



TAIWAN GLASS IND. CORP.

2023
ESG Report

2023

TGI 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. We have been preparing Corporate Social Responsibility Reports since 2013, and the “2023 ESG Report” was TGI’s 11th issue. We renamed the report “ESG Report” in 2021 for conformity with international trends and government regulations, and now publish the report in both a Chinese and English version. 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: Ongoing Communication, Integrity Governance, Products & Services, Green Management, 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 2023. 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 between January 1 and December 31, 2023. Some of the contents also trace back or extend to periods before and after 2023, whereas future strategies, goals, and plans are partially explained in the report.

Content and performance data of this report mainly cover TGI’s Taiwan operations, including the Headquarters and manufacturing sites (namely Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory). Indicators that pertain to other areas will be explained separately in the report. All data disclosed in the report is presented using globally recognized indicators. Any use of estimate will be explained in the respective chapters. The financial data has been audited and confirmed by Ernst & Young, and is presented in NTD. There is no significant change in the scope or boundary of report compared to the “2022 ESG Report.”

Preparation principles and guidelines

TGI has prepared the “2023 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:

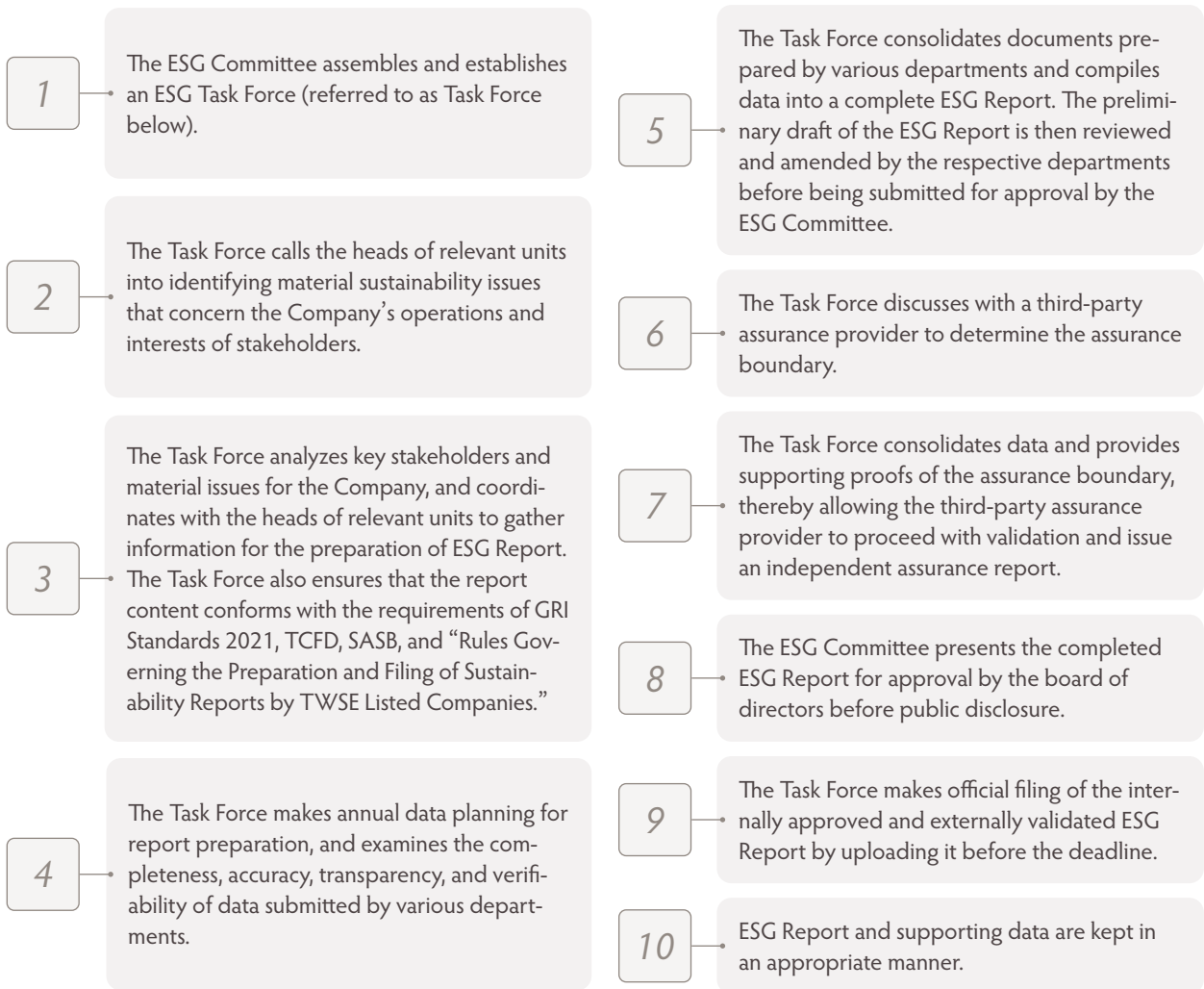
- “GRI Standards” issued by the Global Reporting Initiative (GRI)
- United Nations Sustainable Development Goals (SDGs)
- Earth Charter, Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
- AA 1000 SEC Stakeholder Engagement Standards (version 2015)
- 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 validation procedures for the ESG 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.

The Company has engaged Ernst & Young, an independent and credible accounting firm, to provide limited assurance on our 2023 ESG Report according to Statement of Assurance Principles No. 3000 - “Audit and Review of Non-historical Financial Information.” Outcomes of the assurance review have been fully communicated with the governance body. Please refer to the Independent Assurance Report, presented as an appendix of this report, for more details on the scope and conclusion of CPA’s assurance.



Reporting period and cycle

TGI publishes “ESG Report” on a yearly basis
 Current issue: published in August 2024
 Previous issue: published in July 2023

Taiwan Glass Industry Corporation



Visit the [TGI website](#),
or scan QRCode

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 “2023 ESG Report.”
 Contact information:

Taiwan Glass Industry Corporation

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- TEL: +886-2-2713-0333 #1727
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Message from the Chairman

Greetings to all our directors and shareholders:

In 2023, after the pandemic, global supply chains underwent restructuring, geopolitical tensions escalated, and there was a significant investment in net-zero transformation and complex structural changes. These factors caused US government bond yields to skyrocket to new highs in the fourth quarter, surpassing post-financial crisis levels. As we move into 2024, inflation is expected to decrease, prompting global central banks, with the Federal Reserve in the United States at the forefront, to gradually announce interest rate cuts. The economy is projected to recover at a moderate pace, although facing a short-term period of relatively high interest rates.

In late 2023, China's Ministry of Commerce pre-announced its finding that Taiwan's trade restrictions on China amounted to a trade barrier. This was seen as contradicting the goals of fostering normalized, institutionalized, and liberalized cross-strait economic relations under the Economic Cooperation Framework Agreement (ECFA). As a result, there could potentially be a complete or partial suspension of the ECFA's early harvest list comprising 539 items, coupled with China imposing corresponding sanctions on 2,509 items prohibited by Taiwan. We advised the government to devise response plans accordingly. Meanwhile, as a response to the EU's Carbon Border Adjustment Mechanism (CBAM) and the US Clean Competition Act (CCA), it is imperative to set clear energy efficiency targets and favorable fee structures. This will aid businesses in independently reducing carbon emissions. Furthermore, evaluations should be conducted concerning the imposition of carbon tariffs on imported goods. It's suggested to reconsider energy policies by boosting incentives for green energy investments. This can be achieved through measures like investment offsets, interest subsidies for financing, and tax incentives for private equity leasing. These steps will encourage green energy firms to invest in infrastructure, promote research and application of carbon capture & storage technology, and hasten the transition to a low-carbon, clean energy environment. Regarding the comprehensive rise in electricity prices beginning in April, it's advisable for the central bank to align with global interest rate reductions and avoid raising interest rates, although it will affect both industrial and consumer prices.

Reviewing Taiwan Glass's performance in 2023, various factors like inventory clearance in the electronics sector, inflation, and exchange rate losses have impacted overall results. The group's consolidated revenue for 2023 amounted to NT\$45.62 billion, with a post-tax net profit of NT\$25 million. The following is a report detailing the business activities of each product.

In terms of flat glass, as raw material prices continue to climb, our factories are rolling out plans to cut costs and boost efficiency. They're also aligning with government policies on carbon reduction by installing solar photovoltaic systems totaling 8,700KW. Furthermore, they're swapping out outdated, inefficient equipment, utilizing AI and big data analysis for energy and carbon savings, further trimming down production energy usage. With Taiwan's power structure and electricity prices undergoing changes, the Company is also actively developing LOW-E energy-saving glass applications. This effort extends to promoting smart, zero-carbon green buildings in commercial and residential sectors to meet stricter energy-saving standards for building glass curtain walls. This initiative targets reducing air conditioning energy consumption and effectively cutting electricity expenses.

Beginning in 2023, authorities in China have eased restrictions on the real estate industry, offering increased support for consumers and property developers. This initiative has also prompted infrastructure development, leading to a gradual rebound in domestic demand. The market sees promising business opportunities after these changes and expects them to stimulate the industry and economy.

In the fiber business, Taiwan Glass is focused on cost reduction, speeding up R&D and enhancing product value. To meet the future market demands for electronic-grade fiberglass fabric in high-speed, high-frequency transmission, and AI applications, we offer low DK (DK value of 4.58 at 10GHz) and second-generation low DK (DK value of 4.3 at 10GHz) fiberglass fabrics. These products consistently earn certifications from major international end-users. Through collaboration with Owens Corning in FRP, Taiwan Glass is increasing production capacity, lowering costs, and providing customers with comprehensive and high-performance environmentally friendly products.

In the container, tableware, kitchenware and private brand sector, Taiwan Glass is actively pursuing bids for various domestic market projects and securing foreign orders to enhance profit margins.

Regarding sustainable business practices, as global companies enhance their ESG (Environmental, Social, and Governance) investments and policies, Taiwan Glass has consistently earned recognition. It has been awarded the "Silver Award for Traditional Manufacturing Industry" at the Taiwan Corporate Sustainability Awards for eight years running. Furthermore, in the TCSA evaluation, it has garnered accolades such as the "Circular Economy Leader Award," "Innovative Growth Leader Award," and "Taiwan Top 100 Sustainable Exemplary Enterprise Award," among other ESG honors. Taiwan Glass remains committed to reducing environmental and social impacts across its product chain. Collaborating closely with its supply partners, we strive for mutual growth, leading to significant and visible achievements.

This year marks 60th anniversary of Taiwan Glass, and we would like to extend our heartfelt thanks to our stockholders, directors, independent directors, employees, corporate partners, distributors, and customers for their unwavering support throughout the years. Over the past six decades, amid changing times and external landscapes, we've faced continuous competition and challenges. In recent years, especially in the post-pandemic era, rapid global changes and the adoption of AI intelligence, digitization, and unmanned technology have ushered in a new era. Alongside adapting and innovating, as a leader in the glass industry, Taiwan Glass, with all stakeholders, is intensifying sustainable transformation efforts and establishing a low-carbon operational model, building upon our strong foundation. We are committed to keeping abreast of current trends, maintaining steady operations, and addressing future challenges in business management, environmental stewardship, and social responsibility.



Chairman of Taiwan Glass Industry Corporation

Lin, Por Fong

2023 performance highlights

Sustainability performance and honors



Taiwan Top 100 Sustainable Enterprises Award

TGI received “Taiwan Top 100 Sustainable Enterprises Award” during the 2023 Taiwan Corporate Sustainability Awards (TCSA)



TCSA Corporate Sustainability Report Award - Silver

TGI won TCSA’s Corporate Sustainability Report Award - Silver in the “Conventional Manufacturing” category for 9 consecutive years



Excellent Breastfeeding Room Certification

TGI received certification for “Excellent Breastfeeding Room Certification” from Taipei City Government Department of Health in 2023



4-year consecutive winner of Excellent Performer in Over-quota Employment of Persons with Disabilities

Lukang Factory was once again named “Excellent Performer in Over-quota Employment of Persons with Disabilities” by the Ministry of Labor in 2023



TCSA Growth through Innovation Leader Award

TGI won “Single Category Performance - Growth through Innovation Leader” during the 2023 TCSA



TCSA Circular Economy Leadership Award

TGI won “Single Category Performance - Circular Economy Leadership Award” during the 2023 TCSA



Corporate Food Safety Volunteer Award

Taoyuan City Government Department of Health launched the Business Food Safety Initiative ahead of other cities in Taiwan in 2023, and by having the catering manager undergo the necessary training, TGI’s Taoyuan Factory received the Corporate Food Safety Volunteer Award as proof of conviction to food safety.



Worker commendation on Labor Day

Changhua Coastal Industrial Park Manufacturer Association held an event to commend outstanding workers on Labor Day, during which employees of the Utilities Section at Lukang Factory received “Changhua Coastal Industrial Park Manufacturer Association 2023 Labor Day Commendation of Role Model Workers” for their exceptional work initiative, performance, and capabilities.

Sustainability highlights



Sustainable management

- Environmental protection spending amounted to **NT\$240 million** in 2023
- Total GHG emission in 2023 was **10.59%** lower than 2022



Social inclusion

- Since 2000, TGI Cultural and Educational Foundation has rewarded a total of **2,933 college students** and paid **NT\$33.45 million** in scholarship
- TGI made **NT\$3.7 million** in social donations in 2023
- TGI’s entry-level employees were paid **155%** of the local minimum salary on average
- 83%** of new recruits that were trained under the <Counselor system for new recruits> in 2023 remained in duty as of December 31, 2023
- 28** people of indigenous origin were hired, which demonstrated the organization’s attention to diversity



Supply chain and environment

- 100%** of flat glass products comply with CE (Europe), ANSI (USA), and CNS (Taiwan) standards
- 100%** of fiber glass products had complied with RoHS and REACH requirements
- 100%** of glass container products had complied with Sanitation Standard for Food Utensils, Containers and Packages in Taiwan and the FSSC 22000 standards
- 55.37%** of glass container products were recycled and reused on average; ongoing improvements are being made
- By improving the energy efficiency of production equipment and procedures, such as solar panels, motors, and lighting, the Company was able to save power consumption by nearly **6.67 million kWh**

Sustainability Communication

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| Sustainability Management Performance of 2023



Top 100 Sustainable Enterprises Award

TGI received "Taiwan Top 100 Sustainable Enterprises Award" during the 2023 TCSA



Silver Award

TGI won Corporate Sustainability Report Award - Silver in the [Conventional Manufacturing] category for 9 consecutive years



8 main categories

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



12 issues

In 2023, TGI directed attention to 12 major sustainability issues and devised effective management solutions for each issue

1.1

TGI's sustainable management practice

Being a 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."

All of our directors have adhered to their duties as prudent managers and supervised the Company in fulfillment of its corporate social responsibilities. In addition to managing progress, the directors also contribute toward improving our efforts and practices in every aspect. The board of directors fulfills sustainable management obligations and corporate social responsibilities primarily through the following actions:

- I. Outline the Company's CSR mission and vision; establish corporate sustainability policy, system, or management guidelines.
- II. Incorporate sustainability into the Company's operating activities and growth, and devise feasible ESG action plans.
- III. Ensure timely and accurate disclosure of sustainability-related information.

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, well-being, 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

SDGs now make up the main focus of TGI's sustainability strategies. The Company is a member of the Alliance for Sustainable Development Goals (A-SDGs), which was jointly founded in August 2018 by Taiwan Institute for Sustainable Energy, Center for Corporate Sustainability, businesses, government agencies, academic institutions, and non-government organizations, and it observes the rules of A-SDGs by exerting commercial influence on the industry. A-SDGs executes its strategies through “globalization,” “integration,” “partnership,” “business participation,” and “education.” Using SDGs as a common global language, it invites participants from different fields toward developing sustainability as a competitive edge, and promises to create an inclusive society and a sustainable environment in joint effort with all stakeholders.



SDGs	TGI's Action
<p>SDG1 No poverty</p>	<ul style="list-style-type: none"> Since 2000, TGI Cultural and Educational Foundation has rewarded a total of 2,933 college students and paid NT\$33.45 million in scholarship
<p>SDG3 Good health and well-being</p>	<ul style="list-style-type: none"> 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
<p>SDG4 Quality education</p>	<ul style="list-style-type: none"> 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
<p>SDG5 Gender equality</p>	<ul style="list-style-type: none"> TGI values gender equality; its male-to-female basic compensation ratio is 1:0.95, indicating a difference smaller than 0.05 TGI is dedicated to creating a maternity-friendly workplace, and passed “2023 Excellent Breastfeeding Room Certification by the Taipei City Government Department of Health”
<p>SDG6 Clean water and sanitation</p>	<ul style="list-style-type: none"> 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
<p>SDG7 Affordable and clean energy</p>	<ul style="list-style-type: none"> Constructed approximately 8,784 KW of solar power capacity
<p>SDG8 Decent work and economic growth</p>	<ul style="list-style-type: none"> 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

SDGs	TGI's Action
<p>SDG9 Industry, innovation and infrastructure</p>	<ul style="list-style-type: none"> Set Course of Action for the Excellent Products and Services of Taiwan Glass (TGI) Passed international certifications such as ISO, FSSC, CSI (Australia) etc. Low-carbon, low-pollution, and highly recyclable products accounted for more than 50% of total revenues
<p>SDG10 Reduced inequalities</p>	<ul style="list-style-type: none"> 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 “Excellent Performer in Over-quota Employment of Persons with Disabilities” in Changhua County
<p>SDG11 Sustainable cities and communities</p>	<ul style="list-style-type: none"> As one of the ESG partners, Hsinchu Factory participated in Coca-Cola's coastal cleanup event Employees of Hsinchu Factory participate in the monthly voluntary street cleanup at Puqian Li Hsinchu Factory continues to participate in the Hsinchu City Water Environment Patrol Team and donated NT\$60,000 in supplies Coastal cleanup by Changpin Factory Hsinchu Factory committed to the maintenance of public toilets and contributed to the cleanliness of the community Taoyuan Factory committed to maintaining the green belt of the industrial zone as part of its corporate social responsibilities
<p>SDG12 Responsible consumption and production</p>	<ul style="list-style-type: none"> 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”
<p>SDG13 Climate action</p>	<ul style="list-style-type: none"> Adopted the TCFD framework and established governance, strategy, and risk management measurements and goals for the identification of climate change risks and opportunities
<p>SDG15 Life on land</p>	<ul style="list-style-type: none"> Created a circular economy value chain that recognizes water, glass, waste filament, and backwashing liquid as critical circular materials
<p>SDG16 Peace, justice and strong institutions</p>	<ul style="list-style-type: none"> Completed board performance evaluation for 2022 Developed information security policies using the PDCA system
<p>SDG17 Partnerships for the goals</p>	<ul style="list-style-type: none"> 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 Taoyuan Factory participated in the Shulin Li Mid-autumn Festival Energy and Carbon Reduction Awareness Program and sponsored gifts to contribute toward a common carbon reduction vision

Composition of the ESG 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 convenes meetings once every six months, which can be adjusted flexibly subject to no less than once a year. The Company held a total of two meetings in 2023 to discuss timeline for the preparation of ESG report and track sustainability performance of various factory sites including: energy conservation practice, upgrade of exhaust treatment equipment at Hsinchu Factory, switch of furnace fuel from heavy oil to natural gas, construction of renewable energy capacity, and planning for greenhouse gas survey.

Convening **once** every **six** months

Date of meeting	Agenda of 2023 ESG Committee meetings
2023-05-09	1. Report on the preparation timeline for the 2022 ESG Report 2. Tracking of sustainability performance for each factory 3. Report on greenhouse gas control regulations 4. TGI’s greenhouse gas survey reports in the last 3 years 5. Report on the construction of renewable energy (solar power) systems at TGI’s Taiwan factories
2023-11-03	1. Report on TGI’s performance in the 2023 Taiwan Corporate Sustainability Awards (TCSA) 2. ESG performance of TGI factories 3. Measures for enhancing composition of TGI’s ESG Committee 4. Report on greenhouse gas emission-related regulations 5. Greenhouse gas survey and reduction goals of TGI Group

Organization of the ESG Committee



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	Su, Yu-Te	Male	COO of Fiber Business
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, Tseng-Ming	Male	Vice President of Procurement Headquarters
Executive Members	Hung, Yo-Chin	Male	Vice President of Administration Headquarters
Executive Members	Chuo, Yu-Rong	Male	ESG Lead Organizer

TGI’s ESG webpage

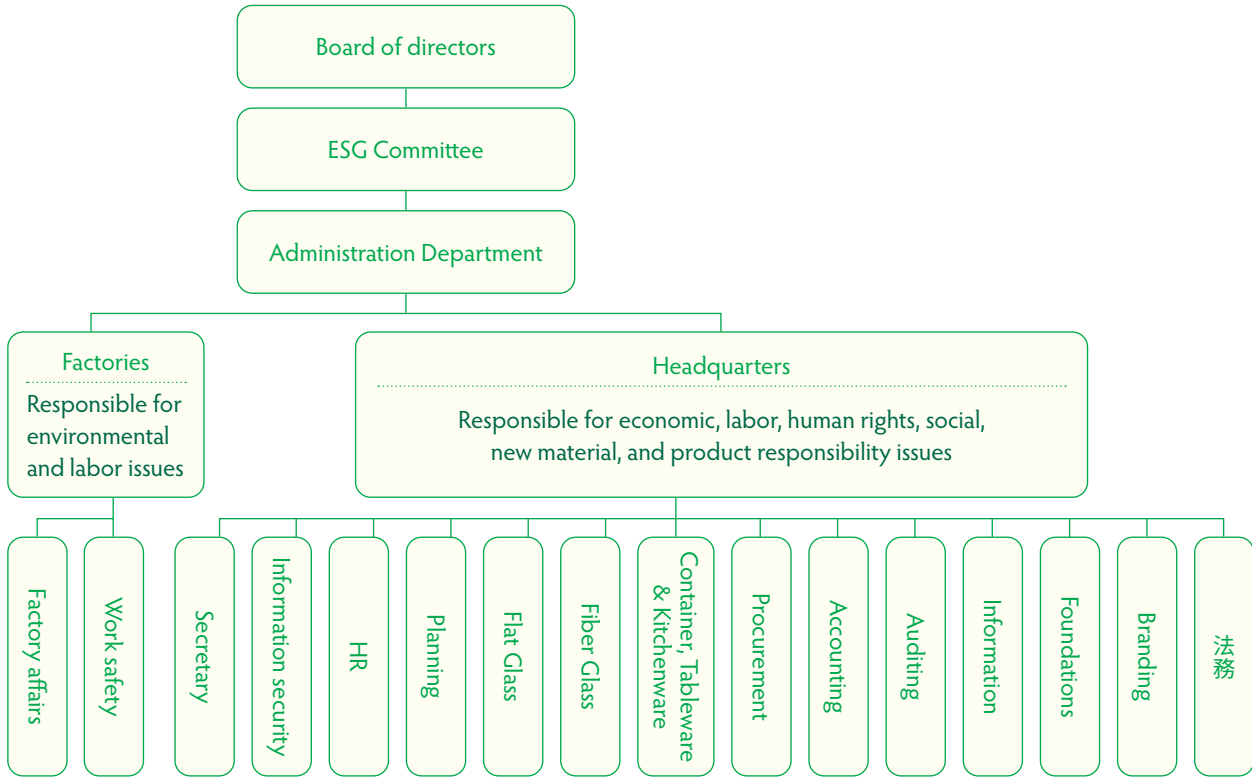


▲ Click here to visit TGI’s ESG webpage

Duties of the ESG Task Force

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 training - 2023

	Course hours	Participants
 Greenhouse gas survey training 2023	3	50

Corporate sustainability development efforts and outcomes

In addition to winning Corporate Sustainability Report Award - Silver in the [Conventional Manufacturing] category for 9 consecutive years, TGI also won numerous overall and single-category awards in 2023 including [Taiwan Top 100 Sustainable Enterprises Award], [Circular Economy Leadership Award], and [Growth through Innovation Leader Award] in 2022, which affirmed TGI's efforts.

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.



Taiwan Top 100 Sustainable Enterprises Award



TCSA Corporate Sustainability Report Award - Conventional Manufacturing - Silver



TCSA performance categories - Circular Economy Leadership Award and Growth through Innovation Leader Award

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 "2023 Taiwan Sustainability Education Award" and "2023 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.



Award ceremony of the 2023 Taiwan Sustainability Education Award

Green Factory Label

TGI values sustainability of the environment, and as a manufacturer, it places great emphasis on conserving energy, inputting the right resources, and reducing output of waste. Lukang Factory and Taoyuan Factory were awarded "Certificate of Cleaner Production Assessment" by the Industrial Development Bureau after 2019 and have since begun assessments for green building improvements. Taoyuan Factory was the first to receive Green Building Label in 2021 and was later awarded Green Factory Label in 2022; meanwhile, Lukang Factory is also making plans to apply for green factory certification in 2023. By conforming with green factory requirements inside and out, TGI takes pragmatic steps toward realizing its visions for sustainable energy conservation and green management, and secures its position as the sustainable leader in the glass-making business.



Taoyuan Factory - Green Building Certificate



Taoyuan Factory - Certificate of Cleaner Production Assessment



Taoyuan Factory - Green Factory Label



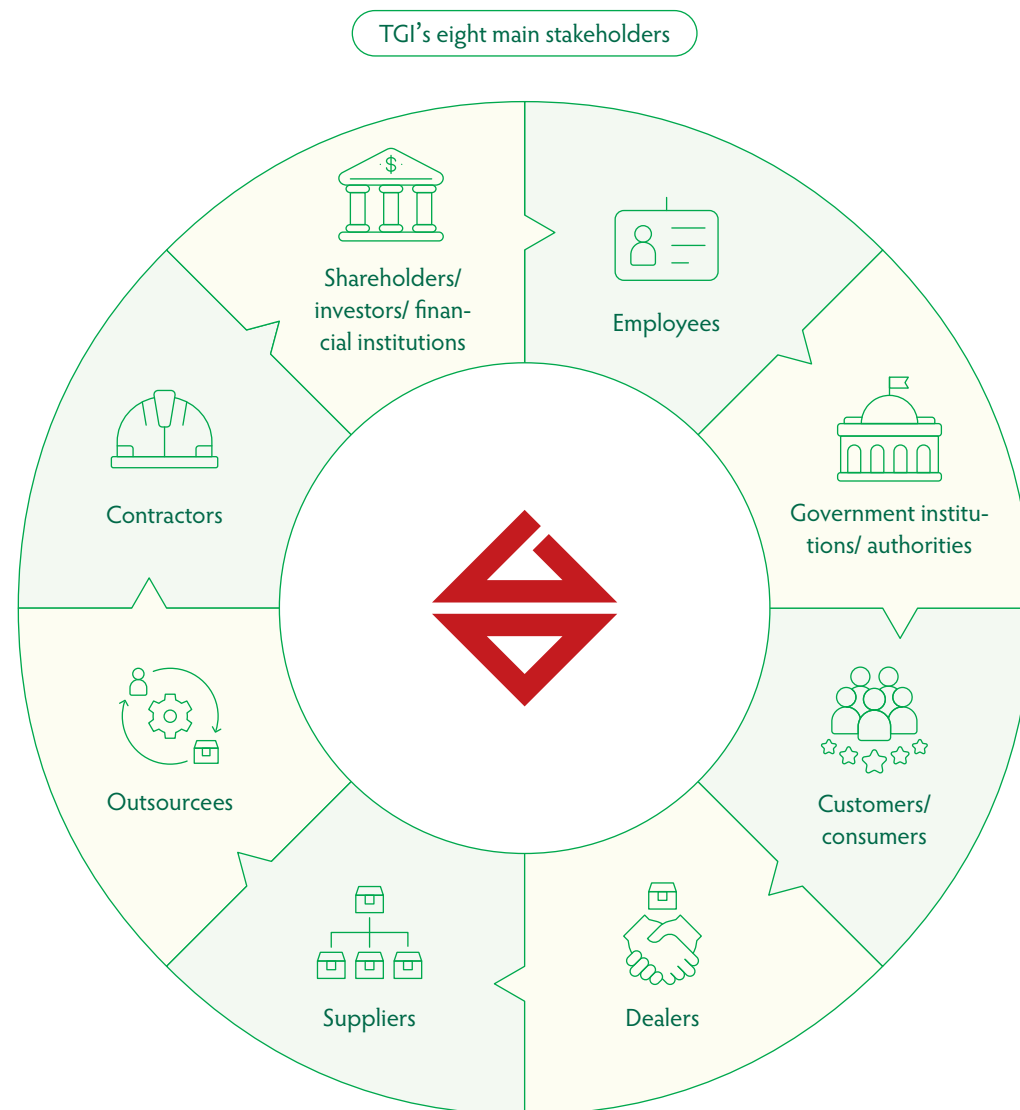
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Stakeholder communication and identification of material issues

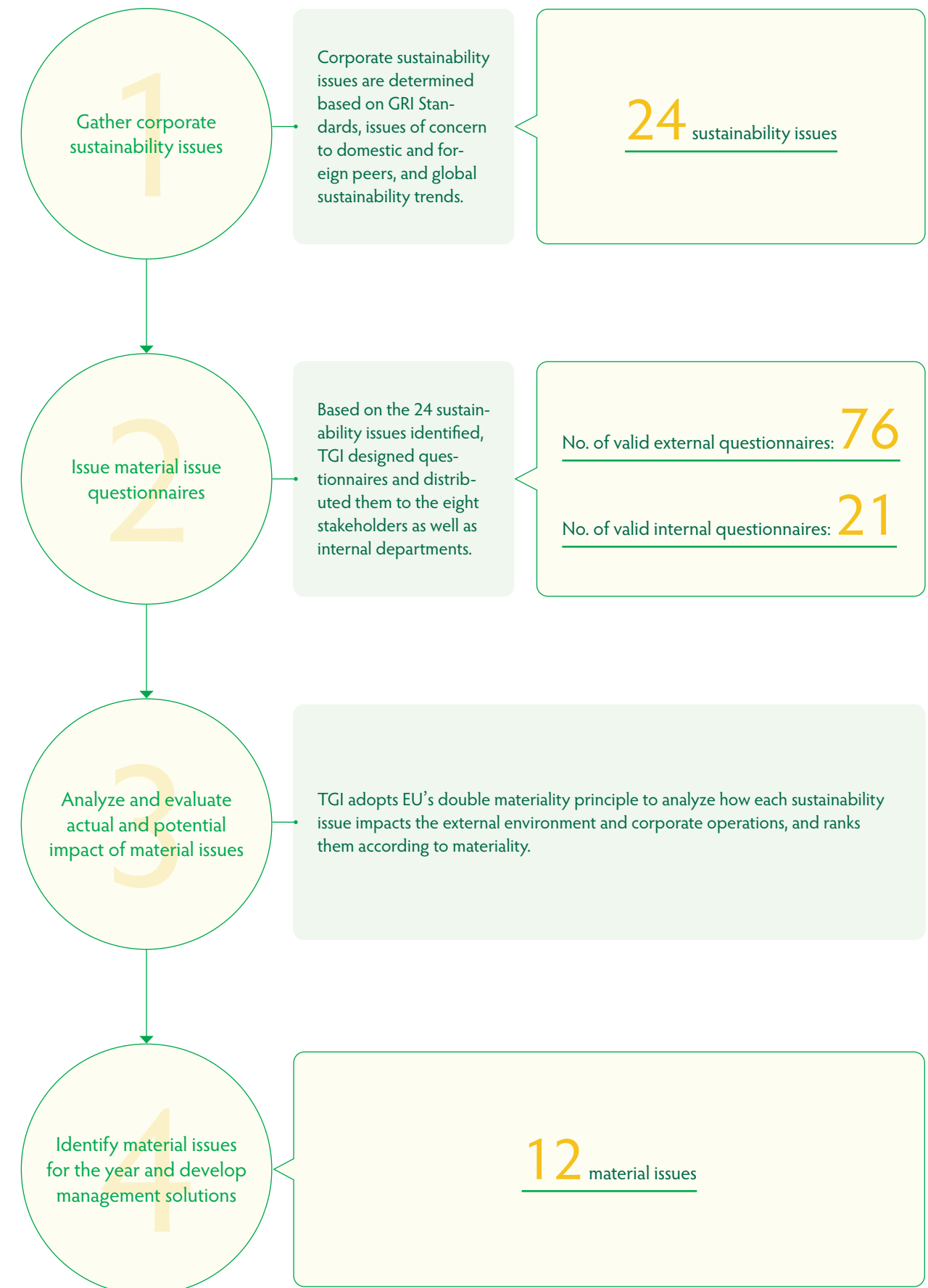
Taiwan Glass (TGI) Industry observes GRI Standards and AA 1000 SES Stakeholder Engagement Standards for the identification and analysis of stakeholders and sustainability-related issues. The “ESG Committee” distributes questionnaires to identify stakeholders and material issues each year. By gathering 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

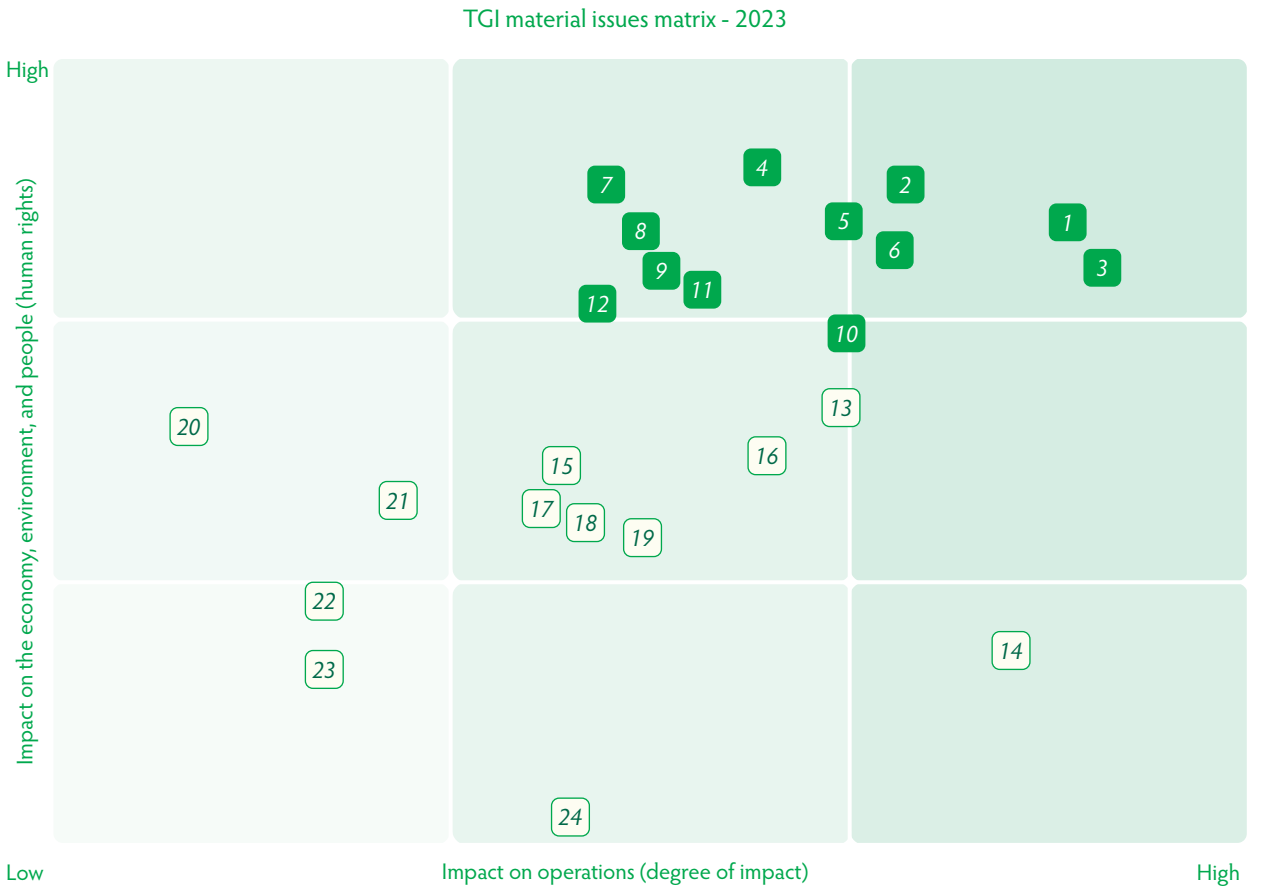
TGI evaluates the importance of each stakeholder based on the five main aspects of AA 1000 Stakeholder Engagement Standard (AA 1000 SES), namely “Dependency,” “Responsibility,” “Tension,” “Influence,” and “Diversity,” for which the ESG Committee issues internal questionnaires to gather response, and a total of 21 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.



Material issue identification process



TGI material issues matrix - 2023



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

Ranking of material issues

↑ Ranking Ascending ↓ Ranking Descending = No Ranking Movement



Material issue	2023 ranking	2022 ranking	Change
Waste management, recycling, and reuse	1	5	↑
Economic performance	2	1	↓
Water resource management	3	3	=
Renewable energy	4	8	↑
Occupational safety and health	5	7	↑
Service quality management	6	2	↓
Greenhouse gas and energy management	7	9	↑
Response to climate change	8	15	↑
Product innovation and green design	9	11	↑
Product quality management	10	4	↓
Talent retention, salary, and welfare	11	6	↓
Raw materials management	12	13	↑
Corporate governance	13	10	↓
Legal Compliance	14	12	↓
Business continuity management	15	16	↑
Ethics and integrity	16	14	↑
Supply chain management	17	19	↑
Anti-corruption	18	18	=
Workers' human rights	19	17	↓
Talent development	20	21	↑
Risk management	21	20	↓
Social influence	22	23	↑
Biodiversity	23	24	↑
Collective bargaining agreement	24	22	↓

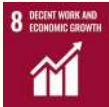




TGI's value chain



Management policies for material issues

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 2023	<ol style="list-style-type: none">In 2023, Taoyuan Factory changed the way it recycles PET bottles by looking for individual recyclers outside factories and offering free shipping, which saves waste treatment expenses.In 2023, TGI committed NT\$21.59 million of budget into waste recycling and produced NT\$4.42 million of economic benefits.Through cold repair and enhancement of equipment and by taking initiative in waste glass recycling, TGI was able to increase recycling of waste glass containers by 4.44% and recycling of waste flat glass by 2.52%.

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	<ul style="list-style-type: none">▶ 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  2

Economic performance	
Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	<ol style="list-style-type: none">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.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 2023	TGI has tightened annual budget assessment since 2023 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	<ul style="list-style-type: none">▶ GRI 201: Economic Performance (2016)▶ SDG 8 - Decent work and economic growth 
Corresponding chapter	2.1 About TGI  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 2023

1. Hsinchu Factory has installed exhaust treatment systems on TS2 and TS7, and switched to drawing water from effluents in 2023 to reduce extraction of groundwater and discharge of effluents by 3,000 tons a month.
2. Taoyuan Factory recycled the wastewater discharged from backwashing of TT1,7 resin softening tank and reused it for washing TT1 E/S SYS. The volume of water recycled amounted to 120,172 tons in 2023.

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 and resource management

Value chain



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 2023

All factories have made plans to install solar power systems, and reached a capacity of 8,784 KW in 2023.

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. Complete installation of solar panels and begin power generation in April 2023.
2. Changpin Factory has made plans to install upgraded mega panels to increase solar power capacity.

Medium- and long-term goals (3-5 years)

1. Continue assessing the viability of installing more solar panels on factory premises.
2. Increase the percentage of solar power relative to total power usage.

Corresponding standards

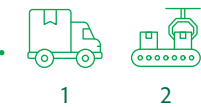
- GRI 302: Energy (2016)
- SASB energy management
- SDG 13 - Climate action



Corresponding chapter

4.2 Energy and resource management

Value chain



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 2023

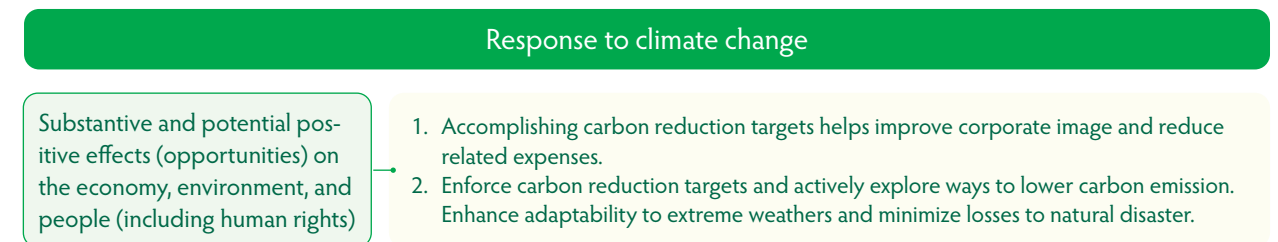
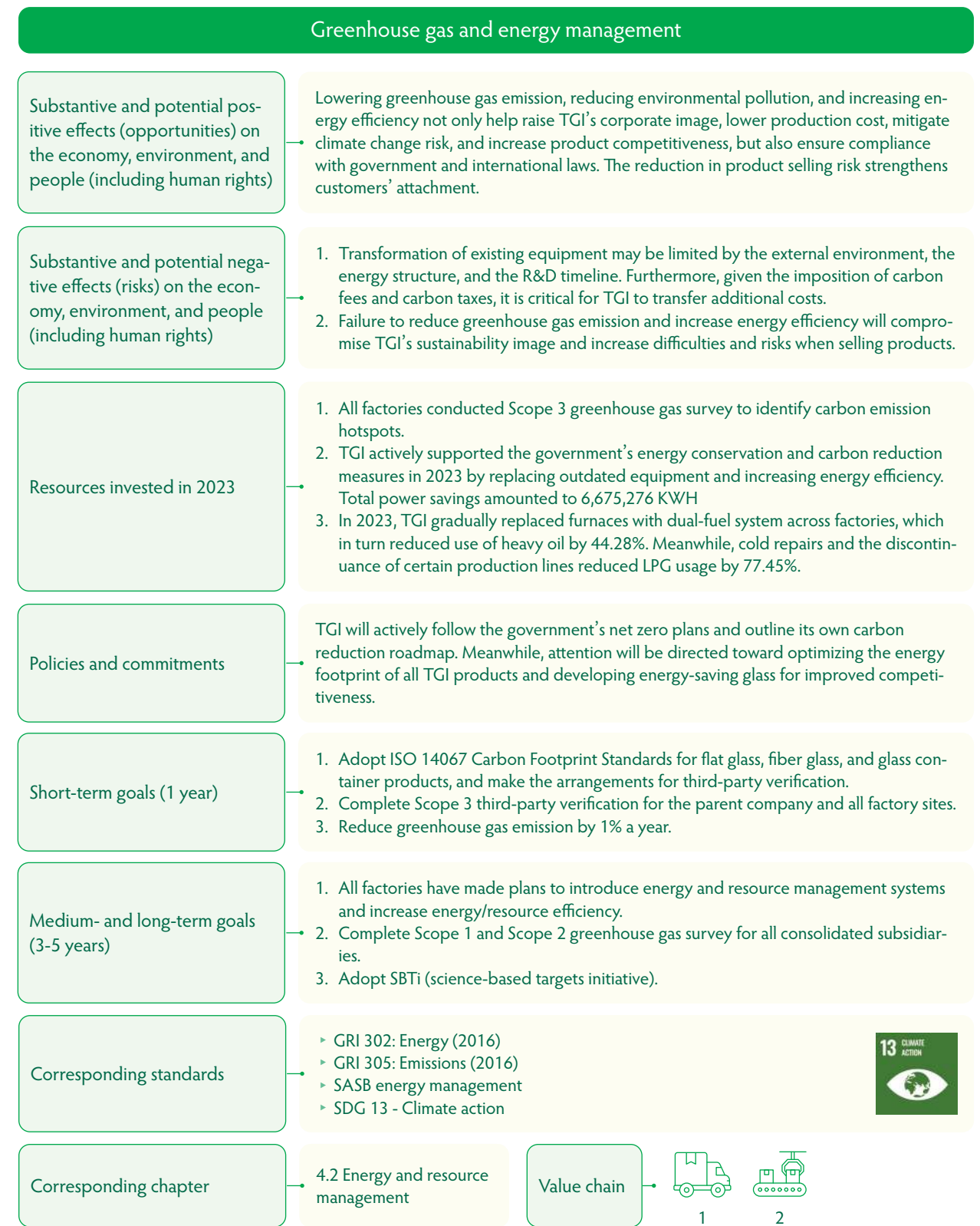
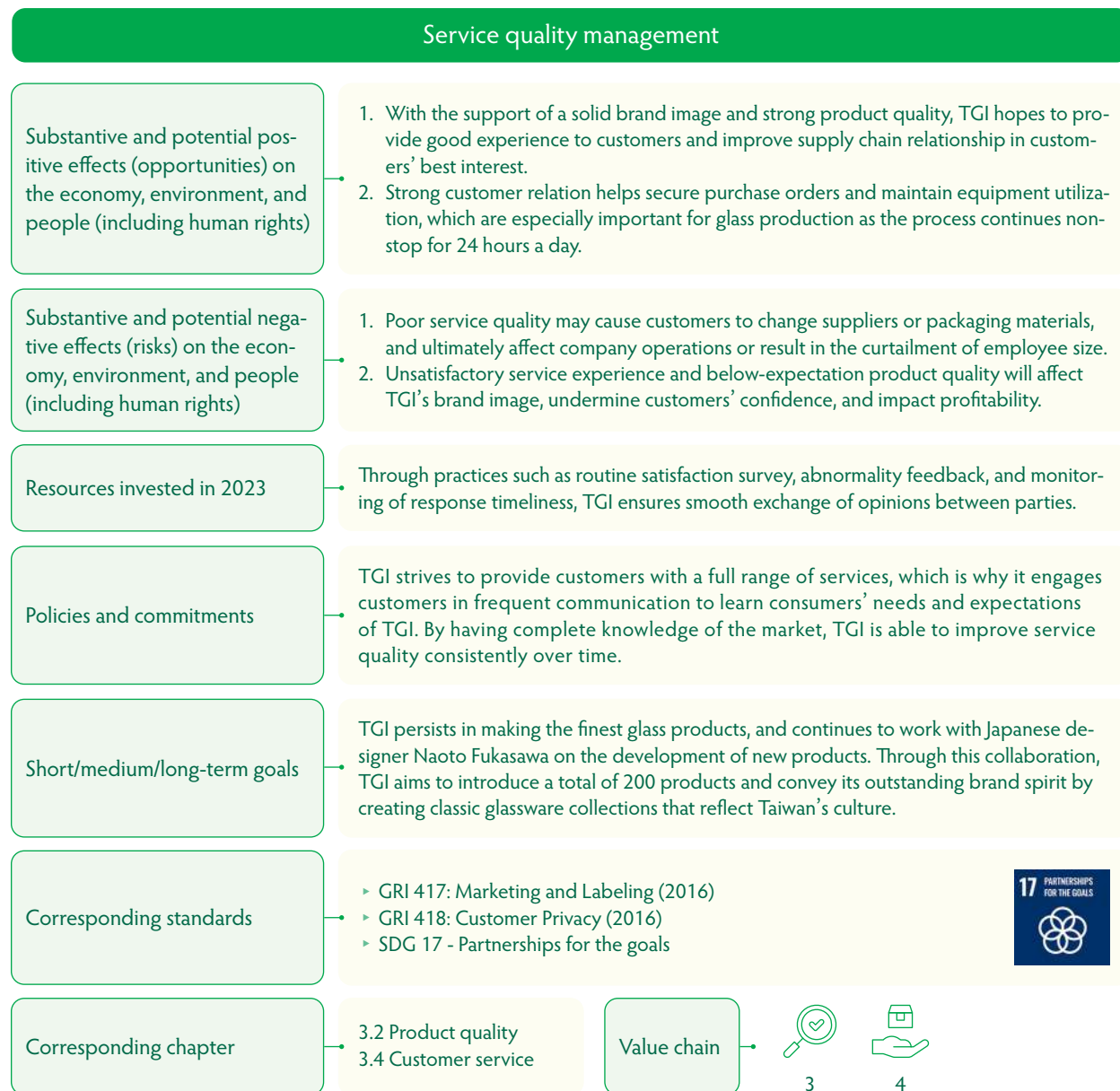
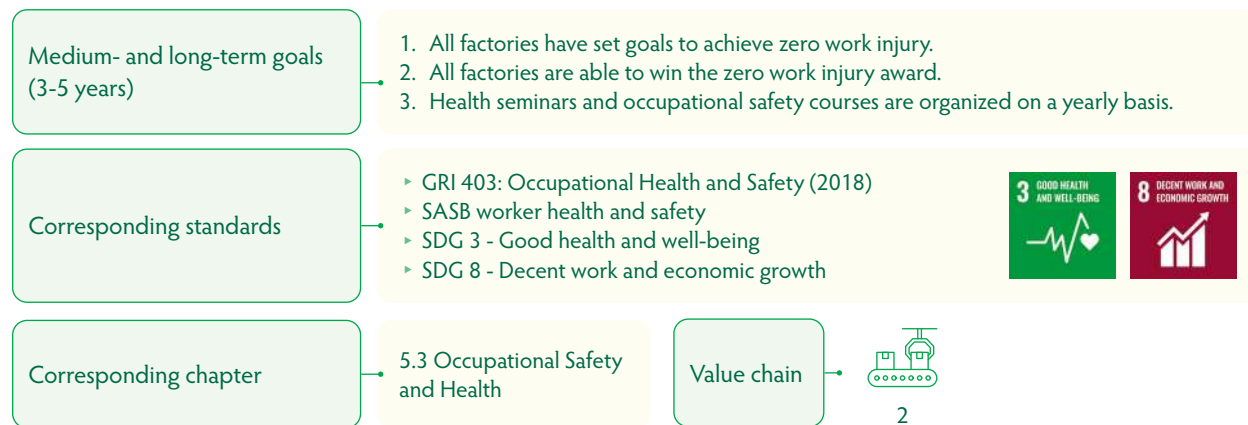
1. Work safety officers of each factory are required to take part in safety committee meetings at the head office on a regular basis, during which they would brief on occupational safety and health-related matters for the current quarter for review.
2. For every work accident occurred, the Company would 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 2023 test results all conformed with standards.
5. Health checkups are arranged on a regular basis.


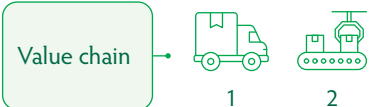
Policies and commitments

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's ultimate goal is to reduce occupational hazards to zero, and currently aims to lower disabling injury frequency rate (FR) and disabling injury severity rate (SR) by 20% each.
2. Hsinchu Factory, Taichung Factory, and Changpin Factory: All of which have set goals to keep work injuries to 0 for 100 straight days. Signs showing the cumulative number of days since the most recent injury are being used to remind employees to prepare for the unexpected each day.
3. Lukang Fiber Glass Factory: Work injury frequency $\leq 0.2\text{hrs/person} \cdot \text{year}$
4. Lukang Flat Glass Factory: Work injury frequency $\leq 0.04\text{hrs/person} \cdot \text{year}$
5. Taoyuan Factory: Work injury frequency $\leq 0.02\text{times/person} \cdot \text{year}$



Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	<ol style="list-style-type: none">1. Failure to meet carbon reduction targets and the imposition of carbon fees and carbon taxes will increase costs and compromise competitiveness.2. Failure to respond to extreme weathers will result in the loss of equipment, products, purchase order etc., which increase costs and affect revenues.
Resources invested in 2023	<ol style="list-style-type: none">1. Lukang Flat Glass Factory has switched to natural gas as the main fuel for the glass furnace. Natural gas accounted for 90% of the fuel used during the year.2. Hsinchu Factory commissioned the use of a TS2 dual-fuel furnace in September 2023; the switch from heavy oil to natural gas, which is a cleaner form of energy, has greatly reduced greenhouse gas emissions.3. Lukang Flat Glass Factory adopted the use of heat-recycling steam boiler in 2023 to minimize fuel consumption.
Policies and commitments	TGI 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.
Short-term goals (1 year)	<ol style="list-style-type: none">1. Install heat recycling equipment according to the Bureau of Energy’s heat recycle subsidy project.2. Lukang Flat Glass Factory plans to purchase TECO’s energy/resource management system as a way to improve energy efficiency within the factory.
Medium- and long-term goals (3-5 years)	<ol style="list-style-type: none">1. 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, and have set goals to increase the percentage of natural gas usage to at least 50%.2. Increase purchase of low-carbon materials and continue development of energy-saving glass.3. Make rolling adjustments to the carbon reduction schedule and goals according to the government’s Net Zero Emissions Roadmap.
Corresponding standards	<ul style="list-style-type: none">▶ GRI 302: Energy (2016)▶ GRI 305: Emissions (2016)▶ SASB energy management▶ SDG 13 - Climate action 
Corresponding chapter	4.4 Climate action 

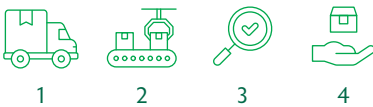
Product innovation and green design

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	<ol style="list-style-type: none">1. TGI has the advanced production procedures and technologies needed to take advantage of growing IoT applications and increasing demands for industrial fiber glass and electronic grade fiberglass fabric. The Company’s products currently lead the industry in terms of environment friendliness, energy conservation, photovoltaic application, thin and light design, and diversity; green building-certified glass products are being developed to provide customers with more competitive, more environment-friendly, and safer solutions.2. Reducing the weight of glass bottles and increase recycling of waste glass help lower greenhouse gas emission and promote circular economy.
Substantive and potential negative effects (risks) on the economy, environment, and people (including human rights)	<ol style="list-style-type: none">1. Failure to launch new products in line with market demand and expectation may result in loss of market share and revenues.2. Most products of the container, tableware, and kitchenware segment are used as packaging materials; excess product weight may negatively affect greenhouse gas emission over the product life cycle and give rise to additional costs, causing customers to switch to other packaging materials.

Resources invested in 2023	Equipment upgrades have been executed to improve product competitiveness in line with the Company’s carbon reduction goals.
Policies and commitments	TGI devotes significant efforts into technological advancement as well as research and development of new products. In addition to introducing environment-friendly and energy-saving products, TGI also explores ways to minimize pollution from the production process and mitigate impact on the environment. An internal sharing system has been created to facilitate the exchange of creative ideas; furthermore, TGI helps customers and industry partners innovate in meaningful ways, including product innovation with customers and green innovation with suppliers.
Short-term goals (1 year)	<ol style="list-style-type: none">1. Adopt lightweight bottle design in new product development (aim to achieve 50% of total products).2. Expand collaboration with ITRI (Industrial Technology Research Institute) and universities.3. Increase the percentage of scrap glass recycled and reused.4. Improve the production capacity and quality of ultra-thin glass.5. As we enter into the 5G era, TGI will be developing Low DK Fiberglass Fabric specifically for printed circuit boards (PCB) used in networking and communication equipment, and thereby expand application of composite fiber glass materials.
Medium- and long-term goals (3-5 years)	<ol style="list-style-type: none">1. Lightweight bottles to account for 45% of the production in 2030.2. Introduce triple silver low-E glasses and promote them as mainstream products.
Corresponding standards	<ul style="list-style-type: none">▶ SASB product design and life cycle▶ SDG 12 - Responsible consumption and production▶ SDG 13 - Climate action  
Corresponding chapter	3.1 TGI products 3.3 Innovative R&D 

Product quality management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	<ol style="list-style-type: none">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)	<ol style="list-style-type: none">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 2023	100% of factories obtained ISO 9001 and ISO 14001 certification.
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)	<ul style="list-style-type: none">1. To continually enforce quality management system, CNS standards, and ANSI (USA) standards in all product lines.2. To obtain certification for electronic grade ultra-thin glass products.
Corresponding standards	<ul style="list-style-type: none">▸ 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 → 

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 2023	<ul style="list-style-type: none">▸ 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)	<ul style="list-style-type: none">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)	<ul style="list-style-type: none">1. Keep employee attrition rate below 15%.2. Strive for business continuity and share profits with employees toward becoming the preferred employer.
Corresponding standards	<ul style="list-style-type: none">▸ GRI 401: Employment (2016)▸ SDG 3 - Good health and well-being▸ SDG 4 - Quality education 
Corresponding chapter	5.1 Human resources and welfare
	Value chain → 

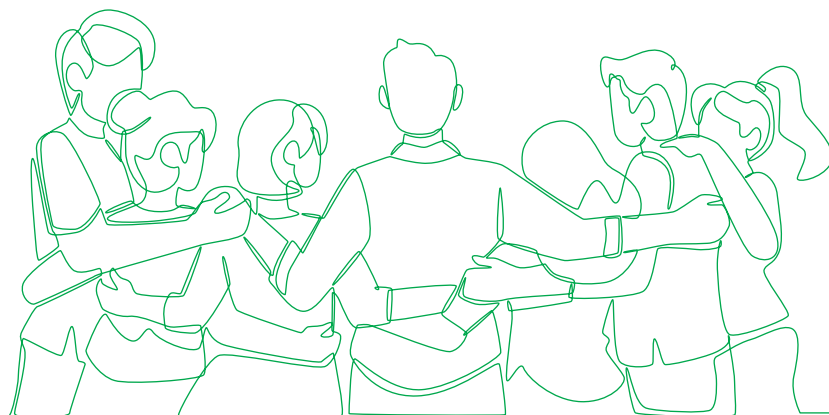
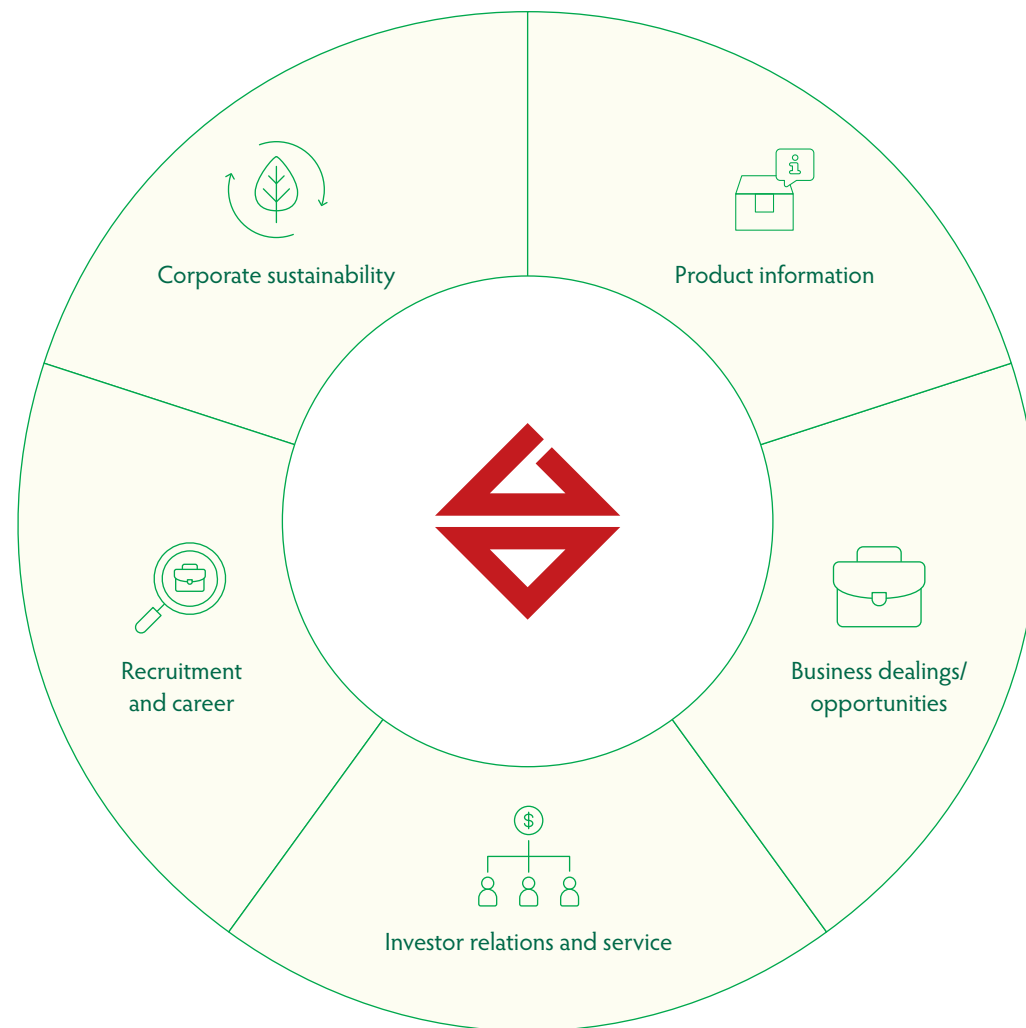
Raw materials management

Substantive and potential positive effects (opportunities) on the economy, environment, and people (including human rights)	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. 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 2023	<ul style="list-style-type: none">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)	<ul style="list-style-type: none">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)	Continuously seek environmentally friendly alternative materials and technologies to create a circular economy.
Corresponding standards	<ul style="list-style-type: none">▸ GRI 301 : Material (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 → 

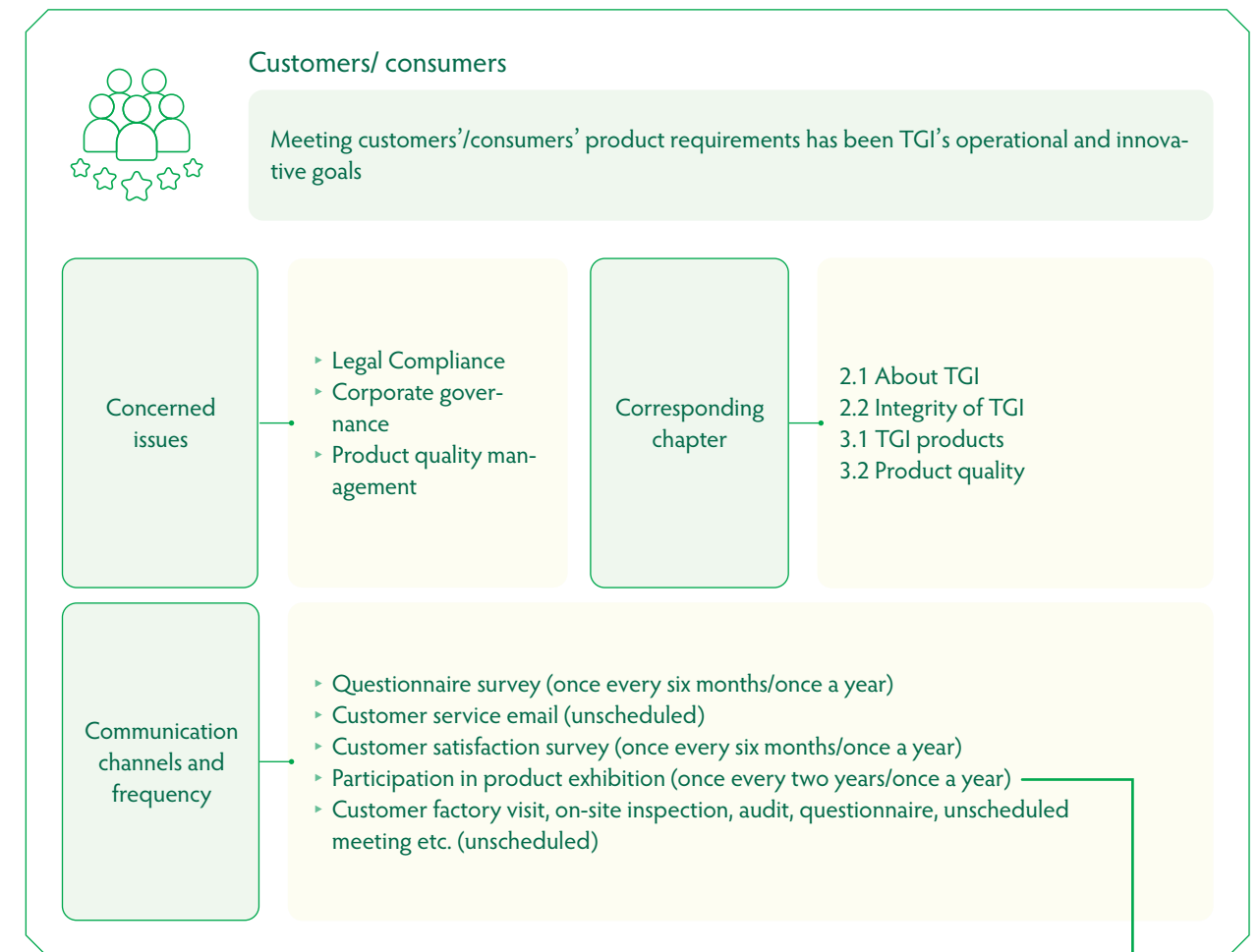
Stakeholder engagement

TGI has identified eight main categories of stakeholder, including customers, suppliers, contractors, dealers, outsourcees, 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 board of directors authorizes the ESG Committee to regularly review the progress and performance of corporate social responsibility tasks. Based on the performance assessment, the ESG Committee then proposes strategic plans and measures to facilitate bilateral communication with stakeholders.

Topics communicated between TGI and stakeholders

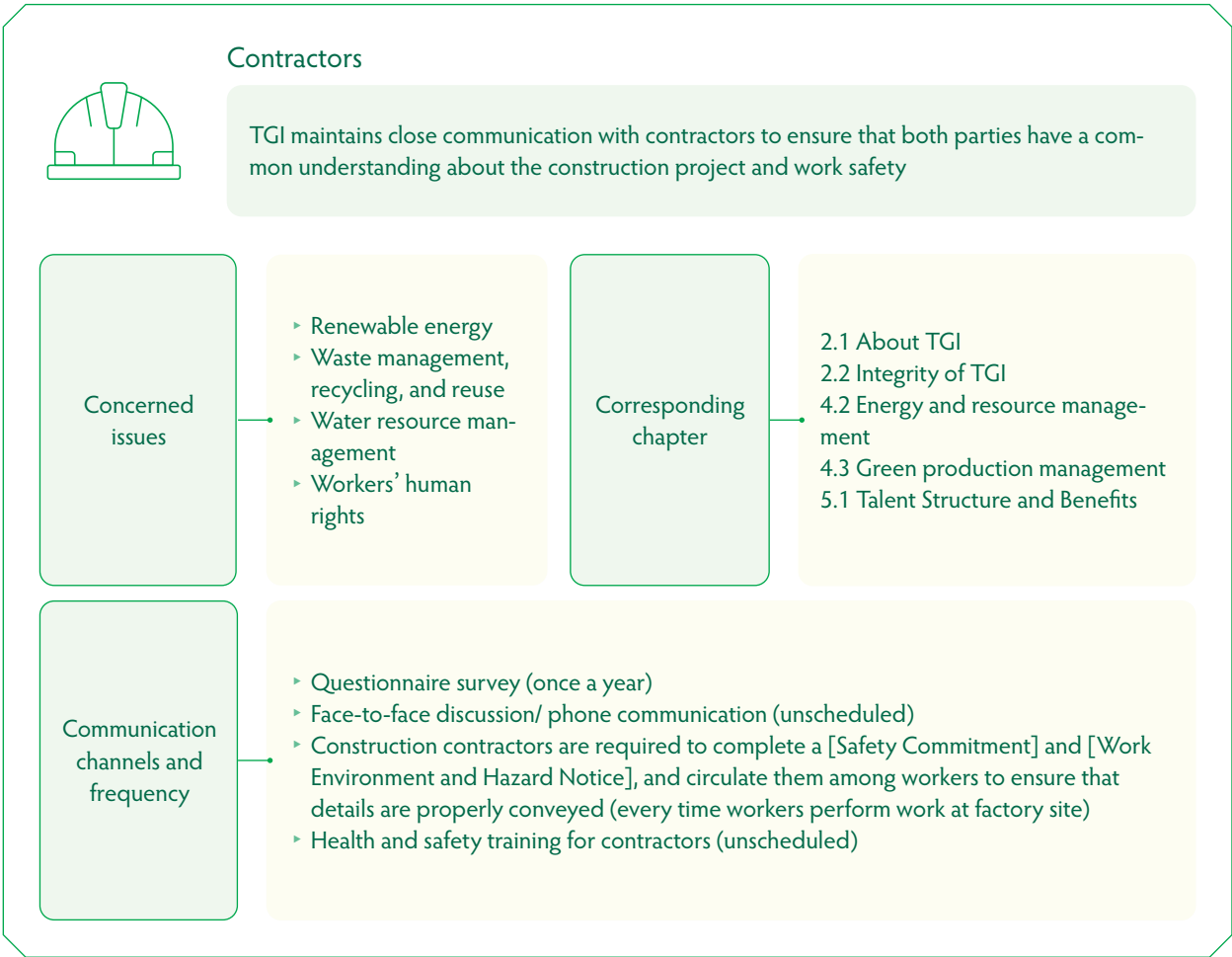
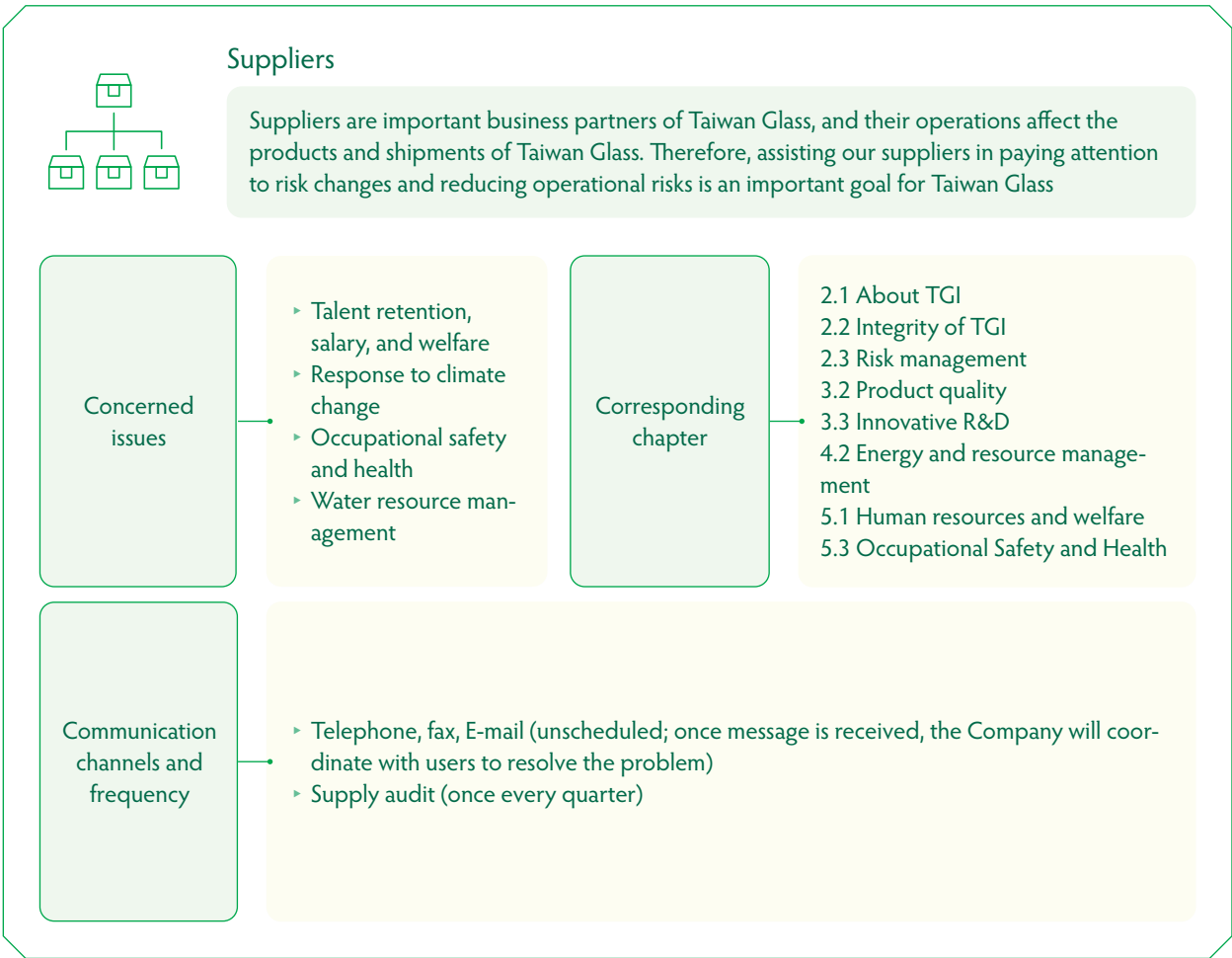
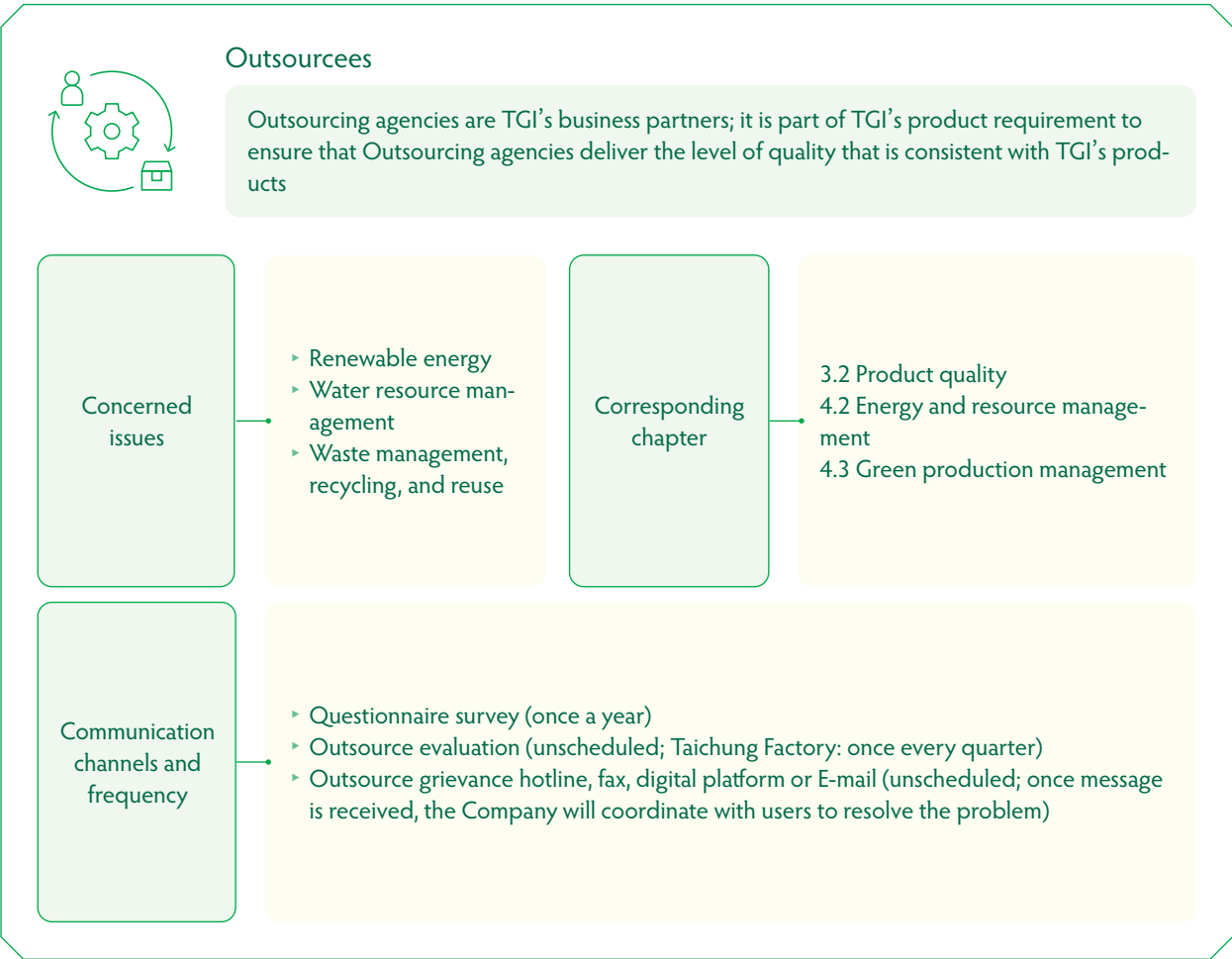
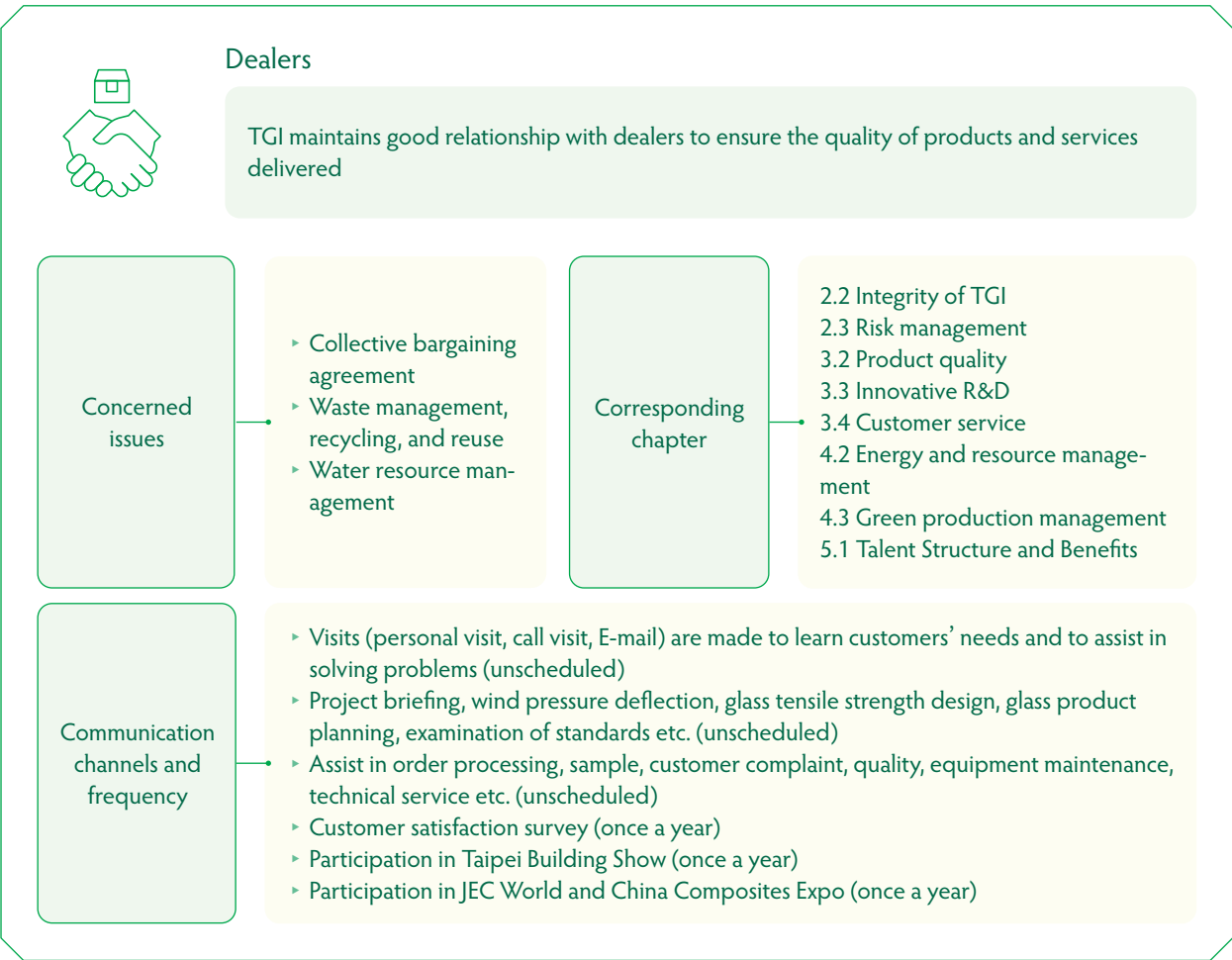


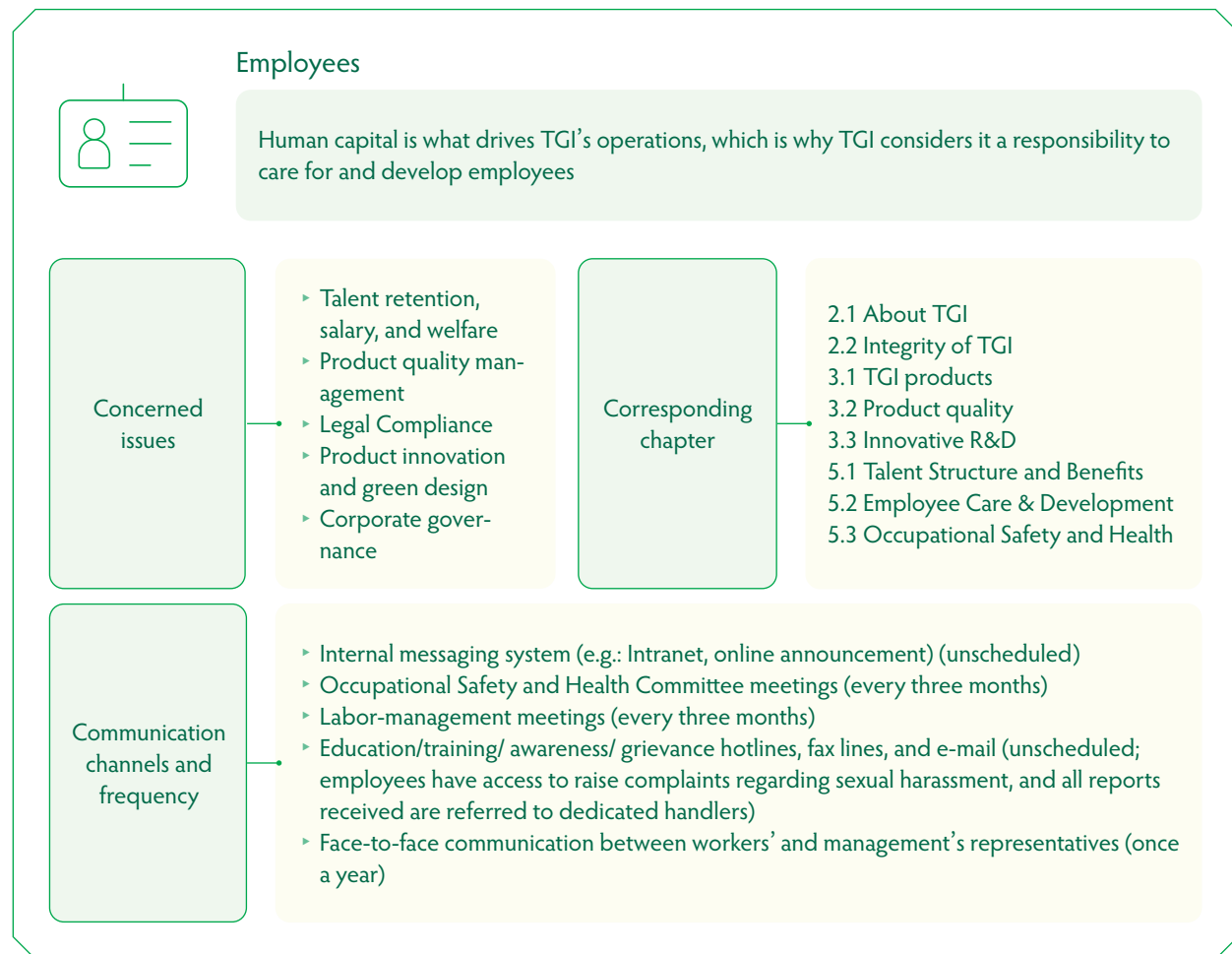
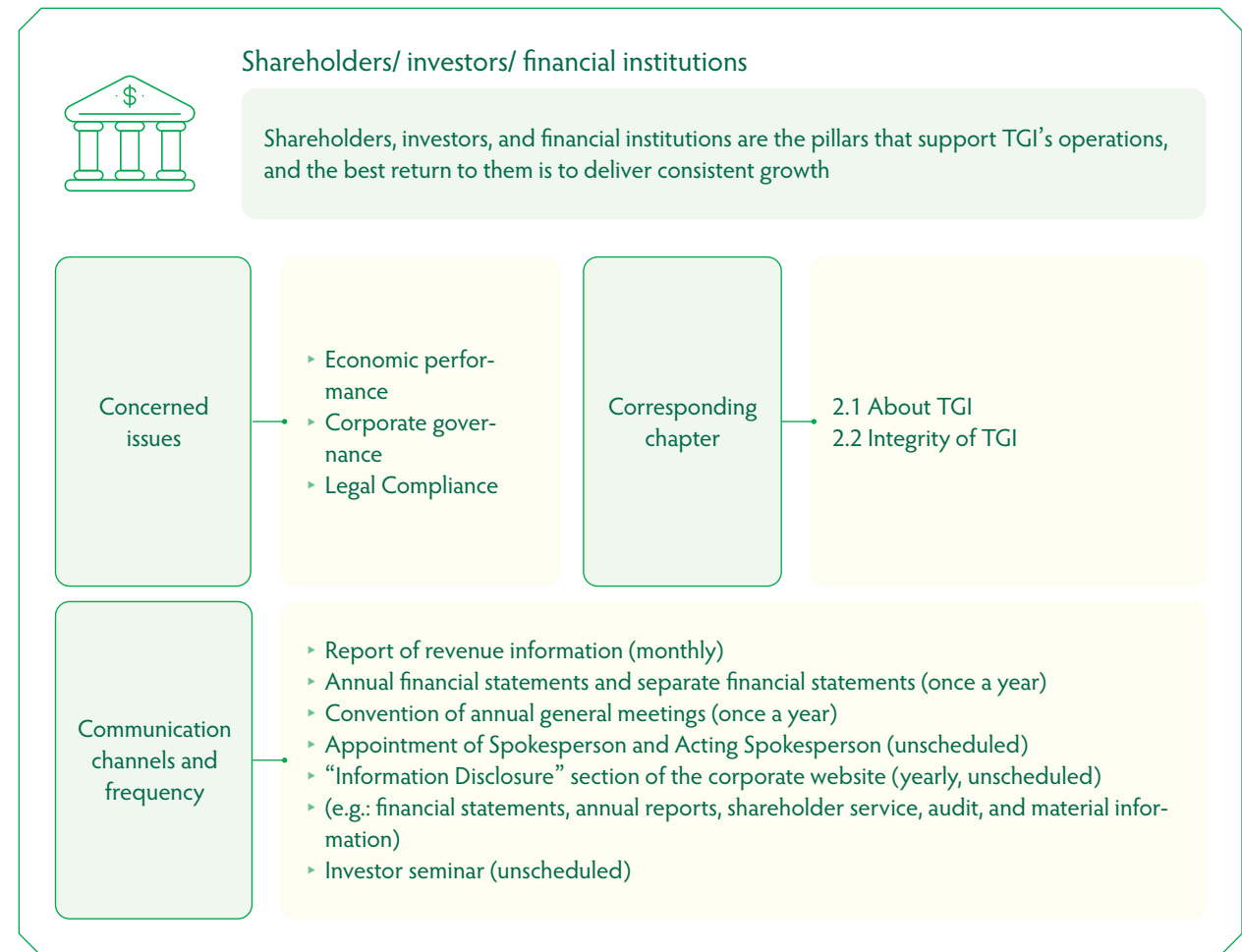
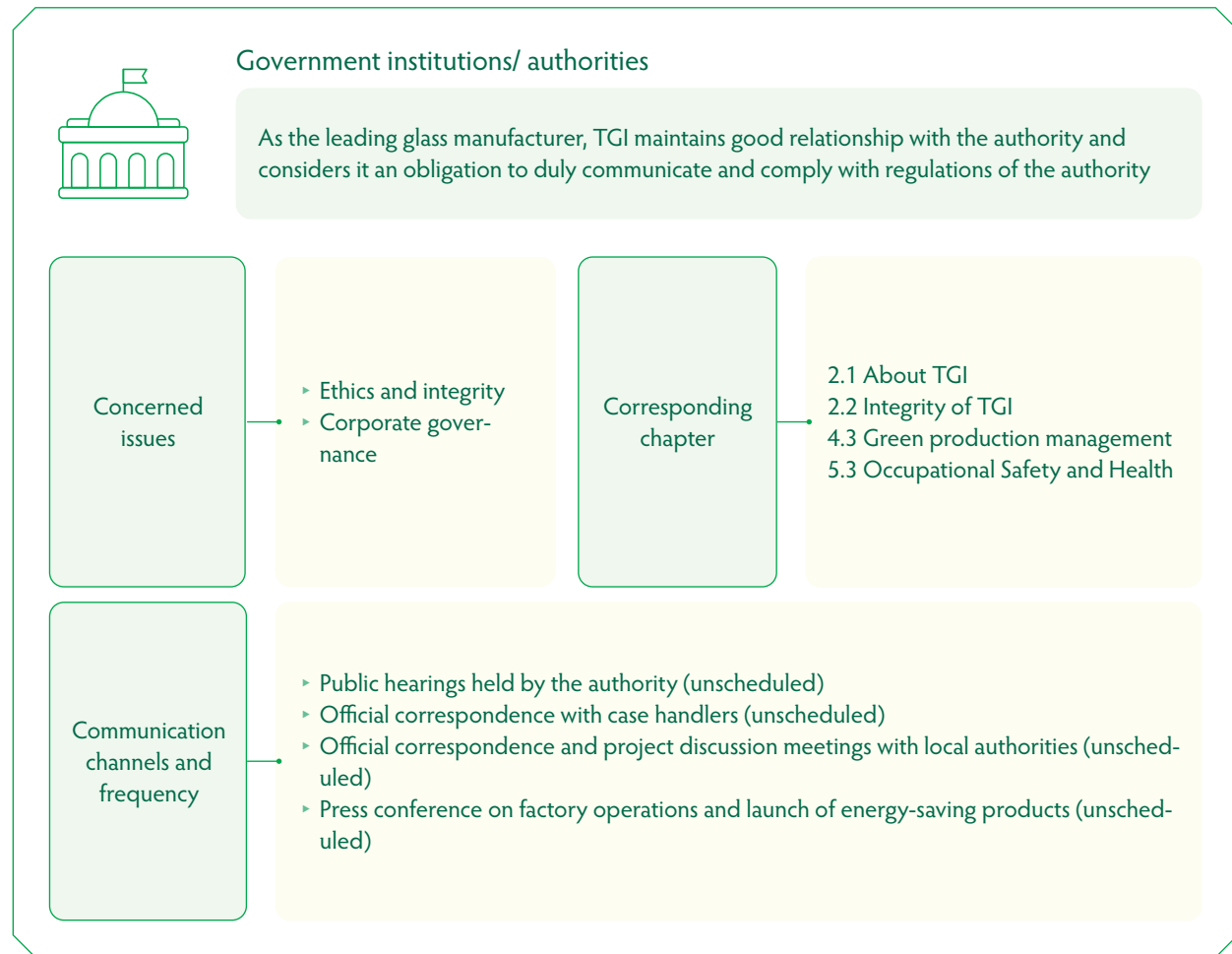
TGI listens to the voices of stakeholders; we take all opinions under advisement and make improvements immediately to meet the public's expectations. At TGI, we consider harmonious relationship with stakeholders to be the first step toward fulfilling corporate responsibilities.



Participation in related product exhibitions

The Flat Glass Division participates in the Taiwan and Germany Building Materials Exhibition every two years, and the Fiberglass Division participates in the China Composite Expo and the French JEC Expo annually. By attending these exhibitions, we engage with existing and potential customers, directly understand the development direction of customers and the market, and enhance the communication with stakeholders.





2

Pragmatic Business Management and Integrity Governance

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2.3 Risk management	67

| Corporate Governance Performance of 2023



12 Sessions

In 2023, a total of 12 information security training sessions were conducted, with 298 participants in attendance.



NT\$ 9.94 million

In 2023, a total of NT\$9,940,893 was invested in information and communication security management to strengthen related equipment and measures for information and security management.



4 sessions

A total of 4 board meetings were held in 2023



0 case

No case of corruption, bribery, or extortion had occurred within TGI in 2023

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.



Corporate philosophy

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



Corporate goals

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.



Quality policy

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

Introduction to TGI

TAIWAN GLASS IND. CORP.	
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 fiberglass fabric and fiberglass 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\$12,278,353 thousand
Employee count	Taiwan-based employees: 3,889
Headquarters	11F Taiwan Glass (TGI) Building, No. 261, Section 3, Nanjing East Road, Songshan District, Taipei City

TGI milestones

For more details on TGI’s history, please refer to the [Taiwan Glass Group History page on the TGI website](#).

Taiwan Glass Group History page on the TGI website



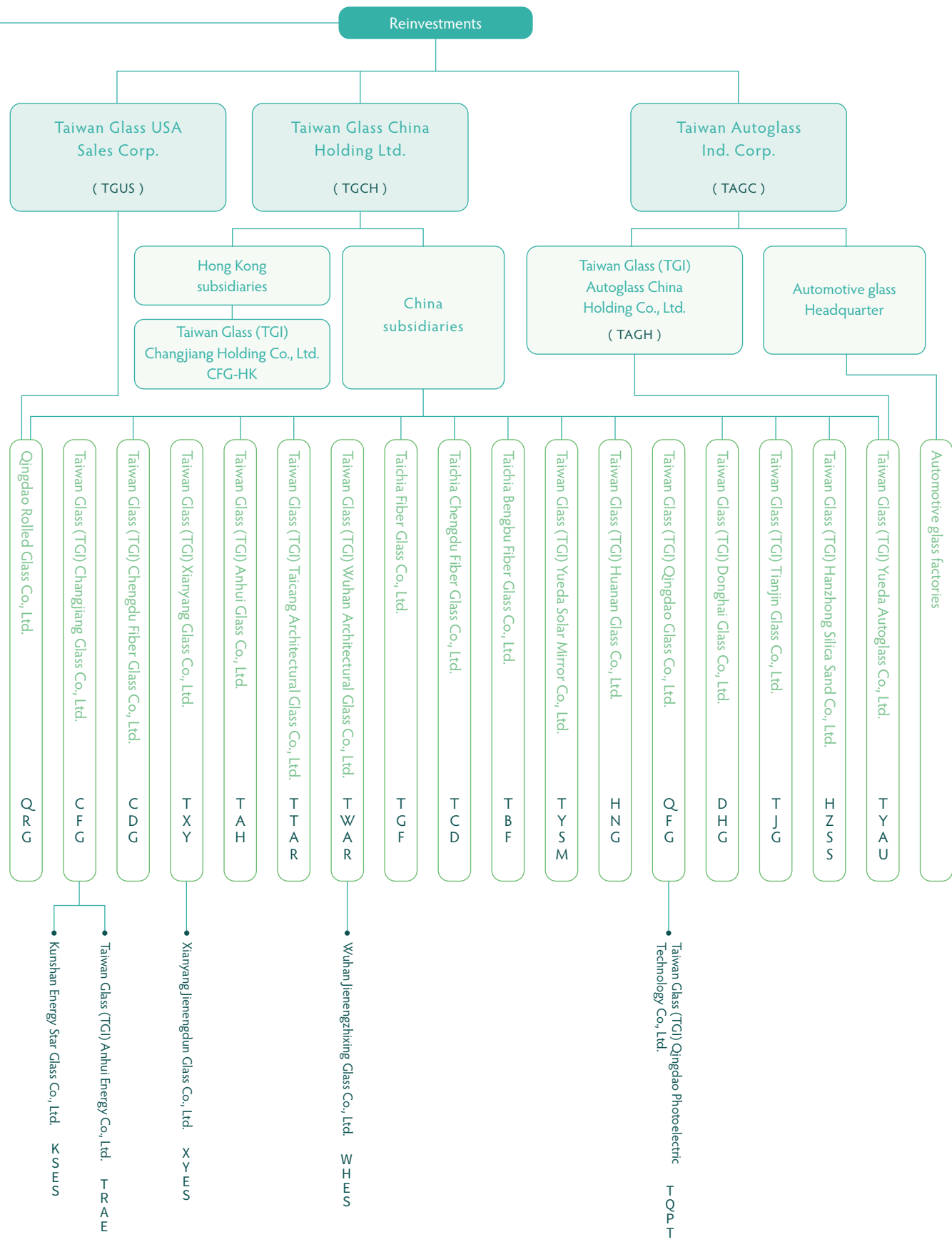
◀ Taiwan Glass Group History page on the TGI website



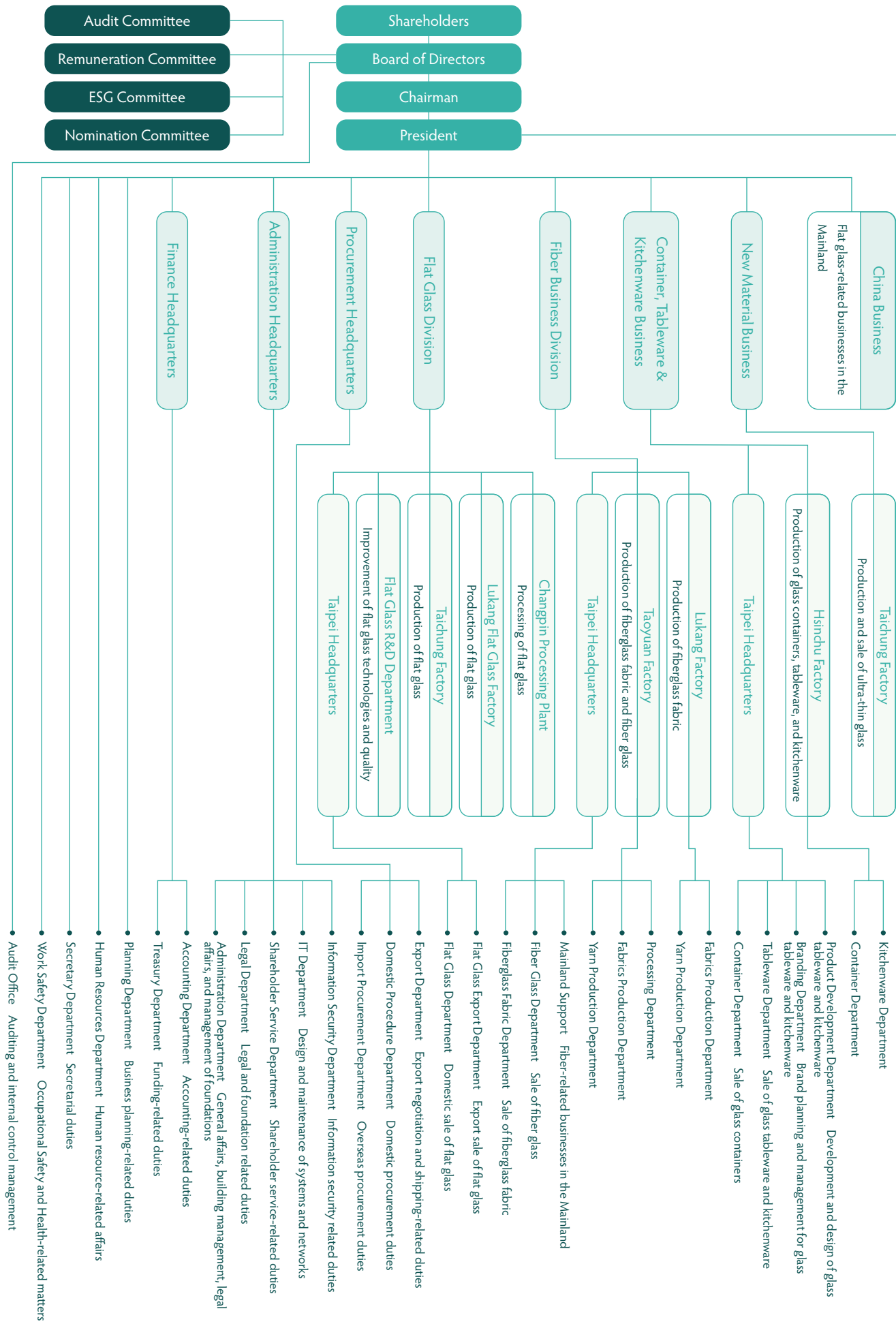
Location of production sites

Headquarters	01	TAIWAN GLASS IND.CORP.
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	TG 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

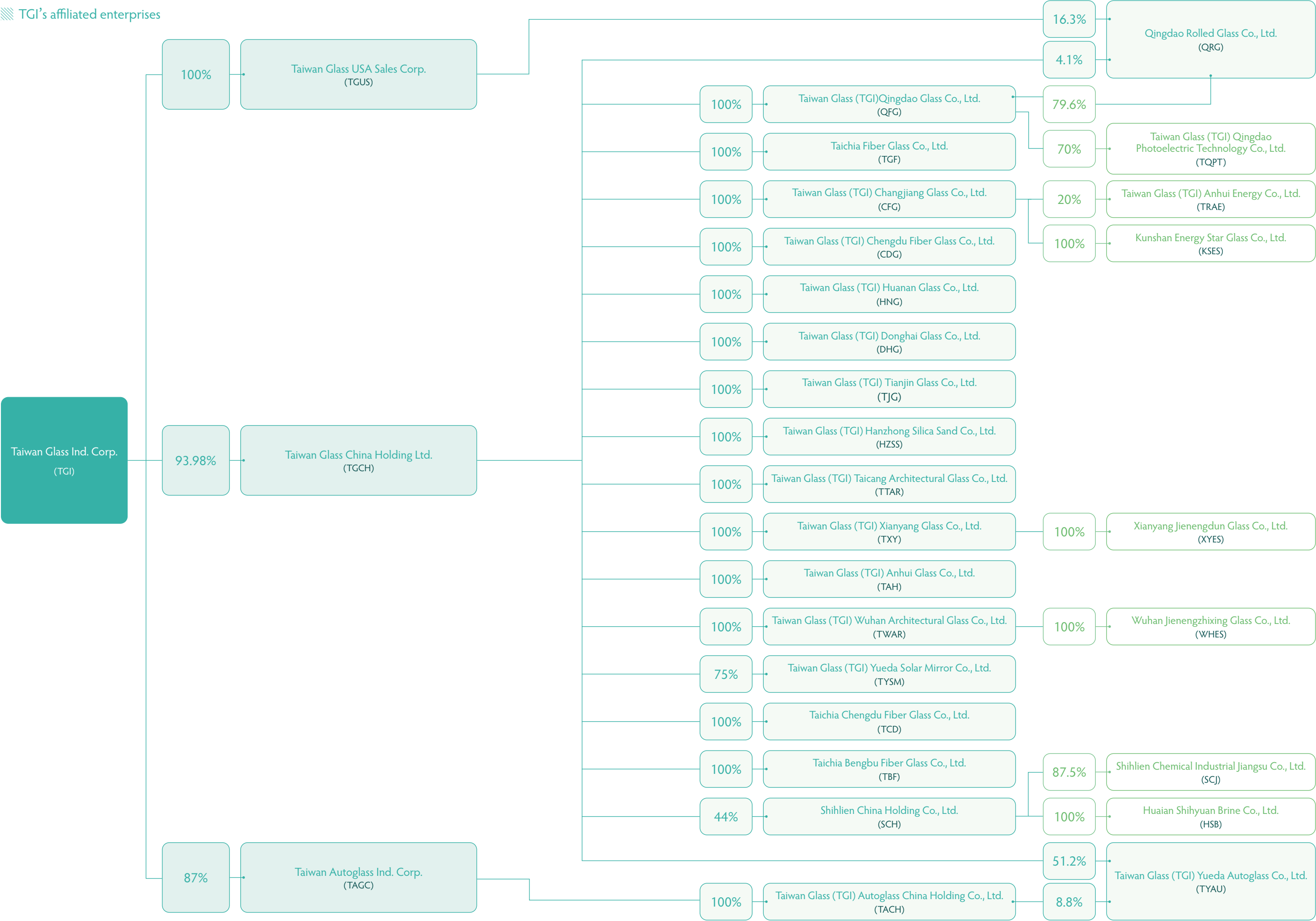
FIBERGLASS REINFORCED , FIBERGLASS FABRIC	17	LUKANG FACTORY
	18	TAOYUAN FACTORY
	19	TAICHIA GLASS FIBER CO., LTD.
	20	TAICHIA CHENGDU GLASS FIBER CO., LTD.
	21	TAICHIA BENGBU GLASS FIBER CO., LTD.
ULTRA-THIN GLASS	22	TAICHUNG ULTRA-THIN GLASS FACTORY
PHOTOELECTRIC GLASS	23	TG YUEDA SOLAR MIRROR CO., LTD.
GLASS CONTAINER TABLEWARE & KITCHENWARE	24	HSINCHU FACTORY
AUTOMOTIVE GLASS	25	TAIWAN AUTOGLASS IND. CORP.
	26	TG YUEDA AUTOGLASS CO., LTD.
SILICA SAND	27	TG HANZHONG SILICA SAND CO., LTD.
SODA ASH	28	SHIHLIEN CHEMICAL INDUSTRIAL JIANGSU CO., LTD.
	29	HUAIAN SHIHYUAN BRINE CO., LTD.



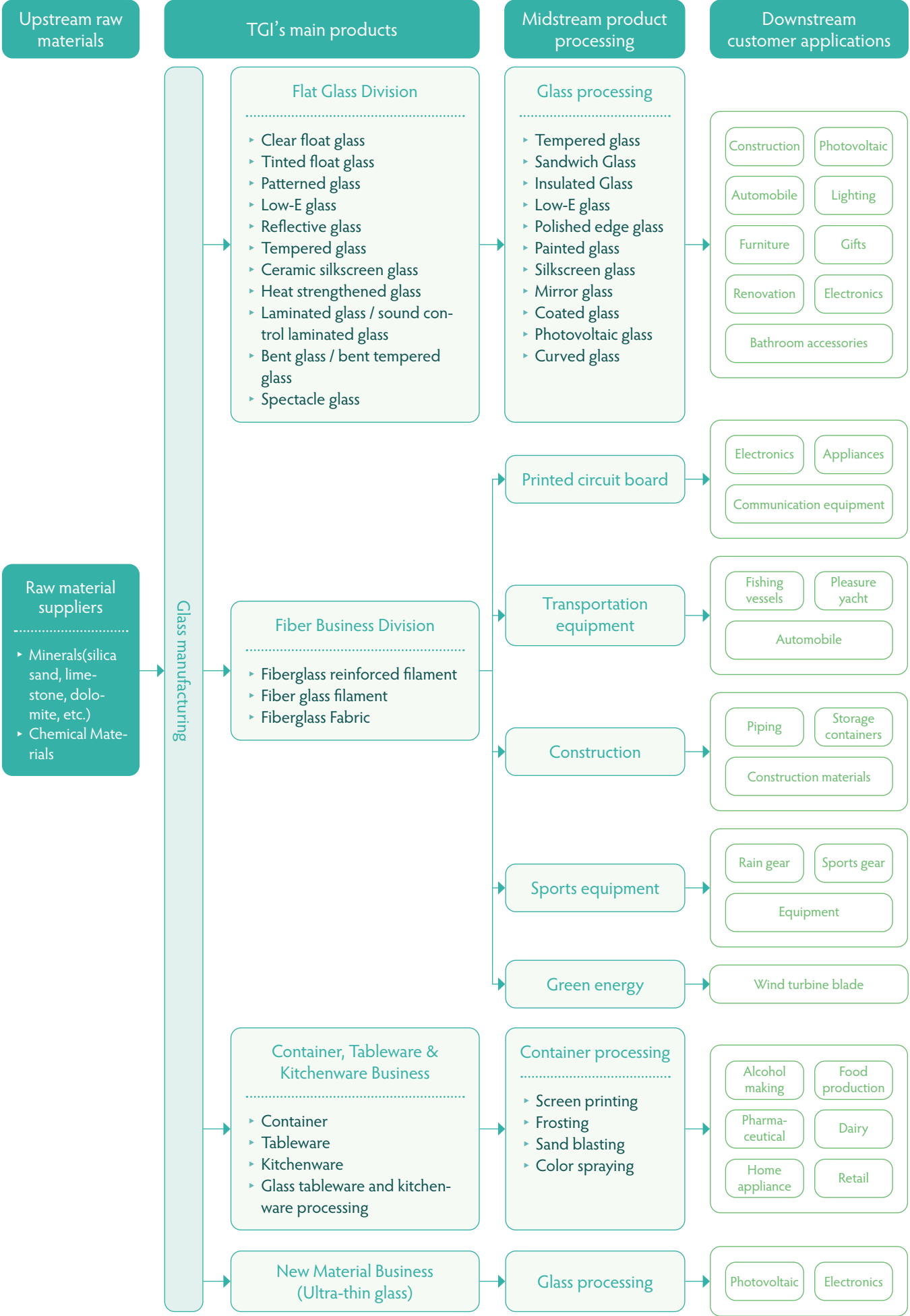
Organization and responsibilities of main departments



TGI's affiliated enterprises



Our main products and value chain



Engagement in associations and groups

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.

TGI has long been collaborating with Japanese businesses. Chairman Lin, Por-Fong, in particular, has a long-term relationship with industry associations in Japan and has made significant contributions to the improvement of economic and trade relations between Taiwan and Japan, for which he was awarded the “Kyokujitsusho Medal” by the Emperor of Japan in 2019. Lin’s efforts provided a solid foundation for the global visibility of Taiwan’s industries and businesses, and opened up opportunities for local businesses to build relationship with international counterparts.



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

Organization	Role
1. Industrial/commercial organizations	
Chinese National Association of Industry and Commerce, 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/trade organizations	
Chinese East Asia Economic Association	Director
Chinese International Economic Cooperation Association	Member
Taiwan-Africa Business Association	Member
4. Industry-related 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. Environmental and sustainable development-related organizations	
Center for Corporate Sustainability (CCS)	Consulting director
Taiwan Green Building Council	Member

Operating performance

Financial performance in the last 3 years

Unit: NTD thousands

Category	Item/Year	2021	2022	2023
Financial performance	Operating revenues	13,152,625	12,595,543	12,278,353
	Operating costs	(10,481,615)	(10,611,170)	(11,028,041)
	Gross profit	2,671,010	1,984,373	1,250,312
	Operating expenses	(2,554,931)	(2,084,039)	(1,844,020)
	Operating profit (loss)	106,323	(19,569)	(514,657)
	Non-operating income and expenses	11,444,975	(466,467)	556,772
	Pre-tax profit/loss	11,551,298	(486,036)	42,115
	Current net income (loss)/current net income from continuing operations	11,476,678	(720,576)	34,594
	Other comprehensive income	213,901	407,309	(917,711)
	Total comprehensive income for the current period	11,690,579	(313,267)	(883,117)
Economic values distributed	EPS (NTD) after retrospective adjustment	3.95	(0.25)	0.01
	Operating costs	10,481,615	10,611,170	11,028,041
	Employee salary and welfare	3,526,175	3,073,262	2,778,506
	Payments to capital contributors	1,454,149	4,782,942	448,300
	Payments to government authorities	45,036	88,116	325,815
Subtotal	Social donations	59,109	10,370	11,488
		15,566,084	18,565,860	14,592,150

Note 1: All yearly financial information above has been audited.

Note 2: The Company has adopted IFRS since 2013.

Note 3: With regards to the 5-year (2014-2018) profit-seeking enterprise income tax exemption granted under the Statute for Upgrading Industries: TGI had applied for exemption for Changpin Factory, Hsinchu TS-7 Furnace, and Taoyuan TT-1 Furnace

Note 4: The revenue for 2023 was lower than the previous year, primarily due to the persistently high domestic housing prices, which led to weak demand for architectural glass. Additionally, the performance in 2023 was impacted by the inventory reduction in the electronics industry and the inflation crisis triggered by the Russia-Ukraine war.

Note 5: No political donation was made in 2023.

Income tax information

Unit: NTD thousands; %

Year	2021	2022	2023	Average
Pre-tax Net Profit (Loss)	11,551,298	(486,036)	42,115	3,702,459
Current Income Tax	37,730	250,813	3,644	97,396
Deferred Income Tax	36,890	(16,273)	3,877	8,165
Income Tax Expense	74,620	234,540	7,521	105,560
Effective tax rate (%)	0.65%	-48.26%	17.86%	-9.92%
Income tax paid	4,237	45,756	244,154	98,049
Cash Tax Rate (%)	0.04%	-9.41%	579.73%	190.12%

Note: The above figures are based on the income tax-related financial data from the company's individual financial statements.

Production volume and value

Unit: tons for volume; NTD thousands for value

Year	2022			2023		
Product	Production capacity	Production volume	Production value	Production capacity	Production volume	Production value
Flat Glass	367,375	309,973	3,168,854	368,835	291,170	2,829,881
Fiber Glass	100,000	71,977	3,909,791	100,000	46,537	3,619,043
Glass container	169,000	135,376	2,864,298	165,400	148,654	3,084,453
Total	636,375	517,326	9,942,943	634,235	486,361	9,533,377

Note: The 2023 production volume and value chart covers Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory.

Production performance - 2023

Product	Taiwan		Mainland		Total	
	Furnace	ton(s)	Furnace	ton(s)	Furnace	ton(s)
Float flat glass	2	340,000	11	2,670,580	13	3,010,580
Fiberglass Fabric	1	20,000	4	94,000	5	114,000
FRP (fiber glass reinforced filament)	1	80,000	-	-	1	80,000
Glass container	6	165,400	-	-	6	165,400
Total	10	605,400	15	2,764,580	25	3,369,980

Low-E production volume - 2023

Product	Taiwan		Mainland China		Total	
	Production line	Thousand M2	Production line	Thousand M2	Production line	Thousand M2
Low-E glass	1	4,000	8	38,000	9	42,000

Main product sales information - 2023

Serial No.	Product category	Percentage of domestic sale	Percentage of export sale	Revenue weight	Sales destination
1	Flat Glass	90%	10%	35.87%	Asia, Central/South America, Australia, Europe, Africa, North America
2	Fiberglass Fabric and fiber glass	41%	59%	29.87%	Europe, USA, China, Japan, Korea, The Middle East, Southeast Asia, New Zealand, Australia
3	Glass container	65%	35%	30.68%	USA, New Zealand, Australia, China, Germany
4	Glass tableware	95%	5%	0.05%	India, Korea, Germany, Australia
	Glass kitchenware	10%	90%	0.76%	Mainland China
5	New materials (ultra-thin glass)	5%	95%	2.77%	Mainland China

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

Market share

Serial No.	Product category	2022	2023
1	Flat Glass	65%	75%
2	Fiberglass Fabric	35%	35%
3	Fiber glass	55%	55%
4	Glass container	35%	60%
5	Glass tableware/kitchenware	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 2023.

completed **12** hours of mandatory training

Composition of the board of directors

TGI’s board of directors had a total of 15 directors in 2023. 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. TGI directors serve a term of three years and are elected during shareholder meetings from persons of adequate capacity. The directors will elect a Chairman from among themselves to represent the Company in all business dealings. The Chairman does not hold the concurrent position of CEO.

The board of directors convenes meetings at least once a quarter. A total of 4 board meetings were held in 2023, and the directors averaged an overall attendance rate of 88%. 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.

Name	Designation	Date on board	Gender	Concurrent employment at the Company	Professional knowledge and skills					
					Glass industry	Finance and banking	Import and export trade	Commerce and management	Finance	International businesses and trade
Lin, Por-Fong	Chairman	1967-09-16	Male	Yes	V			V		
Lin, Por-Shih	Director	1967-09-16	Male	Yes	V			V		
Lin, Por-Chain	Director	1976-04-21	Male	No	V			V		
Lim, Han-Ton	Director	2009-06-10	Male	No		V		V		
Peng, Cheng-Hao	Director	2018-06-13	Male	No			V	V		
Hsu, Li-Lin	Director	2015-06-09	Female	No				V		
Lin, Chia-Hung	Director	2000-04-28	Male	Yes	V			V		
Su, Yu-Te	Director	1996-04-01	Male	Yes	V					
Lin, Chia-Yu	Director	2004-10-06	Male	Yes	V			V		
Lin, Charles Ming	Director	2006-06-09	Male	Yes	V	V			V	
Tsai, Tseng-Ming	Director	2017-10-26	Male	Yes	V		V			V
Lien, Sheng-Wu	Director	2021-07-02	Male	No		V		V	V	
Lin, Sheng-Chung	Independent Director	2021-07-02	Male	No				V		V
Lin, Zui-Yeh	Independent Director	2021-07-02	Male	No			V	V		V
Wang, Yu-Che	Independent Director	2021-07-02	Male	No				V		

For more details on TGI board members, please refer to P.14 of the 2023 annual report.

Major resolutions of the board of directors in 2023

Name of motion	Motion details	Execution progress
Cessation of production activities for TGI’s New Material Division	Report on the cessation of New Material Division	Production has been ceased
Proposal to cease activities or liquidate Taiwan Glass (TGI) Yueda Autoglass Co., Ltd. (TYAU), an investment jointly held between TGI Group and Yueda Auto Development Co., Ltd., and dispose of the right-of-use of land, property, plant, and equipment	Cessation or liquidation of Taiwan Glass (TGI) Yueda Autoglass Co., Ltd.(TYAU)	The resolution is being executed according to schedule

Board diversity

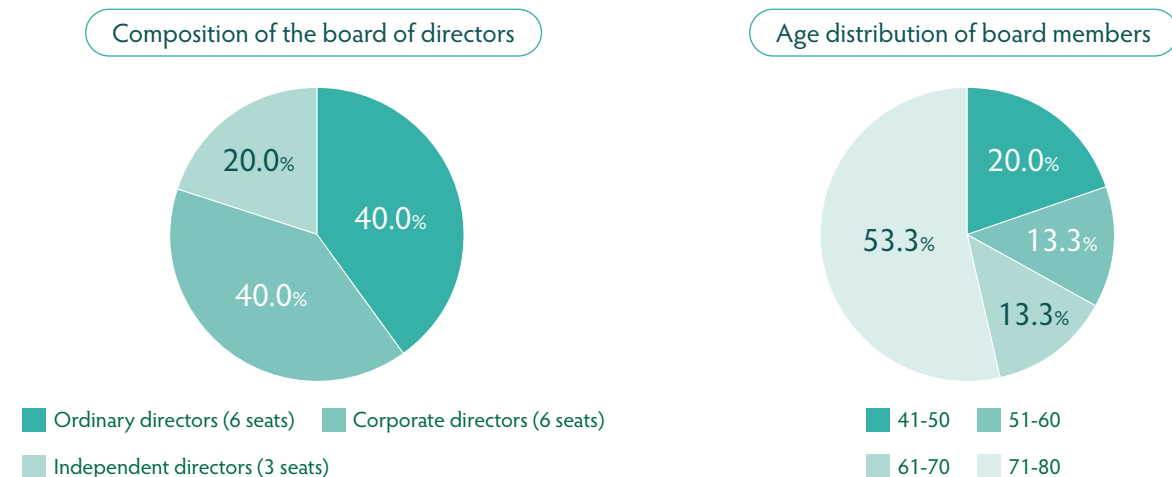
TGI has implemented a “Board Member Diversity Policy” and disclosed details on the corporate website. Board members are selected based on professional capacity and level of commitment while taking into consideration a broad number of diversity criteria including but not limited to gender, age, cultural and educational background, ethnicity, professional experience, skills, knowledge, and duration of service. The average age of TGI’s current board members is 65, with female directors accounting for 7% of the board. According to Article 20 of “Corporate Governance Code of Conduct,” the board as a whole shall possess the following capacities: operational judgment, accounting and financial analysis, business administration, crisis management, industry knowledge, global market vision, leadership, and decision-making.

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

At least one-third of directors possess relevant experience and skills in the glass industry, and the target is deemed to have been met.



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



◀ the board diversity policy and implementation

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.



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 (dismissal) of financial statement auditors, and evaluation of 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 2023 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.

Details of the Audit Committee’s function are explained in P.22 of the 2023 annual report

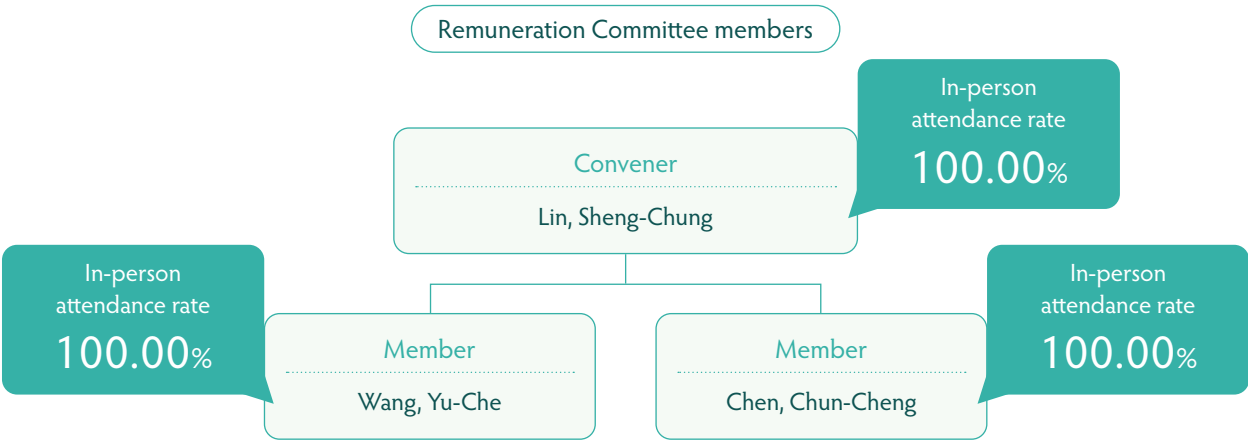
The independent directors communicated with financial statement auditors on 3 occasions in 2023 to discuss outcomes of financial statement audit, quality management, update in securities regulations, and “the latest change in sustainability disclosure guidelines.”

The Audit Committee held **4** meetings in 2023

The independent directors communicated with financial statement auditors on **3** occasions in 2023

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.



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.

A total of 3 Remuneration Committee meetings were held between 2023 and the first quarter of 2024:

Meeting	Date	Discussions	Resolutions
4th meeting of the 5th Remuneration Committee	2023-03-06	Distribution of 2022 compensation to TGI’s directors and managers	Approved and passed by all Remuneration Committee members
5th meeting of the 5th Remuneration Committee	2023-08-04	Routine review of the “Director and Manager Compensation Policy”	
6th meeting of the 5th Remuneration Committee	2024-03-11	Distribution of 2023 compensation to TGI’s directors and managers	

Details of the Remuneration Committee’s function are explained in P.29 of the 2023 annual report.

Board of directors’ compensation 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.

The salary policy for 2023 was determined without direct inquisition for stakeholders’ opinions, and no compensation consultant was hired. In the future, the Company will engage stakeholders and gather opinions to serve as reference. Sustainability performance was not associated with directors’ or senior managers’ compensation. The Company will explore related policies in the future.

Compensation 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.

Compensation of the Company’s directors, independent directors, and managers and association with performance are explained in P.19 of the 2023 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. Details of the Nomination Committee’s function are explained in P.30 of the 2023 annual report.



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

TGI website



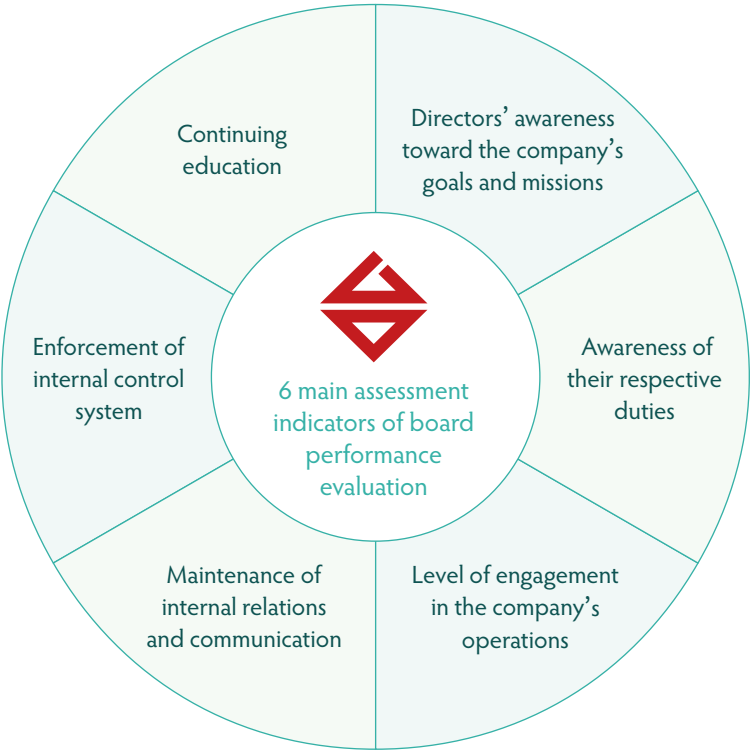
◀ TGI website

Board of directors’ performance assessment

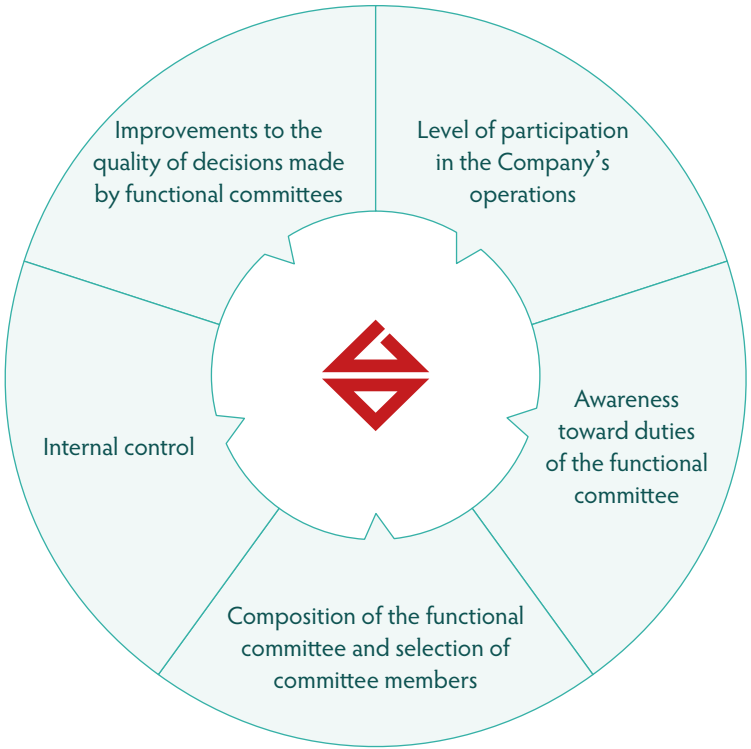
In an attempt to enforce sound corporate governance practices and procedures and to empower the board of directors for more sophisticated duties, TGI passed a set of “Board of Directors Self-assessment or Peer Assessment Policy” in 2021 that serves as guidance for the evaluation of board of directors’ 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

A total of 23 assessment indicators covering six main aspects, including: directors’ awareness toward the Company’s goals and missions, awareness of their respective duties, level of engagement in the Company’s operations, maintenance of internal relations and communication, continuing education, and enforcement of internal control system, were used to evaluate board performance. The outcome of the 2023 assessment was rated “Good” overall, and the board will continue making improvements to low-scoring aspects, including the attendance rate and hours of ongoing education, to further enhance directors’ capacity.



Five main assessment indicators for functional committees (The Audit Committee and Remuneration Committee)



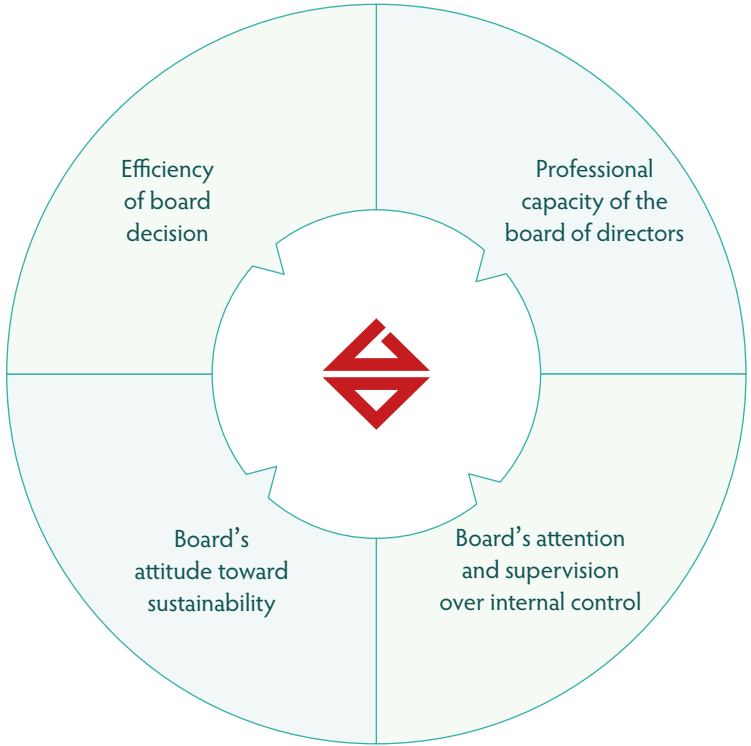
Outcomes of the 2023 board internal assessment, the Audit Committee members performance assessment, and Remuneration Committee members performance assessment were reported during the board of directors meeting held in the first quarter of 2024. Performance scores are explained below:

Assessment aspect	No. of assessment indicators	Assessment score (out of 5)
Board internal performance assessment	23	4.82
Audit Committee	22	4.90
Compensation Committee	19	4.93

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 2023 (to be conducted once every 3 years).

Four main aspects of external performance assessment



Of which, “Board’s attitude toward sustainability” encompasses several indicators including disclosure of ESG information, talent development plan, succession plan, and continuity practices. Execution of board performance evaluation is explained in detail in P. 21 of the 2023 annual report.

Functionality of TGI’s board of directors

Item	Description
Board independence and avoidance of conflicting interests	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.
	All members of the board undergo continuing education to enhance board performance, enforce sound governance, and learn the latest trends that are relevant to improving corporate sustainability. Board members complete a broad variety of training courses organized by external institutions such as Chinese National Association of Industry and Commerce, Securities and Futures Institute, Taiwan Corporate Governance Association, Taiwan Academy of Banking and Finance etc. for at least 3.0 hours. These courses cover a wide range of topics from cross-border taxation, artificial intelligence, FinTech innovation, digital platform, carbon credit, anti-tax evasion, business secret, non-competition, board duties, sustainability to information security.
	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.

TGI’s website



◀ TGI’s website

Business integrity 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.

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.

Enforcement of business integrity for the year

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. TGI employees committed no corruption, bribery, extortion, or any other action in violation of integrity in 2023.

All employees had signed the “Employee service integrity code of conduct” as of November 2015. All 180 new permanent employees recruited in Taiwan in 2023 had signed the document, representing a 100% completion rate. The Company also conducted training on business integrity-related topics in 2023 (including employee handbook, policies, and corporate social responsibilities), which received a total of 1,138 enrollments and delivered 1,048 training hours.



Employee service integrity code of conduct

Whistleblower system and grievance system

TGI has robust accounting policies and internal control systems in place to establish reasonable assurance that all internal departments uphold business integrity and are able to comply with relevant regulations while pursuing growth. Furthermore, to duly enforce Article 20 of the Company’s Business Integrity Code of Conduct, TGI’s board of directors passed a set of Illegal, Unethical, and Dishonest Conducts Reporting Policy in 2018 that outlines the internal unit responsible for receiving misconduct report, the whistleblowing channels available, and the handling procedures. We have disclosed employee grievance e-mail and hotline on Intranet pages, and set up e-mails, hotlines, and written correspondence channels that employees may use to raise complaints and suggestions at any time. The identity of whistleblower and details of each misconduct report are kept confidential. TGI received no report on violation of business integrity in 2023, whether through internal or external channels.

Grievance channels	Contact information	Handler
E-mail	ad@taiwanglass.com	Audit Office
	pn@taiwanglass.com	Human Resources Department
Grievance hotline	02-2715-8051	Audit Office
	02-2715-8060	Human Resources Department
Grievance via written correspondence	11F, No. 261, Section 3, Nanjing East Road, Songshan District, Taipei City	

Terms of the “Business Integrity Code of Conduct,” “Illegal, Unethical, and Dishonest Conducts Reporting Policy,” and “Employee Service Integrity Code of Conduct” are disclosed on the TGI website.

TGI website



TGI website

Legal Compliance

TGI has a legal affairs unit and an internal audit unit in place to assist internal departments with regulatory compliance and prevention of major violations (those that involve a penalty of more than NT\$1 million). TGI was found to have been involved in the following violations in 2023, and the departments concerned have been instructed to make improvements afterwards:

Event	Amount of penalty
Fines for violation against Occupational Safety and Health Act	200,000
Fines for violation against Labor Standards Act	50,000
Fines for violation against Occupational Safety and Health Act	100,000

Note: For more detailed description of the event and subsequent improvements, please refer to section 5.3 Occupational Safety and Health.

Business integrity training

Course name	Content	No. of participants	Photo
Anti-corruption and promotion of business secrecy awareness	In 2023, TGI invited representative from the Investigation Bureau to promote awareness on “anti-corruption” and “business secrecy.”	30	
Personal data protection awareness	The Legal Affairs Department organized a seminar to promote awareness on “personal data protection” issues, and took actions to “take count of personal data under management” and “rehearse proper responses for personal data incident.”	30	

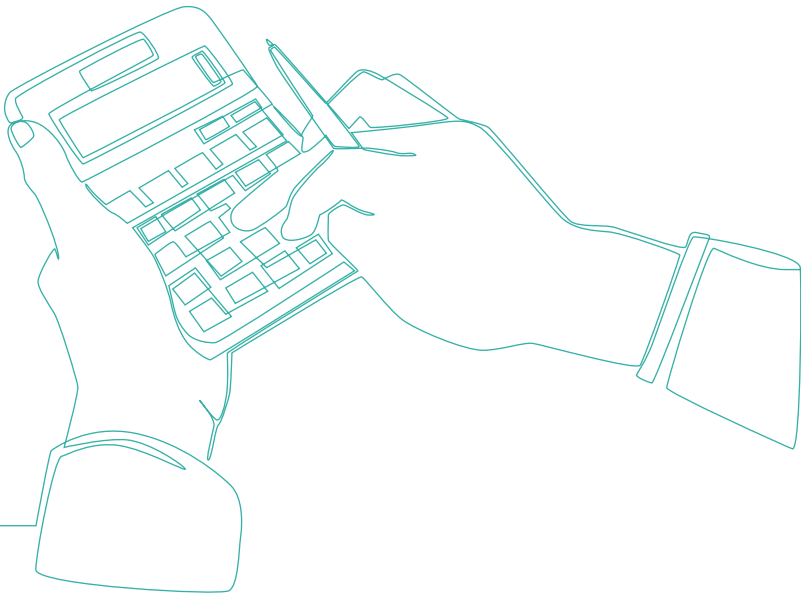
Internal audit

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 33 internal audits were completed in 2023, 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 covers 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.

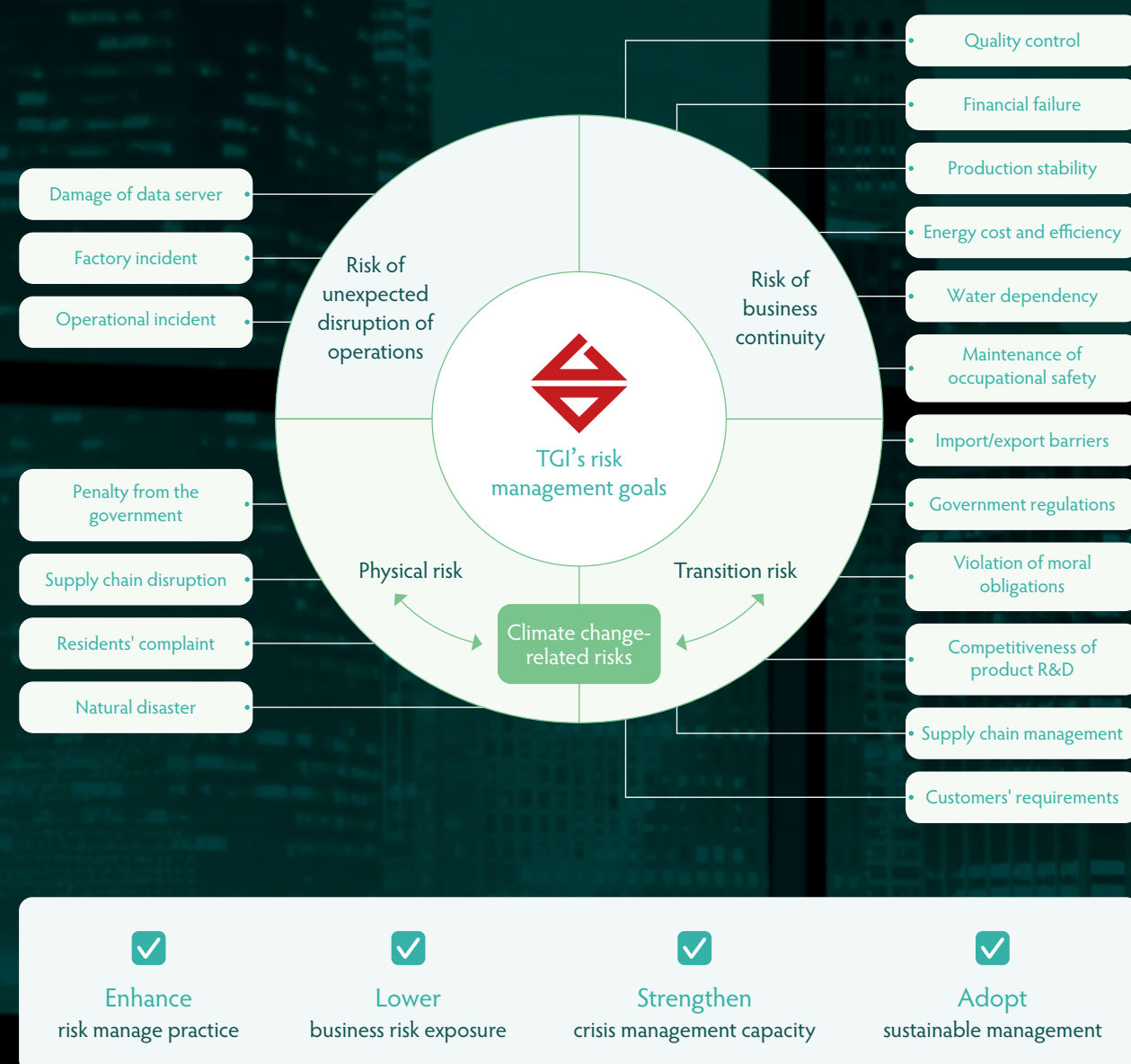
TGI conducted environmental, safety, and health audits of our factories in 2018 and 2019. These were unscheduled audits included under the regulatory compliance audit items. The audits were carried out in accordance with the relevant standards and regulations applicable to each factory.

A total of **33** internal audits were completed in 2023



2.3 Risk management

The ESG Committee is responsible for overseeing risk management on an organization level. TGI requires its internal departments to conduct comprehensive reviews of relevant risk issues, adopt robust risk management practices, and implement appropriate measures for improved corporate governance, business performance, and continuity, and thereby avoid risk unexpected disruption. Meanwhile, the board of directors supervises execution of the above risk practices. Our goals for the identified risks are to minimize chances of occurrence and impact.



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
<ul style="list-style-type: none"> ▸ High-risk and highly leveraged investments ▸ Loans to external parties ▸ Endorsements and guarantees 	
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 2023, 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

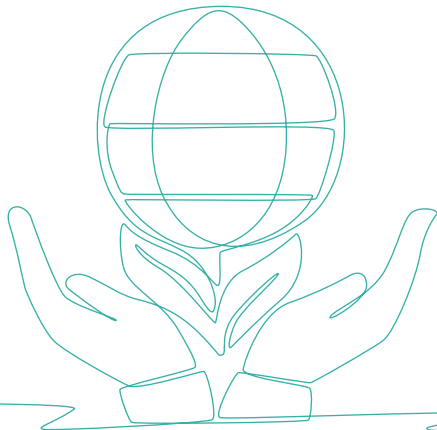
Business risks	
Legal risks	
Description of impact	TGI is required to comply with Regulation Governing Reporting of Greenhouse Gas Emission, Reclaimed Water Resources Development Act, Water Supply Act, Water Act, and other laws concerning employment dispute and occupational hazards.
Risk management system/response	<ul style="list-style-type: none"> ▸ 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	-
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	<ul style="list-style-type: none"> ▸ 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	<ul style="list-style-type: none"> ▸ Material shortage
Risk management system/response	<ul style="list-style-type: none"> ▸ Internal control and audit systems have been implemented to enhance internal risk prevention and control. ▸ Procurement and tender information are 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	<ul style="list-style-type: none">▸ 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	<ul style="list-style-type: none">▸ 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	<ol style="list-style-type: none">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	<ul style="list-style-type: none">▸ 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	<ul style="list-style-type: none">▸ 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	<ol style="list-style-type: none">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	<ul style="list-style-type: none">▸ Malicious information from outside the organization▸ High volume of data at risk and leak of confidential documents
Risk management system/response	<p>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.</p> <ol style="list-style-type: none">1.Enhanced network firewall and network management.2.Enhanced detection, protection, and virus scanning at terminals.3.Enhanced information security training and social engineering drill to raise 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	<ul style="list-style-type: none">▸ Difficulty in recruiting talents▸ Low talent retention rate
Risk management system/response	<ul style="list-style-type: none">▸ 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	<ol style="list-style-type: none">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	<ol style="list-style-type: none">1. Raw materials: Set safety stock levels2. 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 resource: In-plant water circulation system has been improved upon to enable circulation at individual production lines before combined circulation at the water treatment plant.

Business risks	
Opportunities	Ensures uninterrupted operations and maximizes production capacity.
Responsible unit	Factory
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	<ul style="list-style-type: none">▸ 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	<div><div><div>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.</div><div><div>Level 1</div><div>Level 2</div><div>Level 3</div></div><div><div>Incident Occurs</div><div>Emergency Response Implemented On-Site</div><div>Assess whether the Incident can be effectively and immediately controlled</div><div>Switchboard or security guards issue an emergency broadcast notification</div><div>Complete emergency response team assembly and implement emergency response</div><div>Assess whether the Incident can be effectively and immediately controlled</div><div>Request external support</div><div>Carry out rescue missions and disaster management</div><div>Disaster management completed, emergency response plan terminated</div><div>Review</div></div></div></div>
Opportunities	Emergency response and investigation and analysis of incidents help prevent similar occurrences on a later date
Responsible unit	Work safety, Factory affairs

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	<ul style="list-style-type: none">▸ 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 affairs
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	<ul style="list-style-type: none">▸ 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 2023, we adopted TCFD’s management system to simulate and analyze climate risks (please refer to section 4.4 Climate action for an overview of the analysis and the final outcome). By examining climate risks using international standards, we hope to plan our responses ahead and minimize impact on our operations.
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

- 1

To develop, implement, and maintain an intellectual property acquisition/protection/management/utilization system that is suitable given the Company’s size and form.
- 2

To provide adequate resources needed to effectively implement and maintain the intellectual property management system.
- 3

To monitor internal and external risks or opportunities associated with intellectual property management, and take appropriate responses.
- 4

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. An intellectual property management unit has been assigned to make annual briefings to the board of directors on “intellectual property management plan and execution.” Outcomes for 2023 are explained below:

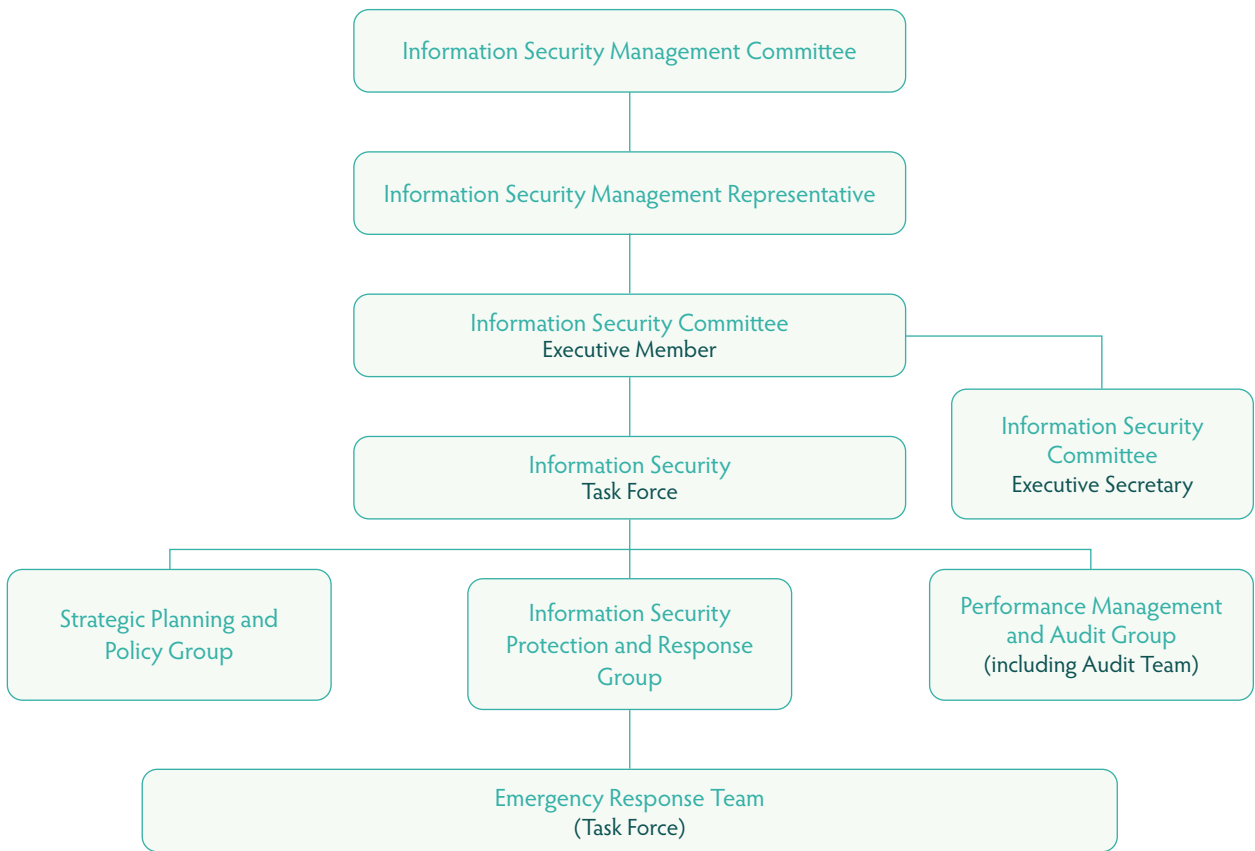
Intellectual property	Number acquired						Application in progress
	Taiwan	China	Japan	Germany	USA	Total	
Patent	34	545	3	1	4	587	87
Trademark	83	92	0	0	0	235	1

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.

For more rigorous management of information security, TGI has implemented systematic practices on information asset management and compliance to ensure the “Confidentiality,” “Integrity,” and “Availability” of the Company’s information assets. These practices not only promote compliance with relevant regulations, but also protect information or communication systems from internal as well as external threats, such as vandalism, accident, unauthorized access, use, control, divulgence, corruption, alternation, or deletion of data, or other attacks. Meanwhile, proper management system, organization, and equipment have been put in place to support information security management practices and maintain continuity of business activities. A set of “ISMS-0-IS-A01 Information Security” and related documents have been established to serve as guidance for compliance for all employees. TGI did not encounter any major information security event in 2023 that resulted in losses.

Structure of the Information Security Management Committee



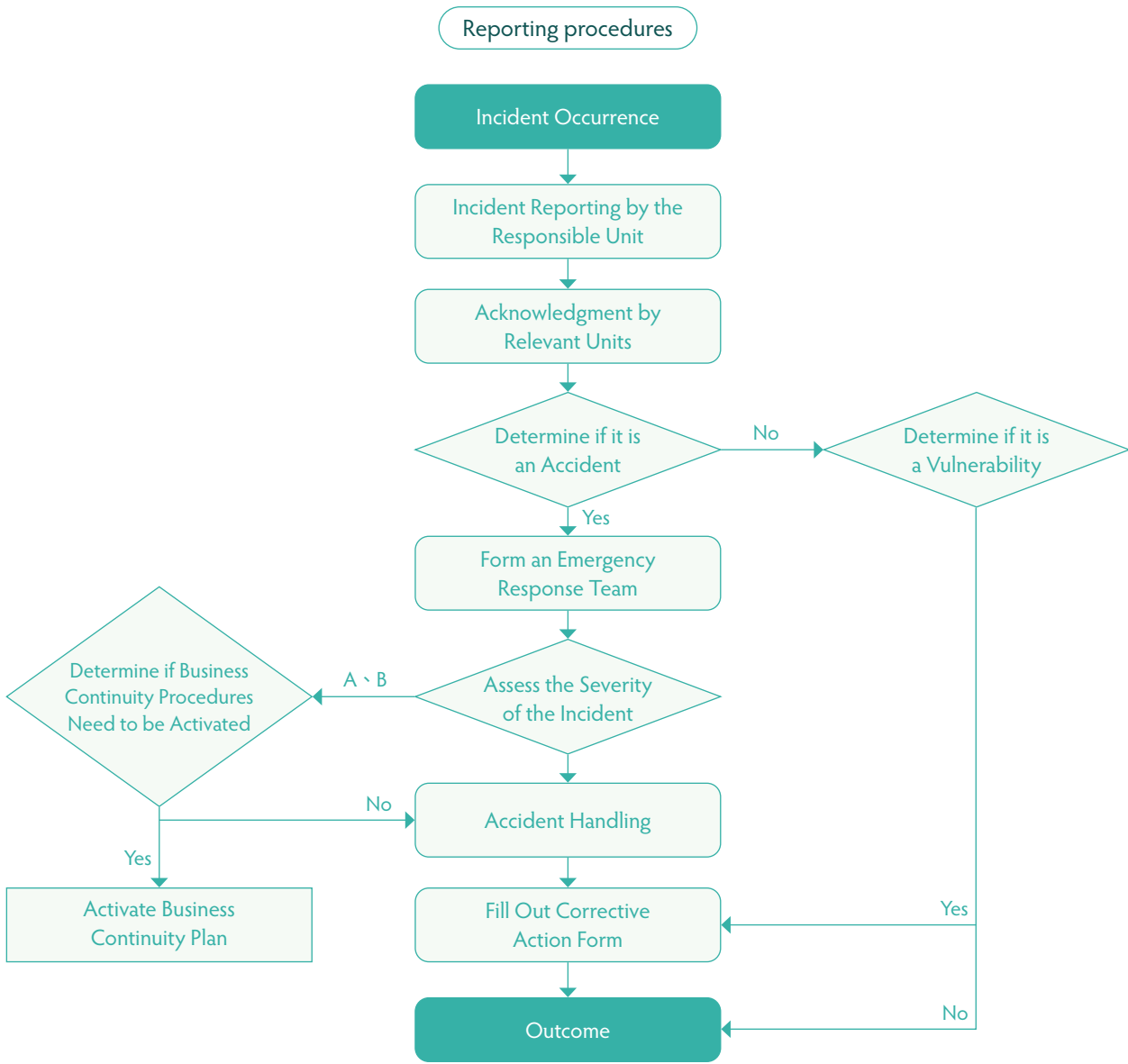
Designation	Responsibilities
Convener	Headed by the Chairman and CEO, whose responsibilities are to make decisions and coordinate resources for important matters concerning information security.
Information Security Management Representative	Headed by the Chief Information Security Officer, whose responsibilities 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 2023	Information security protection planning and execution for 2023.

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.



Management practices

In 2023, TGI arranged counseling for ISO 27001 and developed an ISMS framework to raise customers’ and stakeholders’ trust in information security while enhancing information security risk management, ensuring compliance with legal requirements, optimizing information security processes, and controlling and minimizing the threat and impact of information security incidents. The Company plans to obtain ISO27001 certification and receive third-party assurance for its information security system in the future.

The Company enforces information security management on six main aspects including: “security of information/communication environment and equipment,” “security management of core systems,” “security of network communication,” “security of information system development,” “continuity management of information/communication systems,” and “data security,” and promotes “information security training and awareness” among staff.

Security management for the information environment and equipment	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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	<ol style="list-style-type: none">1. Authorize dedicated personnel to manage network equipment and monitor network condition at all times.2. Introduce SecuTex Network Protection, an advanced information security threat defense system, to record network traffic and increase visibility of network activities; make use of SOC information security monitoring service to analyze network traffic, alert suspicious activities, and report intrusions in real-time. 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	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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. The training covers several topics including encryption key management, protection against phishing attack, and data protection, and aims to ensure that every employee is capable of becoming the first line of defense in terms of information security. In 2023, TGI held 12 sessions of information security training at Taipei Headquarters and factory sites, which cumulated a participant count of 298.



Information security training at Taipei Headquarters



Information security training at factory

Implementation Results

Resources committed

In 2023, TGI committed a total of NT\$9,940,893 and assigned 4 employees information security management and protection.

Expenditure	Amount in 2023 (NTD)
Information security consultation fee	1,950,000
Acquisition of information security hardware/software	6,684,838
Maintenance of information security hardware/software	1,306,055
Total	9,940,893

Information security management projects and execution

The following projects have been implemented:

Project	Purpose
Professional counseling on information security	Introduction of ISO 27001 information security management framework
Purchased 3-year license for the MDR software	Introduction of MDR for enhanced server security management
3-year license for terminal management software - Comodo AEP	Introduction of server management software for improved management efficiency.
3-year license for terminal protection software - Deep Instinct	Introduction of new-generation antivirus software for improved protection.
Purchase of Pure Storage	Introduction of new-generation Storage to increase access speed and security protection in the virtual environment.
Check Point 6400 firewall	Introduction of NGFW to improve protection for internal/external network segments.
Multi-factor authentication (MFA)	MFA has been introduced to enhance login security.
Purchase of backup server and NAS	to backup files stored in the virtual environment.

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

Goal setting and attainment

TGI had attained all six main goals below in 2023, and will continue to act in line with the six main goals in the future.

Item No.	Goals	Measurement/test	Target value	Frequency	Main department in charge
1	Duly enforce the information security management system and ensure confidentiality, integrity, and usability of information assets.	Review of account access check log.	Account access to be checked at least once a year.	Yearly	Information Technology Department
		examine the integrity and correctness of backup data.	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
		Check core systems for abnormal disruption.	No more than 2 unplanned disruptions with RTO exceeding the designated threshold in six months.	Semi-annually	Information Technology Department
2	Ensure continuity of the Company's key business operations.	Examination of business continuity drill log.	Business continuity drills to be conducted on information systems at least once a year.	Yearly	Information Technology Department
3	Ensure that all information security risks are duly identified, assessed, and handled.	Examination of the information asset registry and risk evaluation logs.	Identify and evaluate risks associated with information assets at least once a year.	Yearly	Information Security Department
4	Ensure that employees are adequately informed and trained to carry out routine tasks in a secure manner.	Examination of employee training record.	Employees of the Company undergo information security training at least once a year.	Yearly	Information Security Department
5	Ensure that information security incidents are handled swiftly when they occur, thereby protecting the interests of the Company, shareholders, and stakeholders.	Examination of the information security reporting drill log.	Information security reporting drills are held at least once a year.	Yearly	Information Security Department
6	Ensure that information security management measures meet the needs of all parties concerned.	Examination of the management review meeting minutes and briefings.	Management review meetings are held at least once a year to discuss the execution of information security tasks.	Yearly	Information Security Department

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.

We are also dedicated to protecting customers' confidential information, and prevent data leaks by enforcing strict controls over the access right of information equipment. All employees have the duty to keep customers' secrets and exclusive information entrusted to TGI, and are prohibited from obtaining customers' data in any improper way. The Company provides employees with regular training on information security and has imposed strict requirements on the use of computer password, thereby ensuring conformity with Subparagraph 3, Paragraph 11 of Authorized Economic Operator (AEO) Guidelines. TGI Group encountered no violation of customers' privacy or loss of customers' data in 2023 that resulted in major complaints or violations. Please see section 5.2 Employee Care & Development for details on talent development and training.

3

Service Excellence and Product Innovation

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Product Responsibility Performance of 2023



0 case

TGI committed no violation against product health, safety, labeling, or marketing regulations in 2023



100%

100% of flat glass products had passed CE (Europe), ANSI (USA), and CNS (Taiwan) 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 22,000 standards



-30%

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



-12.5%

Lightweight bottle technology not only reduces product weight by 12.5%, but also makes products 100% recyclable and reusable



0 case

TGI encountered no violation of customers' privacy or loss of customers' data in 2023 that resulted in complaint



14 case

With regards to food grade fiber glass applications, the Company had 4 products that complied with US FDA regulations, 8 products that passed EU 10/2011 and BfR certification for drinking water in Germany, and 2 products that met the CAS drinking water requirements in France

3.1

TGI products

TGI's main products include flat glass, fiber glass, and glass container, tableware, and kitchenware. The Company has also been active in the development and manufacturing of new products in recent years. Production activities take place primarily in Taiwan and Mainland China; products are marketed mainly to areas including Taiwan, China, Japan, Korea, North America, The Middle East, Australia, Europe, and South Africa. None of TGI products were found to have violated product health, safety, labeling, or marketing regulations in 2023, and no product was banned from sale. TGI was not involved in any lawsuit concerning anti-competition, anti-trust, or anti-monopoly in 2023.

Private brand - TG

TGI rivals the best in the world in terms of container, tableware, and glassware production technology. It markets products under the proprietary brand, TG, to consumers who are highly aware of lifestyle quality. In an attempt to shape our own brand identity and product style, we have invited world-renowned designer Naoto Fukasawa to bring new life into our glass products by incorporating Japanese craftsmanship, his observation of the Taiwanese culture, his appreciation for relationships with people, his feelings toward the Taiwanese people, and elements of "kindness," "balance," and "nature" into the design.

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 123 to 129 in 2023, and the Company has plans to expand product portfolio to more than 200 items.

TG



New products in 2023

Coffee



Stainless steel coffee measuring spoons

Alcohol accessories



520ml red wine glass



395ml heat-resistant tall glass vase



650ml heat-resistant tall glass vase



400ml heat-resistant circular glass vase



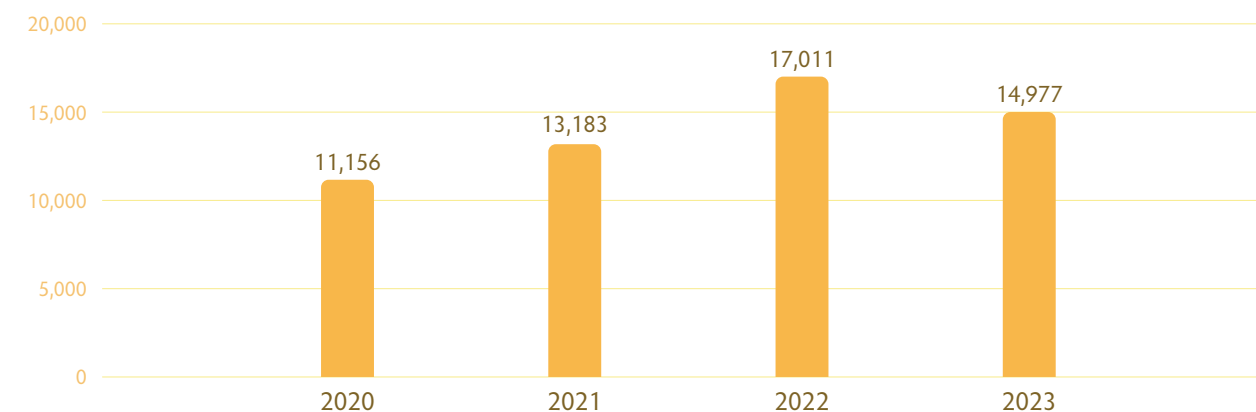
590ml heat-resistant circular glass vase

Home decorations

Brand revenues

Revenues of TG brand in the last 4 years

Unit: NTD thousands



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

Driven by strong awareness for sustainable values, the Company prints packaging labels using environment-friendly ink made with soybeans that are free of heavy metals for all TG products, and has been tested and certified by SGS for the use of eco-friendly ink. 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

The TG brand has won awards during the 2021 30th Taiwan Excellence Awards “Design Selection - Water Appliance Series,” “Design Selection - Tableware Series,” “Design Selection - Home Decoration Series,” “Design Selection - Tea Series,” “Design Selection - Coffee Series.” “All product series” were named as 2021 Japan Good Design and was nominated for the “Best 100” Special Award.

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 “Designer’s Collection” of TG glass is characterized by unobtrusive and simplistic outlines that carry Naoto Fukasawa’s concept of “Without Thought.” In the absolute subtlety, every curve of each piece has been thoughtfully designed to blend naturally into our daily lives, and can only be appreciated by those who use them.

With the affirmation of Taiwan Excellence Awards, 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.

Design Selection - Water series



450ml water bottle with acacia



470ml heat-resistant glass mug



350ml heat-resistant glass mug



200ml heat-resistant glass with wide opening



Taiwan Excellence Taiwan Expo Japan



Taiwan Excellence Taiwan Expo Thailand

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.

Ceramic Whiteware Espresso Cup and Plate Set



The unique handlebar design helps relieve weight on the knuckles, making the espresso cup stable and easy to hold.

Ceramic Whiteware 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



These cups have a clear and smooth surface, have good heat dissipation and air permeation characteristics, making them suitable for clearly appreciating the color and appreciating the warmth from the tea.

Brand value

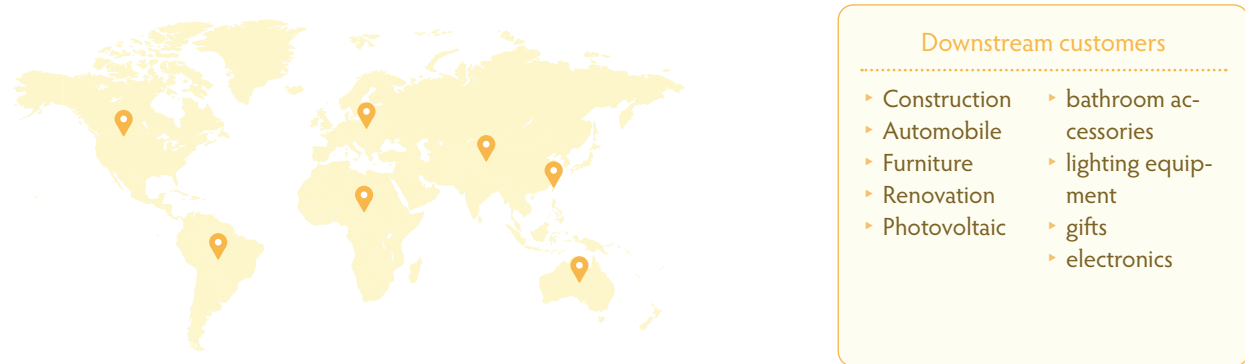
The Company currently has a total of two direct sales in Taiwan: the Taiwan Glass Flagship Store and Xinyi Eslite. There are approximately 40 domestic and foreign entities and online channels in cooperation with the Company, which includes global e-commerce platform for design products Wallpaper Store, 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.

TG also actively collaborated with magazine publishers, retail malls, government agencies, and restaurants in 2023, and offered them gift boxes and glassware as a way to promote online and offline exposure.

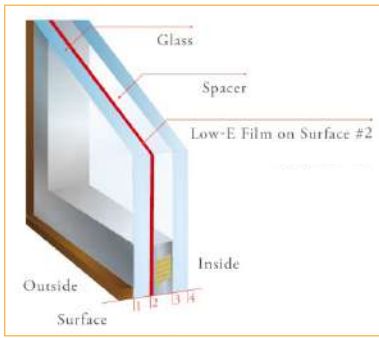
Form of collaboration	Partner	Progress
Financier gift box	NOKE	Japanese patissier Susumu Koyama X chef Thomas Chien X TG (exposure to 95,000 followers of ppa-per_magazine) 
The Lifestyle Gift Box	New Taipei City Government	Gift box for foreign guests 
Customized glass	HAUSINC CAFÉ	Glassware used in restaurants; sold as special merchandise 

Flat Glass

100% of TGI’s flat glass products had passed CE (Europe), ANSI (USA), and CNS (Taiwan) standards. 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. 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. Meanwhile, we’ve actively promoted tempered glass needing to be hot-dipped 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, Central/South America, Australia, Europe, Africa, North America



Structural diagram of dual-layer Low-E glass

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



visit the official website

Flat glass-related certifications



CE (Europe)



CNS (Taiwan)



ISO 9001



ISO 14001/SGS



IGCC

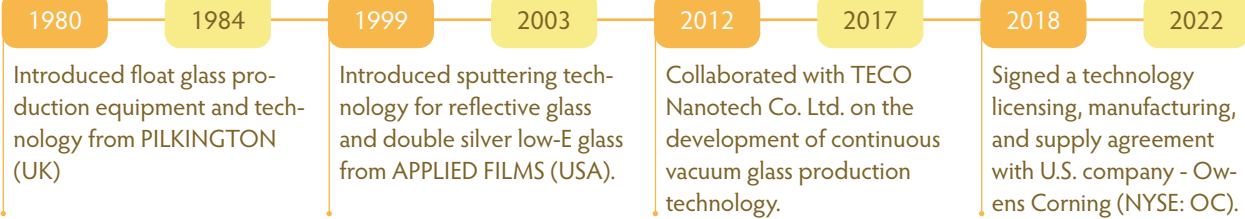
Technological collaboration

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

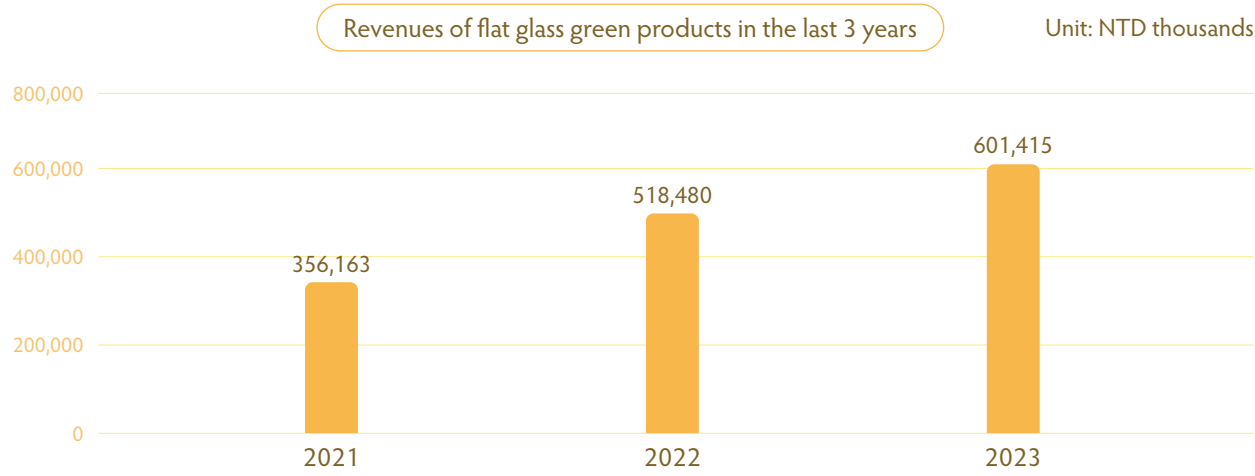
Introduced sputtering technology for double silver low-E glass from VON ARDENNE (Germany).



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

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



Green products - flat glass



Product name	Product description
<div>Low-E insulated glass</div> <div></div> <div>High Performance Green Building Material Mark</div>	TGI’s Low-E insulated glass offers high visible light transmission and low infrared transmission with excellent thermal insulation that has the potential to lower air conditioning load and significantly improve comfort as well as temperature stability indoors, and meets the requirements for environmental protection, energy conservation, and green building. <div></div>
Triple-silver Low-E glass	Boasts world-leading solar absorption and delivers optimal balance between natural light transmission and solar heat control, making it the best glass for energy conservation.
Double-silver Low-E glass	Suitable for applications that require a high level of heat insulation, it offers excellent natural light transmission, solar heat insulation, and insulation of outdoor heat that make it an ideal glass for energy conservation.
Single silver Low-E glass	Offers effective solar heat insulation; can be easily customized to accommodate various building designs while delivering good heat insulation.
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.
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.

Low-E insulated glass, the top choice in today’s energy-saving glass products, effectively blocks infrared thermal radiation from the sun while maintaining excellent light transmittance. This resolves the conflict between natural lighting and heat insulation, significantly reducing the energy consumption of air conditioning systems. TGI’s Low-E insulated glass has earned the CNS Mark, ISO 9001 international quality certification, and IGCC certification from the Insulating Glass Certification Council in the U.S., making it widely adopted in buildings with high energy efficiency requirements.

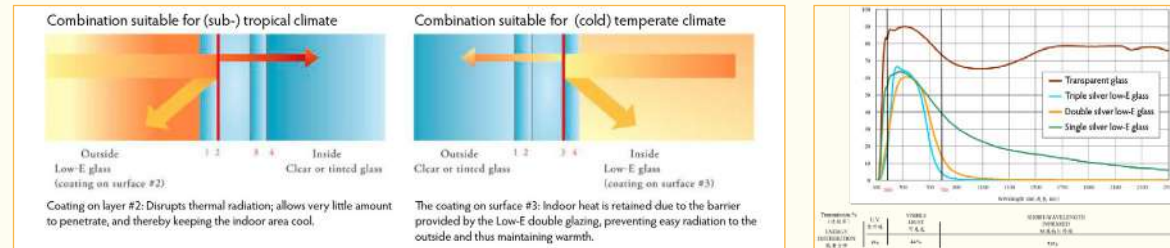
Taiwan Glass Group uses the most advanced coating technology to develop its single-piece Low-E glass: the Jie Neng (JN) series. Compared to general Low-E coating, the JN series layered structure uses a hard semiconductor nano-glass to greatly reduce the radiance of the glass surface. The JN series has 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.



Click to view an introduction of Low-E glass

TGI knowledge base



What is Low-E glass

Low-E (Low-Emissivity) glass is an optimal material for reducing heat from solar exposure. It effectively blocks most ultraviolet and infrared radiation while allowing visible light to pass through, thus preventing an increase in indoor temperature due to solar exposure and contributing to reduced energy consumption and carbon emissions.

Solar radiation is composed of ultraviolet (UV) light, visible light, and near-infrared light. Emissivity (ϵ) measures how much of the solar radiation absorbed by a piece of glass is re-radiated as heat. A lower ϵ value indicates better thermal insulation.

Low-E glass achieves this by using a special coating on the glass surface. According to the national standard CNS, only glass with an emissivity (ϵ) value of less than 0.20 can be classified as Low-E glass.

**Note: The emissivity value refers to an object's ability to radiate thermal energy after absorbing heat at a given temperature. A higher ϵ value indicates that more thermal radiation is absorbed and emitted, while a lower ϵ value suggests less thermal radiation is absorbed and emitted, resulting in better thermal insulation. Low-E glass utilizes its coating layer to block solar heat radiation, enhancing its insulation properties.*

“Scenario construction and environmental parameter gathering project for low-E energy-saving glass”

Working with ITRI, TGI made use of the resources of “SPIN-Lab - 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.



Exterior view of SPINLab

The outcomes show that multi-layer Low-E glass **effectively reduced air conditioning energy consumption by approximately 50%** and is effective at maintaining indoor comfort and temperature.



Room A - Low-E glass with 100% transparency



Room B - Laminated glass with 100% transparency

SPINLab replaced Room A with energy-saving glass, whereas Room B is a photo of the room with laminated glass

Fiber Glass

Fiberglass Fabric

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, USA, China, Japan, Korea, The Middle East, Southeast Asia, India, New Zealand, Australia

Downstream customers

- ▶ Electronics
- ▶ Appliances
- ▶ Communication equipment
- ▶ Fishing vessels
- ▶ Pleasure yacht
- ▶ Automobiles
- ▶ Piping
- ▶ Storage containers
- ▶ Construction materials
- ▶ Rain gear
- ▶ Plastics processing

Fiberglass Fabric

Fiberglass 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.

The world entered an era of high bandwidth and high-speed data transmission with the introduction of 5G service in 2020. 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 fiberglass fabric for high-end PCBs; these products have been certified by domestic and foreign equipment manufacturers for use on 5G equipment. 5G deployment continues throughout the world, whereas an increasing number of auto manufacturers are investing into the production of electric vehicles. Demand for fiberglass fabric has increased rapidly since 2021, and as a response, TGI will continue increasing the production of Low DK and ultra-thin fabric, and develop thinner and higher value-adding products to meet customers' needs.



Fiber glass filament



Fiberglass Fabric



White Fiberglass Fabric passed REACH test for substances of very high concern (SVHC)

Technological collaboration

TGI resumed technology collaboration with Owens Corning, world's leading fiber glass producer, and signed a technology licensing, manufacturing, and supply agreement.

This agreement with Owens Corning gives TGI access to the formula and technological guidance on world's most advanced fiber glass, which can be produced through TGI's highly competitive fiber glass plants into products that offer better performance and are more friendly to the environment at lower cost, thereby improving overall competitiveness of composite materials and products in Taiwan to the benefit of all industry participants.

TGI has long maintained productive business relationship with Owens Corning, and this agreement further strengthens the strategic collaboration between two parties in the composite materials field. Furthermore, given that fiber glass technology and quality have always been part of TGI's core competitiveness, the Company will continue investing resources into developing high-tensile and high-performance fiber glass that can be produced at lower cost, thereby create distinctive advantages and deliver exceptional quality to customers' needs.

Product name:

IN-CS, OFF-CS (glass fiber chopped strands)

Expected years of collaboration:

2023-2024; currently ongoing.

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



visit the official website

Glass Containers

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. As for heat-resistant products, 100% of nurser bottles can pass EU's latest EN 14350 tests, whereas coffee brewers can have temperature tolerance labeled on the package box if requested by customers. 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** USA, New Zealand, Australia, China, Germany
- Tableware** India, Korea, Germany, Australia
- Kitchenware** Mainland China

Customers

- Alcohol making
- Dairy production
- Food production
- Home appliances
- Pharmaceuticals
- Retailing

Container



Decanters



Food-related



Beverage-related



Drug-related



Downstream customers

- Electronics
- Piping
- Appliances
- Storage containers
- Communication equipment
- Construction materials
- Fishing vessels
- Rain gear
- Pleasure yacht
- Plastics processing
- Automobiles

Sales destination Europe, USA, China, Japan, Korea, The Middle East, Southeast Asia, India, New Zealand, Australia

100% of TGI's products had complied with RoHS and REACH requirements. 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.



Tableware



Dinnerware



Water glass



Alcohol glass



Glass with handle



Colored glass



Glass canister



Candle glassware

Kitchenware



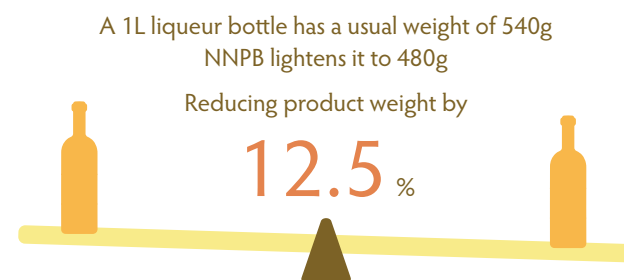
Green Products - Glassware

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, TGI has been engaging Heye-Glass Group from Germany in a series of technological collaborations to develop more than one hundred types of lightweight bottles and produce more than 200 million pieces a year. By lowering the weight of the bottles, we help customers reduce production costs. We have been able to improve our lightweight glass-making technologies in recent years, and achieved success in reducing the weight of 750ml red wine bottles to 415 grams in 2021, and reducing the weight of bottles for 2.5oz essence of chicken by 10 grams or 12% in 2022. These products were mass-produced in 2023 and have received strong approval from both customers and consumers.

Advantages of lightweight bottle:

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



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



▲ visit the official website

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.

TGI had 1,012 products that met the criteria for Green Recycled Products, including: 148 items in the food category, 513 items in the decanter category, 285 items in the beverage category, and 66 items in the pharmaceuticals category.

By increasing the proportion of recycled glass in production, the company not only reduces the consumption of raw materials but also ensures the effective reuse of waste resources. This approach minimizes the burden on waste management, reduces the environmental impact, and mitigates health risks, achieving a win-win outcome for both the economy and the environment.



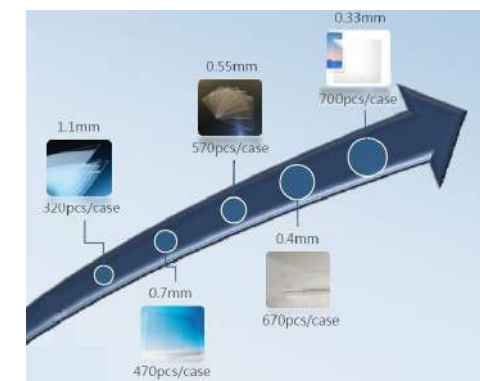
For more explanations on glass containers, visit the official website or scan QR Code:



◀ visit the official website

Ultra-thin glass

The Taichung Factory is TGI's latest production line for ultra-thin touch-screen glass. It features a fully automated production management system and has advanced equipment including cleanroom and robotic arms. The factory commenced production in November 2014 and is capable of mass-producing ultra-thin glass with a thickness of 0.33-1.1mm. Having achieved success in the development of ultra-thin glass with increased aluminium oxide content (2.3% → 3%) in 2019, the Company set goals to manufacture products with 4% content in 2020 to accommodate the market's demand for lightweight yet high tensile equipment. By applying TGI's proprietary AR Coating to glass, the Company was able to reduce reflection by 0.5%-1%, thereby making images clearer with less glare and less double vision. This technology is being used on special medical equipment and showcases (e.g. in art gallery and departmental store). Glass with 0.55-1.1mm thickness can also be used as touch panel on ITO, with the primary market being Mainland China and India. Glass with 0.33-0.4mm thickness can be used as screen protector on consumer electronics. 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.

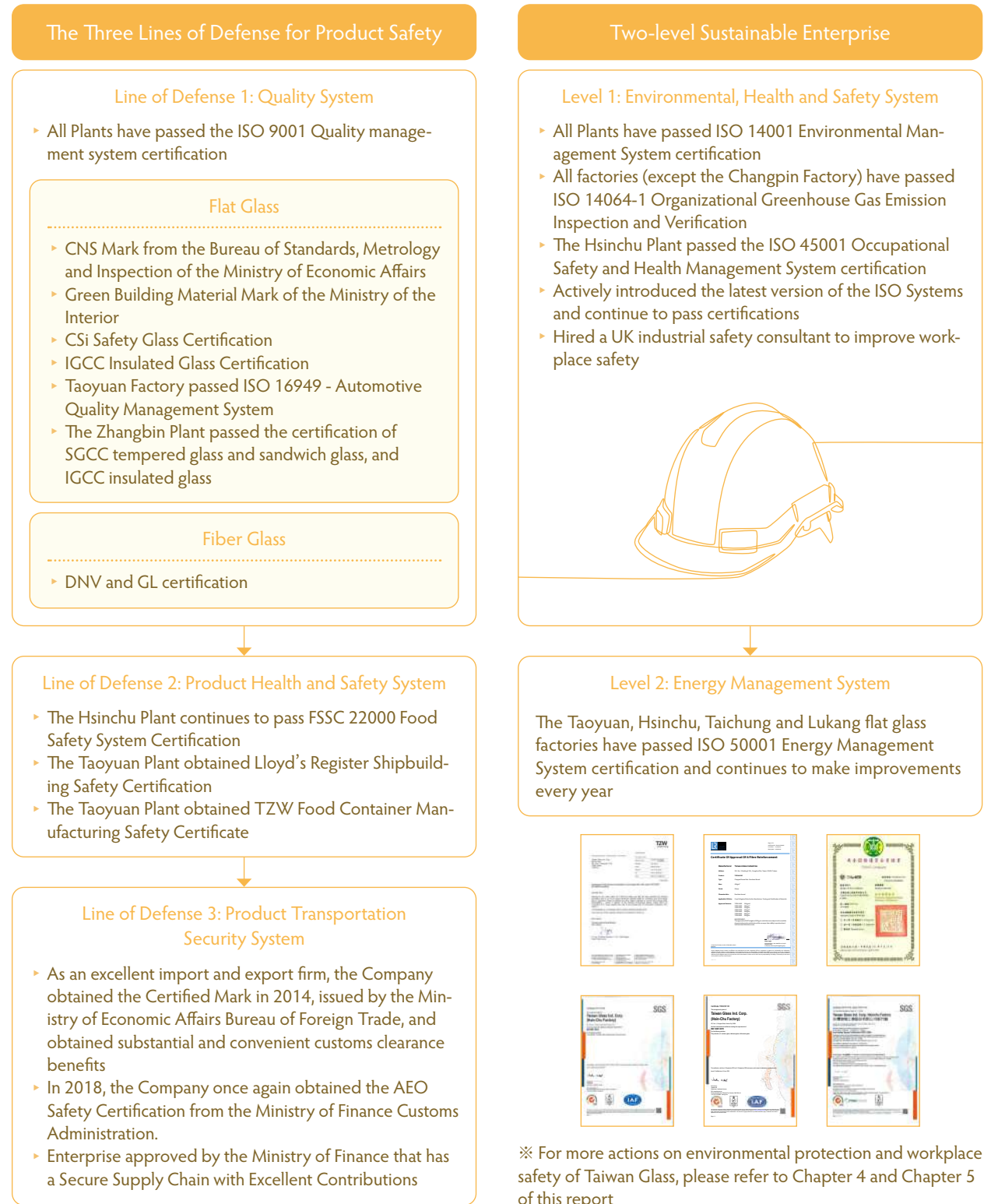


3.2

Product quality

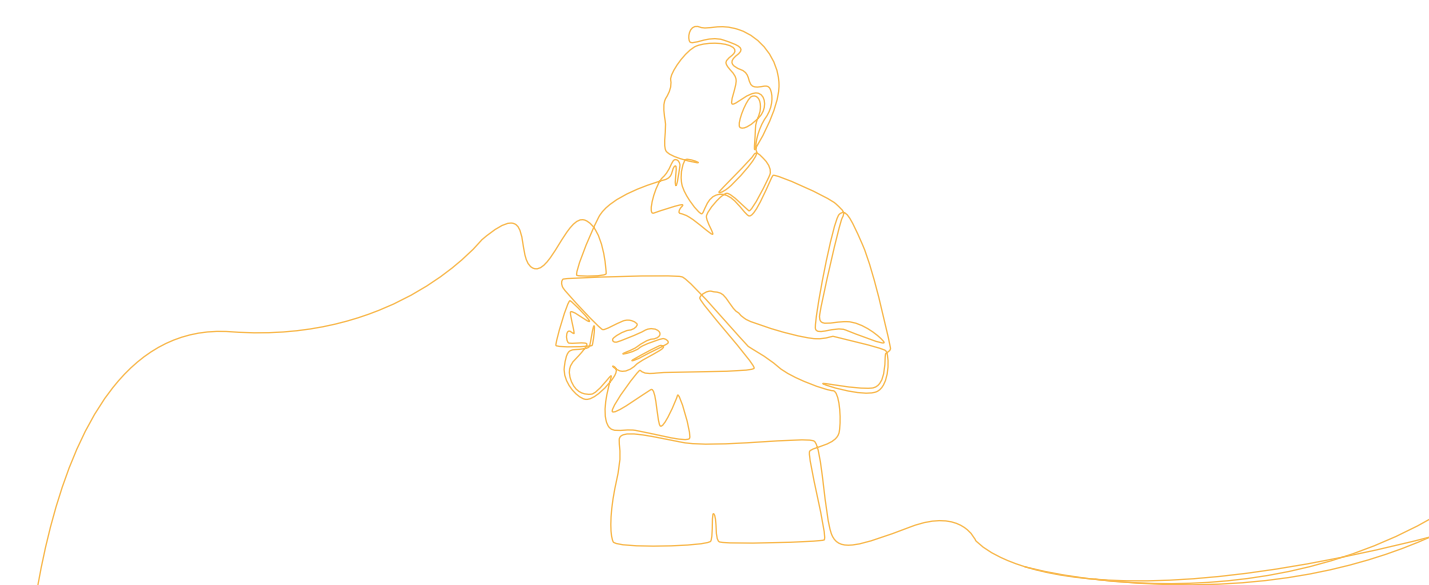
TGI actively introduces product quality, product safety, environment/safety/health, and transportation safety management systems to provide the responses it needs to foster financial growth, promote sustainability of the environment, build a healthy and inclusive workplace, reduce risks, and minimize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

TGI's action plans for product and service excellence

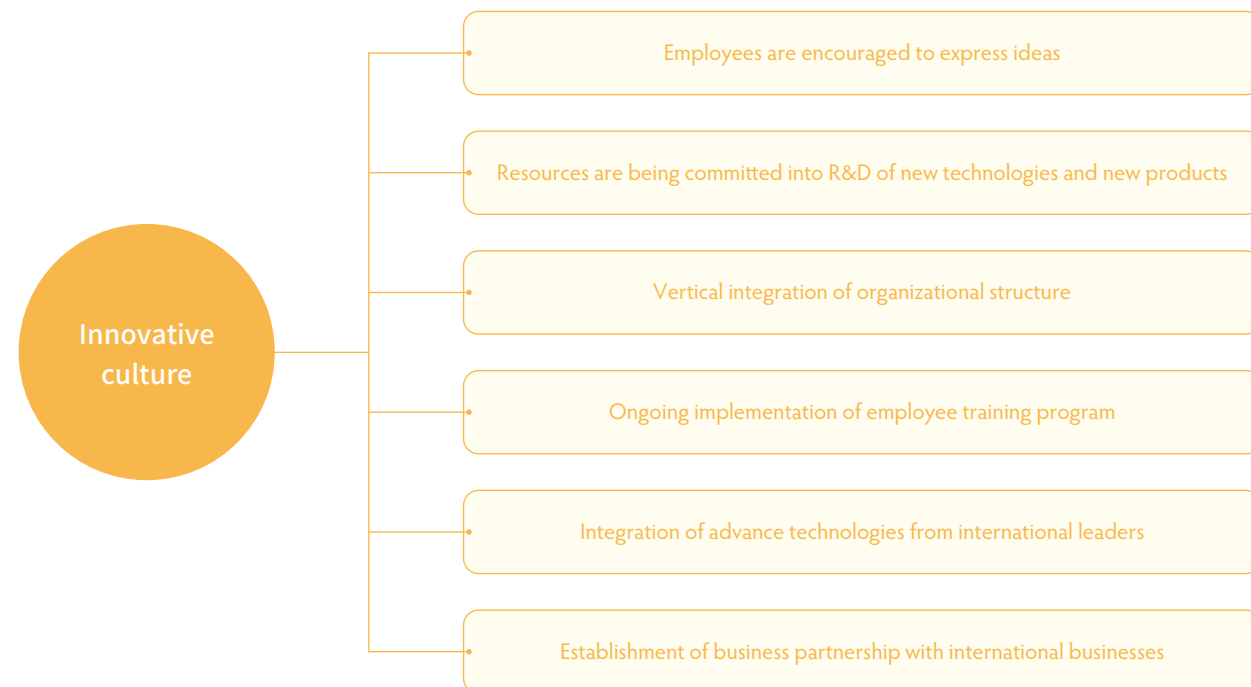


List of certifications attained by factory facilities:

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 Authorized Economic Operator (AEO) certification as a high-quality enterprise.							100%
ISO 9001 Certificate expiry	-	2026/7/26	2026/3/22	2025/11/9	2025/4/15	2023/12/8	2024/6/5	86%
ISO 14001 Certificate expiry	-	2026/10/14	2026/9/14	2023/9/14	2026/03/18	2022/6/18	2025/05/13	86%
ISO 14064-1 Certificate expiry	Certification has been arranged	Regular reviews are conducted on a yearly basis	Regular reviews are conducted on a yearly basis	Regular reviews are conducted on a yearly basis	Regular reviews are conducted on a yearly basis	Regular reviews are conducted on a yearly basis	Certification has been arranged	100%
ISO 50001 Certificate expiry	-	2026/12/30	2026/11/27	2023/11/20	-	2024/12/08	-	57%
ISO/IATF16949 Certificate expiry	-	2024/05/15	-	-	-	-	-	14%
FSSC 22000 Certificate expiry	-	-	2024/12/23	-	-	-	-	14%
ISO 45001 Certificate expiry	-	-	2025/08/31	-	-	-	-	14%



3.3 Innovative R&D



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.



■ TG's Innovative Research and Development Achievements

TG brand

The Company adds 30 new container products to the TG brand each year and strives to bring added value with each offering. These products are being marketed via the B2C channel. 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 2023.

Flat Glass

Coating Colors for Temperable Triple Silver Products

To meet the growing demand for energy efficiency and natural lighting in buildings, the use of triple silver Low-E glass is expected to increase gradually. Enhancing the processability of triple silver Low-E glass and expanding the range of temperable triple silver products will further help in meeting customer needs. In 2023, the development of two coating types, high-transmittance and medium-transmittance, was completed, and they have already been adopted in confirmed construction projects.



SCL-8mm-PTE75A High Transmittance Product Display Image



SCL-8mm-PTE54B-02 Medium Transmittance Product Display Image

Reduction in Anti-Mildew Paper Usage

To minimize waste generated from the use of glass sheets, we advocate for customers to prioritize the shipment of raw glass without anti-mildew paper, provided that storage conditions allow. The usage of anti-mildew paper for clear glass shipments has been reduced to approximately 50%, and for colored glass shipments, it has been reduced to around 65%.

■ Fiber Glass

1 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.

2 A more lightweight Fiberglass Fabric, #1017, passed customers' certification and commenced sale in 2020.

■ Glass container

1 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. Liquor decanters and bottles are also being developed.

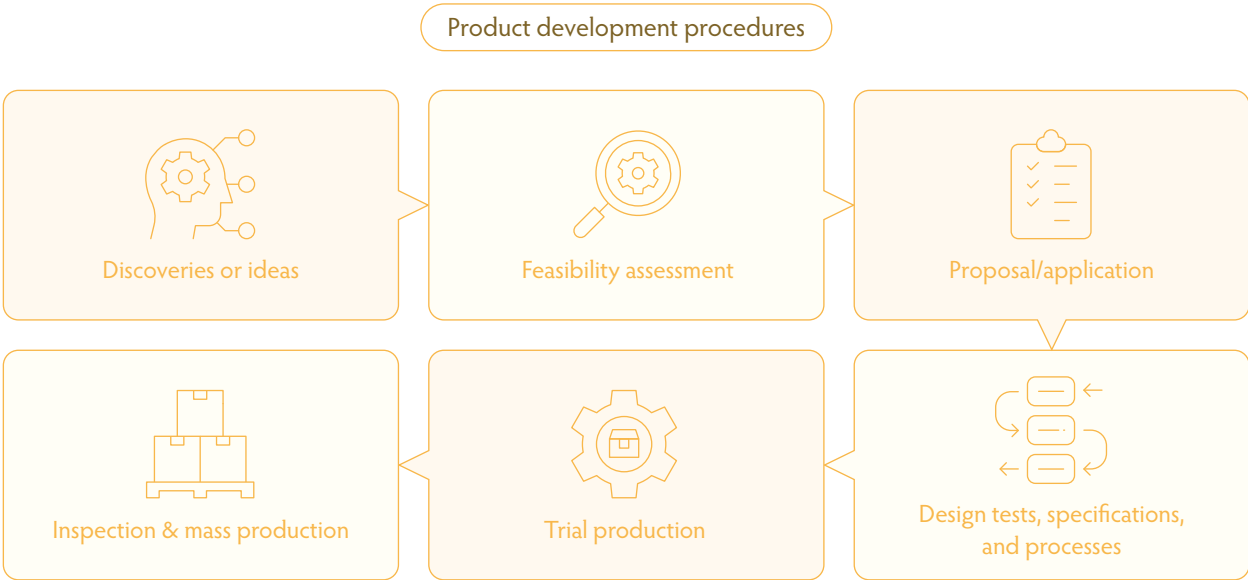
2 The lifting of COVID restrictions has enabled private consumption to recover and business operations to resume, which in turn increased supply of recycled glass. Average rate of increase was approximately 55.36% in 2023.

TGI’s short/medium/long term R&D plan

Department	Short-term	Medium-term	Long-term
Flat Glass	<ol style="list-style-type: none">1. Increase the range of temperable triple-silver Low-E coated products to provide the market with more energy-saving glass options.2. Increase the level of digitalization across production equipment so that data can be cross-analyzed more effectively to provide real-time feedback on the production progress.3. Upgrade production equipment to improve load balancing and stability, and raise product quality to expand product applications.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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 pulp materials for increased product performance.	Optimize production line for improved production efficiency and product quality.	Increase level of production automation.
Glass container for food	95% of products are customized; TGI will continue making lightweight samples and convey to customers the advantages of lightweight products.	Adopt lightweight bottle design in new product development; aim to achieve 50% of total products.	Lightweight bottles to account for 45% of the production in 2030.

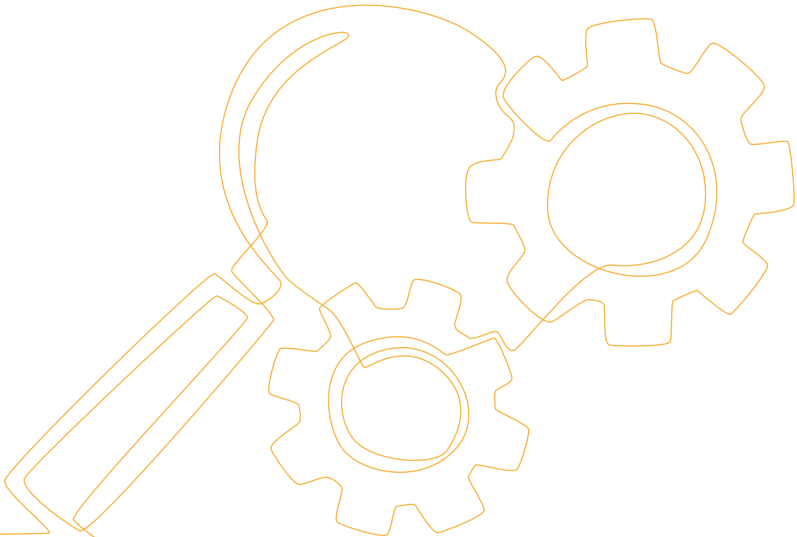


We pay incentives to encourage TGI employees to make suggestions on ways to improve production technology, quality, environmental protection, safety, business, or even administrative practice. For employees involved in major R&D projects, the Company pays bonuses based on the outcome of the project and contribution of individual participants. In doing so, we hope to strengthen employees’ unity toward the organization while at the same time reduce cost, improve work environment, increase productivity, and raise quality standard. We also give credit and reward those who make special contributions to production technology or business management that are ultimately implemented.



Amount of spending (NTD) and manpower committed into R&D for the year

Year	Amount (NTD thousands)	Commitment of internal manpower
2019	51,691	56
2020	51,792	55
2021	52,915	51
2022	42,067	46
2023	49,843	75



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

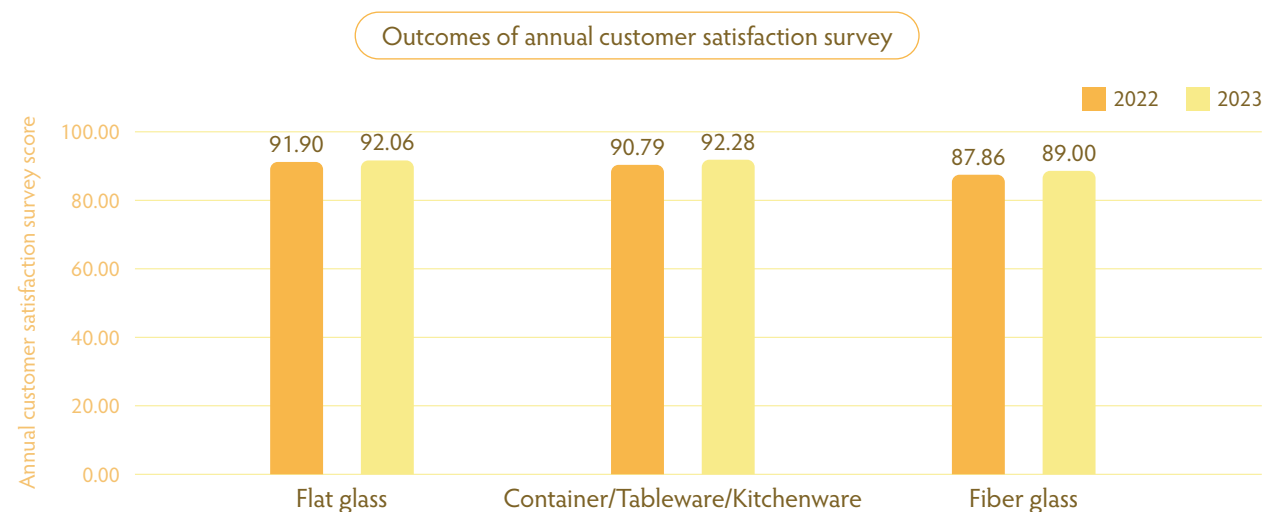
The Company conducts annual "customer satisfaction surveys" to gather customers' opinions on "the speed and accuracy of complaint handling," "speed and accuracy of message reply," "correctness of shipment and consistency of delivery timing," "sales representatives' attitude," "ability to accommodate ad-hoc orders," "professional capacity," "quality consistency" etc., so that improvements can be made to meet customers' needs. TGI also analyzes customers' response to key questions so that meetings can be held to discuss responses and improvements, and raise customers' satisfaction in ways that strengthen the Company's service competitiveness and reputation.

In 2023, the Company conducted a customer satisfaction survey on various products from different departments, and a total of 177 responses were recovered from domestic and foreign customers in 2023. 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

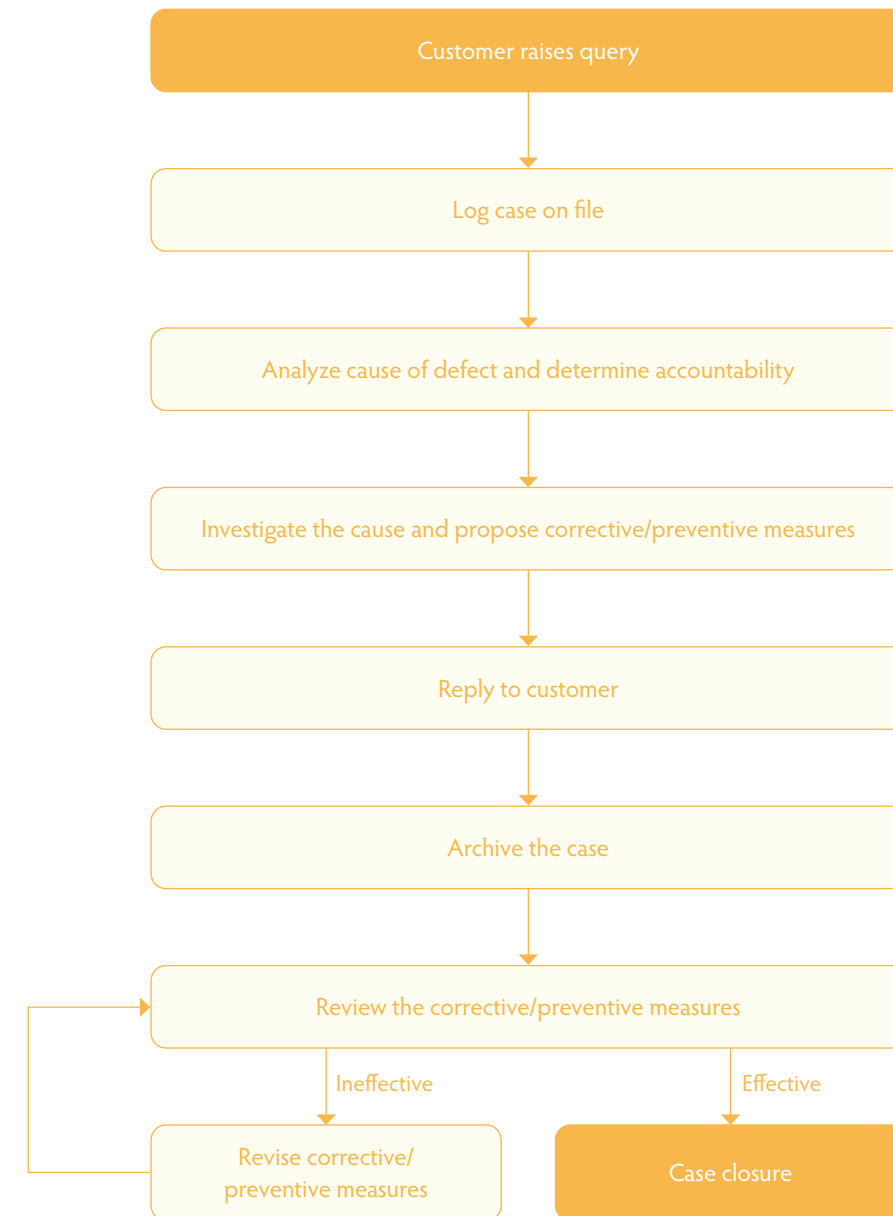
Business segment	Container, Tableware & Kitchenware	Flat glass	Fiber glass
Total questionnaires	87	46	44
Percentage of response from domestic customers	80%	78%	30%
Percentage of response from foreign customers	20%	22%	70%

Outcomes of annual customer satisfaction survey



Note: Satisfaction data for flat glass shown in the 2022 report was incorrect, and has been rectified in the 2023 report.

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, every day. Utilization of the flat glass order placement APP has increased progressively since it was first introduced in 2021, and an online ordering system for flat glass processing was later introduced and completed in 2022 to greatly reduce the cost of customer service and communication and increase the accuracy of its business efforts.

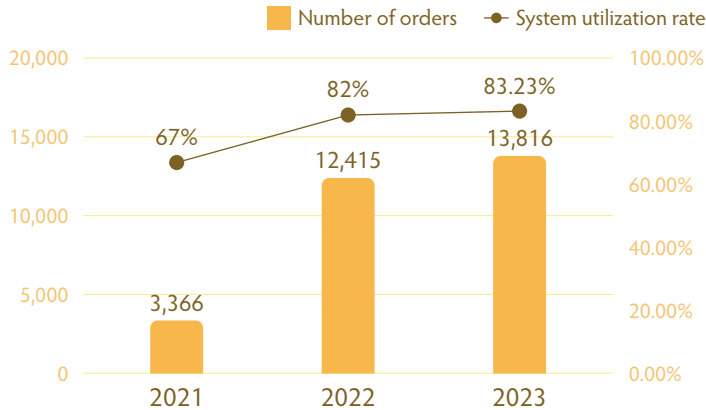
Execution progress

Year	2021	2022	2023
Description	<div><div>Completed the commissioning of flat glass order placement APP and progressively promoted to customers</div><div>Planned the development of online ordering system for flat glass processing</div></div>	<div><div>The flat glass order placement APP was commissioned and achieved more than 80% utilization rate from customers</div><div>The online ordering system for flat glass processing was completed and offered to certain customers</div></div>	<div><div>The flat glass order placement APP maintained a utilization rate of 83.23% from customers</div><div>The online ordering system for flat glass processing was offered to all customers, achieving 68.93% utilization rate for the year</div></div>

Order placement homepage on mobile APP



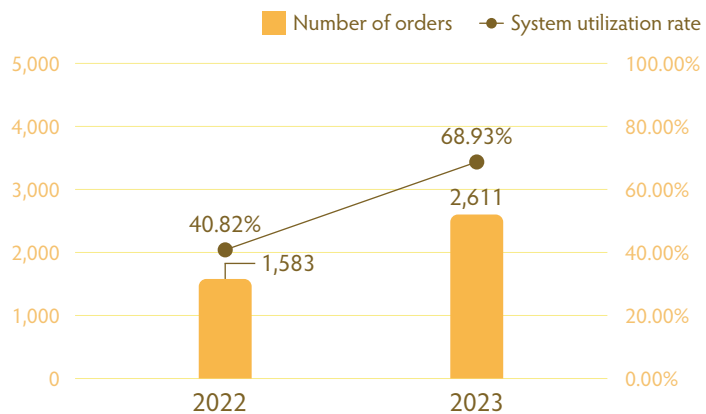
Execution progress of the flat glass order placement APP



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. TGI continued to take part in the Taipei Building Show, the largest exhibition of building materials and products in Taiwan, and traveled overseas to promote the TG brand at Meet Design Exhibition in Japan, JEC World in Paris, and RK Gallery in Shanghai throughout 2023, so that more people get to see our products and the innovations and the thoughtfulness that went into the design.

2023 Taipei Building Show

The theme of this exhibition is "Energy Efficiency, Safety, and ESG." It features a showcase of TG's various Low-E energy-saving glass products in response to global energy conservation and carbon reduction demands, the LamiPlus® Structure laminated glass with enhanced safety and structural integrity, and TG's achievements in sustainable development (ESG).



Meet Design Exhibition (Japan)

Being one of the 26 businesses that participated in the furniture and lifestyle exhibition held in Japan in 2023, the Company took this opportunity to convey to visitors TG's persistence toward high quality as well as the charisma and energy of Taiwan's culture.



JEC World

Participated in the JEC World International Composites Exhibition in France to promote the applications of glass fiber.



RK Gallery (Shanghai)

Heat-resistant glassware was displayed for sale at RK Gallery in Shanghai alongside exquisite furniture to insert TG's brand into the art community.



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.

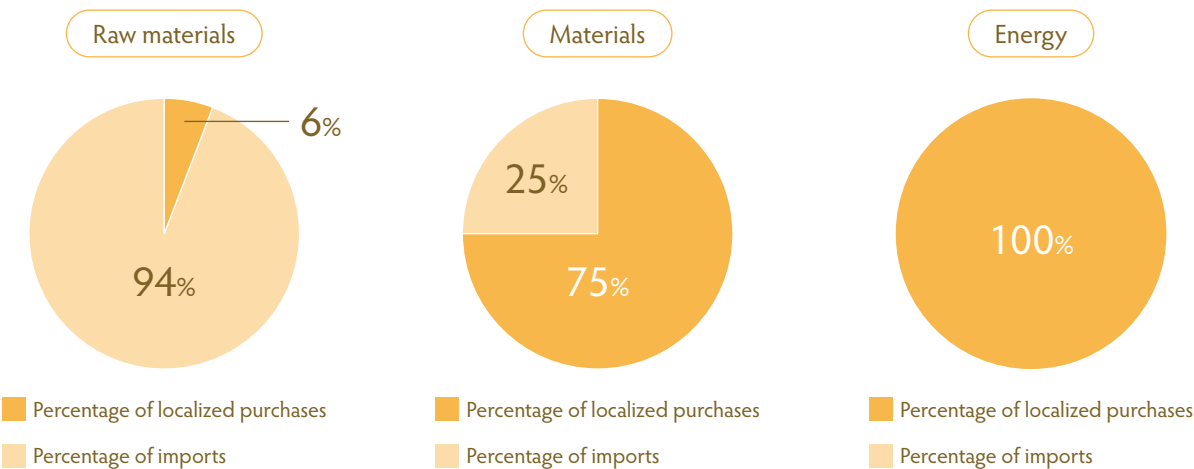
Procurement policy and management strategy

TGI has been disclosing information on procurement tenders publicly over its website since 2020. By adopting a fair, just, and transparent procurement policy, the Company provides manufacturers with raw materials that meet quality standards, conform with supply chain safety requirements, produce low levels of pollution and hazard, and are priced reasonably.

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.

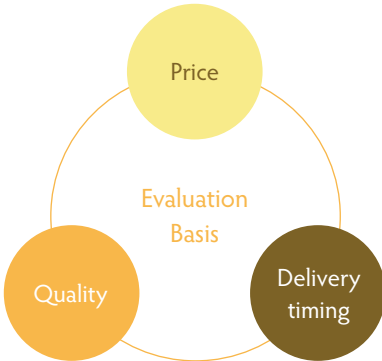
Raw materials, supplies, and energy are the three main categories of purchases made by TGI. TGI had business dealings with a total of 1992 domestic suppliers and 244 foreign suppliers in 2023. The Company adopts a localized procurement policy and 89.1% of its suppliers are based in Taiwan. Approximately 10% of raw material purchases are made domestically whereas 90% are imported. As for supplies, approximately 61% are purchased domestically while 39% are imported. In terms of energy sources, TGI purchases premium diesel from Formosa Petrochemical Corporation and sources fuel oil, natural gas, and L.P.G from CPC. 100% of the electricity used is supplied by Taiwan Power Company. Aside from considerations regarding flexibility and responsiveness of materials supply, TGI hopes to adopt operational measures that benefit Taiwan’s industries in terms of increased job opportunities, local prosperity, and reduced carbon footprint on transportation and energy. Over the course of engagement, we provide suppliers with counseling, training, and knowledge exchange to help them build awareness and capacity toward quality and environmental issues.

Percentage of local and overseas purchases

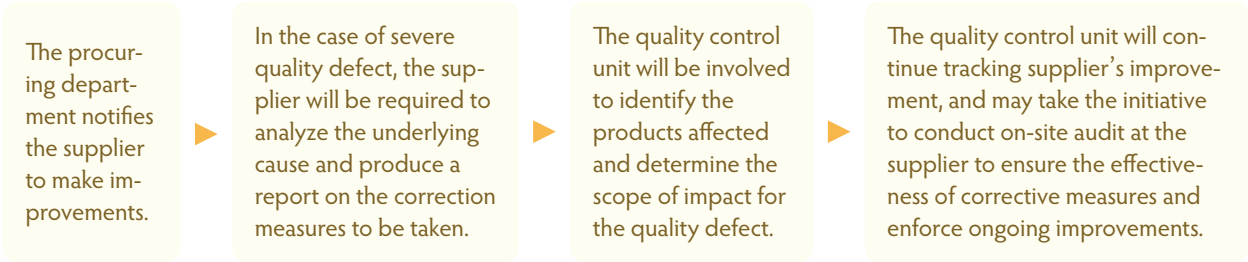


Supplier eligibility, audit, and evaluation

TGI’s supply chain partners can be classified by attribute into “suppliers,” “Outsourcees,” and “contractors” (involved in construction work and design). 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	<div>▶ Quarterly evaluations: Conducted in March, June, September, and September each year and completed before the 15th of the following month.</div> <div>▶ Yearly evaluations: Conducted at the end of December each year and completed before the 20th of the following month.</div>
Basis of evaluation	<div>We use a “Supplier Evaluation Sheet” to conduct quarterly evaluations on the delivery timing, pricing, and quality of key suppliers that affect the quality of products made. Outcomes of the evaluation are taken into account in future purchasing decisions, and we strive to build mutual trust with all supply partners we work with.</div> <div></div>
Attribution of evaluation responsibilities	<div>Quarterly supplier evaluations are jointly executed by several departments, each of which conducts rigorous reviews of suppliers’ performance.</div> <div><div>1. The quality control unit or the department-in-use is responsible for quality issues;</div><div>2. The requesting department or warehousing department is responsible for deliveries;</div><div>3. The procuring department is responsible for evaluating prices, consolidating totals, and keeping records to be used as a reference for recurring purchases.</div></div> <div>Suppliers are divided into three tiers (A, B, and C).</div> <div><div><div>A</div><div>Maintain relationship</div><div>Score ≥90</div></div><div><div>B</div><div>Observe</div><div>Score ≥70 and <90</div></div><div><div>C</div><div>Reject</div><div>Score <70</div></div></div>
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).
Presentation of evaluation outcome	<div>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.</div> <div>Yearly evaluation results: To be presented to the Chairman or CEO</div>

Management procedures for supplier quality incidents



Outcomes of annual supplier audit



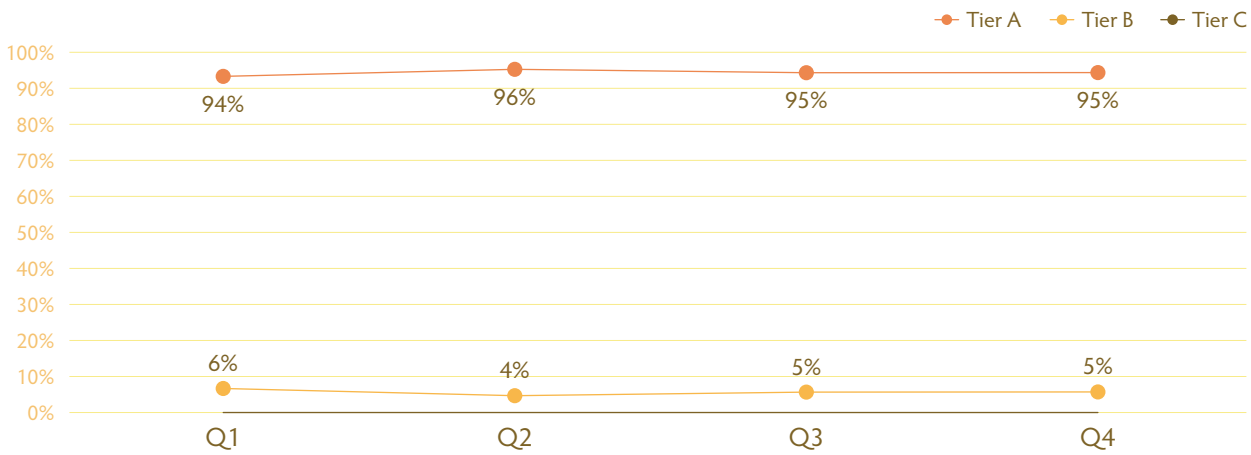
Suppliers delivered excellent performance overall in 2023

Approximately **95** % of suppliers were in the A-tier

5 % were in the B-tier

0 % C-tier supplier

No. of suppliers evaluated by quarter					Percentage of suppliers evaluated by quarter				
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4
Tier A	182	176	178	170	Tier A	94%	96%	95%	95%
Tier B	11	8	10	9	Tier B	6%	4%	5%	5%
Tier C	0	0	0	0	Tier C	0%	0%	0%	0%
Total	193	184	188	179					



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 welfare

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 wastewater

5. Emission of exhaust

6. 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. Business integrity, 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 minerals



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 human rights policy


TGI supplies glass products to international brands, which is why we take the initiative to incorporate customers’ supply chain codes of conduct into our internal management. For example: Taichung Factory sells the flat glass it produces to dealers - Taiwan Mirror Glass, and because the dealers started supplying to the Swedish brand IKEA in 2016, we complied with IKEA’s human rights requirements by issuing a statement of our commitment to prohibit against the use of child labor, and that no child labor is used.

Statement on conflict minerals


With regards to issues for the management of conflict minerals, Taiwan Glass (TGI) has cooperated with suppliers to issue relevant declaration documents for conflict minerals such as gold (Au), tantalum (Ta), tungsten (W), cobalt (Co) and tin (Sn). The Company also promised not to purchase conflict minerals mined with the abuse of human rights or armed coercion, and avoid using conflict minerals from the Democratic Republic of Congo and its surrounding countries and regions.



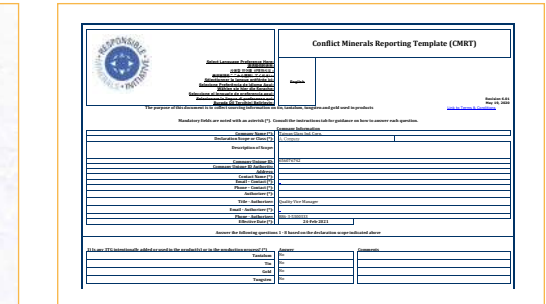
Supplier's protection and career guidance for workers under 18 (IWAY clause)



TGI complies with the IWAY clause



TGI's statement on the absence of conflict minerals



Conflict Minerals Reporting Template (CMRT)

Eligibility of environmental protection partners and auditing/evaluation practices

Environmental protection partners undergo yearly evaluation and review according to the Company’s “Environmental Protection Partner Evaluation Worksheet.” 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

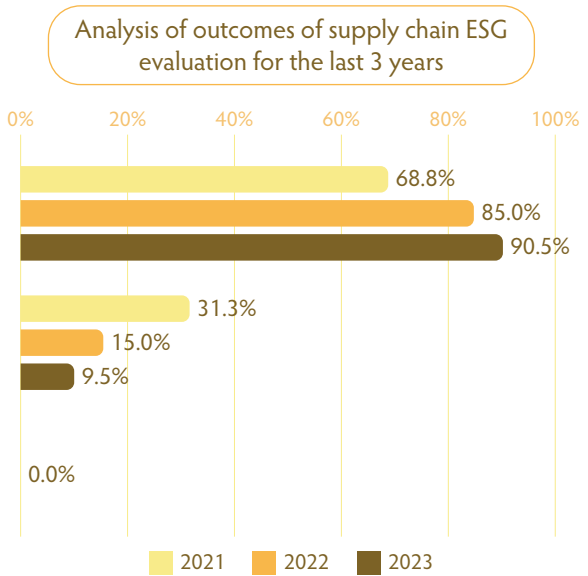


Outcomes of annual supply chain ESG evaluation

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:



Supplier total score analysis			
Grade	Score range	No. of firms	Percentage
Gold (excellent)	100~85	19	90.5%
Silver (pass)	84~60	2	9.5%
Bronze (needs improvement)	<60	0	0.00%
Total		21	100%



Improvement actions based on supply chain ESG evaluation

Based on the outcomes of the supplier sustainability evaluation presented above, it is evident that the percentage of Gold-grade suppliers in TGI’s supply chain has increased from 85% last year to 90.5% this year, whereas another 9.5% are Silver-grade suppliers and 0% are in need of improvement. 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

4

Sustainable, Energy Conservation, and Green Practices

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.

4.1 Sustainable management strategy	115
4.2 Energy/resource management	118
4.3 Green production management	132
4.4 Climate action	143

| Green Production Performance of 2023



NT\$240 million

TGI spent more than NT\$240 million on environmental protection in 2023



-39%

Hsinchu Factory switched to a dual-fuel furnace that saves energy cost by 39% or NT\$45.52 million a year



NT\$80 million

Lukang Flat Glass Factory invested NT\$80 million in 2023 to construct a heat-recycling steam boiler



55.37%

Use of recycled glass in glass container products increased 4.44% to 55.37% in 2023



-25.16%

General waste volume reduced by 25.16% in 2023 compared to the previous year



1,089 kWh

Solar panels generated a total of 1,089 kWh across all factories in 2023



-10.59%

Total greenhouse gas emission reduced by 10.59% in 2023 compared to the previous year, marking the third consecutive year of reduction in total carbon emissions



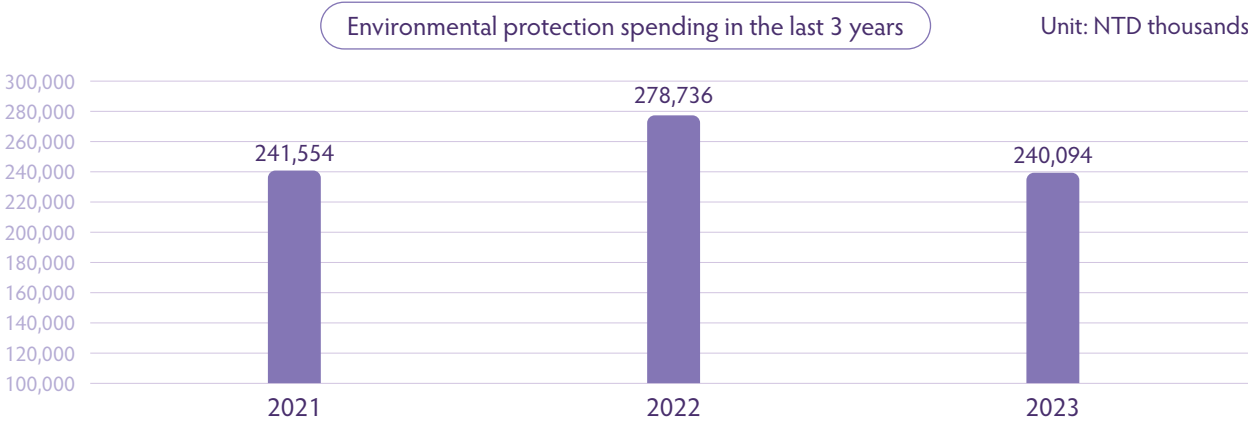
-4.9%

Greenhouse gas emission intensity per unit reduced by 4.9% in 2023 compared to the previous year, marking the third consecutive year of reduction in carbon emission intensity

4.1

Sustainable management strategy

More than NT\$240 million was spent on environmental protection across TGI’s factories in 2023. Regardless of whether the Company makes profit, it persistently invests into new equipment and procedure improvements to increase energy efficiency or lower pollution. Solar power systems were completed at factory sites in 2023, and the Company now has 8,784 KWH of capacity. TGI also makes ongoing investments in environmental management systems and organizes environmental protection training to ensure compliance with environmental regulations, reduce pollution, and contribute to the sustainability of the environment.



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

217,801,326 tons of water was circulated and recycled across all factories in 2023.

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.

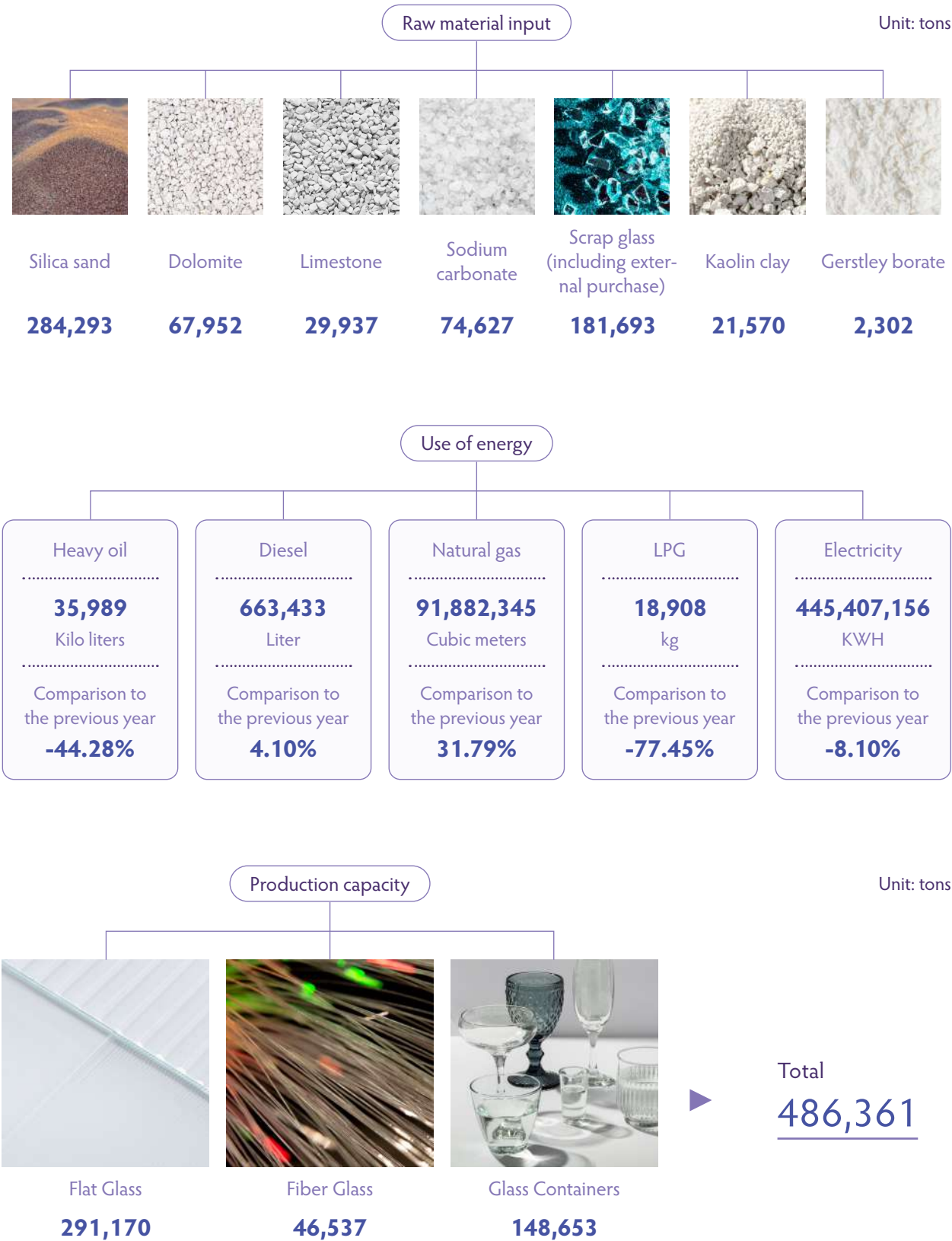
Green purchase

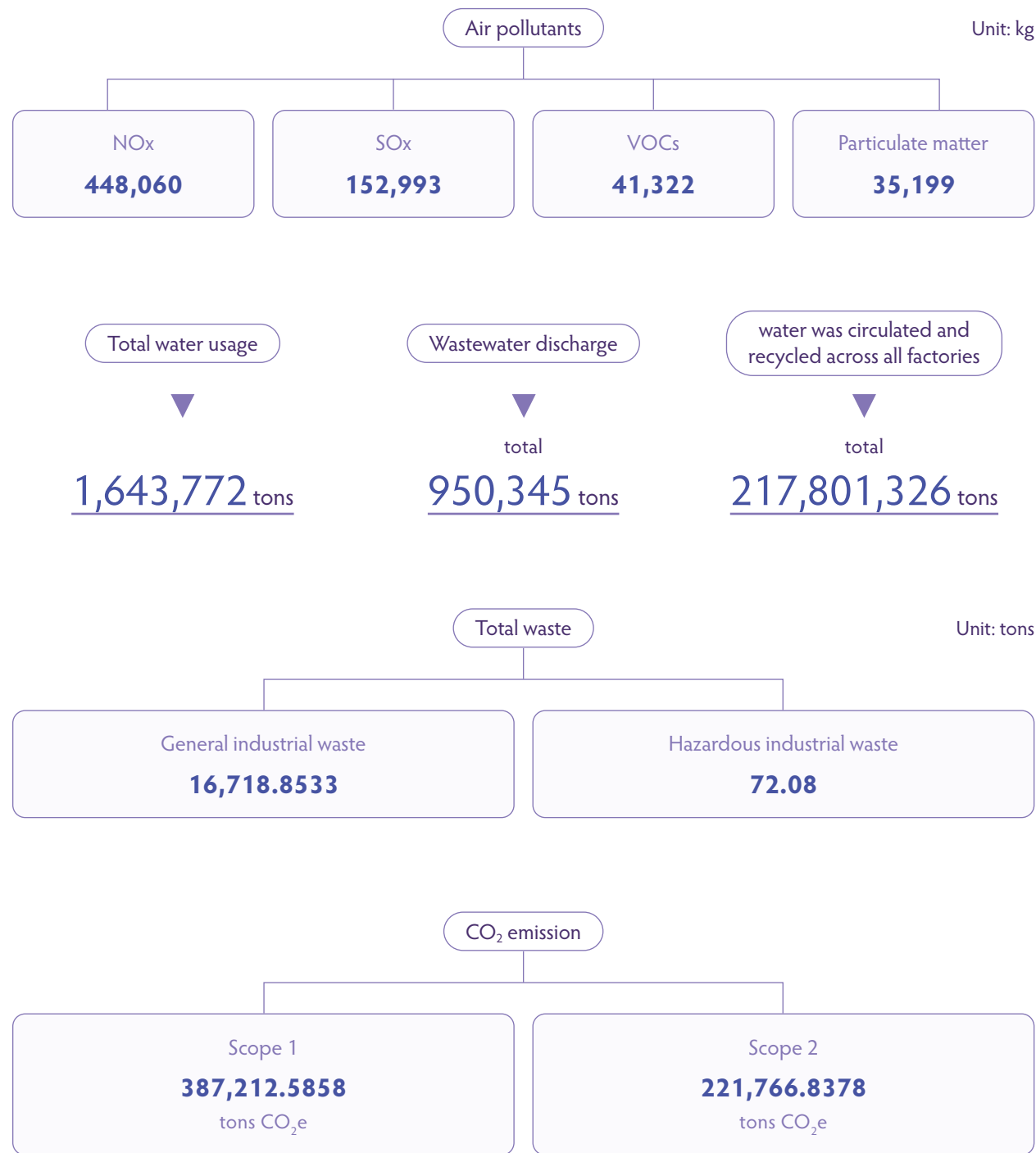
The Company prioritizes purchase of green, energy-saving products; motors used in production activity are upgraded to high efficiency variants, and most forklifts are electric powered.

Investment into renewable energy source

2023 was the year when TGI began investing into the construction of solar power panels across factories; the Company will continue increasing the volume of renewable energy sources used by various factories. TGI is also evaluating the feasibility of using natural gas for production as a way to reduce dependency on fossil fuel and to transition into low-carbon economy.

Illustration of TGI’s environmental inputs and outputs in 2023





Note 1: Scope 1 and Scope 2 CO₂ emission cover the North Taiwan Branch, Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory

Note 2: Calculations other than CO₂ emission cover only the production facilities (namely Taoyuan Factory, Hsinchu Factory, Taichung Factory, Lukang Factory, Lukang Flat Glass Factory, and Changpin Factory); the North Taiwan Branch is not a production site and has therefore been excluded

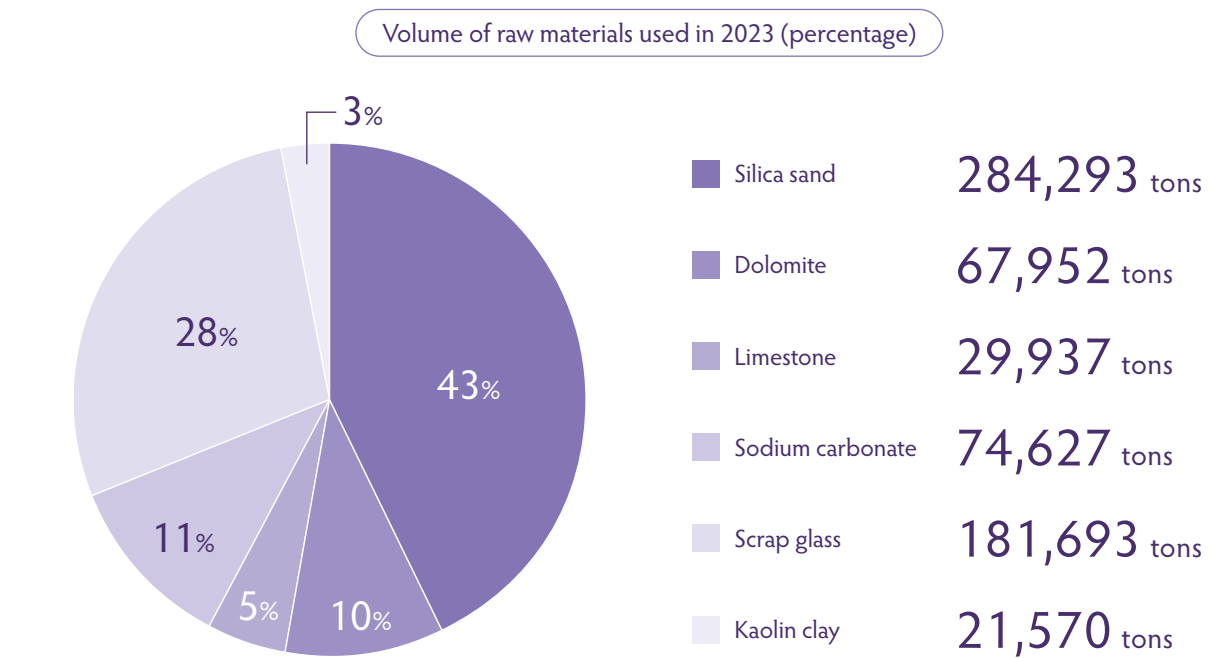
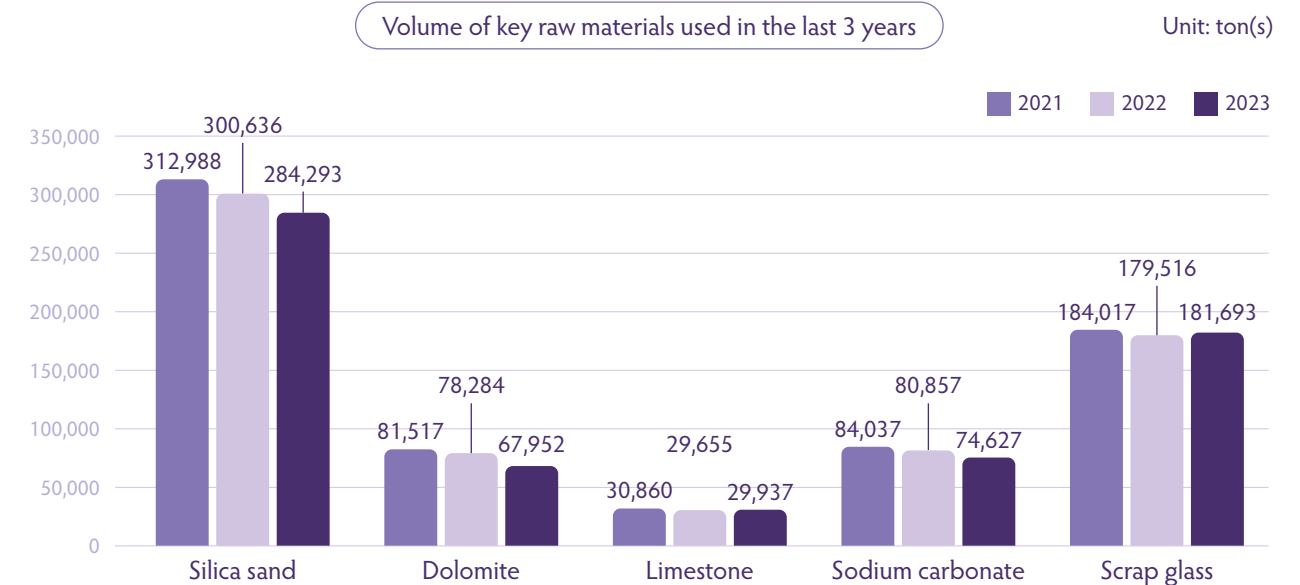
Legal compliance with environmental laws

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 2023.

4.2 Energy/resource management

Raw materials management

TGI’s main products include flat glass, fiber glass, and glass containers, whereas main raw materials include silica sand, limestone, dolomite, sodium carbonate, and recycled scrap glass. Silica sand was the largest form of raw materials used in 2023, totaling 300,000 tons and representing 28% of all materials. Percentage of raw materials used:

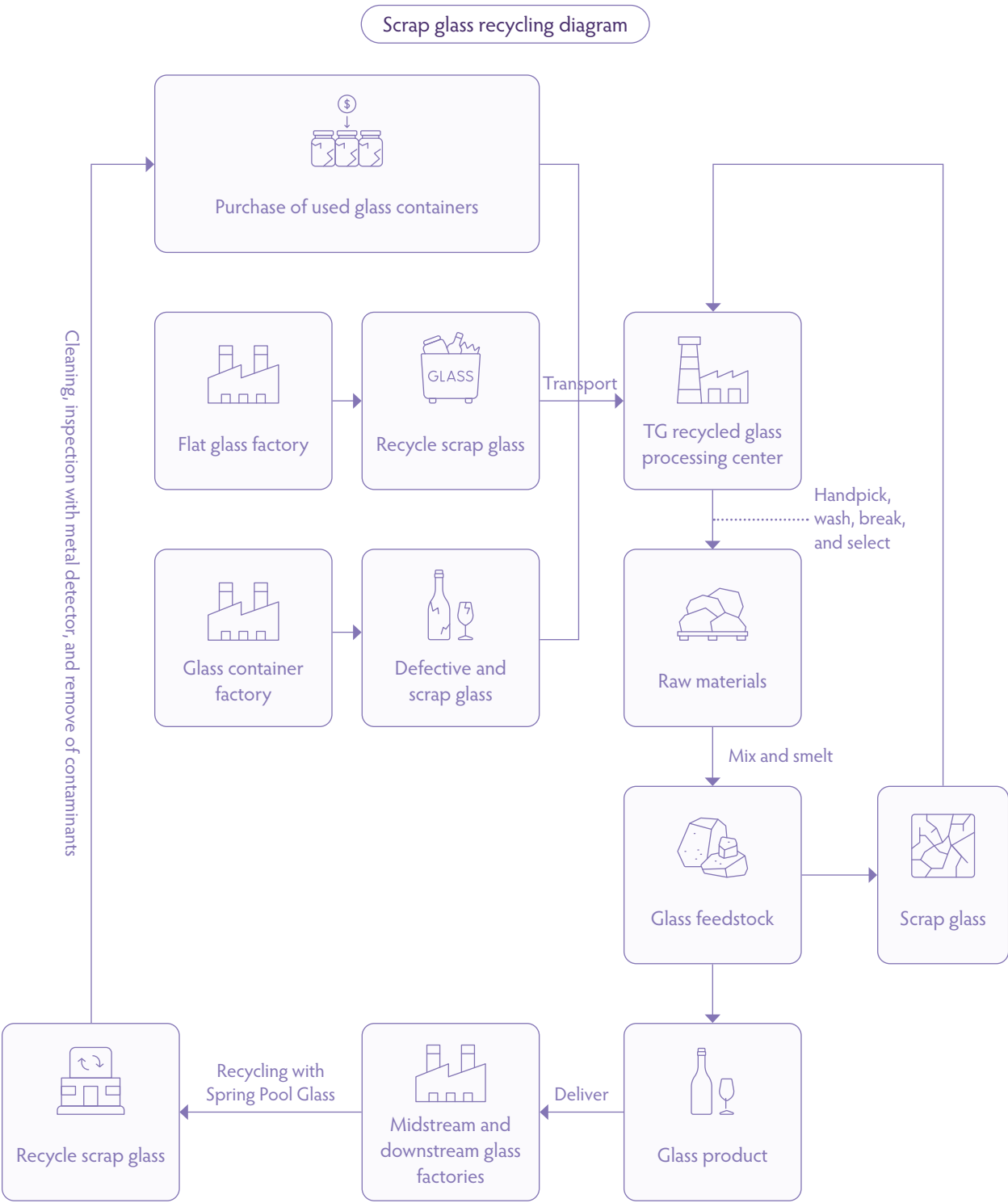


Note 1: Other raw materials such as gerstley borate and nepheline accounted for a smaller percentage and were not listed here.

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); the North Taiwan Branch is not a production site and has therefore been excluded

Circulation and reuse of glass

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. TGI cooperates with Spring Pool Glass for the recovery of cullet from flat glass sold to the middle and downstream glass plants; the cullet is cleaned and inspected using metal detectors to remove most of the metal pollutants such as stainless steel, aluminum, copper, and tin to improve production quality.



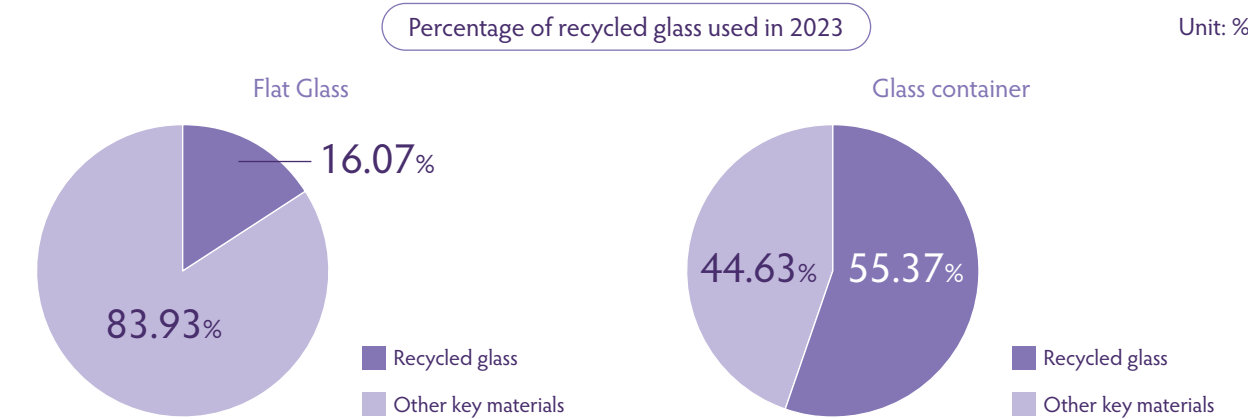
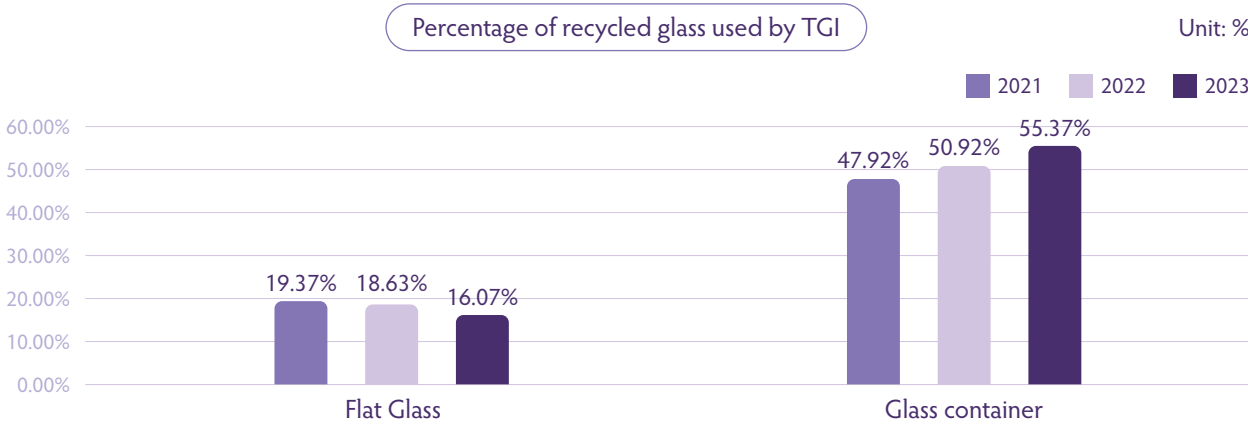
Taiwan Glass Group maintains strict quality standards for recycled glass. The Hsinchu plant has established an “Acceptance Standard for Heterogeneous Glass and Heavy Metal Content in Waste Glass Containers” to assess and determine the quality of recycled glass. If the quality of recycled glass falls below Grade A, the recycling unit price will be reduced based on the weight of the recycled glass. If the heavy metal content in the recycled glass is below Grade A, a warning will be issued, and the recycling vendor will bear the inspection costs and have the delivery quantity reduced. In cases of severe exceedance, the glass can be refused entry to the plant. These measures aim to ensure the stability and consistency of recycled glass materials, thereby improving product quality when reintroduced into the production line and promoting environmental protection and resource reuse.

Inspection Grading Method

Impurities Levels	Heterogeneous Glass Control		Heavy Metal Content Control
	Ceramics, Porcelain, Stones	Heterogeneous/Discolored Glass	Lead Content (ppm)
A	•Above 5mm: ≤1 piece •Below 5mm: ≤5 pieces	Content ≤1%	≤200
B	•Above 5mm: ≤1 piece •Below 5mm: 6 to 10 pieces	Content ≤2%	210-250
C	•Above 5mm: 2 to 4 pieces •Below 5mm: 11 to 19 pieces	Content ≤3%	251-300
D	•Above 5mm: 5 or more pieces •Below 5mm: 20 or more pieces	Content ≥3%	301 and above

Note 1: Heterogeneous Glass refers to milky white (white jade), ground glass, cathode ray tubes, panels, light bulbs, light tubes, heat-resistant glass, and glass fiber.
Note 2: Discolored Glass refers to different-colored glass, such as tinted glass, mirror plates, and reflective glass.
Note 3: To comply with international regulations on heavy metal content, such as RoHS, the inspection standards will be revised as announced. The frequency of sending samples for SGS testing will be 1-4 times per month.

The recycling rate of flat glass and glass container products reached 16% and 55%, respectively, in 2023. Meanwhile, the percentage of recycled glass used had increased by 4.45% for glass containers compared to the previous year. TGI will continue increasing the recycling rate of glass to create value from circular economy.



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 2023, TGI gradually replaced furnaces with dual-fuel system across factories, which in turn reduced use of heavy oil by 44.28%. Meanwhile, cold repairs and the discontinuance of certain production lines reduced LPG usage by 77.45%.

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

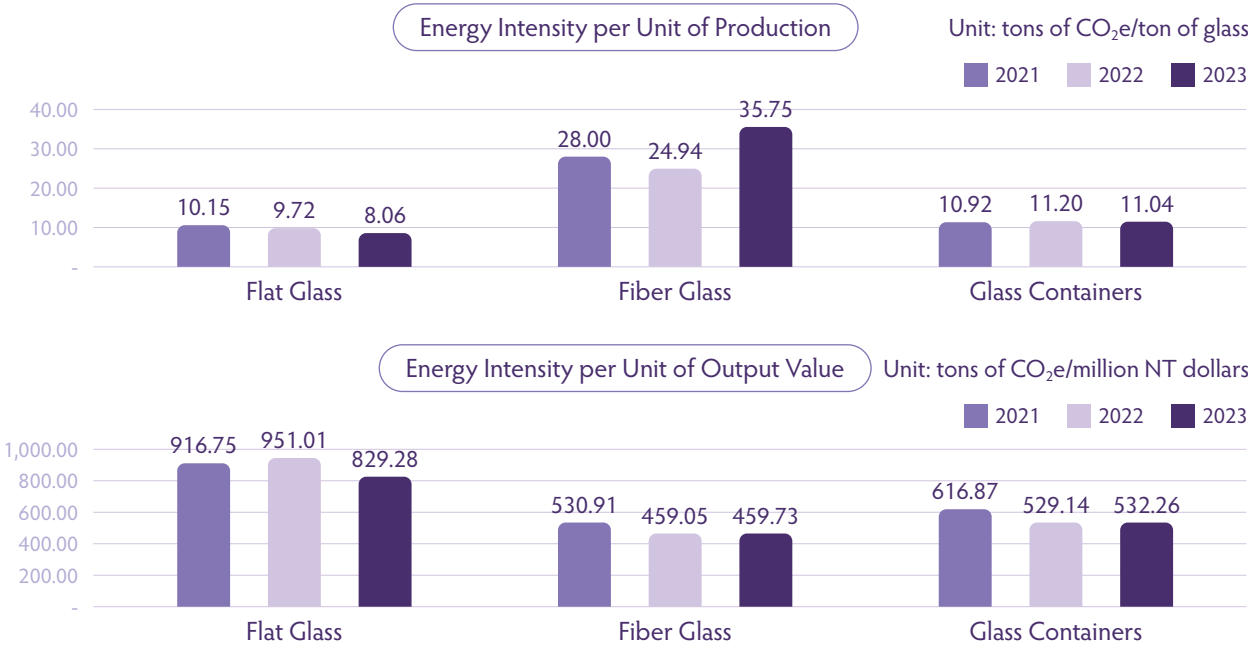
Year	Energy	Heavy oil (kiloliters)	Diesel (liter)	Natural gas (M³)	LPG (KG)	Electricity (kWh)	Percentage of electricity
2021	Total	89,511	684,245	54,070,693	4,636	527,276,704	25.90%
	Calorific value (GJ)	3,597,065	24,059	1,810,719	234	1,898,175	
2022	Total	64,592	637,319	69,720,056	83,847	484,668,284	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	

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: According to the conversion factor announced by the Energy Bureau of the Ministry of Economic Affairs, 1 kg of LPG is equivalent to 1.818 liters. The calorific value data for LPG in the 2021 and 2022 reports has been revised accordingly.

Note 3: Conversion of energy unit: 1 Kcal = 0.0000041868GJ (Gigajoule).

Note 4: The energy calculation for Taiwan Glass only includes the overall production plants (Taoyuan Plant, Hsinchu Plant, Taichung Plant, Lukang Plant, Lukang Flat Glass Plant, and Changbin Plant) and does not include the Northern Company.



Note 1: The calculation scope for flat glass includes the Taichung Plant, Lukang Flat Glass Plant, and Changbin Plant; the calculation scope for glass containers includes the Hsinchu Plant; the calculation scope for fiber glass includes the Taoyuan Plant and Lukang Plant.

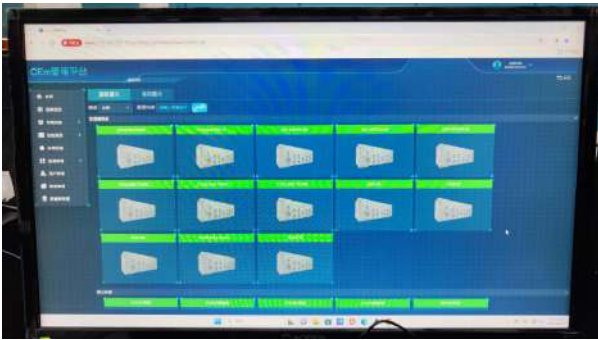
Note 2: This year, the method for calculating energy consumption intensity has been updated, using the annual production volume as the denominator. The calculation formula and unit are GJ/ton.

Note 3: The energy consumption intensity calculation uses the organization's internal energy consumption, including heavy oil, diesel, natural gas, liquefied petroleum gas, and purchased electricity.

Note 4: The optimization of production technology led to smaller fiberglass diameters, resulting in lower total production tonnage despite similar production value, which caused a significant increase in energy consumption intensity.

Introduction of energy/resource management system

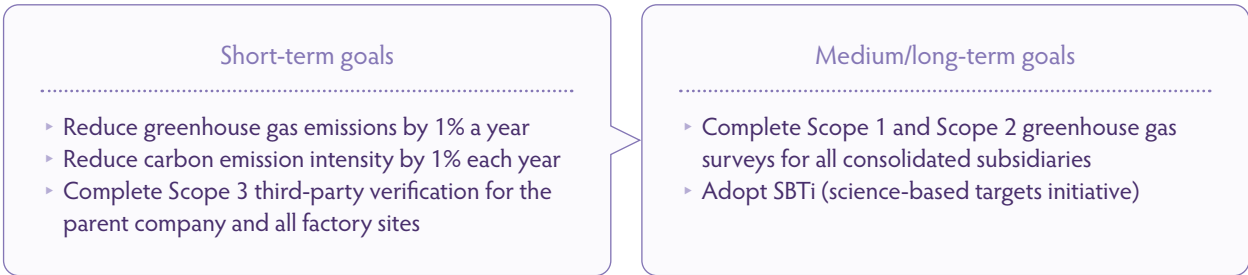
Lukang Flat Glass Factory has purchased an energy and resource management system developed by TECO in an attempt to conform with regulatory trends, increase energy efficiency, and reduce operating costs. This system is expected to be implemented in 2024 for all air compressors with rated capacity above the legal requirement in order to facilitate monitoring of energy consumption. 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.



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. All TGI factories observe rules of the Environmental Protection Administration and follow the sustainability development roadmap for TWSE/TPEX listed companies to execute and complete greenhouse gas surveys; the outcomes of which are reported in quarterly board of directors' meetings. TGI completed Scope 1, Scope 2, and Scope 3 surveys for Taipei Headquarters and all factory sites in 2023 and plans to pass third-party certification for Scope 1, Scope 2, and Scope 3 emissions in 2024.



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 emissions totaled 380,000 tons CO₂e in 2023, down 10.5% from 2022; indirect emissions from flat glass were measured at 250,000 tons, down by 20.9% from 2022; total emissions from glass containers were measured at 160,000 tons, slightly up 4.86% from 2022; and emissions from fiber glass were measured at 190,000 tons, down 6% from 2022. Over the past three years, TGI has achieved a significant reduction in both the volume and intensity of greenhouse gas emissions in Scope 1 and Scope 2, demonstrating excellent results in emission reduction.

Carbon emission by factory

Factory	Direct emissions	Indirect emissions	Total carbon emissions
Taipei Headquarters	210.0273	167.6806	377.7079
Taoyuan Factory	34,594.1413	47,791.5360	82,385.6773
Hsinchu Factory	120,304.4049	42,695.8272	163,000.2321
Taichung Factory	80,236.3468	18,958.3368	99,194.6836
Taichung 3rd Flat Glass Factory	13,454.3277	10,903.9632	24,358.2909
Lukang Factory	30,529.3990	77,044.8219	107,574.2209
Lukang Flat Glass Factory	107,631.8809	14,734.8453	122,366.7262
Changpin Factory	252.0579	9,469.8268	9,721.8847
Total	387,212.5858	221,766.8378	608,979.4236

Note: Greenhouse gas emissions were calculated using the operational control approach, following the formula: activity data * emission factor * GWP value (the emission factors are referenced from the Environmental Protection Administration’s Greenhouse Gas Emission Coefficient Table version 6.0.4, and the GWP values are referenced from the IPCC Fifth Assessment Report (2007)). The greenhouse gases included are CO₂, CH₄, N₂O, and HFCs, while there were no emissions of PFCs, SF₆, or NF₃.

Carbon emission by product in previous years

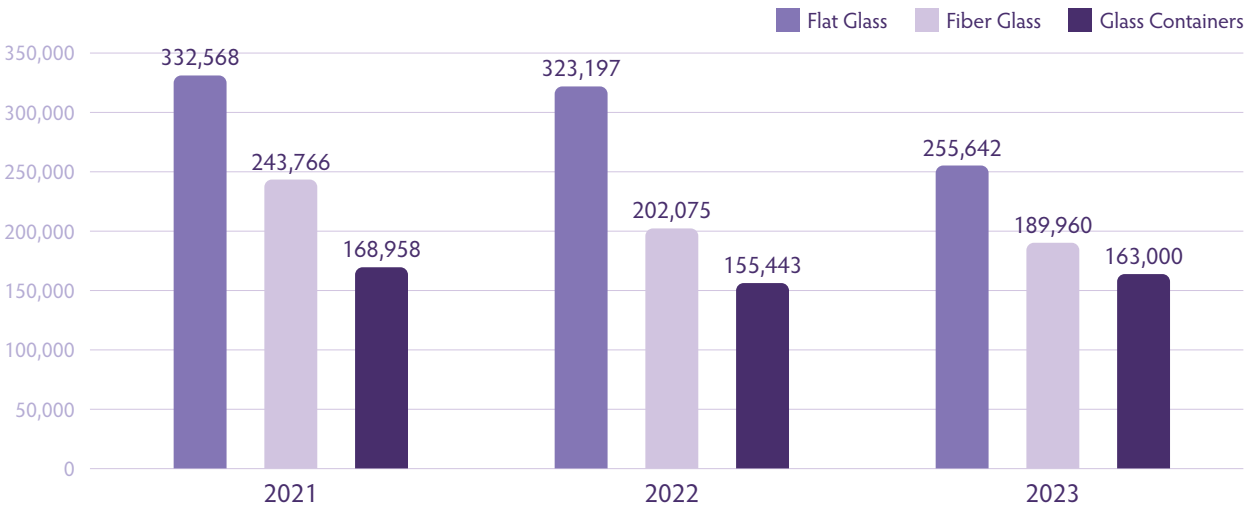
Product	2021		2022		2023	
	Direct emissions	Indirect emissions	Direct emissions	Indirect emissions	Direct emissions	Indirect emissions
Flat Glass	273,121.00	59,447.00	249,223.08	73,973.99	201,574.6133	54,066.9721
Fiber Glass	86,303.00	157,463.00	69,687.79	132,387.64	65,123.5403	124,836.3579
Glass Containers	124,331.00	44,627.00	113,533.80	41,909.43	120,304.4049	42,695.8272
Subtotal	483,755.00	261,537.00	432,444.67	248,271.06	387,002.5585	221,599.1572
Total	745,292.00		680,715.73		608,601.7157	

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: TGI engages a 3rd-party institution to conduct annual surveys on greenhouse gas emissions for the previous year. Survey data is uploaded onto the Environmental Protection Administration’s National GHG Platform and onto the Market Observation Post System as required by laws.

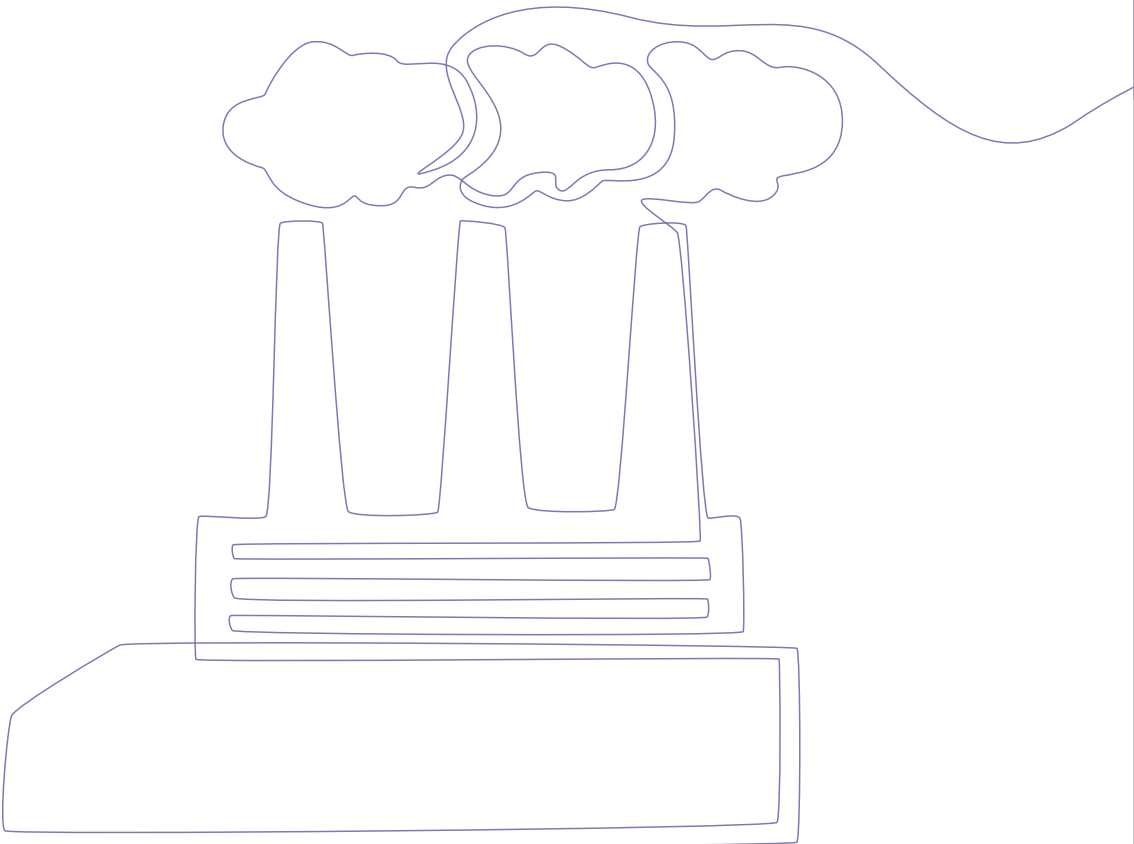
Emission by product category

Unit: ton(s) CO₂e



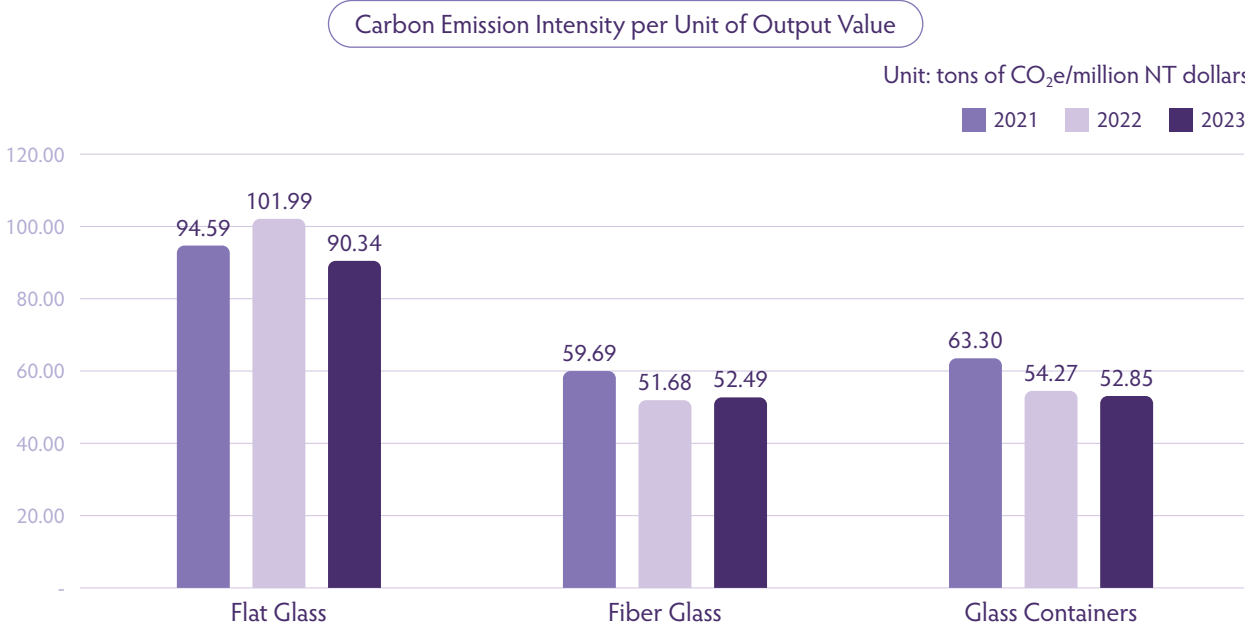
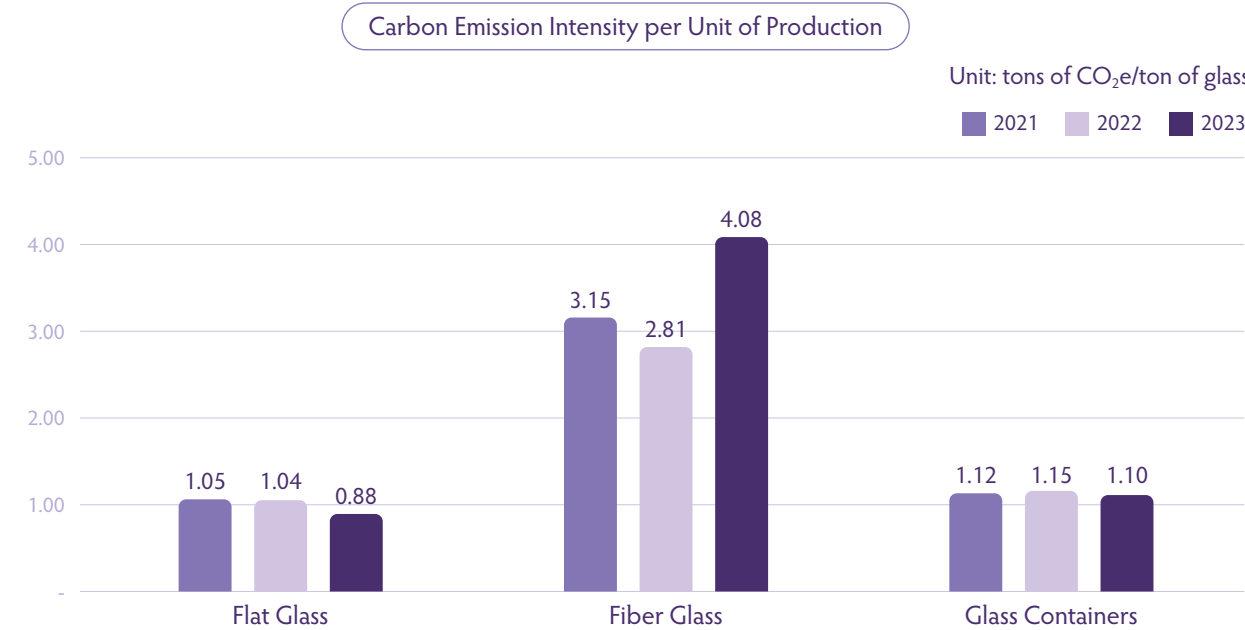
TGI initiated Scope 3 greenhouse gas survey

TGI officially launched a Scope 3 greenhouse gas inventory project in 2023 to strengthen the identification of carbon emission hotspots and actively reduce greenhouse gas emissions. The inventory is conducted in accordance with the ISO 14064-1:2018 standard and covers the Taipei Headquarters and all factory sites. It identifies major Scope 3 emission sources, including purchased goods and services, fuel- and energy-related activities, upstream transportation and distribution, waste generated from operations, downstream transportation and distribution, and downstream leased assets. In 2023, TGI completed its first Scope 3 inventory for the greenhouse gas emissions of 2022, using 2022 as the base year. However, the inventory results have not yet been verified by a third party. In 2024, TGI has initiated the Scope 3 inventory project for 2023, with third-party verification expected to be completed by November 2024.



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.



Note 1: This year, the method for calculating greenhouse gas emission intensity has been updated. The carbon emission intensity per unit of production is calculated as tons of CO₂e per ton of glass, while the carbon emission intensity per unit of output value is calculated as tons of CO₂e per million NT dollars.

Note 2: The intensity ratio calculation includes greenhouse gas emissions from Scope 1 and Scope 2.

Energy and carbon reduction performance by factory

The energy and carbon reduction measures adopted at TGI's factory facilities had yielded prominent results in 2023, saving 6,675,276 KWH of electricity while reducing heavy oil usage by 44.28%, LPG usage by 77.45%, and externally purchased electricity by 8.1%. Total carbon emission was 72,117.8997 tons lower compared to 2022, of which Scope 1 emission has reduced by 45,436.5337 tons while Scope 2 emission had reduced by 26,681.3660 tons compared to 2022.

Taoyuan Factory

- Waste filament was recycled and not landfilled, which reduced the volume of landfill waste by **12,871 tons** in 2023 and minimized environmental impact.
- NT\$1.12 million was invested to recycle wastewater discharged from the backwashing process of the resin softening tank and use it for washing TT1 E/S SYS, which reduced water usage by **120,172 tons**.
- The soft water pump at the water treatment station, previously operating at full load, was switched to variable frequency control, resulting in a carbon emission reduction of **101.4 tons**.
- Lighting for CSM was changed from mercury vapor lamp to LED, which reduced power usage by **18,484 KWH**.

Hsinchu Factory

- The implementation of the TS2 dual-fuel furnace system reduces energy costs, air pollution, and carbon emissions.
- The exhaust treatment system installed on TS2 and TS7 switched water sources to effluents in 2023, which reduced groundwater extraction and effluent discharge by **3,000 tons** a month.
- 1,592,298 kWh** of solar power was generated in 2023, which was equivalent to a carbon reduction benefit of **741 tons**.
- Improvements were made to the combustion efficiency of TS-3 #2 blower furnace, which reduced power usage by **7,300 KWH**.

Taichung Factory

- The waste glass of the Plant and the cullet recovered outside of the Plant are put into the furnace for melting to reduce waste. This process treated **33,290 tons** of material in 2023.
- Solar power system was constructed and the electricity generated has been connected to the power system to reduce external purchase of electricity; the solar system generated **21,464,88 KWH** of electricity during the year.

Lukang Factory and Lukang Flat Glass Factory

- The factory expects to adopt TECO's **energy/resource management system** in 2024 to optimize use of energy.
- The glass furnace has been configured to use natural gas as the main fuel and aims to achieve a substitution rate of **90%**.
- NT\$80 million** were invested into the construction of heat-recycling steam boiler system, which makes efficient use of excess heat from furnace exhaust.
- The solar power system generated **4,197,878 KWH** of electricity in 2023

Changpin Factory

- Operating frequency of cooling tower fans during off-work days was adjusted to save electricity by **100,224 KWH**.
- NT\$225,000** were invested to replace 15 mercury vapor lamps with LED alternatives.

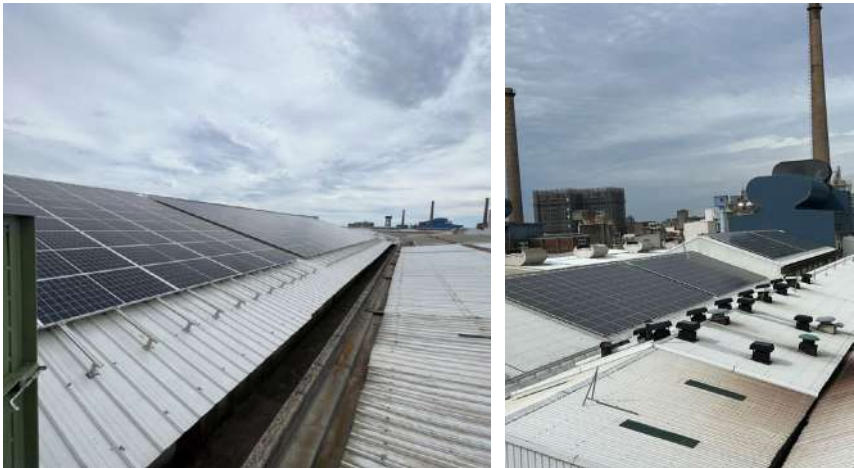
TGI reduced carbon emissions by a total of 3235.7 tons in 2023; the energy/carbon reduction measures adopted by various factories and the results achieved are explained in the following chart:

Item Factory	Energy conservation measures	Type of energy saved	Volume of savings (in standard units of measurement)	Volume of CO ₂ reduced (tons)
Taoyuan Factory	Operation of soft water pump at the water treatment station was changed from full load to variable frequency	Electricity (KWH)	204,902	101.4
	Lighting for CSM was changed from mercury vapor lamp to LED	Electricity (KWH)	18,484	9.1
Hsinchu Factory	Improvements were made to the combustion efficiency of TS-3 #2 blower furnace	Electricity (KWH)	7,300	12.0
Taichung Factory	Implementation of solar power system	Electricity (KWH)	2,146,488	985.7
Changpin Factory	Adjustment to operating frequency of cooling tower fans during off-work days	Electricity (KWH)	100,224	49.6
Lukang Factory	Implementation of solar power system	Electricity (KWH)	4,197,878	2,077.9
Total carbon reduction across all factories			6,675,276.00	3,235.7

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.

In 2023, TGI completed its NT\$380 million solar panel installation project for a total capacity of 8,784 KW. 2023 marked the initial year of solar power for TGI. The aggregate amount of solar power generated across all factories totaled 10.89 million kWh, which saved NT\$30.82 million in electricity cost. By reducing the need to purchase electricity from external sources, TGI lowers carbon emissions from the use of energy and contributes to the sustainability of the environment.



Implementation of Solar Panels in Taiwan Glass Plants

Factory	Solar power generation by factory in 2023		
	Total power generation (kWh)	Electricity costs saved (NTD)	Carbon Reduction (tons)
Taoyuan Factory	2,233,168	6,353,359	1,105.4182
Hsinchu Factory	1,592,298	4,474,357	788.1875
Taichung Factory	1,849,734	5,234,747	915.6183
Lukang Factory	4,230,683	11,972,833	2,094.1881
Lukang Flat Glass Factory	984,998	2,787,544	487.5740
Total	10,890,881	30,822,841	5,391

Note 1: Electricity cost savings are calculated based on the total power generation multiplied by the cost of purchased electricity. The calculation for each plant is based on the average cost per kilowatt-hour from the 2023 electricity bill.

Note 2: The cost of purchased electricity in 2023 is as follows: Taoyuan plant 2.84 NTD/kWh, Hsinchu plant 2.81 NTD/kWh, Taichung plant 2.83 NTD/kWh, Lukang plant 2.83 NTD/kWh, Lukang Flat Panel plant 2.83 NTD/kWh.

Water reduction management

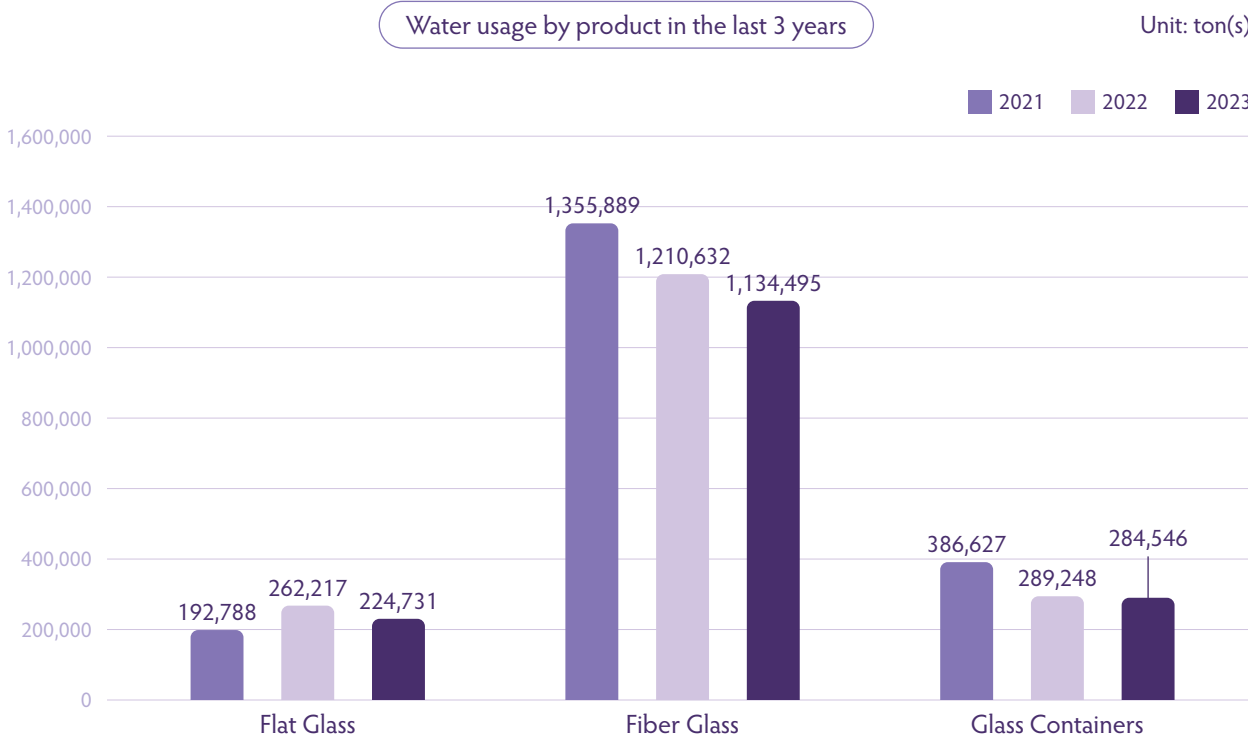
Water resource policy

TGI has established a water resource reduction management policy to actively improve water use efficiency in line with the United Nations Sustainable Development Goals (SDGs 6). The policy prioritizes the procurement of water-saving equipment, strengthens awareness of green production, and promotes the recycling and reuse of 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. Water drawn by TGI’s factory facilities posed no major impact on the local water source and is subject to oversight by regulatory authorities and industrial park management. Water sources are explained in the following chart.



TGI used approximately 1.64 million tons of water and discharged 940,000 tons of effluent across all factories in 2023. The Company has made improvements to some of its production procedures since 2017, using reclaimed water as diluting liquid. As the water recycling system became robust, TGI was able to slow down the increase in water usage.



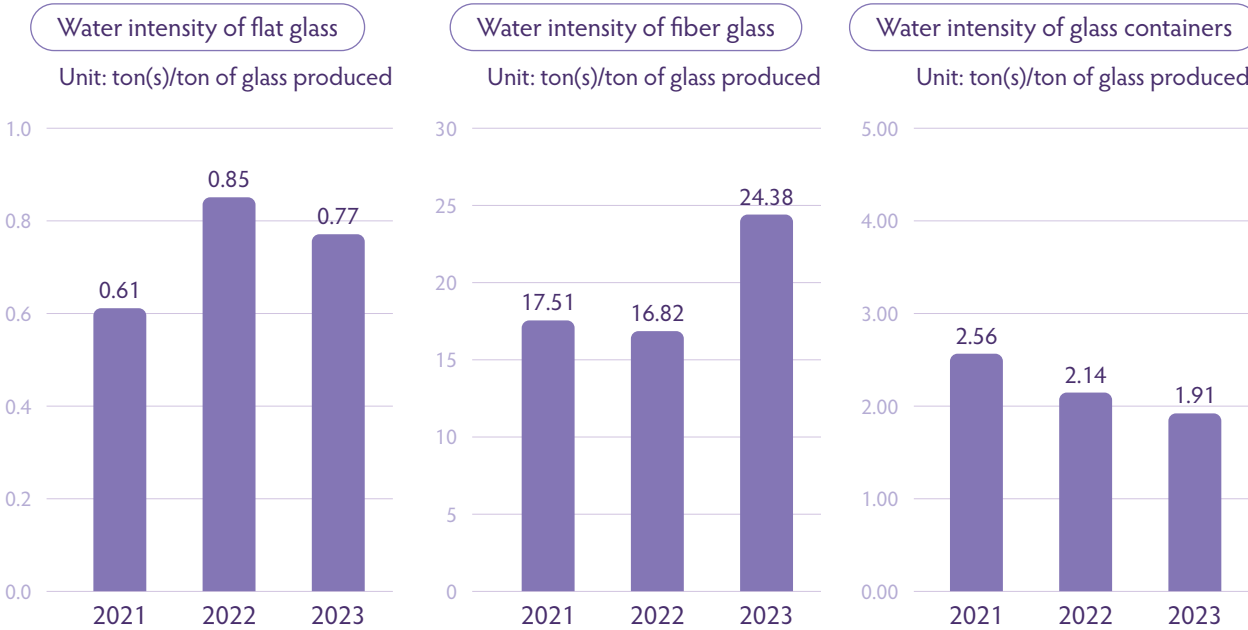
TGI’s water usage in the last 2 years

Year	2022	2023
Volume of water used - by purpose		
Water for living activities	151,087.00	160,456.68
Water for industrial activities	1,611,010.00	1,471,487.92
Water for other purposes	0.00	11,827.40
Total	1,762,097.00	1,643,772.00
Volume of water used - by source		
Fresh water supply (l)	1,498,716.00	1,334,966.00
Extraction of surface water	0.00	0.00
Extraction of groundwater	0.00	0.00
Rain water	331.00	246.00
Desalinated water	0.00	0.00
Discharged Water (million liters)		
Effluent volume	1.042	0.942

Note 1: The water usage and discharge volumes at the Changbin Factory are not consistent due to splash losses during the production process and the splashing and evaporation of cooling circulation water.

Note 2: The discharged water volume at the Lukang Flat Glass Factory is based on actual meter readings. Since the wastewater is treated together with the Lukang Factory and then apportioned between the two plants based on costs, there may be slight differences in the reported volumes.

In 2023, TGI’s water intensity for flat glass production was 0.77 tons of water per ton of glass, a decrease of 0.07 tons compared to 2022. For fiberglass production, the water intensity was 24.38 tons of water per ton of glass. The water intensity for glass containers was 1.914 tons of water per ton of glass, a reduction of 0.22 tons compared to the previous year.



Note 1: The calculation scope for flat glass includes the Taichung Factory, Lukang Flat Glass Factory, and Changbin Factory; the calculation scope for fiberglass includes the Taoyuan Factory and Lukang Factory; the calculation scope for glass containers includes the Hsinchu Factory.

Note 2: This year, the method for calculating water intensity has been updated, using the annual production volume as the denominator. The calculation formula and unit are tons of water per ton of glass (tons/ton 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”
	Hsinchu Factory	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. Total volume of water circulated and recycled in 2023 was reported at 217,801,326 ton(s); the volume and percentage recycled by factory site in 2023 are explained below:

Volume (cubic meters) and percentage of water recycled by factory site in 2023

Factory	Measurement	Total volume of water circulated	Total volume of water recycled	Circulation within cooling tower	Recycling rate (reuse rate)
Taoyuan Factory		56,965,378.00	141,095.00	55,560,716.00	99.19%
Hsinchu Factory		26,047,548.00	568,664.00	26,047,548.00	98.90%
Taichung Factory		16,539,409.00	66,724.00	16,539,409.00	99.35%
Changpin Factory		13,766,620.00	105,018.00	12,499,557.00	99.49%
Lukang Factory		90,693,819.00	246,997.00	36,807,264.00	99.26%
Lukang Flat Glass Factory		12,614,328.00	45,726.00	12,614,328.00	99.47%

Note 1: Volume of water circulated: refers to the volume of water used and recycled by a water user for reuse by the same water user.

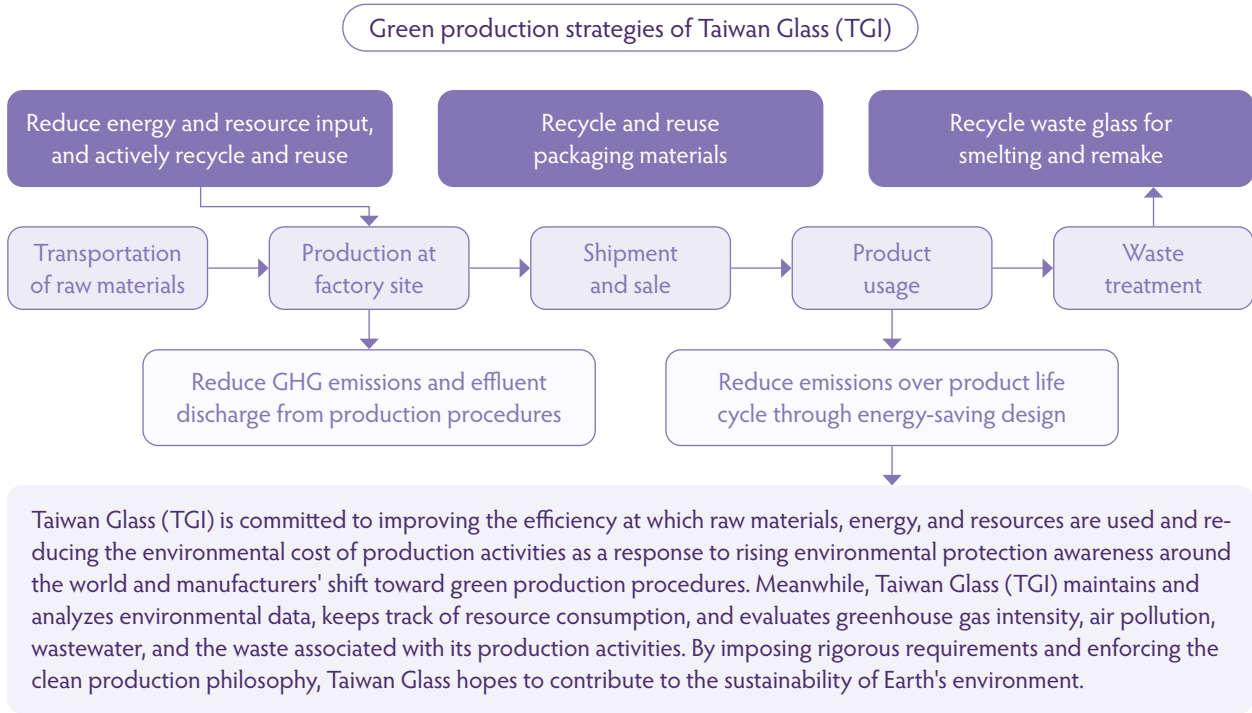
Note 2: Volume of water recycled: refers to the volume of water used and recycled by a water user (system) for reuse by a different water user (system).

Note 3: Recycling rate (reuse rate): (total volume of water circulated + recycled) / total water usage*100%

Note 4: Recycled water that Taichung Factory had supplied to Taiwan Autoglass Ind. Corp. was excluded from calculation for Taichung Factory.

4.3

Green production management



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.

Packaging materials recycled in the last two years

Packaging material	Recycling policy	2022		2023	
		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	3,832 tons + 3,875pcs	3,826 tons + 3,133pcs	3905 tons + 3,339pcs	3606 tons + 2,005pcs
Paper tube	Repurchase and recycling of paper tube	18,030pcs	3,655pcs	22,503pcs	2,666pcs
PE fabric	PE fabric leftovers are moved to junkyard for recycling	12 ton(s)	12 ton(s)	4 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 cannot be estimated reliably.

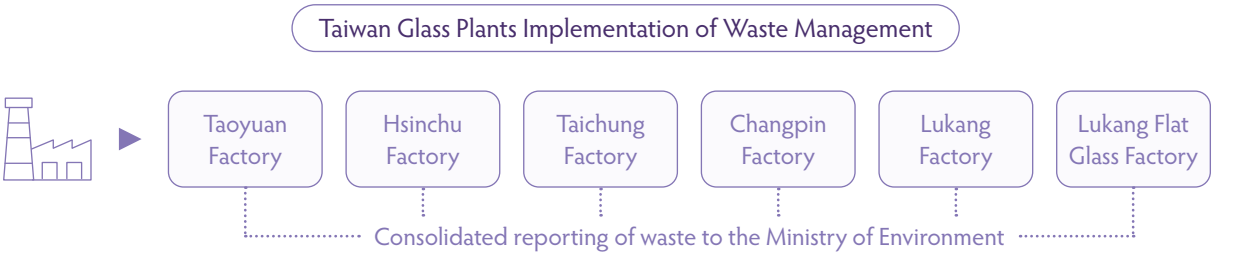
TGI recycled 3,606 ton(s) or 92.3% of pallet and 12% of paper tubes in 2023. Meanwhile, Changpin Factory used 67% less PE fabric compared to the previous year, indicating the significant progress that TGI has made in reducing plastics in packaging materials.

Waste management

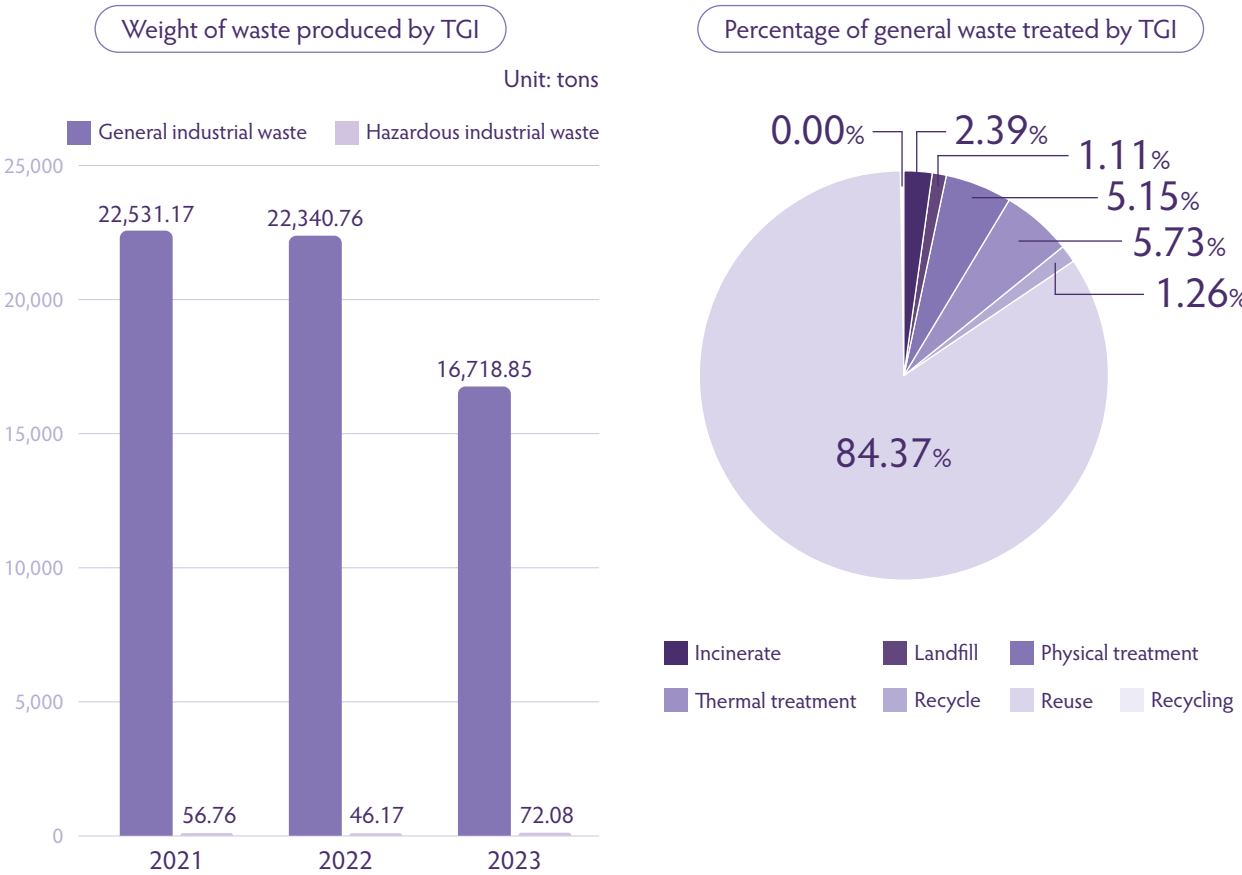
Taiwan Glass (TGI) has established two principles for waste disposal: improve production yield and reduce waste volume, and recycle reusable waste.

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.



GI actively supports the reuse of waste. In 2023, the Company generated 16,718.853 tons of general industrial waste, which was 25.16% less compared to the previous year and represented the waste intensity of 0.03. 85.63% of waste was recycled and reused in 2023, which was 1.78% higher compared to the previous year and indicative of TGI’s devotion to reducing waste. TGI treated hazardous industrial waste by ways of incineration and landfill; no amount or percentage was recycled.



Waste disposal volume (ton(s)) - 2023 Unit: ton(s)

General industrial waste								
Treatment Method	Waste composition	Taoyuan Factory	Hsinchu Factory	Taichung Factory	Changpin Factory	Lukang Factory	Lukang Flat Glass Factory	Subtotal
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	112.37	208.55	44.47	9.7	22.18	2.68	399.95
Landfill	Other waste glass, ceramic, brick, tile, and clay mixtures	0	185.26	0	0	0	0	185.26
Physical treatment	Lubricating oil, construction waste mixture, waste oil mixture, waste sandwich/insulated glass, compost, waste thermal insulation materials, and waste refractory	3.12	40.95	238.95	283.98	293.56	0	860.56
Thermal treatment	Organic sludge, waste oil mixture, inorganic sludge	0	725.75	11.58	50.79	169.27	0	957.39
Recycle	Non-hazardous waste EP ash or EP ash mixtures, waste wooden materials, waste plastics	0	0	208.74	1.36	0.0613	0	210.1613
Reuse	Waste glass, waste wooden materials, non-hazardous waste EP ash or EP ash mixtures, other waste glass, ceramic, brick, tile, and clay mixtures	8,297.98	357.072	238.56	694.84	4,161.7	355.38	14,105.532
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	Subtotal
Incinerate	Selenium and compounds, other corrosive industrial waste mixture	0	39.00	0	0	0	0	39.00
Landfill	Other waste mixtures that contain toxic heavy metals and exceed leaching standards	0	0	0	0	0	33.08	33.08

Note: In 2023, there were no waste leakage incidents at Taiwan Glass.

Total	General industrial waste	Hazardous industrial waste
	16,718.8533 tons	72.08 tons

/// Destruction of waste paper

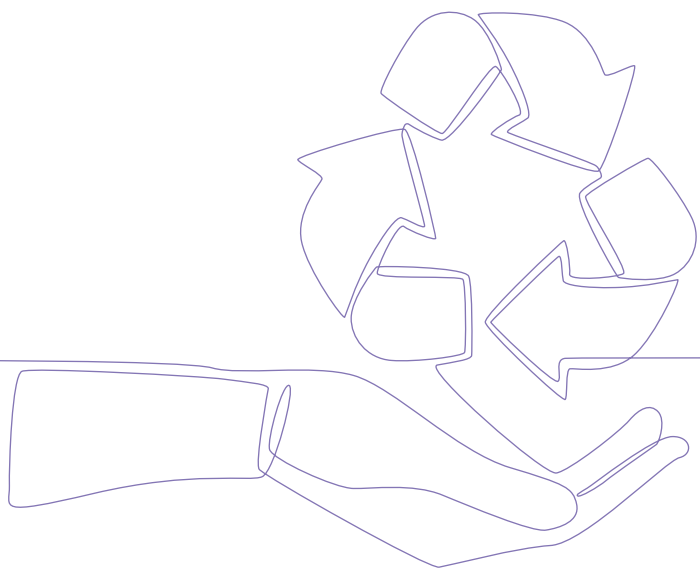
TGI engages Cheng Loong, a professional recycling service provider, to destroy confidential documents on a regular basis. These documents are gathered and delivered to the paper mill at times that match the operating cycle of the pulp tank, where the documents are poured into for the renewal process. 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 the meantime, TGI has taken the initiative to reduce paper usage and turn tasks that used to involve physical handling of paper into digital methods, which has significantly lowered the need for paper. TGI destroyed 2,290 kg of waste paper in 2023, down 60.52% from the previous year, which indicated the prominent progress that TGI has made in reducing paper usage.

According to the 92.7% recycling rate of paper announced by Cheng Loong Corp., the paper waste generated by TGI in 2023 could be turned into 2,122.83 kg of reclaimed paper. Furthermore, assuming that 1 ton of reclaimed paper preserves 20 trees and saves carbon emission by 5.8 tons, the 2,122.83 kg of reclaimed paper preserves about 43 trees and saves carbon emission by 12.31 tons CO₂/year, which yields benefits equivalent to 0.82 hectares of reforestation.



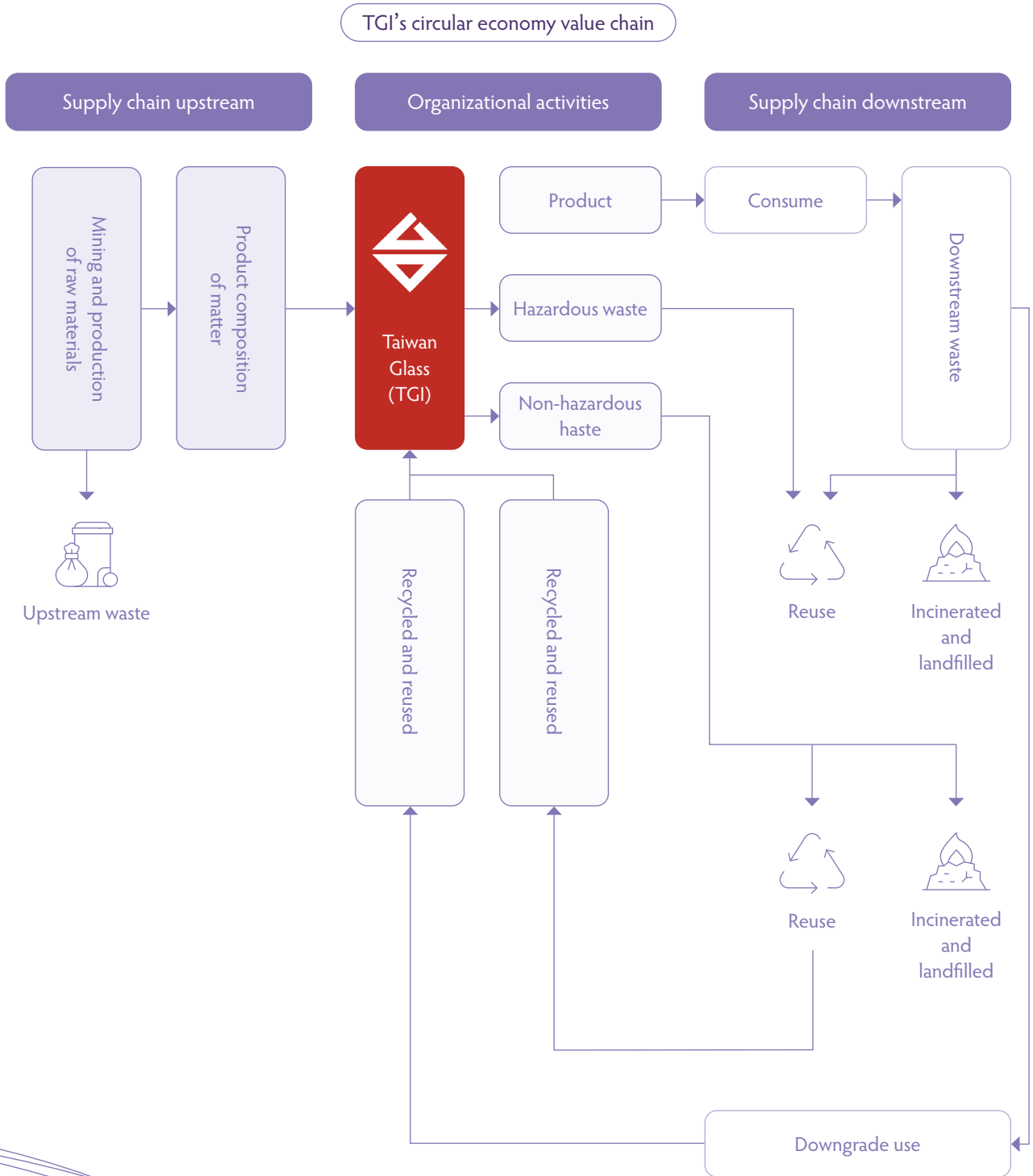
Note: Benefits of reforestation were calculated using the CO₂ fixation volume of 15 tons per hectare per year, as shown in the reforestation study published by the Forestry Bureau, Council of Agriculture.



/// 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.

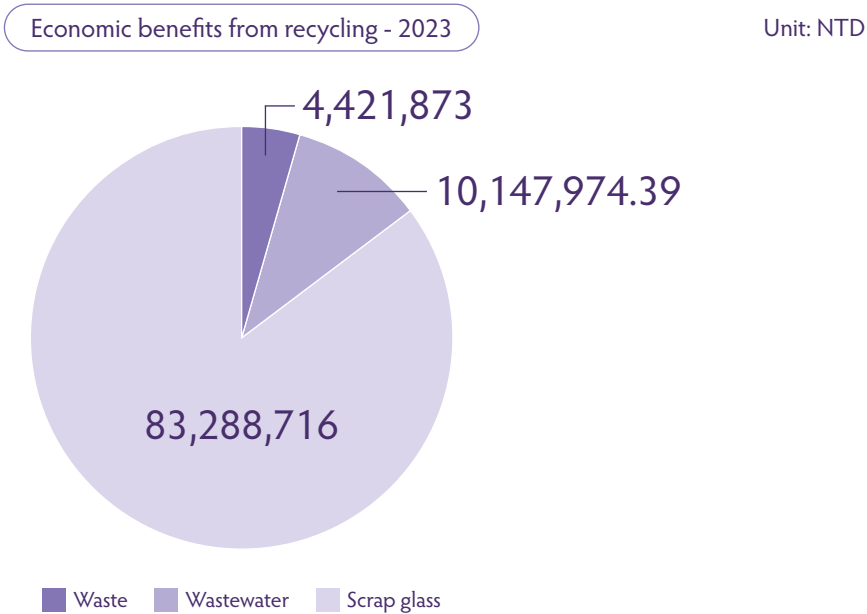


Economic benefit assessment of circulation/recycling

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.

TGI estimates having generated NT\$97,858,563 of economic benefit in 2023 from the recycling of waste, wastewater, and waste glass. In terms of economic benefit, waste recycling has the potential to save materials cost or increase revenue by NT\$4,421,873; wastewater recycling has the potential to save water cost by NT\$10,147,974, whereas waste glass recycling has the potential to save materials cost or increase revenue by NT\$83,288,716.

The Hsinchu Factory plans to replace outdated equipment and conduct a cold repair in 2025, which will increase the waste glass treatment capacity by 700 MT per month, reducing the use of raw glass materials by approximately 700 MT. With regards to the yields of water circulation and recycling, benefits from the recycling of wastewater in 2023 was 25.76% compared to the previous year. Overall, TGI's circulation and recycling measures have accomplished prominent results whether in terms of economic performance, environmental protection, and resource efficiency.



Note 1: Due to differences in factory activity, circulation and recycling was calculated only for Taoyuan Factory, Hsinchu Factory, Changpin Factory, and Lukang Factory.

Note 2: Taoyuan Factory and Lukang Factory did not recycle waste glass, and waste of Lukang Flat Glass Factory was counted into Lukang Factory.

Note 3: Economic benefits from waste cycling include waste iron, waste paper, and waste wood. Waste disposal charge is calculated at NT\$17,700 per ton, tax-inclusive fresh water charge is calculated at NT\$12.5 per ton, and waste glass is calculated using the base rate of NT\$2,500 per ton.

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.

Lukang Flat Glass Factory invested NT\$80 million into the implementation of heat-recycling steam boiler system in 2023. This system recycles heat from furnace exhaust and uses it to boil water and generate steam, which can then be reused for production activities. This system was completed in 2023 and is now in operation; the factory will continue making plans to recycle heat from tail gas and therefore reduce consumption of fuel and electricity. Taichung Factory, too, invested NT\$9.7 million into the design of heat-recycling system to generate power for ECT+ORC and lower the need for natural gas; this project is expected to begin implementation in 2026 in conjunction with the cold repair for TF-2.



Lukang Flat Glass Factory - Heat-recycling steam boiler system

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 of the equipment is 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 2023 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.

Emission of air pollutants in previous years (total across all factories)

Unit: kg

Air pollutant test \ Year	2021	2022	2023
NOx	727,271	892,107	448,060
SOx	274,642	198,901	152,993
VOCs	70,023	65,397	41,322
Particulate matter	54,377	32,447	35,199

Note 1: Taichung 3rd Flat Glass Factory ceased production in 2023; for this reason, the factory generated no air pollution and overall emission was significantly lower compared to 2022.

Note 2: TGI calculates air pollutant emissions based on the "Calculation Method for Air Pollutant Emissions from Fixed Sources of Public and Private Places" announced by the Ministry of Environment and reports these emissions to the regulatory authorities annually.

Note 3: The conversion factors for the concentration of each air pollutant are as follows, with units in grams per normal liter (g/NL): NOx: 2.05 g/NL, SOx: 2.86 g/NL, VOCs: 0.71 g/NL, and particulates are calculated based on the coefficients provided by the regulatory authorities.

Air pollutant control highlights of each factory

Taichung Factory: Purification and reuse of dust containing heavy metal

In 2023, Taichung Factory cooperated with ITRI on the purification and reuse of dust containing heavy metal, which aims to remove heavy metal from the dust collected and purify and recycle the remainder for use as raw materials. The project commenced trial production in June 2023, and plans have been made to further purify and recycle what was left of the heavy metal-containing dust from stage 1 for use as coloring materials, and therefore expand reusability of dust.



Hsinchu Factory: Natural gas/heavy oil fuel switch for furnace

In an attempt to reduce energy costs, air pollution, and carbon emission, Hsinchu Factory adopted a dual-fuel system for the TS2 furnace in September 2023 and made the switch to burning a combination of heavy oil and natural gas. A total of NT\$15.63 million was invested, and the project is estimated to save energy cost by 39% and fuel cost by NT\$45.52 million a year. The factory commissioned TS8 and TS7, two dual-fuel furnaces, later in February and March 2024, and expects to install the dual-fuel system on TS3 after cold repair.



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

In an attempt to minimize air pollution caused by spread of particles, Lukang Flat Glass Factory invested NT\$2 million into the construction of a vehicle washing system equipped with advance machinery that is capable of removing pollutants from vehicles and equipment, and therefore reduce the amount of polluting particles spread into the atmosphere. This system has the potential to improve air quality within the factory premise while at the same time lessening the negative impact of industrial activities on the environment and is expected to be completed in June 2024.

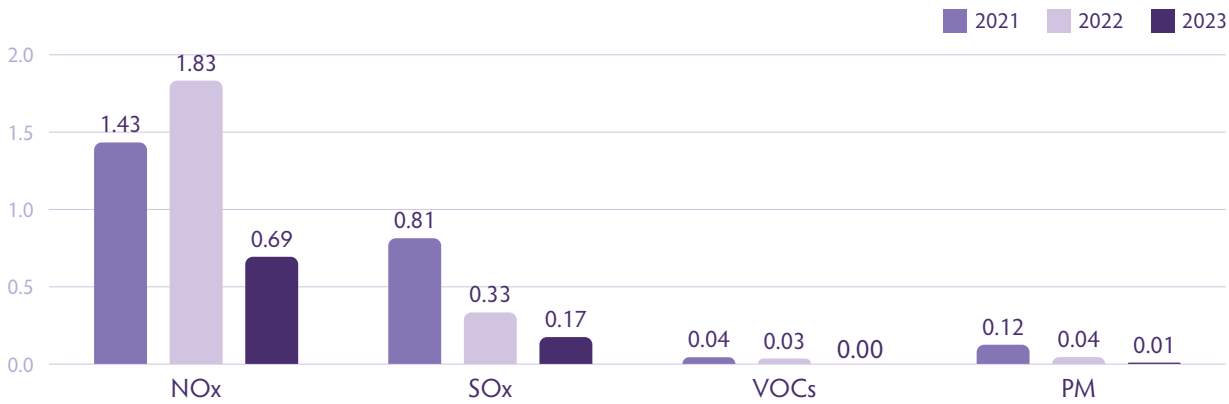


Lukang Flat Glass Factory: 90% of furnace fuel has been replaced with clean energy alternatives

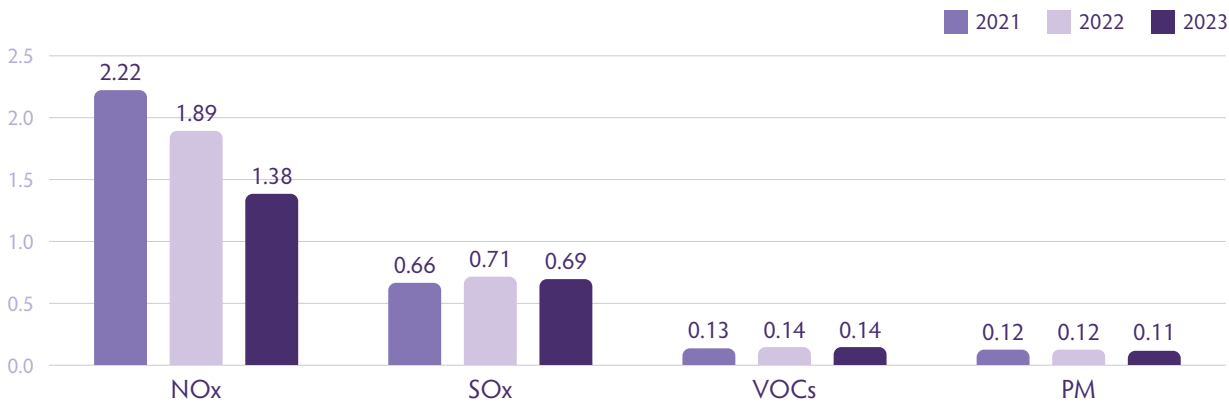
Lukang Flat Glass Factory actively supports clean energy, and has configured its glass furnace to use natural gas as the main fuel. It aims to achieve a substitution rate of 100% and use heavy oil only as a backup fuel. By 2023, the factory had achieved a 90% substitution rate and may increase the substitution rate to 100% following a change of environmental permit.



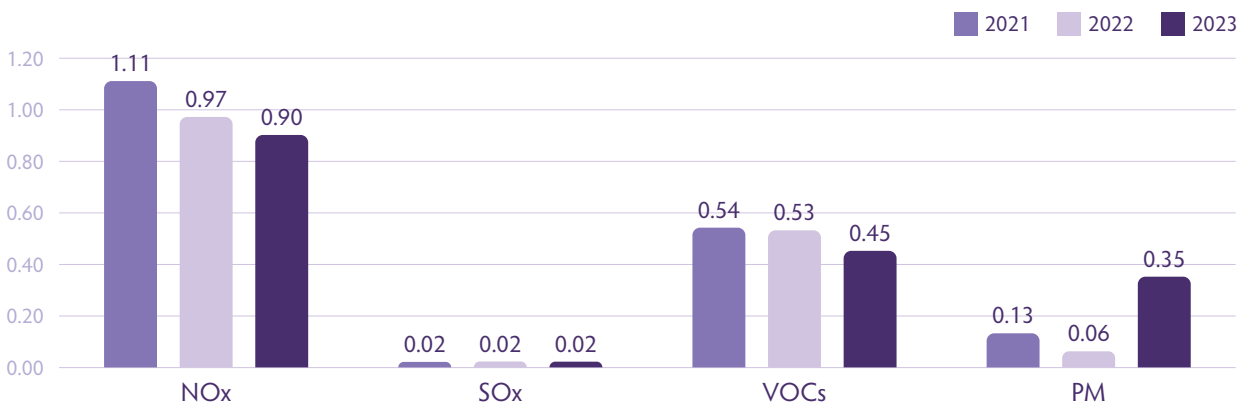
Air pollutant emission intensity of flat glass



Air pollutant emission intensity of glass container



Air pollutant emission intensity of fiber glass

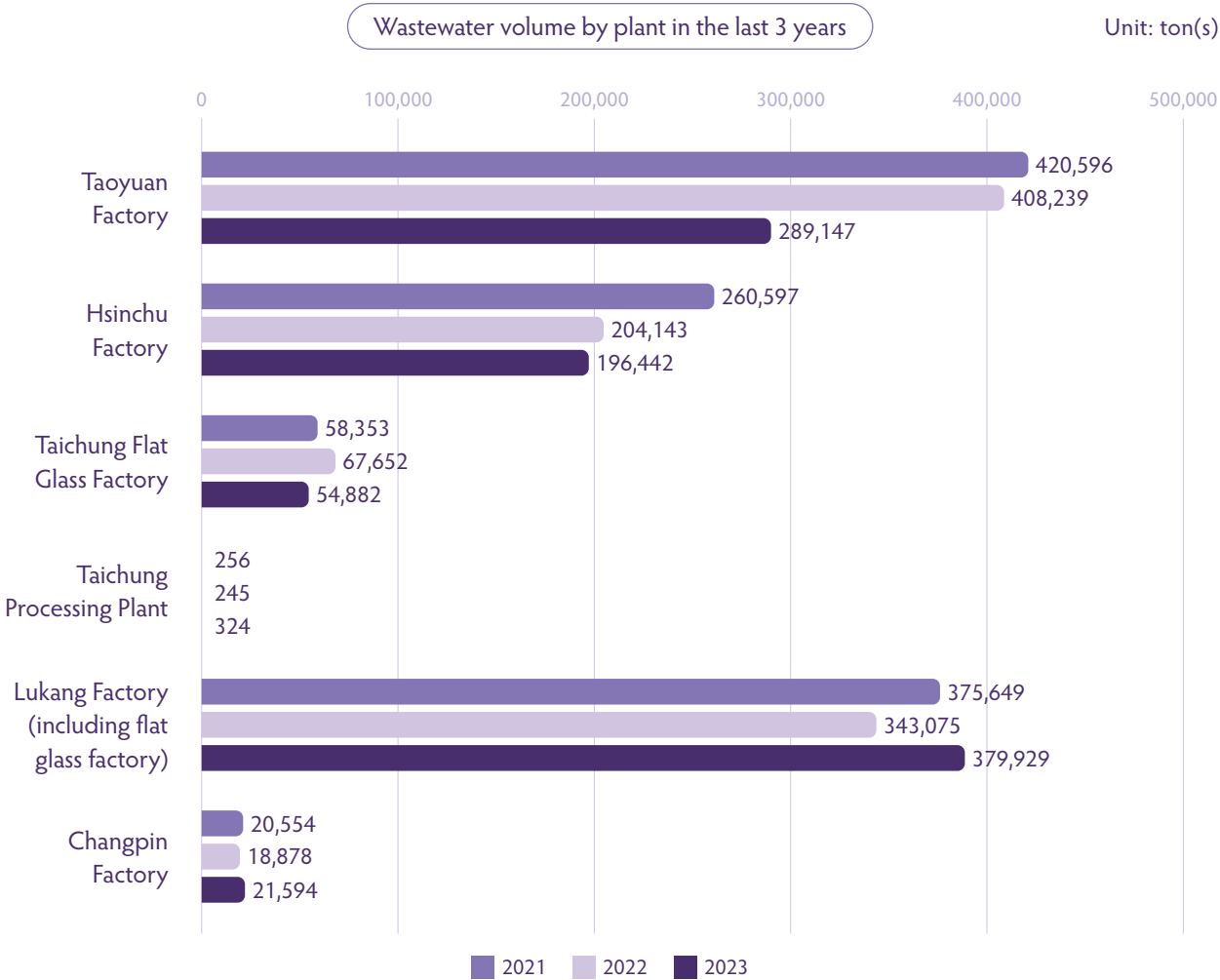


Note: This year, the method for calculating air pollutant emission intensity has been updated, using the annual production volume as the denominator. The calculation formula and unit are tons of pollutant per ton of glass (tons/ton of glass).

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. TGI discharged 942,318 ton(s) of wastewater in 2023, down 9.59% from 2022.

All TGI factories actively enforce the water conservation policy and are committed to circulating and reusing wastewater as a solution to water shortage and environmental pollution. The volume of wastewater discharged in 2023 was lower compared to the previous year, by 29.17% for the Taoyuan Factory and by 20.52% for the Taichung Flat Glass Factory. In particular, Taoyuan Factory recycled the wastewater discharged from backwashing of the TT1,7 resin softening tank and used it to clean the TT1 E/S SYS. The total volume of water recycled in 2023 amounted to 120,172 tons, and a sum of NT\$1,126,442 were invested into this process.



Note 1: TGI's wastewater volume is presented based on the volume of paid discharge for each Factory. The volume of discharge of the Taichung Processing Factory includes Taiwan Auto Glass Co., and the volume of discharge of Changpin Factory includes TG TECO Vacuum Insulated Glass Corp.

Note 2: Taichung Factory and Taichung Processing Factory recycle wastewater to clean filter fabrics and road surfaces. Therefore, the volume of paid discharge is actually lower than the volume of actual discharge.

Use of effluents for exhaust treatment system

In an attempt to increase circulation and reuse of wastewater, Hsinchu Factory made changes to the exhaust treatment system installed on TS2 and TS7 and switched water sources to effluents in 2023. A sum of NT\$1 million was invested for the change, and the solution has completed installation and testing, and commenced operations in May 2023. This solution has the potential to reduce groundwater extraction by 3,000 tons a month and reduce discharge of effluents by 3,000 tons a month. The factory plans to further maximize the reuse of wastewater by switching water sources to effluents for the exhaust treatment system installed on TS8 and TS3 in 2024.



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

Effluent test values by factory - 2022

Factory		Taoyuan Factory	Hsinchu Factory	Taichung Factory	Taichung Processing Plant	Lukang Factory	Lukang Flat Glass Factory	Changpin Factory
Water pollution test	Test value	165	18.8	13.7	13.9	93.1	37.2	45.1
	Emission standard	560	<100	800	800	<640	<640	<640
Suspended solids (SS) (mg/l)	Test value	11.4	1.8	9.1	9.8	4	9.7	13.8
	Emission standard	480	<50	600	600	<400	<400	<400

Note 1: 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.

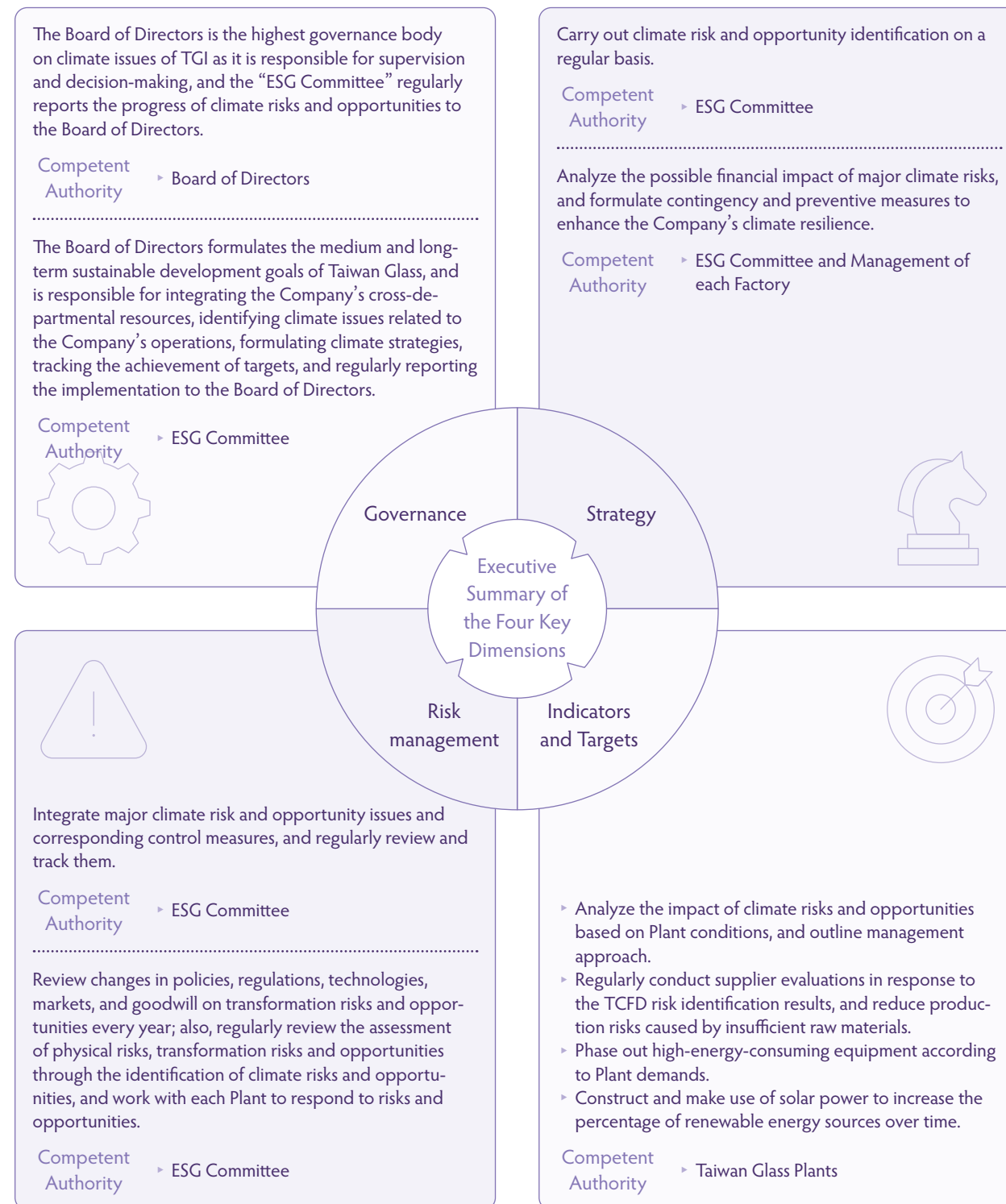
Note 2: With regards to the presentation of test values, Hsinchu Factory presents the quarterly average test value measured by the external institution, whereas all other factories present the monthly average test values measured by the respective industrial zones. For this reason, test value of Taichung Processing Factory includes Taiwan Autoglass Ind. Corp. whereas the test value of Changpin Factory includes TG TECO Vacuum Insulated Glass Corp.

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.

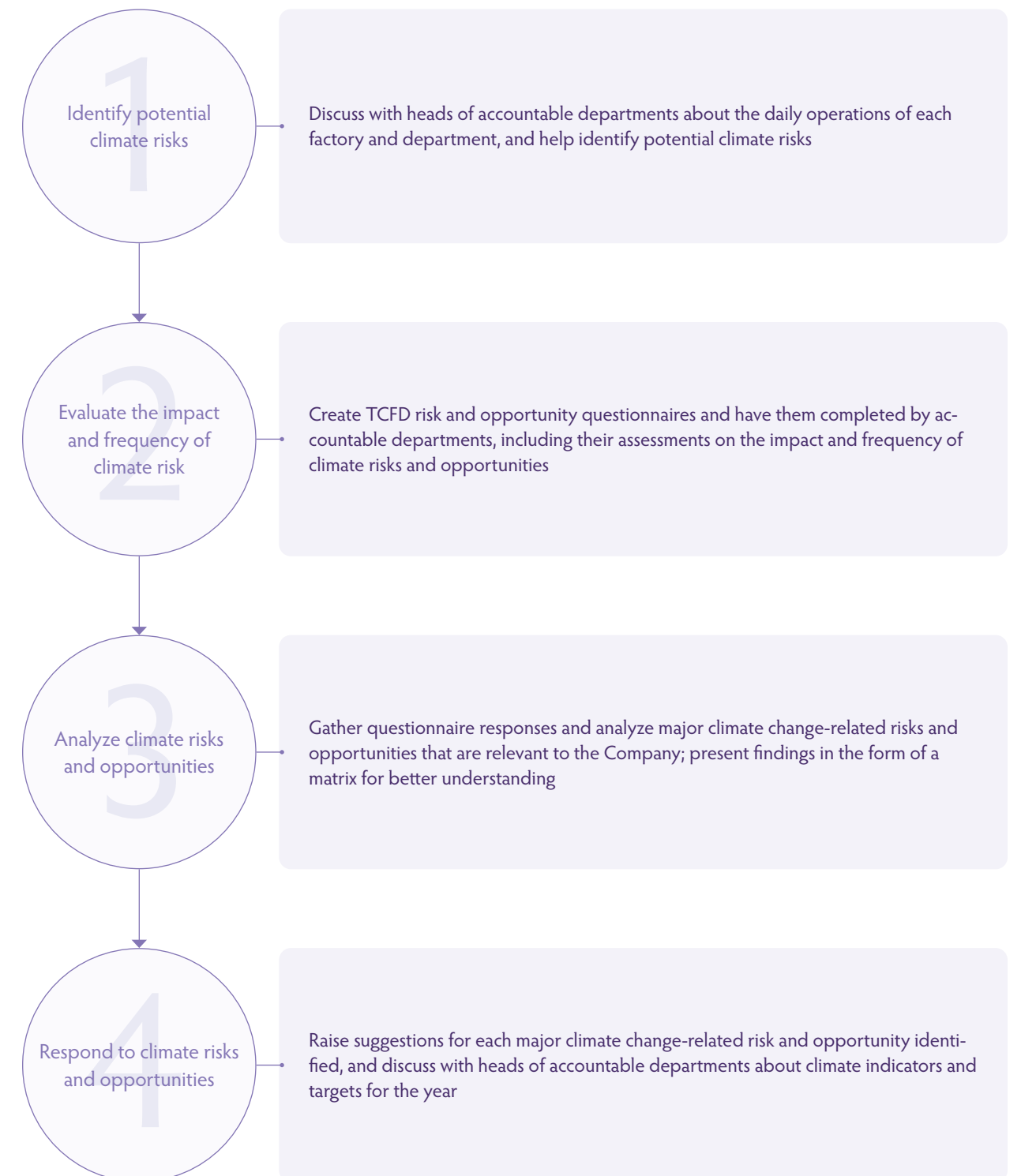


/// Identify Climate Change Risks and Opportunities

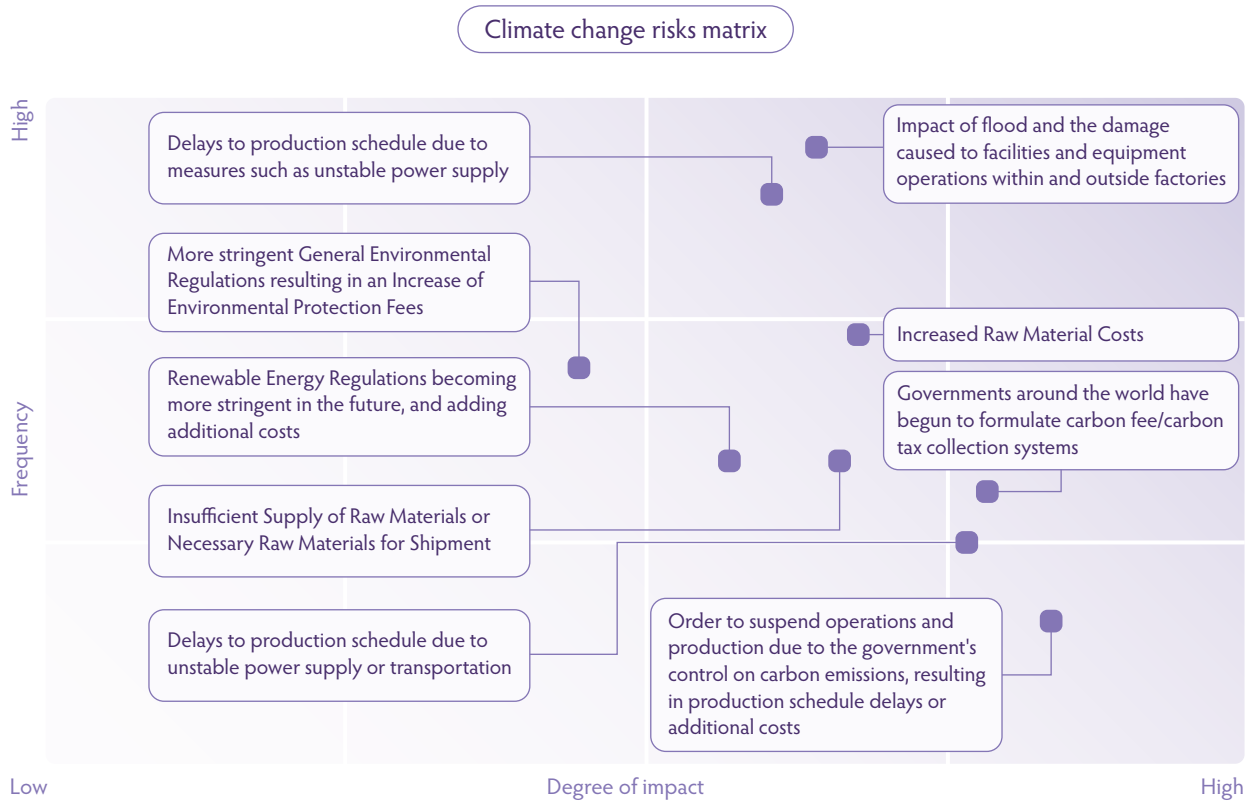
TGI worked together with external consultants and experts to distribute surveys to employees of each Factory, and carried out rigorous analysis after collecting the surveys. Matrix analysis was used based on the two parameters of “occurrence frequency” and “degree of impact,” and a total of 9 major climate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

Description of the 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.



Climate change risks of TGI

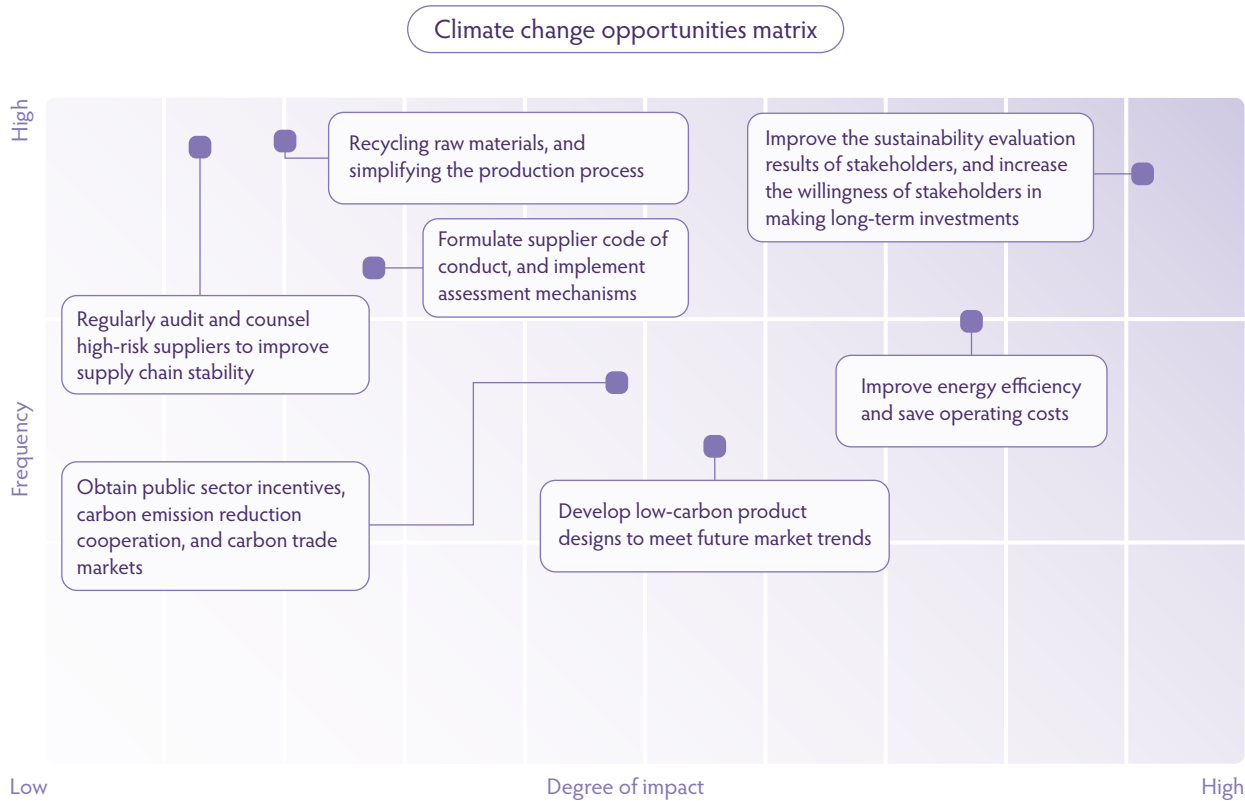


Description of climate change risk

Physical risk	
Category ▶ 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	Increased cost ▲ Capital expenditure ▲
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
Category ▶ 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	Increased cost ▲ Late delivery ▼
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
Category ▶ 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	Late delivery ▼ Loss of reputation ▼
Actions	▸ Improvement of power source exclusively for the switch to LPG supply ▸ Imposition of load limit for electric forklifts

Category ▶ 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	Loss of purchase order ▼ Loss of revenue ▼
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	
Category ▶ 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	Increased cost ▲ Capital expenditure ▲
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
Category ▶ 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	Loss of profit ▼
Actions	▸ Hsinchu Factory has installed SCR denitrification equipment, including electrostatic precipitators, to enhance particulate matter removal efficiency. ▸ Formulate relevant issues such as water and energy conservation, and continually improve production yield and reduce output of waste glass.
Category ▶ 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	Increased cost ▲
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%.
Category ▶ 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	Increased cost ▲ Loss of revenue ▼
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
Category ▶ 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	Loss of profit ▼ Reduced capital 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



Explanation on climate change opportunities

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

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

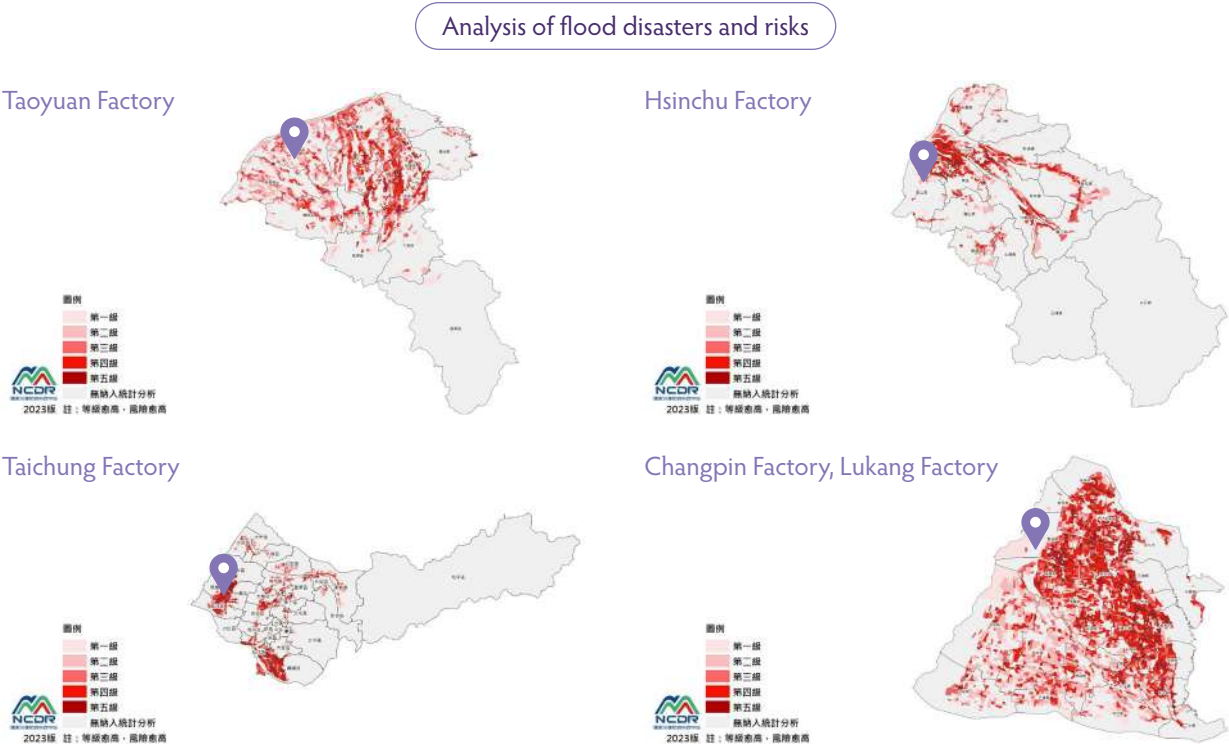
Analysis of climate change risk scenarios

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.



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.

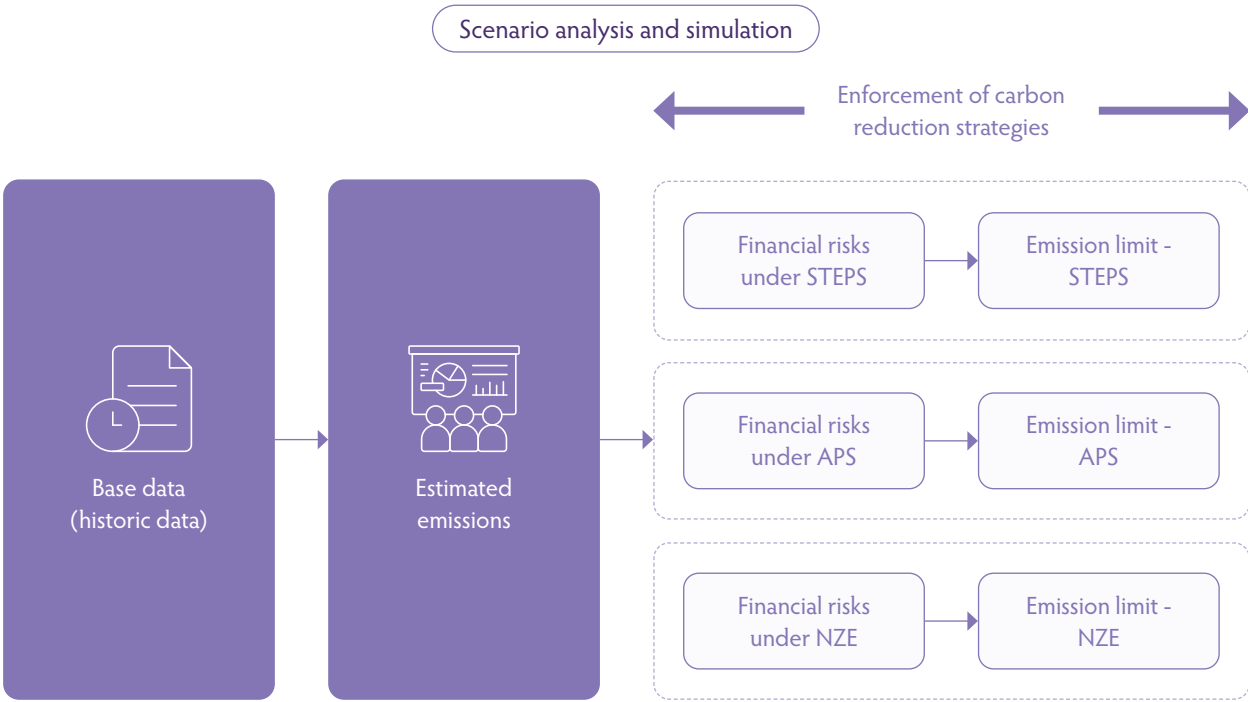
Carbon tax risk analysis

TGI conducted scenario analysis on the transition risk - “Carbon credit/carbon tax systems imposed by governments around the world” considering that the Legislative Yuan had passed the “Climate Change Response Act” in early 2023 in support of the Taiwanese government’s goal to achieve “net zero emission by 2050.” In the foreseeable future, carbon taxes will be imposed on domestic emission sources. Having reported total greenhouse gas emission (Scope 1+Scope 2) of 608,979.4236 ton(s) for 2023, TGI is considered a carbon-intensive business in Taiwan, and the imposition of carbon tax by the local government would result in a surge of operating costs and impact profits significantly.

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.

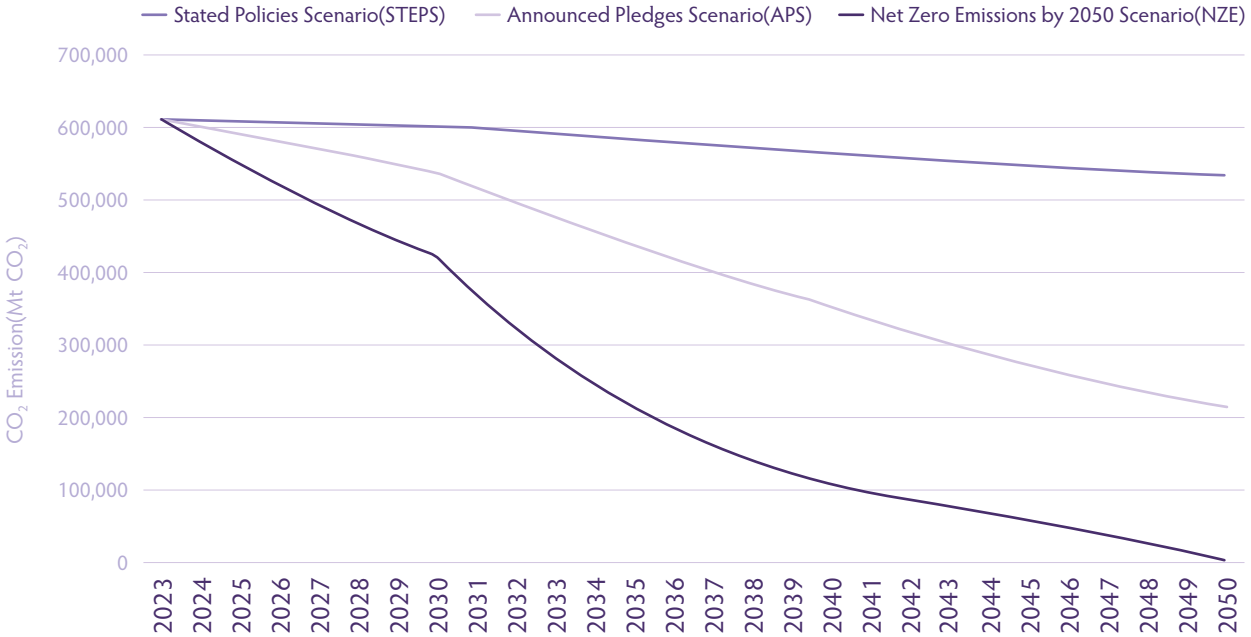
Carbon emission scenarios	We adopted the emissions scenarios proposed by IEA and applied them to forecast changes in greenhouse gas emissions. The scenarios adopted include the following: <ul style="list-style-type: none">▸ Stated Policies Scenario (STEPS)▸ Announced Pledges Scenario (APS)▸ Net Zero 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: <ul style="list-style-type: none">▸ NGFS_2050 Net Zero▸ NGFS_Below 2°C
Year of assessment	Baseline year: 2023 Years of carbon tax change analyzed: 2023 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.

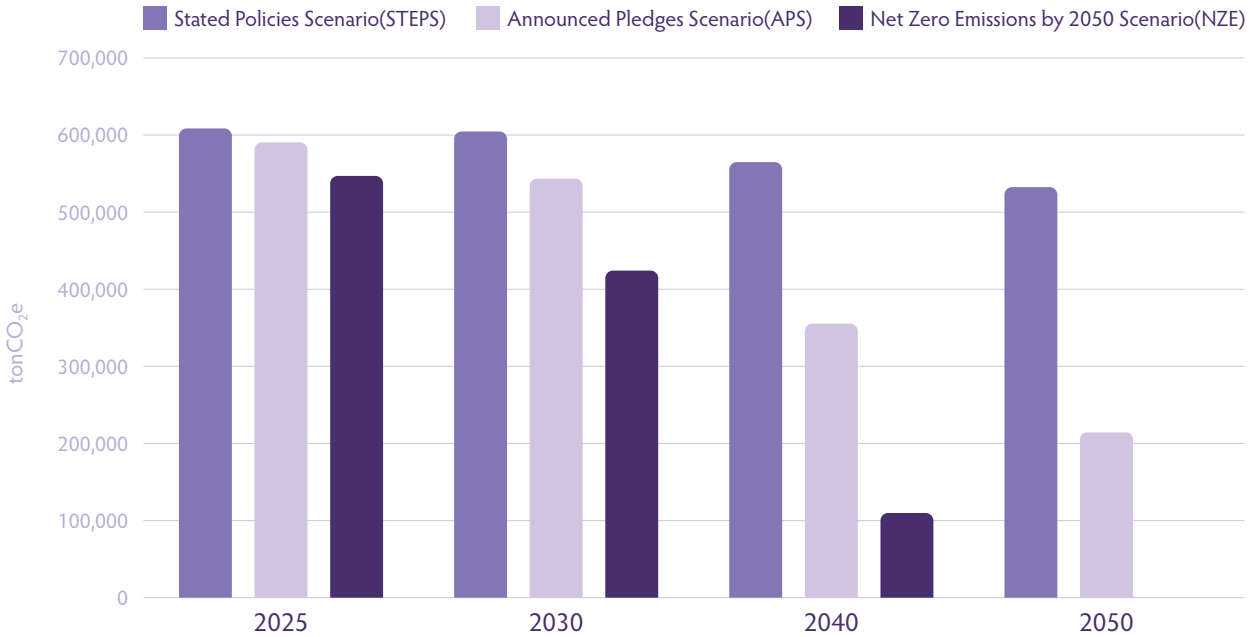


External scenario	Description	Risks assessed	Emission source
STEPS	Assessment based on the government's current carbon emission targets	▸ Legal risks ▸ Market risks ▸ Reputation risk	Scope 1 + Scope 2
APS	Estimation based on IEA's APS		
NZE	Estimation based on IEA's NZE		

Illustration of TGI's carbon emission trends under different scenarios

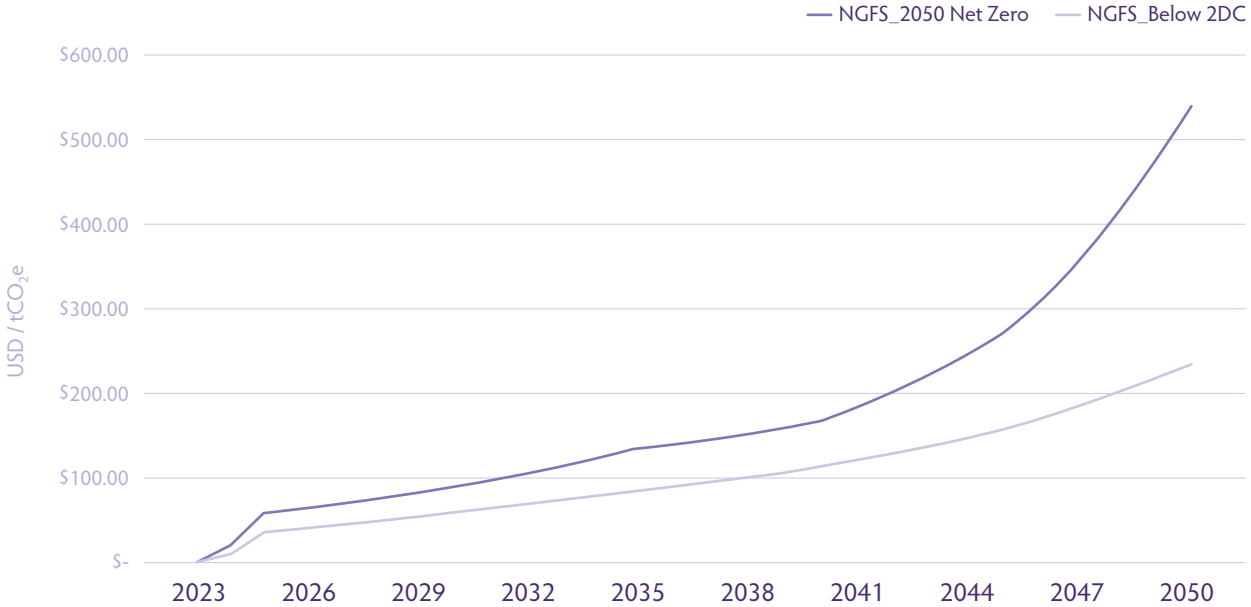


Carbon emission for TGI factories under different scenarios



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 2023 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.

5

Safe Workplace, Trust,
and Growth

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Employee Care Performance of 2023

**155%**

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

**100%**

TGI complies with the government's labor regulations and ensures that its work force is 100% compliant with the "People with Disabilities Rights Protection Act"

**28 people**

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

**81.48%**

81.48% of employees had taken up birthday leaves in 2023

**100%**

In 2023, the average retention rate for both men and women returning to work after taking parental leave reached 90.91%, with the retention rate for women achieving 100%

**99.9%**

99.9% of senior managers were locally hired; in doing so, TGI created job opportunities for Taiwanese talents to the benefit of local residents

**27.78**

A total of 75 employees retired in 2023; the retirees averaged 27.78 years of service

**16.6 hours**

TGI's general employees averaged 16.6 hours of training per person in 2023

**Certificate of Excellence**

Taipei Headquarters received "Excellent Breastfeeding Room Certificate" from Taipei City Government Department of Health

**Awards**

- ▶ Taoyuan Factory received Corporate Food Safety Volunteer Award
- ▶ Lukang Factory was commended as Excellent Performer in Over-quota Employment of Persons with Disabilities
- ▶ Employees of Lukang Factory received worker commendations on Labor Day

5.1

Human resources and welfare

TGI cares for employees' welfare and places the work environment, career development, and physical and mental health care at the top of its priority while at the same time introduces a broad range of welfare measures. TGI offers salary packages that are more favorable than what the laws require, and regularly reviews market salary levels to serve as reference for future salary adjustments. Compensations are not different based on gender, ethnicity, religion, political affiliation, marital status, union membership, or association with any particular organization. We not only offer compensations that are more favorable than the minimum salary, but also pay bonuses based on corporate performance and fair assessment of employees' individual performance as a way to inspire their potentials. TGI has established its management systems and policies in accordance with laws. With the support of our managerial staff, we hope to care for our employees at work and in life, and maintain harmonious employment relations.

TGI's workforce structure

All of TGI's employees are directly hired and no temporary workers are used. The Company considers its workforce structure to be stable and robust. TGI had a total employee size of 3,817 and hired 1,132 Taiwanese managers at the end of 2023. 99.9% of senior managers were locally hired; in doing so, TGI created job opportunities for Taiwanese talents to the benefit of local residents.

TGI has business locations in northern, central, and southern parts of Taiwan; it hires employees either on a permanent or contract basis. Detailed breakdown of the current work force (including local/foreign employees):

Employee nationality/gender distribution in previous years

Year		2021		2022		2023	
Item	Category	Male	Female	Male	Female	Male	Female
Nationality	Taiwanese employees	2,878	532	2,800	531	2,594	510
	Foreign employees	520	111	544	104	615	98
	Subtotal	3,398	643	3,344	635	3,209	608
Employee size		4,041		3,979		3,817	

Distribution of permanent/contract employees

Item	Category	Male		Female		Total	
		Head count	Percentage	Head count	Percentage	Head count	Percentage
Variant	Permanent employees	2,515	81.02%	503	16.20%	3,018	97.23%
	Contract employees	79	2.55%	7	0.22%	86	2.77%
	Total	2,594	83.57%	510	16.43%	3,104	100.00%

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	850	22.27%	177	4.64%	1,027	26.91%
	6-15 years	1,214	31.80%	178	4.66%	1,392	36.46%
	16-24 years	747	19.57%	145	3.80%	892	23.37%
	25 years and above	398	10.43%	108	2.83%	506	13.26%
	Subtotal	3,209	84.07%	608	15.93%	3,817	100.00%

Employee age distribution

Item	Category	Male		Female		Total	
		Head count	Percentage (%)	Head count	Percentage (%)	Head count	Percentage (%)
Age	30 and below	499	13.07%	100	2.62%	599	15.69%
	Age 31-40	1,137	29.79%	239	6.26%	1,376	36.05%
	Age 41-50	1,145	30.00%	206	5.40%	1,351	35.40%
	Age 51 and above	428	11.21%	63	1.65%	491	12.86%
	Subtotal	3,209	84.07%	608	15.93%	3,817	100.00%

Distribution of education background

Item	Category	Male		Female		Total	
		Head count	Percentage (%)	Head count	Percentage (%)	Head count	Percentage (%)
Academic background	Masters & above	129	4.16%	11	0.35%	140	4.51%
	Bachelor Degree	1,651	53.19%	343	11.05%	1,994	64.24%
	Senior high school and below	814	26.22%	156	5.03%	970	31.25%
	Total	2,594	83.57%	510	16.43%	3,104	100.00%

Note: Excludes foreign employees.

Distribution of managerial roles

Nature of work	Gender	Total	Percentage (%)	Aggregate percentage (%)
		Head count		
General employees	Male	2,204	57.74%	70.34%
	Female	481	12.60%	
Entry-level managers	Male	917	24.02%	26.98%
	Female	113	2.96%	
Mid-level managers	Male	69	1.81%	2.15%
	Female	13	0.34%	
Senior managers	Male	19	0.50%	0.53%
	Female	1	0.03%	
Total		3,817		100%

Recruitment and attrition

422 employees resigned in 2023, representing a 13.60% attrition rate. The Company has been able to keep attrition rate below 15% each year for the last 3 years. 198 new recruits were hired in 2023, representing a new recruitment rate of 6.38%. By having new members join in on a constant basis, we hope to maintain healthy turnover of our work force.

Total new recruits - 2023

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	121	100	21	38	28	16	18	7	11	2	1
Central Taiwan	77	64	13	34	17	8	5	8	5	0	0
Total	198	164	34	72	45	24	23	15	16	2	1

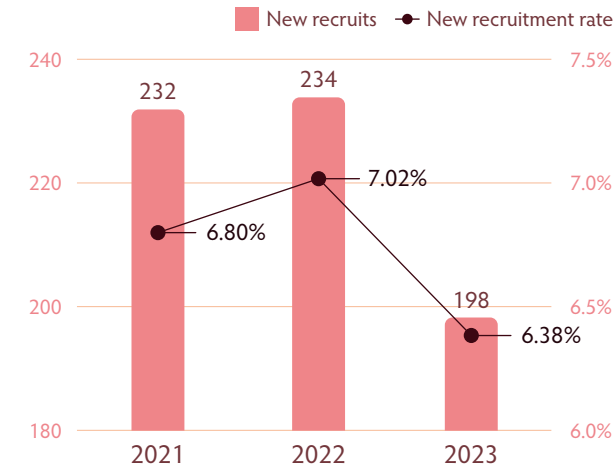
No. of resignees - 2023

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	197	160	37	31	50	40	39	14	10	7	6
Central Taiwan	225	207	18	42	72	49	44	6	9	3	0
Total	422	367	55	73	122	89	83	20	19	10	6

Note 1: The number of new recruits and resignees excludes those who are on extended unpaid leave and internal transfers.

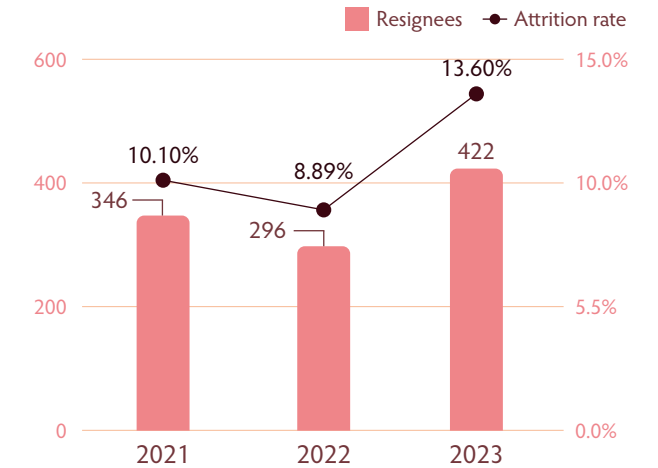
Note 2: Northern area: includes the Headquarters, Taoyuan Factory, and Hsinchu Factory; central area: includes Taichung Processing Factory, Lukang Factory, Lukang Flat Glass Factory, and Changbin Factory.

New recruitment rates in previous years



Note: 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

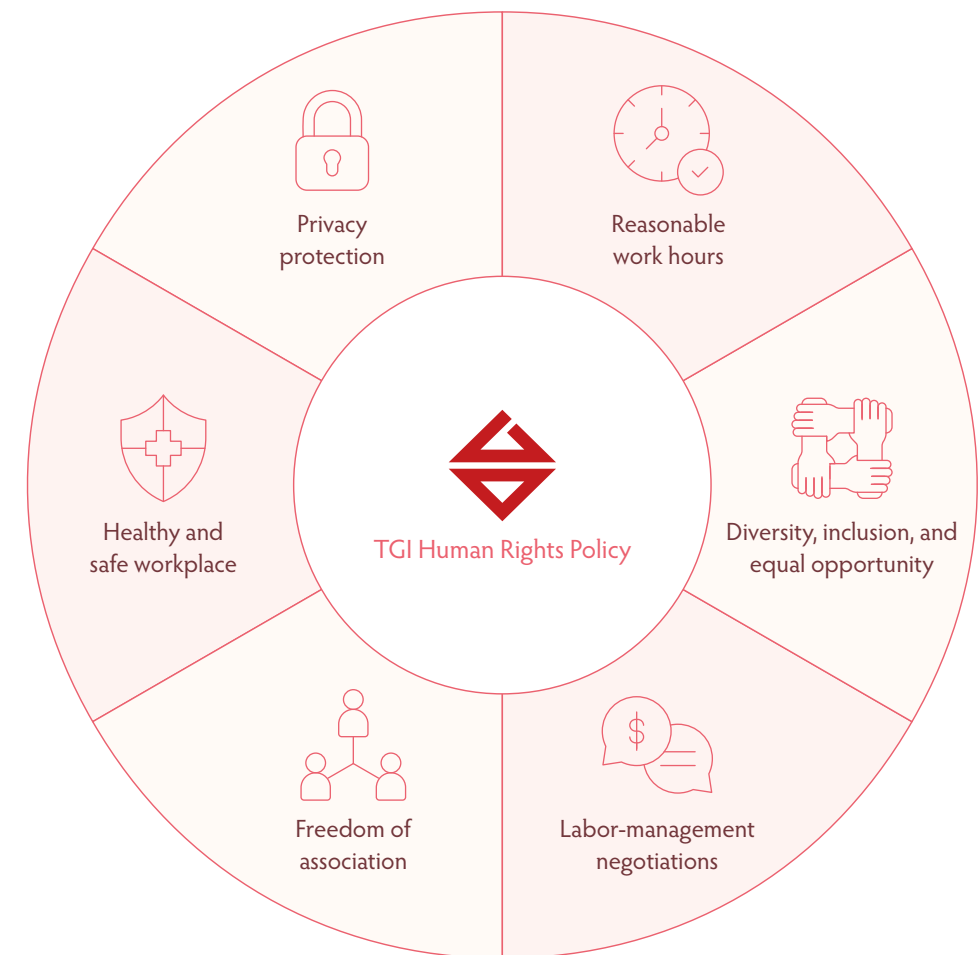


Note: Attrition rate (%) = No. of resignees for the given category of the year/total local employees for the given category at the end of year.

Human rights protection and talent employment

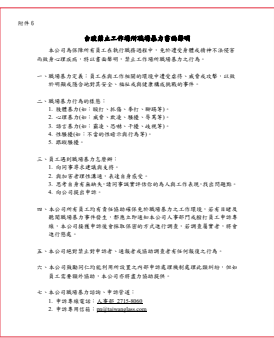
TGI observes principles of “International Labour Organization,” “The UN Global Compact,” “UN Guiding Principles on Business and Human Rights,” “United Nations Universal Declaration of Human Rights” etc., respects globally recognized human rights, and protects basic human rights of employees, customers, and stakeholders as part of its sustainable development efforts. The human rights issues that we are concerned with include: prohibition of child labor, care for the underprivileged, freedom of association, elimination of all forms of forced labor, and elimination of discrimination in employment.

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



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.

TGI strictly complies with the government’s quota for hiring persons with a disability. Despite being a conventional manufacturer, we remain committed to creating a stable and satisfying work environment for persons with a disability.



Written statements on prohibition of workplace violence



As of the end of 2023

TGI hired an average of

101 persons with disability a month

Surpassing legal requirements by more than

164 %

In the future, we will continue creating diverse job opportunities and decent work environment for people with disabilities. In 2023, TGI hired 28 people of indigenous origin, which demonstrated the organization’s attention to diversity. No violation against the rights of indigenous people occurred in 2023.

Human rights risk control program - 2023

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. Doctors and factory nurses regularly check the health examination reports and provide health consultation, advice, and care.	1. Items with abnormal health examinations will be notified and reviewed by the partner hospital. 2. Analyze results of the overall health checks, and plan health promotion events and lectures. 3. Encourage the establishment of sports clubs, and subsidize club-related expenses.
Workplace Safety	1. Handle occupational safety education and training for new employees. 2. Handle occupational safety education and training for in-service colleagues. 3. Conduct fire-fighting drills to improve disaster prevention knowledge. 4. Promote the Four Major Programs for Occupational Safety	1. Occupational accident reporting and handling procedures. 2. Emergency medical first aid kits are available. 3. Doctors and factory nurses are regularly stationed to provide consultation services. 4. Occupational safety and health committee meetings are held regularly, and issues are discussed during the meetings.
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. Really control the number and proportion of people with disabilities. 2. Create a friendly workplace environment. 3. The total number of employees with disabilities employed by the Group in general is higher than the number stipulated in legal regulations.

TGI’s Lukang Factory was named “Excellent Performer in Over-quota Employment of Persons with Disabilities” by Changhua County Government and won “Changhua County Outstanding Employee with Disability” in 2023. Lukang Factory is dedicated to improving the work space and equipment, and strives to provide people with disabilities a work environment where they can find a sense of accomplishment and belonging, and contribute to the organization’s competitiveness.



Lukang Factory was named “Excellent Performer in Over-quota Employment of Persons with Disabilities” by Changhua County Government in 2023

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. 81.48% of employees had taken up birthday leaves in 2023, indicating employees’ strong support for the birthday leave system.

Execution of birthday leave - 2023

No. of employees entitled to birthday leave (A)	No. of employees applied for birthday leave (B)	Execution rate (B/A)(%)
3,229	2,631	81.48%

Execution of parental leave

TGI has always upheld its philosophy of “equally emphasizing work and family,” and employees of both genders can apply to take parental leaves. Parental leave for employees without pay were handled in accordance with laws and regulations. From 2022 to 2023, 38 employees of Taiwan Glass applied for parental leave without pay: female employees accounted for 36.84% of the applications while male employees accounted for 63.16% of the applications, and 31 of them were reinstated in 2023 with a reinstatement rate of 81.58%.

Unpaid parental leave - 2023	Male		Female		Total	
	Head count	Percentage	Head count	Percentage	Head count	Percentage
A. No. of employees due for reinstatement (=B+C)	24	63.16%	14	36.84%	38	100.00%
B. No. of employees reinstated when due	19	50.00%	12	31.58%	31	81.58%
C. No. of employees resigned when due	5	13.16%	2	5.26%	7	18.42%
Reinstatement rate (B/A) %	79.17%		85.71%		81.58%	

According to the statistics for unpaid parental leaves during 2022-2023, a total of 25 employees of Taiwan Glass were reinstated after their unpaid parental leaves in 2022, and the retention rate of in-service employees was 2023 is 90.91%.

2022-2023 Unpaid Parental Leaves	Male		Female		Total	
	Head count	Percentage	Head count	Percentage	Head count	Percentage
E. No. of employees reinstated at the end of unpaid parental leave in 2022	12	54.55%	10	45.45%	22	100.00%
F. The number of employees who were reinstated after the end of their unpaid parental leaves in 2022 and stayed for one year in 2023	10	45.45%	10	45.45%	20	90.91%
Retention Rate F/E %	83.33%		100.00%		90.91%	

Maternity-friendly workplace

We care for employees’ work environment and the maternity friendliness of our workplace. In addition to conducting work-place risk assessment and caring for female employees during pregnancy and for one year after giving birth, we also arrange medical consultations with work health physicians to provide suitability assessment and recommendations given the state of health of each employee. Meanwhile, relevant health knowledge is disseminated to promote work safety and balanced work load.

TGI offers accessible and user-friendly nursery spaces decorated with mild color tones to give users the most relaxing and comfortable experience. For safety assurance, the nursery room door can be locked and a notice board is used to remind employees that the facility is in use. The nursery environment is cleaned and refrigerator temperature is checked daily. Furthermore, TGI provides comfortable couches and extra supplies of breast milk storage bags, nurser bottle, pillow, breast milk fridge, wet wipes, nurser bottle sterilizer etc. that users may use free of charge. For employees who have just given birth, TGI would provide them with relevant information on nursing, refer them to appropriate events and consultation services, check on their physical and mental state, offer support and assistance, and introduce experienced employees that they can share with, thereby creating a maternity-friendly workplace.



The nursery space has been decorated with mild color tones for users’ comfort and for the maternity-friendliness of the workplace. TGI’s Headquarters participated in the “Excellent Breastfeeding Room Certification by the Taipei City Government Department of Health” and **pass the certification**, which served as an affirmation of the Company’s efforts. TGI will continue creating a maternity-friendly environment in the future.



Headquarters



Hsinchu Factory



Changpin Factory

Employee salary and benefits

Fair performance management and compensation system

TGI devotes significant attention to employees’ wellbeing and welfare, and has adopted a differentiated bonus system that rewards employees based on corporate performance, individual performance, and level of contribution as a way to effectively improve and commend employees’ performance. We evaluate each employee based on education and career background, professional knowledge, experience, and individual performance. The evaluation does not differentiate by gender, ethnicity, religion, political affiliation, marital status, or union association. The performance evaluation mainly takes the employees’ “work performance,” “efficiency,” and “accountability” into account.

In 2023, the male-to-female basic compensation ratio for general employees was calculated at 1:0.95; the 0.05 discrepancy was mainly attributed to differences in the nature of work and seniority. In 2023, non-managerial permanent employees averaged yearly salary of NT\$613,000, with the median being NT\$583,000. We strive to provide equal pay for employees engaged in the same line of work, and do not differentiate by gender, ethnicity, religion, political affiliation, marital status, or union association. TGI’s HR unit has been tasked with the mission of tracking and analyzing general employees’ salaries on an ongoing basis and found that all salaries were at least 155% of the statutory minimum.

Employee Welfare Committee

To ensure adequate care for employees, TGI not only arranged the basic protections required by laws but also introduced a multitude of benefits and subsidies aimed at promoting work-life balance. 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 welfare measures		Benefits more favorable than the Labor Standards Act
Healthcare	Employee health checkups that are more favorable than what the laws require.	√
	Privileged health checkup packages for employees’ dependents.	√
	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.	√
	Construction of basketball court, fitness center, and table tennis room.	√
	Introduction of after-work sports courses (employee hobby survey).	√
Lifestyle care	Availability of employee diner, dormitory, and nursery room.	
	Employee meal subsidy (50%)/travel subsidy/club activities subsidy.	√
	Birthday, wedding, funeral, and birth cash/gift	√
	Extended unpaid compassionate leave	√
	Comprehensive death benefit system.	√
	Unpaid parental leave for employees.	
Festive care	Birthday leave.	√
	Festive cash.	√
	Year-end party/cash.	√
	Labor Day cash.	√
Learning care	Introduction of employee development program and complimentary language course.	√
	Incentives for ongoing education.	√
	Children’s education scholarship.	√
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.	√
	Travel insurance for business trips/expatriates.	√

All of TGI’s factories support the welfare policy with activities such as sports competition that aim toward promoting team work and harmony. Tourism activities are also arranged from time to time to increase satisfaction and unity among TGI employees.



Badminton club by TGI employees



Changpin Factory held a badminton tournament in 2023 and a total of 20 employees signed up for the competition



Changpin Factory held a table tennis tournament in 2023 and a total of 32 employees signed up for the competition



Hsinchu Factory organized a domestic trip for foreign workers in two separate groups in 2023, and took them to Old Times Leisure Farm in Hsinchu County where they indulged in the rural scenery, recreational facilities, and outdoor barbeque



Retirement system

TGI has established its own employee retirement policy in accordance with the “Labor Standards Act” and “Labor Pension Act.” Employees who came onboard on and before June 30, 2005 were covered by the old pension scheme, and those who opted for the new pension scheme were entitled to carry over their years of service accumulated under the old scheme. Currently, 100% of employees are covered by pension scheme. TGI makes consistent pension contributions and benefit payments. It engages professional accounting consultants to make actuarial calculations on the pension fund each year to ensure that adequate contributions are made. TGI had 75 employees averaging 27.78 years of service retire in 2023. All senior retirees will receive a commemorative medal presented personally by the Chairman or CEO as a gesture of gratitude for their long-time contribution.

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

Union

TGI observes international labor conventions and domestic union regulations by assembling worker unions in some of its factory sites. The union serves as a communication channel and is able to convey opinions of the labor and management in an effective manner. In September 2018, TGI signed a collective bargaining agreement with the union to provide a solid foundation for harmonious employment relations. In June and November 2019, Lukang Factory received commendations from the Changhua County Government and the Ministry of Labor, respectively, for the efforts it made to promote employment relations. The union convenes representative meetings once a year, during which an open vote is held to elect suitable representatives. The union also convenes director meetings every three months and ordinary meetings regularly to discuss issues concerning employees’ meals, group accident insurance, incentive trips, year-end gatherings etc. E-mail, bulletins, and a hotline have all been made available for employees to express opinions directly. The Company may assign relevant personnel to attend meetings and respond to the motions discussed if necessary, and gather opinions for subsequent improvements and coordination. In 2023, TGI had 1,033 employees being union members.

Union participation by factory - 2023

Factory	Hsinchu Factory	Taichung Factory
Male	755	182
Female	79	17
No. of union members	834	199
Employee count	861	274
Percentage	97%	73%

Note 1: Foreign workers were excluded for Hsinchu Factory; all factory workers were union members.
Note 2: No union was assembled at Taoyuan Factory, Lukang Flat Glass Factory, or Changpin Factory.
Note 3: Lukang Factory union is unable to provide relevant information.

Union Representatives Conference - 2023



Union Representatives Conference of Taichung Factory



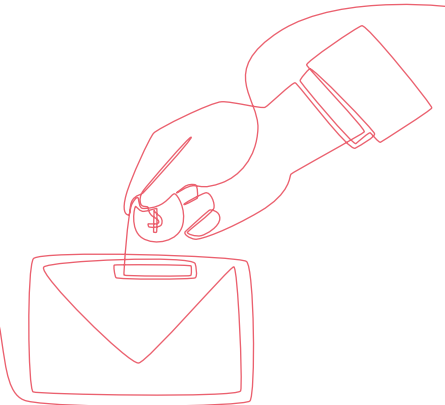
Union Representatives Conference of Hsinchu Factory



Minimum notice period for operational change

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:

- I. 10 days of advance notice for employees with 3 months to less than 1 year of continuous service
- II. 20 days of advance notice for employees with 1 year to less than 3 years of continuous service
- III. 30 days of advance notice for employees with more than 3 years of continuous service



5.2

Talent development and training

Talent development has always been one of TGI's goals. We value employees' career plan and individual growth, and take training as an opportunity to convey TGI's mission, vision, and value. TGI has assigned dedicated personnel to survey and analyze training requirements based on organizational strategies for the given year, and to plan courses for new recruits as well as existing employees. We have implemented a comprehensive training system along with diverse learning channels and access to everything from common courses, specialist courses, management knowledge to self-development courses. Through systematic training such as: standardized practice for entry-level workers, optimization of managers' responsibilities, promotion of workplace safety and health etc., TGI raises employees' awareness toward human rights, workplace safety, and legal compliance. To facilitate response to the fast-changing market, we have committed resources into developing talents and technologies in fields such as photovoltaic, energy conservation, and touch control that would help sustain the Company's competitiveness and growth.

In 2023, general employees averaged 16.6 hours of training per person, whereas entry-level managers averaged 16.8 hours, mid-level managers averaged 10.2 hours, and senior managers averaged 9.2 hours.

TGI's general employees averaged **16.6** hours of training per person in 2023

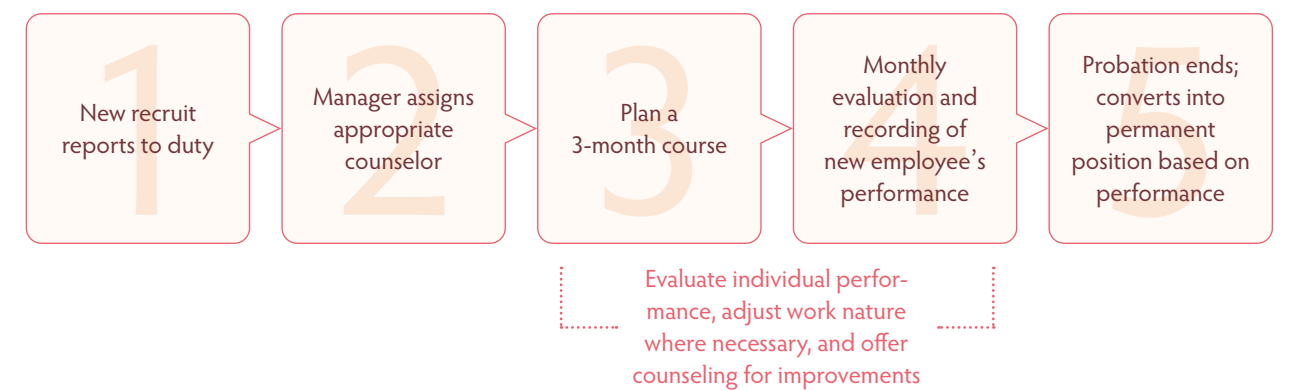
Statistics on 2023 employee training

Item	Factory	Male		Female		Total	
		Head count	Hours	Head count	Hours	Head count	Hours
General employees	Headquarters	25	176	22	117	47	293
	Taoyuan Factory	194	5,690	77	2,518	271	8,208
	Hsinchu Factory	534	8,057.8	77	1,033.1	611	9,090.9
	Taichung Factory	225	2,186	22	184	247	2,370
	Lukang Factory	594	8,112.4	181	2,025	775	10,137.4
	Lukang Flat Glass Factory	107	1,862.5	8	99	115	1,961.5
	Changpin Factory	167	5,127	22	259	189	5,386
	Subtotal	1,846	3,1211.7	409	6,235.1	2,255	37,446.8
	Average hours		16.9		15.2		16.6
Entry-level managers	Headquarters	30	300.7	43	261	73	561.7
	Taoyuan Factory	139	4,287.5	12	401	151	4,688.5
	Hsinchu Factory	296	5,556.3	14	251.3	310	5,807.6
	Taichung Factory	149	1,343	4	35	153	1,378
	Lukang Factory	199	2,653.5	13	132	212	2,785.5
	Lukang Flat Glass Factory	69	1,191.6	1	10	70	1,201.6
	Changpin Factory	60	855.5	1	4	61	859.5
	Subtotal	942	16,188.1	88	1,094.3	1,030	17,282.4
	Average hours		17.2		12.4		16.8

Item	Factory	Male		Female		Total	
		Head count	Hours	Head count	Hours	Head count	Hours
Mid-level managers	Headquarters	19	183	8	97	27	280
	Taoyuan Factory	1	8	0	0	1	8
	Hsinchu Factory	1	24.2	1	4	2	28.2
	Taichung Factory	9	41	0	0	9	41
	Lukang Factory	2	2	0	0	2	2
	Lukang Flat Glass Factory	0	0	0	0	0	0
	Changpin Factory	20	262	0	0	20	262
	Subtotal	52	520.2	9	101	61	621.2
	Average hours		10.0		11.2		10.2
Senior managers	Headquarters	3	25	1	4	4	29
	Hsinchu Factory	1	17.3	0	0	1	17.3
	Changpin Factory	1	9	0	0	1	9
	Subtotal	5	51.3	1	4	6	55.3
	Average hours		10.3		4.0		9.2

TGI's training system

Training for new recruits



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. This internal support system is what enables new recruits to quickly blend in and adapt to the work culture and environment, which helps increase the retention rate. A total of 12 employees underwent the counselor system in 2023; 10 of whom were converted into permanent employment at the end of probation and 83% of whom remained in duty at the end of 2023, indicating good results of the counselor system.

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 training organized by the Headquarters in 2023 (legal requirements)			
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)	68
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)	43
Workplace violence awareness	Identify high-risk employees, organize hazard prevention training, conduct regular workplace inspections, and adopt effective risk mitigation measures.	1 time(s)	67
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)	62
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)	30



Occupational Safety and Health Training



Workplace violence awareness

Routine training organized by factories - Information security courses

Factory	Number of Events	Enrollments
Taoyuan Factory	2 time(s)	44
Hsinchu Factory	2 time(s)	65
Taichung Factory	2 time(s)	39
Changpin Factory	2 time(s)	27
Lukang Factory (Fiber glass + flat glass)	2 time(s)	61

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 2023

Course type	Course content	No. of training participants	Photo
Managerial skill training for entry-level managers	<ul style="list-style-type: none">Work guidance for employeesOngoing work improvementsWork relationship between subordinates and managersCritical skills for successful leadershipManagement practices training	30	
Statistical Process Control (SPC)	<ul style="list-style-type: none">The Quality ConceptUnderstanding Weaknesses and ChangesHow to Gather DataCommon Problems and Mistakes in SPCIntroduction to Statistical Process Control (SPC)Basic statistics and control chartsIntroduction and practical use of EXCEL toolsSPC Case Study	34	
Courses reported completion rate of 100%			

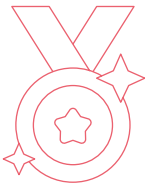
Taichung Factory - Specialist skill courses for 2023

Program name	No. of training participants
Forklift training	60
Crane training	19
Training for paper handling equipment	30
Specialist training: Capacity improvement training was organized for various departments	55
Training completion rate was 100%	

Changpin Factory - Specialist skill courses for 2023

Program name	No. of training participants	Photo
Forklift back-training: Operation and related regulations	41	
Crane back-training: Operation and related regulations for stationary crane	31	
Hoisting operations: Operation and accident prevention in hoisting	21	
Specialist courses on processing and production: Technical training is carried out by the respective departments	67	-
Specialist courses on processing and production averaged a completion rate of 97%; all other courses reported completion rate of 100%		

TGI spares no effort in the growth and training of its employees. It is the hope of the organization to exert influence in ways that help employees reach their full potentials and put their skills in the best use. In 2023, employee Huang of Lukang Factory was commended during the “Labor Day Exemplary Worker Commendation” event organized by Changhua Coastal Industrial Park Manufacturer Association.



Changhua Coastal Industrial Park Manufacturer Association held a “Labor Day Exemplary Worker Commendation” event, and employee Huang of Lukang Factory won the award

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 execution of the 5S program, TGI promotes safety awareness among employees during orientation and on-job training so that they can better respond to emergencies and minimize chances of accident to create a safe and healthy work environment.

Taiwan Glass Occupational Safety and Health Management System

- 01

Raise suggestions regarding employer’s Occupational Health and Safety policy
- 02

Coordination and recommendation on the execution of Occupational Health and Safety management program
- 03

Review of implementation plans for safety and health training
- 04

Review of environment monitoring plans, results, and measures
- 05

Review of health management, occupational illness prevention, and health promotion tasks
- 06

Review of safety and health proposals
- 07

Review of self-inspections and environment safety and health audits
- 08

Review of preventive measures against machinery, equipment, and material hazards
- 09

Review of occupational hazard investigation reports
- 10

Evaluation of workplace safety and health management performance
- 11

Review of safety and health management tasks for contracted jobs
- 12

Other matters relating to Occupational Health and Safety management

Percentage of worker representatives in Occupational Health and Safety Committee - 2023

Measurement \ Factory	Headquarters	Taoyuan Factory	Hsinchu Factory	Taichung Factory	Lukang Factory	Changpin Factory	Total
No. of Occupational Health and Safety Committee members	13	18	15	19	10	41	116
No. of worker representatives	6	7	6	7	5	13	44
Percentage of worker representatives (%)	46.2%	38.89%	40.0%	36.8%	50.0%	31.7%	37.94%

Note: Changpin Factory and Lukang Flat Glass Factory are not required to assemble their own occupational safety and health committees according to laws; nevertheless, these factories still organize annual training programs to enhance employees' awareness toward occupational safety and health.



2023 Occupational Safety and Health Committee - Taoyuan Factory



2023 Occupational Safety and Health Committee - 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 2023, 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.
Special health checkup	Arrangements are made for employees to undergo special health checkups in order to track employees' health state.

Fire Fighting Drill

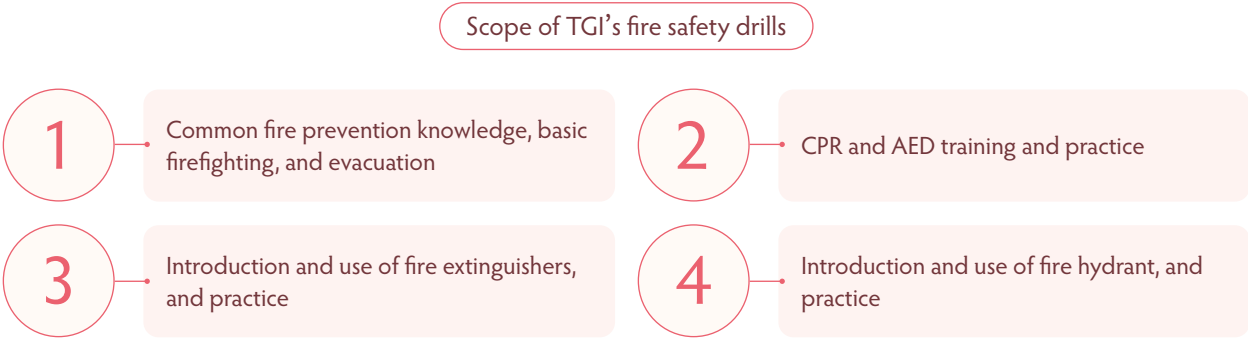
TGI has established fire safety regulations for its operations. Each plant has designated emergency personnel and fire safety managers to ensure a safe working environment. Additionally, in compliance with legal requirements, personnel with relevant certifications are assigned to participate in periodic in-service training. The Headquarters holds self-defense fire training sessions every six months (one in the first half of the year and one in the second half) conducted by fire safety managers to reinforce safety knowledge and culture among employees. Furthermore, the company contracts professional agencies for the inspection and maintenance of fire safety equipment, identifying and addressing any deficiencies in fire safety management. In 2023, Taiwan Glass reported zero fire incidents, with no contractors experiencing fire-related accidents at the company's workplaces.

In 2023, Taiwan Glass reported 0 fire incidents

Implementing fire safety management policies at the plant

Factory	Description
TF4	<ul style="list-style-type: none">The plant implements the ISO 14001 Environmental Management System and has established management regulations for "Fire Equipment Management," "Hazard Awareness Management," and "Emergency Response."Each year, the plant commissions professional fire safety companies to conduct annual fire safety inspections and reports. Additionally, the plant's internal fire brigade performs fire drills and disaster prevention seminars every six months. The plant has designated fire safety managers and security supervisors to oversee fire safety-related matters.
Taichung Factory	According to the plant's fire protection plan, we implement fire prevention management, conduct self-defense fire drills, and manage the maintenance of fire safety equipment. Responsible personnel are required to perform regular inspections. If any deficiencies are found during these inspections, they must report them to the assistant manager and the person in charge of management, who will then address and rectify the issues.

In practical fire safety management, Taiwan Glass plants conduct annual environmental impact assessments. They identify and evaluate hazards and risks associated with high-risk areas or operations related to environment, fire safety, and occupational health. Improvement plans are developed for high-risk areas. Each department performs monthly self-inspections of hazardous machinery, fire safety equipment, and first aid supplies within their scope of responsibility. The plant has an emergency response team that conducts fire drills every six months. Additionally, each unit manages the use of chemicals through a tiered system, maintaining and periodically updating a chemical inventory list.



Factory	No. of fire drills	Enrollments
Headquarters	2 times/year	43
Taoyuan Factory	2 times/year	103
Hsinchu Factory	2 times/year	151
Taichung Factory	2 times/year	32
Lukang Factory	2 times/year	66
Lukang Flat Glass Factory	2 times/year	25
Changpin Factory	2 times/year	72



Taoyuan Factory



Taoyuan Factory

Fire safety course -
Hsinchu FactoryFire extinguisher tutorial
- Hsinchu FactoryEvacuation training -
Hsinchu FactoryFire safety course -
Lukang FactoryInternal fire safety team
(notification team) training
- Lukang FactoryIndoor fire hydrant drill -
Lukang FactoryOn-site fire safety drill -
Changpin FactoryOn-site fire safety drill -
Changpin Factory

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.

The Company also began deploying AEDs at factory sites in 2022, and has organized numerous CPR+AED training courses to familiarize employees with the equipment. Taoyuan Factory and Hsinchu Factory deployed 3 AEDs on their premises in 2023; these equipments are being inspected daily by relevant departments to ensure that they function properly at time of need.

AED at the Head-
quartersHsinchu Factory deployed AEDs at the entrance of the dining area and
at the finished product sections of furnaces No. 8 and No.10

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 - 2023

Factory	Sessions	No. of health consultation visits
Headquarters	24	17
Taoyuan Factory	12	74
Hsinchu Factory	24	95
Taichung Factory	12	41
Changpin Factory	6	69
Lukang Flat Glass Factory	4	27
Lukang Fiber Glass Factory	12	74

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 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 1,444 general health checkups and 2,496 special health checkups were completed in 2023.

Factory	Special health checkup (No. of checks)										Total
	High temperature	Dust	Noise	N-hexane	Lead	Chronic acid and chromium salt	Ionizing radiation	Nickel and compounds	Mercury and non-organic compounds	Manganese and inorganic compounds	
Taoyuan Factory	0	38	247	0	0	0	0	0	0	0	285
Hsinchu Factory	224	145	481	0	56	2	3	63	2	0	976
Taichung Factory	93	108	10	0	0	0	51	0	0	0	262
Lukang Fiber Glass Factory	0	23	670	6	0	0	0	0	0	0	699
Lukang Flat Glass Factory	72	81	0	2	0	0	67	0	0	0	222
Changpin Factory	0	31	0	0	5	0	0	8	0	8	52



Health checkup at Hsinchu Factory

Special health checkup
at Taoyuan Factory

Factory	General health checkup (No. of checks)
Taoyuan Factory	3
Hsinchu Factory	362
Lukang Factory	912
Lukang Flat Glass Factory	167
Total	1444

General health checkups

Once every two years. In 2023, general health checkups were arranged for Hsinchu Factory, Lukang Factory, and Lukang Flat Glass Factory

Special health checkups

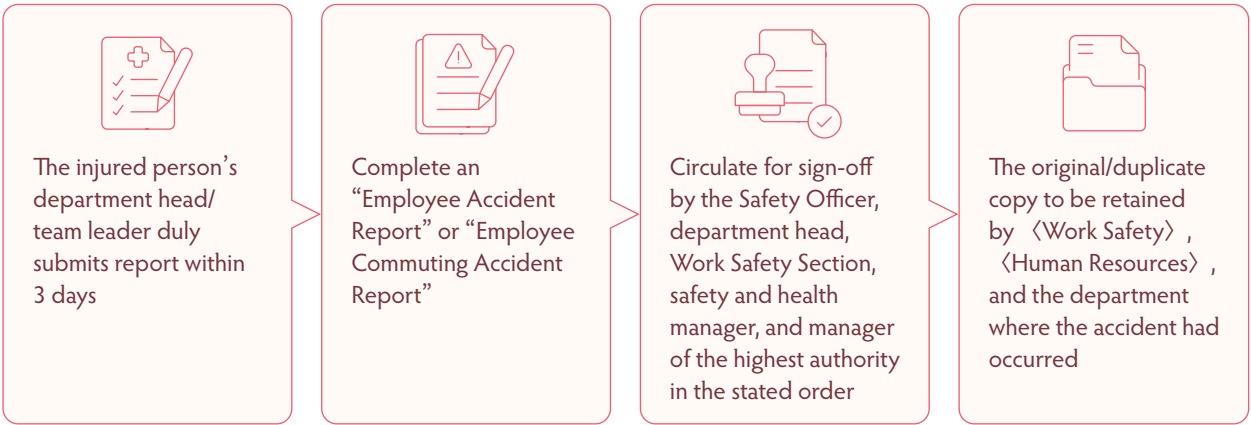
Once a year.

Considering that the furnace section of Taichung Factory operates at a high temperature, TGI has devised an “Overstress-induced disease prevention program” and adopted preventions and improvements according to plan to ensure that employees’ work hours, break duration, and leave of absence are duly compliant with employment regulations, thereby helping employees maintain physical and mental health and good work-life balance. Both Taoyuan Factory and Taichung Factory arranged special health checkups in 2020 to address work activities that posed higher health risks, such as: high temperature, noise, dust, and ionizing radiation. In 2021, Hsinchu Factory added “Nickel and compound” and “Mercury and inorganic compound” to its health checkup.

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



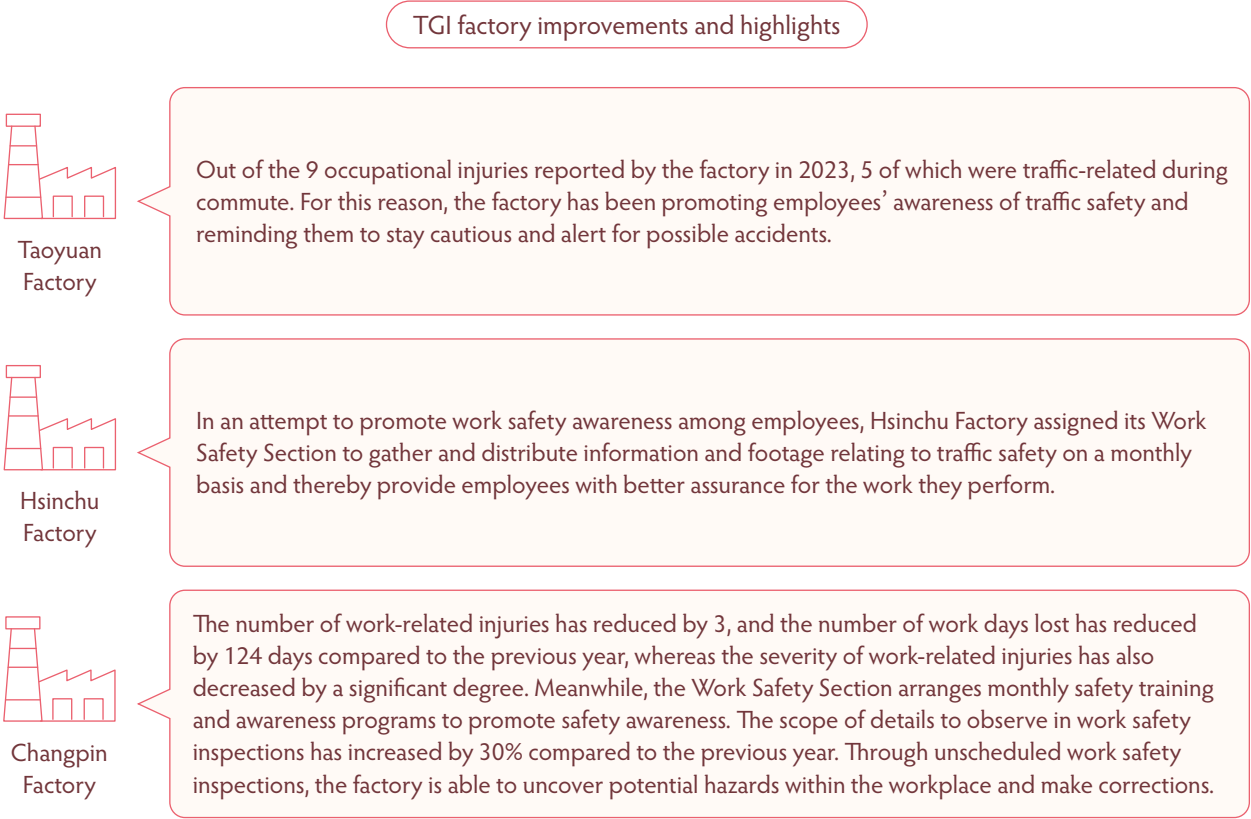
To deal with accidents, traffic accidents and false alarms, Taiwan Glass established an operational mechanism for managing occupational accidents that actively implements procedures for reporting, investigating, and improving accident prevention. Occurrence and cause of occupational hazard are analyzed 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 2021-2023:

Item	Year	Gender	2021	2022	2023
Disabling injury frequency rate (FR) No. of tasks lost (only if break time is greater than 8 hours) X 1,000,000 / total work hours		Male	7.25	7.99	7.88
		Female	4.66	7.15	4.88
		Total	6.85	7.85	7.40
Disabling injury severity rate (SR) No. of work days lost X1,000,000 / total work hours		Male	215	239	282.00
		Female	100	197	301.00
		Total	197	232	286.00
Absenteeism rate (AR) Total absent days / total working days		Male	0.01	0.01	0.01
		Female	0.02	0.02	0.03
		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): 50,199.5 hours
(2)Unpaid leave (includes family care leave): 27,160 hours
(3)Work injury leave: 17,921 hours
(4)Total work hours: 7,699,200 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.



TGI even organizes annual competitions where factory sites that report zero injuries for the year are evaluated using environmental safety indicators and commended with Awards of Exceptional Performance / Excellence / Achievement, presented personally by the Chairman/CEO.

TGI’s ten work safety principles

01

“People” are the key to successful safety and health management.

02

All injuries and occupational illnesses can be prevented.

03

Every employee has the responsibility to prevent possible injuries and diseases.

04

Respect for safety is part of our employment conditions, and every employee has to be held accountable for work safety.

05

Work safety training is the foundation for creating a safe work environment

06

Ongoing work safety audits are necessary.

07

All safety defects must be corrected immediately.

08

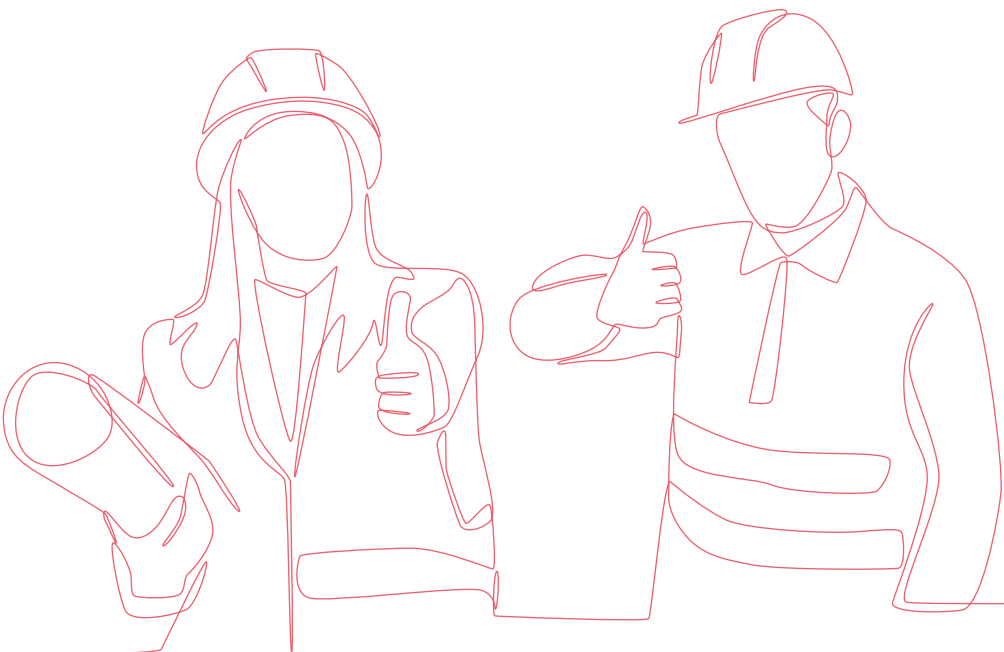
Anticipation for possible accidents is just as important as investigating accidents that have already occurred.

09

Safety after work is just as important as safety during work.

10

Preventing work injuries yields financial benefits.



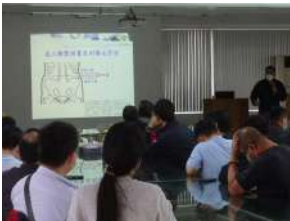
Taichung Factory hosts factory meetings every Monday to review work safety incidents of the previous week. The department where an incident had occurred is required to present a report along with improvement measures to all department heads present at the meeting, while the Work Safety Section and other 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 - 2023

Factory	Course name	Number of Events	Enrollment count
Hsinchu Factory	General safety and health training	Once per department each year	995
	Reading the health checkup report	4	386
Taichung Factory	Care for high blood glucose and kidney health	1	40
	Raising workers’ safety awareness	29	400
Changpin Factory	Worker safety training	6	269
	Health promotion seminar	1	29



“Reading the health checkup report” - Taichung Factory



“Worker safety training” - Changpin Factory



“Health promotion seminar - Care for high blood glucose and kidney health” - Taichung Factory

/// Labor Safety Inspection and Legal Compliance

TGI has established environmental, safety, and health audit management regulations. Internal audits of the environmental, safety, and health management system are conducted annually, with audit teams composed of members from various units performing mutual inspections. Additionally, an external audit is conducted once a year to ensure that Taiwan Glass’s environmental, safety, and health management system operates effectively and smoothly.

There were no risks of forced or compulsory labor in any of TGI’s internal operations, and employment terms 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 2023. The list of relevant inspections in 2023 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
Taoyuan Factory	Rules on Occupational Safety and Health Facilities	100,000	Tracing wheel and transmission wheel that form part of the blade component of the felt loom were not shielded or guarded, which posed a risk of jamming.	Protective shields have been applied to the tracing wheel and transmission wheel of the blade component.
	Rules on Occupational Safety and Health Facilities	100,000	The IN-LINE CS Chopper was not shielded, which posed a risk of jamming.	Protective shields have been applied to the transmission component of the Chopper.
	Labor Standards Act	50,000	Two of the workers had worked overtime for more than 46 hours a month.	Manpower has been reallocated from other departments to provide support, and actions are being taken to improve recruitment efficiency.
Taichung Factory	Occupational Safety and Health Act	100,000	When eliminating the malfunction of the glass cutter, one of the employees had a right ring finger caught in the gear, causing injury that required inpatient treatment.	The factory has since organized training on the prevention of jamming hazard, and explained to workers about the possible dangers when using the cutter as well as the precautions to take.
	Occupational Safety and Health Act	100,000	When moving glass panels to the recycling bin, an employee accidentally knocked into the edge of a glass, and the shards cut parts of the arm that were exposed and not covered by protective gear, causing a severed tendon that required inpatient treatment.	<ol style="list-style-type: none">1. The factory has since organized training on flat glass operations as well as the necessary precautions.2. Enhanced safety training has been implemented for new recruits and night shift workers involved in other operations across all departments.3. The factory now requires all workers to wear extended arm gear and has tightened supervision on proper use of gear.

/// Employee Health Promotion and Management

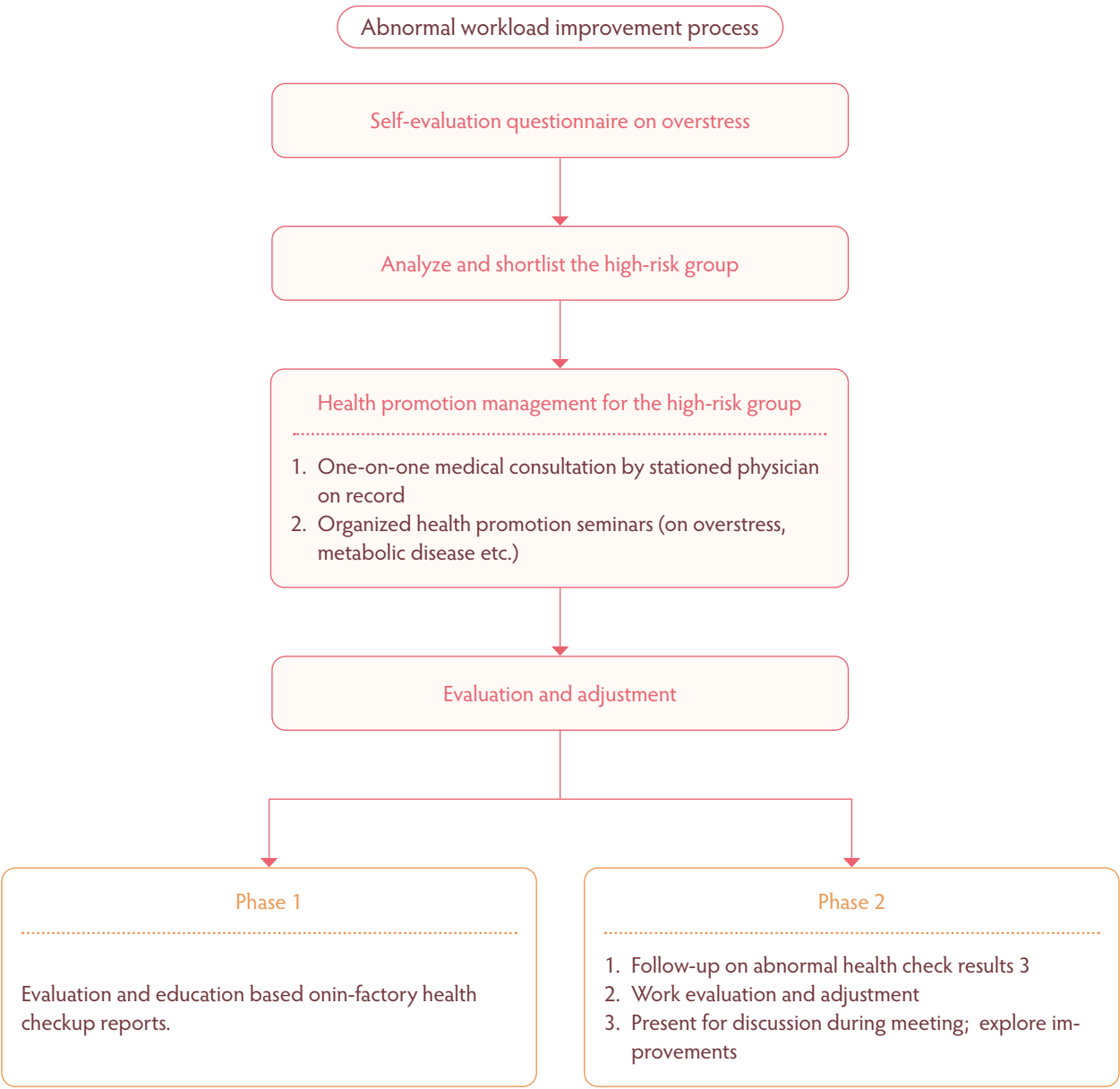
Health Risk Issues	Amount of Impact	Control Measures	Actual Results
Employee Health	High Risk	<ol style="list-style-type: none">1. Consultation services by on-site doctors and nurses.2. Provide sphygmomanometers for colleagues to measure and monitor their blood pressure.3. Health check items that are better than the ones stipulated in laws and regulations.4. Management of the health of new and in-service employees by level.5. Sports Club Subsidies.	<ol style="list-style-type: none">1. 94 health service sessions were organized across factories and a total of 397 consultations were completed.2. TGI organized an annual health checkup that covered 18 more tests than the legal requirement, such as uric acid, blood urea nitrogen, glomerular filtration rate, corpuscular volume etc. The Company also collaborated with hospitals to provide more favorable health check packages that employees may purchase as needed.3. Passed the “Healthy Workplace Certification” by the Ministry of Health and Welfare Health Promotion Administration.
Workplace Safety	Moderate Risk	<ol style="list-style-type: none">1. Implement the Four Major Programs for Occupational Safety2. Regularly hold occupational safety and health committee meetings.3. Set up AED first aid equipment.4. Fingerprint identification system controls the access of Company personnel.5. The office area, entrances and exits of passageways are well illuminated.6. Security guards are present at entrances to control personnel access.7. Handle occupational safety and health education and training for new and in-service employees	<ol style="list-style-type: none">1. The implementation rate of the Four Major Programs for Occupational Safety is 100%.2. Occupational safety and health committee meetings were held as scheduled.3. Employees, customers, and firms abide the Plant’s access control measures.4. There were no incidents of intrusion or injury.5. Occupational Health and Safety training for new recruits and existing employees received a total of 3,254 enrollments and delivered 7,322 training hours in 2023.
Maternity Health Protection	Moderate Risk	<ol style="list-style-type: none">1. Set up a feeding room for colleagues to use.2. Provide maternity leaves, accompanying prenatal visit leaves and paternity leaves, prenatal visit leaves, and breastfeeding leaves.3. Application for unpaid parental leave.	<ol style="list-style-type: none">1. The rate of reinstatement without pay for parental leave is 80.65%.2. There were 18 accompanying paternity leaves and a total of 104 hours of leave.3. Passed the “Excellent Breastfeeding Room Certification” by the Taipei City Government Department of Health.

Workers’ health service

Having recognized employees as “the greatest advantage,” TGI has established health centers across all factory sites and staffed them with professional nurses and contract physicians specializing in occupational health. These health centers are responsible for promoting employee care, including health care, special protection, and health promotion among other health management solutions. By catering for practical medical requirements and risk management, these health centers contribute persistently to the prevention of occupational hazard and disease and the promotion of employees’ physical and mental health.

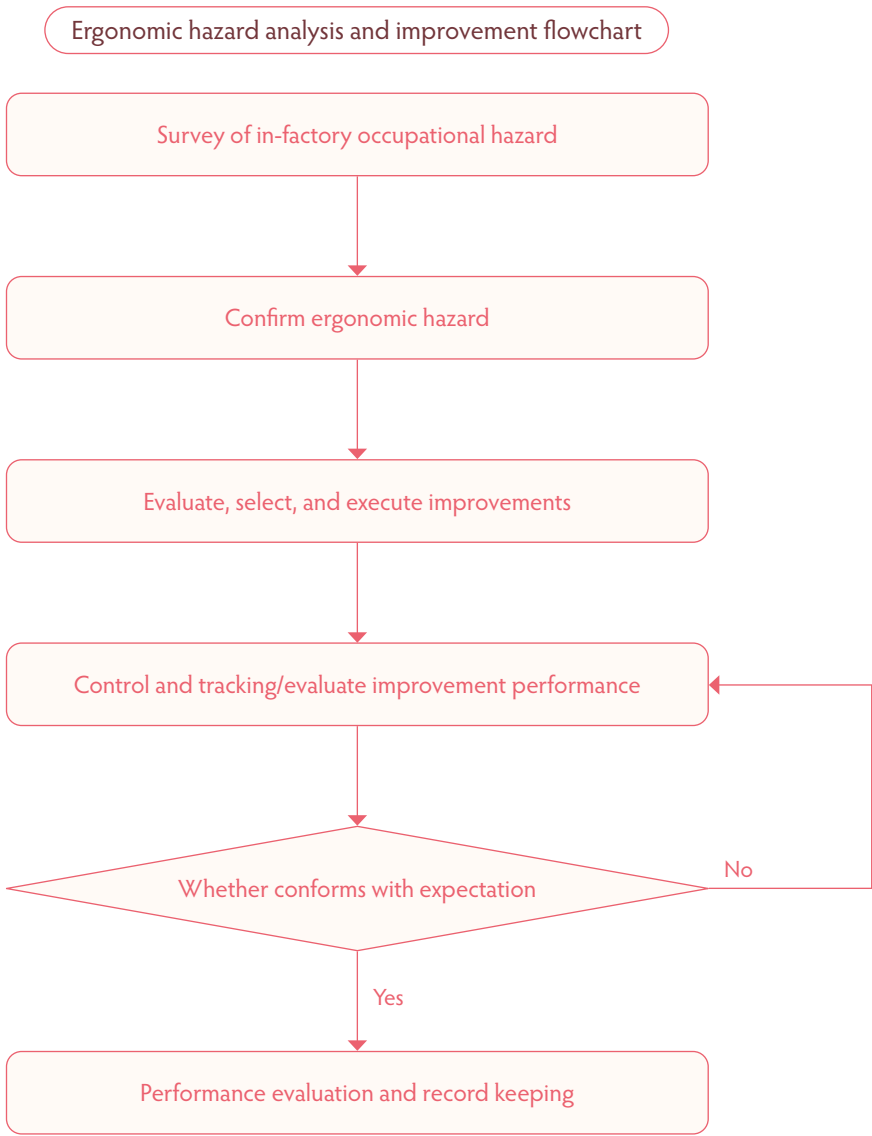
Overstress-induced disease prevention program

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.



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 stationed physician and nurse accompanied the head of Custom Cutting Section to the operation site, where they observed how workers of the Custom Cutting Section handled finished glass products.
- ▶ The height of the work bench that workers use to move finished glass products is above waist level and below shoulder level, which is within the range of ergonomic safety. Workers have ample room to handle finished glass products with proper posture. Finished glass products that weight 10kg and above are moved by a team of two or more. The work still requires repetitive use of force, and prevention of ergonomic hazard is deemed essential.

6

Inclusion and Social Care

6.1 Social engagement	185
6.2 Community engagement	189

Social Care Performance of 2023



2,933 beneficiaries
NT\$33.45 million

Since 2000, TGI Cultural and Educational Foundation has rewarded a total of 2,933 college students and paid NT\$33.45 million in scholarship



120 individuals
NT\$10,000 each

A total of 120 students received scholarship of NT\$10,000 each in 2023



NT\$3.7 million

TGI made NT\$3.7 million in social donations in 2023



35 bags of blood donation

TGI organized one blood donation event and donated 35 bags of blood

6.1

Social engagement

To commemorate its 25th anniversary, TGI donated to the founding of TGI Cultural and Educational Foundation in 1989. The foundation was established with the mission to reward young students for studying and to support cultural and art businesses. In addition to sponsoring art and cultural activities, the foundation has rewarded a total of 2,933 college students and paid NT\$33.45 million in scholarship since 2000.

In 2018, “Xue Xue Foundation” invited TGI Cultural and Educational Foundation to assist in the organization of Zodiac - Scholarship Artist Exhibition, for which it received “Regular Award - Bronze” in the 14th “Arts & Business Awards” in 2019 from the Ministry of Culture.

“Arts & Business Awards” is an event organized by the Ministry of Culture in accordance with “Regulations on Subsidizing and Rewarding Art and Cultural Enterprises by Ministry of Culture,” a law created under the “Culture and the Arts Reward and Promotion Act.” The event is intended to commend businesses, organizations, or individuals for supporting cultural and art enterprises, and it presents two different awards: a “Regular Award” and a “Special Award” distinguished by the amount and nature of sponsorship. With this commendation, TGI Cultural and Educational Foundation hopes to inspire businesses toward supporting cultural and art activities, and make culture a part of the nation’s soft power.

TGI is dedicated to supporting social development through action. This award has been an affirmation of our efforts and will provide us with the motivation to make further social contributions in the future. Founder Lin, Yu-Chia encourages all sponsored students to learn, grow, and develop a sense of honor and responsibility, and looks forward to seeing the donations used in the best interest of the nation, the society, and the individual.



Zodiac Works Area

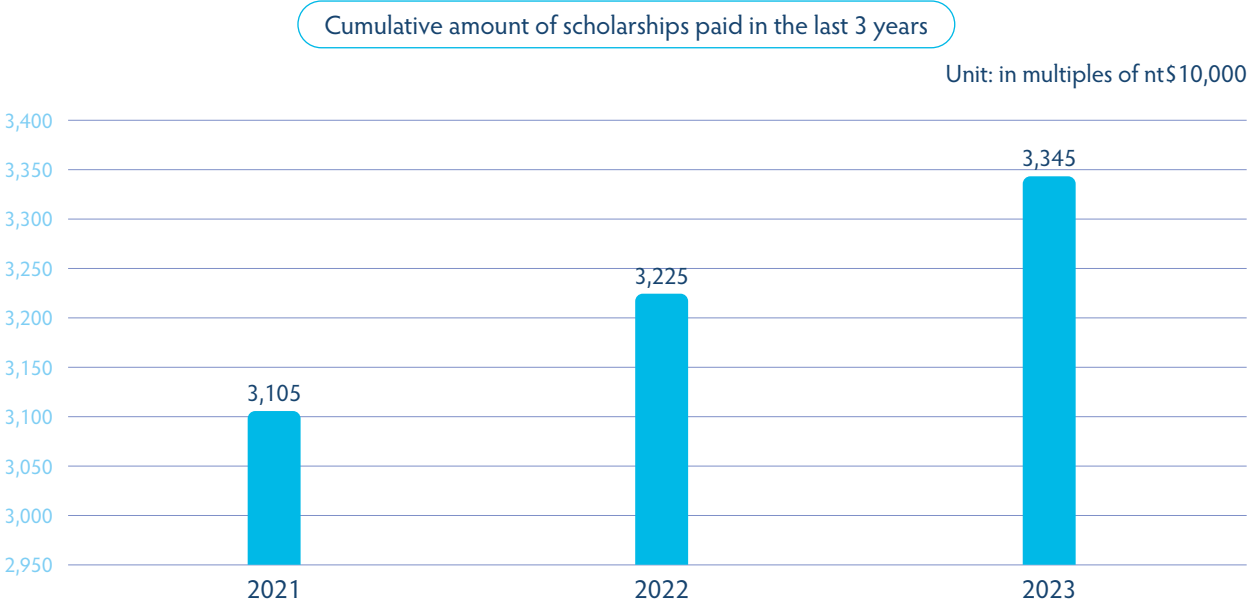


Arts & Business Awards trophy


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

Year	Event	Venue	Details
2023	Payment of scholarship/ tuition aid	Taipei City	A total of 120 students received scholarship of NT\$10,000 each
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.

Year	Event	Venue	Details
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.
2012	Payment of scholarship/ tuition aid	Taipei City	A total of 196 students received scholarship of NT\$10,000 each
	Art exhibition	Taipei City	Sponsored Álvaro Siza: The Beauty 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	Sponsored Álvaro Siza: The Beauty 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.



Three main emphases of TGI Cultural and Educational Foundation




Technology education

01

“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

02

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

03

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 - 2023

Item	Name	Amount (NTD)
1	2023 Taiwan Glass Taifong Open	NT\$1,200,000
2	SanCode Foundation - The 2nd SanCode Technology, Art, and Culture Awards	NT\$500,000
3	Scholarships	NT\$1,200,000
4	2023 Taiwan Sustainability Education Award (TAISE)	NT\$500,000
5	Taiwan Institute for Sustainable Energy - Award ceremony of 2023 Global Corporate Sustainability Forum	NT\$300,000
Total donations - 2023		NT\$3.7 million

Note: Items (1), (2), and (3) were made by TGI Cultural and Educational Foundation, whereas items (4) and (5) were made by Taiwan Glass (TGI) Industry Corporation.

Taiwan Glass Taifong Open

TGI Group and TaiFong Golf Club jointly organized Taiwan Glass Taifong Open in 2023, and expanded the competition to an Asia tour for the first time. TGI has always sponsored and supported golf in Taiwan with the hope of providing Taiwanese talents an opportunity to compete in an international setting where they can accumulate experience, score points, and climb up in world ranking throughout their careers.

In addition to increasing overall significance of the competition, TaiFong Golf Club continues to make improvements to its golf course including facilities, fairway, and green. In 2022, TaiFong Golf Club was named Best 10 International Clubhouses by Golf Digest for its aesthetic design, comfort, architecture, and interesting blend of Taiwan’s local delicacies and lifestyle. TaiFong is dedicated to binging golfers the best environment, and hopes to see Taiwanese golfers shine in the global arena.



Participation and support for TAISE

TAISE is an event organized by Taiwan Institute for Sustainable Energy that encourages elementary schools to commit to sustainability education and make sustainability a part of 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.



6.2 Community engagement

For many years, TGI has cared for the sustainability of the environment, prioritized recruitment of local residents, contributed to local community development, and engaged locals in active communication. The Headquarters organizes social care and environmental actions as means to convey our philosophy. We place great emphasis on our relationship with the local community and have long been committed to building a mutually beneficial relationship with locals. In an attempt to give back to the local community and improve corporate image, we have taken the initiative to create a safe and comfortable work environment for our employees and encourage them to take part in community environment projects with the hope of spreading our green vision to others. We also support non-profit organizations within the community by offering TGI's products as a form of sponsorship.

Engagement with external organizations

Assisting Taichung Veterans General Hospital with glass upgrades for the connecting bridge

The connecting bridge used to have glass panels for railing that only covered the lower part of the opening, leaving the upper part unshielded. As a result, patients and hospital staff often had to endure strong wind, rain, and harsh weather when traveling between buildings through the bridge. In this remodeling, the hospital used TGI's high-tensile LamiPlus® Structure sandwich glass to greatly increase the height and width of individual glass panels, so that patients and hospital staff are shielded from wind and rain and may have a more expansive view of the surroundings. Overall, this installation has made the bridge more joyful and safe to walk on. The glass upgrade for the connecting bridge of Taichung Veterans General Hospital was completed in 2023, and the bridge has since been commissioned.



Blood donation

TGI advocates the idea that "Blood Donation Saves Lives" and encourages employees to donate blood as a form of charity and a way to give back to the society.

Blood donation event by Changpin Factory

Changpin Factory invited employees to roll up their sleeves and donate blood for society's wellbeing. Employees of Changpin Factory demonstrated unrivaled passion and contribution in 2023, donating 35 bags of blood in total.



Coastal cleanup

As one of the ESG partners, Hsinchu Factory participated in Coca-Cola's coastal cleanup event

In 2023, Hsinchu Factory responded to the invitation of Coca-Cola, one of its customers. It took part in the "Partner for future" coastal cleanup event, where it contributed to the cleanliness and sustainability of the ocean environment.

Three employees from Ta's Hsinchu plant participated in a beach cleanup event, during which a total of 796 kg of trash was collected.



Coastal cleanup by Changpin Factory

Changpin Factory organized a coastal cleanup event to clean up beaches near the Changhua area, and employees were encouraged to bring family members to this meaningful event. After the cleanup, the participants gathered for a group meal, during which they bonded with each other.

The coastal cleanup event saw participation from approximately 60 employees and family members, and cleared 387.48 kg of waste from the ocean.



Community investment

Hsinchu City Water Environment Patrol Team

In 2023, TGI's Hsinchu Factory continually participated in the Hsinchu City Water Environment Patrol Team and sponsored the Patrol Team with NT\$ 60,000 in supplies, for which Hsinchu City Government issued a special certificate of appreciation to the Company. Factory employees had voluntarily committed to maintaining the local environment through monetary contributions and action. Over the course of their sustainability efforts, they gained a better understanding of the local environment and took pride in being a part of it.



Hsinchu City neighborhood care

Employees of Hsinchu Factory have volunteered themselves to clean up streets within Puqian Li on a monthly basis for the cleanliness of the neighborhood. Each monthly cleanup service involved 3 employees, and a total of 36 volunteers took part in this event in 2023. Through this program, the Company was able to insert itself as a member of the community and work together to contribute to the local environment.



Appendices

Appendix 1 GRI Standards

The following content has passed the assurance of an independent third party; outcome of the assurance is explained in Appendix 5 - Independent Assurance Report. °

" * " denotes material topic; " ● " denotes external assurance.

Declaration on the application of GRI Standards	The 2023 sustainability report has been prepared in accordance with GRI Standards; the data covers the period from January 1 to December 31, 2023.
GRI version	GRI 1: Foundation 2021
Applicable GRI Industry Standards	None

GRI 2

Indicator	Disclosures	Corresponding chapter	External assurance	Page
Organization and reporting				
GRI 2-1	Information on the organization	About the report 2.1 About TGI	●	3 41
GRI 2-2	Entities included in the organization's sustainability reporting	About the report 2.1 About TGI	●	3 41
GRI 2-3	Reporting period, frequency and contact point	About the report	●	3
GRI 2-4	Restatements of information	No part of current year's report was restated	●	N/A
GRI 2-5	External assurance	Appendix 4: Assurance report	●	204
Activities and workers				
GRI 2-6	Activities, value chain and other business relationships	1.2 Stakeholder communication and identification of material issues	●	19
		2.1 About TGI		41
		3.1 TGI products		85
		3.5 Sustainable Supply Chain		107
		4.1 Sustainable Environment Strategy		115
GRI 2-7	Employees	4.3 Green production management		132
		5.1 Human resources and welfare	●	155
GRI 2-8	Non-employee workers	5.1 Human resources and welfare	●	155
Governance				
GRI 2-9	Governance structure and composition	2.2 Integrity of TGI	●	54
GRI 2-10	Nomination and selection of the highest governance body	2.2 Integrity of TGI	●	54
GRI 2-11	Chair of the highest governance body	2.2 Integrity TGI	●	54

Maintenance of public toilet in Hsinchu City

Hsinchu Factory took the initiative to maintain the public toilet located near Feng An Temple in Hsinchu City for a period of 3 years from November 1, 2021 until October 31, 2024, thereby contributing to the cleanliness of the community's place of worship.



Maintenance of green belt in Taoyuan City

Taoyuan Factory made the commitment to maintain the green belt of the industrial zone for a period of 5 years from January 1, 2019 until December 31, 2023, which can be renewed upon expiry if agreed between the two parties. The maintenance applies to land lot No. 124, Sub-section 4, Guanyin Industrial Zone Section, Guanyin District, Taoyuan City. Employees of Taoyuan Factory have committed themselves to watering the vegetation 2-3 times a week as well as quarterly branch trimming, regular leaf clearing, weeding, fertilization, pest control, and erection of supporting braces in this 4,001 square meters of land. Together, they contribute to the cleanliness and beautification of the green belt.

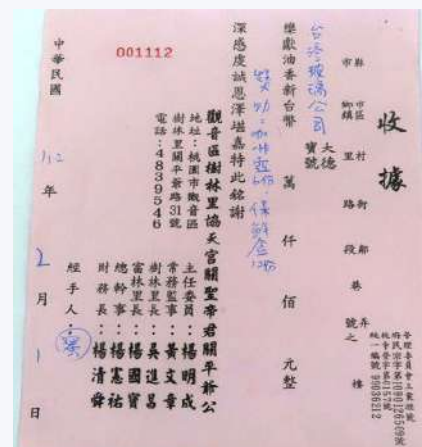


Woven shade net over the windbreak

Sponsoring of community Yuanxiao/Mid-autumn celebration

TGI's Taoyuan Factory is located in Shulin Li of Guanyin District, and was invited to the "Yuanxiao Celebration" organized by the local Sie Tian Temple in 2023.

In sponsorship of this event, Taoyuan Factory offered six 960cc coffee pots and twelve cylinder food containers to be given out as prizes for the lucky draw while serving as an indication of the prosperity and growth of the community.



Indicator	Disclosures	Corresponding chapter	External assurance	Page
GRI 2-12	Role of the highest governance body in overseeing the management of impact	1.2 Stakeholder communication and identification of material issues 2.2 Integrity TGI	●	19 54
GRI 2-13	Delegation of responsibility for managing impacts	2.2 Integrity TGI	●	54
GRI 2-14	Role of the highest governance body in sustainability reporting	About the report 1.1 TGI Sustainable Management	●	3 11
GRI 2-15	Conflicts of interest	2.2 Integrity TGI	●	54
GRI 2-16	Communication of critical concerns	2.2 Integrity TGI	●	54
GRI 2-17	Collective knowledge of highest governance body	2.2 Integrity TGI	●	54
GRI 2-18	Evaluation of the performance of the highest governance body	2.2 Integrity TGI	●	54
GRI 2-19	Remuneration policies	2.2 Integrity TGI	●	54
GRI 2-20	Process for determining remuneration	2.2 Integrity of TGI 5.1 Human resources and welfare	●	54 155
GRI 2-21	Annual total compensation ratio	Not disclosed due to confidentiality	●	N/A
Strategy, policies and practices				
GRI 2-22	Statement on sustainable development strategy	Message from the Chairman	●	5
GRI 2-23	Policy commitments	1.1 TGI Sustainable Management	●	11
GRI 2-24	Embedding policy commitments	1.1 TGI Sustainable Management	●	11
GRI 2-25	Processes to remediate negative impacts	2.2 Integrity TGI	●	54
GRI 2-26	Mechanisms for seeking advice and raising concerns	2.2 Integrity TGI	●	54
GRI 2-27	Legal Compliance	2.3 Risk Management 3.1 TGI products 4.1 Sustainable management strategy 5.3 Occupational Safety and Health	●	67 85 115 170
GRI 2-28	Membership of associations	2.1 About TGI	●	41
Stakeholder Engagement				
GRI 2-29	Approach to stakeholder engagement	1.2 Stakeholder communication and identification of material issues	●	19
GRI 2-30	Collective bargaining agreements	5.1 Human resources and welfare	●	155

Topic-specific GRI standards

*Material issues

GRI category/ topic	Serial No.	GRI indicator	Corresponding chapter	External assurance	Page
GRI 3 : Material topic 2021	3-1	Process to determine material topics	1.2 Stakeholder communication and identification of material issues		19
	3-2	List of material topics	1.2 Stakeholder communication and identification of material issues		19
	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
Governance					
Economic performance*	GRI 3	Material topic	1.2 Stakeholder communication and identification of material issues		19
	201-1	Direct economic value generated and distributed	2.2 Integrity of TGI		54
	201-2	Financial implications and other risks and opportunities due to climate change	4.4 Climate action		143
Market presence	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	5.1 Talent Structure and Benefits		155
Procurement impacts	204-1	Proportion of spending on local suppliers	3.5 Sustainable supply chain		107
Anti-corruption	205-3	Confirmed incidents of corruption and actions taken	2.2 Integrity of TGI		54
Anti-competition	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	3.1 TGI products	●	85
Taxation	207-1	Approach to tax	2.1 About TGI		41
Environmental					
Materials*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	301-1	Materials used by weight or volume	4.2 Energy and resource management		118
	301-2	Percentage of renewable materials used	4.2 Energy and resource management		118
Energy*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	302-1	Energy consumption outside of the organization Energy intensity	4.2 Energy and resource management		118
	302-3	Energy intensity	4.2 Energy and resource management		118
	302-4	Reduction of energy consumption	4.2 Energy and resource management		118
	302-5	Reductions in energy requirements of products and services	4.2 Energy and resource management		118
Water and effluent*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19

GRI category/ topic	Serial No.	GRI indicator	Corresponding chapter	External assurance	Page
Water and effluent*	303-2	Management of significant waste-related impacts	4.3 Green production management	●	132
	303-3	Water withdrawal	4.3 Green production management		118
	303-4	Water discharge	4.3 Green production management		118
	303-5	Water consumption	4.3 Green production management		118
Biodiversity	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	1.2 Stakeholder communication and identification of material issues		115
Emissions*	3-3	Management of material topics	4.2 Energy and resource management		19
	305-1	Direct (Scope 1) GHG emissions	4.2 Energy and resource management		118
	305-2	Energy indirect (Scope 2) GHG emissions	4.2 Energy and resource management		118
	305-4	GHG emissions intensity	4.2 Energy and resource management		118
	305-5	Reduction of GHG emissions	4.2 Energy and resource management		118
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	4.3 Green production management		132
Waste*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	306-1	Waste generated and significant waste-related impacts	4.3 Green production management		132
	306-2	Management of significant waste-related impacts	4.3 Green production management		132
	306-3	Waste generated	4.3 Green production management		132
	306-4	Waste diverted from disposal	4.3 Green production management		132
	306-5	Waste directed to disposal	4.3 Green production management		132
Supplier environmental assessment	308-1	New suppliers that were screened using environmental criteria	3.5 Sustainable supply chain		107
	308-2	Negative environmental impacts in the supply chain and actions taken	3.5 Sustainable supply chain		107
Social					
Labor-man- agement relations*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	401-1	New employee hires and employee turnover	5.1 Talent Structure and Benefits	●	155
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	5.1 Talent Structure and Benefits		155
	401-3	Parental leave	5.1 Talent Structure and Benefits		155

GRI category/ topic	Serial No.	GRI indicator	Corresponding chapter	External assurance	Page
Labor/ management relations	402-1	Minimum notice periods regarding operational changes	5.1 Talent Structure and Benefits		155
Occupational Health and Safety*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	403-1	Occupational health and safety management system	5.3 Occupational Safety and Health		170
	403-2	Hazard identification, risk assessment, and incident investigation	5.3 Occupational Safety and Health		170
	403-3	Occupational health services	5.3 Occupational Safety and Health		170
	403-4	Worker participation, consultation, and communication on occupational health and safety	5.3 Occupational Safety and Health		170
	403-5	Worker training on occupational health and safety	5.3 Occupational Safety and Health		170
	403-6	Promotion of worker health	5.3 Occupational Safety and Health		170
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	5.3 Occupational Safety and Health		170
	403-9	Work-related injuries	5.3 Occupational Safety and Health	●	170
	403-10	Work-related ill health	5.3 Occupational Safety and Health		170
Training and education	404-1	Average hours of training per year per employee	5.2 Employee Care & Development		165
	404-2	Programs for upgrading employee skills and transition assistance programs	5.2 Employee Care & Development		165
Diversity and equal oppor- tunity	405-1	Diversity of governance bodies and employees	5.1 Talent Structure and Benefits		155
Forced or compulsory labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	TGI encountered no such incident		N/A

GRI category/ topic	Serial No.	GRI indicator	Corresponding chapter	External assurance	Page
Supplier social assessment	414-1	Selection of new suppliers using social principles	3.5 Sustainable supply chain		107
	414-2	Negative social impacts in the supply chain and actions taken	3.5 Sustainable supply chain		107
Customer health and safety*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	416-1	Assessment of the health and safety impacts of product and service categories	3.1 TGI products	●	85
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	3.1 TGI products		85
Marketing and Labeling*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	417-1	Product and service informa- tion labeling requirements	3.1 TGI products		85
Customer privacy*	3-3	Management of material topics	1.2 Stakeholder communication and identification of material issues		19
	418-1	Substantiated complaints concerning breaches of cus- tomer privacy and losses of customer data	2.3 Risk Management		67
Others					
Product in- novation and green design	Non-GRI Standard indicators		1.2 Stakeholder communication and identification of material issues		19
			3.1 TGI products		85
			3.3 Research and Innovation		99

Appendix 2

Table of Reference to The UN Global Compact

Item No.	Content	Corresponding chapter	Page
1. Human right			
1	Businesses should support and respect the protection of internationally proclaimed human rights	3.5 Sustainable supply chain 5.1 Talent Structure and Benefits	107 155
2	Business should make sure that they are not complicit in human rights abuses	5.1 Talent Structure and Benefits	155
2. Labor			
3	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	5.1 Talent Structure and Benefits	155
4	Elimination of all forms of forced and compulsory labor	CH5 Safe workplace, trust, and growth	153
5	Effective abolition of child labour	5.1 Talent Structure and Benefits	155
6	Elimination of discrimination in respect of employment and occupation	5.1 Talent Structure and Benefits	155
3. Environment			
7	Business should support a precautionary approach to environmental challenges	2.3 Risk Management CH4 Sustainable, energy conser- vation, and green practices	67 113
8	Business should undertake initiatives to promote greater environmental responsibility	CH4 Sustainable, energy conser- vation, and green practices	113
9	Business should encourage the development and diffusion of environmentally friendly technologies	3.1 TGI products 4.2 Energy and resource man- agement 4.3 Green production manage- ment	85 118 132
4. Anti-corruption			
10	Business should take actions to prevent corruptive behaviors, including fraud and bribery	2.2 Integrity TGI	54

Appendix 3

Table of Reference to Standards of Sustainability Accounting Standards Board (SASB)

Topic of disclosure	Indicator code	Category	Disclosure indicator	Corresponding chapter/description	Page No.
Greenhouse gas (GHG) emission	EM-CM-110a.1.	Quantitative	1. Total Scope 1 GHG emission in the world; 2. Percentage of controlled GHG emission in the world.	4.2 Sustainable Resource Management	118
	EM-CM-110a.2.	Quantitative	Long-term and short-term strategies for Scope 1 emission management; description of reduction plans and targets, and analysis of target performance	4.2 Sustainable Resource Management	118
Air quality	EM-CM-120a.1.	Quantitative	Air pollutants include the following: (1) NO _x , (excluding N ₂ O); (2) Sox;x; (3) Suspended solids (PM10); (4) Dioxin/furan; (5) VOCs; (6) PAHs; and (7) Heavy metal.	4.3 Green production management	132
Energy management	EM-CM-130a.1.	Quantitative	1. Total energy consumed;	4.1 Sustainable Environment Strategy	115
			2. Percentage of power drawn from grid; 3. Percentage of alternative energy used; 4. Percentage of renewable energy used.	4.2 Sustainable Resource Management	118
Water management	EM-CM-140a.1.	Quantitative	1. Total water withdrawn; 2. Percentage of water reclaimed; 3. Percentage of high or extremely high water stressed area.	4.2 Sustainable Resource Management *TGI is not located in any high water stressed area.	118
Waste management	EM-CM-150a.1.	Quantitative	1. Volume of waste generated; 2. Percentage of hazardous waste; 3. Percentage of waste recycled.	4.3 Green production management	132
Effect on biodiversity	EM-CM-160a.1.	Qualitative	Describe environmental management policies and practices at active sites	4.1 Sustainable Environment Strategy	115

Topic of disclosure	Indicator code	Category	Disclosure indicator	Corresponding chapter/description	Page No.
Worker health and safety	EM-CM-320a.1.	Quantitative	1. (1) Recordable incidents rate for permanent and contract employees; 2. (2) Frequency of near misses encountered by permanent and contract employees.	5.3 Occupational Safety and Health	170
	EM-CM-320a.2.	Quantitative	Number of reported silicosis	5.3 Occupational Safety and Health *TGI reported no silicosis in 2022	170
Product design and life cycle management	EM-CM-410a.1.	Quantitative	Percentage of certified products that can be supplied to the design and construction of sustainable buildings	3.1 TGI products	85
	EM-CM-410a.2.	Quantitative	Potential demand and market share for products of lower energy, water, and material impact during usage and production	3.1 TGI products	85
Competitive behavior	EM-CM-520a.1.	Quantitative	Total amount of monetary losses as a result of legal proceedings associated with cartel arrangement, price fixing, and anti-trust activities	*TGI encountered no such occurrence in 2022.	N/A
Activity indicators	EM-CM-000.A.	Quantitative	Capacity of main production lines	2.1 About TGI	41

Appendix 4

Climate-related information for TWSE/TPEX listed companies

Item	Current progress
1. Describe how the board of directors and the management exercise supervision and governance over climate-related risks and opportunities.	<p>With regards to the supervision of climate-related risks and opportunities, the Board of Directors is the highest governance unit on climate issues within Taiwan Glass (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 "ESG Committee" formulates medium and long-term sustainable development goals of Taiwan Glass (TGI), and is responsible for integrating the Company's cross-departmental resources, identifying climate issues related to the Company's operations, formulating climate strategies, tracking the achievement of targets, and making unscheduled reports to the Board of Directors.</p> <p>The committee develops strategies and actions to address climate change, focusing on four aspects: "Governance," "Strategy," "Risk Management," and "Metrics and Targets." The aim is to mitigate the impact of climate risks and ensure that the management of climate-related risks and opportunities is effectively implemented within the group's operations.</p>
2. Describe how the climate risks and opportunities identified affect the entity's businesses, strategies, and financial position (short-term, medium-term, and long-term).	<p>The "ESG Committee" will regularly identify climate risks and opportunities, reviewing annually changes in policies, regulations, technology, markets, and reputation concerning transition risks and opportunities. The committee will also periodically assess physical risks, transition risks, and opportunities, and collaborate with various plants to address these issues. It will analyze the potential financial impacts of significant climate risks, develop response and preventive measures, and enhance climate resilience.</p> <p>Regarding climate risks, the company has identified that increased extreme weather events, rising raw material costs, or supply shortages may lead to production scheduling delays. Additionally, stricter environmental regulations and the gradual implementation of carbon pricing mechanisms could result in higher operational costs. On the climate opportunities front, the company is actively improving energy efficiency, developing low-carbon products using recycled materials, and assisting high-risk suppliers in enhancing supply chain stability.</p>
3. State the financial impacts of extreme weather events and transition actions.	<p>Based on TCFD's guidelines on physical risks, transition risks, and climate change opportunities, TGI will set up meetings to have factory managers and department heads work with external consultants to determine the financial impacts of extreme weather events and transition actions, as well as the potential financial and operational impacts of climate change</p> <ol style="list-style-type: none"> Delays to production schedule due to unstable power supply: increased operating costs, possible interruption to operations, and delays in product delivery that result in customers losing confidence in TGI. Imposition of carbon taxes by governments around the world: increased operating costs that impact competitiveness of product pricing. Possible production delays caused by unstable supply/transportation of energy (e.g. natural gas, diesel, heavy oil, and LPG) under extreme weathers: disrupts production activities, puts equipment in idle state, and delays delivery. Order to suspend operations and production due to the government's control on carbon emissions, resulting in production schedule delays or additional costs: some of the equipment used for production are machines that cannot be shutdown; forcing a shutdown may damage these equipment and will reduce revenues. Renewable energy regulations become more stringent in the future, which present additional costs: construction of green power capacity incurs additional operating costs. More stringent environmental regulations result in an increase of environmental protection expenses: increased water charges, carbon taxes, and raw material costs will erode production margin.

Item	Current progress	
4. Describe the procedures undertaken to identify, evaluate, and manage climate risks, and how they are integrated into the risk management system.	Based on the outcomes of the climate change risks and opportunities questionnaire, "ESG Committee" consolidates climate-related risks, opportunities, and management measures for regular review and tracking. Furthermore, the committee reviews how changes in policies, regulations, technologies, markets, and reputation affect transition risks and opportunities on a yearly basis, and regularly reviews the assessment of physical risks, transition risks, and opportunities through the identification of climate risks and opportunities, so that it may coordinate with factories to devise proper responses.	
5. Where scenario analysis is used to evaluate resilience to climate change risk, describe the underlying scenarios, parameters, assumptions, factors, and key financial impacts.	<p>In response to sustainable development and to prevent operational disruptions caused by extreme weather events, the company has implemented climate scenario analysis to assess the risks of extreme weather events at operational sites.</p> <ol style="list-style-type: none"> 1. Flood Risk Analysis for Operational Sites: The company uses the "Representative Concentration Pathways" from the IPCC's Fifth Assessment Report, analyzing the difference in radiative forcing between 2100 and 1750 as an indicator to assess flood risks at operational sites. The RCPs 8.5 scenario is employed, and climate conditions are estimated based on information from the "National Disaster Prevention and Protection Technology Center - Climate Change Disaster Risk Adaptation Platform." 2. Carbon Cost Risk Analysis: The company evaluates future carbon emission trends using three scenarios proposed by the International Energy Agency: the Stated Policies Scenario (STEPS), the Announced Pledges Scenario (APS), and the Net Zero Emissions by 2050 Scenario (NZE). Carbon costs are analyzed based on changes in the price per unit of carbon emissions, using two different carbon pricing scenarios to estimate potential carbon cost levels for TGI up to 2050. 	
6. Where transition plans have been made to manage climate risks, explain plan details and the indicators and goals used for the identification and management of physical risks and transition risks.	Each Taiwan Glass plant will analyze climate risks and opportunities based on the condition of the facilities and describe their management policies. In response to TCFD risk identification results, the company conducts regular supplier evaluations to mitigate production risks caused by raw material shortages and progressively replaces high-energy-consuming equipment based on facility needs. Additionally, Taiwan Glass plans to establish and utilize solar energy, increasing the percentage of renewable energy used each year. The solar energy system was completed by the end of 2022 and began parallel operation in 2023.	
7. Where internal carbon pricing is used as planning tool, explain the pricing basis.	TGI will adopt internal carbon pricing in the future to provide employees with a stronger incentive toward reducing carbon. By setting the good example, TGI hopes to rally industry peers to carbon reduction.	
8. If climate-related goals have been implemented, explain the activities covered, the scope of greenhouse gas emissions, any timeline planned, and the progress made each year. Where carbon offset or renewable energy certificate (REC) is used to accomplish the above goals, explain the source and quantity of carbon credit or the quantity of REC.	According to the "sustainability development roadmap for TWSE/TPEX listed companies" published by the Financial Supervisory Commission in March 2022, the Company has paid-up capital of more than NT\$10 billion, which means that the entity (i.e. the parent company) is subject to phase 1 greenhouse gas survey (to be completed by 2023 and validated by 2024). TGI will observe the guidelines and rules published by the authority and continue monitoring completion greenhouse gas survey and validation.	
9.	Greenhouse gas survey and assurance: Please refer to Table 1-1-1 and Table 1-1-2 for details.	
	Greenhouse Gas Inventory Reduction Targets, Strategies, and Specific Action Plans	4.1 Sustainable Environment Strategy 4.2 Sustainable Resource Management

1-1. Recent Two Years of Company Greenhouse Gas Inventory and Verification

1-1-1. Greenhouse Gas Inventory Information

The company began conducting inventories starting from 2022. For the years 2022 and 2023, both the Headquarters and all plants completed the ISO 14064-1 inventory for Scope 1 and 2. The inventory scope includes the Headquarters and all plants. Data for the Headquarters and Changbin Plant were self-conducted internally. For the Taoyuan Plant, Hsinchu Plant, Taichung Plant, Lukang Plant, and Lukang Flat Glass Plant, due to the requirements from the Environmental Protection Administration, the greenhouse gas emissions data were verified by Taiwan Verification Technology Co., Ltd. (SGS)

		2022		2023	
		Total Emissions (Tons CO ₂ e)	Intensity (Tons CO ₂ e/ Million NTD)	Total Emissions (Tons CO ₂ e)	Intensity (Tons CO ₂ e/ Million NTD)
TGI	Scope 1: Direct Greenhouse Gas Emissions	432,649.13		387,213.56	
	Scope 2: Indirect Greenhouse Gas Emissions	248,448.45		221,766.84	
Total		681,097.58	54.07	608,980.40	49.60

Note 1: Greenhouse Gas Inventory Standard: The company uses the ISO 14064-1 standard published by the International Organization for Standardization (ISO) to conduct greenhouse gas inventories.
Note 2: The intensity of greenhouse gas emissions is calculated based on Taiwan Glass's 2022 revenue of NT\$12,595,543 thousand.

1-1-2. Greenhouse Gas Verification Information

The company began implementing verification starting from 2023. In the disclosure of total greenhouse gas emissions in section 1-1-1, the verification scope for 2022 and 2023 respectively covered 98.5% and 98.3% of the total emissions for each respective year.

	Year	Verification Scope	Verification Agency	Verification Standards	Description of Verification Status
TGI	2022	Taoyuan Plant, Hsinchu Plant, Taichung Plant, Lukang Plant, and Lukang Flat Glass Plant	SGS	ISO 14064-3 reasonable assurance	Unmodified Opinion
	2023	Taoyuan Plant, Hsinchu Plant, Taichung Plant, Lukang Plant, and Lukang Flat Glass Plant	SGS	ISO 14064-3 reasonable assurance	Unmodified Opinion

Appendix 5
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2023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，包括參考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。



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；
- 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



民國一一三年八月三十日

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 2023 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	85	3.1 台玻產品	台玻產品 2023 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 2023 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	141-142	4.3 綠色生產管理-水汙染管理	近三年台玻各廠廢水量、各廠區廢水排放地及相關法規與標準、2023 年各廠排放水監測值	公司統計資料
4	157-158	5.1 人力資源及福利-員工新進率及離職率統計	2023 年員工新進率及離職率統計	公司統計資料
5	176	5.3 職場安全與健康-職業安全管理	2023 年失能傷害頻率、失能傷害嚴重率、缺席率	公司統計資料