

# ch.3 Green Production

3.1 Environmental Management    3.2 Climate Change Mitigation and Adaptation    3.3 Responsible Production

Material Topics of This Chapter	Environmental Policy and Management System Pollution Prevention	Climate Change and Carbon Management Energy Management	Hazardous Substance Management	Responsible Production Green Consumption Circular Economy
<b>Management Approach</b>	Shape a business model that enables harmonious coexistence with nature and internalization of environmental impacts.	Mitigate the impacts on corporate operations from the worsening climate change, and promote effective climate-related management and adaptation measures.	Take full responsibility as a manufacturer to reduce environmental impacts from manufacturing processes and strive to achieve resource circulation.	
<b>Policy and Action</b>	<ul style="list-style-type: none"> <li>Introduce ISO14001 Environmental Management System.</li> <li>Promote the "333 Reduction Plan" and set annual and long-term reduction goals.</li> <li>Promote the "Sustainability Fund" and "Reduction Reward Program" to encourage internal energy conservation proposals.</li> <li>Introduce fully automated intelligent production processes.</li> </ul>	<ul style="list-style-type: none"> <li>Introduce ISO14064 and PAS 2050.</li> <li>Participate in the CDP.</li> <li>Introduce Science-based Targets (SBT) analytical tools to review the connection between current carbon reduction plans and the international climate target.</li> <li>Introduce TCFD framework for climate-related risk identification and scenario analysis.</li> </ul>	<ul style="list-style-type: none"> <li>Introduce IECQ QC 080000 hazardous substance process management certification.</li> <li>Refer to international laws and regulations and publish GIGABYTE "Harmful Chemical Substances Requirements (HCSR)".</li> <li>The treatment of all wastes, exhaust gases, and sewage generated by GIGABYTE complies with local laws and regulations.</li> </ul>	<ul style="list-style-type: none"> <li>Introduce ISO14051 material flow cost accounting.</li> <li>Release the "Product Environmental Reports" to disclose the potential environmental impacts of a product during its life cycle.</li> <li>The local service sites of Bestyield International recover waste electronic products of all brands. The products are repaired, refurbished, and resold to realize the reversed logistics business model of the circular economy. This business model has received BS 8001 certificate.</li> <li>Define a Group product packaging and incoming packaging reduction plan.</li> </ul>
<b>Vision and Goal</b>	<ul style="list-style-type: none"> <li>Reduce carbon emissions by 3% every year, and reduce 50% in 2025 compared to the 2009 base year.</li> <li>Reduce water and waste by 3% every year, reduce water by 20%, and waste by 50% in 2030 compared to the base year 2010.</li> </ul>	<ul style="list-style-type: none"> <li>Continue participating in the CDP to keep improving and urging climate management performance and aim to be scored above the Management Level.</li> </ul>	<ul style="list-style-type: none"> <li>Revise the GIGABYTE HSCR every year according to the latest chemical substances laws and regulations.</li> <li>No major environmental violations (with monetary penalties in excess of NTD 1 million)</li> </ul>	<ul style="list-style-type: none"> <li>Publish Product Environmental Reports of all product lines.</li> <li>Continue to promote the ICT Refurbished Product Certification worldwide, improve service integration capability and make process improvements to boost the cost-effectiveness of the circular economy.</li> <li>Stop using disposable packaging from 2030.</li> </ul>
<b>2022 Major Achievement</b>	<ul style="list-style-type: none"> <li>[ ● ] From 2022 onwards, the scope of greenhouse gas inventory expanded to include the subsidiaries GIGAPIC and Selita Precision at Taipei Silicon Valley Park Offices. Carbon emissions were 6.77% lower than in 2021 and 42.99% lower than the base year.</li> <li>[ ● ] Received 245 proposals through the reduction reward program to date. These translated into annual savings of 6,210 MWh in electricity, 28,622 tonnes of water, and 440 tonnes of waste.</li> <li>[ ● ] Water consumption data included 4F of Headquarters Building B in 2022. Total water consumption was 2.42% lower than in 2021 and 35.17% lower than the base year.</li> <li>[ ● ] Waste production in 2022 was 10.62% lower than in 2021 and 11.99% lower than the base year.</li> </ul>	<ul style="list-style-type: none"> <li>[ ● ] Received A- (Leadership) for the 2022 CDP Climate assessment, A (Leadership) for the 2022 CDP Supplier Engagement Rating (SER), and B (Management) for the 2022 CDP Water Security assessment.</li> <li>[ ● ] Climate scenario analysis was conducted using the transition scenarios IEA B2DS and APS, as well as physical scenarios RCP2.6, RCP4.5, and RCP8.5.</li> </ul>	<ul style="list-style-type: none"> <li>[ ● ] Updated HSCR to version 4.8.</li> <li>[ ● ] No major environmental violations in 2022.</li> </ul>	<ul style="list-style-type: none"> <li>[ ● ] Published environmental reports for 4 main product lines and the accumulative number of published reports to date were 77.</li> <li>[ ● ] Recovered, repaired, and refurbished 687,000 electronic products; the rate of repaired products taken back by consumers was 98.66%.</li> <li>[ ● ] In 2022, the total weight of packaging materials was 5,780.3 metric tons and 60.43% lower than in 2011. 95.1% of the packaging was recyclable.</li> </ul>

[ ● ] Stage objective completed    [ ● ] In progress    [ ○ ] Not yet implemented    [ ● ] Stage objective not yet achieved

### 3.1 Environmental Management

GIGABYTE's environmental management commits to reducing the environmental impact of operations and manufacturing processes as well as protecting the health and safety of our employees. Environmental and hazardous substances management systems such as ISO14001, ISO14064-1, and IECQ QC 080000 are introduced to ensure that all our routine operations and products comply with environmental standards and regulations.

#### 3.1.1 Environmental Management Performance

In terms of environmental management, GIGABYTE sets a clear long-term goal drawn with an aggressive reduction timetable. The "333 Reduction Plan" was set as a short-term goal aiming at reducing carbon emissions, water use, and waste by 3% every year. At the same time, initiatives such as the reduction reward program and green challenges help employees cultivate the habit of energy and water conservation. It also provided motivation to get involved in the development of green and energy-saving products.

(For more information on GIGABYTE environmental and quality management systems, please visit the [GIGABYTE CSR Website](#))

#### 2022 Environmental Resources Input and Output

Input	Output	Reduction Outcomes over the Past 2 Years
<b>Energy<sup>[1]</sup></b> [GJ] <ul style="list-style-type: none"> <li>Purchased electricity: 147,820.19</li> <li>Purchased steam: 5,409.32</li> <li>Gasoline: 232.27</li> <li>Diesel: 852.75</li> <li>LPG: 31.65</li> </ul>	<b>Greenhouse Gas</b> [t-CO <sub>2</sub> e] <ul style="list-style-type: none"> <li>Direct emissions (Scope 1): 627.8059</li> <li>Indirect emissions associated with purchase energy (Scope 2): 27,283.6386</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Increased 1,166.02 t-CO<sub>2</sub>e (+4.05%)</b> in 2021 compared to the previous year Reduced 38.85% compared to the base year 2009</li> <li>▪ <b>Decreased 2,026.50 t-CO<sub>2</sub>e (-6.77%)</b> in 2022 compared to the previous year Reduced 42.99% compared to the base year 2009</li> </ul>
<b>Water Resource</b> [MT] <ul style="list-style-type: none"> <li>Tap water : 252,964</li> </ul>	<b>Effluent</b> [MT] <ul style="list-style-type: none"> <li>Domestic sewage: 202,371</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Decreased 31,948 MT (-10.97%)</b> in 2021 compared to the previous year Reduced 33.56% compared to the base year 2010</li> <li>▪ <b>Decreased 6,270 MT (-2.42%)</b> in 2022 compared to the previous year Reduced 35.17% compared to the base year 2010</li> </ul>
<b>Resource<sup>[2]</sup></b> [MT] <ul style="list-style-type: none"> <li>Plastic: 2,824.34</li> <li>Glass: 778.14</li> <li>Metal: 9,728.19</li> <li>Paper: 5,494.71</li> <li>Other: 1,073.00</li> </ul>	<b>Waste</b> [MT] <ul style="list-style-type: none"> <li>General industrial waste: 2,073.25</li> <li>Hazardous industrial waste: 141.57</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Increased 406.92 MT (+19.65%)</b> in 2021 compared to the previous year Reduced 1.54% compared to the base year 2010</li> <li>▪ <b>Decreased 263.19 (-10.62%)</b> in 2022 compared to the previous year Reduced 11.99% compared to the base year 2010</li> </ul>

[Note 1] The energy conversion factors are based on the location of factories where the energy types were used. The factors of steam, LPG, and gasoline take reference from the data in China, while the factors of diesel and gasoline used in Taiwan bases refer to the Heat Content of Energy Commodities table published by the Bureau of Energy, MOEA.

[Note 2] Input resources include all product packaging as well as the materials used to produce ATX, Micro ATX, and Mini ITX motherboards.

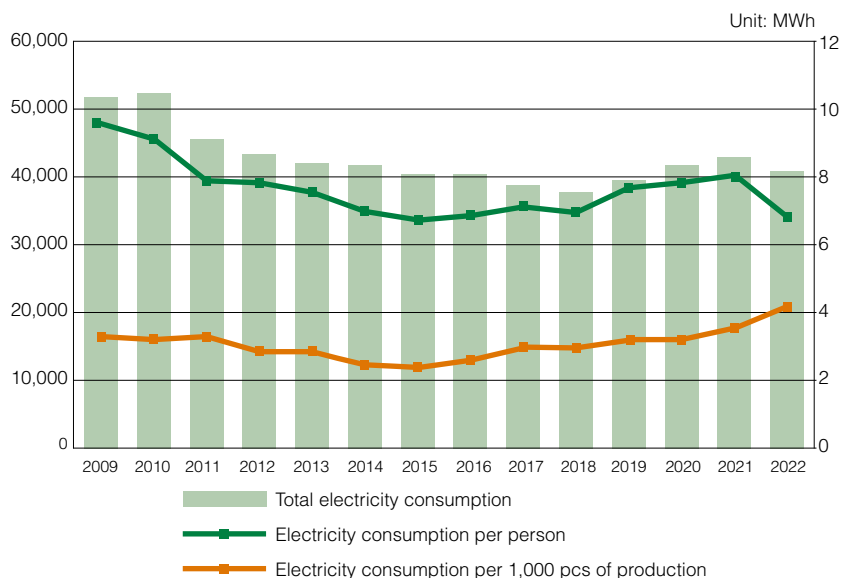
[Note 3] General industrial waste includes domestic waste.

[Note 4] The scope of energy in this table encompassed Headquarters, Taoyuan Nanping Factory, China Dongguan and Ningbo Factorys, as well as the Taipei Silicon Valley Park Offices where the subsidiaries Bestyield International, G-Style, GIGAPIC, and Selita Precision are located; the scope of water resources and resources were Headquarters, Taoyuan Nanping Factory, and China Dongguan and Ningbo Factorys.

### Energy Conservation

Electricity is the main type of energy used by GIGABYTE in our routine operations and production processes. The subsidiaries GIGAPIC and Selita Precision, located at the Taipei Silicon Valley Park Offices, were included in the scope of the GIGABYTE energy inventory for 2022. Total electricity consumption for the year amounted to 41,061.16 MWh, 4.97% lower than in 2021 and 21.01% lower than in 2009. Analysis of electricity consumption attributed to the reduction in electricity consumption in production. A number of energy conservation and carbon reduction projects were implemented by factories during 2022, including optimization of production line configuration and processes, equipment upgrades and development, and introduction of auxiliary tools, all of which helped reduce electricity consumption. Considering both electricity and other energy sources, the intensity of total energy consumption per 1,000 pieces of production in 2022 was 15.8 GJ, and per capita was 25.8 GJ.

#### Electricity Consumption and Intensity Over the Years



#### 2022 Energy Conservation and Emission Reduction Projects

Operation Base	Energy Conservation Project	Electricity Saving (Unit: kWh)	Energy Reduction (Unit: GJ)	Emission Reduction (Unit: t-CO <sub>2</sub> e)
Headquarters	Chiller replacement	20,174	72.63	10.27
	Switched to energy-efficient lighting	1,872	6.74	0.95
Nanping Factory	Introduction of unpowered roller platforms on the production line	4,125	14.85	2.10
	Introduction of automatic screw locking machine for notebook KB and C components	5,928	21.34	3.02
	SMT Reflow fan monitoring system	4,602	16.57	2.34
	Development, introduction, and application of feed alerts	443	1.59	0.23
	Introduction of 1-to-many disc duplicator for downloading of notebook test images	977	3.52	0.50
	Waste reduction for SMT and DIP carrier materials	15,926	57.33	8.11
	Material reduction for SMT common carriers	5,888	21.20	3.00
	Quick-locking jig for cooling modules	870	3.13	0.44
	Reduced wasted electricity from printers and OA equipment on standby	7,474	26.91	3.80
	Dongguan Factory	Introduction of heat pumps with level 1 energy efficiency rating for employee dormitories	9,360	33.70
Introduction of new energy-efficient nitrogen machines		216,000	777.60	173.71
Ningbo Factory	Upgrades to SMT network communications cooling	6,584	23.70	5.22
	Introduction of a drying room	68,104	245.17	53.94
	Optimization of manually soldered components for notebooks to improve energy efficiency	3,488	12.56	2.76
<b>Total</b>		<b>374,575</b>	<b>1,348.47</b>	<b>279.32</b>

[Note 1] The energy types of all energy conservation measures were electricity. The figures are estimated.  
 [Note 2] The measures are different year by year. The estimated electricity savings were compared to the energy consumption of the equipment before improvement.  
 [Note 3] The reduced emissions in Taiwan bases were calculated based on the 2021 electricity emission factor, 0.509 kg-CO<sub>2</sub>e/kWh, announced by the Bureau of Energy, MOEA.  
 [Note 4] Emission reduction at China Dongguan Factory was calculated based on the emission factor of 0.8042 (kg-CO<sub>2</sub>e/kWh) in southern China; as for the China Ningbo Factory, the emission factor of 0.7921 (kg-CO<sub>2</sub>e) for southern China was used.

**Water Resource Conservation**

The manufacturing process of GIGABYTE's products is mainly assembly, which does not consume too much water, and the water sources for basic factory facilities and domestic water are tap water. The water resources management policies are promoted and implemented through water-saving policies, education promotion, and annual performance reporting. Besides, we build rainwater recycling systems on the G-HOME Sustainable Eco-Roof that can supply about half of the water for irrigation every year. In the future, we will continue to look for raw materials with lower water footprints to achieve the water-saving target of the overall product lifecycle.

Regarding wastewater discharge, all GIGABYTE's wastewater is domestic sewage and is legally discharged into underground sewers per local laws and regulations. Thus, it has not caused impacts on the environment and ecology around the business locations.

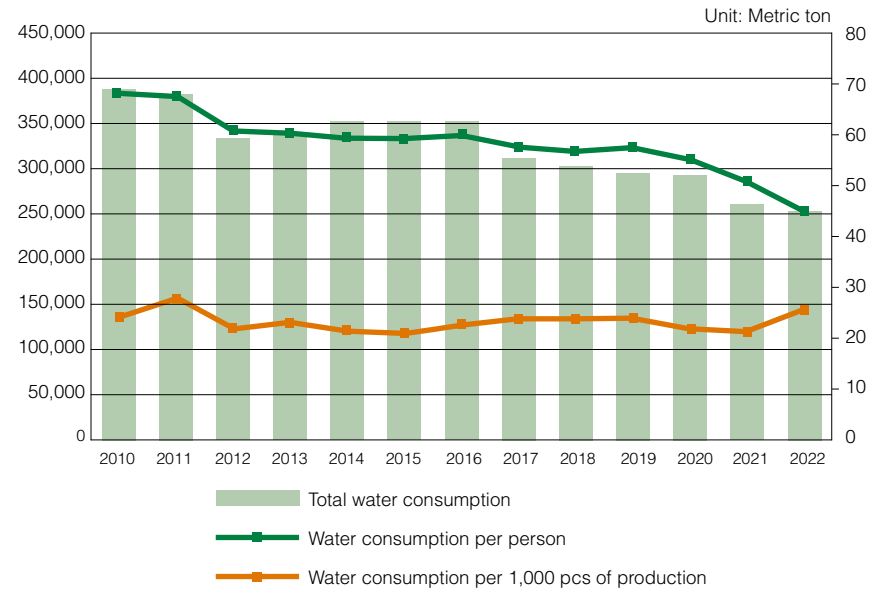
**Water Use in 2022**

Unit: megaliters

Water Resources	Total Water Withdrawal	Total Water Discharge	Total Water Consumption
Distinguish by Source of Water Withdrawal and Discharge			
Surface Water	-	-	50.59
Groundwater	-	-	
Seawater	-	-	
Produced Water	-	-	
Third-Party Water	252.96	202.37	
Distinguish by Water Category			
Fresh Water <sup>[1]</sup>	252.96	202.37	50.59
Other Water <sup>[2]</sup>	-	-	

[Note 1] Freshwater: total dissolved solids ≤ 1,000 mg/L  
 [Note 2] Other Water: total dissolved solids > 1,000 mg/L

**Water Consumption and Intensity Over the Years**



[Note] The scope of water resource inventory included Operation Headquarters, Taoyuan Nanping Factory, China Dongguan Factory, and China Ningbo Factory. Also, 4F of Headquarters Building B was added to the inventory boundary in 2022. Taipei Silicon Valley Park Offices are in a leased office building, so no separate water meter data is available.

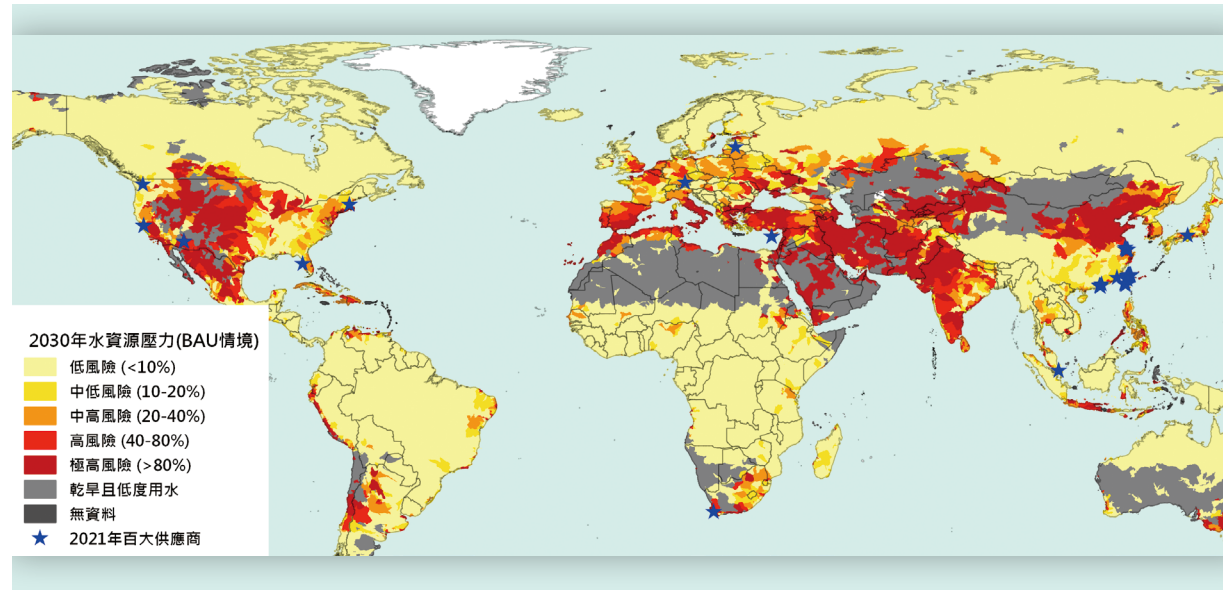


**Water Resource Risk Assessment**

In response to the increased severity of drought and flood risks due to climate change, GIGABYTE employed GIS tools and the water risk assessment tool developed by the World Resource Institute (WRI) for the first time in 2019 to analyze the water stress and risk exposure at our global operating locations and key suppliers. The latest analysis in 2022 found that, under the BAU scenario, most of our top 100 suppliers will face moderate to high water stress by 2030 in the regions they base. Water shortages will also become a problem in the supply chain. GIGABYTE has responded by including water in our climate-related risks for management. We are also communicating the potential risk in water resources to suppliers through our supplier conference.

**Waste Reduction and Pollution Control**

The domestic waste, recyclable waste, and hazardous industrial waste generated by each GIGABYTE's operating base are entrusted to local qualified manufacturers for disposal. In accordance with local waste disposal regulations, the manufacturer clears and transports waste off-site for disposal, and provides a proper disposal receipt for the company's declaration and management of disposal. Audits are also conducted regularly at waste disposal manufacturers to ensure proper waste disposal. The "333 Reduction Plan" sets a target to reduce waste by 3% every year, and we strive to reduce waste by improving the process and introducing circular resource modes. Our ultimate goal is to achieve "Zero Waste and Zero Pollution". Total waste production in 2022 amounted to 2,214.82 metric tons.



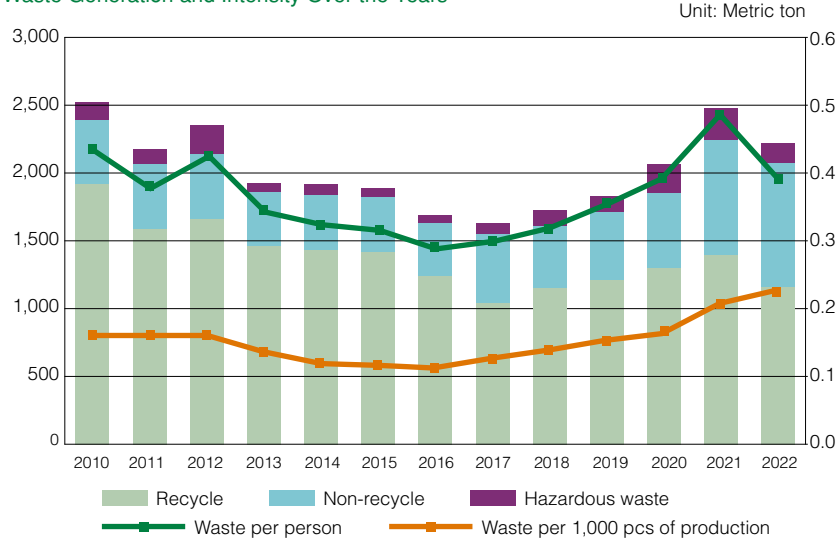
**Total Waste Generation in 2022**

Unit: Metric ton

	General Industrial Waste				Hazardous Industrial Waste			
	Recycle	Landfill	Incineration	Other (including compost)	Recycle	Landfill	Incineration	Other
Taiwan	462.85	0.00	315.88	174.15	13.67	0.00	0.00	32.35
China	689.17	431.21	0.00	0.00	63.13	0.00	32.42	0.00
Total	1,152.01	431.21	315.88	174.15	76.80	0.00	32.42	32.35

In terms of pollution control, since the GIGABYTE process is relatively simple, both industrial waste and hazardous waste of the assembly-based factories are managed by legal contractors. Besides, the Ningbo Factory has installed the related equipment for the disposal of paint exhaust gas and electronic exhaust gas in response to its special manufacturing process to treat and dispose of xylene and non-methane hydrocarbon emissions properly.

● Waste Generation and Intensity Over the Years



[Note] The scope of waste calculations included Headquarters, Taoyuan Nanping Factory, China Dongguan Factory, and China Ningbo Factory. Taipei Silison Valley Park Offices are in a leased office building with centralized waste disposal, so separate waste data is unavailable.

Explanation of 2022 Violations

The competent authorities fined GIGABYTE twice in 2022 due to violations of the Waste Disposal Act. The main reason for this was an increase in the disposal of food boxes at plant cafeterias due to internal epidemic prevention measures that led to anomalies in online reporting. The industrial waste disposal plans were subsequently updated by the competent internal unit based on the needs of plant personnel management and epidemic prevention policy. The changes had been approved by the competent authorities.

● Cumulative Reduction Performance of Proposals

Round	Electricity Savings (MWh per year)	Water Savings (tonnes per year)	Waste Reduction (tonnes per year)	Waste Liquid Reduction (KL per year)	Carbon Reduction (t-CO <sub>2</sub> e per year)
6 <sup>th</sup> Round (Mar 2022)	1,326.15	0	67.65	0	854.08
7 <sup>th</sup> Round (Sep 2022)	893.35	0	0.80	4.42	474.36
Cumulative Total	6,210.36	28,622.20	381.73	58.50	5,801.96

3.1.2 Sustainability Fund and Reduction Reward Program

In 2019, GIGABYTE officially launched the 6-year "Sustainability Fund". The Fund is based on the savings of energy fees every year and invests in 3 aspects: energy conservation at factories, development of resource reduction and low-carbon products, and green projects related to climate change and sustainable development. The program aims to stimulate comprehensively innovative thinking for manufacturing, operation, product strategies, and sustainable development plans to provide incentives and motivations for reduction and strengthen the internal competence of green designing that helps achieve the reduction purpose.

Factory Reduction Reward

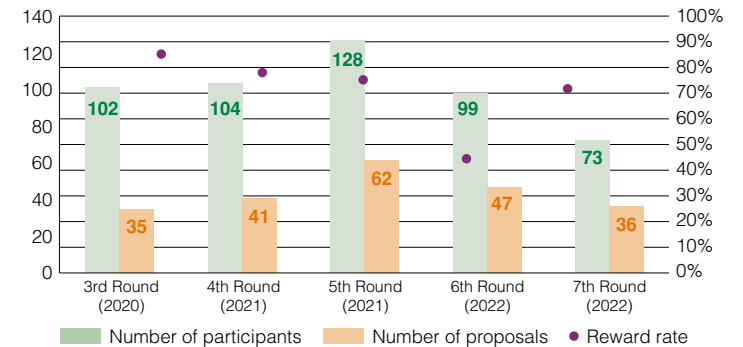
After comparing emissions reduction performance and production output changes in 2021 at each factory, Taoyuan Nanping Factory was qualified to receive the "Factory Reduction Incentives" of the Sustainability Fund in 2022.

Results of Reduction and Low-carbon Product Proposals

Applications for reduction and low-carbon product proposal rewards are accepted twice a year. 7 rounds have been held as of the end of 2022. The review of incentive applications employs the "shadow pricing" concept for internal carbon pricing to quantify actual reduction performance. Carbon was priced at USD 50 per metric ton (currently equivalent to TWD 1,535). Proposals submitted by employees this year included optimization of the production process to boost energy efficiency, improve yields, and reduce the scrapping of high-value parts. Also, some responded to the Group's targets for reducing plastic packaging or recycling waste plastics.

The average approval rate for proposal rewards this year was 71.8%, and we will continue refining the reward scheme in the future. The transparent reward scheme and judging process were also used to provide advice and guidance on the optimization of proposals. We hope this will motivate employees to put environmental awareness into practice in their work and submit proposals as a team. They will not only be rewarded with prize money but will also receive additional learning opportunities.

● Participation Outcomes of Reduction and Low-Carbon Product Proposals



### 3.2 Climate Change Mitigation and Adaptation

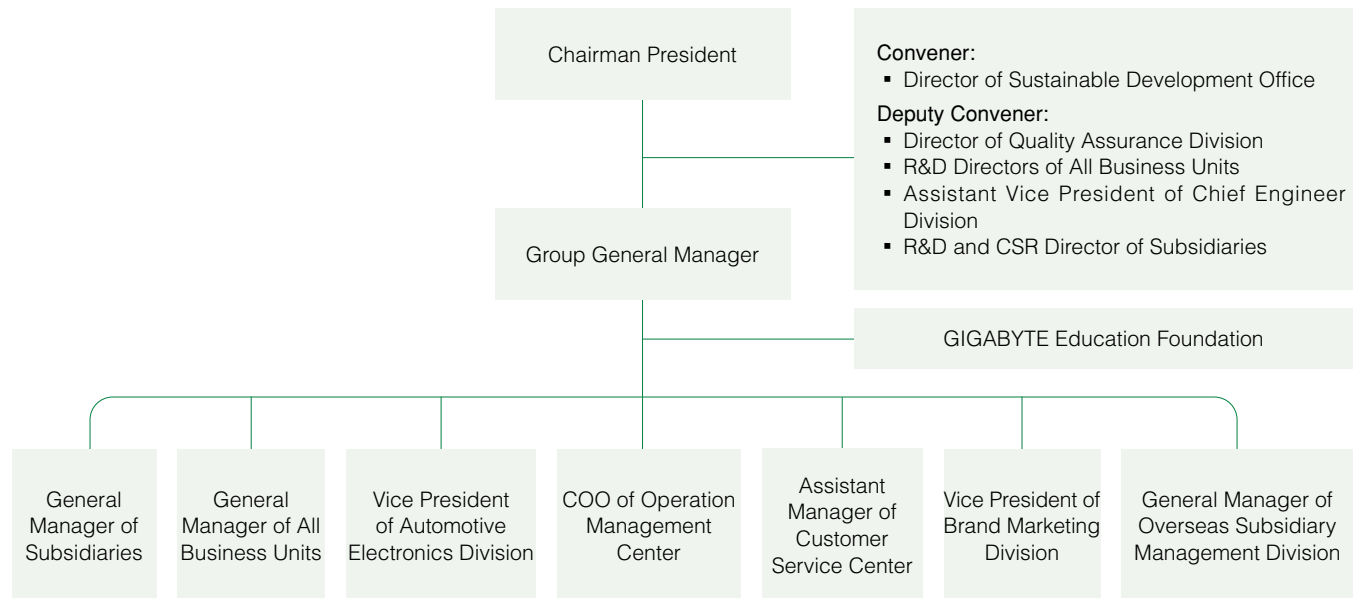
GIGABYTE is committed to mitigating climate change caused by business operations. Visionary management policies and effective response plans were adopted to promote climate-related management and adaptation measures effectively. These not only improve our cost efficiency, boost the green competitiveness of our products, but also fulfill our environmental responsibility on climate change mitigation and adaptation.

#### 3.2.1 Climate Governance Organization

The GIGABYTE Green Sustainable Development Committee was formally established in 2009, serving as the highest management level for sustainable development issues such as climate change. The Company's chairman chairs the Committee. The GIGABYTE "Corporate Social Responsibility Best Practice Principles" also explicitly state that the Board of Directors authorizes the senior management to handle all economic, environmental, and social topics generated by the Company's business activities, and the management should periodically report its handling of such topics to the Board of Directors.

All business groups, factories, and subsidiaries attend a meeting every one to two months, and resolutions are submitted to the chairperson every two weeks. Annual outcomes are reported to the Board of Directors so they can evaluate the company's overall performance at the year's end.

#### ● GIGABYTE Green Sustainable Development Committee



#### Committee Responsibility and Strategies

The meetings look at topics such as the company's overall sustainability strategy with a particular focus on climate-related topics. Everything from climate action on the company level to actual methods of implementation and strategy for expanding to include the supply chain is planned in detail by the Committee. Performance indicators are also defined for monitoring management performance.

#### Climate Governance Strategy

- Define and supervise GIGABYTE's core sustainability policy – Green Action Plan.
- Monitor climate-related national/international trends and propose response strategies.
- Collate energy consumption and greenhouse data from each operating location for analysis of annual performance.
- Disclose GIGABYTE's climate risks and response strategies.



#### Value Chain Cooperation

- Conduct sustainable supplier evaluations every year to collect data on energy and resource conservation as well as identify supplier climate-related risks.
- Host supplier conferences to provide climate-related knowledge, education, and training on sustainability trends and actions.



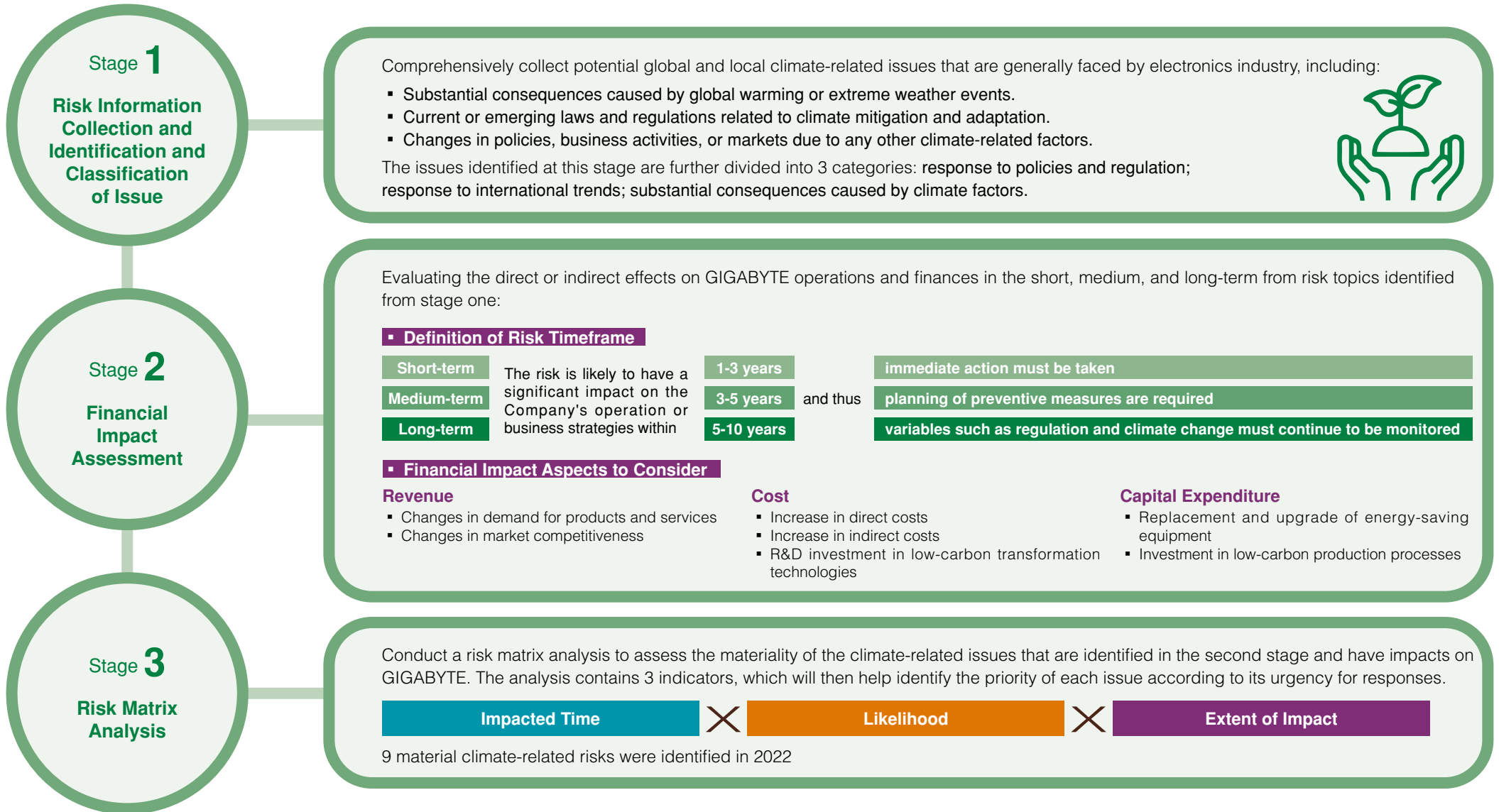
#### Substantive Mitigation and Adaptation Plans

- Set carbon reduction targets. (Please refer to Section 3.2.4 Greenhouse Gas Management Targets and Performance)
- Conduct GHG inventories and third-party verification in accordance with the Greenhouse Gas Protocol and ISO 14064-1 standard every year.
- Develop an internal product carbon footprint calculation platform to analyze each product line's environmental impacts in its lifecycle.
- Cooperate with the government and non-government organizations to continue planting trees worldwide to mitigate global warming.
- Established the GIGABYTE G-HOME Eco-Rooftop to demonstrate greening engineering techniques for old buildings that balance climate adjustment and eco-inclusivity.



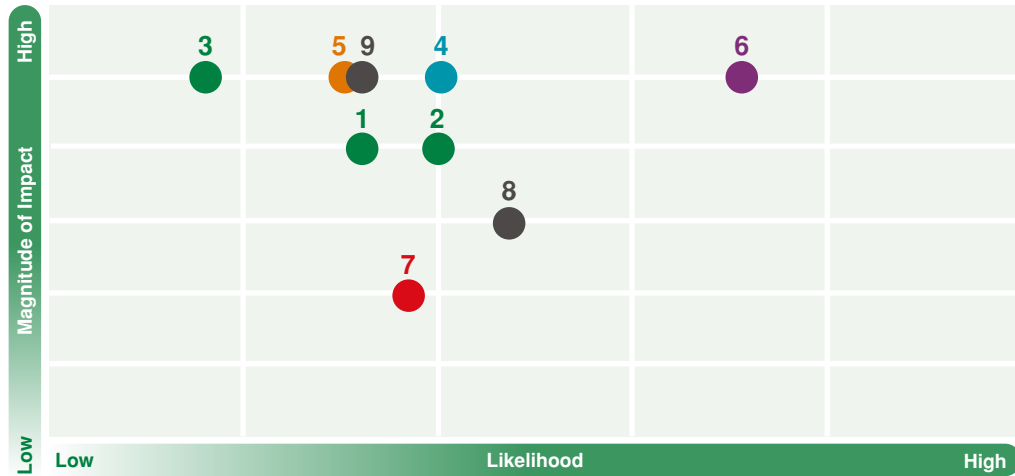
### 3.2.2 Climate Risk Assessment and Management Strategy

GIGABYTE adopted the framework recommended by the Task Force on Climate-related Financial Disclosures (TCFD) to fully understand how climate risks may affect company operations or the opportunities they may create. Climate-related risks and opportunities were then identified. The topics that will significantly affect finances, change business strategies or models or impact the value chain are prioritized for planning response strategies and management measures. Annual reviews and re-assessments are then conducted through climate scenario analysis.





2022 GIGABYTE Climate Risk Matrix



1	→ Tightening of GHG management policy in Taiwan and the upcoming implementation of carbon fees	Policy and Legal
2	→ Energy transformation policy and adjustment of electricity structure leading to fluctuations in electricity prices and new requirements on the use of renewable energy.	Policy and Legal
3	→ Impact on trade costs from activation of carbon pricing mechanisms in the international market.	Policy and Legal
4	→ Product carbon footprint is becoming a key component of market competitiveness and must be reduced from products' life cycle.	Technology
5	→ Rising consumer awareness means product sustainability will become increasingly connected to brand value and consumer loyalty.	Reputation
6	→ Customer requirements on carbon management in the supply chain are becoming increasingly rigorous and have expanded to include product carbon footprint disclosure and carbon reduction targets.	Market
7	→ Increasing severity of extreme climate events, such as typhoons.	Acute
8	→ A drastic increase in the cost of cooling as temperatures continue to rise.	Chronic
9	→ Changing rainfall and climate patterns expose supply chains and operating locations to water risk.	Chronic

Climate Scenario Analysis



	Proactive Mitigation Scenario	Transitional Adaptation Scenario	Business as Usual (BAU)
Transition Scenario	IEA B2DC	IEA APS	None
Physical Scenario	RCP 2.6	RCP 4.5	RCP 8.5
Scenario Description	Accelerate the realization of carbon reduction targets through effective energy management and the use of renewable energy together with the investment of returns in carbon neutrality projects.	Adopt less cost-effective energy conservation and carbon reduction measures to realize carbon reduction targets within a short period of time.	Emissions continue to increase due to stagnation in energy management methods with no carbon reduction or carbon neutrality actions taken.
Analytical Method	1. Assumption: If the magnitude of annual changes in operating status and energy usage are identical. 2. Analytical factors: Extent of climate warming, transformation of energy structure, level of carbon pricing, cost of emission reduction measures.		
<b>Summary of Analytical Outcomes</b>			
2030	<ul style="list-style-type: none"> <li>20% reduction in GHG emissions compared to 2021.</li> <li>Invest approximately NTD68.3 million towards emission reduction measures to realize the emission reduction target.</li> </ul>	Invest approximately NTD110 million towards emission reduction measures to lower the cost of compliance and accelerate emission reduction.	<ul style="list-style-type: none"> <li>Poor carbon reduction performance may result in up to NTD38.5 million in costs associated with carbon fees in Taiwan and international carbon tariffs.</li> <li>60% increase in electricity consumption compared to 2021.</li> <li>Economic losses due to the failure of global climate action will amount to approximately 0.13% of annual revenue.</li> </ul>
2050	<ul style="list-style-type: none"> <li>88% reduction in GHG emissions compared to 2021.</li> <li>Invest approximately NTD270 million towards emission reduction measures to realize the emission reduction target.</li> </ul>	Invest approximately NTD360 million towards carbon reduction measures to lower the cost of compliance and accelerate emission reduction.	<ul style="list-style-type: none"> <li>Poor carbon reduction performance may result in up to NTD380 million in costs associated with carbon fees in Taiwan and international carbon tariffs</li> <li>176% increase in electricity consumption compared to 2021.</li> <li>Economic losses due to the failure of global climate action will affect approximately 2.15% of GIGABYTE's annual revenue.</li> </ul>

### 3.2.3 Identification of Climate-related Risks and Opportunities

Transition Risk	Policy and Legal		
	GHG management policy in Taiwan	Energy structure transition policy	Carbon pricing mechanism in international markets
Risk Description	Taiwan's "Greenhouse Gas Reduction and Management Act" was officially amended in January 2023 to become the "Climate Change Response Act." The target of net zero by 2050 was also made into law, and a carbon levy mechanism will be activated.	The Ministry of Economic Affairs in Taiwan has set a renewable energy target of up to 20% by 2025. The energy transition policy will lead to fluctuations in electricity prices and businesses will be required to adopt more renewable energy.	The EU will implement the Carbon Border Adjustment Mechanism (CBAM) in October 2023 with the ultimate goal of amalgamating CBAM with its carbon trading market mechanism. This will spur the implementation of carbon tariff mechanisms by other international markets.
Likelihood	Likely	Very likely	Likely
Scope of Impact	Business operations	Business operations	Upstream supply chain, business operations, downstream demand chain
Potential Financial Impact	Future inclusion in the control scope will lead to increased operating costs from legal compliance.	<ul style="list-style-type: none"> <li>Production costs will increase by fluctuations in energy prices.</li> <li>Investment in equipment related to energy transition equipment due to regulatory requirements will increase capital expenditure.</li> </ul>	<ul style="list-style-type: none"> <li>International carbon pricing may lead to higher material costs and reduce product gross profits.</li> <li>Operation costs increase to reduce carbon emissions during production in order to comply with the trading regulations.</li> </ul>
Management Strategy	<ul style="list-style-type: none"> <li>The GIGABYTE Green Sustainable Development Committee continues to enhance the environmental management system by developing and supervising the implementation of sustainability strategy.</li> <li>The units responsible for sustainability continue monitoring international regulations and trends, implementing energy conservation projects, replacing outdated equipment, and improving production efficiency at each operating location.</li> <li>Active tracking of domestic and overseas climate legislation to facilitate timely adjustment of climate policy direction to ensure compliance.</li> <li>Introduction of ISO 14064 management system and third-party verification.</li> <li>The "Sustainability Fund" was set up in 2019 to reward units for reduction performance based on savings from energy and resource conservation in order to promote continued internal innovation and improvements to resource utilization.</li> <li>Set up a life cycle assessment system for all products to analyze 16 environmental impact indicators, including carbon footprint for all product series.</li> </ul>		
Derived Opportunities	<ul style="list-style-type: none"> <li>Introduce an internal carbon pricing mechanism to assess the true cost of products and target sources of energy consumption to improve product competitiveness.</li> <li>Continue to optimize the energy efficiency of processes so that production output increases while operating costs are reduced.</li> <li>Develop and apply renewable energy to realize carbon reduction targets, fulfill corporate responsibility for environmental protection, and enhance brand preference.</li> </ul>		

Transition Risk	Technology	Reputation	Market
	Low-carbon products become the mainstay of the market	Change in consumer preferences	Raising of carbon management requirements by customers
Risk Description	The product carbon footprint has become a key part of market competitiveness due to global consensus in order to achieve global climate targets. Nearly 95% of GIGABYTE products are exported, so a low-carbon transition will be essential.	Growing global environmental awareness and international advocacy and regulations continue to push for greater disclosure by businesses. Greater access to environmental information by consumers is in turn having an influence on consumer behavior.	The global climate crisis as well as advocacy on circular economy are boosting awareness of value chain symbiosis. Customers are now setting stricter requirements on carbon management for their upstream supply chain, and those that fail to meet those standards may miss out on orders and opportunities for cooperation.
Likelihood	Very certain	Likely	Very certain
Scope of Impact	Upstream supply chain, business operations	Business operations	Upstream supply chain, business operations
Potential Financial Impact	<ul style="list-style-type: none"> <li>A decrease in demand for products and services leads to decreased revenue.</li> <li>Production and operating costs An increase in order to respond to each nation's environmental regulations on products.</li> </ul>	Revenue may be impacted by a decrease in demand for products and services due to the inability to satisfy consumer preferences.	Revenue may be impacted by a decrease in demand for products and services due to higher standards being set by customers.

Transition Risk	Technology	Reputation	Market
	Low-carbon products become the mainstay of the market	Change in consumer preferences	Raising of carbon management requirements by customers
Management Strategy	<ul style="list-style-type: none"> <li>Allocate part of annual revenue to research and development to develop environmentally friendly products with high performance and low carbon footprint.</li> <li>Promote energy conservation policy at all operating locations and investment in the R&amp;D of energy-efficient and low-carbon products.</li> <li>Set up a "Sustainability Fund" to reward the development of low-carbon products and cultivate the capability to develop products with low environmental impact.</li> <li>Voluntarily inventory Scope 3 greenhouse gas emissions, analyze carbon footprint information for all products, and publicly disclose climate-related information.</li> <li>Strengthen supplier management to lower the environmental impact of the value chain as a whole.</li> </ul>		<ul style="list-style-type: none"> <li>Strive to achieve the "333 Reduction" target of a 3% annual reduction in carbon emissions, water consumption, and waste, and recruit supply chain partners to do the same.</li> <li>Introduce ISO 14064 management system with third-party verification and analyze GHG emissions every year to pinpoint carbon reduction hot spots.</li> <li>Establish a life cycle assessment system for all products to strengthen the ability to analyze and manage environmental data for products and the upstream supply chain.</li> <li>Set up a "Sustainability Fund" to use last year's budget savings from energy conservation to reward each plant for reduction and low-carbon projects they propose and implement.</li> </ul>
Derived Opportunities	<ul style="list-style-type: none"> <li>Crossover into the low-carbon product or service markets to increase brand visibility and boost brand value.</li> <li>Transition to green product services to satisfy customer requirements and consumer preferences.</li> </ul>		

Physical Risk	Acute	Chronic	
	Increased frequency of extreme weather events	Increased water risk from changing precipitation pattern	Increasing severity of the warming
Risk Description	Extreme weather events may increase in frequency and severity. Most of GIGABYTE's operating bases are located in the northwest Pacific, where typhoons often occur. Global warming may enforce the intensity and duration of typhoons, increasing our exposure to flooding and power outages.	Analysis based on international databases found that GIGABYTE's Headquarters, factories, and some key suppliers were located in regions with moderately high to high water stress. Relatively high exposure to flood and drought risks may impact on continuity of operations and supply.	Excessive GHG emissions will make the global warming problem worse. The urban heat island effect is becoming more obvious in urbanized regions as well. Increased electricity demand for cooling of offices and workshops increases the risk of power outages due to overload on summer days.
Likelihood	Likely	Likely	Very certain
Scope of Impact	Upstream supply chain, business operations, downstream demand chain	Upstream supply chain, business operations	Business Operations
Potential Financial Impact	<ul style="list-style-type: none"> <li>Increased labor and equipment maintenance from interrupted operations.</li> <li>Increased operating costs in upstream supply or downstream shipping may impact profits.</li> </ul>	Reduction in production output due to supply disruptions and unreliable delivery of materials that in turn have impacts on revenue.	Higher energy costs from fluctuations in electricity prices and increased electricity consumption.
Management Strategy	<ul style="list-style-type: none"> <li>Establishment of "Risk and Emergency Management Guidelines" in accordance with ISO14001 as well as the devising of management and response measures for typhoons and flooding.</li> <li>Water shortage drill conducted by factories in response to potential water restrictions during the dry season.</li> <li>Establish water reclamation system at the Dongguan and Ningbo factories in China.</li> <li>Diversify suppliers to distribute supply chain risk and ensure the continuity of key raw materials</li> </ul>		<ul style="list-style-type: none"> <li>Replace old and worn AC and cooling equipment and improve the energy efficiency of AC equipment.</li> <li>Optimize the power factor of electrical equipment to reduce power loss as well as stabilize and lower the load of the electrical system.</li> <li>Set up and maintain the GIGABYTE G-HOME Eco-Rooftop to effectively reduce the indoor temperature of the top floor by 2.5°C and the surface temperature on the rooftop by 25° C.</li> </ul>
Derived Opportunities	<ul style="list-style-type: none"> <li>Diversify and distribute product sources in the supply chain to improve the stability of material supply and strengthen the risk resilience of the supply chain.</li> <li>Improve the energy efficiency of offices, processes, and equipment to conserve operating costs as well as reduce the carbon footprint of products and services.</li> </ul>		

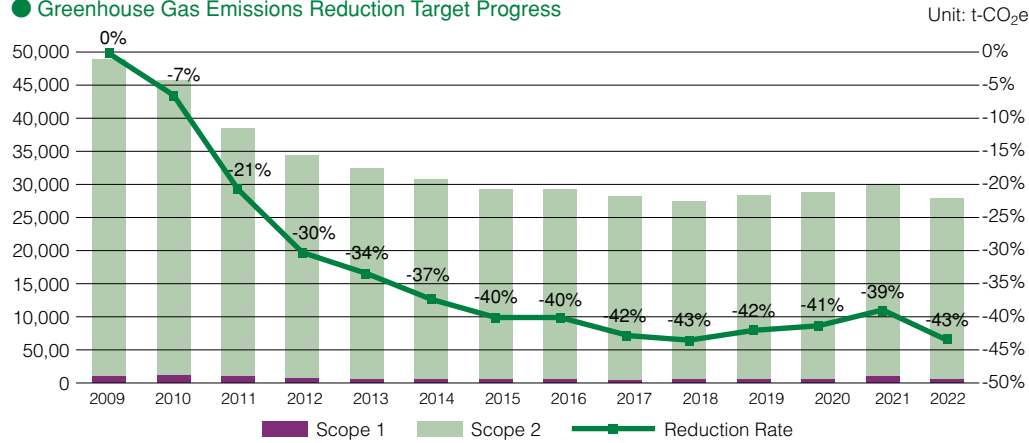
### 3.2.4 Greenhouse Gas Management Targets and Performance

#### Greenhouse Gas Targets and Performance

GIGABYTE has set a greenhouse gas reduction target of a 50% reduction in carbon emission by 2025 with 2009 as the base year. A separate short-term target was set in 2016 under the "333 Reduction Plan" with GIGABYTE promising to reduce carbon emissions, water consumption and waste production by 3% each compared to the previous year. The concise targets help us track our carbon reduction progress and performance.

GIGABYTE began conducting annual organizational GHG inventories in accordance with ISO 14064 in 2010. The inventory originally encompassed scope 1 and scope 2 greenhouse gas emissions at the Business Headquarters, Taoyuan Nanping Factory, and Dongguan and Ningbo Factorys in China. As of 2021, the reporting boundary was expanded in response to the latest standards and regulations to encompass the Taipei Silicon Valley Park Offices, where the subsidiaries Bestyfield International, G-style, GIGAPIC, and Selita Precision are located, as well as scope 3 greenhouse gas emissions. GIGABYTE's processes and products do not use substances that harm the ozone layer, nor do they emit nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), or other major gaseous emissions.

#### Greenhouse Gas Emissions Reduction Target Progress

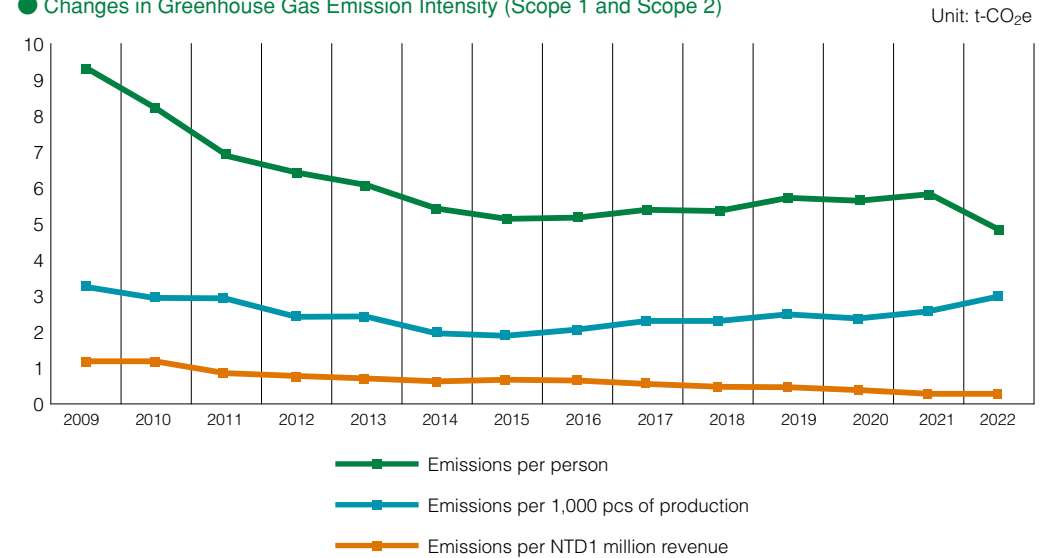


(Unit: t-CO <sub>2</sub> e)	2020	2021	2022
Scope 1	648.09	1,063.52	627.81
Scope 2	28,123.84	28,874.43	27,283.64
Sum of Scope 1 and Scope 2	28,771.93	29,937.95	27,911.44
2025 Carbon Reduction Target Progress	82.5%	77.7%	86.0%
333 Reduction Target Progress	+1.1% (Target not met)	+4.1% (Target not met)	-6.8% (Target met)

[Note] The GHG inventory applied IPCC 2021 AR6 GWP values. Types of GHG covered CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>, and NF<sub>3</sub>.

GIGABYTE has transformed our organizational strategy and diversified product portfolio in recent years in response to the popularization of cloud computing, digitization of industries, and automation of factories and supply chains in the post-pandemic era. We are focusing on working with our global partners to craft innovative solutions in manufacturing, healthcare, transportation, and communications, which has also led to drastic changes in our annual production output. Our absolute greenhouse gas emissions in 2022 were 42.99% lower than the base year and 6.77% lower than the previous year. In terms of emission intensity, emissions per unit of revenue were 77.34% lower than the base year, while emissions per unit of production were 9.32% lower than the base year.

#### Changes in Greenhouse Gas Emission Intensity (Scope 1 and Scope 2)



● Scope 3 GHG Inventory for the Past 2 Years <sup>[1]</sup>

Unit: t-CO<sub>2</sub>e

Scope 3 GHG Emission Items <sup>[2]</sup>		2021	2022
Transport-related	Upstream Transportation and Distribution	234.74	58.32
	Downstream Transportation and Distribution	40,088.61	28,051.45
	Business Travel*	24.13	128.35
	Employee Commuting*	1,201.65	1,867.53
GIGABYTE's use of products	Purchased Goods*	1,515,136.60	892,256.60
	Capital Goods	739.74	776.94
	Fuel and Energy-related Activities	1,860.45	1,217.49
Use of GIGABYTE's products	Waste Generated from Operation*	1,464.50	1,238.66
	Processing of Sold Product	1,722.91	2,312.99
	Use of Sold Products*	4,239,140.03	5,689,602.28
	End-of-Life Treatment of Sold Products*	10,931.82	8,089.73
<b>Total Scope 3</b>		<b>5,812,545.17</b>	<b>6,625,600.33</b>

[Note 1] GIGABYTE adjusted the inventory methodology for scope 3 due to the reversion of ISO14064-1:2018 standard. The results before 2020 were not shown in this table because of the differences in methodology.

[Note 2] Figures marked with \* have been verified by an external party.

**CDP Performance**

Since 2010, GIGABYTE has responded to the CDP Climate Change Questionnaire because of customer requests. Besides responding to customers' requirements and international expectations, participating in CDP helps further self-examine the implementing processes of carbon management, adjusting the carbon management approaches according to the evaluative results and feedback to improve the overall management system.

In 2022, GIGABYTE's CDP rating was A- (Leadership). Our rating was better than the industry and regional average for Asia. Our supplier engagement rating (SER) was A. The Water Security Questionnaire was added in 2022 and rated B. With the growing domestic and overseas importance of carbon management, we will continue to strengthen our carbon reduction initiatives and review the weaknesses in our performance in order to realize the goal of low-carbon technology.

● GIGABYTE CDP Score in the Past 5 Years

	Leadership	Management	2018	2019	2020	2021	2022
Climate Change			B	A-	B	A-	A-
Supplier Engagement Rating			A-	A-	A	A-	A
Water Security			/	/	/	/	B

**3.3 Responsible Production**

GIGABYTE incorporates lifecycle thinking into product research, development, and assembly and considers material recycling and environmental friendliness from the design stage. The selection of raw materials strictly follows the hazardous substances control rules. After the products are sold, we provide a longer warranty period and repair services. Furthermore, the customer service center provides electronic equipment recycling services regardless of brand. It develops a circular business model based on returned logistic services that strive to achieve resource recycling and reduce the overall environmental impacts of products. Transparency on the environmental impact data of products is the manufacturer's duty to consumers. Therefore, we established a product carbon footprint calculation system in 2016. As of 2022, the system is now able to issue product reports covering 16 aspects of environmental impacts.

(For more information on our product environmental reports and their actual implementation, please visit [GIGABYTE CSR Website](#))

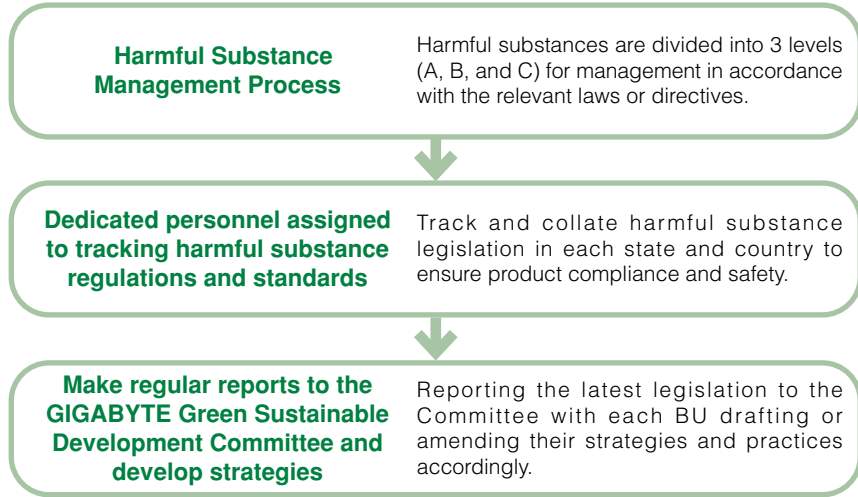
**3.3.1 Friendly Product**

**Harmful Substance Management**

To GIGABYTE, ensuring our products are safe for consumers and friendly to the environment is the basic principle as a manufacturer. The trends and changes in international hazardous substances management standards are reported quarterly at the Green Sustainability Committee meetings. A cross-department response plan will be started when it is necessary. The plan will set a response time target to ensure that GIGABYTE's products comply with the latest laws and regulations in time.

We issue the "GIGABYTE Harmful Chemical Substances Requirements (HCSR)" that classifies the substances into three levels: Level A prohibited substances, Level B prohibited substances with time limits, and Level C potentially prohibited substances in the future. By systematically managing the list of high-risk substances and forming respective response plans according to the hazardous levels, we could quickly eliminate prohibited substances.

● Harmful Substance Management Process



**Product Design with High Efficiency and Low Energy Consumption**

GIGABYTE has introduced various innovative materials, technologies, and meticulous management mechanisms at various stages of the product life cycle in order to facilitate the product's outstanding performance with high efficiency and stable durability. Moreover, the design stage takes circular economy as its core so that we will move towards the zero-waste goal. After launching the Ultra Durable Motherboard in 2007, GIGABYTE progressively introduced innovative technologies such as energy-saving switches, 2X copper PCBs, and high current capable components that boosted motherboard stability and extended product service life.

(For more information on friendly product designs from previous years, please refer to the [GIGABYTE CSR Website](#))

In response to the growing demand for data centers from all sectors, GIGABYTE began assisting customers with deploying different types of immersion cooling data centers in 2021. Our solutions have since won praise from academic, scientific research, government, and industry customers. Investment and support for immersion cooling computing solutions were further expanded in 2022 with the introduction of off-the-shelf, turn-key single-phase immersion cooling computing solutions that offer advantages such as breakthrough cooling performance, high-performance computing, mobile deployment, and high scalability. Our solution effectively reduces energy consumption and helps users realize the net zero carbon emissions goal.

(For more information on system cooling solutions, please refer to the [GIGABYTE website](#))

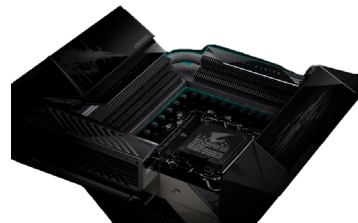
**Product with Friendly Design**

**Diverse low-energy-consumption products**



All integrated water cooling and multi-platform tower fans are equipped with the Socket AM5 clip to provide enthusiasts with the optimal CPU cooling performance and easy system upgrades without having to replace the heatsink.

The all-new 3rd generation Fins-Array design delivers extreme cooling performance. Irregular secondary fins provide 9 times the cooling surface of conventional heatsink fins.



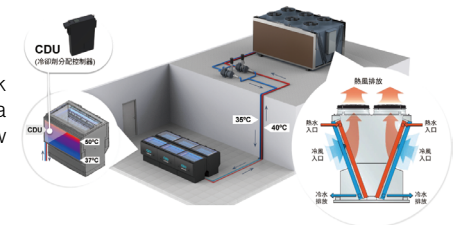
All products in the PSU line have obtained 80 PLUS certification indicating exceptional power conversion efficiency, reduced waste heat generation, and lower fan noise.

**Single-phase Immersion Cooling Solution**

A range of single-phase immersion cooling servers was launched in 2022 along with an immersion cooling tank that complies with Electronic Industry Alliance (EIA) and Open Computing Project (COP) specifications.

**Single-phase Immersion Cooling Process**

The server and other IT equipment are immersed in a tank filled with heat-conducting dielectric liquid. The liquid is a carbon-fluorine compound with a high boiling point and low viscosity that stays in liquid form, whether boiling or frozen.



**Smart Temperature-Regulated Cooling Tank**

The inside of the cooling tank is fitted with a host of intelligent sensors that detect the temperature of the surrounding liquid to keep the tank below 35°C at all times. A backup pump is also provided to prevent any interruption of server operations.

**Friendly Packaging Materials**

GIGABYTE continues to streamline packaging, increase the ratio of recycled materials used, and replacement of polystyrene padding materials in order to reduce consumption of packaging materials and the waste they produce. We began analyzing our packaging recovery rate and composition in 2011, and reduction progress is reviewed every year. In 2021, GIGABYTE launched the Product Packaging and Incoming Packaging Reduction Plan. Non-use of disposable packaging materials from 2030 onwards was set as the ultimate goal.

GIGABYTE eliminated printed user manuals for all motherboards and retained just essential quick installation guides in 2022. Detailed instructions and configurations are now presented via a QR Code. The change reduced not only paper consumption and waste but also the need for non-environmentally friendly processes, such as color printing, gluing, and lamination of manual cover pages.

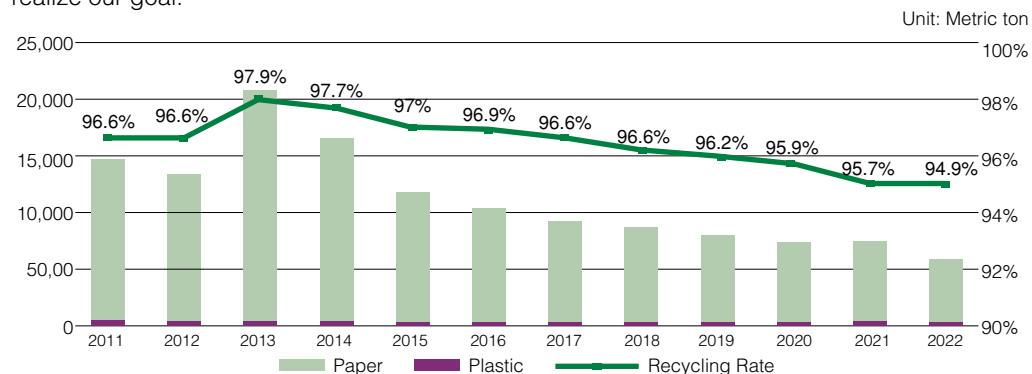
● **Example: Optimization of notebook packaging volume to improve transportation efficiency and reduce transportation carbon emissions**

The R&D and design departments for notebooks used the stacking volume of sea freight pallets as the starting point to optimize the volume of notebook packaging. The optimization reduced the volume of product lines by 19-52%, increasing the average capacity of each container by 51.6%. As a result, carbon emissions from the sea freight phase were reduced by 9-10% per notebook.



● **Recycling Rate of Packaging Materials**

GIGABYTE makes every effort to avoid excessive packaging while maintaining a certain level of protection. The total weight of packaging used by products in recent years has been declining. In 2022, GIGABYTE used 5,494.7 metric tons of paper and 285.6 metric tons of plastic in packaging materials, a reduction of 60.43% compared to 2011. The recycling ratio for packaging was 95.1%, and we will continue with further reductions in the future in order to realize our goal.



[Note] The recycling ratio for packaging materials was calculated using the percentage of paper in all packaging materials (plastic plus paper).

**3.3.2 Circular Economy**

In 2018, GIGABYTE drew on more than 20 years of professional PCB repairs and customer service expertise to set up the subsidiary Bestyfield International ("Bestyfield"). A sustainable circular economy business model was established based on a core philosophy of Mottainai<sup>[1]</sup>. In 2020, Bestyfield obtained the highest level of "Optimizing" certification under the BS 8001 circular economy standard for business model maturity. Then, in 2022, it won the Outstanding Award of Innovative Service Award at the 3rd Taiwan Circular Economy Awards as well as the SGS Excellent Quality Practice Award.

[Note 1] Mottainai is a Japanese phrase used to sigh for something that is no longer what it should be. It was later used to convey regret over wasting materials, efforts, or actions.

**Popularize the Value of Responsible Consumption**

Bestyfield converted 6 existing repair centers in Taiwan into G+ 3C Outlet retail outlets. In 2021, some of the rapid service centers were also converted into hybrid sales + service centers. The stores' bright and minimalist design provides consumers with the same pleasant shopping experience as shopping for brand-new merchandise. The repair area was designed to educate consumers on the Mottainai spirit, and sculptures made from the powder of ground-up waste motherboards were displayed inside the store to highlight the innovative reuse of substances.

The G+ 3C Outlet sells refurbished and off-season GIGABYTE products as well as products sold on consignment by other maintenance clients. It also continues providing customer support services. Bestyfield has also been focusing on corporate leasing services for notebooks, services, and office smart solutions in recent years.

At the same time, Bestyfield actively reached out to government agencies, businesses, and school organizations through social networks in order to promote the concept and benefits of circular economy to the general public through a variety of channels. It participated in 4 public exhibitions and received 4 visiting tours during 2022.

**Strengthen Credibility of Second-hand Market**

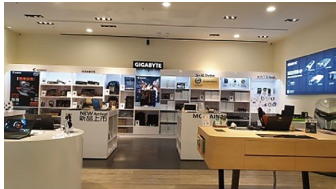
Bestyfield introduced the "Refurbished Product Certification" (RPC) to diminish consumers' doubts and distrust of second-hand products. The product that has been repaired, tested, and meets the quality standards would receive an RPC certificate and a resume showing the complete traceability of the product. The certification aims to solve the "lemon's market", which is full of cheap and defective products due to the information disparity between buyers and sellers. Also, to increase consumer trust and willingness to purchase, Bestyfield International introduces "Manufacturer Approved" and "100% Tested" certificates and offers a 0-6 months warranty depending on the product type.



▪ Sustainability Special Exhibition of Taipei City



▪ MOE Lifelong Learning Alliance Midterm Workshop



▪ G+ 3C Outle



▪ Repair Display



▪ Sculpture of Waste Motherboards

**Recycle and Reuse Electronic Waste**

Bestyied refers to the 9R circular economy values defined by the PBL Netherlands Environmental Assessment Agency and develops an action strategy in response to "SDG 12.5: by 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse" to seek tangible environmental benefits for the electronic waste topic.

Value Proposition		Action Direction
Innovative design in the use and manufacture of products	R0 Refuse	Product maintenance quality analyses provide feedback to the manufacturing and design sides, and hopefully, the need for manufacturing can be reduced by improving serviceability at the process or design levels.
	R1 Rethink	
	R2 Reduce	
Extend the life cycle of products and parts	R3 Re-use	Use techniques such as repair, refurbishment, and leasing services as well as extension into the preowned market to ensure the resources are effectively recovered and repaired. The goal of maximizing utility and extending product life cycle can then be achieved.
	R4 Repair	
	R5 Refurbish	
	R6 Remanufacture	
	R7 Repurpose	
Material applications	R8 Recycle	The recovery and re-manufacturing of resources make materials usable by factories or repair centers again.
	R9 Recover	

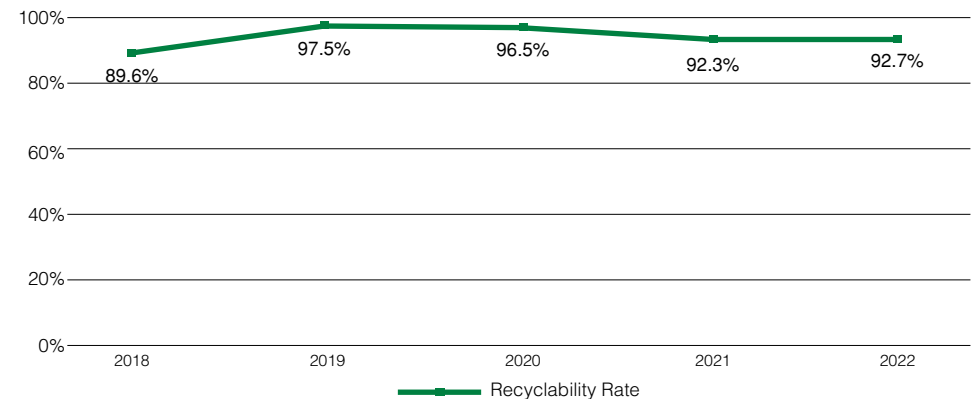
In 2022, Bestyied extended the life of 660,710 products through repair and refurbishment, equivalent to removing 774.2 metric tons of electronic waste. The EPA product carbon footprint database estimated emissions from solidification and disposal of hazardous industrial waste to be 130 kg-CO<sub>2</sub>e per metric ton, so that means we reduced carbon emissions by 100,646 kg.

Action Plan	Outcome
Repair	619,474 pieces were sent for repairs and 611,162 pieces were picked up after being repaired. The repair rate was 98.7%, and reduced electronic waste by 726.7 metric tons.
Refurbishment	A total of 41,236 pieces of products were refurbished and 16,192 pieces were sold after refurbishment. Unsold products were returned to the distributor's refurbished goods warehouse after refurbishment and testing for continued use. Electronic waste was reduced by a total of 47.6 metric tons.
Recycling and Reuse	Consumers turned in 10,174 pieces of products for scrapping while Bestyied purchased 16,220 pieces of waste products and recovered 267 pieces of B2B leased devices. These were refurbished, remanufactured, or recycled in some other manner for reuse.

**Product Recycling Rate and Environmental Impact**

In addition to promoting the circular economy business model and reinforcing terminal recovery, GIGABYTE is working on increasing the proportion of reusable materials in our products to reduce the environmental burden at their disposal stage. Motherboards manufactured by GIGABYTE are mostly made of metal and plastics. In 2022, 9,728.19 tonnes of metal, 2,538.7 tonnes of plastic, 778.14 tonnes of glass, and 1,024.07 tonnes of other raw materials were used to produce motherboards. The average recyclability rate of raw materials was above 92.7%.

● **Recyclability Rate of Raw Materials Used by Motherboards**



[Note] The motherboard form factors and model analyzed in 2022 included ATX (Z790 AORUS ELITE AX), Micro ATX (Z790M AORUS ELITE), and Mini ITX (Z690I AORUS ULTRA).