughly how they affect us and adopt management practices with the utmost caution.

Through internal analysis and discussion, we have decided to perform scenario analysis on two physical/transition risks that have the "highest impact and highest frequency" on the Climate Change Risk Matrix, which are: "Delays to production schedule due to measures for flood or unstable power supply" and "Imposition of carbon tax by governments around the world." A more detailed explanation is provided below:

Analysis on risk of flood at places of business

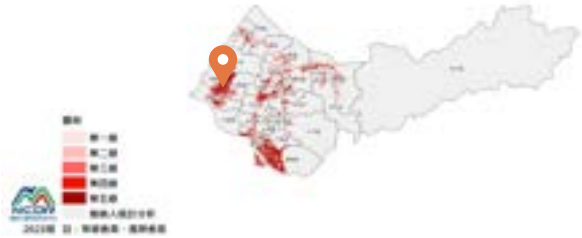
TGI conducted scenario analysis on the physical risk - "Impact of flood and the damage caused to facilities and equipment operations within and outside factories" and included production sites (Taoyuan Factory, Taichung Factory, Hsinchu Factory, Changpin Factory, and Lukang Factory) in the analysis. For this analysis, we followed the 5th evaluation report of Intergovernmental Panel on Climate Change (IPCC) and used Representative Concentration Pathways (RCPs) and Radiative Forcing between the years 2100 and 1750 as indicators. The analysis also adopted scenario RCPs 8.5 and used the information published on the "Climate Change Disaster and Risk Mediation Platform of National Science and Technology Center for Disaster Reduction" to project climate change for the years 2036 to 2065.

Analysis of flood disasters and risks

Taoyuan Factory

Hsinchu Factory

Taichung Factory



Changpin Factory,
Lukang Factory

According to map data analysis, Taoyuan Factory was the only site located in a level 2 risk area, whereas Hsinchu Factory, Taichung Factory, Changpin Factory, and Lukang Factory were all located in a level 5 risk area, indicating high risk of flood. Based on the outcomes derived above, all of TGI's production sites are prone to high risk of flood, and the hazards will only escalate given the increasing prevalence of extreme weathers. For this reason, we will devise proper responses based on the outcomes of this analysis to prevent flooding of factory sites that may disrupt operations or affect employees' commute in the event of extreme weather. We will also take the initiative to evaluate potential hazards and devise management practices and actions in advance.

Note 1: Risk of flood is evaluated using three indicators on severity, vulnerability, and exposure; risk levels are determined using baseline period (1976-2005) and multi-GCM (2036-2065) approach under the RCP8.5 scenario
Note 2: Disaster risk is graded using standards as of the baseline period, whereas the Projected Disaster Risk Chart is derived from a modal analysis of 33 forecast models.
Note 3: A level-5 flood risk indicates highest "relative" risk for the given area, whereas a level-1 flood risk indicates relatively low risk, and not risk-free or disaster-free
Note 4: RCP8.5 is a high emission scenario that assumes an increase of radiative forcing to 8.5 watts per square meter by 2100 while the carbon reduction policy remains unchanged and the rate of greenhouse gas increase stays consistent, and the higher concentration of greenhouse gas in the atmosphere ultimately raises temperature by nearly 4° C, causing unavoidable damage to the global environment

Carbon fee risk analysis

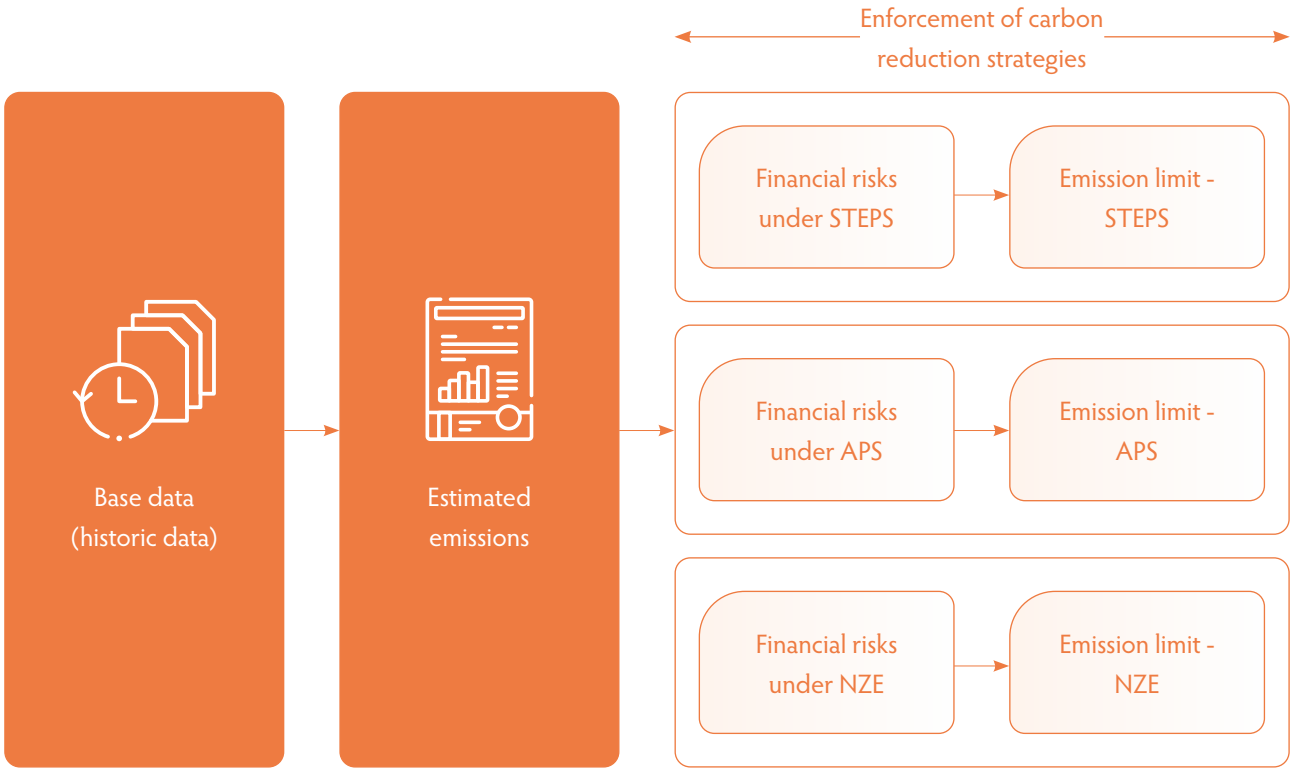
TGI conducted a scenario analysis based on the transition risk of "Governments around the world are starting to formulate carbon pricing mechanisms". In response to the Taiwan government's goal of achieving "net zero emissions by 2050", the Legislative Yuan passed the third reading of the "Climate Change Response Act" in early 2023, and will impose a carbon fee on domestic emission sources starting in 2026. TGI's greenhouse gas emissions (Scope 1 + Scope 2) in 2024 were 551,460.2974 metric tons, making it a major carbon emitter in Taiwan. If the government imposes high carbon fees in the future, the Company's operating costs will rise sharply and have a certain impact on profits.

For this reason, we have analyzed TGI's future emissions using three scenarios proposed by International Energy Agency (IEA), namely the Stated Policies Scenario (STEPS), the Announced Pledges Scenario (APS), and the Net Zero Emissions by 2050 Scenario (NZE). We also adopted two carbon pricing scenarios to accommodate possible changes in carbon tax per unit of emission. These scenarios enabled us to analyze potential carbon taxes up until 2050.

Carbon emission scenarios	We adopted the emissions scenarios proposed by IEA and applied them to forecast changes in greenhouse gas emissions. The scenarios adopted include the following: • Stated Policies Scenario (STEPS) • Announced Pledges Scenario (APS) • Net Zero Emissions by 2050 Scenario (NZE)
Carbon pricing scenarios	We adopted two carbon pricing scenarios to analyze possible changes in carbon tax. The scenarios adopted include the following: • NGFS_2050 Net Zero • Carbon price level - NGFS_below 2° C
Year of assessment	Baseline year: 2024 Years of carbon tax change analyzed: 2024 to 2050
Explanation to scenario calculations	Calculations were made to determine the additional operating costs (unit carbon price*emission volume) and their impact on operations in terms of "operating profit margin" that a business may encounter, after taking into consideration the possible changes in emission level and carbon pricing local and abroad using 3 emissions scenarios (as shown in the following figure) and 2 carbon pricing scenarios.

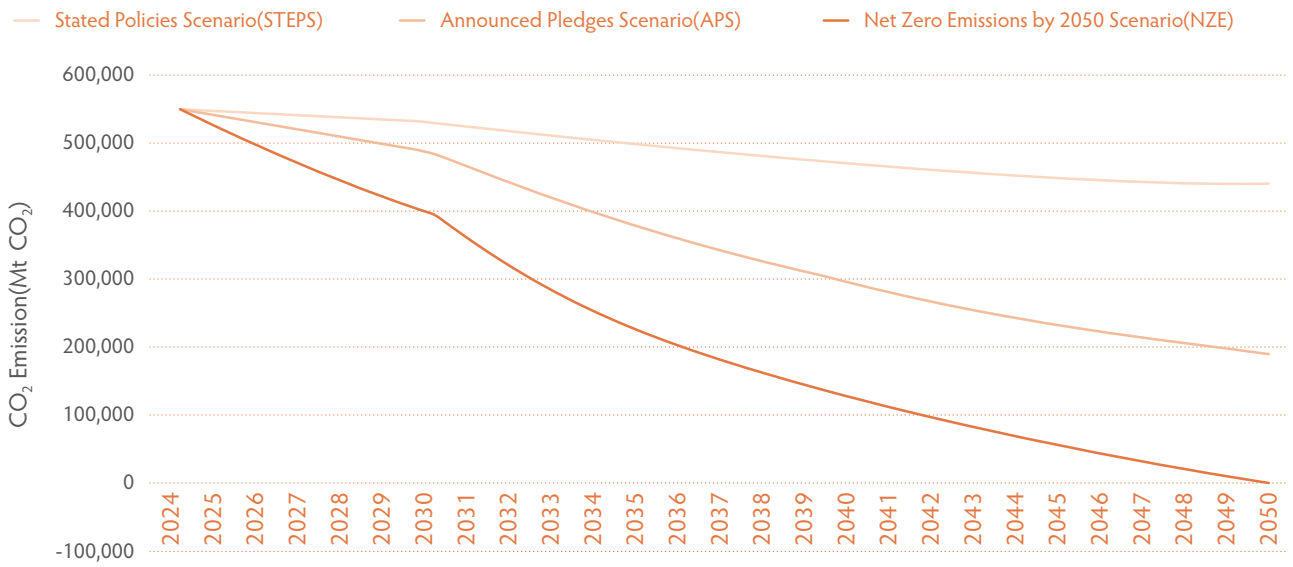
Businesses have to implement rigorous procedures and methods to duly enforce climate-related financial disclosures. Given the prevailing climate change risks, TGI has distinguished climate scenarios into two categories: transition and physical. In the transition scenario analysis, TGI adopted STEPS, APS, and NZE while taking into consideration the possibility of net zero to estimate financial impacts.

Scenario analysis and simulation

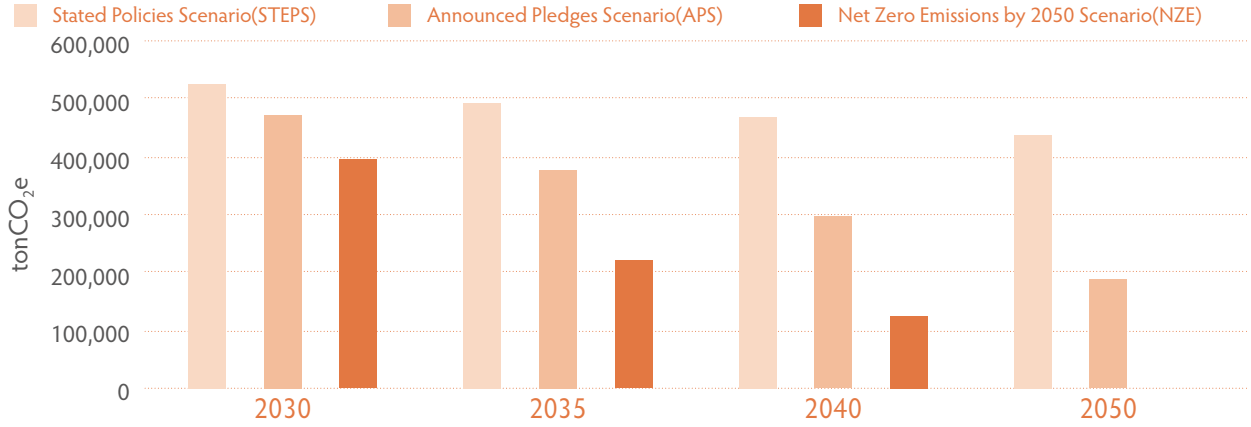


External scenario	Description	Risks assessed	Emission source
STEPS	Assessment based on the government's current carbon emission targets	• Legal risks • Market risks • Reputation risk	Scope 1 + Scope 2
APS	Estimation based on IEA's APS		
NZE	Estimation based on IEA's NZE		

Illustration of TGI's carbon emission trends under different scenarios

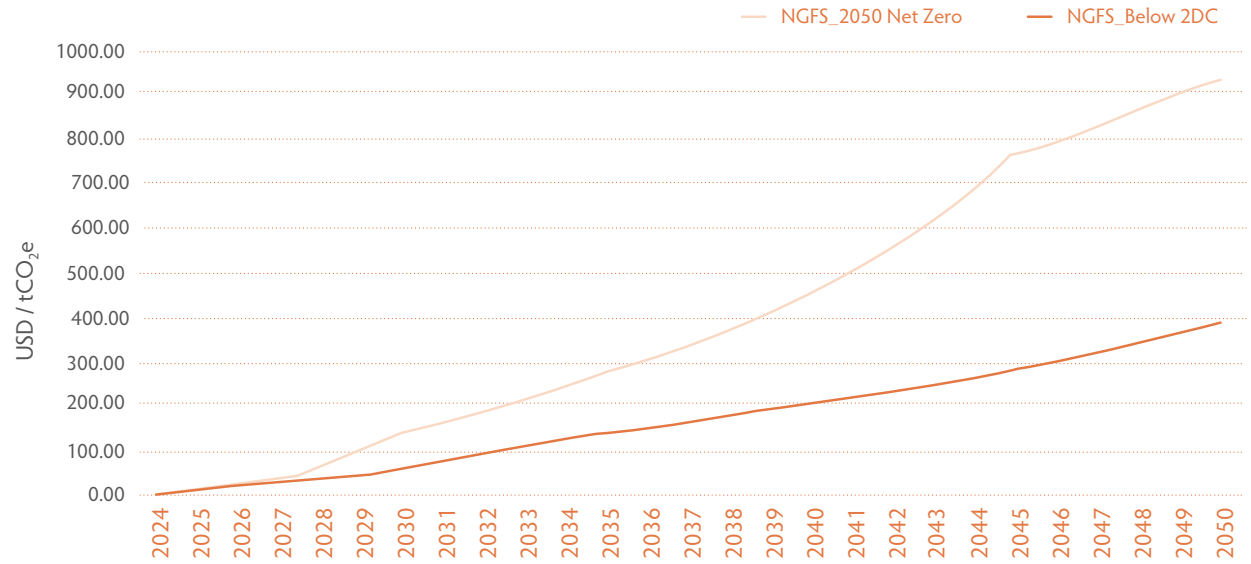


Carbon emission for TGI factories under different scenarios



TGI has evaluated the possible financial impacts associated with climate change by focusing on net zero with less than 2° C warming and by simulating legal, market, and reputation risks. Using the three scenarios proposed by IEA and the two carbon price predictions: "NGFS 2050 Net Zero" and "NGFS Below 2DC," we performed simulations to determine the possible risk exposures between 2024 and 2050 under different scenarios. International or local cost factors were then taken into consideration to estimate possible financial impacts over the medium and long term.

Carbon tax analysis---NGFS carbon pricing scenarios and trends



Outcomes of the scenario analysis suggest that carbon taxes impact TGI significantly in the future. In addition to acquiring renewable energy equipment, we also strive to optimize the percentage of waste reused and explore technological improvements to minimize carbon emission in every stage of product life cycle, thereby providing customers with products that are environment-friendly and of low carbon footprint.

TGI actively enforces the TCFD framework and is committed to improving climate risk management and information transparency. TGI's TCFD report provides a detailed explanation of its climate change responses and strategies, and includes a scenario analysis that evaluates how different climate scenarios affect business operations. Through this report, TGI demonstrates the commitment and actions it has made toward reducing carbon emissions and promoting sustainability. For more details, please refer to TGI's TCFD report.

chapter 5

Safe Workplace, Trust, and Growth

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Employee Care Performance of 2024

155%

TGI's entry-level employees were paid 155% of the local minimum salary on average

250%

We strictly abide by government labor laws and employ people with disabilities at a rate that is 250% higher than the legal requirement

32 people

32 people of indigenous origin were hired, which demonstrated the organization's attention to diversity

80.75%

80.75% of employees had taken up birthday leaves in 2024

90%

In 2024, the average retention rate for men and women returning from parental leave reached 85.19%, with women reaching 90%

100%

100% of senior managers were locally hired; in doing so, TGI created job opportunities for Taiwanese talents to the benefit of local residents

29.46

A total of 42 employees retired in 2024; the retirees averaged 29.46 years of service

15.2hours

The average number of hours of education and training per person for general employees of TGI in 2024 was 15.2 hours

Certification

- Obtained Healthy Workplace certification from the Ministry of Health and Welfare
- TGI Building was awarded the "Excellent Breastfeeding Room" certification by the Taipei City Government's Department of Health
- Changpin Plant was awarded the "Changhua County Friendly Breastfeeding Room" certification by the Changhua County Public Health Bureau

Awards

- Lukang Plant was awarded the "Excellent Performer in Over-quota Employment of Persons with Disabilities" by the Changhua County Government

5.1 Human resources and welfare

TGI regards talent as the cornerstone of sustainable development and firmly believes that only by creating a work environment that prioritizes safety, respect, and growth can we unleash employee potential and enhance organizational resilience and competitiveness. Therefore, TGI prioritizes employees' working environment, career development, and physical and mental care, and continuously optimizes system design, paying full attention to employee needs to create a people-oriented workplace culture. In addition, we offer a minimum wage that exceeds legal requirements and regularly adjust overall remuneration based on market salary levels. We also distribute bonuses fairly based on overall operating conditions and individual employee performance, regardless of gender, age, race, religion, political stance, marital status, union membership, or other factors. In the future, TGI will continue to strengthen the connection between human resources strategy and sustainable development, deepen employee value commitment, and enhance overall organizational resilience and sustainable competitiveness.

TGI's workforce structure

TGI employees are all directly hired, with no dispatched personnel, resulting in a stable and healthy workforce structure. As of the end of 2024, TGI employed a total of 3,861 people. There was no significant fluctuation in the number of employees during the reporting period. Among them, a total of 1,150 local Taiwanese managers were employed, and the employment ratio of local senior managers was 100%, creating a positive impact on promoting local employment.

Due to the characteristics of our industry, TGI has more male than female employees. Although there is a gender gap in the employee ratio, we continue to strive to create a diverse workplace. TGI has business locations throughout northern, central, and southern Taiwan, and employs employees on a permanent or contract basis. Detailed statistics on the distribution of employees (including domestic and foreign employees) are as follows:

Nationality/gender structure of employees over the years

Year		2022		2023		2024	
Item	Category	Male	Female	Male	Female	Male	Female
Nationality	Taiwanese employees	2,800	531	2,594	510	2,481	502
	Foreign employees	544	104	615	98	766	112
	Subtotal	3,344	635	3,209	608	3,247	614
Employee size		3,979		3,817		3,861	

Regular/Contract Employee Structure

Item	Category	Male		Female		Total	
		Head count	Percentage	Head count	Percentage	Head count	Percentage
Contract type	Permanent employees	2,392	80.19%	496	16.63%	2,888	96.82%
	Contract employees	89	2.98%	6	0.20%	95	3.18%
	Total	2,481	83.17%	502	16.83%	2,983	100%

Note: Excludes foreign employees

Seniority distribution

Item	Category	Male		Female		Total	
		Head count	Percentage (%)	Head count	Percentage (%)	Head count	Percentage (%)
Years of service	5 years and below	907	23.49%	186	4.82%	1,093	28.31%
	6-15 years	1,201	31.11%	177	4.58%	1,378	35.69%
	16-24 years	732	18.96%	139	3.60%	871	22.56%
	25 years and above	407	10.54%	112	2.90%	519	13.44%
	Subtotal	3,247	84.10%	614	15.90%	3,861	100.00%

Employee age distribution

Item	Category	Male		Female		Total	
		Head count	Percentage (%)	Head count	Percentage (%)	Head count	Percentage (%)
Age	30 and below	568	14.72%	121	3.13%	689	17.85%
	Age 31-40	1,033	26.75%	206	5.34%	1,239	32.09%
	Age 41-50	1,156	29.94%	217	5.62%	1,373	35.56%
	Age 51 and above	490	12.69%	70	1.81%	560	14.50%
	Subtotal	3,247	84.10%	614	15.90%	3,861	100.00%

Distribution of education background

Item	Category	Male		Female		Total	
		Head count	Percentage (%)	Head count	Percentage (%)	Head count	Percentage (%)
Academic back-ground	Masters & above	128	4.29%	12	0.40%	140	4.69%
	Bachelor Degree	1,564	52.43%	343	11.50%	1,907	63.93%
	Senior high school and below	789	26.45%	147	4.93%	936	31.38%
	Total	2,481	83.17%	502	16.83%	2,983	100.00%

Note: Excludes foreign employees.

Distribution of managerial roles

Nature of work	Gender	Total Head count	Percentage (%)	Aggregate percentage (%)
General employees	Male	2,235	57.89%	70.21%
	Female	476	12.33%	
Entry-level managers	Male	919	23.80%	27.01%
	Female	124	3.21%	
Mid-level managers	Male	76	1.97%	2.31%
	Female	13	0.34%	
Senior managers	Male	17	0.44%	0.47%
	Female	1	0.03%	
Total		3,861	100%	

Recruitment and attrition

TGI reviews employee resignations annually to enhance overall human resource stability. In 2024, the number of employees who resigned was 320, with a turnover rate of 10.73%, a decrease of 2.87% from 2023. The turnover rate has remained below 15% for three consecutive years. We regularly conduct employee resignation analyses and use them as a basis for improving employee experience and workplace environment in the future.

In terms of recruitment and talent retention, TGI actively invests in diversified recruitment platforms to expand the exposure and reach of job vacancies to attract more outstanding talents to join. In 2024, a total of 206 new employees were hired, with a new hire rate of 6.91%. In addition, new hires are arranged to participate in "Occupational Safety and Health" and "Company System and Standards" related courses on their first day of work to lay a solid foundation for safety and standard awareness. Through a comprehensive human resource recruitment and coaching mechanism, we help new employees quickly adapt to the workplace environment and work content, thereby enhancing organizational vitality and resilience.

Number of new hires in 2024

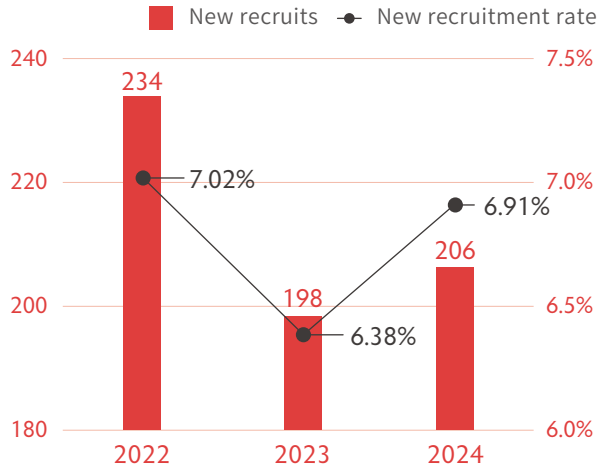
Location	Head count	Gender		Age							
				Male				Female			
		Male	Female	30 and below	Age 31-40	Age 41-50	Age 51 and above	30 and below	Age 31-40	Age 41-50	Age 51 and above
Northern Taiwan	129	88	41	27	27	15	19	24	12	4	1
Central Taiwan	77	61	16	27	14	15	5	7	7	2	0
Total	206	149	57	54	41	30	24	31	19	6	1

Number of resigned employees in 2024

Location	Head count	Gender		Age							
				Male				Female			
		Male	Fe-male	30 and below	Age 31-40	Age 41-50	Age 51 and above	30 and below	Age 31-40	Age 41-50	Age 51 and above
Northern Taiwan	171	127	44	27	42	30	28	18	17	4	5
Central Taiwan	149	128	21	31	47	36	14	6	8	6	1
Total	320	255	65	58	89	66	42	24	25	10	6

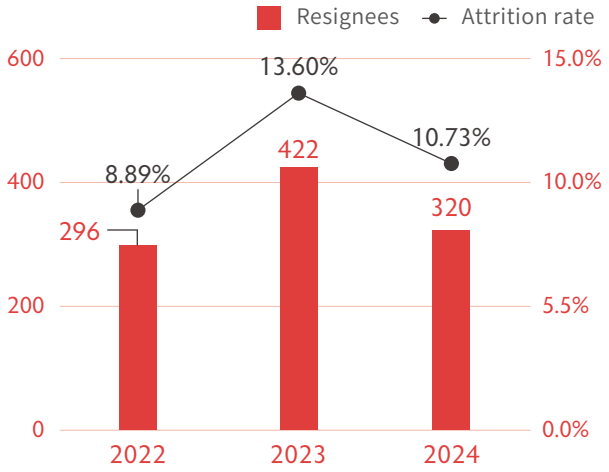
Note1: The number of new recruits and resignees excludes those who are on extended unpaid leave and internal transfers.
Note2: Northern area: includes the Headquarters, Taoyuan Factory, and Hsinchu Factory; central area: includes Taichung Processing Factory, Lukang Factory, Lukang Flat Glass Factory, and Changbin Factory.

New recruitment rates in previous years



Note1: New recruitment rate (%)= No. of new recruits for the given category of the year/total local employees for the given category at the end of year.

Attrition rates in previous years



Note1: Attrition rate (%)= No. of resignees for the given category of the year/total local employees for the given category at the end of year.

Human Rights Protection and Talent Employment

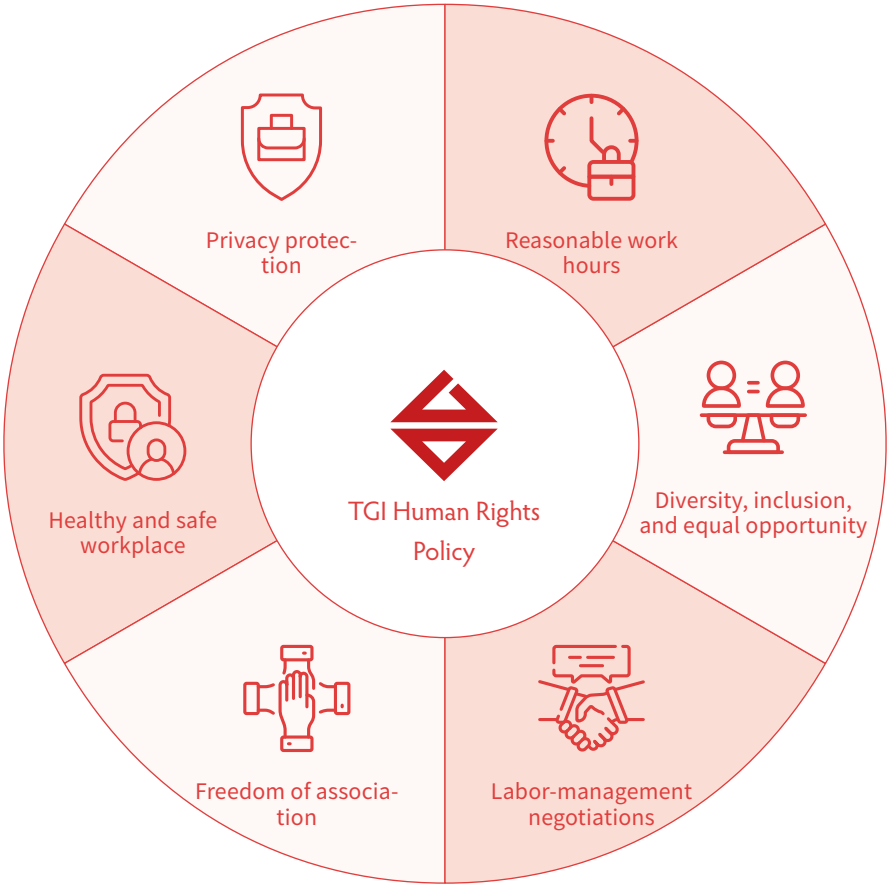
TGI adheres to international human rights standards, including the United Nations International Labour Organization, the United Nations Global Compact, the United Nations Guiding Principles on Business and Human Rights, and the United Nations Universal Declaration of Human Rights. We have established and promoted the "TGI Human Rights Policy" and respect the basic protections set forth in human rights conventions. Policies cover the prohibition of child labor, care for vulnerable groups, freedom of association, elimination of all forms of forced labor, and elimination of hiring and employment discrimination. There were no major complaints in 2024.

TGI Human Rights Policy

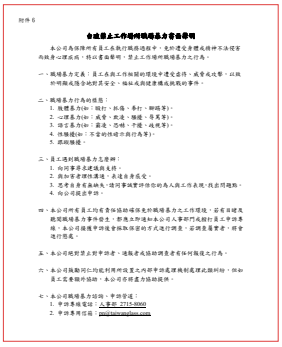
To strengthen human rights protection practices, the Company has also formulated a number of management policy documents, including: "Written Statement Prohibiting Sexual Harassment in the Workplace", "Workplace Sexual Harassment Prevention Measures, Complaints and Disciplinary Standards", and "Written Statement Prohibiting Workplace Violence". Through institutionalized management mechanisms, we prevent and eliminate improper treatment and create a safe, respectful and equal working environment.

TGI's human rights policy applies to all departments; it promotes and improves human rights through six main themes:

TGI Human Rights Policy



TGI upholds principles of integrity and fairness when recruiting talents, and complies with government regulations with respect to the sourcing, testing, and hiring of talents. TGI sets salaries based on candidate' education background and work experience while taking into consideration the responsibilities borne, grade, professional capacity, and overall performance. In addition to complying with the Labor Standards Act and relevant workplace and labor regulations, TGI does not discriminate or differentiate in terms of compensation based on ethnicity, social status, religion, language, thoughts, political party, origin, place of birth, gender, sexual orientation, age, marital status, looks, physical/mental disability, blood type, zodiac sign, or previous union affiliation for the protection of employees' human rights.



附件 6

台玻股份有限公司工作場所暴力防治聲明

本公司為保障所有員工在執行職務過程中，免於遭受身體或精神不法侵害與損害之保障起見，特以書面聲明，禁止工作場所暴力之行為。

一、暴力定義：員工在與工作相關的環境中遭受威脅、威脅或攻擊，以致於明顯或隱含地危害安全、福祉或健康機或機會事件。

二、暴力行為的類型：
1. 肢體暴力(如：毆打、扑擊、推打、踢踢等)。
2. 心理暴力(如：威脅、恐嚇、騷擾、辱罵等)。
3. 語言暴力(如：嘲笑、恐嚇、中傷、威脅等)。
4. 性騷擾(如：不當的性暗示與行為等)。
5. 跟蹤騷擾。

三、員工遭到暴力怎麼辦：
1. 向同事表達抗議或警。
2. 與如家老闆快溝通，表達自己感受。
3. 恐有自己有論缺失，請同事調解評估他的為人與工作表現，找出問題點。
4. 向公司提出申訴。

四、本公司所有員工均有責任協助確保免於暴力之工作環境，若有目睹或聽聞暴力事件發生，即應立即通知本公司人事部門或執行員工申訴專線，本公司保護申訴後者與配保密的方式進行調查，若調查屬實者，將會進行懲處。

五、本公司絕對禁止對申訴者、通報者或協助調查者有任何報復之行為。

六、本公司鼓勵同仁均能利用所設置之內部申訴處理機制處理此類問題，但如員工需要額外協助，本公司亦將提供協助機制。

七、本公司暴力防治，申訴管道：
1. 申訴專線電話：人事部-2715-8000
2. 申訴專用信箱：pm@taiwanglass.com

Written statements on prohibition of workplace violence

TGI complies with government regulations on quota employment for people with disabilities and is committed to providing a stable and developmental work environment so that employees with disabilities can find employment with peace of mind and utilize their expertise.

Lukang Plant was awarded the Changhua County's 2024 "Excellent Employers for Exceeding the Quota of Persons with Disabilities". By continuously optimizing workspaces and equipment, it allows employees with disabilities to find peace of mind in their jobs, affirm themselves, and realize their potential and stable value.

TGI employs an average of **95** people with disabilities each month

More than **250%** higher than the regulatory standards

- In 2024, TGI employed 32 Indigenous employees, demonstrating its commitment to diversity in employment.
- No incidents of human rights violations against indigenous peoples occurred in 2024.

Human rights risk control program - 2024

Concerned issues	Risk Mitigation Measures	Impact Compensation Measures
Workplace Health	1. Employee health checks are implemented every two years to help employees keep track of their own health. 2. Occupational physicians and nurses regularly review health checkup reports and provide health consultation, guidance, and care.	1. Abnormal items in the health checkup will be reported and followed up by the cooperating hospital. 2. Analyze ov e rall health checkup results and plan health promotion activities and lectures. 3. Encourage the establishment of sports clubs and subsidize club-related expenses.
Workplace Safety	1. Arrange occupational safety education and training for new employees. 2. Provide occupational safety education and training for on-the-job employees. 3. Organize fire drills to enhance disaster prevention awareness. 4. Promote four major occupational safety initiatives.	1. Occupational accident reporting and handling procedures. 2. An emergency medical kit is available for use. 3. Occupational physicians and nurses are stationed on site regularly to provide consulting services. 4. Regular meetings of the Occupational Safety and Health Committee are held to discuss issues.
Workplace Diversity	1. Any form of discrimination is prohibited for a friendly workplace environment. 2. Employees with disabilities are employed in full according to laws and regulations.	1. Effectively controlling the number and proportion of employees with disabilities. 2. Building a supportive workplace environment. 3. The total number of disabled employees employed by the Group exceeds the legally required number.

Fostering a diverse and friendly work environment

Birthday leave

Friendly workplace column - birthday leave for employees

The Company has set its goals to create a satisfying work environment that "cares for employees and brings joy to work." As a gratitude for employees' contribution, the Company introduced birthday leave as a benefit in 2019, which allows employees to take one day off in their birth month.

Execution of birthday leave - 2024

No. of employees entitled to birthday leave (A)	No. of employees applied for birthday leave (B)	Execution rate (B/A)(%)
3,028	2,445	80.75%

Execution of parental leave

TGI has consistently upheld the philosophy of "giving equal importance to work and family". There is no discrimination based on gender when applying for parental leave, and all employees are entitled to parental leave. Employees may apply for unpaid leave according to law during the period of parenting. Between 2023 and 2024, 27 employees of TGI applied for parental leave, including 8 female employees and 19 male employees, accounting for 29.63% and 70.37%, respectively. Among them, 21 employees returned to work in 2024, with a reinstatement rate of 77.78%. The retention rate for employees in 2024 was 85.19%, with both male and female retention rates exceeding 80%.

Unpaid parental leave - 2024	Male		Female		Total	
	Head count	Percentage	Head count	Percentage	Head count	Percentage
A. Number of people who should be reinstated (=B+C)	19	70.37%	8	29.63%	27	100.00%
B. Number of people reinstated after their term	14	51.85%	7	25.93%	21	77.78%
C. No. of employees resigned when due	5	18.52%	1	3.70%	6	22.22%
D. Reinstatement rate (B/A) %	73.68%		87.50%		77.78%	
E. Number of people returning to work after parental leave in 2023	19	61.29%	12	38.71%	31	100.00%
F. The Number of Employees who were be reinstated after the end of their Unpaid Parental Leaves in 2023 and were be employed for one year in 2024	14	51.85%	9	33.33%	23	85%
Retention Rate F/E %	73.68%		75.00%		74.19%	

Note 1: Reinstatement rate = Actual number of reinstated employees in the reporting year / Number of employees who should have been reinstated in the reporting year
Note 2: Retention rate = Number of people who have returned to work for one year after the reporting year before / Number of people who have returned to work in the year before the reporting year

Maternity-friendly workplace

TGI prioritizes employee well-being and is committed to creating a supportive and friendly work environment. We continue to promote maternity protection and workplace equality measures, including the following key initiatives:

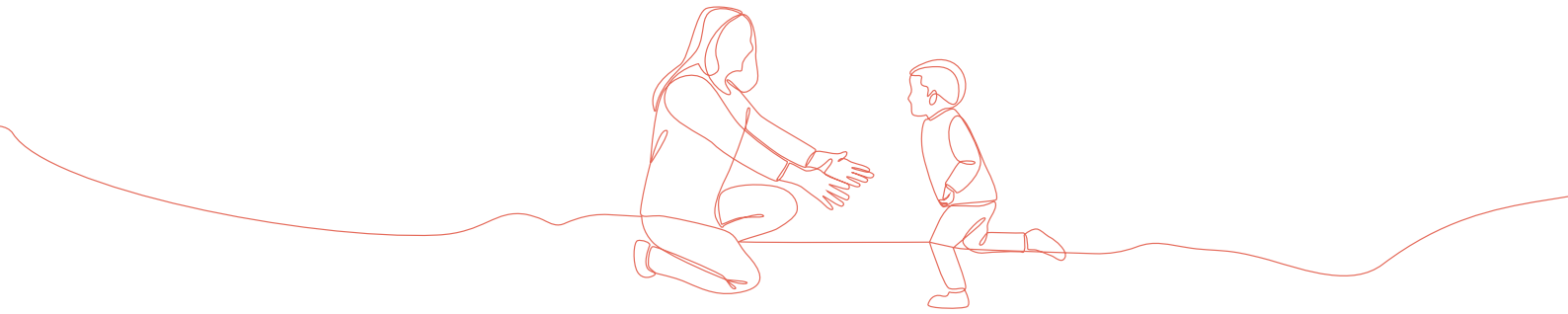
- Health care and work adjustment: Conduct work safety interviews and provide health education information for all female employees, especially those who are pregnant or within one year of giving birth. A total of 6 people were interviewed at Hsinchu Factory in 2024. In addition, Taoyuan Plant has adjusted pregnant female employees to day shifts and arranged for occupational physicians to interview pregnant female employees to help them balance their physical and mental health with work needs.
- Improve breastfeeding space and equipment: Comfortable and private breastfeeding rooms are set up throughout the factory, featuring soft colors, door locks, and reminders during use. These rooms are cleaned daily and refrigerator temperatures are monitored. We provide a full set of equipment, including breast milk bags, glass bottles, nursing pillows, breast milk refrigerators, pure water wipes, bottle sterilizers, etc., which are available for employees to use free of charge to assist them in continuing breastfeeding smoothly.
- Continuous support and care: In addition to hardware facilities, we also regularly provide breastfeeding and childcare information, psychological support, and experience-sharing activities to establish a platform for mutual assistance and communication among employees, helping female employees balance their work and family roles.

We have been awarded the "Taipei City Government Health Bureau's Excellent Breastfeeding Room Certification", and will continue to create a friendly breastfeeding environment in the future.

Headquarters

Hsinchu Factory

Changpin Factory: Received the "Changhua County Friendly Breastfeeding Room" certification from the Changhua County Public Health Bureau



Employee salary and benefits

Fair performance management and remuneration system

TGI adheres to the principles of fairness and work performance orientation, and uses "efficiency" and "responsibility" as key assessment points. It has established a differentiated bonus system, which comprehensively evaluates employees' academic background, professional knowledge and skills, years of professional experience, and personal performance to establish an attractive salary structure.

TGI's employee performance evaluation process:

Initial goal setting

Heads of each unit discuss and set expected results based on the work of their employees.

Mid-term performance interview

Discuss and track work execution results periodically, and provide appropriate feedback and incentives.

Confirmation of final results

Work results are assessed every quarter.

In 2024, the gender base salary ratio for TGI's general employees was 1:0.95, with an overall difference of less than 0.05. There was no significant difference in basic salary. This slight difference reflects the differences in job content and seniority. In 2024, the average salary of non-supervisory full-time employees at TGI was NT$682,000, and the median was NT$647,000. We adhere to the principle of equal pay for equal work, regardless of gender, race, religion, political stance, marital status, or union membership. Furthermore, TGI's Human Resources Department continuously tracks and analyzes the salaries of general employees, and the average salary exceeds the statutory salary by more than 155%.

The Company's total number of full-time non-supervisory employees in 2024 was 3,761, with an average salary of NT$682,000, an increase of 11.21% over the previous year; the median salary was NT$647,000, an increase of 10.98% over the previous year.

Salaries of full-time employees who do not hold supervisory positions

Year	2022	2023	2024	Differences between 2023 and 2024
Employee count	3,939	3,872	3,761	-111
Total salary	2,667,724	2,373,862	2,564,362	8.02%
Average salary	677,000	613,000	682,000	11.26%
Median salary	631,000	583,000	647,000	10.98%

Number and percentage of employees who receive regular performance and career development reviews

Category	Total		Number of people receiving performance evaluation		Percentage	
	Male	Female	Male	Female	Male	Female
Managerial role	1,012	138	1,012	138	100%	100%
General employees	1,469	364	1,469	364	100%	100%
Percentage of employees subject to performance evaluation	100%					

Note: Except for blue-collar foreign employees and employees who have not completed their probation period, all other employees are required to undergo regular performance evaluations

Employee Welfare Committee

To safeguard the welfare of all employees, in addition to the basic statutory benefits, TGI has also planned a variety of welfare plans and provided relevant subsidies to help employees balance work and life. The Employee Welfare Committee oversees welfare of TGI employees, and is responsible for the arrangement and execution of employee benefits. Overview of existing welfare measures:

TGI Employee Care and Welfare Facilities		Benefits more favorable than the Labor Standards Act
Healthcare	Employee health checkups that are more favorable than what the laws require.	V
	Privileged health checkup packages for employees' dependents.	V
	Stationed physicians and nurses or on-site labor health service.	
	Enforcement of the four occupational safety programs and employee health management	
	Active support for sports clubs and health seminars.	V
	Construction of basketball court, fitness center, and table tennis room.	V
	Introduction of after-work sports courses (employee hobby survey).	V
Lifestyle care	Availability of employee diner, dormitory, and nursery room.	
	Employee meal subsidy (50%)/travel subsidy/club activities subsidy.	V
	Birthday, wedding, funeral, and birth cash/gift	V
	Extended unpaid compassionate leave	V
	Comprehensive death benefit system.	V
	Unpaid parental leave for employees.	
Festive care	Birthday leave	V
	Festive cash.	V
	Year-end party/cash.	V
	Labor Day cash.	V
Learning care	Introduction of employee development program and complimentary language course.	V
	Incentives for ongoing education.	V
	Children's education scholarship.	V
Insurance care	Group accident insurance coverage that is more favorable than what the laws require, which employees and dependents may subscribe to at a discounted rate.	V
	Travel insurance for business trips/expatriates.	V

TGI actively recognizes the efforts and achievements of its employees and provides appropriate encouragement to those who have made substantial contributions to boost team morale and cohesion. In 2024, a total of 21 employees were awarded for their outstanding performance.

Changpin Plant awards outstanding employees

We also value the physical and mental health of our employees and workplace cohesion. In addition to continuously organizing sports competitions and travel activities, each site has also actively responded to the establishment of spontaneous sports clubs. This year, we also plan to cooperate with the sports center to organize boxing aerobic classes to continue to create a diverse and dynamic working environment.

Employees from Taipei Headquarters established a badminton club

Hsinchu Factory organized two batches of tourism activities for foreign migrant workers in 2024, including one-day tour to Chungshe Tourist Flower Market and barbecue event.

Changpin Plant held a badminton competition, with a total of 20 employees signed up to participate in 2024

Changpin Plant held a table tennis competition, with a total of 32 employees signed up for the competition in 2024

Retirement system

TGI has established retirement regulations in accordance with the Labor Standards Act and the Labor Pension Act. Employees who joined the Company before June 30, 2005 (inclusive) are entitled to the old pension system. However, they will only be entitled to the new pension system after they freely choose to switch to the new pension system. Currently, the employee participation rate in the retirement plan has reached 100%, and senior executives are awarded retirement medals by senior management as a token of appreciation. The Company has professional consultants calculate retirement reserves every year to ensure sufficient funds are allocated.

In addition, TGI has established a post-retirement contract re-employment system to assist employees in a smooth transition and promote technology inheritance. At the same time, it complies with policies to introduce mid-level migrant workers to strengthen labor force stability and skill continuity.

Old pension scheme

For every employee under the old pension scheme, the employer contributes an amount equal to 6% of monthly salary into a pension account held with the Central Trust of China

New pension scheme

- The employer contributes an amount equal to 6% of monthly salary into employee's pension account
- Employees may choose to make additional pension contributions of 0%-6%

Employee communication channels

	2022	2023	2024
Labor Retirement Reserve Account (NT$)	1,676,598,000	1,679,420,000	1,820,215,000
Number of retirees	52	75	42
Employee size	3,979	3,817	3,861
Employees' participation rate in retirement plans	1,33%	1.96%	1.09%
Average years of service (years)	26.81	27,78	29.46

Employee communication channels

Union

TGI complies with international labor conventions and relevant laws such as domestic trade union laws, and respects and protects employees' freedom of association and assembly.

1. TGI guarantees employees' freedom of association and complies with relevant laws and regulations such as international labor conventions and domestic trade union laws. Company unions have been established at Hsinchu, Taichung, and Lukang Factories.
2. The Company respects the union's freedom of assembly. When the union holds a member representative conference, the Company will provide subsidies for meals and gifts.
3. TGI respects the collective bargaining rights of labor unions and has signed a collective agreement with Lukang Plant's labor union.

TGI complies with international labor conventions and relevant laws such as the Taiwan Labor Union Act. Labor unions have been established at some of its production facilities. The Company signed a collective agreement with Lukang Plant's labor union on September 11, 2018. The agreement expired on October 20, 2021, and was renewed on November 12, 2024. The current agreement is valid until November 2027. The agreement covers the scope of application, how new employees report to the union and participate, the convening of the union member representative conference and company subsidies, conference leave, the validity period of the agreement, and the renewal method. It covers the union members of Lukang Plant, with a coverage rate of approximately 20%. Hsinchu and Taichung Factories' labor unions are in the process of negotiating with the Company, so a collective agreement has not yet been signed. The headquarters, Taoyuan Plant, and Changpin Plant do not have a labor union and therefore have not signed a collective agreement. Labor-management meetings are established and held regularly in accordance with the law to ensure that employee rights and needs are valued and properly addressed.

The union holds a member representative conference every year and board of directors and supervisors meetings every three months to discuss issues such as employee benefits, meals, insurance, and travel. The Company has established an electronic suggestion box, bulletin board and dedicated telephone line as channels for feedback, and assigns personnel to respond according to the topic. The Company also provides substantial support for union activities, such as providing dinner and gift subsidies during member meetings to promote healthy interaction, communication and coordination between labor and management, and practice labor-management harmony.

Union participation by factory - 2024

Factory	Hsinchu Factory	Taichung Factory
Male	530	158
Female	267	17
No. of union members	797	175
Employee count	834	241
Percentage	96%	73%

Note1: Hsinchu Factory does not include foreign workers, and all employees are union members.
Note2: There are no labor unions at Taoyuan Plant, Lukang flat panel Plant, or Changpin Plant.
Note3: Lugang Plant's labor union was unable to provide relevant information.

2024 Labor Union's Representative Conference

Union Representatives Conference of Taichung Factory

Union Representatives Conference of Hsinchu Factory

Minimum notice period for operational changes

TGI is bound to serve the following notice periods in the event that employment contract is terminated in accordance with the exception clause stated in Article 11 or Article 13 of the Labor Standards Act:

1. For those who have worked continuously for more than 3 months but less than 1 year, 10 days' notice is required.
2. For those who have worked continuously for more than 1 year but less than 3 years, 20 days' notice is required.
3. For those who have worked continuously for more than 3 years, 30 days' notice is required.

5.2 Talent Development and Training

TGI attaches great importance to the cultivation of professional talents and regards professional manpower as a key asset for the sustainable development of the Company. We are committed to helping employees plan their career development and enhance their personal potential. Based on an annual survey and analysis of organizational strategies and training needs, the Company arranges dedicated personnel to plan a comprehensive and diverse education and training system, covering new employee training, on-the-job training, management function development, and self-growth courses, establishing a learning path from general to professional courses. In addition, through systematic education and training, such as standardizing work procedures for entry-level employees, optimizing management functions for supervisors, and promoting workplace safety and health education, we continuously strengthen employees' awareness of issues such as human rights protection, workplace safety, and regulatory compliance. We cultivate the professional capabilities of talents in emerging fields such as optoelectronics, energy saving and touch panels, and strengthen the depth of technology and competitiveness of talents.

In 2024, the average education and training hours at TGI were 15.2 hours per general employee, 18.9 hours for entry-level supervisors, 8.3 hours for mid-level supervisors, and 4.2 hours for senior supervisors.

TGI's general employees averaged **15.2** hours of training per person in 2024

Statistics on 2024 employee training

Item	Factory	Male		Female		Total	
		Head count	Hours	Head count	Hours	Head count	Hours
General employees	Headquarters	34	255	34	215	68	470
	Taoyuan Factory	137	4012.9	67	2026	204	6038.9
	Hsinchu Factory	509	6870.2	78	1186.5	587	8056.7
	Taichung Factory	128	1356.5	20	204.5	148	1561
	Lukang Factory	558	7224	173	1957	731	9181
	Lukang Flat Glass Factory	109	1636.7	9	101	118	1737.7
	Changpin Factory	160	3465.2	25	328.9	185	3794.1
	Subtotal	1635	24820.5	406	6018.9	2041	30839.4
	Average hours	15.2		14.8		15.1	
Entry-level managers	Headquarters	44	263.5	74	364.7	118	628.2
	Taoyuan Factory	143	3955.3	17	523	160	4478.3
	Hsinchu Factory	296	6098.1	16	559.2	312	6657.3
	Taichung Factory	106	1909.4	3	22	109	1931.4
	Lukang Factory	209	2875.3	18	183.8	227	3059.1
	Lukang Flat Glass Factory	62	1063.1	1	11	63	1074.1
	Changpin Factory	85	1654.5	1	5	86	1659.5
	Subtotal	945	17819.2	130	1668.7	1075	19487.9
	Average hours	18.9		12.8		18.1	

Item	Factory	Male		Female		Total	
		Head count	Hours	Head count	Hours	Head count	Hours
Mid-level managers	Headquarters	26	111	14	83	40	194
	Taoyuan Factory	1	7.3	0	0	1	7.3
	Hsinchu Factory	16	112	1	8.5	17	120.5
	Taichung Factory	8	180	0	0	8	180
	Lukang Factory	5	27.3	0	0	5	27.3
	Lukang Flat Glass Factory	2	18	0	0	2	18
	Changpin Factory	1	34	0	0	1	34
	Subtotal	59	489.6	15	91.5	74	581.1
	Average hours	8.3		6.1		7.9	
Senior managers	Headquarters	9	15	1	1	10	16
	Hsinchu Factory	0	0	0	0	0	0
	Changpin Factory	1	1.5	0	0	1	1.5
	Subtotal	10	16.5	1	1	11	17.5
	Average hours	1.65		1.0		1.6	

TGI's employee education system

Education and training for new hires

New recruit reports to duty ▶ Manager assigns appropriate counselor ▶ Plan a 3-month course ▶ Monthly evaluation and recording of new employee's performance ▶ Probation ends; converts into permanent position based on performance

Evaluate individual performance, adjust work nature where necessary, and offer counseling for improvements

Common courses

Including Group introduction, employee handbook and employee regulations, Occupational Health and Safety education and training, human resources system, reading of professional documents, and the addition of "Administrative Regulations for the Prevention of Insider Trading" in 2020

Specialist courses

Includes department-specific courses, factory assignments etc.

TGI introduced a 'Counselor system for new recruits' in 2019 to facilitate transfer of experience and tacit knowledge among employees. In this system, we assign senior counselors who are familiar with the organization's culture and skills to care for, guide, and teach new recruits on a one-to-one basis. Through this employee mutual assistance mechanism, new employees can more quickly integrate into the organizational culture, adapt to the work environment, and improve retention rates. In 2024, a total of 17 people were promoted to full-time employees upon completion of their terms.

On-job training

1. Yearly training plan: At the end of each year, the Company instructs all departments to plan their course requirements so that course timing and orientation can be planned ahead for the following year.
2. External training request: Each department may assign employees to undergo external training as deemed necessary to improve professional knowledge and skills.

Diverse training

TGI offers a diverse range of training courses in accordance with legal requirements and the needs of various factories to help employees expand the diversity of their knowledge and skills.

Routine training - Headquarters

Routine regulatory education and training conducted by the headquarters in 2024			
Course	Description of Item	Number of Events	Enrollments
Occupational Safety and Health Training	Help colleagues establish workplace safety awareness, analyze and introduce the causes of various disasters, avoid disasters and reduce risks, and improve workplace safety.	2 time(s)	185
Self-defense Firefighting Team Training	Use exercises to hone skills and simulations in advance to ensure that colleagues we remain calm in critical situations, make correct judgments, and effectively reduce casualties and property losses.	2 time(s)	47
Information security seminar	The Company recognizes the importance of information security, and uses case reviews to improve the employees ability to identify information security issues, avoid falling into information security traps, and effectively enhance their awareness of information security protection.	2 time(s)	65

Occupational Safety and Health Training

Self-defense Firefighting Team Training

Information security seminar

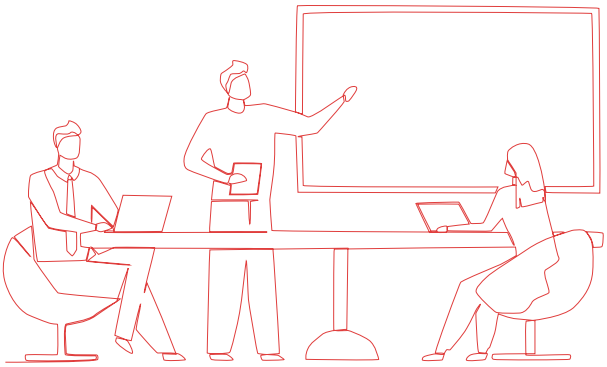
Routine regulatory education and training conducted by the headquarters in 2024			
Course	Description of Item	Number of Events	Enroll-ments
Personal data security course	Insider trading case studies were used to deter potential wrongdoers. The course promoted awareness on the importance of personal data security as well as the level of discretion needed to handle personal data in order to avoid leaks that may result in regulatory violation.	1 time(s)	31
Sexual harassment pre-vention education and training (including complaint investigation and han-dling personnel)	Understand the laws and regulations related to sexual harassment	1 time(s)	185

Personal data security course

Sexual harassment prevention education and training (including complaint investigation and handling personnel)

Routine training organized by factories - Information security courses

Factory	Number of Events	Enrollments
Taoyuan Factory	2 time(s)	46
Hsinchu Factory	2 time(s)	72
Taichung Factory	2 time(s)	Representatives from various units participated in the training
Changpin Factory	2 time(s)	28
Lukang Factory and Lukang Flat Glass Factory	2 time(s)	24



Specialist skill courses

TGI assigned full-time personnel to plan various types of education and training, formulate annual training plans, and cultivate the required glass-related technical and management talent using professional curriculum, training and practice. If the work requires other conditions such as education level, skills or licenses, experiences etc., the Factory Affairs Section will evaluate and select capable personnel. Operators of overhead cranes and forklifts should have qualified licenses to operate them.

Hsinchu Factory - Specialist skill courses for 2024

Course type	Course content	No. of training participants
Forklift operator training	Forklift related regulations and operation practice	28
Training for Class C occupational safety and health supervisors	Occupational safety and health regulations	11
Crane operator training	Regulations related to crane operation	28
ISO 9001:2015 Internal Audit Practice	Enhance employees' understanding and application of the ISO 9001:2015 system and train them in internal auditing techniques.	28
Managerial skill training for entry-level managers	Through training, we learn how to lead subordinates, enhance the planning, strategic and problem-solving abilities that entry-level supervisors should possess, and unlock the performance of management leadership.	31
Financial Statement Analysis and Enterprise Value Assessment Class	Analyze the business operation status and future development trends from financial reports, and establish a holistic concept of financial planning and management	21
ChatGPT and Office Application Class	Integrating AI with Office software applications, quickly completing multiple usage skills and enhancing employees' computer software application capabilities	20
The course completion rate was 100%		

ISO 9001:2015 Internal Audit Practice

Managerial skill training for entry-level managers

Financial Statement Analysis and Enterprise Value Assessment Class

ChatGPT and Office Application Class

Taichung Factory - Specialist skill courses for 2024

Course name	No. of training participants
Forklift training	16
Crane training	9
Acetylene welding training	5
The course completion rate was 100%	

Changpin Factory - Specialist skill courses for 2024

Course name	Course content	No. of training participants
Lifting operation	Lifting operation and accident prevention, etc.	28
Processing and production professional courses	Professional and technical teaching in various units	11
Forklift training	Forklift operation and related regulations	21
Overhead crane training	Fixed crane operation and related regulations	19
Talent pool training courses	Achieve talent training and inheritance	71
Consultant courses	Improve cadre management functions	22
The completion rate for all other courses was 100%, except for the forklift training course, which was 95%, and the talent pool training course, which was 85%		

Processing and production professional courses

Talent pool training courses

Consultant courses

5.3 Occupational Safety and Health

Occupational Safety and Health Committee

TGI has assembled occupational safety committees at the Headquarters and all factory sites to foster a safe work environment and facilitate communications. Worker-elected representatives account for more than one-third of committee members, as required by laws. The committees convene quarterly meetings to discuss safety and health issues, and these meetings serve as official channels for communication between departments, managers, and employees.

The occupational safety committees have implemented safety and health guidelines, and any work accident will be reported immediately to the appropriate authority in a manner that complies with laws. TGI has set targets on safety, health, and environmental protection to cater for employees' physical and mental health, whereas the Occupational Health and Safety Committee devises safety and health promotion goals on an organizational level and persistently implements improvement plans. TGI is also dedicated to the enforcement of environmental safety and health tasks and risk controls, and has work safety management units created at the Headquarters and factory sites to conduct regular safety and health inspections. Occupational Health and Safety Committee meetings are convened on a quarterly basis to brief factory managers, relevant departments, and worker representatives on potential issues so that preventive measures can be taken ahead of time. Through the implementation of the 5S plan, TGI implements induction and on-the-job training for employees in each unit. The purpose of the training is to enhance employees' awareness of work safety, improve their ability to deal with work situations, avoid accidents, and strive to minimize the probability of accidents and build a safe and healthy working environment.

Occupational Safety and Health Management System of TGI

1	Provide recommendations on the occupational safety and health policies formulated by employers
2	Coordinate and recommend occupational safety and health management plans
3	Review the implementation plan for safety and health education and training
4	Review of work environment monitoring plans, monitoring results, and measures to be taken
5	Review health management, occupational disease prevention and health promotion matters
6	Review various safety and health proposals
7	Review of self-inspections and environmental safety and health audits of public institutions
8	Review preventive measures for hazards posed by machinery, equipment, raw materials, or other materials
9	Review of occupational hazard investigation reports
10	Assessment of on-site safety and health management performance
11	Review of safety and health management matters for contracted business
12	Other matters related to occupational safety and health management

Percentage of worker representatives in Occupational Health and Safety Committee - 2024

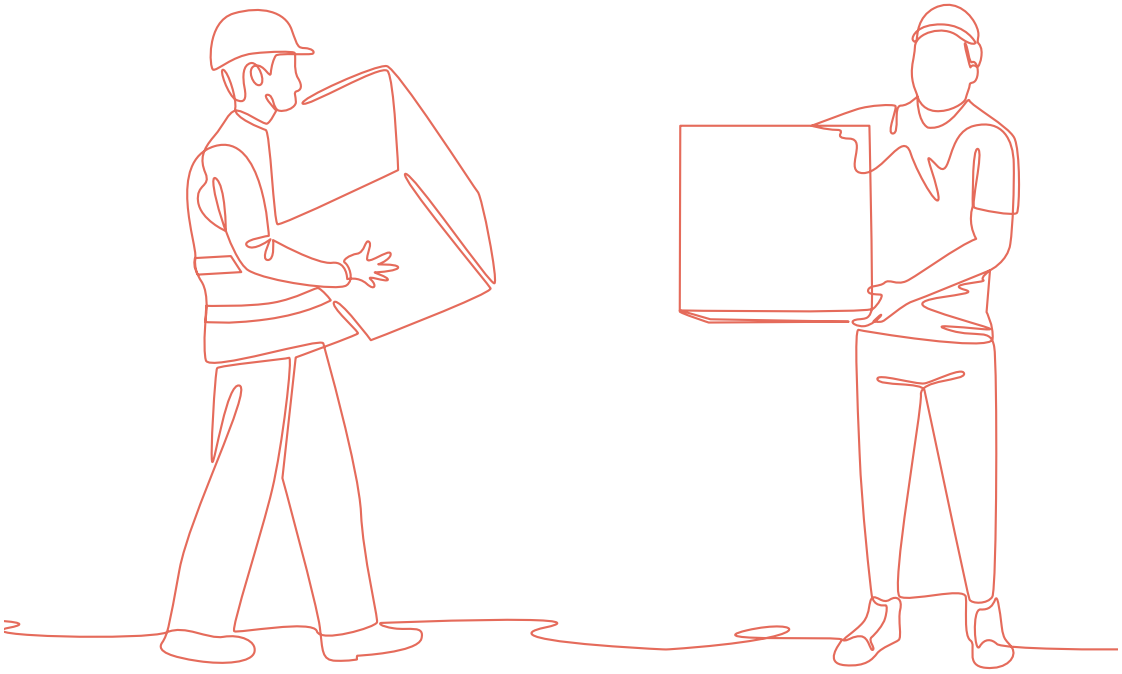
Measurement/Factory	Headquarters	Taoyuan Factory	Hsinchu Factory	Taichung Factory	Lukang Factory	Total
No. of Occupational Health and Safety Committee members	13	19	15	19	15	81
No. of worker representatives	6	7	6	7	5	31
Percentage of worker representatives (%)	46.15%	36.84%	40.00%	36.84%	33.3%	38.27%

Note: While Changpin and Lukang Flat Panel plants are not required by law to establish a Labor Safety and Health Committee, they continue to promote employee education and training programs annually to enhance awareness of occupational safety and health.

Occupational Safety Committee of each factory in 2024	Number of attendees
Taoyuan Factory	34 people (19 are committee members and the rest are attendees)
Hsinchu Factory	15

Taoyuan Factory

Hsinchu Factory



Occupational safety management

Zero hazard has been the ultimate goal of TGI's occupational hazard management efforts, and is the benchmark of all safety campaigns implemented at various factory sites. The Company currently aims to reduce disabling injury frequency rate (FR) and disabling injury severity rate (SR) by 20% each year. In 2024, TG used these programs in hopes of providing employees with a healthy and safe workplace.

Occupational health and safety service programs

Name of Project	Description
Fire Fighting Drill	Use exercises to hone skills and simulations in advance to ensure that colleagues we remain calm in critical situations, make correct judgments, and effectively reduce casualties and property losses.
AED	AEDs have been deployed from the Headquarters to factory sites to safeguard employees' health.
Workers' health service	Physicians and nurses are stationed at factory sites to help employees manage health risks through regular tracking and health consultation.
Employee health checks	Employee health checkups were conducted in March 2024 (additional items: prostate cancer screening, ovarian cancer screening, uric acid, and urea nitrogen).

Workers' health service

Employee health checks

Fire Fighting Drill

TGI has established corporate fire regulations and systems. Each factory has first aid personnel and fire prevention managers in accordance with regulations to maintain a safe working environment in each factory area. In addition, personnel with relevant certificates are assigned to participate in on-the-job training and retraining at regular frequency. Every six months, the fire prevention manager of Taipei Headquarters organizes a self-defense fire safety group education and training course (one in the first half of the year and one in the second half of the year) to strengthen employees' safety knowledge and safety culture. In addition, with regard to fire safety management, the Company will also outsource fire safety equipment maintenance professional organizations to conduct inspections and patrols, thereby identifying deficiencies in the Company's fire safety management and making improvements. In 2024, the number of fire incidents at TGI was zero, and no fire-related accidents occurred at the contractor's workplace within the factory.

The factory implements fire safety management policies

TF4

- The factory implements the ISO 14001 environmental management system and has established management regulations such as "fire equipment management", "hazard communication management", and "emergency response".
- We regularly entrust professional fire protection companies to conduct annual fire protection inspections and declarations. Every six months, the factory and fire brigade conduct regular fire drills and disaster prevention awareness sessions. The factory has fire prevention managers and security supervisors to oversee fire safety related matters.

Taichung Factory

Based on the factory's fire protection plan, we implement fire prevention management, conduct self-defense fire group drills, and maintain and manage fire safety equipment. We require daily inspection personnel to conduct various inspections. If any inspections are found to be deficient, they must be reported to the assistant manager and management authority for correction.

In terms of fire safety management practices, TGI's factories conduct annual environmental assessments, identify hazards and conduct risk assessments for high-risk areas or operations in the areas of environment, fire protection, safety and hygiene, and formulate improvement plans for high-risk areas. Each department conducts regular self-inspections of hazardous machinery and equipment, fire protection facilities, and first aid equipment within its scope of responsibility every month. The factory has an emergency response team and conducts regular fire drills every six months. Each unit implements tiered management for the use of chemicals, establishes a chemical inventory, and updates the content regularly.

Main contents of TGI's fire drills

1. Common fire prevention knowledge, basic firefighting, and evacuation
2. CPR, AED teaching training and drills
3. Introduction and use of fire extinguishers, and practice
4. Introduction and use of fire hydrant, and practice

Factory	No. of fire drills	Enrollments
Headquarters	2 times/year	43
Taoyuan Factory	2 times/year	103
Hsinchu Factory	2 times/year	139
Taichung Factory	2 times/year	32
Lukang Factory	2 times/year	66
Lukang Flat Glass Factory	2 times/year	22
Changpin Factory	2 times/year	64

Taoyuan Plant Fire Safety Training

Changpin Plant Fire Drill Instruction

Changpin Plant Fire Extinguisher Training

Changpin Plant On-site Fire Drill Practice

Hsinchu Factory Fire Extinguisher Training

Hsinchu Factory Fire Safety Training

Hsinchu Factory CPR Training

Hsinchu Factory Evacuation Drill

AED deployment

The number of people suffering heart-related diseases in Taiwan has increased in recent years. For this reason, TGI has deployed AEDs at the Headquarters and taken the initiative to promote knowledge on the use of AEDs, thereby improving first-aid capabilities within the workplace. Starting from 2022, AED first aid equipment will be gradually installed in each factory, and a number of CPR+AED first aid training courses will be held to familiarize employees with the operations.

Factory	Program name	Project content	Number of events held in 2024	No. of participants
Taoyuan	AED first aid training	Employees know how to use AED+CPR	5 time(s)	166
Lukang Flat Glass Factory	AED First Aid Training TF4	AED first aid training	3 time(s)	32

Taoyuan-AED first aid training

Lukang Flat Glass Factory-AED First Aid Training TF4

pHsinchu Factory has installed AEDs at the restaurant entrance and in the eight and ten kiln finished product areas.

AED at the Headquarters

Workers' health service

TGI has physicians and nurses stationed at the Headquarters and factory sites. Arrangements are made to have occupational medical specialists and nurses provide service at the factory premises every one to two months. Physicians would organize, analyze, and keep records of health checkup reports in order to learn the health state of the Company's employees. For employees who have been identified to exhibit high health risks, the physicians would also educate them, arrange follow-up tracking and treatment, pay regular attention, and organize health-promoting activities.

No. of worker health consultation visits - 2024

Factory	Sessions	No. of health consultation visits
Headquarters	52	19
Taoyuan Factory	12	43
Hsinchu Factory	24	100
Taichung Factory	12	15
Changpin Factory	4	19
Lukang Flat Glass Factory	3	14
Lukang Fiber Glass Factory	12	76
Total	119	286

Note: The health service consultation sessions of Taipei Headquarters are 48 sessions for nurses and 4 sessions for doctors

Employee health checkup

All new recruits are required to complete a physical health check before commencing duty; outcomes of the health check report will be be taken into consideration for work assignment, tier-based health management, health education, and tracking. Permanent employees are subject to a health checkup once every two years. Those who engage in hazardous operations are required to undergo annual special health checkups and complete four health training sessions a year. The stationed nurse will: consolidate, analyze, and file health checkup reports; establish an understanding of employees' health state through the checkup data; arrange health education, follow-up tracking, treatment, and care for high-risk groups; evaluate the appropriateness of existing job role; assist with work adjustments if necessary; and plan health promotion activities based on employees' overall health state. Through the use of e-bulletins, TGI kept employees up-to-date on relevant health information, seasonal disease, and the COVID-19 pandemic. TGI also recommended employees in the high-risk group to take vaccines as a form of protection, and disseminated proper information on personal/home care that employees can read at their own convenience.

TGI observes "Regulations Governing Protection of Worker Health" and organizes regular health checkups to provide employees with a healthy work environment. The Company also engages physicians to manage employees' health based on the health checkup results. A total of 1,110 general health checkups and 3,660 special health checkups were completed in 2024.

Number of health checkups in 2024

Factory	Special health checkups (number of people)											General health checkups (number of people)	Total
	High temperature	Dust	Noise	N-hexane	Lead	Chromic acid and chromium salt	Ionizing radiation	Nickel and compounds	Mercury and non-organic compounds	Manganese and its compounds	Subtotal		
Headquarters	0	0	0	0	0	0	0	0	0	0	0	200	200
Taoyuan Factory	0	40	279	0	0	0	0	0	0	0	319	530	849
Hsinchu Factory	223	133	547	0	56	4	5	56	4	0	1,028	110	1,138
Taichung Factory	78	89	8	0	0	0	41	0	0	0	216	223	439
Lukang Fiber Glass Factory	0	24	673	6	0	0	0	0	0	0	703	0	703
Lukang Flat Glass Factory	68	77	0	3	0	0	68	0	0	0	216	0	216
Changpin Factory	0	56	0	0	4	0	0	8	0	8	68	247	315
Total	369	419	1,507	9	60	4	114	64	4	8	2,550	1,110	3,660

- General health checkups: It is conducted every two years and was implemented in all factories except Lukang Fiberglass and Lukang Flat Panel in 2024.
- Special health checkups: Once a year.

1. Taoyuan Plant has introduced the ISO 45001 occupational safety and health management system starting in November 2024 and is expected to pass the certification in July 2025.

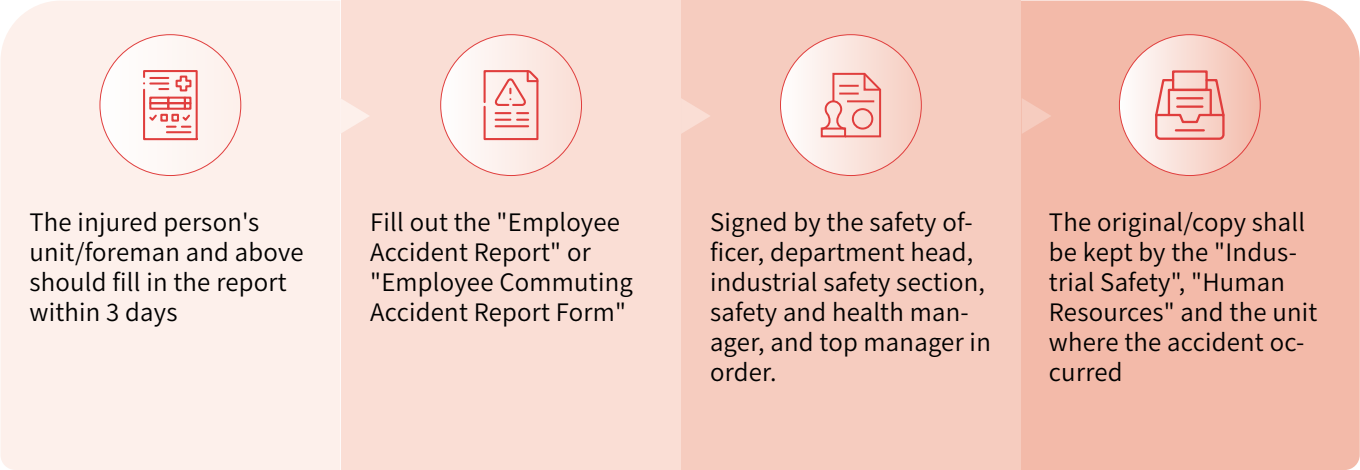
2. In order to improve the hot and stuffy working environment in the factory in summer, Changpin Plant tested and installed two large ceiling fans in 2023, which showed obvious improvement. Therefore, the fans were installed in all working areas of the factory in 2024. 17 large ceiling fans were installed in 2024, for a total of 19 fans in the entire factory.

3. Hsinchu Factory provides health education and assessment interviews for those at moderate risk or above. For those assessed to be at moderate risk or above of overwork, on-site medical staff are arranged to conduct interviews and consultations. A total of 39 people were interviewed in 2024.

For employees who work shifts or extended hours that also exhibit cardiovascular disease risk factors such as obesity, smoking habit, abnormal blood pressure, diabetes etc., the work safety unit would use the work hours checklist furnished by HR in conjunction with all relevant scorecards to shortlist the people who are at risk. Based on the data collected and the evaluations conducted, employees will be referred to physicians for diagnosis, treatment, and health education, and may have work details adjusted, restricted, and followed up continually to ensure employees' physical and mental health, which is also in the Company's best interest.

In addition, Taiwan Glass also installed a "Weight and Body Composition Monitor and Body Scanner" in the Health Room (which measures body weight, body fat, body age, basal metabolic rate, visceral fat; the subcutaneous fat and skeletal muscle of the entire body, arms, body, and feet) for employees to manage their health and weight loss.

Reporting and handling of emergencies



To deal with accidents, traffic accidents and false alarms, Taiwan Glass established an operational mechanism for managing occupational accidents that actively implements procedures for reporting, investigating, and improving accident prevention. Occurrence and cause of occupational hazard are analyzed every six months to identify prevention points. Preventions are communicated to each department to minimize chances of recurrence and impact. Any major accident suffered by other businesses will be communicated immediately to all departments via internal correspondence, so that employees can be made aware of the safety requirements.

The following safety indicators were used in 2022-2024:

Item/Year	Gender	2022	2023	2024
Disability Injury Frequency Rate (FR) Number of lost work hours (only counted if rest time is greater than 8 hours) x 1,000,000/total working hours	Male	7.99	7.88	5.35
	Female	7.15	4.88	5.12
	Total	7.85	7.40	5.31
Disability Severity Rate (SR) Number of lost work days x 1,000,000/total working hours	Male	239	282.00	227
	Female	197	301.00	188
	Total	232	286.00	221
Absenteeism rate (AR) Total absent days / total working days	Male	0.01	0.01	0.01
	Female	0.02	0.03	0.02
	Total	0.01	0.01	0.01

Note: Total absent days include days of unpaid leave, illness leave, and work injury leave:
(1)Illness leave (includes unpaid illness leave, partially paid illness leave, and menstruation leave): 42,852 hours
(2)Unpaid leave (includes family care leave): 24,843 hours
(3)Work injury leave: 21,445 hours
(4)Total work hours: 7,532,568 hours

TGI hired Warwick Mayall, a British work safety consultant, to provide work safety consultation and counseling at each factory site. Through persistent data gathering and observation, the consultant helped improve risk management capabilities and enabled greater insight into the forms and probabilities of injury, so that we may analyze the underlying cause and learn from each incident, such as injuries that can be treated on-site and near misses. These practices also helped turn safety awareness into work attitude, and teach employees to look out for each other and place safety above all else in order to achieve our goal of zero work injury.

Improvement directions and highlights of some TGI's factories

Taoyuan Factory

The ISO 45001 occupational safety and health management system will be introduced from November 2024 and is expected to pass the certification in July 2025.

Changpin Factory

The number of work-related injuries has reduced by 3, and the number of work days lost has reduced by 124 days compared to the previous year, whereas the severity of work-related injuries has also decreased by a significant degree. Meanwhile, the Work Safety Section arranges monthly safety training and awareness programs to promote safety awareness. The scope of details to observe in work safety inspections has increased by 30% compared to the previous year. Through unscheduled work safety inspections, the factory is able to uncover potential hazards within the workplace and make corrections.

Lukang Flat Glass Factory

- Established a safety management committee at the factory in 2024
- TF4 established a safety management committee to enhance safety awareness within the factory and share work safety incidents.

To this end, TGI holds an annual zero-injury competition. Factories with zero injuries are selected, supplemented by a comprehensive evaluation of environmental and safety indicators. Annual zero-injury awards are presented as Special Award/Excellence Award/Achievement Award. The winning factories are awarded medals by the Chairman/President as encouragement.

TGI's Ten Principles of Workplace Safety

1	"People" are the key to the success of a safety and health management program.
2	All injuries and occupational illnesses are preventable.
3	Every employee has a responsibility to prevent possible injury and illness.
4	Paying attention to safety is one of the conditions of employment, and every employee must assume work safety responsibilities.
5	Workplace safety training is the foundation of a safe workplace.
6	Continuous safety audits are necessary.
7	All safety deficiencies must be corrected immediately.
8	Investigating potential accidents is just as important as investigating accidents that have already occurred.
9	Safety after work is just as important as safety during work.
10	Preventing workplace injuries can bring significant benefits.

Taichung Factory hosts factory meetings every Monday to review work safety incidents of the previous week. The department where an incident had occurred is required to present a report along with improvement measures to all department heads present at the meeting, while the Work Safety Section and other departments would also provide recommendations. If no work accident occurred on factory premises, meeting participants would gather information on work safety accidents from other parts of the country for simulation, analysis, and review. Changpin Factory, on the other hand, placed emphasis on the assessment and management of risks associated with personnel and machinery, and tried to prevent potential hazards by making improvements to the equipment and protective gear used in high-risk operations. As for Lukang Factory, much of its attention was directed toward regular promotion of traffic safety. Training efforts were especially targeted at foreign workers in order to minimize chances of accidents while commuting.

Apart from Occupational Health and Safety training, TGI also organizes training, drills, and awareness courses to address emergency events within the factory. For example, professionals are invited to host courses on CPR and use of AED at factory premises; training on prevention, evacuation, and emergency response to fire outbreak are also held in addition to existing fire safety drills.

In addition to hosting Occupational Health and Safety training, emergency response and fire safety training, and off-premise specialist training for new recruits, TGI also conducts monthly Occupational Health and Safety training for employees across all departments as a way to promote knowledge on work safety and health. Taoyuan Factory organizes Occupational Health and Safety training for contractors and work supervisors to communicate with them on the common work safety defects and regulatory requirements.

Occupational safety and health training by factory - 2024

Factory	Course name	Number of Events	Enrollment count
Hsinchu Factory	Health promotion seminar	1	45
Changpin Factory	Worker safety training	6	270
	Lecture on Three Highs Metabolic Syndrome	1	21

pHsinchu Factory "Understanding the Health Checkup Report"

pChangpin Plant "Labor Safety Education and Training"

pChangpin Plant "Lecture on Three Highs Metabolic Syndrome"

Labor Safety Inspection and Legal Compliance

TGI has established environmental safety and health audit management regulations. For the environmental safety and health management system, internal audits are conducted once a year, with audit teams formed by each unit to conduct mutual audits. In addition, external audits are also conducted once a year to ensure that TGI's environmental safety and health management system operates effectively and smoothly.

There were no risks of forced or compulsory labor in any of Taiwan Glass' internal operations, and the relevant labor conditions were handled in accordance with the relevant provisions of the Labor Standards Act. There was no use of child labor, no complaints regarding major labor-related issues, and no discriminatory behavior in 2024. The list of relevant inspections in 2024 and the follow-up improvement methods are as follows:

Factory	Labor Safety Inspections and Regulatory Violations	Amount of penalty (NTD)	Description of Event	Follow-up Improvement Measures
Hsinchu Factory	Rules on Occupational Safety and Health Facilities	50,000	The anti-slip latch of the hook of fixed crane with a lifting load of 2 metric tons in the basement of Unit 2 of Kiln No. 6 malfunctioned.	The anti-slip latch of the hook was replaced on May 22, 2024.

Factory	Labor Safety Inspections and Regulatory Violations	Amount of penalty (NTD)	Description of Event	Follow-up Improvement Measures
Hsinchu Factory	Occupational Safety and Health Act	100,000	1. There is no formal consultative body established for the subcontractor (Sanhe Enterprise) to hold agreement meetings regularly or irregularly. 2. The Company failed to thoroughly inspect workplaces involving hazardous elevated operations, and failed to coordinate and adjust necessary safety equipment or measures for the hazards of falling at heights of more than two meters, exposing workers to the risk of occupational hazards.	1. Agreement meetings shall be held from time to time and records shall be retained for future reference in accordance with regulations. 2. For places with falling hazards above two meters, contractors are required to install safety protection equipment or measures before construction can begin.
	Occupational Safety and Health Act	60,000	1. The employer causes workers to perform work without taking necessary preventive equipment or measures to protect workers from occupational hazards. 2. When an occupational accident occurs at a business entity's workplace resulting in more than one casualty requiring hospitalization, the employer fails to notify the labor inspection agency within eight hours.	1. Immediately communicate with employees that they should hold the handrails and step firmly on each step when going up and down the stairs. 2. Comply with the reporting deadlines stipulated in Article 37, Paragraph 2, Subparagraph 3 of the Occupational Safety and Health Act.
	Occupational safety facilities rules	60,000	There are no handrails on the working steps of the bicycle traction path next to the modified section.	1. Promote to employees the importance of holding the handrails and stepping firmly on each step when going up and down stairs. 2. Add handrails on both sides of the passage and lay anti-slip material on the steps.
Taichung Factory	Occupational Safety and Health Act	100,000	The employee was making preparations for the feeding operation. When he was about to lift the first cover plate near the side of the platform on the work platform, the wind speed was very strong at that moment and wind pressure caused the cover plate in his hand to blow downwards. The employee was anxious to straighten the cover plate but still could not withstand the wind pressure. He lost his balance and fell to the floor. The doctor diagnosed that he had a fracture of the left medial malleolus and the right tibia and needed to be hospitalized for surgery.	1. Improve the operation of folding and lifting the rainproof wooden board and replace it with a canvas retractor. 2. Increase the protection range of the guardrail. 3. Strengthen safety education and training for employees and contractors. 4. Add stair handrails
	Occupational Safety and Health Act	100,000 (Note 1)	The lack of handrails on the stairs in the workplace resulted in a fall by the contractor's employee.	
Lukang Flat Glass Factory	Safety violations and penalties	60,000	Improper guardrail installation	Guardrail paving improvements were completed
	Occupational Safety and Health Act	60,000	When a worker was operating a trimming machine to splice fiberglass cloth, he failed to stop the machine as required and lacked necessary protective equipment, resulting in his hand being caught in the machine while it was running, causing a fracture in his left forearm.	Fences have been installed in dangerous areas, warning signs have been posted, and operations are prohibited to prevent people from approaching. At the same time, we will strengthen multilingual warning signs and operator education and training to reduce the risk of occupational hazards.

Note 1: The violation in this case occurred in 2024, but the Ministry of Labor issued a disciplinary notice in 2025, and the Company paid the relevant fine in 2025.

Employee Health Promotion and Management

Health Risk Issues	Amount of Impact	Control Measures	Actual Results
Employee Health	High Risk	1. On-site consultation services by doctors and nurses. 2. Provide blood pressure monitors for employees to measure and monitor blood pressure. 3. Health check items that are superior to those required by law. 4. Health grading management for new and current employees. 5. Subsidy for sports club expenses.	1. A total of 92 health service consultations were held, with a total of 181 people receiving consultations. 2. Each factory conducts annual health checks. Taoyuan Plant adds one more item than required by law: glycosylated hemoglobin. Changpin Plant has added 18 basic checkup items beyond the statutory items, such as uric acid, urea nitrogen, glomerular filtration rate, hematocrit, etc. It also cooperates with hospitals to provide more preferential health check-up items such as blood draws, ultrasound, and microscopy. It also adds more items based on employee assessment needs to achieve a more comprehensive health assessment. 3. Hsinchu Factory implemented health grading management, provided individualized health education and follow-up interviews, and conducted 39 interviews in 2024.
Abnormal workload Disease prevention initiatives	High Risk	For those at moderate risk or above, health education and assessment interviews are required	Hsinchu Factory assessed that some employees were at moderate or higher risk of overwork and arranged for on-site medical staff to conduct interviews and consultations. The factory physician interviewed a total of 39 people.
Workplace Safety	Moderate Risk	1. Implement four key occupational safety and health initiatives. 2. Hold regular Occupational Safety and Health Committee meetings. 3. Set up AED emergency equipment. 4. The facial recognition system controls the entry and exit of personnel. 5. The office areas and entrances and exits are brightly lit. 6. Security personnel are stationed at the entrance for access control. 7. Provide occupational safety and health education and training for new and current employees.	1. The implementation rate of the four major occupational safety plans in all factories was 100%. Among these efforts, Changpin Plant completed 12 improvement assessment questionnaires, improved a total of 32 office chairs, and provided health education to 297 people regarding work overload. 2. One employee at Hsinchu Factory was diagnosed with pneumoconiosis due to long-term engagement in traditional lathe and mold maintenance work. TGI immediately transferred the employee to a dust-free work unit and arranged regular health monitoring and tracking. 3. All Occupational Safety and Health Committee meetings were held as scheduled. 4. Employees, customers, vendors, etc. all complied with entry and exit control measures. 5. No incidents of unauthorized access or harm to personnel occurred. 6. A total of 737 new and current employees participated in occupational safety and health education and training, totaling 2,169 hours of training.
Maternity Health Protection	Moderate Risk	1. A breastfeeding room is set up for employees to use. 2. Provide maternity leave, paternity check-up leave, paternity leave, prenatal check-up leave, and breastfeeding leave. 3. Application for parental leave without pay. 4. The maternal labor health protection program is underway. 5. Set up parking spaces for pregnant women.	1. Obtained "Excellent Breastfeeding Room Certification" from the Taipei City Government's Department of Health. 2. Taoyuan and Hsinchu Factories provided care for pregnant female employees and arranged occupational physicians for consultation. 3. Changpin Plant received the Excellent Nursing Room certification.

TGI organizes labor health services

TGI upholds the principle that "employees are our most important asset" and has established health centers at each factory. These centers are staffed by professional factory nurses and contracted labor health service specialists to jointly promote employee care. These centers include health management programs covering health care, special protection, and health promotion. The goal is to balance practical medical needs with risk management, and to continuously work on occupational hazard and disease prevention initiatives and measures to promote employee physical and mental well-being.

Overstress-induced disease prevention program

This program is intended to help employees prevent against cerebrovascular/cardiovascular disease and reduce mental stress. TGI conducts ongoing investigations and risk evaluations about employees' health state, work nature (shift, night shift, long hours, abnormal workload etc.), and work hours, and extends care and follows up on those who are in the high-risk group by referring them to physicians where they can receive health guidance, medical assistance, educational knowledge, and recommendations on work adjustment.

Abnormal workload improvement process

Self-evaluation questionnaire on overstress

↓

Analyze and shortlist the high-risk group

↓

Health promotion management for the high-risk group

1. One-on-one medical consultation by stationed physician on record
2. Organized health promotion seminars (on overstress, metabolic disease etc.)

↓

Evaluation and adjustment

Phase 1

Evaluation and education based onin-factory health checkup reports.

Phase 2

1. Follow-up on abnormal health check results 3
2. Work evaluation and adjustment
3. Present for discussion during meeting; explore im-provements

Prevention of ergonomic hazard

It is TGI's goal to create a safe and healthy workplace where employees are able to prevent against ergonomic hazards and repetitive musculoskeletal injuries. By gathering and analyzing data on the nature of works performed, TGI is able to apply tier-based management and propose solutions to improve repetitive musculoskeletal injuries and the overall work environment. Below is an example of execution procedures undertaken by TGI:

- The on-site physician and nurse, together with the section chief of the cutting section, observed the handling of finished glass products by the personnel of the storage and transportation section's cutting unit at the worksite
- The workbench height for on-site personnel handling and transporting finished glass products is above waist height but below shoulder height, which conforms to the ergonomic working safety zone. There is ample space for handling and transporting finished glass products, allowing people to work in the correct posture. Finished glass products weighing more than 10 kilograms will be handled and transported by a team of two or more people depending on the weight. The work is still repetitive and requires force, so it is necessary to prevent ergonomic hazards.

The stationed physician showed workers the correct lifting posture and recommended wearing of protective gear when handling finished glass products to prevent cuts and musculoskeletal injuries.

Ergonomic hazard analysis and improvement flowchart

Survey of in-factory occupational hazard

↓

Confirm ergonomic hazard

↓

Evaluate, select, and execute improvements

↓

Control and tracking/evaluate improvement performance

↓

Whether conforms with expectation

No → Control and tracking/evaluate improvement performance

Yes ↓

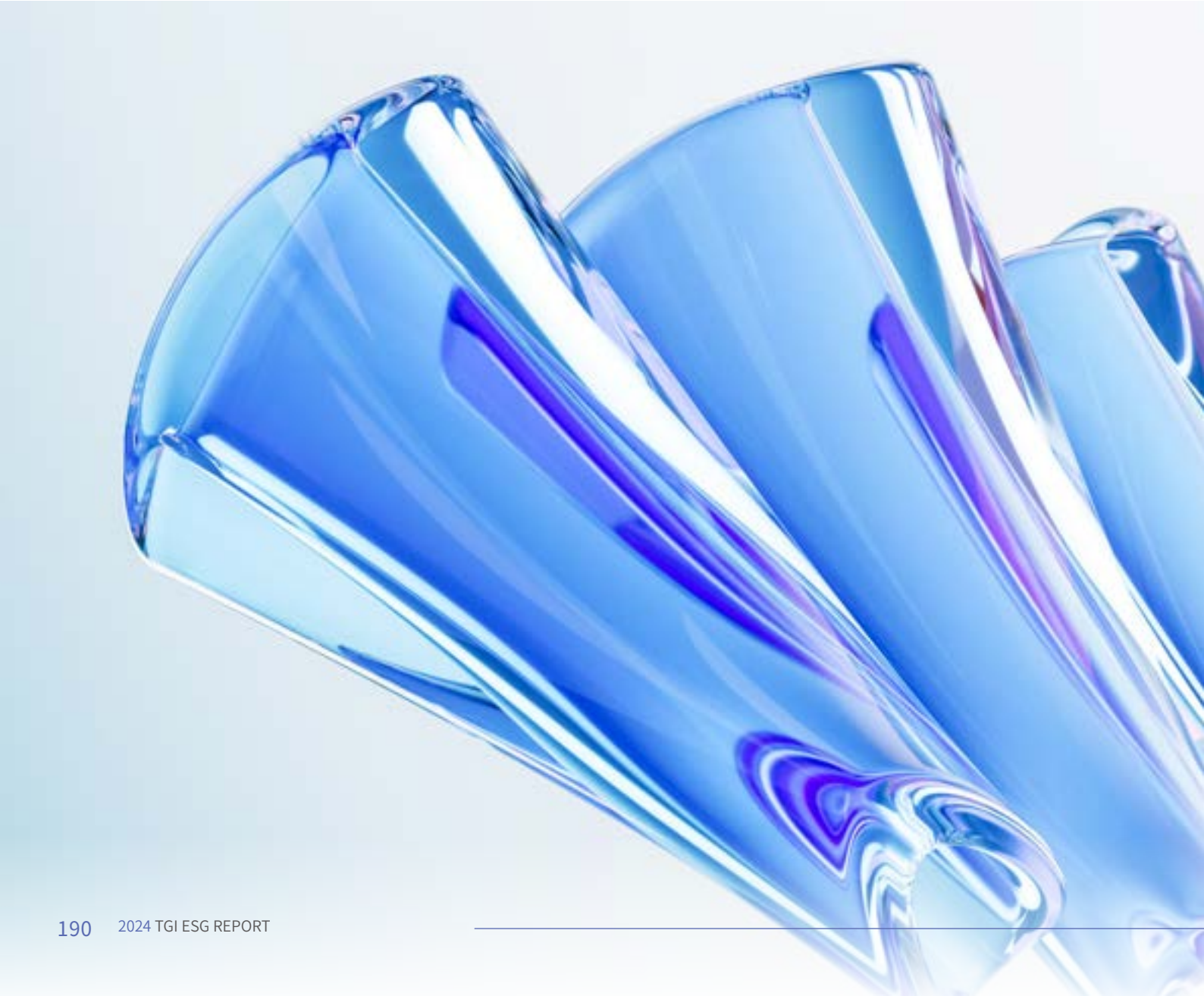
Performance evaluation and record keeping

chapter 6

Inclusion and Social Care

6.1 Social engagement 192

6.2 Community engagement 198



Social Care Performance of 2024

3,019 beneficiaries
$34.31 million

Since 2000, TGI Cultural and Educational Foundation has awarded scholarships to 3,019 college students, totaling NT$34.31 million

$1.2 million

A total of NT$1.2 million was invested in Taiwan Glass Taifong Open to support local athletes in Taiwan

NT$860,000

Donated scholarships and grants totaling NT$860,000

NT$500,000

Participated in supporting the 3rd SanCode Technology Literature and Art Award, donating a total of NT$500,000

NT$700,000

Promoted the sustainable development of Taiwanese enterprises and donated NT$700,000

6.1 Social engagement

To commemorate its 25th anniversary and the support it has received from the community, TGI established the TGI Cultural and Educational Foundation in 1989. Adhering to the philosophy of cultivating talent and giving back to society, the Foundation has long been actively promoting diverse education and cultural public welfare projects with various sectors. Since 2000, a total of 3,019 scholarships have been awarded to college and university students across Taiwan, with a total amount of NT$34.31 million.

Won the 14th "Taiwans Cultural Equity Award: Permanent Award - Bronze Award" of the Ministry of Culture

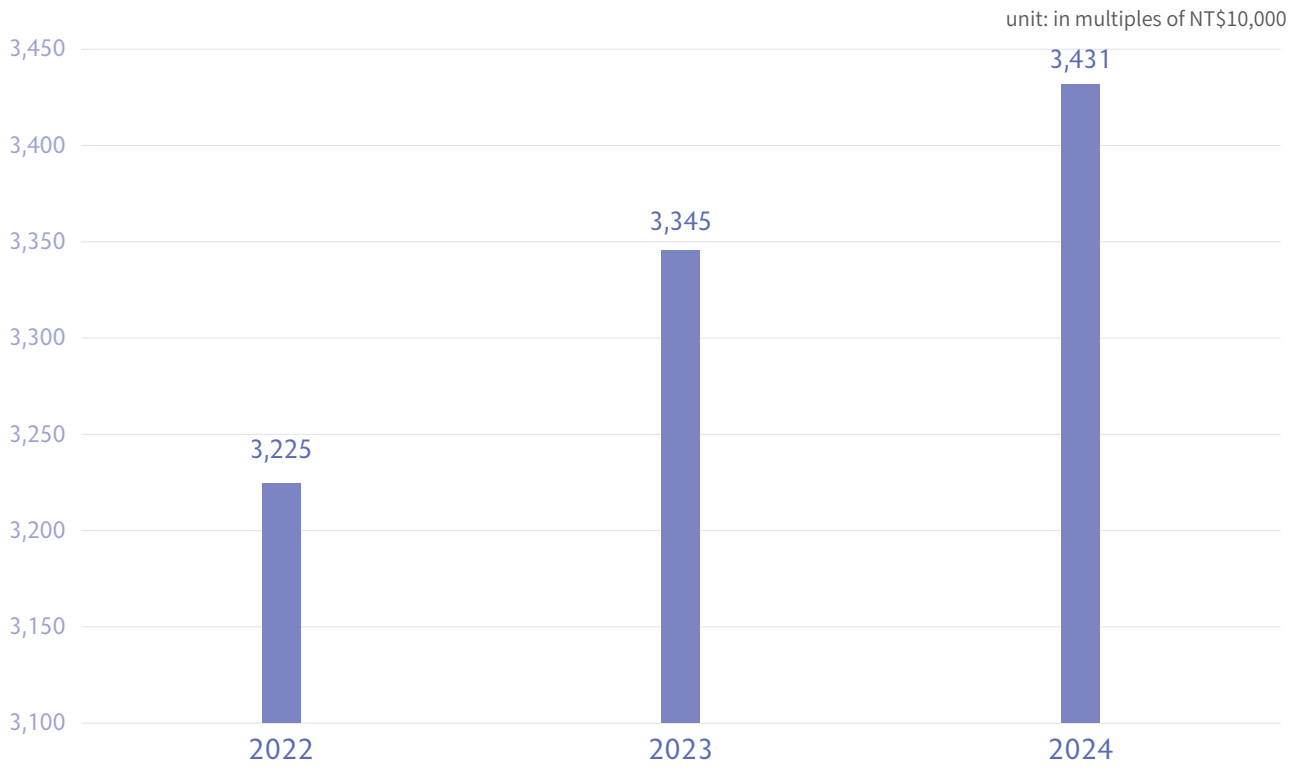
Since co-organizing the "Twelve Zodiac Animals Artists' Paintings to Aid Students Special Exhibition" in 2018 and winning the Bronze Award in the 14th Taiwanese Cultural Equity Award, TGI has continued to promote cultural inheritance and innovation through practical actions, transforming corporate resources into a force to support social and cultural development, promoting culture to take root and shine outward, and hoping to stimulate corporate participation in arts and cultural activities. Founder Mr. Lin Yu-Chia also encouraged the award-winning students to cultivate a sense of responsibility and spirit of self-realization, and hoped that the recipients would give back to the country and society and jointly realize the corporate commitment to social value.

Past scholarships and cultural/education activities by TGI Cultural and Educational Foundation

Year	Event	Venue	Details
2024	Payment of scholarship/ tuition aid	Taipei City	A total of 120 students received scholarships, each worth NT$10,000
	Arts and Culture Awards Donation	Taipei City	Donated NT$500,000 to SanCode Technology Literature and Art Award
2023	Payment of scholarship/ tuition aid	Taipei City	A total of 120 students received scholarships, each worth NT$10,000
2022	Payment of scholarship/ tuition aid	Taipei City	A total of 120 students received scholarship of NT$10,000 each
2021	Payment of scholarship/ tuition aid	Taipei City	A total of 120 students received scholarship of NT$10,000 each
2020	Payment of scholarship/ tuition aid	Taipei City	A total of 50 students received scholarship of NT$10,000 each
2019	Payment of scholarship/ tuition aid	Taipei City	A total of 90 students received scholarship of NT$10,000 each
2018	Payment of scholarship/ tuition aid	Taipei City	A total of 90 students received scholarship of NT$10,000 each
	Art exhibition	Kaohsiung City	Sponsored Zodiac - Scholarship Artist Exhibition.
2017	Payment of scholarship/ tuition aid	Taipei City	A total of 80 students received scholarship of NT$10,000 each
2016	Payment of scholarship/ tuition aid	Taipei City	A total of 140 students received scholarship of NT$10,000 each
2015	Payment of scholarship/ tuition aid	Taipei City	A total of 140 students received scholarship of NT$10,000 each
2014	Payment of scholarship/ tuition aid	Taipei City	A total of 129 students received scholarship of NT$10,000 each
2013	Payment of scholarship/ tuition aid	Taipei City	A total of 143 students received scholarship of NT$10,000 each
	Cultural/artistic event	Taipei City	Purchased 131 tickets for the screening of Chi, Po-Lin's Beyond Beauty - Taiwan from Above.

Year	Event	Venue	Details
2012	Payment of scholarship/ tuition aid	Taipei City	A total of 196 students received scholarship of NT$10,000 each
	Art exhibition	Taipei City	Co-organized and sponsored the exhibition "Álvaro Siza: The Aesthetics of Function".
2011	Payment of scholarship/ tuition aid	Taipei City	A total of 180 students received scholarship of NT$10,000 each
	Art exhibition	Taipei City	Co-organized and sponsored the exhibition "Álvaro Siza: The Aesthetics of Function".
2010	Payment of scholarship/ tuition aid	Taipei City	A total of 160 students received scholarship of NT$10,000 each
	Special movie screening	Taipei City	Assisted in the special screening of Let the Wind Carry Me for 200 viewers. By promoting quality film productions from Taiwan, the Foundation hopes to contribute to the growth of outstanding local filmmakers
	Green building seminar	Taipei City	Beautify Taipei - Green Building Seminar; audience size: 300. The foundation supported Taipei City Government Department of Urban Development in the execution of urban redevelopment projects. The redevelopment not only renews old buildings, but also introduces green energy and environmental features.

Cumulative amount of scholarships paid in the last 3 years



TGI Cultural and Educational Foundation focuses on development in three main areas

TGI Cultural and Educational Foundation focuses on development in three main areas

Technology education

Ideals
"Technology and the Future" - The event uses different forms of media and high-tech tools to promote understanding of future technologies across different generations and to inspire imagination about how technology may change our world. These new visions will ultimately guide us to the path toward a digital future.

Plan details
By supporting technology education and application, we aim to help the young generation develop technological skills and expand global vision.

Sports activities

Plan details
Promote sports activities and healthy exercise.

Plan details
Though golf events, we aim to provide incentives for golfers to improve their game and share their experience.

Corporate sustainability

Plan details
Being an active promoter of sustainability in Taiwan, the foundation pays ongoing attention to issues concerning climate change, sustainable energy, and corporate sustainability, and contributes to the sustainability initiative through action. It is our hope to expand social influence and lead the society toward the right path.

Plan details
Assists businesses with sustainability awards and promotes education on related topics.

Donations by TGI Cultural and Educational Foundation and Taiwan Glass (TGI) Industry Corporation - 2024

Donee	Name	Amount (NTD)	Implementation objectives and benefits
TGI Cultural and Educational Foundation	The 3rd SanCode Technology Literature and Art Award	NT$500,000	TGI co-organizes this award to support public welfare activities that integrate technology and art across different fields, and to promote the responsibility and commitment of advancing humanity and innovation.
	2024 Taiwan Glass Taifong Open	NT$1,200,000	Support Taiwanese athletes to participate in international competitions
	Scholarships	NT$860,000	To encourage the children of the Company to cultivate good character and study hard, and to cultivate outstanding talents
	2024 Global Corporate Sustainability Forum Awards Ceremony	NT$300,000	Strengthen exchanges and cooperation with domestic and international sustainability advocacy organizations to demonstrate commitment to promoting net-zero transition
Taiwan Glass Industry Corporation	2024 Taiwan Sustainability Education Award (TAISE)	NT$400,000	Encourage elementary schools to invest in sustainable education, deepen sustainable education, and make it the nourishment for students' growth. TGI participates in and supports TAISE as a lead organizer. Through this involvement, we hope to give school staff and teachers the inspiration and motivation they need to promote sustainability awareness in children.
Total donations - 2024		NT$3.26 million	

SDG 4 - Quality education

Technology Education - Inspiring Youth's Digital Thinking, Building a Cross-Domain Innovation Future

The social issues we want to address

Facing rapidly changing technological trends, Taiwanese youth still have room to grow in technological literacy, cross-disciplinary skills, and global perspective. Traditional education models are unlikely to meet the creativity and technological application capabilities required in the future.

TGI's role

TGI Cultural and Educational Foundation organizes innovative and inclusive science and technology education activities to encourage young people to access science and technology knowledge through diverse media, improve their scientific and technological literacy and expression skills, and thus stimulate their imagination and thinking about the future.

Practical actions-2024 3rd SanCode Technology Literature and Art Award:

This award is sponsored by the SanCode Education Foundation and continuously supported and promoted by TGI Cultural and Educational Foundation. As of 2024, it has entered its third year. It is committed to using art and cultural media to deepen young people's understanding of science and technology and break through the single knowledge input model.

In the face of technological trends such as generative AI and virtual reality, this year's SanCode Technology and Literature Award has the vision of "Let the public become the ones setting off the fireworks, rather than intimidated bystanders". It encourages young people to explore technology through literature and art, and strengthens their cross-disciplinary thinking and application of technology.

This year's award submissions cover four categories: reading and science experience writing, youth science fiction, children's computer drawing, and youth store drawing, covering a wide range of ages and expression media. In the future, we will continue to create a science and technology learning environment for the participation of all people.

2024 3rd SanCode Technology Literature and Art Award Column

Through the selection process of the 3rd SanCode Technology Literature and Art Award, we are able to see the profound observation and expression potential of contemporary youth regarding science and technology and social issues. Whether creating works with AI as the theme or exploring the relationship between technology and ourselves, the contestants demonstrated a fusion of critical thinking and humanistic qualities, highlighting the ambition of future generations to actively engage in dialogue in the digital era.

For example, in a work themed "AI Participation", the contestant used poetic language to reflect on the relationship between humans and machines, cleverly combining technological development with humanistic feelings, and guiding readers to rethink how technology is not just a tool, but also a part of our daily relationships. Another entry focuses on the cross-cultural experience of mathematician Shing-Tung Yau. Participants compare the experiences of the characters in the book with their own educational journeys, thereby understanding the cultural background and value choices behind the knowledge.

This year's judging process also indicated that student works generally demonstrated a keen sense of technological issues and an ability to integrate them. The integration of technology and education has taken root in the younger generation. The SanCode Technology Literature and Art Award is not only a platform for recognizing outstanding works, but also a starting point for witnessing young people understand the world and change the future.

SDG 3 - Good health and well-being

Sports Development - Persistence in promoting the internationalization of Taiwan golf through the swing

The social issues we want to address

Supporting internationally compatible competition platforms and building stadiums and training facilities that meet international standards

TGI's role

TGI Cultural and Educational Foundation actively plays the dual role of connecting international sports competition platforms and promoting the improvement of training environments. It not only continues to invest in the hardware and software facilities of Taifong Golf Course, but also creates international exposure by sponsoring events, helping Taiwanese athletes hone their skills in actual competition and connect with the world stage.

Practical actions-2024 Taiwan Glass Taifong Open:

Starting in 2023, the tournament will be upgraded to the Asian Tour, making Taiwan an important stop on the Asian Tour and writing a new milestone in Taiwan's golf history. Furthermore, Taifong Golf Course continues to optimize the quality of its greens and fairways. Currently, the green speed has reached the international standard of 10.5, making it one of Taiwan's most representative golf courses. In addition to promoting tournaments, Taifong Golf Course itself is also a model of world-class hardware facilities. The golf course features two buildings, the "Siza Club" and the "Jiaqing Club", designed by Portuguese architect Álvaro Siza, winner of the 1992 Pritzker Architecture Prize. They blend humanistic and landscape aesthetics, showcasing the ultimate combination of golf course and architectural art. Since its completion, the clubhouse has received numerous international accolades and was selected as one of the Best 10 International Clubhouses by Golf Digest in 2022, providing a comfortable and aesthetic environment for golfers and players. In the future, TGI will continue to invest resources to support diverse sports activities and support local athletes to go global, allowing global athletes to see Taiwan.

SDG 17 - Partnerships for the goals

Corporate Sustainability – Promoting sustainability awareness and expanding social impact

The social issues we want to address

As the era of carbon pricing arrives, Taiwan will face the challenge of stricter regulations. In addition, TGI is also committed to providing teachers with resources and training suitable for teaching sites, and enhancing students' understanding and practice of sustainable development issues, strengthening the connection between life and action.

TGI's role

TGI actively plays the role of a promoter of sustainable transformation. Through long-term support for socially influential sustainability forums and education awards, TGI not only helps to gather energy for policy initiatives, but also promotes the concept of sustainability in schools and teaching sites.

Practical actions-2024 Global Corporate Sustainability Forum Awards Ceremony

TGI supports the "Global Corporate Sustainability Forum Awards Ceremony" hosted by the Taiwan Institute for Sustainable Energy. Through resource collaboration and platform promotion, it brings together outstanding domestic and foreign companies to publicly commend companies and organizations with outstanding performance in ESG, climate governance, sustainable innovation, and other fields. TGI helps establish learning benchmarks among companies, enhancing the overall industry chain's attention to and depth of practice on sustainability issues

Practical actions-2024 TAISE Taiwan Sustainable Education Award

TGI continues to collaborate with the Taiwan Institute for Sustainable Energy to organize the "2024 Taiwan Sustainable Education Award" to recognize teachers and schools that have made innovative contributions to sustainable education. The award encourages teachers to incorporate SDGs into lesson plans, implement innovative teaching practices, and guide students to participate in sustainable actions on campus and in the community. Through this award, we hope to work with schools to cultivate a new generation of citizens with sustainable thinking and action.

2024 Global Corporate Sustainability Forum Awards Ceremony

2024 TAISE Taiwan Sustainable Education Award

6.2 Community engagement

TGI values connections and integration with local communities, and is actively working towards strengthening community participation and giving back to society. Through diverse participation activities coordinated and promoted by the Company, caring actions are integrated into daily life, encouraging employees to start from themselves and build a friendly, trusting, and sustainable relationship with the community.

Donation event

Hualien County Government and Tzu Chi Foundation's donation of glass for permanent housing

Hualien has been hit by frequent earthquakes and typhoons. In response to the Hualien County Government's and Tzu Chi's joint "Relay Permanent Housing" project, TGI is donating an estimated NT$1.2 million worth of glass materials to help approximately 300 affected people find shelter. Upon completion in the second half of 2025, immediate resettlement will be provided, mitigating the impact on the lives of those displaced in eastern Taiwan due to natural disasters.

Blood donation

Blood donation event by Changpin Factory

TGI's Changpin Plant called on employees to participate in a blood donation campaign, responding to the call of "Donate a bag of blood, save a life" and demonstrating the Company's concrete actions in participating in public welfare. On the day of the event, a total of 32 bags of "blood" were collected, demonstrating the actual contribution of employees to social care.

Coastal cleanup

TGI's Taoyuan Plant held a beach cleanup event

Led by the Factory Affairs Manager, 10 employees went to the south bank of the Guanyin Coastal Recreation Area to participate in a cleanup operation, working together to safeguard the sustainability of the coastal environment and fulfill their responsibility to protect the local environment.

Community investment

Donated products to the temple to support Lantern Festival Gala

TGI's Taoyuan Plant, located in Shulinli, Guanyin District, supported the Xie Tian Temple gala during the Lantern Festival by donating two baking pans and four glass pots as raffle prizes, helping the temple promote local festival activities and community cohesion.

Puchien Li Mid-Autumn Festival Gala

In response to the Puchien Li Mid-Autumn Festival Gala, TGI provided 36 sets of 900ml round food storage containers with a total value of NT$32,400 and received a certificate of appreciation, demonstrating the Company's active participation and care in local festivals and promoting community cohesion and cultural heritage.

Adoption of local ecology and facilities

Adoption of coastal windbreaks

TGI has adopted the Guanyin Industrial Park windbreak forest and pledged to carry out maintenance work such as watering, fertilizing, and pest control for six years from 2024 to 2029. It will invest NT$65,000 annually to continuously improve the park's green environment and contribute to the local ecology and landscape quality.

Adoption of public toilet at Mr. Wu Temple

To enhance the cleanliness of local public facilities and maintain a hygienic community environment, TGI adopted the public toilet at Mr. Wu Temple. From November 2021 to October 2024, it commissioned cleaning staff to clean it every two weeks, with a total investment of NT$12,566 during this period.

Youth exchange

Youth glass industry exchange

In October 2024, TGI was invited to participate in the Hsinchu-Miaoli Youth Exchange Activity co-organized by the Hsinchu City Government, Hsinchu County, and Miaoli County. It sent three representatives to introduce glass products and production processes, thereby promoting local industry awareness and youth interaction, and deepening industrial cultural inheritance and regional collaboration.

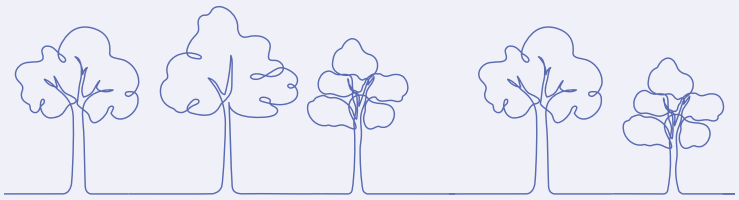
Local contributions

Monthly assistance with cleaning Puchien Li Park

In support of Hsinchu City's Environmental Friendly Day promotion, a total of 23 people were mobilized in 2024 to regularly assist in cleaning Puchien Li Park every month, actively participating in the maintenance of the community's public space environment and improving the quality of local life and environment.

Material sponsorship for the Water Environment Patrol Team

Donated NT$60,000 in supplies to the Water Environment Patrol Team to purchase patrol vests for the team members. This will improve their vision, strengthen their daily patrols and environmental protection capabilities, and help maintain the ecological quality of rivers and wetlands.



Foreign employee participation

Christmas dinner for foreign migrant workers

In 2024, two groups of foreign migrant workers' tours and Christmas dinners were arranged in September and December, and employees were allowed to invite relatives and friends to participate to enhance communication and a sense of belonging among employees. A total of 220 people participated. We fostered team cohesion and enhanced job satisfaction through activities, consistently demonstrating care and support for our diverse workforce.

Forum on the Elimination of Human Trafficking

We cooperated with the Hsinchu City Labor Department to assist in organizing "Eliminate Human Trafficking" awareness campaign and symposium, with 45 participants. We helped foreign migrant workers understand common traps and help channels, and strengthen their awareness of human trafficking issues and self-protection capabilities.

Appendices

Appendix 1: GRI Standards

The following content has been independently verified by an impartial third-party organization. The verification results are shown in Appendix 5: Independent Assurance Report.

"*" indicates a material topic, and " ● " indicates external assurance.

GRI General Standards Statement	Publish the 2024 Sustainability Report in accordance with GRI standards, with data and information covering the period from January 1 to December 31, 2024
GRI 1 Version used	GRI 1: Foundation 2021
Application of GRI Industry Standards	None

GRI 2: General Disclosures 2021				
Indicators	disclosures	Corresponding chapter or description	External assurance	Page
Organization and reporting				
GRI 2-1	Organization information	About the report 2.1 About TGI	●	4 38
GRI 2-2	Entities included in organization's sustainability reporting	About the report 2.1 About TGI	●	4 39
GRI 2-3	Reporting period, reporting frequency and contact person	About the report	●	4 6
GRI 2-4	Restatements of information	There was no restatement of information in this year's report	●	N/A
GRI 2-5	External assurance	Appendix 5: Assurance Report	●	5 220
Activities and workers				
GRI 2-6	Activities, value chains and other business relationships	2.1 About TGI 3.1 TGI products 3.5 Sustainable Supply Chain	●	42 50 54 55 111
GRI 2-7	Employees	5.1 Human resources and welfare	●	158
GRI 2-8	Non-employee workers	5.1 Human resources and welfare	●	158
Governance				
GRI 2-9	Governance structure and composition	1.1 TGI's sustainable management practice 2.2 Integrity of TGI	●	16 55

Indicators	disclosures	Corresponding chapter or description	External assurance	Page
GRI 2-10	Nomination and selection of the highest governance body	2.2 Integrity of TGI	●	58
GRI 2-11	Chair of the highest governance body	2.2 Integrity of TGI	●	56
GRI 2-12	The role of the highest governance body in overseeing impact management	1.1 TGI's sustainable management practice 1.2 Identification of Stakeholders and Material Issues	●	16 21
GRI 2-13	Delegating responsibility for impact management	1.1 TGI's sustainable management practice	●	16 18
GRI 2-14	The role of the highest governance body in sustainability reporting	About the report 1.1 TGI's sustainable management practice	●	4 16
GRI 2-15	Conflict of interest	2.2 Integrity of TGI	●	63
GRI 2-16	Communication of important matters	1.2 Identification of Stakeholders and Material Issues	●	35
GRI 2-17	Collective knowledge of highest governance body	2.2 Integrity of TGI	●	63
GRI 2-18	Performance evaluation of the highest governance body	2.2 Integrity of TGI	●	62
GRI 2-19	Remuneration policy	2.2 Integrity of TGI	●	61
GRI 2-20	Process for determining remuneration	2.2 Integrity of TGI 5.1 Human resources and welfare	●	61 158
GRI 2-21	Annual total remuneration ratio	This is the Company's confidential information and will not be disclosed	●	N/A
Strategy, policies and practices				
GRI 2-22	Sustainable Development Strategy Statement	Message from the Chairman	●	8
GRI 2-23	Policy commitments	1.1 TGI's sustainable management practice	●	14
GRI 2-24	Integration policy commitments	1.1TGI's sustainable management practice 2.2 Integrity of TGI	●	14 64
GRI 2-25	Negative impact remuneration process	2.2 Integrity of TGI	●	65
GRI 2-26	Mechanisms for soliciting suggestions and raising concerns	2.2 Integrity of TGI	●	65
GRI 2-27	Legal Compliance	2.2 Integrity of TGI 3.1 TGI products 4.1 Sustainable management strategy 5.3 Occupational Safety and Health	●	66 84 120 186
GRI 2-28	Membership of public associations	2.1 About TGI	●	51
Stakeholder Engagement				
GRI 2-29	Stakeholder engagement methods	1.2 Identification of Stakeholders and Material Issues	●	21 35
GRI 2-30	Collective bargaining agreements	5.1 Human resources and welfare	●	169

GRI Topic-Specific Guidelines

*Material Issues

GRI Category/ Topic	Number	GRI indicator content	Corresponding chapter	External assurance	Page
GRI 3: Material Topics 2021	3-1	Process for determining material topics	1.2 Identification of Stakeholders and Material Issues		21
	3-2	List of material topics	1.2 Identification of Stakeholders and Material Issues		23
	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
Governance					
Economic performance*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	201-1	Direct economic value generated and distributed	2.1 About TGI		52
	201-2	Financial implications and other risks and opportunities due to climate change	4.4 Climate Action		148
	201-3	Defined benefit obligations and other retirement plans	5.1 Human resources and welfare		168
	201-4	Financial assistance from the government	2.1 About TGI		53
Market position	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	5.1 Human resources and welfare		166
	202-2	Percentage of local residents among senior management	5.1 Human resources and welfare		158
Indirect economic impacts	203-1	Infrastructure investments and services supported	6.1 Social engagement 6.2 Community engagement		192 198
Procurement impacts	204-1	Proportion of spending on local suppliers	3.5 Sustainable Supply Chain		110
Anti-corruption	205-2	Communication and training about anti-corruption policies and procedures	2.2 Integrity of TGI		64
	205-3	Confirmed incidents of corruption and actions taken	2.2 Integrity of TGI		64
Anti-competitive behavior	206-1	Legal actions against anti-competitive conduct, antitrust, and monopolistic practices	3.1 TGI products	●	84
Taxation	207-1	Tax policy	2.1 About TGI		53
Environment					
Materials*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	301-1	Materials used by weight or volume	4.2 Energy/resource management		121
	301-2	Percentage of recycled raw materials	4.2 Energy/resource management		135
	301-3	Recycled products and packaging	3.1 TGI products		135

GRI Category/ Topic	Number	GRI indicator content	Corresponding chapter	External assurance	Page
Energy*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	302-1	Energy consumption within the organization	4.2 Energy/resource management		124
	302-2	Energy consumption outside the organization	4.2 Energy/resource management		124
	302-3	Energy intensity	4.2 Energy/resource management		125
	302-4	Reduction of energy consumption	4.2 Energy/resource management		129
	302-5	Reductions in energy requirements of products and services	4.2 Energy/resource management		129
Water and effluent*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	303-1	Mutual impacts of shared water resources	4.3 Green production management		131
	303-2	Management of drainage-related impacts	4.3 Green production management	●	145
	303-3	Water withdrawal	4.2 Energy/resource management	●	132
	303-4	Water discharge	4.2 Energy/resource management		132
	303-5	Water consumption	4.2 Energy/resource management		132
Biodiversity	304-1	The organization's owned, leased, managed operations or their adjacent areas are located in protected areas or other areas of high biodiversity value	Most of our factories are located in government-approved industrial zones, which are developed lands. Our operations have limited impact on natural ecology and biodiversity. For Hsinchu Factory, which is not located in an industrial zone, we have also completed an environmental risk assessment, confirming that there are no nature reserves or sensitive habitats around the operating site, and that our operations have no significant impact on the local ecology		N/A
Emissions*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	305-1	Direct (Scope 1) greenhouse gas emissions	4.2 Energy/resource management		126
	305-2	Energy indirect (Scope 2) greenhouse gas emissions	4.2 Energy/resource management		126
	305-3	Other indirect (Scope 3) greenhouse gas emissions	4.2 Energy/resource management		127
	305-4	GHG emissions intensity	4.2 Energy/resource management		126
	305-5	Reduction of GHG emissions	4.2 Energy/resource management		129
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other major gas emissions	4.3 Green production management		141
Waste*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	306-1	Waste generation and waste-related significant impacts	4.3 Green production management		136

GRI Category/ Topic	Number	GRI indicator content	Corresponding chapter	External assurance	Page
Waste*	306-2	Management of significant waste-related impacts	4.3 Green production management		136
	306-3	Waste generated	4.3 Green production management		137
	306-4	Waste diverted from disposal	4.3 Green production management		137
	306-5	Waste directed to disposal	4.3 Green production management		137
Supplier environmental assessment	308-1	New suppliers that were screened using environmental criteria	3.5 Sustainable Supply Chain		114
	308-2	Negative environmental impacts of the supply chain and actions taken	3.5 Sustainable Supply Chain		115
Social					
Labor-employment relation*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	401-1	New employee hires and employee turnover	5.1 Human resources and welfare	●	160
	401-2	Benefits provided to full-time employees (excluding temporary or part-time employees)	5.1 Human resources and welfare		167
	401-3	Parental leave	5.1 Human resources and welfare		164
Labor/management relations*	402-1	Minimum notice periods regarding operational changes	5.1 Human resources and welfare		170
Occupational Health and Safety*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	403-1	Occupational health and safety management system	5.3 Occupational Safety and Health		179
	403-2	Hazard identification, risk assessment and accident investigation	5.3 Occupational Safety and Health		177
	403-3	Occupational health services	5.3 Occupational Safety and Health		188
	403-4	Worker participation, consultation, and communication on occupational health and safety	5.3 Occupational Safety and Health		178
	403-5	Worker training on occupational health and safety	5.3 Occupational Safety and Health		180
	403-6	Promotion of worker health	5.3 Occupational Safety and Health		182
	403-7	Prevent and mitigate occupational health and safety impacts directly related to business relationships	5.3 Occupational Safety and Health		179
	403-8	Workers covered by an occupational health and safety management system	2.2 Integrity of TGI		66
	403-9	Work-related injuries	5.3 Occupational Safety and Health	●	179
	403-10	Occupational disease	5.3 Occupational Safety and Health		188
Training and education	404-1	Average hours of training per year per employee	5.2 Talent development and training		171
	404-2	Enhancing employee capabilities and transition assistance programs	5.2 Talent development and training		172

GRI Category/ Topic	Number	GRI indicator content	Corresponding chapter	External assurance	Page
Training and education	404-3	Percentage of employees receiving regular performance and career development reviews	5.2 Talent development and training		166
Diversity and equal opportunity	405-1	Diversity of governance bodies and employees	2.2 Integrity of TGI 5.1 Human resources and welfare		58 163
	405-2	Ratio of female to male basic salary and remuneration	5.1 Human resources and welfare		166
Non-discrimination	406-1	Incidents of discrimination and corrective actions taken	5.3 Occupational Safety and Health		163
Freedom of association and collective bargaining	407-1	Operations or suppliers susceptible to risks concerning freedom of association and collective bargaining	5.1 Human resources and welfare		169
Child labor	408-1	Operations and suppliers at significant risk for incidents of child labor	5.3 Occupational Safety and Health		161
Forced or compulsory labor	409-1	Operational locations and suppliers with significant risks of forced and compulsory labor	TGI reported no related incidents		161
Indigenous rights	411-1	Incidents of violations involving rights of indigenous peoples	5.1 Human resources and welfare		163
Supplier social assessment	414-1	Selection of new suppliers using social principles	3.5 Sustainable Supply Chain		114
	414-2	Negative social impacts in the supply chain and actions taken	3.5 Sustainable Supply Chain		115
Public policy	415	Political donations	TGI reported no related incidents		-
Customer health and safety*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	416-1	Assess the health and safety impact of product and service categories	3.1 TGI products		84
	416-2	Violations of health and safety regulations related to products and services	3.1 TGI products	●	84
Marketing and Labeling	417-1	Product and service information and labeling requirements	3.1 TGI products		84
	417-2	Incidents of non-compliance concerning product and service information and labeling	3.1 TGI products		84
	417-3	Incidents of non-compliance concerning marketing communications	3.1 TGI products		84
Customer privacy*	3-3	Material topics management	1.2 Identification of Stakeholders and Material Issues		23
	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	2.3 Risk management		81

Appendix 2: Table of Reference to The UN Global Compact

Item No.	Article	Corresponding chapter	Page
1. Human Rights			
1	Support and respect international human rights within the Company's sphere of influence	3.5 Sustainable Supply Chain 5.1 Human resources and welfare	110 158
2	Companies should ensure that human rights are not violated within their own companies	5.1 Human resources and welfare	158
2. Labor Practices			
3	Guarantee workers' freedom of assembly and association, and effectively recognize the right to collective bargaining	5.1 Human resources and welfare	158
4	Eliminate all forms of forced labor	CH5 Safe Workplace, Trust, and Growth	158
5	Effectively abolish child labor	5.1 Human resources and welfare	158
6	Eliminate discrimination in employment and occupation	5.1 Human resources and welfare	158
3. Environmental			
7	Support preventative measures to address environmental challenges	2.3 Risk management CH4 Sustainable, Energy Conservation, and Green Practices	67 116
8	Adopt practices to enhance corporate environmental responsibility	CH4 Sustainable, Energy Conservation, and Green Practices	116
9	Encourage the research, development and dissemination of environmentally friendly technologies	3.1 TGI products 4.2 Energy/resource management 4.3 Green production management	84 121 135
4. Anti-corruption			
10	Companies should be committed to combating corruption, including extortion and bribery	2.2 Integrity of TGI	55

Appendix 3: Table of Reference to Standards of Sustainability Accounting Standards Board (SASB)

SASB Standards-Building Materials Index Comparison Table

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapter	Disclosure of page number
Greenhouse gas (GHG) emission	EM-CM-110a.1.	Quantification	1. Total global Scope 1 greenhouse gas emissions; 2. Share of global regulated greenhouse gas emissions.	4.2 Energy/resource management	121
	EM-CM-110a.2.	Qualitative	Scope 1: Long-term and short-term strategies or plans for emissions management, description of reduction targets, and analysis of performance against targets	4.2 Energy/resource management	121
Air quality	EM-CM-120a.1.	Quantification	Air pollution emissions include the following pollutants: (1) NOx nitrogen oxides (excluding N2O); (2) SOx sulfur oxides; (3) suspended particulate matter (PM10); (4) dioxins/furans; (5) volatile organic compounds (VOCs); (6) polycyclic aromatic hydrocarbons (PAHs); and (7) heavy metals.	4.3 Green production management	135
Energy management	EM-CM-130a.1.	Quantification	1. Total energy consumption; 2. Percentage of transmission network; 3. Percentage of alternative energy sources; 4. Percentage of renewable energy.	4.1 Sustainable management strategy 4.2 Energy/resource management	118 124 130
Water management	EM-CM-140a.1.	Quantification	1. Total water withdrawal; 2. Recycled water percentage; 3. Percentage of areas located in high or very high water stress.	4.2 Energy/resource management *The areas where TGI is located are not high water stress areas.	131-132
Waste management	EM-CM-150a.1.	Quantification	1. Amount of waste generated; 2. Proportion of hazardous waste; 3. Percentage of waste recycled.	4.3 Green production management	136-137
Biodiversity impact	EM-CM-160a.1.	Qualitative	Describe the environmental management policies and practices at active sites	4.1 Sustainable management strategy	118
	EM-CM-160a.2.	Quantification	The land area disturbed, and the percentage of affected areas that subsequently recovered	All of our factories are located within government-approved industrial zones and are developed lands with no surrounding nature reserves or sensitive habitats.	-
Labor health and safety	EM-CM-320a.1.	Quantification	1. Recordable accident rates for full-time and contract employees; 2. Frequency of near-miss accidents among full-time and contract employees.	5.3 Occupational Safety and Health	182
	EM-CM-320a.2.	Quantification	Number of reported cases of silicosis	5.3 Occupational Safety and Health *TGI had no silicosis cases in 2024	-

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapter	Disclosure of page number
Product design and life cycle management	EM-CM-410a.1.	Quantification	Percentage of products that can provide sustainable building design and construction certification	3.1 TGI products	109
	EM-CM-410a.2.	Quantification	The total potential market and market share for products that reduce energy, water, and material impacts during use and manufacturing	3.1 TGI products	109
Competitive behavior	EM-CM-520a.1.	Quantification	Total financial losses resulting from litigation related to cartel behavior, price fixing, and antitrust activities	3.1 TGI products *There were no related incidents at TGI in 2024.	-
Activity indicators	EM-CM-000.A.	Quantification	Output of main production lines	2.1 About TGI	53

SASB Standards-Hardware Index Comparison Table

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapters/ instructions	Disclosure of page number
Product safety	TC-HW-230a.1	Discussion and analysis	Description of practices for identifying and responding to product data security risks	2.3 Risk management	75
Employee diversity and inclusion	TC-HW-330a.1	Quantification	Percentage of (1) gender and (2) diversity representation for (a) senior management, (b) non-senior management, (c) technical staff, and (d) all other employees	5.1 Human resources and welfare	158-160
Product life cycle management	TC-HW-410a.1	Quantification	Percentage of product sales using materials covered by the IEC 62474 standard for electronics industry	TGI does not use chemical substances such as those covered by IEC62474, so the revenue share of IEC62474 material products is 0%.	-
	TC-HW-410a.2	Quantification	Percentage of revenue from products that meet EPEAT registration requirements or equivalent	Not applicable, TGI is not an electronic product manufacturer	-
	TC-HW-410a.3	Quantification	Percentage of revenue from products eligible for energy efficiency certification	3.1 TGI products	89
	TC-HW-410a.4	Quantification	Weight of end-of-life products and electronic waste collected; percentage recycled	4.2 Energy/resource management	123

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapters/ instructions	Disclosure of page number
Supply chain management	TC-HW-430a.1	Quantification	Percentage of Tier 1 supplier sites audited under the Responsible Business Alliance (RBA) Effectiveness Assessment Program (VAP) or equivalent, broken down by (a) all sites and (b) high-risk sites	Failure to use RBA or equivalent verification procedures	-
	TC-HW-430a.2	Quantification	Tier 1 suppliers' (1) non-conformance rate for (a) priority non-conformance and (b) other non-conformance, and (2) related corrective action rate	Failure to use RBA or equivalent verification procedures	-
Material acquisition	TC-HW-440a.1	Discussion and analysis	Description of risk management related to the use of critical materials	4.2 Energy/resource management	121
Activity indicators	TC-HW-000.A	Quantification	Number of production units, by product category	2.1 About TGI	53
	TC-HW-000.B	Quantification	Area of manufacturing facilities	The Company's manufacturing facilities in Taiwan, including Taoyuan, Hsinchu, Taichung Flat Panel, Lukang Flat Panel, and Changpin Plant, cover an area of approximately 404,100m²	-
	TC-HW-000.C	Quantification	Percentage of production from owned facilities	All of our products are manufactured in our own facilities, with own production accounting for 100%.	-

SASB Guidelines - Containers and Packaging Comparison Chart

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapter	Disclosure of page number
Greenhouse gas (GHG) emission	RT-CP-110a.1	Quantification	Percentage of Scope 1 gases emitted in total emissions under regulations limiting greenhouse gas emissions	4.2 Energy/resource management	126
	RT-CP-110a.2	Discussion and analysis	Discussion of long-term and short-term strategies for managing Scope 1 gas emissions, emission reduction targets, and analysis of performance against targets	4.2 Energy/resource management	126
Air quality	RT-CP-120a.1	Quantification	Air emissions of the following pollutants: (1) Nitrogen oxides (NOx, excluding nitrous oxide N_2O), (2) sulfur oxides (SOx), (3) volatile organic compounds (VOCs), and (4) particulate matter (PM)	4.3 Green production management	141

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapter	Disclosure of page number
Energy management	RT-CP-130a.1	Quantification	(1) Total energy consumption, (2) the share of grid electricity, (3) the share of renewable energy, and (4) the total energy generated through self-generation.	4.2 Energy/resource management	124
Water resource management	RT-CP-140a.1	Quantification	(1) Total water withdrawals and (2) percentage of recoverable water, as a percentage of areas with high or very high baseline water stress	4.2 Energy/resource management	131
	RT-CP-140a.2	Quantification	A description of water resource management risks and discussion of strategies and practices to mitigate those risks.	4.2 Energy/resource management	131
	RT-CP-140a.3	Quantification	Number of violations related to water quality permits, standards, and regulations.	4.3 Green production management	144
Waste management	RT-CP-150a.1	Quantification	Percentage of total waste generated that is hazardous and percentage that is recyclable	4.3 Green production management	137
Product safety	RT-CP-250a.1	Quantification	(1) Number of recalls, (2) Total number of recalled products	1. "475,650 units of "26oz Pasta" voluntarily recalled due to carcass deformation 2. There were 3 returns of glass fiber fabric from Taoyuan Plant, totaling approximately 5,870M 3. There were 23 returns of glass fiber fabric from Lukang Plant, totaling approximately 355,288M	-
	RT-CP-250a.2	Discussion and analysis	Description of the process for identifying and managing emerging materials and chemicals.	TGI is concerned about the potential impacts of raw materials and chemicals used in its manufacturing processes on human health and the environment, and has established material management processes to identify and manage substances that pose potential risks or are of concern to stakeholders. The glass production and post-processing process may involve chemicals such as heavy metal oxides including lead, antimony and cadmium, coating additives and cleaning agents. These materials are managed in accordance with the following procedures: 1. Material identification and monitoring: Regularly review global regulatory trends (such as REACH, RoHS, etc.) and customer requirements, and update the list of substances of concern.	-

Disclosure topics	Indicator code	Category	Disclosure indicators	Corresponding chapter	Disclosure of page number
Product safety	RT-CP-250a.2	Discussion and analysis	Description of the process for identifying and managing emerging materials and chemicals.	2. Internal control: We have established safety data sheet management process for the chemical procurement, storage, and use stages, and provide regular employee education and training. 3. Product declaration and customer communication: Provide material composition disclosure upon customer request and cooperate in hazardous substance declaration (such as RoHS, REACH).	-
Product life cycle management	RT-CP-410a.1	Quantification	Proportion of raw material sources: (1) recycled materials, (2) renewable resources, and (3) materials with both renewable and recycled sources.	4.3 Green production management	140
	RT-CP-410a.2	Quantification	Revenue from reusable, recyclable or compostable products.	4.3 Green production management	140
	RT-CP-410a.3	Discussion and analysis	Description of the strategy for reducing the environmental impact of packaging throughout its life cycle.	3.1 TGI products	84
Supply chain management	RT-CP-430a.1	Quantification	Total amount of wood fiber purchased; proportion from certified sources.	TGI did not purchase wood fiber, so the total amount and certification ratio are both 0%	-
	RT-CP-430a.2	Discussion and analysis	Total amount of aluminum purchased; proportion from certified sources.	TGI did not purchase aluminum, so the total amount and certification ratio are both 0%	-
Activity indicators	RT-CP-000.A	Quantification	Total production by substrate. These include paper or wood fibers, glass, metal, and petroleum-based substrates (polymers).	2.1 About TGI	53
	RT-CP-000.B	Quantification	Production share of each product: (1) paper/wood, (2) glass, (3) metal, and (4) plastic.	The Company's products are all glass products, and the production ratio of products is 100% glass, and no other materials are involved.	-
	RT-CP-000.C	Quantification	Employee count	5.1 Human resources and welfare	158

Appendix 4: Task Force on Climate-Related Financial Disclosures (TCFD) Comparison Table

Aspects	TCFD recommended disclosures	Corresponding chapter	Disclosure of page number
Governance	Describe the board's oversight of climate-related risks and opportunities	2.2 Integrity of TGI	55
	Describe management's role in assessing and managing climate-related risks and opportunities	2.2 Integrity of TGI	55
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	2.3 Risk management	67-73
	Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning	2.3 Risk management 4.4 Climate action	67-73 147-149
	Describe the organization's strategic resilience, considering different climate-related scenarios (including 2°C or more severe scenaris)	4.4 Climate action	152-153
Risk management	Describe the organization's processes for identifying and assessing climate-related risks	4.4 Climate action	147
	Describe the organization's processes for managing climate-related risks	4.4 Climate action	147
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	2.3 Risk management	67
Indicators and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	4.4 Climate action	148-151
	Disclosure of Scope 1, Scope 2, and Scope 3 (if applicable) greenhouse gas emissions and associated risks	4.2 Energy/resource management	126
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	4.2 Energy/resource management	125

Appendix 5: SDGs Comparison Table

SDGs targets	Corresponding GRI standards	TGI's corresponding actions	Corresponding chapter
SDG 1 No Poverty	GRI 413 Local Communities	Since 2000, TGI Cultural and Educational Foundation has awarded scholarships to 3,019 college students, totaling NT$34.31 million	6.1 Social engagement
SDG 3 Good Health and Well-being	GRI 403 Occupational Health and Safety	• Established TGI Human Rights Policy - Healthy and Safe Workplace • The implementation rate of the Four Major Programs for Occupational Safety is 100% • Enforced training for new and existing employees	5.1 Human resources and welfare 5.2 Talent development and training
SDG 4 Quality education	GRI 404 Training and Education GRI 413 Local Communities	• TGI Cultural and Educational Foundation places great emphasis on technological education, helping young adults expand vision toward potential technologies while advocating healthy exercise habits • Establishment of robust internal training system	5.2 Talent development and training 6.1 Social engagement
SDG 5 Gender Equality	GRI 401-1 New employees and former employees GRI 405-2 Ratio of female to male basic salary and remuneration	• TGI values gender equality; its male-to-female basic compensation ratio is 1:0.95, indicating a difference smaller than 0.05 • Established a mother-friendly workplace, awarded "Changhua County Friendly Breastfeeding Room" and "Excellent Breastfeeding Room"	5.1 Human resources and welfare 5.3 Occupational Safety and Health
SDG 6 Clean Water and Sanitation	GRI 303 Water and Effluent	• Prioritized purchase of water-saving equipment • Improved production procedures to use reclaimed water as diluting liquid, and thereby increasing water efficiency • All factories recycled more than 90% of water resources	3.5 Sustainable Supply Chain 4.2 Energy/resource management
SDG 7 Affordable and Clean Energy	GRI 302 Energy	The solar power generation system has a capacity of approximately 8,779 KW	4.2 Energy/resource management
SDG 8 Decent Work and Economic Growth	GRI 401 Employment GRI 403 Occupational Health and Safety GRI 404 Training and Education	• Appointed a corporate governance officer • Established a comprehensive talent development and retention policy • Offered compensations and benefits that are more favorable than what the laws require	5.1 Human resources and welfare 5.2 Talent development and training
SDG 9 Industry, Innovation and Infrastructure	GRI 302 Energy GRI 305 Emissions GRI 306 Waste	• Set Course of Action for the Excellent Products and Services of Taiwan Glass (TGI) • Passed international certifications such as ISO, FSSC, CSi (Australia) etc. • Increase the ratio of waste glass used in production and reduce the amount of raw material used; aim to increase by 2% a year	3.1 TGI products 3.2 Product quality 4.4 Climate action

SDGs targets	Corresponding GRI standards	TGI's corresponding actions	Corresponding chapter
SDG 10 Reduced Inequalities	GRI 405 Diversity and Equal Opportunity GRI 406 Non-discrimination GRI 412 Human Rights Assessment	• Complied with international human rights conventions such as principles of the "International Labour Organization," "The UN Global Compact," "UN Guiding Principles on Business and Human Rights," "United Nations Universal Declaration of Human Rights" etc. and established "TGI Human Rights Policy" • Awarded the title of "Excellent Performer in Over-quota Employment of Persons with Disabilities"	5.1 Human resources and welfare
SDG 11 Sustainable Cities and Communities	GRI 413 Local Communities	• Hualien County Government donated glass from permanent housing • to Taoyuan Plant for beach cleaning activities	6.2 Community engagement
SDG 12 Responsible Consumption and Production	GRI 205 Anti-corruption	• Established "Business Integrity Code of Conduct" and "Illegal, Unethical, and Dishonest Conducts Reporting Policy" • Established "Intellectual Property Management Plan" • All employees have signed "Employee Service Integrity Code of Conduct"	2.2 Integrity of TGI 2.3 Risk management
SDG 13 Climate Action	GRI 302 Energy GRI 305 Greenhouse Gas Emissions	Adopted the TCFD framework and established governance, strategy, and risk management measurements and goals for the identification of climate change risks and opportunities	2.3 Risk management 4.4 Climate action
SDG 15 Life on Land	GRI 301 Materials GRI 303 Water and Effluent GRI 306 Waste	Created a circular economy value chain that recognizes water, glass, waste filament, and backwashing liquid as critical circular materials	4.3 Green production management
SDG 16 Peace, Justice, and Strong Institutions	GRI 2-18 Performance evaluation of the highest governance body GRI 418 Customer Privacy	• Completed board performance evaluation for 2022 • Developed information security policies using the PDCA system	2.2 Integrity of TGI 2.3 Risk management
SDG 17 Partnerships for the Goals	GRI 308 Supplier Environmental Assessment GRI 413 Local Communities	• Participated in multiple industrial/commercial groups, cross-strait interactive organizations, regional economic/trade organizations, industry associations, and environmental/sustainability organizations to develop proactive and close working relationships with business partners • TGI has implemented its "supplier ESG evaluation" since 2015, and encourages upstream and downstream partners to improve ESG performance in ways that contribute to the creation of a sustainable supply chain • Hsinchu Factory participated in Puchien Li Mid-Autumn Festival Gala and provided food storage containers	2.1 About TGI 3.5 Sustainable Supply Chain 6.2 Community engagement

Appendix 6: Climate-related information for TWSE/ TPEX listed companies

Item	Current progress
1. Describe the board and management's oversight and governance of climate-related risks and opportunities.	With regards to the supervision of climate-related risks and opportunities, the Board of Directors is the highest governance unit on climate issues within TGI as it is responsible for supervision and decision-making. An "ESG Committee" has been assembled under the board, which regularly reports progress on climate risks and opportunities to the Board of Directors. The Sustainability Committee will formulate TGI's medium- and long-term sustainability goals, be responsible for integrating cross-departmental resources, identifying climate issues related to the Company's operations, formulating corresponding climate strategies, tracking the achievement of goals, and reporting on the implementation status to the Board of Directors on an irregular basis. The "ESG Committee" identifies climate-related risks and opportunities that are relevant to corporate operations and of concern to stakeholders in semi-annual meetings through various task forces that it has assembled for each issue. Climate change strategies and actions are being formulated in the four main aspects of "governance," "strategy," "risk management," and "metrics and goals" in an attempt to minimize climate risk impact and to ensure that management practices for climate-related risks and opportunities are duly enforced in group operations.
2. Describe how the identified climate risks and opportunities will affect the Company's business, strategy and finances (short-term, medium-term and long-term).	The Sustainability Committee will regularly conduct climate risk and opportunity identification, annually reviewing changes in policies, regulations, technology, markets, and goodwill in terms of transitional risks and opportunities. Furthermore, through climate risk and opportunity identification, the Committee will regularly review the results of physical risk, transitional risk, and opportunity assessments, and work with each factory to analyze the potential financial impact of major climate risks, formulate contingency and preventive measures, and strengthen climate resilience. Regarding climate risks, the Company has identified that intensified extreme climate events, higher raw material costs or insufficient supply may lead to delays in production schedules. Furthermore, increasingly stringent environmental regulations and the gradual improvement of carbon fee and tax mechanism may also lead to an increase in the Company's operating costs. Regarding climate opportunities, the Company is actively improving energy efficiency, developing low-carbon products using recycled raw materials, and providing guidance to high-risk suppliers to enhance supply chain stability.
3. Describe the financial impacts of extreme climate events and transition actions.	Based on the TCFD's physical risks, transition risks, and climate change opportunities, through meetings with external consultants and TGI's factory and department heads, we identified the financial impacts of extreme climate events and transition actions. The potential financial and operational impacts of climate change risk events are as follows. I.Delays in production schedules due to unstable power supply and other measures: operating costs increase and operations may be interrupted. Delays in product delivery will cause customers to lose confidence in TGI. II.Governments around the world have begun to formulate carbon fee/tax levy mechanisms: operating costs increase, affecting price competitiveness of products. III.The impact of unstable supply/transportation of energy (such as natural gas, diesel, heavy oil, LPG) caused by extreme weather may lead to delays in production scheduling, hindering production and causing equipment to be idle, with the possibility of delayed delivery. IV.Production delays or additional costs may occur due to government-imposed carbon emission controls, such as shutdowns and other measures. Some of the equipment within the factory cannot be shut down. If they are required to shut down, equipment may be damaged, and the suspension of production will also reduce revenue. V.In the future, renewable energy regulations will become stricter, resulting in additional costs: the construction of green electricity will increase operating costs. I.Stricter environmental regulations lead to rising environmental costs: erosion of production profits, such as rising water fees, carbon fees, and raw material costs.
4. Describe how the climate risk identification, assessment and management processes are integrated into the overall risk management system.	Based on the results of the questionnaire on identifying climate change risks and opportunities, the Sustainability Committee will compile major climate risk and opportunity issues and corresponding risk management measures, and conduct regular reviews and follow-up. In addition, we review changes in policies, regulations, technology, markets, and goodwill in terms of transition risks and opportunities every year. At the same time, we regularly review the assessment results of physical risks, transition risks, and opportunities through climate risk and opportunity identification, and work with each factory to develop responses.

Item		Current progress
5. If scenario analysis is used to assess resilience to climate change risks, the scenarios, parameters, assumptions, analytical factors and main financial impacts used should be explained.		To support sustainable development and prevent extreme weather from terminating company operations, the Company has introduced climate scenario analysis to assess the risks of extreme weather events at its operating sites. I. Analysis of flooding risk at operating sites: The Company uses the "Representative Concentration Pathway" from the IPCC's Fifth Assessment Report, using the difference in radiative forcing between 1750 and 2100 as an indicator to analyze flooding risk at operating sites. The RCP 8.5 scenario was used to estimate climate conditions based on information from the National Science and Technology Center for Disaster Reduction - Climate Change Disaster Risk Adaptation Platform. II. Carbon fee risk analysis: We analyzed TGI's future carbon emissions using three scenarios proposed by the International Energy Agency: the Stable Policy Scenario (STEPS), the Ambition Target Scenario (APS), and the 2050 Net Zero Emissions Scenario (NZE). We also analyzed TGI's potential carbon fee levels through 2050, using two different carbon price level scenarios based on changes in the price levied per unit of carbon emissions.
6. If there is a transition plan to manage climate-related risks, describe the content of the plan and the indicators and targets used to identify and manage physical and transition risks.		Each TGI factory will analyze climate risks and opportunities based on its own conditions and describe management policies. In response to the TCFD risk identification results, regular supplier evaluations will be conducted to reduce production risks caused by raw material shortages, and high energy-consuming equipment will be gradually replaced according to factory needs. At the same time, TGI plans to build and use solar energy, increasing the percentage of renewable energy use year by year. The construction was completed at the end of 2022 and parallel operation began in 2023.
7. If internal carbon pricing is used as a planning tool, the basis for setting the price should be explained.		In order to more effectively encourage employees to implement carbon reduction, internal carbon pricing will be introduced in the future, hoping that by reducing carbon emissions from within the Company, it can inspire peers to take carbon reduction actions.
8. If climate-related targets are set, the covered activities, scope of greenhouse gas emissions, planning period, and annual progress should be explained. If carbon offsets or renewable energy certificates (RECs) are used to achieve the relevant targets, the source and quantity of carbon reduction credits or the number of renewable energy certificates (RECs) used should be explained.		According to the "Sustainable Development Roadmap for Listed Companies" issued by the Financial Supervisory Commission in March 2022, the Company is a company with paid-in capital of NT$10 billion or more. The Company has completed the greenhouse gas inventory for Scope 1 and 2 of individual company (i.e., the parent company) in 2023 and completed the verification in 2024. The Company will continue to monitor the completion of greenhouse gas inventory and verification disclosure schedule in accordance with the reference guidelines and relevant regulations issued by the competent authorities.
9.	Greenhouse gas inventory and assurance	Please refer to the following tables 1-1-1 and 1-1-2 for details
	Greenhouse gas inventory reduction targets, strategies and specific action plans	4.1 Sustainable management strategy 4.2 Energy/resource management

1-1 The company's greenhouse gas inventory and assurance status in the last two years

The scope of information that must be disclosed according to the sustainable development roadmap for listed companies is as follows:

1. The parent company should disclose greenhouse gas inventory information for the previous year starting in 2024.
2. Subsidiaries that are included in the consolidated financial statements should disclose the previous year's greenhouse gas inventory information starting from 2025.

The Company and its consolidated subsidiaries have established a greenhouse gas inventory mechanism in accordance with the ISO 14064-1 greenhouse gas inventory standard issued by the International Organization for Standardization (ISO).

The greenhouse gas inventory data for the past two years included the greenhouse gas emissions of the Company and its subsidiaries reported in the consolidated financial statements, as follows:

1-1-1 Greenhouse gas inventory information

		2023		2024	
		Total discharge (metric tons CO_2e)	Intensity (metric tons CO_2e/ revenue in NT$ million)	Total discharge (metric tons CO_2e)	Intensity (metric tons CO_2e/ revenue in NT$ million)
TGI	Scope 1	387,204.1941		338,438.3001	
	Scope 2	221,951.7381		213,039.9011	
	Total	609,155.9322		551,478.2012	
Consolidated financial statements of all subsidiaries	Scope 1	1,639,054.8000		1,750,884.91	
	Scope 2	818,175.4400		675,384.58	
	Total	2,457,230.24		2,426,269.4900	
Total		3,066,386.1722	67.2172	2,977,747.6912	70.0600

Note 1: Greenhouse gas inventory standards: The Company uses ISO 14064-1, published by the International Organization for Standardization (ISO) to conduct greenhouse gas inventory.
Note 2: The intensity of greenhouse gas emissions was calculated based on TGI's 2024 turnover of NT$42,502,810 thousand.

1-1-2 Greenhouse Gas Assurance Information

The scope of information that must be disclosed according to the sustainable development roadmap for listed companies is as follows:

1. Parent company should disclose the greenhouse gas inventory assurance of the previous year starting from 2024.
2. Subsidiaries that are included in the consolidated financial statements should disclose the previous year's greenhouse gas inventory assurance starting from 2027

The Company regularly verifies the Scope 1 and 2 greenhouse gas emissions of individual company annually since 2023; the consolidated subsidiaries are expected to complete the Scope 1 and Scope 2 greenhouse gas inventory assurance in the second half of 2025.

The Company's individual assurance engagements for the past two years are described as follows:

Scope of assurance		2023	2024
		Total discharge (metric tons CO_2e)	Total discharge (metric tons CO_2e)
TGI	Scope 1	387,204.1941	338,453.4652
	Scope 2	221,951.7381	213,039.9011
	Total	609,155.9322	551,493.366
	Percentage of inventory data disclosed in the above 1-1-1	98.3%	100%
	Assurance institution	SGS Taiwan Ltd.	SGS Taiwan Ltd.
	Statement of assurance	ISO 14064-3 Reasonable Assurance	ISO 14064-3 Reasonable Assurance
	Assurance opinion	Unqualified opinion	Unqualified opinion

Appendix 7: Assurance Report

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會計師有限確信報告

台灣玻璃工業股份有限公司　公鑒：

確信範圍

本會計師接受台灣玻璃工業股份有限公司(以下簡稱台玻公司)之委任，對2024年度永續報告書中所選定之永續績效資訊（以下稱「標的資訊」），執行財團法人中華民國會計研究發展基金會所發布之確信準則所定義之「有限確信案件」並出具報告。

標的資訊及其適用基準

有關台玻公司之標的資訊及其適用基準詳列於附件一。

管理階層之責任

台玻公司管理階層之責任係依據臺灣證券交易所「上市公司編製與申報永續報告書作業辦法」之規定，以及參考適當之基準編製標的資訊，包括依據全球永續性報告協會(Global Reporting Initiatives, GRI)所發布之2021年GRI 準則(GRI Standards)，台玻公司管理階層應選擇所適用之基準，並對標的資訊在所有重大方面是否依據該適用基準報導負責，此責任包括建立及維持與標的資訊編製有關之內部控制，維持適當之記錄並作成相關之估計，以確保標的資訊未存有導因於舞弊或錯誤之重大不實表達。

本會計師之責任

本會計師之責任係依據所取得之證據對標的資訊作成結論。

本會計師依照財團法人中華民國會計研究發展基金會所發布之確信準則3000號「非屬歷史性財務資訊查核或核閱之確信案件」之要求規劃並執行確信工作，以發現標的資訊在所有重大方面是否有未依適用基準編製而須作修正之情事，並出具有限確信報告。

本會計師依據專業判斷，包括對導因於舞弊或錯誤之重大不實表達風險之評估，以決定確信程序之性質、時間及範圍。

本會計師相信已取得足夠及適切之證據，以作為表示有限確信結論之基礎。

會計師之獨立性及品質管理

本會計師及所隸屬組織遵循會計師職業道德規範中有關獨立性及其他道德規範之規定，該規範之基本原則為正直、公正客觀、專業能力及專業上應有之注意、保密及專業行為。

本事務所遵循品質管理準則1號「會計師事務所之品質管理」，該品質管理準則規定組織設計、付諸實行及執行品質管理制度，包含與遵循職業道德規範、專業準則及適用之法令規範相關之政策或程序。

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所執行程序之說明

有限確信案件中執行程序之性質及時間與適用於合理確信案件不同，其範圍亦較小。因此，有限確信案件中取得之確信程度明顯低於合理確信案件中取得者。本會計師所設計之程序係為取得有限確信並據此作成結論，並不提供合理確信必要之所有證據。

儘管本會計師於決定確信程序之性質及範圍時曾考量台玻公司之業務與內部控制之有效性，惟本確信案件並非對台玻公司內部控制之有效性表示意見。本會計師所執行之程序不包括測試控制或執行與檢查資訊科技(IT)系統內資料之彙總或計算相關之程序。

有限確信案件包括進行查詢，主要係對負責編製標的資訊及相關資訊之人員進行查詢，並應用分析及其他適當程序。

本會計師所執行之程序包括：

- 與台玻公司之管理階層及員工進行訪談，以瞭解台玻公司之業務與履行永續發展之整體情況，以及報導流程；
- 透過訪談、檢查相關文件，以瞭解台玻公司之主要利害關係人及利害關係人之期望與需求、雙方具體之溝通管道，以及台玻公司如何回應該等期望與需求；
- 與台玻公司做關人員進行訪談，以瞭解用以蒐集、整理及報導標的資訊之相關流程；
- 檢查計算標準是否已依據適用基準中概述的方法正確應用；
- 針對報告中所選定之永續績效資訊進行分析性程序；蒐集並評估其他支持證據資料及所取得之管理階層聲明；如必要時，則抽選樣本進行測試；
- 閱讀台玻公司之永續發展報告書，確認其與本事務所取得關於永續發展整體履行情況之瞭解一致。

先天限制

因永續報告中所包含之非財務資訊受到衡量不確定性之影響，選擇不同的衡量方式，可能導致績效衡量上之重大差異，且由於確信工作係採抽樣方式進行，任何內部控制均受有先天限制，故未必能查出所有業已存在之重大不實表達，無論是導因於舞弊或錯誤。

結論

依據所執行之程序及所取得之證據，本會計師未發現標的資訊有未依照適用基準編製而須作重大修正之情事。

安永聯合會計師事務所

會計師：李育儒 李育儒

民國一一四年八月十一日

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附件一：

編號	頁次	內文標題	標的資訊	適用基準
1	符合性確信		台玻揭露 2024 年度永續發展報告書係依據全球永續性標準理事會(Global Sustainability Standards Board, GSSB)發布之 GRI 準則(GRI Standards 2021)編製	GRI 準則(GRI Standards 2021)
2	84	3.1 台玻產品	台玻產品 2024 年無違反產品健康與安全、標示及市場推廣相關法規，亦無發生產品被禁止銷售之事件。台玻 2024 年亦無涉及反競爭行為、反托拉斯與壟斷措施的法律訴訟	公司適用之商品標示法、食品安全衛生管理法、國際反托拉斯法、消費者保護法
3	131-132	4.2 能資源管理	2023 年及 2024 年台玻各廠用水量統計	公司統計資料
4	144-145	4.3 綠色生產管理-水汙染管理	台玻各廠廢水量、各廠區廢水排放地及相關法規與標準、2024 年各廠排放水監測值	公司統計資料
5	160-161	5.1 人力資源及福利-員工新進率及離職率統計	2024 年員工新進率及離職率統計	公司統計資料
6	184	5.3 職場安全與健康-職業安全管理	2024 年失能傷害頻率、失能傷害嚴重率、缺席率	公司統計資料

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Appendix 8: Chinese-English Terminology Comparison Table

English name	Chinese name	Description
GRI (Global Reporting Initiative)	全球報告倡議組織	Published the world's most widely used sustainability reporting standard.
Sustainable Development Goals (SDGs)	永續發展目標	The 17 global Sustainable Development Goals proposed by the United Nations in 2015 aim to achieve balanced economic, social and environmental development by 2030.
Organisation for Economic Co-operation and Development (OECD)	經濟合作暨發展組織	An international organization composed of 38 member countries that promotes economic growth, financial stability and sustainable development.
AA 1000 Stakeholder Engagement Standard	AA 1000 SEC 利害關係人議和標準	International standards for communication and engagement with enterprises and stakeholders.
International Standard on Assurance Engagements (ISAE 3000)	國際確信業務準則	Standards for assurance engagements relating to non-financial information issued by the International Auditing and Assurance Standards Board (IAASB).
The United Nations Global Compact (UNGC)	聯合國全球盟約	Initiated by the United Nations in 2000, it encourages companies to act in accordance with the ten principles across four major areas: human rights, labor, environment, and anti-corruption.
ISO 26000 Social Responsibility Guidance Standard	ISO 26000 社會責任標準指南	This document serves as a guiding framework for social responsibility issues and is a non-mandatory certification standard.
Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies	臺灣證券交易所「上市公司編製與申報永續報告書作業辦法」	Published by the Taiwan Stock Exchange, it regulates the operational requirements and content standards for the preparation and submission of sustainability reports by listed companies.
Task Force on Climate-related Financial Disclosures (TCFD)	氣候相關財務揭露	Established by the Financial Stability Board, it proposes a disclosure framework for climate-related financial risks and opportunities to help companies cope with the impacts of climate change.
Sustainability Accounting Standards Board (SASB)	永續會計準則委員會	Develop industry-based sustainability accounting standards to help companies disclose financially impactful sustainability information in their financial reports.