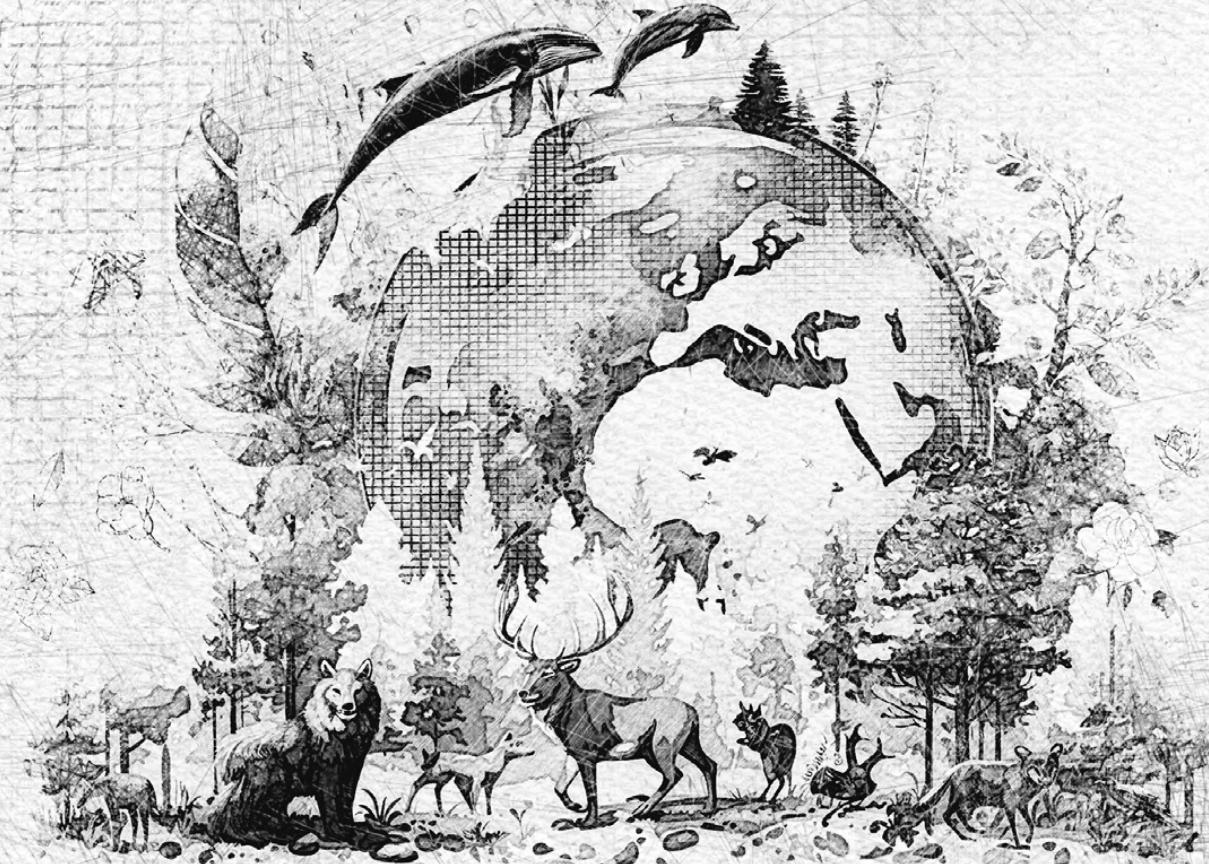


**winbond**

Winbond Electronics Corporation



## 2023 Sustainability Report

Fostering Green Innovation and Sustainability for  
a Better Future for All

## Cover Story

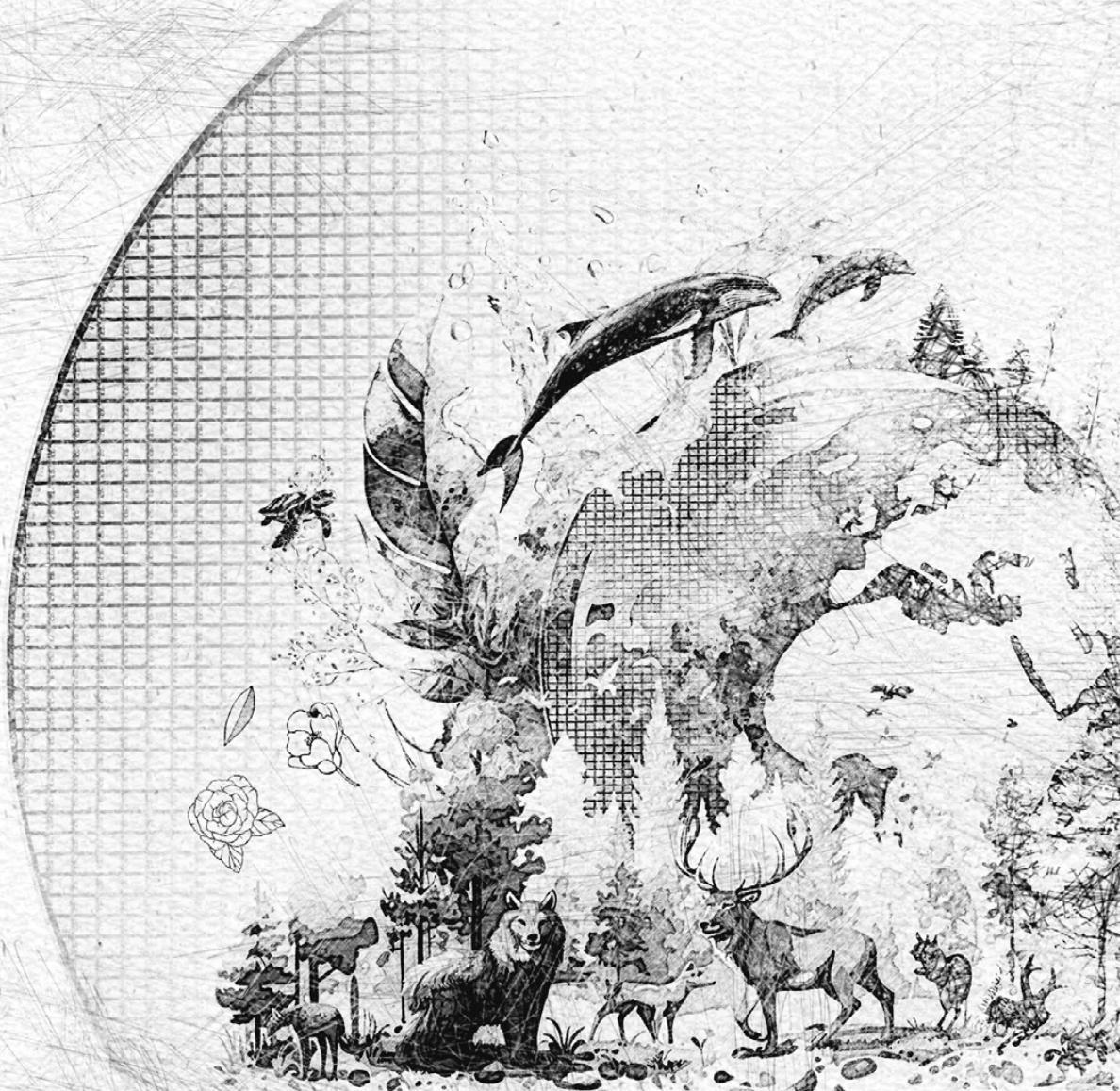
From land to sea, the hidden champion takes flight, In gardens green, where dreams ignite. The accountable team, they never back down, With enthusiasm for learning, they wear the crown.

Pursuing sustainability, enriching life's theme, From city to village, our presence is seen. Leading the world, with technology we create, Holding true to our ideals, progress we facilitate.

Contributing to society, promises we keep, Green semiconductor tech, benefits so deep. Innovative thinking, let the world know, Embracing change, stronger we grow.

Building hope for the future, shining bright, Let's stride into tomorrow, with tech's might. Sustainable development, a better world in sight, Partners all around, together we ignite.

Trust and collaboration, hand in hand, Seeing a beautiful horizon, in this new land.



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# PREFACE

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## A message from our chairman and CEO

"Sustainability" is a multifaceted concept. It represents a spirit of enduring enterprise that transcends time; it requires companies to innovate and create value in a changing world; and it inspires us to wisely utilize resources and cherish our one and only Earth, becoming the pillar of sustainable development in human society.

In 2023, several significant events propelled Winbond to make further progress on the path towards sustainability. At the beginning of the year, the drought in Taiwan led to the creation of our "Water Efficiency Policy." To achieve net-zero by 2050, we explored renewable energy investment and procurement; and led the way for our supply chain partners to accelerate our progress towards net-zero. The release of Open AI's GPT4.0 injected new vitality into creating value with AI. Geopolitical conflicts accelerated our adoption of localized layouts, implementing globalization strategies.

To improve management quality and align with international standards, Winbond began ISO 46001 water efficiency management systems certification in the second half of 2023. Based on the vision of "being a hidden champion in providing sustainable semiconductors to enrich human life," we established the following water efficiency policy:

- Engage everyone in water conservation to enhance awareness of water resource management.
- Prioritize water-saving designs and continuously strive to enhance water resource efficiency.
- Recycle and reuse water resources to ensure the attainment of the water efficiency goals.
- Comply with government regulations and conduct regular reviews of water resource management.

From the initial construction of our CTSP Fab in 2005, the concept of recycling and circulation was incorporated into the design, utilizing dedicated piping systems, real-time water quality monitoring, and the establishment of recycling treatment systems. In addition, the Kaohsiung Fab enhanced water resource recovery through a newly designed process. Winbond also engaged in water-saving technologies exchange with Green Energy and Environment Research Laboratories of the Industrial Technology Research Institute(ETRI), organizing industry tours to share achievements with the industry. In 2023, a total of 6 water-saving projects were introduced, resulting in an annual water saving of up to 390,000 metric tons (approximately 2.4% of the plant's annual water usage), while the overall plant recovery rate increased by 1.7% (from 80.5% to 82.2%).

Due to Taiwan's limited land and dense population, investing in renewable energy presents a great challenge. Therefore, the management team actively seeks and discusses every opportunity to acquire renewable energy. With over two years of experience, our confidence in transitioning to 100% renewable energy has increased. As electricity usage contributes significantly to Winbond's carbon emissions, adopting renewable energy can make an important contribution to Winbond's goal of achieving net-zero emissions.

In 2024, we established a paid volunteer leave policy to encourage employees to participate in social and environmental improvement activities. According to this policy, employees can apply for volunteer leave during working hours to engage in volunteer work, support charitable organizations, and participate in community service or environmental protection activities. This not only helps employee to develop a sense of social engagement and well-being but also reflects our firm commitment to sustainability and community contribution. We will continue to promote this policy to support our employee in participating in meaningful volunteer work, while fostering a more sustainable future.

Our Board of Directors leads Winbond's sustainable strategy to promote sustainable development. The board has established an ESG Committee, composed of the chairman and independent directors, to jointly formulate a sustainability vision, considering the carbon footprint as a key indicator, and to promote value creation in innovation. We strive to make every employee a sustainable ambassador and jointly cultivate a sustainable culture. In addition, the Risk Management Committee regularly assesses risks and opportunities.

We actively promote for a diverse, equal, and inclusive work environment (DEI) to attract global talent. A Senior Executive Development Committee has been established strengthening talent development and succession planning, while expanding the board's supervisory functions to establishes a more robust corporate governance framework.

Looking forward, in the development of globalization and localization, the new chapter of corporate social responsibility will encompass activities that integrate and interact with different countries and cultures. I look forward to joining hands with many friends and colleagues to build a beautiful home and fulfill our responsibility to protect our beautiful Earth.



Arthur Yu-Cheng Chiao  
Chairman and CEO





## A message from our President

2023 was a year filled with challenges and opportunities for Winbond. Despite the ongoing global political and economic turmoil, the increasing severity of climate change, and a complex operating environment, Winbond is keenly aware that the transition to net-zero has become the core issue of sustainability for businesses worldwide. We rely on our expertise in semiconductor process technology and manufacturing services, strict quality management, and product innovation as the solid foundation for sustainability. By internalizing ESG as part of our competitiveness and through clear policies, goals, and concrete actions, we collaborate with stakeholders to implement the company's five main directions for ESG, supporting global sustainability actions.

James Pei-Ming Chen  
President

**E**

Combining core competencies, innovative technology, and sustainable energy-saving and carbon reduction goals, by implementing energy and carbon emission reduction measures, process efficiency improvements, green product design, and digitization of information systems, we build a long-term sustainable win-win relationships with our customers and supply chain.

At the product design stage, Winbond focuses on incorporating green concepts such as "low-carbon materials," "energy-saving and low-energy consumption," and "smaller form factor and lower pin counts." This approach aligns with international trends and the needs of stakeholders and customers, aiming to minimize environmental impact in product development.

Leveraging DRAM and Flash memory process technology, we have been deeply involved in the KGD (Known Good Die) field and offer SiP (System in Package) multi-chip packaging solutions to reduce packaging materials and chip sizes. We introduced a new generation of low-capacity 3V Serial NOR RV series and 1.2V Hyper-RAM products, which reduced carbon emissions by over 30% compared to previous generations. We also developed flash memory products that support Low-Temperature Soldering (LTS) processes, enabling customers to achieve energy-saving innovations, thereby reducing greenhouse gas (GHG) emissions and creating energy-saving and carbon-reducing end products.

In addressing supply chain sustainability issues, Winbond collaborates with its supply chain partners to establish a green semiconductor supply, jointly exploring carbon reduction opportunities. In 2023, Winbond joined Industrial Development Administration of MOEA's post-pandemic low-carbon transformation subsidy program, collaborating with 13 suppliers and outsourcees to formulate carbon reduction plans, to benefit the secondary industry supply chain with carbon reduction progress. As international regulations on net-zero carbon reduction become stricter, we connect internal systems and data through digital tools, applying them to office collaboration and production operations, gradually improving the Company and suppliers' carbon inventory, carbon footprint information, and internal carbon accounting systems. We also utilize AI applications to increase corporate resilience in response to the dynamic semiconductor industry.

In green technology production, Winbond also focuses on renewable energy, water management, water and waste recycling, and GHG emissions reduction as key performance indicators and global actions, dedicated to minimizing environmental externalities. We replaced energy-saving equipment and installed exhaust gas treatment equipment, carried out energy-saving projects, and consumed renewable energy, continuing to implement electricity-saving measures across 7 categories with 108 items in 2023. Production sites will gradually obtain certification of ISO 46001 Water Efficiency Management Systems and ISO 14046 Water Footprint, to effectively manage water supply-related risks and improve water resource efficiency.

**S**

We strive to create a work environment that upholds human rights, is dignified, and embraces diversity, equality, and inclusion (DEI), fostering global talent integration.

Winbond places great importance on the development of human rights issues. After completing a human rights due diligence in 2022, the Company continued to optimize and reduce risks in 2023, conducting an Employee Core Values and Engagement Survey in 2023. The survey indicated that over 97% of colleagues are willing to utilize their strengths at Winbond for the next five years.

In addition, we have strengthened the concept of Diversity, Equity, and Inclusion (DEI) and continue to build a more friendly workplace for sustainable talent development. In 2023, a Senior Executive Development Committee was established under the Board of Directors, with staff receiving an average of 50 hours of training per year, continually and systematically cultivating talents. Foreign executives accounted for 17% at the Winbond center, demonstrating the diversity of nationalities in the decision-making circle. We connect the energy of talent cultivation from various colleges, promote the empowerment of the youth, collaborate with National Cheng Kung University to advance the "Semiconductor Course," and sponsored the "Lecture Professor Research Fund" at National Yang Ming Chiao Tung University, leveraging the industry's core capabilities, with concrete actions to construct a technology innovation exchange domain, facilitating the development of the semiconductor industry.

We also continue to lead our employees in contributing to social welfare, creating value, and expanding Winbond's positive social impact. On Family Day, we continue the spirit of public welfare care, providing opportunities for 6,065 colleagues, their families, and 55 students from invited institutions to cultivate an appreciation for arts and culture, rooting cultural experiences.

Winbond is concerned about environmental conservation and ecological preservation. Colleagues actively participate in beach and river cleaning activities, safeguarding the cleanliness of our coastal environment. In 2023, a total of 264 participants joined, collecting 993 kilograms of garbage. Since 2021, Winbond has initiated a tree planting program, planting native tree species in the Kaohsiung Fab area, actively participating in government-led afforestation programs, and supporting the Forestry and Nature Conservation Agency's donations, adoption and tree protection initiatives. Through tripartite cooperation between industry, government, and academia, the Company demonstrates environmental care actions, jointly creating a quality mountain and forest environment.

**G**

We aim to strengthen the functions of the Board of Directors to enhance the sustainable value of the corporation; and improve and quantify non-financial data and reporting capabilities for better compliance, transparency, and strategic insight.

Winbond strengthens the function of the Board of Directors, elevating the level of sustainable governance. The "ESG Committee" was promoted from an internal management organization to a functional committee under the Board of Directors. The Board of Directors supervises ESG and risk management execution results, demonstrating Winbond's emphasis on sustainable development.

Winbond is keenly aware that research and development are the main driving forces for maintaining competitiveness in the industry. In 2023, Winbond's R&D investments accounted for 23% of its revenue, and the Company was awarded as one of Clarivate's Top 100 Global Innovators for two consecutive years, showcasing Winbond as a semiconductor company committed to pursuing innovation-driven growth and environmental sustainability. In 2023, Winbond formally adopted the "Taiwan Intellectual Property Management System (TIPS)" and obtained A-level certification, nurturing its innovative culture, strengthening awareness of intellectual property protection, and enhancing its sustainable competitive advantage. Facing the post-pandemic digital era, where diverse data ecosystems flourish, Winbond also took the opportunity to upgrade its cybersecurity protection by introducing SEMI-E187 Specification for Cybersecurity of Fab Equipment, establishing a data security management system.

In terms of climate change management, in addition to continuously improving energy use and management through the ISO 50001 Energy Management System, Winbond also sets its own goals for the use of renewable energy and net-zero emissions. This includes expanding self-built renewable energy generation facilities, procuring renewable energy through power purchase agreements, and purchasing renewable energy certificates (RECs), all of which are crucial components of achieving net-zero. In response to carbon neutrality requirements from international supply chains and initiatives, we, by purchasing voluntary carbon credits to offset carbon emissions, held a zero-carbon family day for two consecutive years, demonstrating our commitment to sustainable development.

Moreover, we actively follow global sustainability trends by publishing our sustainability report annually and disclosing "Climate-Related Financial Disclosure Report," "UN Sustainable Development Goals Action" and "Materiality Analysis Reports." With an open and transparent approach, we share our progress and achievements with stakeholders, enhancing the transparency of sustainability information disclosure.

## About Winbond

Winbond Electronics Corporation ("Winbond") is a global leader in providing semiconductor memory solutions, with a focus on product design, research and development, wafer fabrication, marketing, and after-sales service. Our dedication to delivering comprehensive niche memory solutions has earned us a reputation for excellence among our customers. Our product portfolio includes Specialty DRAM, Mobile DRAM, Code Storage Flash Memory, and TrustME® Secure Memory, which are widely used in various fields such as communication, consumer electronics, industrial and automotive electronics, and computer peripherals. With our headquarters in the Central Taiwan Science Park, and subsidiaries in the United States, Japan, Israel, mainland China, Hong Kong, and Germany, we deliver exceptional service to our customers worldwide. Our two 12-inch wafer fabs, located in the Central and Southern Taiwan Science Parks, are equipped with state-of-the-art technology, allowing us to implement our self-developed process technology and provide our partners with high-quality memory solutions.

## Corporate culture and vision

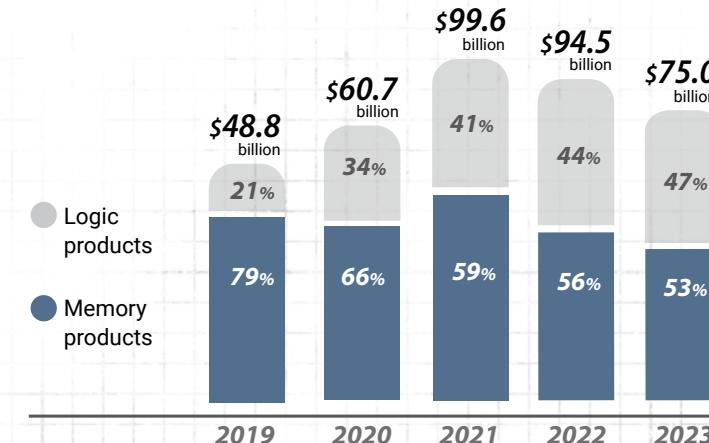
The corporate culture of Winbond is defined by "business integrity, accountable team work, enthusiasm for learning, aggressive innovation, and contribution to sustainability," which also serves as Winbond's core value, belief, and conduct.

### Winbond Culture



## Business performance in 2023

(Consolidated Financial Statements)



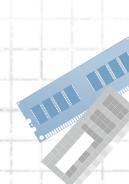
## Leading position



Source: Omdia Research

## Solutions

### Main products



Code Storage Flash Memory, TrustME® Secure Flash Memory, Specialty DRAM, and Mobile DRAM.



Code Storage Flash Memory  
TrustME® Secure Flash Memory  
Specialty DRAM

Mobile DRAM

### Application



Handheld applications, consumer electronics, computer peripherals, and automotive and industrial-use electronics, which are all fields that have extremely high standards for product quality.



Automotive

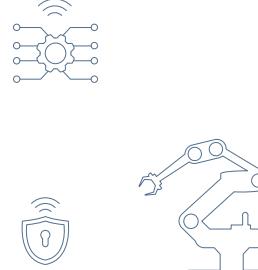
Industrial

Communication

Computer

Consumer

## Milestones

<b>1987</b> Established in Hsinchu Science Park	<b>2004</b> Winbond's SpiFlash established the SPI NOR industry standard	<b>2008</b> Logic product business spun off as Nuvoton Technology Co. established	<b>2010</b> Launched WLCSP (Wafer Level Chip Scale Packaging) for serial NOR	<b>2014</b> The SpiStack product line has been launched to bolster data storage capabilities. In addition, Winbond's SPI products feature encoding-based storage, Over-The-Air (OTA) software update applications, and small-form-factor packaging.	<b>2018</b> Launched the high-performance QspiNAND to support the automotive industry	<b>2023</b> Winbond Group recognized as a Top 100 Global Innovators from Clarivate
						
<b>1995</b> Listed on Taiwan Stock Exchange (TWSE: 2344)		<b>2006</b> Launched Multi I/O SpiFlash (Dual 2006, Quad 2007), achieving the highest performance in the industry	<b>2009</b> The mass production of the industry's first 16Mb Serial Flash using advanced 90-nanometer technology			<b>2013</b> Launched QspiNAND with continuous read, embedded ECC, and bad block management capabilities.
						<b>2017</b> Introduced the world's first ultra-low voltage 1.2V 8Mb Serial NOR Flash product
						<b>2020</b> Launched the 1.2V Serial NOR encoded storage flash memory product line

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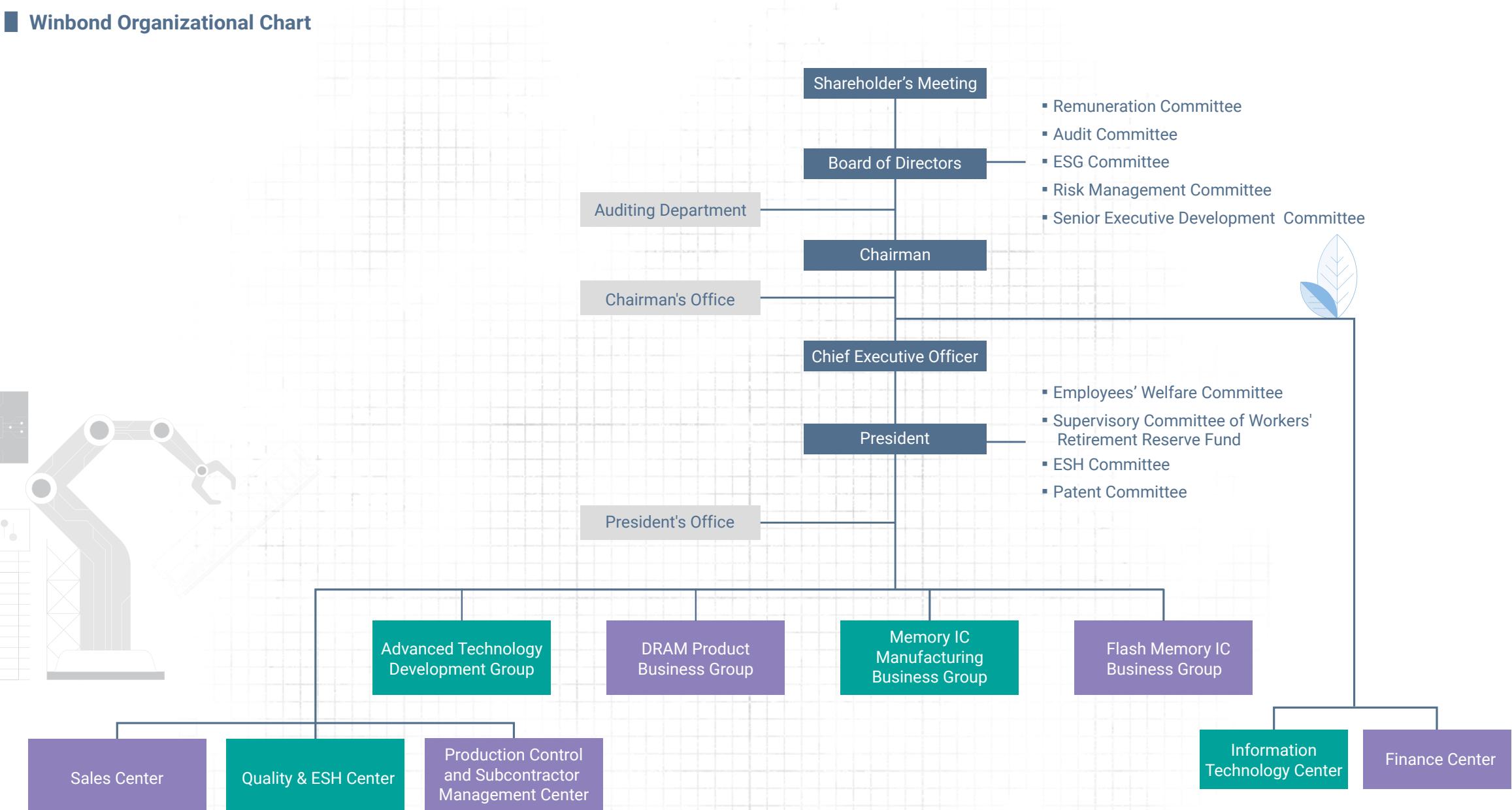
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## Winbond Organizational Chart



## Our Values

### Foresight In Trends, Value in Practice

With a deep understanding of market trends for next-generation products, Winbond continually invests resources in semiconductor design, production technology, and sustainable product innovation. We provide customers with low-carbon and low-power green products, enhancing our competitive advantage and market share in green business opportunities. Also, we continuously improves our ESG performance to enhance Winbond's sustainable competitiveness.



- Minimize the generation and emissions of hazardous substances in the manufacturing process
- ✓ Shorten manufacturing lead time
- ✓ Reduce manufacturing costs
- ✓ Utilize low-carbon raw materials
- ✓ Enhance product performance
- ✓ Increase product energy efficiency
- ✓ Reduce production energy consumption
- ✓ Achieve smaller size

### Technology catalyzes innovation and enhances the quality of life



#### Automotive Electronics

From vehicle body to power systems, to information and entertainment systems, to intelligent driving and advanced safety systems, our technology is used in emerging electric vehicles to achieve a safer, smarter, and more environmentally friendly transportation environment.



#### Industrial Electronics

For industrial systems, Winbond brings higher performance, information security, and advanced safety in intelligent networking, remote monitoring, human-machine interaction, and on-site machine learning.



#### 5G Communications

With higher data transmission speeds, Winbond provides a foundational platform for the Internet of Things, enabling efficient communication that transcends time and location, enhancing productivity, entertainment, and learning.



#### IoT

In the world of interconnected devices, Winbond accelerates digital transformation while ensuring information security and functional safety, achieving energy efficiency, convenience, and a higher level of safety protection for everyday life.



#### Consumer electronics

For consumer products, Winbond delivers more powerful, energy-efficient, and feature-rich solutions, offering an enhanced product experience.

### Applications and Products

- |  |  |
|--|--|
| ▪ Vehicle-to-Everything (V2X)  | ▪ Telematics                           |
| ▪ Advanced driver-assistance systems (ADAS)                                | ▪ Automotive sensing components        |
| ▪ Vehicle dashboards   | ▪ Automotive gateways                  |
| ▪ In-Vehicle Infotainment (IVI)  |  |
| ▪ Real-time sales information devices                                      | ▪ Graphical user interfaces            |
| ▪ Smart factories  | ▪ Industrial gateways                  |
| ▪ Smart dashboards   | ▪ Industrial machine vision            |
| ▪ Programmable logic controllers   | ▪ Industrial computers                 |
| ▪ Network digital video converters   | ▪ Unmanned Aerial Vehicles (UAVs)      |
| ▪ High-speed Ethernet switches   | ▪ Surveillance cameras                 |
| ▪ Wireless terminal access equipment and customer premises equipment (CPE) |  |
| ▪ Smart cities   | ▪ Long-Term Evolution (LTE) technology |
| ▪ Smart transportation systems   | ▪ LTE/5G base stations                 |
| ▪ Self-driving cars  |  |
| ▪ Smart factories  | ▪ Telehealth                           |
| ▪ Smart home   | ▪ Smart meter                          |
| ▪ Smartphones  | ▪ Satellite navigation                 |
| ▪ Smartwatches   | ▪ Digital cameras                      |
| ▪ AR smart glasses   | ▪ True wireless earphones              |
| ▪ Tablet computers   | ▪ Set-top boxes                        |
| ▪ Smart TV   |  |
| ▪ Smart home   |  |

## Awards and Recognition

Sustainability Recognition		Corporate Governance
<b>TCSA Taiwan Corporate Sustainability Award</b> <ul style="list-style-type: none"> <li>Taiwan Top 100 Sustainable Corporate Award</li> <li>Corporate Sustainability Report Award – Platinum Level</li> <li>Talent Development Leadership Award</li> <li>Human Rights Leadership Award</li> <li>Workplace Wellbeing Leadership Award</li> <li>Innovation and Growth Leadership Award</li> </ul> <b>FTSE4Good Selected</b> <ul style="list-style-type: none"> <li>Selected as a constituent company of FTSE4Good emerging index</li> </ul>	<b>Taichung City Government</b> <ul style="list-style-type: none"> <li>Taichung City Government 5th Taichung Low Carbon Sustainable City Outstanding Contribution Award</li> </ul> <b>Responsible Business Alliance (RBA)</b> <ul style="list-style-type: none"> <li>Platinum, VAP (Validated Assessment Program)</li> </ul> <b>ECOVADIS 2023 Sustainability Rating</b> <ul style="list-style-type: none"> <li>Silver</li> </ul> <b>CDP</b> <ul style="list-style-type: none"> <li>Climate change: B</li> <li>Water security: B</li> </ul>	<b>bsi. British Standard Institution (BSI)</b> <ul style="list-style-type: none"> <li>2023 BSI Sustainable Resilience Excellence Award</li> </ul> <b>1111 Job Bank</b> <ul style="list-style-type: none"> <li>Gold Level Award 2023 Happy Enterprise</li> </ul> <b>National Taxation Bureau of the Central Area, Ministry of Finance</b> <ul style="list-style-type: none"> <li>Awarded as an outstanding business entity for using electronic uniform invoices</li> </ul>
<b>TWSE The 10th Corporate Governance Evaluation</b> <ul style="list-style-type: none"> <li>Ranked in the top 6% to 20% among listed companies</li> </ul> <b>Taiwan Index Plus</b> <ul style="list-style-type: none"> <li>Selected as a constituent company of</li> </ul> <ul style="list-style-type: none"> <li>TWSE Corporate Governance 100 Index</li> <li>TWSE RAFI® Taiwan High Compensation 100 Index</li> <li>TWSE RA Taiwan Employment Creation 99 Index</li> </ul> <b>Taiwan Institute of Directors</b> <ul style="list-style-type: none"> <li>2023 Taiwan Best-in-Class 100</li> </ul>		

Product Innovation		International Standards Compliance and Verification
<b>Clarivate</b> <ul style="list-style-type: none"> <li>Top 100 Global Innovators</li> </ul> <b>Intellectual Property Office, MOEA (TIPO)</b> <ul style="list-style-type: none"> <li>Top 100 Patent Applicants in 2023:                     <ul style="list-style-type: none"> <li>23th Place among the Applicants of the Taiwanese Juridical Persons</li> <li>23th Place among the Patentees of the Taiwanese Juridical Persons</li> </ul> </li> </ul>	<b>Industrial Development Administration, MOEA</b> <ul style="list-style-type: none"> <li>TIPS A-level certification</li> </ul> <b>Taiwan Continuous Improvement Awards</b> <ul style="list-style-type: none"> <li>2 Golden Tower Awards</li> <li>1 Silver Tower Award</li> </ul>	<ul style="list-style-type: none"> <li>ISO9001 Quality Management System</li> <li>IATF 16949 Automotive Quality Management System Standard</li> <li>QC 080000 Hazardous Substance Process Management System</li> <li>ISO/SAE 21434 Road vehicles – Cybersecurity engineering</li> <li>ISO 26262 Road vehicles - Functional Safety</li> <li>ISO 27001 Information technology – Security techniques – Information security management systems – Requirements</li> <li>ISO 14001 Environmental Management System</li> <li>ISO 14064-1 Greenhouse Gases – Part 1</li> <li>ISO 14067 Products Carbon Footprint</li> </ul>  <b>ISO 9001 Certified</b> <b>IATF 16949 Certified</b> <b>IECQ HIRF Certified</b>

# Sustainable Performance

## E Environmental



### **2.28 M tCO<sub>2</sub>e reduction (accumulated)**

Since 2006, Winbond has participated in PFCs emission reduction projects with the Taiwan Semiconductor Industry Association (TSIA) and the World Semiconductor Council (WSC), achieving a total reduction of approximately 2.28 million tCO<sub>2</sub>e, equivalent to the annual carbon sequestration of 5,907 Daan Forest Parks.



### **Nature-based solutions removed 1,380 tCO<sub>2</sub>e**

Winbond implemented nature-based solutions, removing 1,380 tCO<sub>2</sub>e over 30 years through afforestation and carbon sequestration.



### **456 GWh electricity saved**

From 2019 to 2023, Winbond saved a cumulative total of 456 GWh of electricity, equivalent to the annual consumption of 130,233 households.



### **2.1 M kWh of renewable energy procurement**

Winbond procured approximately 2.1 million kWh of renewable energy in 2023.



### **Fab-wide water recovery rate reached 82.2%**

Our fabs recycled a total of 13.15 million cubic meters of water, resulting in a water recovery rate of 82.2% across the entire facility.



### **Water Conservation of 4,000 megaliters**

Cumulative water conservation of 4,000 megaliters from 2019 to 2023.



### **ISO 46001 and ISO 14046**

Winbond implemented ISO 46001 water efficiency and ISO 14046 water footprint management systems.



### **Waste recycling rate 90.9%**

13,595 metric tons of waste were recycled, resulting in a recycling rate of 90.9%.



### **Removal rate for VOCs in 2023 reached 98%**

The average removal rate for volatile organic compound was 98%.

## S Social



### **Human rights due diligence**

In 2023, Winbond issued its first independent report on human rights due diligence.



### **Diversity and Inclusion**

- 17% of senior executives are foreign nationals.
- In Taiwan, women make up 43% of new hires at Winbond.
- The weighted number of employees with disabilities increased by 19%.



### **Childcare Subsidies Exceeds NT\$330M**

Winbond has distributed NT\$330 million in monthly childcare subsidies of NT\$6,000 to its employees from 2011 to 2023.



### **Social Welfare Investment Reaches NT\$18.11M**

Total investment in social welfare reached NT\$18.11 million in 2023.



### **Conserving and breeding 27 species of Theaceae plants, we safeguard Taiwan's native flora**

Among the 42 Theaceae species found throughout Taiwan, efforts have been made to cultivate 27 varieties. Of these, 1 species is critically endangered, 1 is endangered, 6 are vulnerable, and 3 are near threatened.



### **Cultural Tour Sponsorship NT\$7.29M**

In 2023, Winbond sponsored a cultural tour for 6,120 people at the National Palace Museum Southern Branch, costing NT\$7.29 million.



### **Boosted human capital**

through an average of 50 training hours per employee, resulting in a 19% increase in staff training compared to 2022.



### **The average salary of non-supervisors was NT\$ 1.59M**

The average salary of non-supervisory full-time employees in 2023 was NT\$1.59 million.

## G Governance



### **The Board oversees the ESG Committee**

The ESG Committee, composed of the Chairman and all independent directors, guides the direction of Winbond's sustainable development strategy.



### **Senior Executive Development Committee established**

Strengthening succession teams to ensure sustainable business operations and foster talent development.



### **NT\$955M renewable energy investment plan**

Winbond accumulatively invested in renewable energy development and continuously collaborated with green industry supply chain alliances from 2022 to 2023.



### **A pioneer in joining in Taiwan Carbon Exchange**

Winbond became a representative of international enterprises making inaugural carbon credit purchases.



### **Acquisition of 13,500 tCO<sub>2</sub>e of carbon credits**

Since 2022, a cumulative acquisition of voluntary carbon credit projects from 9 countries in Asia and Africa, creating diverse sustainable benefits.



### **Clarivate global top 100 innovators**

Selected for two consecutive years, 2023-2024.



### **SEMI-E187 enhances cybersecurity defense in semiconductor manufacturing**

The introduction of SEMI-E187, a cybersecurity standard for semiconductor equipment, strengthens cybersecurity defense in semiconductor manufacturing.



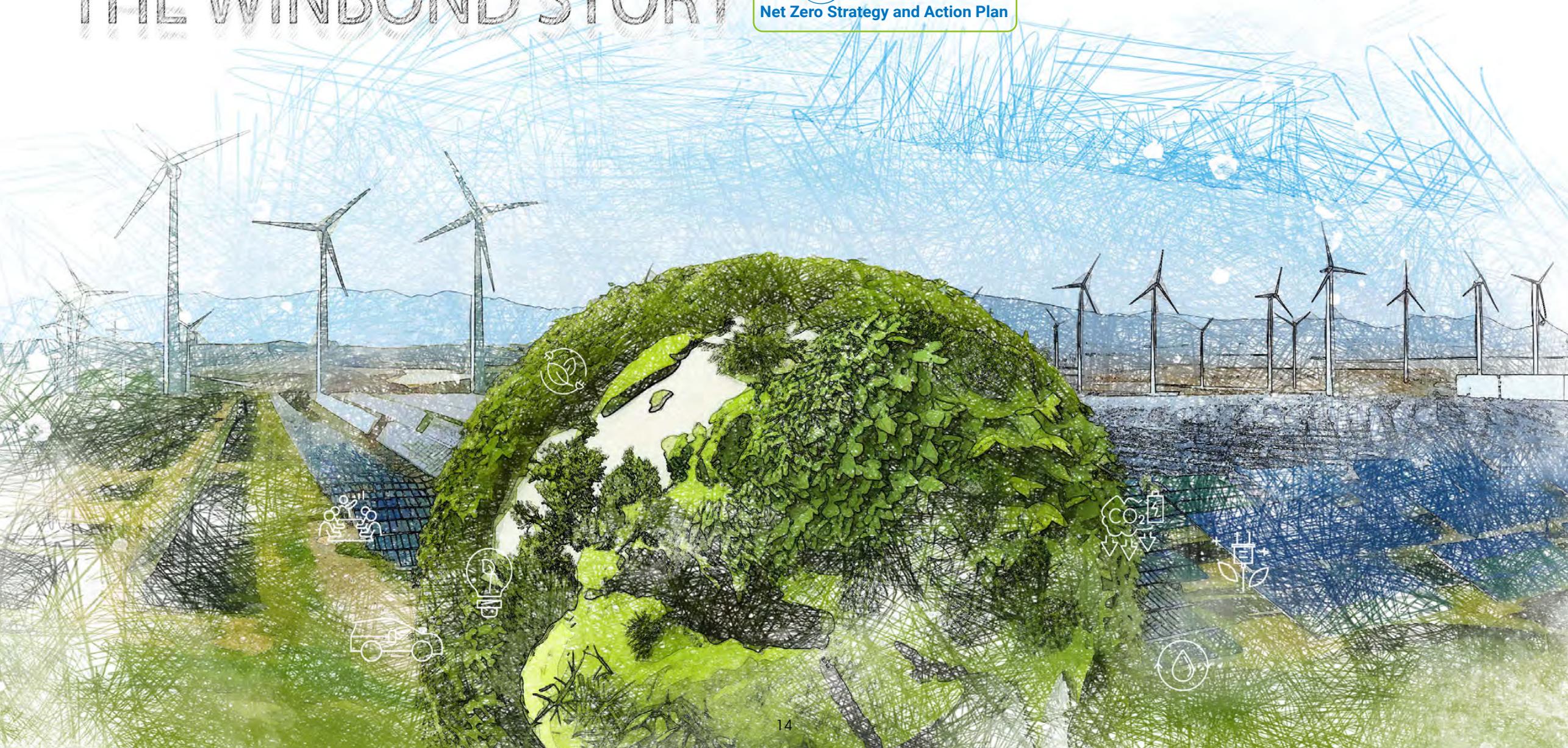
### **Winbond awarded TIPS A certification**

Winbond received the Taiwan Intellectual Property Management Specification (TIPS) A-level certification.

# THE WINBOND STORY



Net Zero Strategy and Action Plan





## Winbond Declares Its Goal to Achieve Net-Zero Emissions by 2050

**Winbond is Dedicated to the Sustainability of the Earth and the Enterprise  
Guided by the Board of Directors, Winbond establishes our sustainable strategy  
and demonstrates our commitment towards sustainable development**

With our vision to be the 'hidden champion in providing sustainable semiconductors to enrich human life', our Chairman is dedicated to driving sustainable innovation by leveraging the company's core capabilities. Carbon footprint is used as a key measure of innovative value, and every team member is empowered to become a carrier of corporate sustainability. Winbond's sustainable culture is shaped through collective wisdom, AI, and green technology to drive green product design innovation, green smart manufacturing, and sustainable supply chain strategies (see Figure 3). Winbond built a carbon accounting system and implemented data governance by leveraging its core competency and designing green products (see Figure 4). We established an ESG performance management system to incentivize and reward team members for sustainable innovation. Through systematization, a long-term tracking mechanism monitors and manages sustainability-related risks and opportunities. Winbond advances sustainability by influencing its supply chain and engaging all stakeholders, both internal and external. In 2023, Winbond achieved its GHG reduction targets, as depicted in Figure 5. For further accomplishments, please see the Sustainable Practices section.



Figure 2 ESG Committee



Figure 1 Global risks ranked by severity over the 10-year period  
Source: World Economic Forum (2023)



**Global risks ranked by severity over the 10-year period**

1 Failure of climate-change mitigation



2 Failure of climate-change adaptation

3 Extreme weather events

4 Biodiversity loss

5 Involuntary migration



## Net Zero Strategy and Action Plan

### Leveraging Core Capabilities for Sustainable Innovation

#### Carbon Footprint as KPI for Innovation and Value Creation

#### ESG Management: Monitoring Sustainability Risks & Opportunities



With our vision to be the 'hidden champion in providing sustainable semiconductors to enrich human life', our Chairman is dedicated to driving sustainable innovation by leveraging the company's core capabilities. Carbon footprint is used as a key measure of innovative value, and every team member is empowered to become a carrier of corporate sustainability. Winbond's sustainable culture is shaped through collective wisdom, AI, and green technology to drive green product design innovation, green smart manufacturing, and sustainable supply chain strategies (see Figure 3). Winbond built a carbon accounting system and implemented data governance by leveraging its core competency and designing green products (see Figure 4). We established an ESG performance management system to incentivize and reward team members for sustainable innovation. Through systematization, a long-term tracking mechanism monitors and manages sustainability-related risks and opportunities. Winbond advances sustainability by influencing its supply chain and engaging all stakeholders, both internal and external. In 2023, Winbond achieved its GHG reduction targets, as depicted in Figure 5. For further accomplishments, please see the [Sustainable Practices](#) section.



### Leveraging Core Capabilities for Sustainable Innovation

The world's first NOR Flash to support an operating voltage of 1.2V

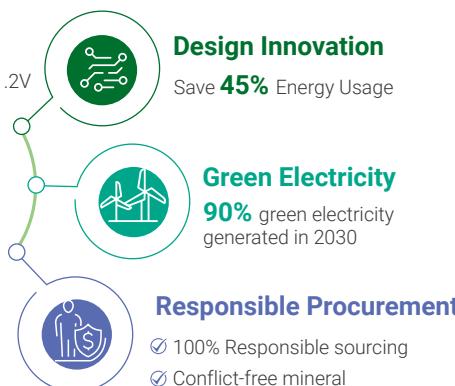


Figure 4 | Green Product Innovation

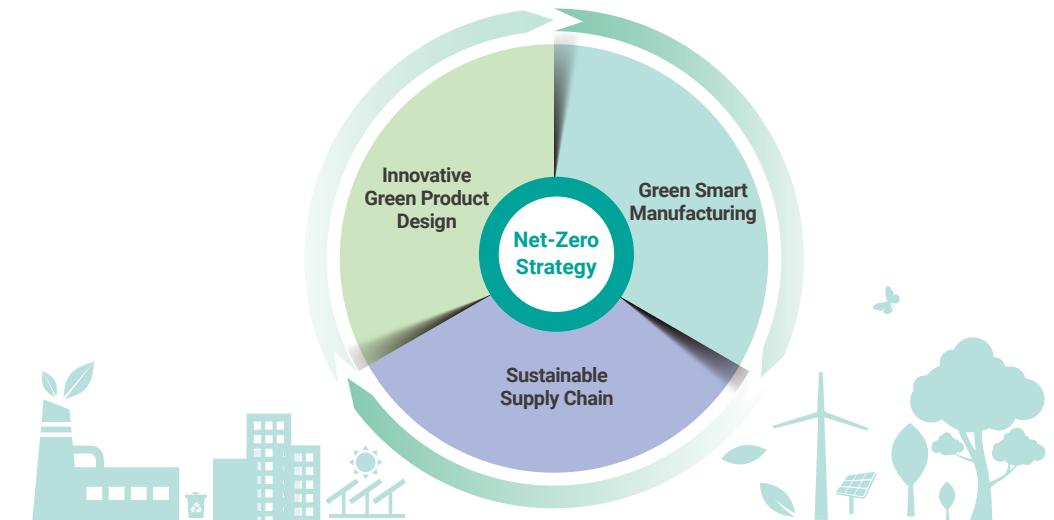
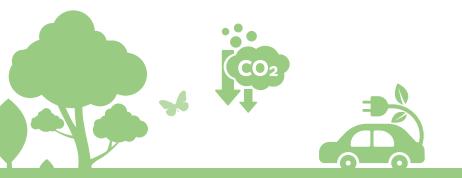


Figure 3 | Net-zero strategy



### Highlights

	<b>Innovative Green Product Design</b>		<b>Green Smart Manufacturing</b>		<b>Sustainable Supply Chain</b>
	<b>1.2V NOR Flash</b> compared to 1.8V NOR Flash <b>saves 45%</b> power consumption		<b>AI smart air conditioning</b> saved up to <b>9.96 million</b> kWh of electricity per year		<b>"Large Leads Small"</b> Total training hour is <b>16,965</b>
	Launched the world's first NOR Flash supporting 1.2V working voltage		Implemented AI Data Predictive Parameter Model into Smart Chiller Operation		100% Responsible procurement Product carbon footprint inventory of assembly and testing 100% Responsible sourcing of minerals management

Figure 5 | Performance of Carbon Reduction

## 20<sup>NET</sup>50 Net Zero Strategy and Action Plan

- To steadily advance towards sustainability, Winbond has combined its corporate sustainability strategy and ethos to establish short-term (by 2030), medium-term (by 2040), and long-term (by 2050) net-zero goals. Additionally, Winbond has developed a roadmap to achieve net-zero emissions by 2050 (see Figure 6) and is undertaking comprehensive actions towards achieving net-zero emissions by 2050.

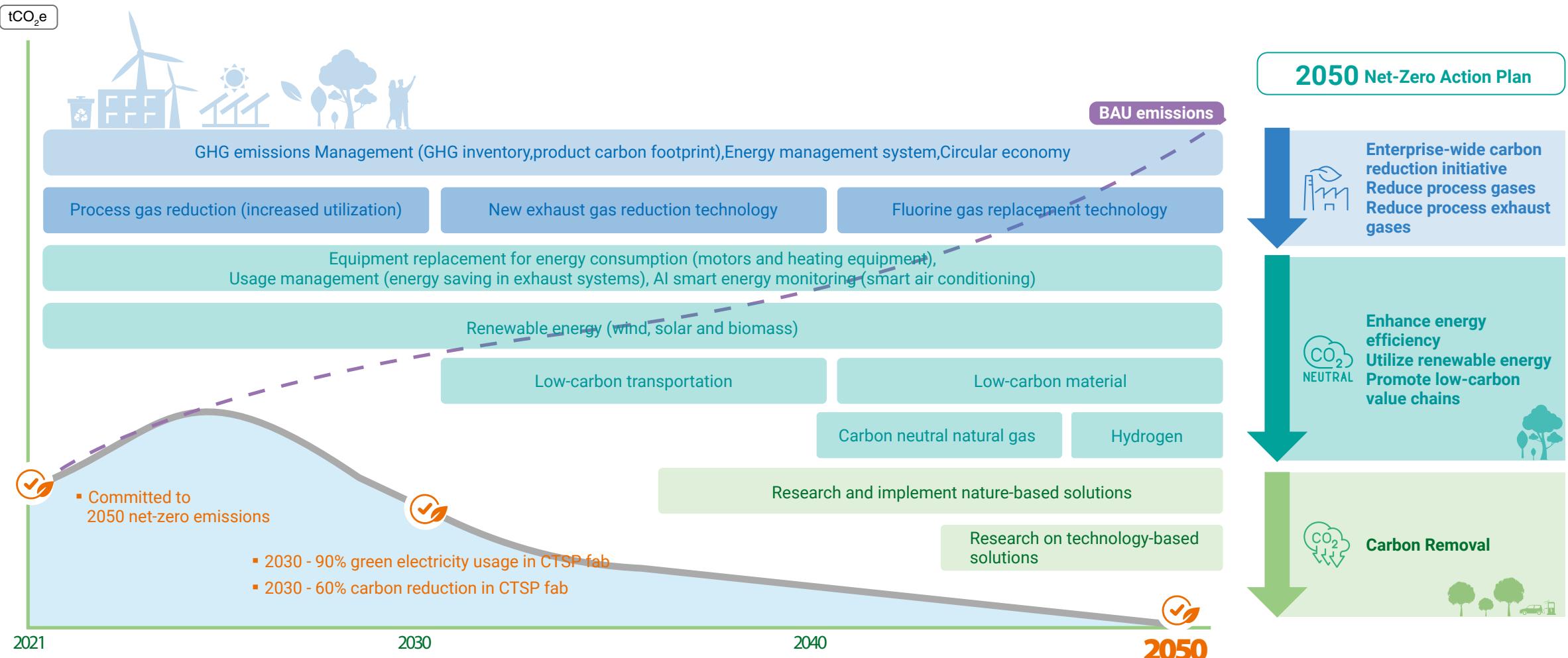


Figure 6 2050 Winbond Net-zero Roadmap

**Net Zero Strategy and Action Plan****■ 2050 Net Zero Strategy and Action Plan****① Direct emissions reduction ② Renewable energy use ③ Carbon removal****■ ① Direct emission reduction**

- Promoting a Net Zero Culture: We encourage all colleagues to collectively reduce carbon emissions. As of 2023, we have cumulatively reduced approximately 2.28 million tCO<sub>2</sub>e emissions, which is equivalent to the annual carbon sequestration of 5,907 Daan Forest Parks.
- Extending this initiative to our subsidiaries and branches progressively.

To achieve our goal of reducing direct emissions, Winbond advocates breaking free from traditional linear thinking. We foster an innovative culture, harness collective wisdom, and encourage colleagues to rethink the entire product lifecycle from a cradle-to-cradle design perspective. By setting targets, implementing data governance, establishing carbon accounting systems, managing institutional processes, and allocating capital expenditures, we drive a net zero culture. We are gradually expanding this approach to our subsidiaries and branches. Since 2006, Winbond has actively participated in reducing greenhouse gas emissions of perfluorocarbons in collaboration with the Taiwan and World Semiconductor Associations. Our collective efforts have resulted in a reduction of approximately 2.28 million tCO<sub>2</sub>e emissions, equivalent to the annual carbon sequestration of 5,907 Daan Forest Parks <sup>(Note)</sup>. Simultaneously, we have established long-term mechanisms to ensure the achievement of sustainable development goals. These measures contribute significantly to our progress in reducing direct emissions.

<sup>(Note)</sup> Based on data from the Forestry and Nature Conservation Agency, Ministry of Agriculture, and the Taipei City Government's Department of Land Administration, Daan Forest Park covers 25.93 hectares and has a carbon fixation rate of 14.9 tCO<sub>2</sub>e per hectare per year. As a result, the park contributes to the annual absorption of approximately 386 tCO<sub>2</sub>e.

**■ ② Renewable energy use**

- Commitment to 90% Use of Renewable Energy at the CTSP fab by 2030
- Investment of NT\$955 Million in Green Energy
- Procurement of Green Energy: Onshore Wind Turbines 3.6MW, Solar Power 27MW

Winbond has committed to achieving 90% usage of renewable energy at the CTSP fab by 2030 and actively participated in renewable energy project planning with investments totaling NT\$955 million. Concurrently, the company actively engages in green energy procurement. The first procurement of 3.6MW onshore wind power was completed in September 2023, securing approximately 2.1 million kWh of green electricity (with an expected annual generation of about 8.5 million kWh). Starting from April 2024, an additional 27MW of solar power has been acquired.

**■ ③ Carbon removal**

Nature-based Solutions (see "Net-zero case study" for details)

- Green Carbon - 30-year Afforestation Carbon Reduction Plan Removing 1,380 tCO<sub>2</sub>e
- Blue Carbon - Investing in the World's Largest Blue Carbon Project
- Seed Conservation and Breeding

To gradually achieve the net-zero target, Winbond has begun researching how to remove carbon from the atmosphere. Scientists have found that capturing and storing carbon dioxide from the atmosphere is an indispensable key element for the success of net-zero, which can be stored in land, oceans, and rock formations. Winbond explores nature-based solutions, starting with green carbon and blue carbon. Through industry-academia collaboration and tripartite cooperation among industry, government, and academia, afforestation and tree adoption are implemented. Additionally, investments in blue carbon and seed conservation and breeding are utilized to remove carbon from the atmosphere while promoting biodiversity benefits.

In 2023, Winbond was invited to participate in the launch ceremony of the Taiwan Carbon Solution Exchange (TCX)'s foreign emission reduction quota trading platform. This indicates the company's active participation in the international carbon trading market to address the carbon neutrality demands in corporate operations, creating diverse sustainable benefits. Such participation not only helps reduce carbon emissions but also contributes to climate change, biodiversity, and employment opportunities.

**1 Direct emission reduction**

- Promoting net-zero culture
- Driving digital transformation
- Developing green products
- Promoting green manufacturing
- Promoting green supply chain procurement

**2 Renewable energy use**

- Purchasing renewable energy
- Investing in renewable energy

**3 Carbon removal**

- Nature-based solutions -afforestation
- Purchasing carbon credits
- Researching on technology-based solutions

**Net Zero Strategy and Action Plan****■ Net Zero Case Study – Nature-Based Solutions (NBS)****Winbond is dedicated to carbon removal while preserving biodiversity**

- To achieve net-zero targets, Winbond has begun researching strategies to remove carbon dioxide from the atmosphere. Scientists have discovered that capturing and storing carbon dioxide from the atmosphere is essential for reaching net-zero emissions. It can be stored through means such as in soils, the ocean, and rocks. Winbond has been researching nature-based solutions and, through industry-university collaboration and tripartite collaboration between industry, government, and academia, we have implemented tree planting and adoption, invested in blue carbon projects, and engaged in conservation and breeding of tree species. These approaches contribute to the removal of carbon dioxide from the atmosphere while protecting biodiversity.

**■ ①Green Carbon Project: Planting 9,000 Trees to Remove 1,380 tCO<sub>2</sub>e in 30 Years**

Based on expert advice, Winbond has systematically planned new planting and afforestation operations, following the steps of suitable land, seeds, seedlings, timing, methods, and dimensions (Figure 7). We have invested time and effort in designing the tree planting area, cultivating seedlings, preparing the land, and implementing new planting and tending operations to create a sustainable forest management plan, selecting native tree species with high carbon sequestration capabilities to increase Taiwan's forest carbon sink. Winbond planted five native tree species at the Kaohsiung Fab, Bischofia javanic, Palaquium formosanum, Acacia confuse, Melia azedarach, Fraxinus griffithii. We cooperated with National Chung Hsing University on a 30-year afforestation plan, sequestering an estimated 390 tCO<sub>2</sub>e. We have eradicated alien species and planted native tree species to create green spaces in the factory area, achieving carbon sequestration, environmental beautification, air purification, and stabilizing the natural ecological environment.

Meanwhile, Winbond participated in the tree adoption and conservation program of the Forestry and Nature Conservation Service of the Ministry of Agriculture, adopting state-owned forest lands in Tainan City and Chiayi County, and planting four native tree species on 29,400 square meters of land, sequestering an estimated 990 tCO<sub>2</sub>e. Over 7,700 trees have been planted on the land, and through afforestation work, we aim to restore the vegetation cover of the hillside, maintain local vegetation, increase biodiversity and species habitat, and provide ecosystem services such as forest soil and water conservation, disaster reduction, soil fertility maintenance, and water flow regulation.

**■ ②Blue Carbon - Investing in the World's Largest Blue Carbon Project**

Blue carbon refers to the carbon dioxide absorbed and stored by coastal wetlands, including mangroves, salt marshes, and seagrasses. These ecosystems not only store carbon dioxide in their biomass, such as terrestrial forests, but also capture carbon dioxide flowing from upstream sources, acting as a natural filter to trap carbon dioxide in expansive river deltas. With this dual carbon dioxide capture process, coastal wetlands can remove carbon dioxide at a rate forty times faster than terrestrial forests, making blue carbon one of the most effective and valuable carbon removal systems available. Winbond's investment supports a large-scale project to restore mangroves and wetlands in the Indus River Delta region of Pakistan. Spanning 350,000 hectares, the project is expected to reduce carbon emissions by more than 142 million tCO<sub>2</sub>e over its 60-year duration from 2015 to 2075. Additional benefits of the project are illustrated in Figure 8.

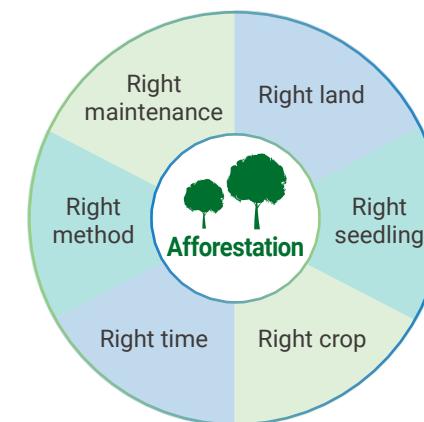


Figure 7 Nature-based solution – Afforestation



Protect and restores **350,000** ha in the Sindh Indus Delta Region

Over **42,000** residents are benefits from this projects

**15,100** people benefit from the health condition improved by this project

Expected to remove **142** million tCO<sub>2</sub> over the project's 60-year lifetime

**400** people daily are provided with clean drinking water through the rehabilitation and management of reverse osmosis plants

**34,600** people benefits from the increasing fishing

Figure 8 Benefits of the Mangrove and Wetland Afforestation and Restoration Project in the Indus River Delta Region of Pakistan.



Net Zero Strategy and Action Plan

## ■ Net Zero Case Study – Nature-Based Solutions (NBS)

### ③ Conservation and Breeding Program of Tree Species

- The program focuses on the 42 species of Theaceae plants found in Taiwan, 27 of which have already been collected and cultivated. Of these, 1 species is critically endangered, 1 is endangered, 6 are vulnerable, and 3 are near threatened.

In 2021, Winbond launched the Baoshan Park Species Conservation and Breeding Program, leveraging group resources to cultivate native tree species in Taiwan. The initial focus is on Theaceae plants, with the collection and cultivation of native plant species in Taiwan, as shown in Figure 9. In collaboration with National Chung Hsing University, the program aims to achieve species conservation and breeding, ecological education, and sustainable forestry. The goal is to preserve a forest garden with conservation, education, and cultural value amidst rapid social development and expansion.

Theaceae plants, the main tree species in evergreen broad-leaved forests, are easily destroyed by environmental development. They also have various economic values, making them vulnerable to human hazards such as theft for grafting rootstock or horticultural plants, or for their high-value tea leaves. Hybridization with foreign tea species has also caused confusion in the wild sources of native Theaceae. These factors have harmed Taiwan's native Theaceae populations, and the slow growth of Theaceae plants makes recovery difficult. In response, Winbond is dedicated to protecting Taiwan's native plants and preserving Theaceae species, with the goal of conserving all 42 species of Theaceae plants found in Taiwan. We have cultivated 27 species, including 1 species that is classified as critically endangered, 1 as endangered, 5 as vulnerable, and 3 as near threatened, as listed in the IUCN Red List of Threatened Species.



Figure 9. The conservation and breeding program of Theaceae Plant Species

### ■ Creating a Native Wildflower Garden with Ecological Landscaping

- This garden features 20 species of native Taiwanese plants, including 1 critically endangered, 3 endangered, and 3 vulnerable species

In 2023, Winbond's Zhubei Building unveiled a native wildflower garden, designed with the Wild Gardening aesthetic. The design was eco-friendly, energy-efficient, and focused on creating a thriving native plant ecology within the city. This garden featured 20 species of native Taiwanese plants, including 1 critically endangered, 3 endangered, and 3 vulnerable species, as listed in the IUCN Red List of Threatened Species. Spanning approximately 5 square meters, the garden showcases the beauty of the changing seasons, while providing ecological benefits such as air purification, microclimate regulation, and dust absorption. The use of native Taiwanese tree species aligns with SDG 15, protect, restore and promote sustainable use of terrestrial ecosystems. Furthermore, by protecting endangered species, the garden will serve as an educational purpose, raising awareness for conservation efforts.

### ■ Endangered Wild Plant 'Spiranthes' Discovered! Taiwan's Smallest Native Plain Orchid

Spiranthes spp., once a thriving and abundant plant on the plains of Taiwan (as depicted in Figure 10), has experienced a significant reduction in its habitat in recent years due to habitat loss, fragmentation, and the decline of native green spaces on the plains. This has resulted in its inclusion in the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The green spaces at Winbond's CTSP Fab and Tainan building, which were free of pesticides, were found to be suitable habitats for the expansion of Spiranthes populations. To conserve Spiranthes populations, Winbond postponed weeding during the plant's flowering and fruiting period, allowing it to reproduce naturally. After the flowering period, maintenance was performed on the greenway to ensure that Spiranthes had the opportunity to continue reproducing through rhizomes and seeds. Wild plants are an essential component of biodiversity. We educated our colleagues on the importance of conserving wild plants and encouraged them to join this initiative. Conservation is urgent. Winbond is committed to preserving Taiwan's biodiversity and ecology by protecting endangered wild plants and contributing to the conservation of this land.



Figure 10 Endangered wild plant – Spiranthes

# THE WINBOND STORY

**Sustainable Impact**

## Winbond's Value Creation and the Six Capitals: Inputs and Outputs



Adhering to the principles set forth by the International Integrated Reporting Council (IIRC) in its Integrated Reporting Framework, Winbond discloses its capital inputs, capital outputs, and sustainable management practices. The 2023 summary is as follows:

Capital	Value Creation	Key Project	Outcome
 <b>Financial capital</b>	Maintain the foundation of the daily operations, production and services through operations and investments	<ul style="list-style-type: none"> <li>Strengthening financial structure, expanding cost-competitive production capacity and adjusting product portfolio.</li> <li>Operating expenses: NT\$24 billion.</li> </ul>	<ul style="list-style-type: none"> <li>Consolidated revenue: NT\$75 billion.</li> <li>Consolidated net profit after tax: NT\$ 34 million.</li> </ul>
 <b>Manufactured capital</b>	Including the investment and maintenance of wafer manufacturing integrated factories, production and R&D equipment, and providing products that meet customer needs	<ul style="list-style-type: none"> <li>Capital expenditures for the acquisition of production machinery and process development equipment: NT\$13.8 billion.</li> </ul>	<ul style="list-style-type: none"> <li>The annual production capacity is approximately 828 thousand 12-inch wafers and approximately 536 thousand 6-inch wafers.</li> </ul>
 <b>Intellectual capital</b>	Knowledge-based intangible assets owned by company. Enhance digitalization to provide more convenient and secure services based on innovative technology	<ul style="list-style-type: none"> <li>R&amp;D expenses accounted for 23% of revenue.</li> <li>Promote smart manufacturing using four major digital transformation systems of industrial AI (artificial intelligence) technology.</li> <li>Digital platform.</li> </ul>	<ul style="list-style-type: none"> <li>Obtained 390 patents globally and domestically, and the accumulated patented granted is 4,900.</li> <li>Topics of project development includes "Data analysis efficiency", "quality improvement", "output improvement", "energy saving analysis".</li> <li>Complete 35 digital transformation activities and trainings; the paperless inventory system can save 1,016 hours of manpower per year.</li> </ul>
 <b>Natural capital</b>	Committed to minimizing the negative impact of operations on the environment	<ul style="list-style-type: none"> <li>Implemented a 30-year reforestation plan.</li> <li>Implemented of ISO 46001 water efficiency management systems.</li> <li>Process improvements included replacing energy-efficient equipment, installing exhaust treatment equipment, executing energy-saving projects, and utilizing renewable energy.</li> </ul>	<ul style="list-style-type: none"> <li>A total of 9,000 trees will be planted, which is expected to absorb approximately 1,380 tCO<sub>2</sub>e from 2023 to 2053.</li> <li>The water recovery rate of the entire plants: 82.2%.</li> <li>Cumulative power savings from 2019 to 2023: 456 million kWh.</li> </ul>
 <b>Human capital</b>	Support employees by enhancing competitiveness, workplace diversity and inclusion, and improving quality of life	<ul style="list-style-type: none"> <li>Expenditure on employee education and training: NT\$25.26 million.</li> <li>Employee compensation and benefits: NT\$16,774,873 thousand.</li> <li>Conducted the Employee Core Values and Engagement Survey in 2023.</li> </ul>	<ul style="list-style-type: none"> <li>The average training hours for global employees will be 50 hours (mainly core, professional, data science, and management).</li> <li>Global employee retention rate of 94% in 2023.</li> <li>97% of colleagues are committed to staying on and are willing to make full use of their talents in Winbond in the next five years.</li> </ul>
 <b>Social and relationship capital</b>	Relationships with communities and other stakeholder groups, as well as investment and planning related to social participation	<ul style="list-style-type: none"> <li>The total amount of investment in social welfare: NT\$18.11 million.</li> <li>Cumulative employee childcare subsidies exceed NT\$330 million.</li> <li>Conducted customer satisfaction surveys.</li> </ul>	<ul style="list-style-type: none"> <li>Public welfare activities implemented three core strategies - "talent cultivation", "nature-based solutions", and "social welfare and environmental protection".</li> <li>A total of 1,847 employees' children benefited from childcare subsidies from 2011 to 2023.</li> <li>Customer satisfaction rate: 85%.</li> </ul>

# Winbond's Three Major Value Chain Stages of Impact **1**



Winbond recognizes that alongside business growth and profitability, it must also prioritize the external impact of its operational footprint on society and the environment, and create long-term value for stakeholders. Therefore, Winbond examines the direct and indirect positive (value creation) and negative (cost) impacts of activities at each stage of the value chain on the economy, environment, and society. This helps in understanding the external influence of the three major stages of the value chain (upstream procurement, operations, and customer usage). Positive impacts mainly arise from the economic value generated by operational activities and employee development, while negative impacts primarily stem from the social costs of carbon emissions generated by operational activities.

## **Value Chain**      **Procurement Stage**

- 100% compliance with responsible sourcing and conflict-free mineral usage
- Accumulated more than 9,000 hours on supplier ESG workshops
- Worked with 13 suppliers and outsourcers on carbon reduction plan

In the upstream supply chain, Winbond's procurement needs contributed to an increase in the output value of the supply chain, indirectly creating employment opportunities and salary income for employees. However, its environmental footprint also led to various social costs, including greenhouse gas emissions, wastewater emissions, and other forms of pollution derived from the supply chain.

Regarding supply chain sustainability, Winbond actively promoted responsible practices, collaborating with suppliers to identify improvement opportunities and driving sustainable industry transformation. In 2023, we participated in the post-epidemic low-carbon transformation subsidy program of the Industrial Development Administration of the Ministry of Economic Affairs. We worked with 13 suppliers and outsourcing manufacturers to develop carbon reduction plans, with regular reviews of progress planned annually. Implementation is anticipated to commence in 2025, aiming to reduce approximately 5,866 metric tons of carbon dioxide equivalent annually and extend carbon reduction benefits to the sub-industry supply chain.

Winbond also remained committed to responsible sourcing, ensuring the exclusion of conflict minerals to align with market and regulatory expectations. In 2023, our supplier ESG learning workshops exceeded 9,000 hours, further fortifying the resilience of the overall supply chain.



Winbond embraced the government's 'Large Leads Small' policy by driving the upgrade and transformation of the supply chain, earning recognition from the Ministry of Economic Affairs.

## **Value Chain**      **Operation Stage**

- Global average training hours per employee reached 50 hours
- Overall compensation ranked within the top 25% of the industry
- Operating income of NT\$75 billion in 2023

Throughout its operational process, Winbond creates various value streams for stakeholders, including net operating profit (for customers/shareholders/investors), remuneration and benefits (for employees), taxation (for the government), and depreciation and amortization (for suppliers). In 2023, Winbond generated NT\$75 billion in revenue, contributing to its economic dimension.

In the societal dimension, in 2023, Winbond contributed a total of NT\$18.2 billion in tax payments and employee salaries, making significant contributions to national finances and social welfare, enhancing quality of life, and driving economic growth momentum. Additionally, Winbond is committed to fostering employee experiences and skills. Apart from boosting productivity and company revenue, this effort also strengthens each employee's employability. In 2023, Winbond's global employees accumulated a total training time of 189,725 hours, with an average training time per employee of 50 hours. Winbond's salary structure, including "average employee salary," "total employee compensation," and "salary growth rate," all possess market advantages, leading to its inclusion in the TWSE RAFI® Taiwan High Compensation 100 Index. This underscores Winbond's dedication to employee care. In 2023, the average annual salary for non-supervisory full-time employees at Winbond was NT\$1.59 million.

As a leader in the memory industry, Winbond actively implements green manufacturing practices. Apart from enhancing resource efficiency, Winbond also endeavors to reduce environmental impact by minimizing greenhouse gas emissions, wastewater, waste generation, and chemical usage. Furthermore, Winbond undertakes green investments, such as afforestation and increasing renewable energy sources, to mitigate the ecological footprint of its operations and value chain activities.

## **Value Chain**      **Customer using stage**

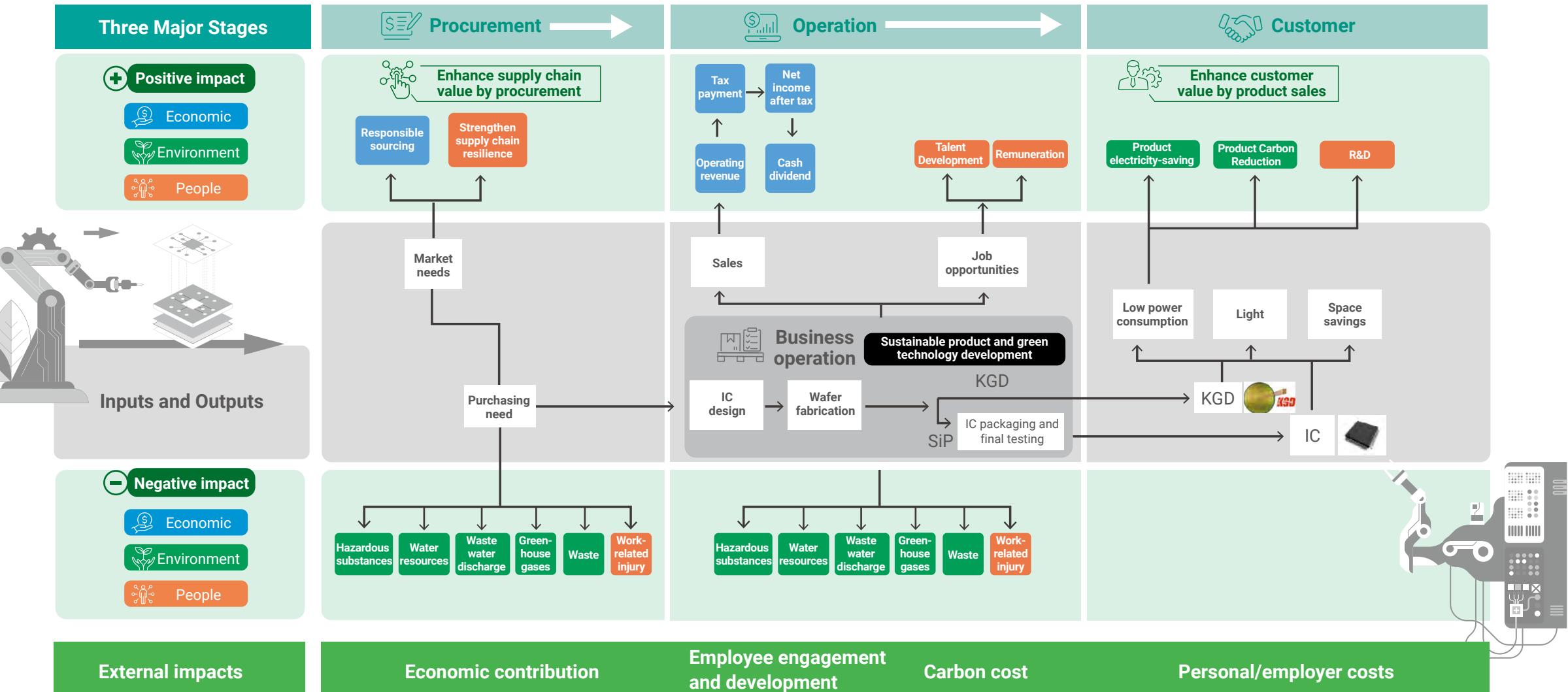
- 1.2V HyperRAM saves 33% in power consumption compared to 1.8V HyperRAM
- 1.2V NOR Flash reduces power consumption by 45%

Winbond understands that product design and process improvement are the essential ESG missions in the semiconductor industry.

In 2023, through advancing innovations in DRAM and Flash process technologies, we provided energy-efficient product solutions for our customers, aiming to reduce the energy demand during the use of electronic products. This effort not only helps in reducing greenhouse gas emissions but also mitigates the social carbon costs and health impacts associated with electricity consumption of end products. We led industry development by introducing the world's first NOR Flash supporting 1.2V operating voltage, which reduces total power consumption by 45% compared to the widely used 1.8V NOR Flash. Additionally, our Flash division launched the new generation of low-capacity 3V Serial NOR RV series flash memory products, significantly reducing the die area per chip and supporting smaller packaging. This innovation greatly lowers the carbon footprint during the wafer fabrication and packaging stages, with a 34% reduction compared to the previous generation. Simultaneously, our HyperRAM product in DRAM successfully reduced the voltage to 1.2V, cutting power consumption by 33% and extending the usage time of wearable devices. These advancements underscore our commitment to promoting energy-efficient, low-carbon products and highlight our determination to make significant contributions to the well-being of human society.

In the future, Winbond will continue to integrate green design concepts into product development, leveraging core competencies to fulfill its commitment to sustainable development. This includes developing ultra-low power designs and smaller size packaging technologies in Flash and DRAM products, such as Flash SON 2x3, 100BGA LPDDR4/4X. Additionally, Winbond will advance innovative CUBE (customized ultra-bandwidth elements) architecture, enhancing bandwidth with 3D stacking technology to reduce the power required for data transmission.

## Winbond's Three Major Value Chain Stages of Impact 2



# LEADING A SUSTAINABLE PATHWAY

- 26** | ESG implementation framework
- 28** | Materiality analysis and stakeholder engagement
- 38** | Attaining the UN sustainable development goals

## ESG Implementation Framework

Winbond strives to become "a hidden champion in providing sustainable semiconductors to enrich human life." With the ESG vision personally outlined by the Chairman, Winbond has established an ESG committee within the Board of Directors (see Figure 1). The Board of Directors provides the strategic framework for sustainable development (see Figure 2). Winbond upholds values such as integrity, ethical behavior, innovation, and enthusiasm, continuously enhancing corporate value. Simultaneously, the company remains attuned to global trends, addresses social issues, and responds to stakeholder expectations. By aligning its actions with the United Nations Sustainable Development Goals (SDGs) and integrating sustainability principles into its core operations, Winbond contributes to a better future for society.



Figure 1 ESG Committee

### Winbond ESG Strategy Framework

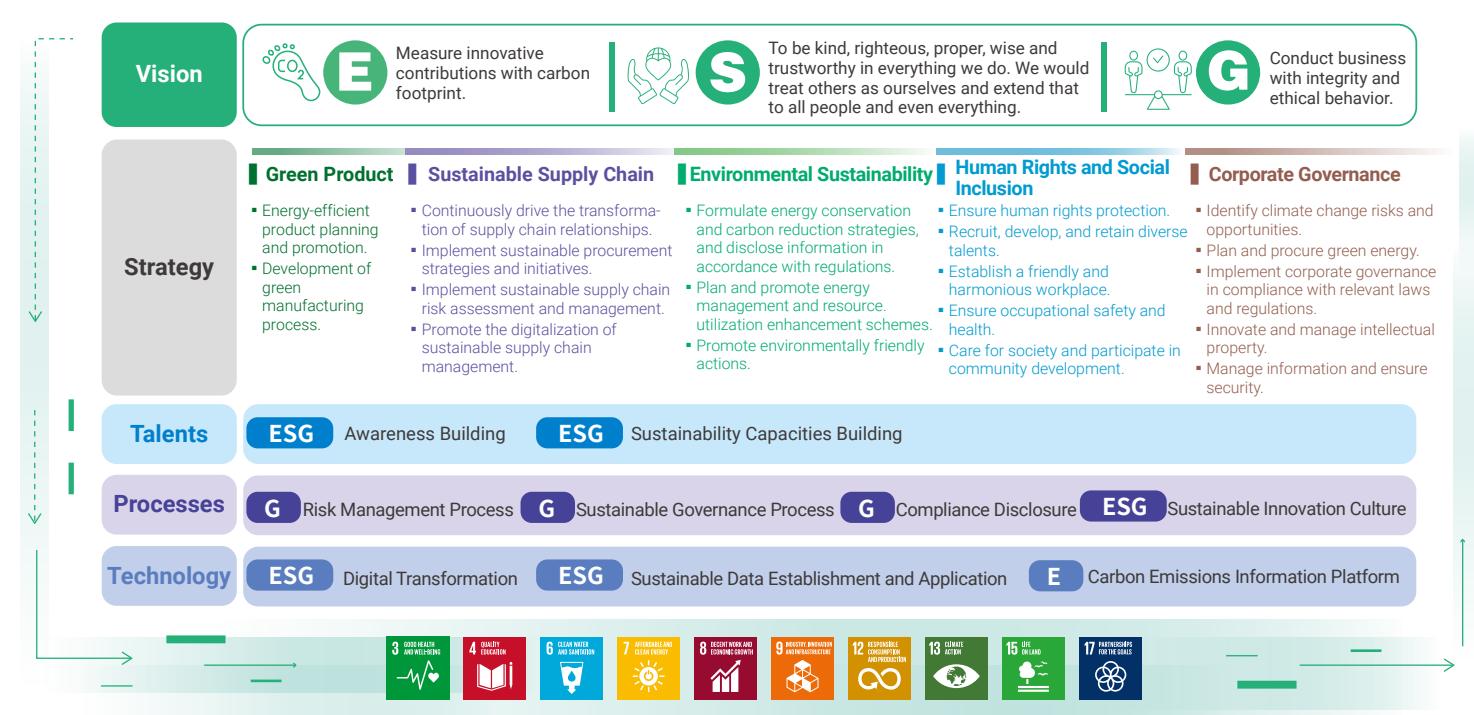


Figure 2 ESG Strategy Framework

## Sustainability Statement

Senior executives integrate cross-departmental resources, emphasize the importance of sustainability commitments through a high level of attention to ESG, implement Winbond's sustainability spirit throughout the entire company, and expand its influence to customers and supply chains for mutual benefit and inclusiveness.



**Jing-Fong Tsai**

Vice President,  
Quality & ESH Center

R&D innovation is Winbond's most powerful advantage in adapting to trends. Winbond has incorporated it into our company's development path, aligning it with market demands while maintaining service quality. With confidence, our team continues to strive towards the development of high-end products, aiming to cultivate competitiveness and core technologies to face various risk challenges.



**Ilia Stolov**

President (Israel),  
Security Technology  
& Solution Center

At Winbond, we recognize that a lack of data protection poses a significant threat to society, as security plays a crucial role in safeguarding people's privacy. Committed to innovation, we are advancing the field of memory security to create more ethical products, ensuring seamless privacy protection for our customers and society. Our dedication to security is not just a commitment but a corporate responsibility, reflected in our proactive approach to product security certification. By certifying our products, we demonstrate our willingness to adhere to the highest security practices, providing our customers with the most secure and trusted solutions available in the market. Winbond strives to contribute positively to the broader community and uphold values that align with sustainability and responsible business practices.

## Sustainability Statement

**HSIU-HAN LIAO**

Assistant vice president,  
Code Storage Technology  
Development Center

We are committed to the sustainable development of storage memory technology, creating low-power products through innovative low-carbon processes, smart technology, and component design. Our philosophy is to integrate ESG energy-saving and carbon-reduction concepts into every research and development effort, collectively shaping a cleaner and more environmentally friendly future in technology.

**WEI-MING CHIU**

Technology Executive,  
KS. Fab Memory Prod. Proc.  
Integ. & Testing Center

Winbond emphasizes rapid adoption of various technology products and quality enhancement. The company provides robust chip testing platforms, actively seeks work-life balance for employees, and prioritizes their holistic well-being to achieve sustainable development goals.

**Jackson Huang**

Technology Executive,  
Flash Product Marketing  
Center

**Wen-Pin Chang**

Technology Executive,  
Taichung Fab. Memory Prod.  
Manufacturing Center

**Yi-Der Wu**

Technology Executive,  
Flash Product and testing  
Engin. Center

Winbond places quality at the heart of product testing. By using innovative technologies to reduce environmental impact, it ensures high-standard testing processes for every product. Upholding integrity and environmental consciousness, Winbond contributes to sustainable storage solutions.

As our world becomes increasingly reliant on electronics devices, innovation becomes crucial in mitigating and minimizing their environmental impact. With an annual shipment exceeding 3 billion flash devices that are integral to a diverse array of systems, the onus is on Winbond to introduce solutions that not only consume minimal amount of energy but also cater to optimal user experiences and application requirements. It is imperative for Winbond to help pave the way for a sustainable future, where technology harmonizes with ecological responsibilities.

**Shuo-Che Chan**

Technology Executive,  
C.M.S Technology Development  
Center

Innovation is deeply ingrained in Winbond's corporate culture. The technical team not only drives continuous innovation but also actively participates in carbon reduction and process optimization to enhance the competitiveness of our green semiconductor products, aligning with the company's vision.

**Yi-Chih Chang**

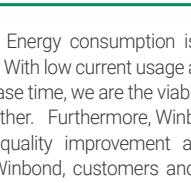
Technology Executive,  
C.M.S Marketing Center

Winbond recognizes that its responsibility extends beyond employees and their families. It strives to benefit society by ensuring healthy lives and a better green environment for future generations. Upholding the highest ethical standards, Winbond avoids using products from unjust, unfair, or inhumane sources. Winbond recognizes that its responsibility extends beyond employees and their families. It strives to benefit society by ensuring healthy lives and a better green environment for future generations. Upholding the highest ethical standards, Winbond avoids using products from unjust, unfair, or inhumane sources.

**TZU-CHING CHUANG**

Technology Executive,  
Taichung Fab. Memory  
Prod. Proc. Integ. Cen

Balancing innovation and efficiency during the semiconductor process integration, Winbond acknowledges its responsibility toward the environment, society, and governance. Environmentally, it seeks energy-saving and waste-reduction opportunities in processes, adhering to sustainable resource use and circular economy principles. Socially, it prioritizes employee safety and health, maintaining strict workplace safety standards. In governance, it upholds ethical norms and transparency, reporting responsibly. Through these commitments, Winbond aims to create economic value while positively impacting the environment and society.

**Johnny Chan**

Technology Executive,  
Flash Product Design  
Center

Reduction of Energy consumption is always Winbond Flash memory design's commitment. With low current usage and low voltage supply combining with short program & erase time, we are the viable partner for the end users to reduce carbon footprint together. Furthermore, Winbond closely engage clients with customized designs for quality improvement and to shorten their manufacturing time. Collectively, Winbond, customers and end-users are working toward ESG goals together.

## Materiality Analysis and Stakeholder Engagement

Winbond is committed to communicating with stakeholders in a transparent and open manner in order to identify all sustainability topics of concern and incorporate these topics into our corporate sustainability framework. In 2023, Winbond published its first [Materiality Analysis Report](#), disclosing the material topics Winbond had identified and its approach to managing these issues. Based on the GRI Standards published by the Global Sustainability Standards Board on October 2021 (GRI 3: Material Topics 2021), Winbond has conducted a materiality analysis, and defined Winbond's material topics assessment principles as: "issues of significant impact to major stakeholders that also have a noticeable impact on Winbond operations, while staying consistent with Winbond's sustainable development goals". In line with our philosophy for managing material topics, Winbond has identified 9 material topics after consolidation of similar issues, no difference than that of 2022. Winbond conducts a materiality analysis every three years. During this period, Winbond continues to communicate and respond to stakeholders, implementing sustainability strategies and enhancing effectiveness.

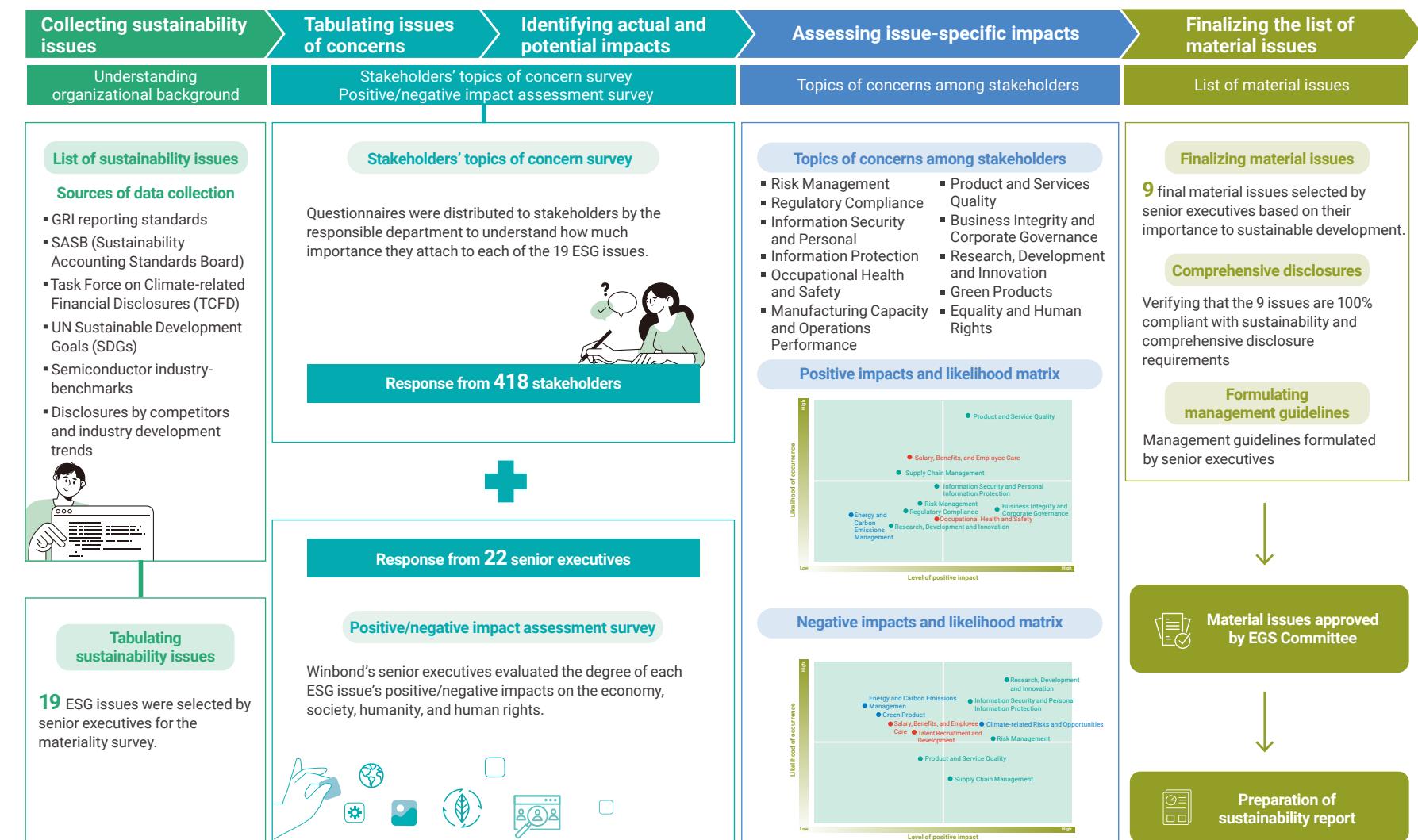
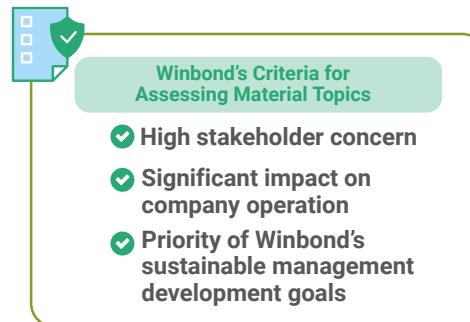


Figure 3 Procedures for Analyzing Material Issues

## Matrix of Level of Potential Positive and Negative Impact and Likelihood of Occurrence

In accordance with the GRI Standards (2021) definition of materiality, the senior management team assessed topic impacts through an impact assessment questionnaire, duly considering the principle of double materiality. This evaluation examined both the positive and negative impacts of 19 sustainability topics on the economy, environment, and people (including human rights), rating them based on their likelihood of occurrence and severity of impact (see Figure 4). Subsequently, the material topics identified were organized and submitted to the ESG Committee for review. Based on the priority set by Winbond for its various Sustainable Development Goals, the impact of each topic on Winbond's internal corporate development, the external economic, environmental, and social (including human rights) impact of Winbond's business operations, and in line with Winbond's philosophy for managing material topics, similar material topics are consolidated into a single topic. Through this adjustment process, 9 material sustainability topics were identified. Finally, the Winbond ESG Committee reviewed the identified material topics and confirmed that the information meets the reporting principles of sustainability context and completeness. A management approach was determined for each material topic and submitted to the Board of Directors for approval.

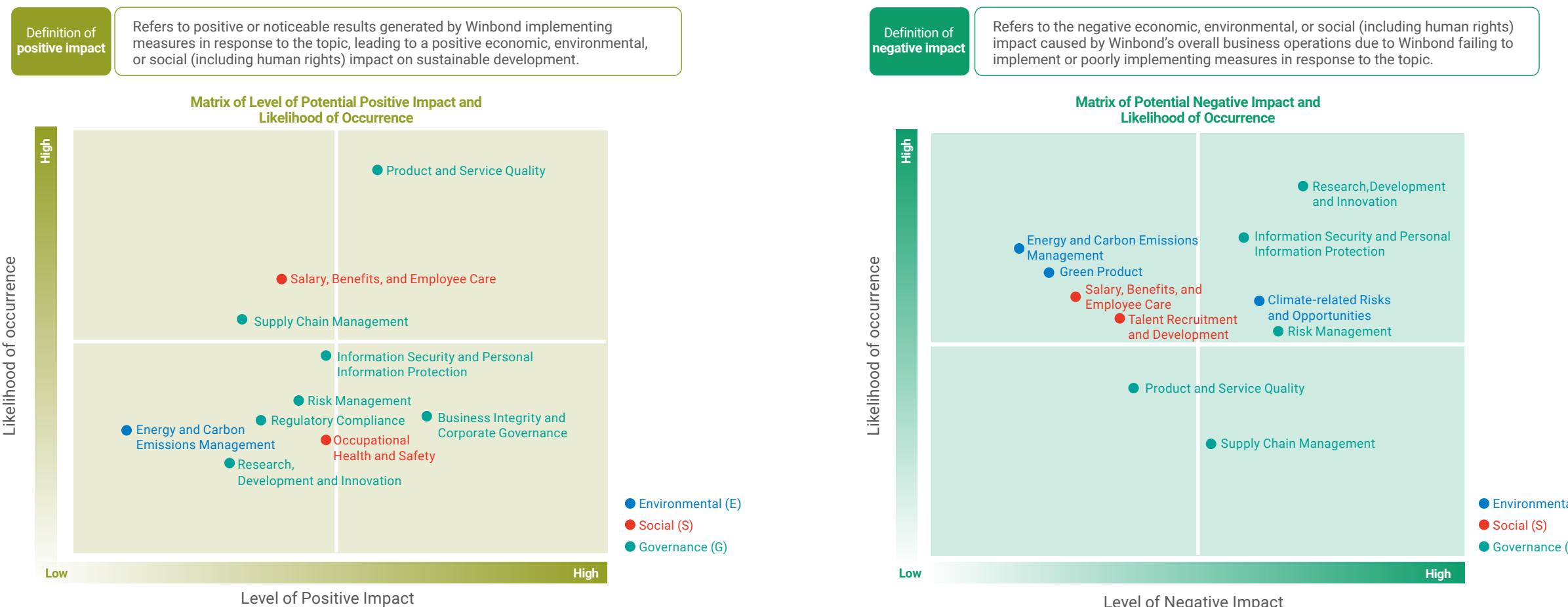


Figure 4 | Top 10 sustainable issues ranked by the severity of positive and negative impacts and the likelihood of occurrence

## Material Topics and Their Relationship with Winbond Value Chain

Winbond places high importance on material topics, describing both positive and negative impacts associated with the 9 identified material topics. It links these material topics to Winbond's value chain, determining the impact boundaries on the value chain, including Winbond itself, customers, and the supply chain. Winbond tracks specific outcomes regularly each year.

● Direct impact ▲ Indirect impact through business relationship

Material Topic	Type of Impact (↑ as positive impact ↓ as negative impact)	Description (How to impact economic, environment, and people (including human rights))	Scope of Impact			2023 Result (Please refer to the following sections)
			Winbond	Customer	Supply Chain	
<b>Business Integrity and Corporate Governance</b>	↑ Improve positive brand image. ↓ Corruption and anti-competitive behavior reduce the trust that stakeholders have in Winbond, negatively affecting our operating revenue.	<ul style="list-style-type: none"> <li>Well-established corporate governance and regulatory compliance lead to increased investment.</li> <li>Avoiding illegal activities prevents financial and rights losses for Winbond and certain groups.</li> </ul>	●	▲	▲	<a href="#">1.1 Corporate governance</a> <a href="#">1.2 Business integrity</a>
<b>Regulatory Compliance</b>	↑ Elevating reputation for sustainable operations. ↓ Receiving legal or regulatory penalties may damage Winbond's reputation, and negatively impact our financial situation and employees.	<ul style="list-style-type: none"> <li>Compliance with regulatory requirements enhances reputation, leading to increased investment and revenue.</li> <li>Avoiding the impact on society and Winbond resulting from non-compliance with social or environmental regulations.</li> </ul>	●	▲	▲	<a href="#">1.2 Business integrity</a> <a href="#">3 Environmental sustainability</a> <a href="#">5.1 Human rights governance</a> <a href="#">5.4 Occupational safety and health</a>
<b>Risk Management</b>	↑ Improve corporate resilience, reducing the impact of risk on the Winbond. ↓ Without a risk management system, potential risks that occur may damage Winbond's reputation and lead to financial losses. Information security leaks may lead to security or financial losses.	<ul style="list-style-type: none"> <li>Through effective corporate governance, human rights, and supply chain risk management systems, the impact and likelihood of risks from climate change and human factors can be reduced.</li> <li>Encourage greater investment from Winbond's stakeholders.</li> </ul>	●	▲	▲	<a href="#">1.4 Risk management</a>
<b>Research, Development and Innovation</b>	↑ Research and development into improving energy conservation and carbon reduction performance are able to provide both Winbond and our customers with benefits. ↓ If research, development, and innovation are unable to provide results that customers are satisfied with, Winbond's competitiveness would decline.	<ul style="list-style-type: none"> <li>The energy conservation and carbon reduction benefits provided through research and development are able to reduce environmental impact.</li> <li>Innovative technologies can satisfy customer requirements, leading to more competitive products and higher revenues for Winbond.</li> </ul>	●	●	▲	<a href="#">2.1 Research, development, and innovation</a>
<b>Productivity and Business Performance</b>	↑ Increased productivity, positively impacting revenues. ↓ Insufficient productivity, reducing business performance.	<ul style="list-style-type: none"> <li>Increased productivity can reduce costs and waste, improving business performance and capabilities.</li> <li>Insufficient productivity can lead to higher costs and waste, leading to revenue losses and increased environmental burden, costs and waste, leading to revenue losses and increased environmental burden.</li> </ul>	●	▲	▲	<a href="#">1.3 Productivity and business performance</a>
<b>Supply Chain Management</b>	↑ Refine the supply chain management system, making the goods supply process more stable and smoother. ↓ Supply channels obstructed, leading to production and sales delays.	<ul style="list-style-type: none"> <li>Build a comprehensive supply chain management system, ensuring that supply is stable, leading to increased business production efficiency and higher revenues.</li> <li>Poor management of the social and environmental aspects of the supply chain, leading to lower customer trust and sales orders, and increased environmental burden.</li> </ul>	●	▲	●	<a href="#">4 Sustainable supply chain</a>
<b>Green Product</b>	↑ Improving product functions and reducing product energy consumption can create positive benefits for the environment. ↓ Product market competitiveness.	<ul style="list-style-type: none"> <li>Consistent with sustainability trends, meet customer expectations, improve product positioning and revenues, while also benefiting the environment.</li> <li>Failure to meet customer demands would diminish product value and reduce revenue.</li> </ul>	●	●	▲	<a href="#">2.2 Quality management for products and services</a> <a href="#">2.3 Customer relationship management</a>
<b>Energy and Greenhouse Gas Management</b>	↑ Carbon emissions management, calculating and managing carbon costs. ↓ If energy consumptions and emissions go unmanaged, this may lead to severe environmental impacts and accelerate the negative impact of climate change.	<ul style="list-style-type: none"> <li>Managing Winbond's energy consumption and greenhouse gas emissions to effectively reduce costs.</li> <li>Mitigate the potential operational impacts caused by extreme climate conditions.</li> </ul>	●	▲	▲	<a href="#">3.1 Energy and greenhouse gas management</a>
<b>Talent Management</b>	↑ Bilateral communications between employers and employees help promote smooth business operations. ↓ The safety, diversity, equality, and compliance of the workplace environment significantly impact talent retention or turnover.	<ul style="list-style-type: none"> <li>By enhancing talent acquisition and retention, as well as fostering employee skills and self-worth, we promote the sustainable operation of a happy enterprise and enhance our R&amp;D innovation capabilities.</li> <li>Implementing occupational safety and health management, prevent serious workplace injuries, and promote the physical and mental well-being of employees.</li> </ul>	●	▲	▲	<a href="#">5.1 Human rights</a> <a href="#">5.2 Talent attraction and development</a> <a href="#">5.3 Employee communication and relations</a> <a href="#">5.4 Occupational safety and health</a>

## Alignment of Major Topics with GRI, SASB, UN Global Compact, SDGs, and Winbond Commitments

Winbond aligns nine major issues with international standards, including the Global Reporting Initiative, (GRI), the Sustainability Accounting Standards Board, (SASB), the United Nations Global Compact, (UNGC) and the United Nations Sustainable Development Goals, (SDGs).

Material Topic	Significance to Winbond	Commitment of Winbond	GRI	SASB	UNGC	SDGs
<b>Business Integrity and Corporate Governance</b>	In the knowledge economy, business integrity and corporate governance are vital for high-tech firms such as Winbond.	Adherence to legal regulations is the fundamental baseline; "business integrity" represents Winbond's highest ethical standard. Based on this principle, we strive for the mutual prosperity of both the company and society.	GRI 205 Anti-Corruption GRI 206 Anti-competitive Behavior	TC-SC-520a.1 Intellectual Property Protection & Competitive Behaviour	Businesses should work against corruption in all its forms, including extortion and bribery.	
<b>Regulatory Compliance</b>	Winbond is committed to a corporate philosophy of sustainable development, and to doing our part as a responsible corporation. Winbond has complied with all laws and regulations throughout our overall business operations.	Winbond shall fully comply with all laws and regulations on corporate governance, financial operations, trade, environmental protection, occupational safety and health, information security, intellectual property, worker rights, internal controls, and risk management relevant to our business operations.	Regulatory compliance (self-defined topic)			
<b>Risk Management</b>	A sound and well-implemented risk management system is the foundation of Winbond's sustainable business operations.	Adhering to the goal of sustainable business operations, establishing a risk management mechanism, integrating and managing various potential risks that may affect operations and profitability, including but not limited to financial, environmental, cybersecurity, operational, and climate risks.	Risk management (Self-defined topic)			 
<b>Research, Development and Innovation</b>	Research, development and innovation into our products, technologies, and business model are the sources of our competitiveness and value. They are also one of the most effective ways to conserve energy and reduce carbon emissions.	Winbond promises to deliver most competitive, energy-efficient, power-saving, and low-carbon-emission products through our innovative technologies developed in R&D.	Research & Development and Innovation (Self-defined topics)			
<b>Productivity and Business Performance</b>	Productivity and business performance are critical to Winbond's continued development. Improving productivity can lead to lower costs and less waste while increasing income at the same time, further increasing corporate profits and improving business performance.	Winbond is committed to improving productivity and business performance, with sustainable development and the enhancement of corporate value as our guiding goals. We are actively promoting digital transformation, introducing advanced technology, and popularizing the application of data and AI. We continuously optimize our business strategy and management models to improve corporate competitiveness and market share, while also strengthening employee training and motivation.	GRI 201 Economic Performance			
<b>Supply Chain Management</b>	Building a sustainable and resilient supply chain system, coordinating and integrating logistics, production, procurement, and other sales-related activities, achieving high production and service efficiency and maximizing value.	Winbond is committed to ensuring the stability of our supply chains, improving supply chain transparency, and establishing and implementing policies on environmental protection and corporate social responsibility through close collaborations with our suppliers. These efforts aim to promote the overall legal compliance and continued development of the overall supply chain.	GRI 308 Supplier Environmental Assessment GRI 414 Supplier Social Assessment	TC-SC-440a.1 Material sourcing	Make sure that they are not complicit in human rights abuses.	    
<b>Green Product</b>	Creating value, reducing risks, and developing sustainable technologies and products in order to create secure, energy-saving, and smart lifestyles.	Winbond's vision is to become a "hidden champion in providing sustainable semiconductors to enrich human life", and Winbond has devoted ourselves to developing a high-efficiency, small-size, low energy-consumption, and high-quality green memory products and green manufacturing processes.	GRI 417 Marketing and Labeling	TC-SC-410a.1 TC-SC-410a.2 Product lifecycle management	Encourage the development and diffusion of environmentally friendly technologies.	 
<b>Energy and Greenhouse Gas Management</b>	Extreme climate conditions threaten to upset ecosystem balance. Winbond needs to do our part to save energy and reduce carbon emissions.	Combine data science and professional knowledge, and together with our Fab facility systems suppliers, continue to improve energy usage efficiency, gradually increase the proportion of renewable energy used, and reduce greenhouse gas emissions.	GRI 302 Energy GRI 305 Emission	TC-SC-110a.1 TC-SC-110a.2 Greenhouse Gas Emissions TC-SC-130a.1 Energy emission	Businesses should support a precautionary approach to environmental challenges. Undertake initiatives to promote greater environmental responsibility	    
<b>Talent Management</b>	Talent is the key to Winbond's success. Recruiting talent, using talent, cultivating talent, and retaining talent are all long-term operational tasks.	Winbond is committed to providing a high-quality working environment, competitive compensation and benefits to attract, develop, and retain our talents, aiming to enhance employee engagement and dedication.	GRI 401 Employment GRI 403 Occupational Health and Safety GRI 404 Training and Education GRI 405 Diversity and Equal Opportunity GRI 406 Non-discrimination GRI 408 Child Labor	TC-SC 320a.1 TC-SC-320a.2 Workforce Health & Safety TC-SC-330a.1 Recruiting & Managing a Global & Skilled Workforce	Businesses should support and respect the protection of internationally proclaimed human rights. Make sure that they are not complicit in human rights abuses. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining. The elimination of all forms of forced and compulsory labour. The effective abolition of child labour. The elimination of discrimination in respect of employment and occupation.	   

## Goals and Performance for Material Topics

Material Topic	2023 Goal	2023 Performance (✓ Achieved)	2024 Short-Term Goal	2030 Mid- & Long-Term Goal
 <b>Business Integrity and Corporate Governance</b>	<ul style="list-style-type: none"> <li>▪ Attain top 20% ranking in TWSE Corporate Governance Evaluation.</li> <li>▪ Continuously increasing the participation of female board members.</li> </ul>	<span style="color: green;">✓</span> listed in top 6-20% <span style="color: green;">✓</span> 3 female directors, accounting for 27%	listed in top 20%	Listed in top 20%  Continuously increasing the participation of female board members
 <b>Regulatory Compliance</b>	<ul style="list-style-type: none"> <li>▪ Implement and conduct 12 regulatory compliance –related courses/year.</li> <li>▪ Ensure strict compliance with relevant domestic and foreign laws and regulations, with no major violations.</li> </ul>	<span style="color: green;">✓</span> 21 courses <span style="color: green;">✓</span> 0	>12 course/year  0	>15 course/year  0
 <b>Risk Management</b>	<ul style="list-style-type: none"> <li>▪ Strengthen climate resilience and formulate measures climate change adaptation and prevention to minimize the impact of climate risks and production disruptions caused by climate disasters.</li> </ul>	<span style="color: green;">✓</span> 0 days	0 days	0 days
 <b>Research, Development and Innovation</b>	<ul style="list-style-type: none"> <li>▪ Achieve over 80% customer satisfaction.</li> <li>▪ Obtain approval for 350 patents worldwide</li> </ul>	<span style="color: green;">✓</span> 85.2% <span style="color: green;">✓</span> 390 patents	>80%  >350 patents	>80%  >350 patents
 <b>Productivity and Business Performance</b>	<ul style="list-style-type: none"> <li>▪ Complete at least 24 digital transformation activities and training sessions in 2023</li> </ul>	<span style="color: green;">✓</span> 35 sessions	72 sessions	72 sessions
 <b>Supply Chain Management</b>	<ul style="list-style-type: none"> <li>▪ Conduct an annual survey of major suppliers to assess their sustainable supply chain resource usage, with a focus on improving the survey response rate each year</li> </ul>	<span style="color: green;">✓</span> ≥90%	≥91%	≥93%
	<ul style="list-style-type: none"> <li>▪ Achieve a high implementation rate of sustainability risk assessment of key suppliers</li> </ul>	<span style="color: green;">✓</span> 100%	100%	100%
	<ul style="list-style-type: none"> <li>▪ Achieve a high installation and utilization rate of the outsourced product GHG emission data exchange standard module for suppliers</li> </ul>	Installation rate 60%	Installation rate 100%	Utilization rate 100%
	<ul style="list-style-type: none"> <li>▪ Plan the implementation and utilization of internal logistics operational systems and green electricity product production systems.</li> </ul>	Installation rate 60%	Installation rate 100%	Utilization rate 100%
	<ul style="list-style-type: none"> <li>▪ Achieve a 37% localization rate in key raw material procurement.</li> </ul>	<span style="color: green;">✓</span> 37%	38%	41%
	<ul style="list-style-type: none"> <li>▪ Complete 8 projects focus on developing multi-sources for key raw materials.</li> </ul>	<span style="color: green;">✓</span> 8 projects	14 projects	26 projects
	<ul style="list-style-type: none"> <li>▪ Enhance the construction and utilization rates of the suppliers ESG Interactive Network.</li> </ul>	<span style="color: green;">✓</span> Installation Rate>90%	Utilization rate 100%	Utilization rate 100%
	<ul style="list-style-type: none"> <li>▪ Host annual Suppliers ESG Co-Learning Workshops (cumulative sessions)</li> </ul>	<span style="color: green;">✓</span> 24 sessions	32 sessions	80 sessions
	<ul style="list-style-type: none"> <li>▪ Organize annual Sustainable Supply Chain Forums (cumulative sessions)</li> </ul>	<span style="color: green;">✓</span> 3 sessions	5 sessions	20 sessions
	<ul style="list-style-type: none"> <li>▪ Provide 28 hours ESG education and training for internal supply chain colleagues (per person)</li> </ul>	<span style="color: green;">✓</span> 28 hours per person	30 hours per person	40 hours per person



## Goals and Performance for Material Topics

Material Topic	2023 Goal	2023 Performance (✓ Achieved)	2024 Short-Term Goal	2030 Mid- & Long-Term Goal
 <b>Green Product</b>	▪ 1.2V HyperRAM mass production	✓ The 1.2V HyperRAM products were mass-produced utilizing advanced, compact packaging such as 49BGA and WLCSP. <small>(Note 1)</small>	Energy savings and GHG emission reductions at the customer application end >33% <small>(Note 2)</small>	20% Reduction in GHG emissions throughout the product's life cycle. <small>(Note 3)</small>
	▪ 3V Spi NOR RV series mass production	✓ The RV series produced 34% less GHG emissions than the 90nm DV series	GHG reduction of 35,000 tCO <sub>2</sub> e <small>(Note 4)</small>	GHG reduction of 110,000 tCO <sub>2</sub> e <small>(Note 4)</small>
 <b>Energy and Greenhouse Gas Management</b>	▪ Total power saving: 2~3%	✓ 4.2%	2~3%	>2~3%
	▪ YoY reduction in electricity consumption per unit product: ≥ 1%	Increased 22.8% <small>(Note 5)</small>	≥1%	≥1%
	▪ YoY reduction in GHG emission intensity: ≥5%	Increased 17.4% <small>(Note 5)</small>	≥5%	≥5%
	▪ Fab-wide water recovery rate ≥ 80%	✓ 82.2%	≥80%	≥80%
	▪ Overall waste recycling rate: ≥ 90%	✓ 90.9%	≥90%	≥90%
	▪ Reduction rate of volatile organic compounds (VOCs): ≥ 93%	✓ 98%	≥93%	≥93%
 <b>Talent Management</b>	▪ Global human rights and labor ethics training course – achieve a 100% attendance rate	✓ 100%	100%	100%
	▪ Ensure social inclusion donations > NT\$10 million	✓ NT\$18.11 million	>NT\$10 million	>NT\$10 million
	▪ Maintain total compensation within the top 25% of the industry	✓ Top 25% <small>(Note 6)</small>	Top 25%	Top 25%
	▪ Attain ≥95% employee retention and willingness to contribute at Winbond for the next 5 years, based on the 2023 Employee Core Values and Engagement Survey results	✓ 97%	≥ 95%	≥ 95%
	▪ (Important operating sites-WEC) Ensure the average number of learning hours per employee reaches 48 hours	✓ 50 hours per person	50 hours per person	65 hours per person

Note 1. The 128Mb~512Mb products were mass-produced in 49BGA package, and the 1.2V/128Mb products were mass-produced in WLCSP (Wafer-Level Chip-Scale Package).

2. This calculation was based on 25nm 1.2V/128Mb HyperRAM product.

3. Calculations were based on the entire range of dynamic random-access memory (DRAM) products including the process evolution.

Note 4. Calculations were based on the entire range of flash memory products including the process evolution.  
 5. The challenge in meeting targets was linked to the global economic recession in 2023, resulting in decreased production capacity. Furthermore, the Kaohsiung Fab not yet attained economies of scale, contributing to elevated average electricity consumption and emissions per unit product.  
 6. Data was sourced from the figures published annually in July by the Taiwan Stock Exchange Market Observation Post System for the preceding year.

## Stakeholder Engagement

Winbond identified the relevance and precedence of stakeholders using the five principles of the AA1000 Stakeholder Engagement Standard (SES) 2015: Dependency, Responsibility, Influence, Tension, and Diverse Perspectives.

In 2022, 22 senior management members at Winbond participated in a stakeholder identification survey (please refer to the [Materiality Analysis Report](#)). They identified the following major stakeholders based on the extent of each stakeholder's relationship with Winbond: government agencies, customers, employees, investors/shareholders, media, suppliers/contractors, and community groups.

A dedicated stakeholder section has been established on the Winbond website, providing various communication channels for stakeholders. Stakeholders can raise questions or suggestions related to sustainability topics, with specific contacts designated to respond to different types of stakeholders. This structure ensures effective communication between Winbond and its stakeholders. The 2023 report utilized the stakeholder identification results mentioned above.

### Employees



- Employees are one of the most important assets.
- Serving as key stakeholders in our continued breakthroughs and innovations.

**100 %**  
Human rights due diligence

**88 %** Attendance rate  
4 supervisor management discussion sessions

**62**  
\*Total number of internal communication cases handled\*

### Material Topics

- Business Integrity and Corporate Governance
- Talent Management
- Regulatory Compliance
- Productivity and Business Performance

### Channel and Frequency of Communication

#### immediate

- Internal Hotline 75234 Employee Complaints Hotline
- "Care" Employee Suggestions Box
- Illegal Employment Infringement Appeals and Arbitration Committee
- Health Consultation

#### ad hoc

- Health Promotion Activities
- Employee Welfare Committee
- Internal Bulletin Board

#### regular

- Surveys on Health, Stress, and Physical Aches (annual)
- Employer-Employee Meetings and Supervisor Communication Meetings (quarterly)
- Functional Communications Meetings (regular)
- Articles on Winbond Philosophy Published on the Employee Homepage (weekly)
- Monthly Labor Safety Meetings (monthly)
- Environmental Safety and Health Committee (quarterly)
- ESG questionnaire (annual)

### 2023 Communication Effectiveness

- 12 cases of internal complaints in total (excluding the sexual harassment)
- 2 cases of sexual harassment
- 48 reports of everyday issues received through the suggestion box
- 4 quarterly supervisor management discussion sessions were held. These sessions were attended by 2,099 people, achieving an attendance rate of 88%.
- 12 labor-management meetings were held (Zhubei Building, CTSP Fab, Kaohsiung Fab).

### Employee Testimonial

"Thanks to Winbond's various policies that support employees to achieve a balance between work and family. LOHAS leave and flexible working hours provide more time to spend with their children. The maternity subsidy provided quarterly for four years is just like regular small sure payments every quarter. Fortunately, we can actually feel that the company pays attention to employees' families and life attitude."

Kai Jen



▲ Winbond has pioneered the childcare allowance system and takes care of the family life of employees



▲ 2023 Winbond Zero-Carbon Family Day offset the event's carbon footprint through carbon credits.

**Customers**

- Customers are the primary source of economic value creation for Winbond.
- They are key stakeholders concerned with Winbond's ESG performance.

**85.2 %**  
Customer satisfaction

**7,470**  
Customer interaction

**Material Topics**

- Business Integrity and Corporate Governance
- Energy and Greenhouse Gas Management
- Green Product
- Regulatory Compliance
- Productivity and Business Performance
- Research, Development and Innovation
- Risk Management
- Supply Chain Management

**Channel and Frequency of Communication****immediate**

- Winbond official website, telephone, and e-mail

**regular**

- Sales meetings (regular)
- ESG questionnaire (annual)
- Technical seminars (annual)
- Internal Audit (annual)

**ad hoc**

- Customer audits

**2023 Communication Effectiveness**

- WinTech 2023: Exploring product performance, market dynamics, future trends, and technical solutions.
- International exhibitions: Participating in the Germany Embedded World 2023, Shanghai electronica 2023, USA Flash Memory Summit, Japan EdgeTech+ and other international exhibitions.
- Technical seminars:
  - Conducting product technology forums in Shenzhen and Shanghai with our partner NXP, focusing on the Chinese market.
  - Organizing Distributor Sales Conference events, featuring market outlook presentations by senior executives, product planning and advantages presentations by business group managers, and market observation and analysis by sales center.
- Daily visit and communication

**Customer Testimonials**

▲ Provide a detailed explanation of future strategies and Supply Chain Management to customer (Inventec)

Miss Rachel Huang Manager,  
Inventec

"From numerous discussions about future strategies and supply chain management with suppliers, Winbond stands out as the most enthusiastic and well-prepared supply partner."

Miss Gloria Shih  
Procurement Manager, Pegatron

"In multiple discussions, PEGATRON has acknowledged Winbond's expertise and dedication in this field."

Mr. Lee SCM Strategic  
Procurement Manager,SigmaStar

"SigmaStar recognizes Winbond as a long-term strategic partner, believing in Winbond's professional product development and planning, as well as its deep commitment to enhancing the customer experience."





## Suppliers

▪ Suppliers/Contractors provide supplies and services required for Winbond's production operations. They help maintain Winbond's continuous and sustainable operations, making them also important stakeholders and partners of Winbond's sustainable development.

**100 %** Signing rate  
Of Code of ethics and  
integrity and RBA statement

**340 Hours**  
ESG co-learning workshop  
training hours

**9 Workshops**  
ESG co-learning workshops

### Material Topics

- Business Integrity and Corporate Governance
- Green Product
- Regulatory Compliance
- Research, Development and Innovation
- Supply Chain Management

### Channel and Frequency of Communication

#### immediate

- External complaints channels

#### regular

- Winbond Ethics and Integrity Policy and complaint channel (Six months)
- Evaluations of major suppliers (Six months)
- Supplier audits (annual)
- ESG evaluations of suppliers (annual)

### 2023 Communication Effectiveness

- 100% suppliers have signed the Commitment to Ethical Conduct and the Responsible Business Alliance (RBA) Code of Conduct
- 100% of key suppliers have signed the Declaration of Non-Use of Conflict Minerals
- 100% of key suppliers have signed the Hazardous Substance Free Declaration (HSF).
- 0 cases of supplier complaints
- 100% of suppliers have passed economic, environmental, and social impact audits, and have adopted sustainability review standards.

### Supplier Testimonial



▲ Supply chain low-carbon transformation ceremonies

"Thank you, for inviting us to participate in the 'Large Leads Small' project and for the government funding support. Let's continue building a win-win partnership with Winbond as we work towards our net-zero goal by 2050!"

**Choc Choc Lin, Vice Chair of the Sustainable Development Committee, Walton Advanced Engineering**



## Government Agencies

▪ Government agencies are concerned with Winbond's regulatory compliance on environmental, social and governance (ESG) matters. Its influence on industry development and policy implementation makes it a material stakeholder.

**24**  
Public associations

**65 Meetings**  
Occupational safety and health meeting with authorities

### Material Topics

- Business Integrity and Corporate Governance
- Talent Management
- Energy and Greenhouse Gas Management
- Regulatory Compliance
- Risk Management

### Channel and Frequency of Communication

#### regular

- ESG questionnaire (annual)

#### ad hoc

- Official documents and correspondence
- Public hearings
- Policy information sessions
- Regulatory conferences
- Inspections by competent authority

### 2023 Communication Effectiveness

- Participated in 65 meetings with Occupational safety and health management entities.
- Conducted 38 on-site audits and inspections with Occupational safety and health management entities
- Engaged in 24 public association



◀ Recognized as an outstanding business entity for using electronic uniform invoices by the Ministry of Finance in 2023



## Shareholders/ Investors

- Shareholders/Investors are Winbond's main source of capital.
- They are mainly concerned with Winbond's operating performance and sustainable development.

**51 Meetings**  
Shareholders/investors communication meetings



## Community/ Society

- Their proximity to Winbond's operating locations means they bear the brunt of the impact from our operations. Their welfare is therefore of high importance to Winbond.

**NT\$18.11 million**  
Total amount of charitable donations

**1,089 People**  
Total number of donors

**358 People**  
Serve as a volunteer and lecturer

### Material Topics

- |                   |   |
|-------------------|---|
| ▪ Green Product   | ▪ Regulatory Compliance                       |
| ▪ Risk Management | ▪ Productivity and Business Performance       |
|                   | ▪ Business Integrity and Corporate Governance |
|                   | ▪ Research, Development and Innovation        |

### Channel and Frequency of Communication

- |                        |  |
|------------------------|--|
| <b>immediate</b>       | <b>regular</b>   |
| ▪ Telephone and e-mail | <ul style="list-style-type: none"> <li>▪ Investor conference (biannual, or whenever necessary due to special circumstances)</li> <li>▪ One-on-one meetings with institutional investors (10-20 times/quarter)</li> <li>▪ Shareholders' Meeting (annual)</li> <li>▪ ESG questionnaire (annual)</li> </ul> |

- |               |  |
|---------------|--|
| <b>ad hoc</b> |  |
|               | <ul style="list-style-type: none"> <li>▪ Winbond official website</li> <li>▪ The Taiwan Stock Exchange Market Observation Post System</li> </ul> |

### 2023 Communication Effectiveness

- |                                  |  |                                      |
|----------------------------------|--|--------------------------------------|
| ▪ 12 disclosures of revenue      | ▪ 2 institutional investor conferences | ▪ 4 disclosures of financial reports |
| ▪ 1 annual shareholders' meeting | ▪ 48 Corporate communication meetings  |                                      |

### Dialogue and Engagement with Investors



▲ Winbond 2022 annual shareholders' meeting

"In the past two years, Winbond has engaged in exchanged and negotiated with Winbond on ESG materiality issues, ESG development, and MSCI ESG Rating, and Winbond has further shared its ESG actions, carbon inventory and verification timetable of domestic and foreign subsidiaries. The company's open and transparent attitude is the key to building investor trust, and it also reflects the company's recognition and commitment to ESG values. Cathay Life also sincerely hopes that the company can take the ESG field to the next level, so as to bring positive and long-term impact to both parties and society!"

Responsible Investment Team, Cathay Life Insurance

### Material Topics

- |   |                         |
|---|-------------------------|
| ▪ Business Integrity and Corporate Governance | ▪ Regulatory Compliance |
| ▪ Talent Management                           |                         |

### Channel and Frequency of Communication

- |                        |                                     |
|------------------------|-------------------------------------|
| <b>ad hoc</b>          |                                     |
| ▪ Volunteer activities | ▪ Collaborative projects and visits |



▲ Conserving and nurturing 27 species of Theaceae to protect Taiwan's native plants and preserve Theaceae germplasm

### 2023 Communication Effectiveness

- We have cultivated 27 Theaceae species, including 1 species that is classified as critically endangered, 1 as endangered, 5 as vulnerable, and 3 as near threatened, as listed in the IUCN Red List of Threatened Species.
- Happy Breakfast Program for School Children in Rural Areas which benefits 101 students
- Fundraising for Impoverished Students Education Financial Aid which benefits 1,023 students
- Donate NT\$115,000 in Southern Taiwan Science park charity picnic
- Collected 70 kg of trash in the activity - Guard Fazi River activities
- Total amount of charitable donations NT\$18.11 million



## Media

- The media serves as a bridge between Winbond and stakeholders. With immediate access to information released by Winbond, they can assist Winbond with the disclosure of positive sustainability information

**2 Press  
conferences**

**30 Press  
releases**

### Material Topics

- |   |   |
|---|---|
| ▪ Business Integrity and Corporate Governance | ▪ Green Product                         |
| ▪ Talent Management                           | ▪ Productivity and Business Performance |
|   | ▪ Research, Development and Innovation  |

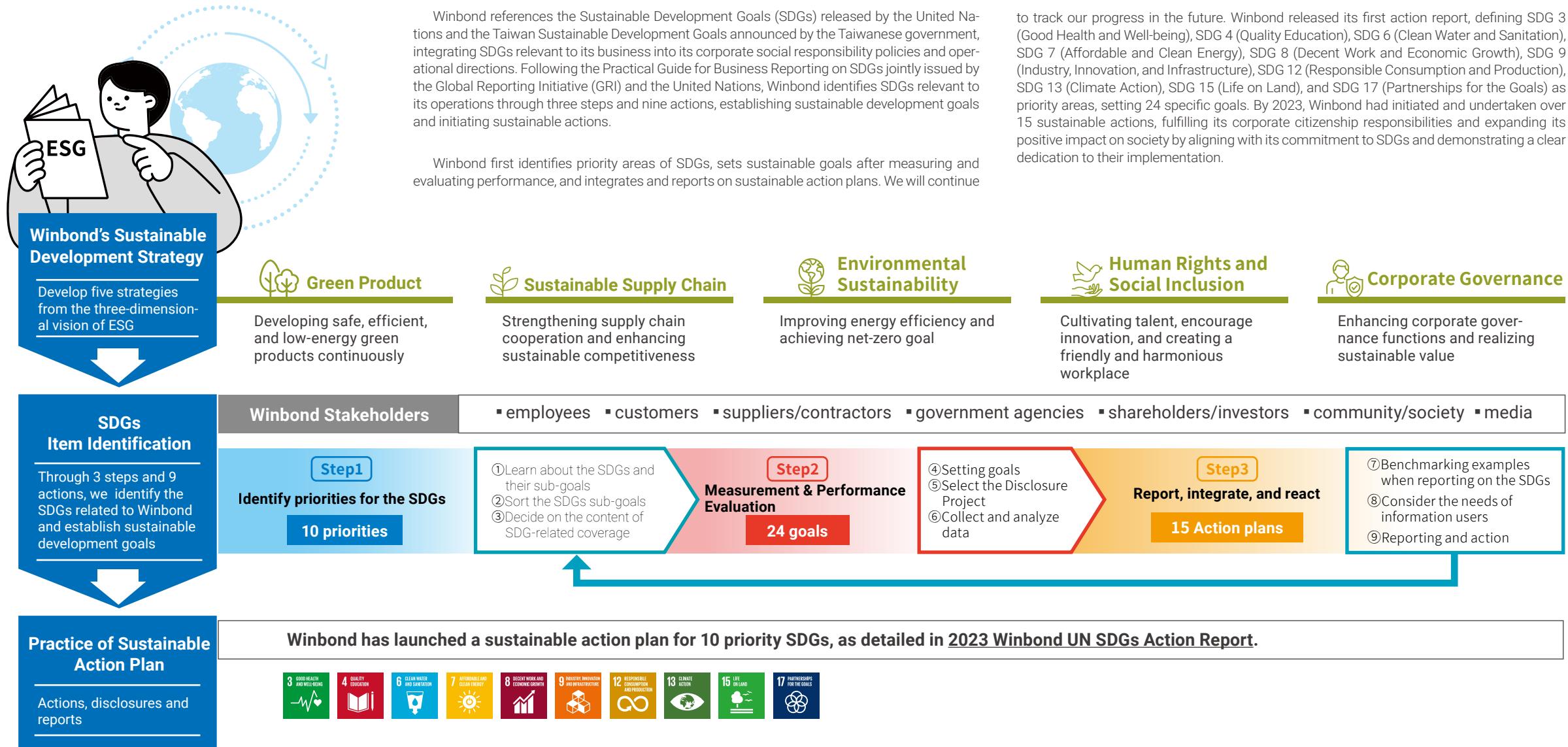
### Channel and Frequency of Communication

- |                        |  |
|------------------------|--|
| <b>immediate</b>       | <b>regular</b>   |
| ▪ Telephone and e-mail | <ul style="list-style-type: none"> <li>▪ Press release</li> <li>▪ Media interviews (annual)</li> <li>▪ ESG questionnaire (annual)</li> </ul> |

### 2023 Communication Effectiveness

- 25 telephone and e-mail communications
- 30 press releases
- Winbond operating report provided 2 times
- 2 press conferences held

## Attaining the UN Sustainable Development Goals





## SDG 3 Good health and well-being

### 1 Employee health management

- ① > 1,000 employees benefit from health promotion programs
- ② > 1,000 employees receive free vaccines

### 2 Encourage childbearing

- ① NT\$6,000 monthly employee childcare stipend (until the kid reaches the age of 4)
- ② Pregnant Employee Care Program coverage: 100%

## Achievements in 2023

- Employee health examination follow-up completion rate: 100%
- 30,476 employees participated in sports promotion campaigns (10,362,995 Kcal burned)
- 1,773 employees received free flu shots
- NT\$6,000 monthly employee childcare stipend (NT\$330 million paid between 2011 and 2023)
- 45 pregnant employees received counseling services and information on subsidies



## SDG 4 Quality Education

### 1 Youth education

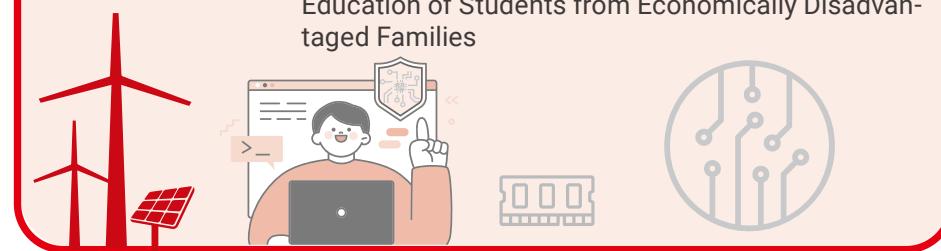
- ① Investing NT\$10 million in cultivating semiconductor talent

### 2 Educational resources for the disadvantaged

- ① Annual scholarships for disadvantaged students (benefiting > 1,000 students)

## Achievements in 2023

- Invested NT\$10 million in and appointed 20 lecturers to the NCKU Semiconductor Program, benefiting 360 students
- 1,023 students benefiting from Financial Aid for the Education of Students from Economically Disadvantaged Families



**6** CLEAN WATER AND SANITATION**SDG 6**  
**Clean water and sanitation****1** Minimizing water risk

- ① The water recovery rate of the whole plant ≥ 80%

**Achievements in 2023**

- Fab-wide water recovery rate: 82.2%
- 4 billion liters of water conserved during 2019–2023
- Introduction of the ISO 46001 water efficiency management systems

**7** AFFORDABLE AND CLEAN ENERGY**SDG 7**  
**Affordable and clean energy****1** Energy conservation

- Reduction in electric power consumption of 2–3% year over year between 2023 and 2030
- Reduction in product energy intensity of 1% year over year between 2023 and 2030

**2** Use of renewable energy

- Green energy accounted for 90% by 2030 at the CTSB Fab

**Achievements in 2023**

- 456,000 MWh conserved between 2019 and 2023
- Renewable energy accounted for 0.4% of all energy used at the CTSP Fab

**8** DECENT WORK AND ECONOMIC GROWTH**SDG 8**  
**Decent work and economic growth****1** Competitive employee remuneration

- Salary level ranks in the top 25% among our competitors

**2** Local procurement

- >35% of key materials sourced locally

**Achievements in 2023**

- Remuneration for full-time non-management employees ranked in the top 25% in the industry in 2022
- 37% of key materials sourced locally
- Winbond became the first company in the semiconductor industry to receive a full subsidy from Industrial Development Administration (IDA) for the “Large Leads Small: Working with suppliers to reduce carbon footprint” program

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE**SDG 9**  
**Industry, innovation and infrastructure****1** Encouraging innovation

- 350 new patents globally per year between 2023 and 2030
- R&D expenses account for > 8.5% of operating income between 2023 and 2030

**Achievements in 2023**

- 390 new patents granted in 2023; total patents reached 4,900
- R&D expenses accounted for 23% of operating income
- Named Top 100 Global Innovator by Clarivate

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION

## SDG 12 Responsible consumption and production

### 1 Responsible Procurement

- ① Declaration of Non-Use of Conflict Minerals signing rate: 100%
- ② Winbond Supplier Code of Conduct Commitment Letter signing rate: 100%

### 2 Promotion of Sustainability Awareness

- ① 80 supplier ESG workshops by 2030

## Achievements in 2023

- Zero conflict minerals used
- The signing rate of the Winbond Supplier Code of Conduct Commitment Letter reached 100% among our key suppliers
- 24 supplier ESG workshops

**13** CLIMATE ACTION

## SDG 13 Climate action

### 1 Minimize weather risks

- ① Zero days of production interruptions due to weather-related hazards
- ② Greenhouse gas emission intensity YoY reduction ≥5%

### 2 Promote climate change education

- ① Promoting sustainable education
- ② Promoting suppliers co-learning initiative
- ③ Establish cross-functional TCFD project team



## Achievements in 2023

- Zero days of production interruptions due to weather-related hazards in 2023
- 2.28 million metric tons in CO<sub>2</sub>e reduction since joining the Perfluorocarbon Greenhouse Gas Emissions Reduction Project initiated by the World Semiconductor Council in 2006
- Establish sustainable training platform to promote sustainable education
- Total learning hours for the supply chain ecosystem: 16,965 hours

**15** LIFE ON LAND

## SDG 15 Life on land

### 1 Nature-based solutions

- ① 30-year afforestation project
- ② > Preservation of 25 species of Theaceae (The tea plant family)



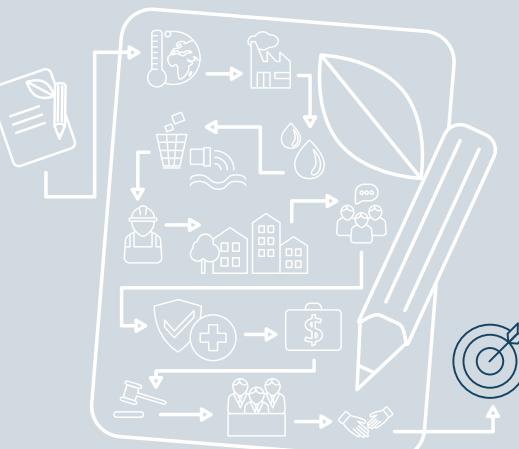
## Achievements in 2023

- 1,300 trees planted at the Kaohsiung Fab
- 7,700 trees planted in Chiayi
- 27 out of 42 native Taiwanese Theaceae species conserved
- Conservation of Spiranthes sinensis (the Lady's Tresses orchid), an endangered wild plant species

**17** PARTNERSHIPS FOR THE GOALS

## SDG 17 Partnerships for the goals

Winbond starts with its own operations, engages employees, customers, suppliers, government agencies, stakeholders/investors, and the community/society, and collaborates with stakeholders to respond to the SDGs and create sustainable value.



# SUSTAINABLE PRACTICES

## Corporate Governance

- 43 | 1.1 Corporate Governance
- 50 | 1.2 Business Integrity
- 52 | 1.3 Productivity and Business Performance
- 54 | 1.4 Risk Management
- 60 | 1.5 Green Investment & Sustainability-Linked Loan
- 62 | 1.6 Climate Change Management



"Business integrity" is the foundation of the sustainable operation of the enterprise, and it is the highest corporate culture and spirit of Winbond. Winbond is committed to formulating comprehensive corporate governance regulations and management processes, and continuously monitoring and improving processes. With the efforts of all colleagues, Winbond has been ranked in the top 20% since the first TWSE Corporate Governance Evaluation. Moving forward, we will continue to embrace a corporate culture founded on business integrity, establishing a trustworthy and reputable company.

### 2023 Performance Highlights

-  **ESG Committee is Supervised by the Board**  
ESG Committee composed of the chairman and all independent directors, it guides matters related to the company's sustainable development.
-  **NT\$ 955 Million Renewable Energy Investment Plan**  
Cumulative investment in renewable energy development from 2022 to 2023. Continued alliances and exchanges with green industry suppliers.
-  **Established a Senior Executive Development Committee**  
Strengthening succession teams to ensure sustainable business operations and foster talent development.
-  **SEMI-E187**  
Introduction of Semiconductor Equipment Security Standards.
-  **Join the Taiwan Carbon Solution Exchange (TCX)**  
Became one of the very first representative companies which purchased international carbon credits in TCX.



# 1.1 Corporate Governance

## 1.1.1 Board of Directors

The Board exercising powers and authorities are in accordance with relevant laws and regulations along with the resolutions of the shareholders' meeting. The directors create the maximum benefit for shareholders in line with the principle of sustainable operation. Winbond has established "Conflict of Interest Reporting and Recusal Instruction", "Insider Trading Prevention Procedure", "Instruction for Personal Finance Reporting by Employees at Specific Positions and Business-Related Personnel and Suppliers", "Rules for Receiving or Providing Gifts and Entertainment", "Technical and Classified Data Management Instruction", "Anti-Trust Code of Conduct", etc. to prevent unethical behaviors. Winbond also has established Ethical Management Violation Handling Instruction, which describes explicitly the methods and channels for filing a complaint, and vigorously promotes and implements the instruction, which has been regularly reviewed and revised, while meting out disciplinary action against violators.

### Chih-Chung Chou

Chief Financial Officer, Finance Center

In addition to financial performance indicators, expectations from diverse stakeholders for sustainable development should be emphasized in corporate values. Winbond will fully implement ESG strategies through integrating financial information and promoting cross-departmental communication and collaboration. Winbond aims to establish long-term positive impact in contribution to sustainability and well-being, fostering mutual wellness and prosperity for both the environment and society.



For more information about the members of the Winbond Board of Directors, please scan the QR CODE



### Composition of Board of Directors

The 13th Board of Directors consists of 11 directors, including 4 independent directors and 3 female directors. Directors who do not hold managerial positions of the Winbond and its subsidiaries make up more than two-thirds of board members. There are 3 persons having a spousal relationship or a familial relationship within the second degree of kinship with the directors, which is less than half of the board members and follows Article 26-3 of the Securities and Exchange Act. Winbond's Chairman serving concurrently as CEO is to lead the management team to effectively implement the decisions of the Board of Directors. In response to the circumstances, there are 4 independent directors among the Board of Directors.



### Major Shareholders

Institutional directors Walsin Lihwa Corporation and Chin-Xin Investment Co., Ltd are major shareholders of the Winbond. Among them, Walsin Lihwa Corporation is a founder of the Winbond, also the largest shareholder and a director since Winbond's inception.



### 2023 Attendance of the Board Meeting

In 2023, 10 meetings of the Board of Directors were convened, with the average attendance rate of 100% (including actual attendance <93%> and proxy attendance <7%>). According to the material topics in 2023, the total number of key major events communicated with the highest governance until was 16 (business integrity, R&D innovation, productivity and business performance, energy and greenhouse gas, sustainable development and other topics).



### Election of the Directors

The composition of the Board of Directors is independent and diverse. The nomination of directors follows a rigorous selection process, adopting a candidate nomination system and voting at the shareholders' meeting. Shareholders fully exercise their election rights.

- The members of the Board of Directors all have rich experience in industrial management, and their knowledge and professional experience cover different fields. Winbond recruits elites from across generations and diverse sectors, leading the company to continue to innovate and move towards diversified goals.
- More than 75 percent of the independent directors serve no more than 3 consecutive terms.
- Continuously increase the participation of female directors.



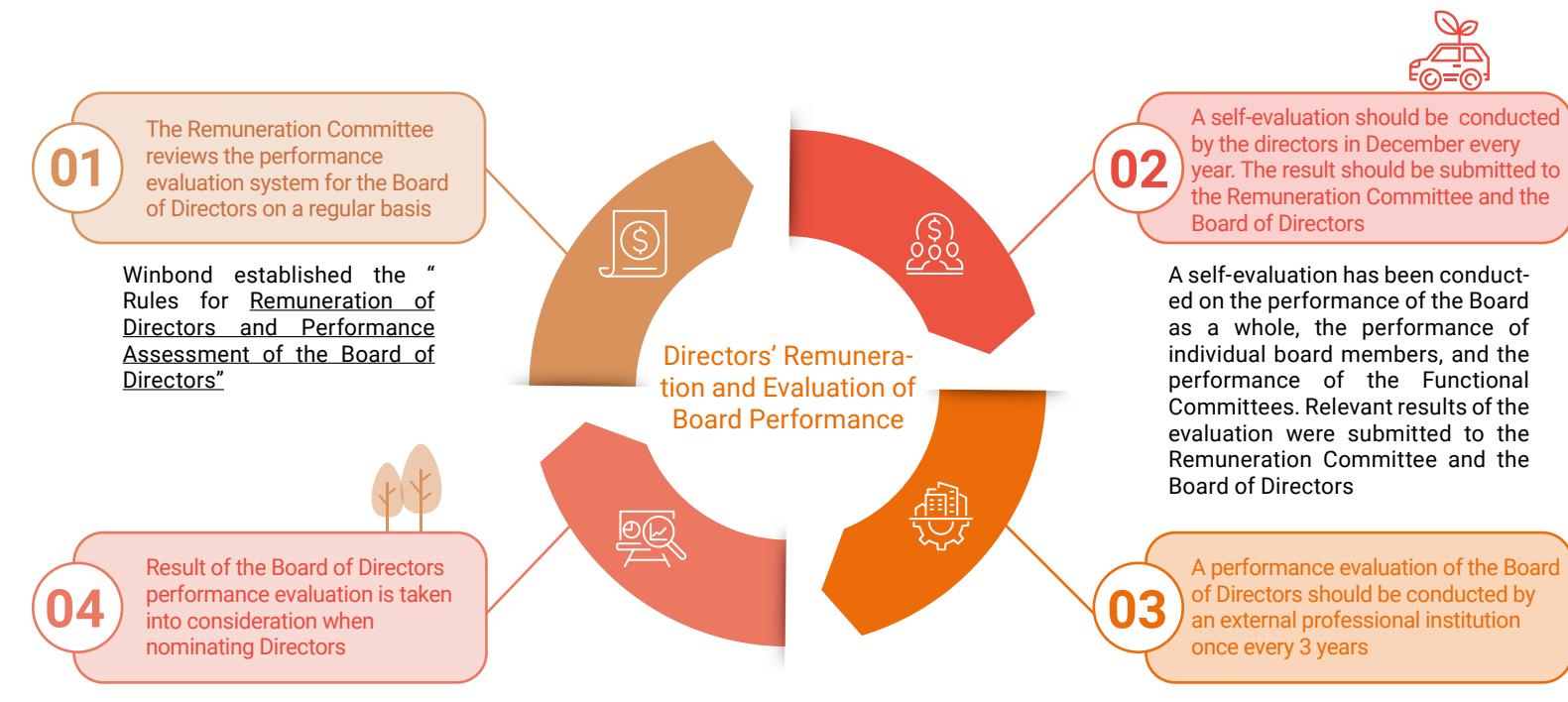
For Board and Committee proposals that involved the interests of the directors themselves, the directors had explained the reasons for recusal at the meeting and refrained from discussing and voting on such proposals to ensure the avoidance and mitigation of conflicts of interest. For relevant information, please refer to page 23, and 27 of Winbond's 2023 Annual Report.

**13<sup>th</sup> Members of the Board ( term 2023/6 - 2026/5 )**

Title	Name	Gender	Age Distribution	Individual Director Background					IT	Diversified Fields			Independent Director Ratio	Percentage of Directors who Hold Concurrent Company Managerial or Employee Positions
				Business Management	Leadership & Decision Making	Knowledge of the Industry	Finance & Accounting	Environment		Economy	People			
Chairman	Arthur Yu-Cheng Chiao	Male	60-70	●	●	●	●	●	▲	▲	▲	▲		
Vice Chairman	Chin-Xin Investment Co., Ltd (Representative: Tung-Yi Chan)	Male	60-70	●	●	●	●	●	▲	▲	▲	▲		
Director	Yung Chin	Female	60-70	●	●	●	●	●	▲	▲	▲	▲		
Independent Director	Allen Hsu	Male	60-70	●	●	●	●	●		▲	▲	▲		
Independent Director	Stephen T. Tso	Male	70-80	●	●	●		●	▲		▲	▲		
Independent Director	Chung-Ming Kuan	Male	60-70		●		●			▲	▲	▲	36%	27%
Independent Director	Jong-Peir Li	Male	60-70	●	●	●	●	●	●	▲	▲	▲		
Director	Walsin Lihwa Corporation (Representative: Fred Pan)	Male	60-70	●	●	●	●	●		▲	▲	▲		
Director	Jamie Lin	Male	40-50	●	●	●	●	●		▲	▲	▲		
Director	Wei-Hsin Ma	Female	50-60	●	●	●	●	●	●	▲	▲	▲		
Director	Elaine Shihlan Chang	Female	40-50	●	●		●	●	▲	▲	▲	▲		

## Professional Excellence of Directors

The 11 directors all have extensive business operations experience. The ages of board members cover different generations, and their professional background covers different industries. All board members possess the ability to perform their duties, supervise, and give constructive feedback and strategies. The directors take classes outside or participate in multi-faceted training courses organized by Winbond. Training hours for director education and training and environmental sustainability related courses (For example: carbon credit, climate change, and sustainable finance) were 33 hours and for courses related to corporate governance and business (global economic, AI business management, and sustainable finance) were 43.5 hours. The training hours for legal compliance-related courses are 12 hours. In 2023, the directors obtained a certificate of study with an average of 8.05 hours.



✓ In 2023, the assessment results were submitted to the Remuneration Committee and the Board of Directors on March 8, 2024.

### Self-assessment results of the Board of Directors in 2023:

1. The assessment result for "level of involvement in company operations" showed a significant decrease compared to 2022.
2. Improvement aspects:
  - (1) Increase communication between board members and the management team.
  - (2) Provide shareholder meeting and board meeting schedules in advance to allow directors to reserve time for attendance.
  - (3) Continue industry-related training courses.

### Self-assessment results of the Functional Committees in 2023:

1. The assessment result for "level of involvement in company operations" also showed a significant decrease compared to 2022.
2. Improvement aspects:
  - (1) Increase meeting time to allow committee members to thoroughly discuss various issues.
  - (2) Provide committee meeting schedules in advance to allow committee members to reserve time for attendance.
  - (3) Enhance communication and interaction between the Audit Committee and accountants.

Note: For related information on director performance evaluation, please refer to the [2022 External Evaluation Results of Winbond's Board Performance](#) and [Winbond's 2023 Annual Report](#).

## 1.1.2 Operations and Responsibilities of the Functional Committees

In order to improve the supervision function of the Board of Directors and strengthen the management function, the Winbond's Board of Directors has set up 5 functional committees: an Audit Committee, a Remuneration Committee, a ESG Committee, a Risk Management Committee and a Senior Executive Development Committee. Each functional committee is responsible to the Board of Directors and submits proposals to the Board of Directors for resolution.

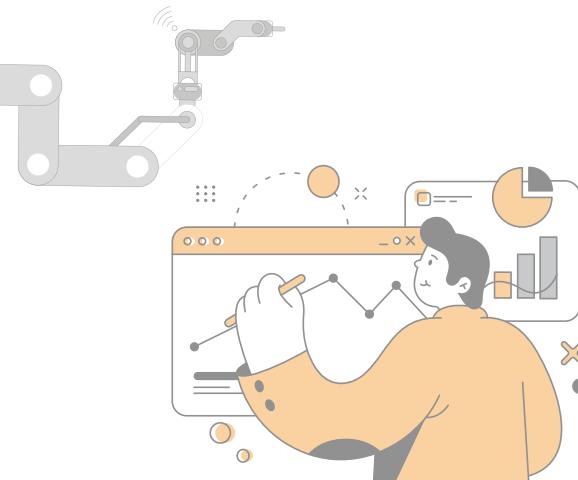


### Audit Committee

- Composed of 4 independent directors, the convener is Mr. Allen Hsu
- In 2023, 8 meetings were convened, with the average attendance rate of 100% (including actual attendance <88%> and proxy attendance <12%>)

#### Responsibilities

Supervises the fair presentation of the company' s financial statements, appointment (dismissal) of the CPA as well as the CPA' s independence and performance, and assists the Board of Directors in performing supervisory duties such as: Control of compliance with relevant laws and regulations and existing or potential risks by the company.



### Remuneration Committee

- Composed of 4 independent directors, the convener is Mr. Stephen T. Tso
- In 2023, 3 meetings were convened, with an actual attendance rate of 100% (including the actual attendance 100%)

#### Responsibilities

Responsible for setting and reviewing the performance evaluation and remuneration policy, system, standard, and structure as well as individual compensation for Winbond directors and managers. The "Rules for Remuneration of Directors and Performance Assessment of the Board of Directors" and "Rules for Remuneration and Performance Evaluations of Managerial Personnel" were also drawn up to maximize the long-term effectiveness of the Board and to ensure a close linkage between the managers' compensation and the company' s sustainability performance (economic, environmental, social).



1. Winbond established the "Rules for Remuneration of Directors and Performance Assessment of the Board of Directors", which specifies the basis for directors' remuneration, and submits it to the Remuneration Committee every year for review to see if adjustments are required. Both the Audit Committee and the Remuneration Committee of Winbond are composed of all independent directors and are independent. Winbond does not have a remuneration claw back mechanism. For information on the remuneration of directors, President and Vice President, please refer to page 18 to page 23 of Winbond's 2023 Annual Report.
2. Winbond stakeholders can express their opinions through various channels such as attending shareholder meetings or participating in employee engagement surveys. The Remuneration Committee regularly considers these opinions as one of the factors in determining compensation matters. There were no inquiries regarding director and employee compensation during the 2023 Annual General Meeting, as documented in the meeting minutes.

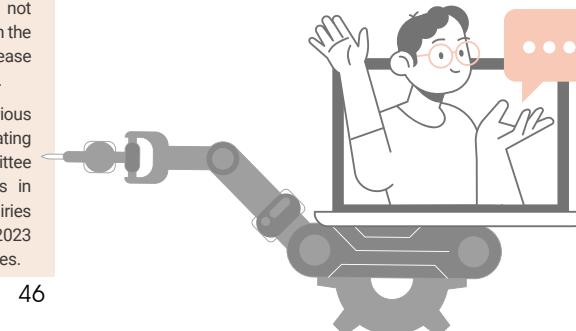


### ESG Committee

- The committee consists of 4 independent directors, convened by the Chairman, Arthur Yu-Cheng Chiao
- In 2023, 2 meetings were convened, with the attendance rate of 90%

#### Responsibilities

1. Formulate corporate sustainability policies and related management guidelines.
2. Develop short-term, medium-term, and long-term sustainable development strategies and goals.
3. Review, track, and revise the implementation status and effectiveness of the company' s sustainability initiatives.
4. Regularly report the committee' s execution results to the Board of Directors each year.



Established the ESG Office and five task forces, including Environmental Sustainability, Green Products, Human Rights and Social Inclusion, Sustainable Supply Chain, and Corporate Governance, regularly report to the Board of Directors every year to ensure the promotion and implementation of relevant work for corporate sustainability. The committee is led by the chairman personally and consists of independent directors. It convenes meetings twice a year, where each task force reports on the progress (achievements) of the current year and submits plans for the following year.

In 2023, a total of **10 board meetings** were held, covering **19 sustainability topics**, including:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>▪ Risk management</li> <li>▪ Integrity implementation</li> <li>▪ Intellectual property management plans and implementation</li> <li>▪ Established a Senior Executive Development Committee</li> </ul> | <ul style="list-style-type: none"> <li>▪ Renewable energy procurement plans and implementation</li> <li>▪ Establishment of the Managerial Personnel Remuneration Committee</li> </ul> |
|--|---|

The Board also fulfills its supervisory and guidance responsibilities by promptly asking questions and providing feedback to urge adjustments within the management team. For a comprehensive list of all topics, please refer to page 36. ☺





## Risk Management Committee

- Composed of all the board members, the convener is the Chairman, Arthur Yu-Cheng Chiao
- In 2023, 1 meetings were convened with the attendance rate of 100% (including actual attendance <80%> and proxy attendance <20%>)

### Responsibilities

- 1.Responsible for overseeing the overall risk management of the company, formulating risk management policies, frameworks, and establishing qualitative and quantitative management standards, adjusting as needed based on the company's actual development or objective environmental changes.
- 2.Execute risk management decisions of the Board of Directors and review the development, establishment, and effectiveness of the company' s overall risk management mechanisms.
- 3.Set risk appetite and review and manage the company's overall risks.
- 4.Assist and supervise various units in conducting risk management activities and coordinate cross-unit interactions and communication related to risk management.
- 5.Adjust risk categories and assumptions based on environmental changes.
- 6.Execute other responsibilities as required by the Board of Directors.



## Senior Executive Development Committee

- The committee members consist of directors from Winbond/Nuvoton, who serve as mentors, with the committee chair appointed by mutual recommendation among the directors, currently held by independent director, Chung-Ming Kuan. The mentees are senior executives from Winbond and Nuvoton, with the list of mentees discussed and adjusted annually by the board.
- Established on: December 22, 2023. The attendance rate of mentees at the inaugural meeting was 100%.

### Method of Operation

#### 1.Study sessions for all mentee

Study sessions for all mentee held once a month in principle, except when the lecturer or students have special circumstances, the timing is adjusted accordingly. The speaker can be a director from Winbond/Nuvoton or an external expert, with the current planned topics as follows:

- A.International economic environment
- B.Industry trends and strategies
- C.SDGs & ESG trends and progress
- D.Technology and business innovation
- E.Leadership and management
- F.History and humanities

#### 2. Mentor/mentee mechanism between mentors and mentees

- A.The first version of mentor-mentee pairing has been established, allowing mentors to observe and guide mentees more closely.
- B.The pairing of mentors and mentees is adjusted annually, based on the increase or decrease of mentees or individual needs.



### 1.1.3 Shareholder Relations and Rights

To maintain shareholder relations and rights, Winbond mainly manages through the following four measures to ensure that the communication process with shareholders is smooth and in line with due process, the information is open and transparent, and the active and positive interaction between the company and shareholders is effectively maintained:

#### Uphold Shareholders' Interests

 External channel of communication provided

Winbond has appointed a spokesperson and 2 deputy spokesperson, and relevant units like investor relations and stock affairs have also been established.

 Regular disclosure on Winbond operations

- Monthly turnover, financial reports, and Winbond's annual reports are regularly disclosed on the official website.
- Starting from 2024, the meeting dates of the Board of Directors will be announced before filing each quarter's financial report.

 Define management procedure for prevention of insider trading

- In addition, directors are not allowed to trade their stocks during the closed period of 30 days before the announcement of the annual financial report and 15 days before the announcement of the quarterly financial report.
- Education on prevention of insider trading is conducted every month to prevent accidental violations of the relevant laws.

 2 institutional investor conferences and 1 general shareholders' meeting are hosted each year

An institutional investor conference is held by Winbond every six months with two of such conferences in 2022.



For more information on the rights and interest of shareholders, please refer to the [videos and presentations from the institutional investor conferences](#).

### 1.1.4 Tax Management



Winbond has established a unit responsible for tax governance, comply with the local tax regulations to handle various tax declarations. Winbond also supports government policies aimed at promoting corporate innovation, research and development, and tax incentives.

In response to the global anti-tax avoidance trend led by the OECD, Winbond ensures information transparency. Apart from timely completing transfer pricing documentation for headquarter and subsidiaries, also regularly discloses tax information in financial reports and annual reports. On the tax fairness front, in addition to completing local tax declarations for headquarter and subsidiaries within the deadlines, we also engage independent third-party professional consultants to ensure tax compliance across the group's various countries. Furthermore, Winbond monitors the list of non-cooperative tax jurisdictions released by EU, and evaluate investment structures then chose to liquidates some Controlled Foreign Companies (CFCs).



#### Seven Principles of Taxation Policy

- ① Comply with the local tax laws, report tax returns honestly, pay taxes on time, and fulfill our social responsibilities as taxpayers.
- ② Local and international tax reforms are thoroughly assessed to determine the impact and develop a swift response.
- ③ Tax information is regularly disclosed in the financial statements and annual report to ensure information transparency.
- ④ Transactions between affiliated enterprises are based on the Arm's Length Principle, comply with the internationally accepted Transfer Pricing Guidelines defined by the Organization for Economic Cooperation and Development (OECD).
- ⑤ Winbond has built a relationship based on mutual trust and honest communications with the tax authorities.
- ⑥ All material transactions and decisions made by the company take the effect of tax and leases into account.
- ⑦ Do not transfer profits to low-tax countries or regions.



**Winbond has been awarded the 2023 outstanding business entity for electronic invoices by the Ministry of Finance.**

The National Taxation Bureau under Ministry of Finance elects outstanding e-invoice operators annually. The selection criteria are stringent, considering not only the usage rate of e-invoices and the implementation of energy-saving and carbon-reduction policies but also ESG considerations. This includes meeting the following conditions in the two years prior to selection: no instances of missing or misused uniform invoices, no overdue declaration of sales, no major violations or tax arrears (including tariffs), no violations of environmental protection, labor, or food safety and hygiene laws, and involvement in socially significant or landmark cases.

Under the jurisdiction of the Central Regional Taxation Bureau, there are over 282,000 businesses using uniform invoices. In 2023, Winbond has been awarded by the National Taxation Bureau as an outstanding entity by adopting e-invoice system, demonstrating Winbond's commitment to integrity and compliance.



**2023 The Distribution of Tax Payments by the Group**



Unit: NT\$ Million

Company	Income Tax Paid	%	Income Tax Payable	%
<b>Winbond</b>	589	40.10%	475	59.01%
<b>Nuvoton</b>	355	24.00%	239	30.00%
<b>Other Subsidiaries</b>	525	35.90%	91	10.99%
<b>Total</b>	1,469	100.00%	805	100.00%

Distribution of Group Tax Payments in 2023 : Winbond Group paid a total of NT\$1.469 billion in income tax in 2023, accounting for approximately 1.96% of consolidated operating revenue.

**Tax Reduction and Credit**

In 2023, Winbond and Nuvoton completed and filed FY2022 Taiwan corporate income tax, and applied for tax credit totaling NT\$735,851 thousand under Article 10 of the Statute for Industrial Innovation for research and development expenses and 5G smart machinery investment deductions. The tax filings of Winbond and Nuvoton through FY2022 have been assessed by tax authorities as of 2023.

**Investment Grants, Research and Development Grants, and Other Related Subsidies**

As of the end of 2023, Winbond obtained government-subsidized loans under the "Welcome Taiwanese Businesses Back to Invest in Taiwan Action Plan" amounting to NT\$5,131,600 thousand. After government grants, the interest rates ranged from 1.25% to 1.45%. These funds were used for the purchase of machinery and equipment as well as working capital turnover. The loan will be repaid in installments over a seven-year period. For more information, please refer to page 53 of [Winbond 2023 Consolidated Financial Statement \(Report\)](#).

**Note:** The Large Leads Small supply chain project did not receive any grants in the fiscal year 2023.



## 1.2 Business Integrity

### 1.2.1 Business Integrity

"Business integrity" is Winbond's highest ethical standard. The human resources unit is responsible for the establishment and development of the corporate culture of business integrity, and ethical compliance audits which is conducted quarterly in conjunction with internal control operations.

Winbond employees are familiar with the content of business integrity through the training of regulations , continuous improvement, supervision & control, and education & training; regulations are also formulated, such as "[Corporate Governance Best Practice Principles](#)," "[Procedures for Ethical Management and Guidelines for Conduct](#)," "[Sustainability Development Best Practice Principles](#)," "Corporate Social Responsibility Manual," "[The Code of Ethics and Professional Conduct for Directors](#)," "[Employee Code of Conduct](#)," and "[Winbond Anti-Corruption Commitment](#)" embedding business integrity into the company's culture.

An annual report on business integrity management promotion and training is presented to the Board by the HR in the fourth quarter of each year. Internal cultural promotion, weekly articles on corporate philosophy, and promotion of policy announcements published on the employees' homepages are used to strengthen the implementation of education and training on labor rights, environmental protection, health and safety, ethical standards, and prevention of insider trading. Winbond strengthens internal ethical awareness to ensure compliance with corporate ethics and government regulations and implements sound business integrity management.



In 2024, Winbond will establish the "Winbond Anti-Corruption Commitment," and adhere the value of "Conduct business with integrity and ethical behavior" to eliminate any corrupt practices.

### 2023 Results of Business Integrity Management



In 2023, "Human Rights and Labor Ethics Education Training" was held online. This course covers topics such as "Integrity in Business" (preventing insider trading, fair transactions, advertising and competition, identity protection, and retaliation prevention) and labor rights. It is promoted across all global locations.



#### Global Training Number of Employee

Total training number

**4,285** people

Total training time

**1,714** hours

The training rate for all directors and employees has reached **100 %**



Winbond has no incidents related to economy or environment violations, and also no instances of corruption, anti-competitive behavior, or marketing and labeling violations.



No cases of violation of integrity were reported through complaint channel in 2023.

## Statistics of Ethics Code Advocacy Courses for Practitioners

Region/Subsidiary	Employee Type		Management/Non-management		Total	Total Hour (0.4hr/courses)
	Direct Employee	In-direct Employee	Management	Non-management		
Taiwan	Number of Trainees	483	3,015	542	2,956	3,498
	Number of Completed Trainees	483	3,015	542	2,956	3,498
	Completion Rate	100%	100%	100%	100%	1,399
Asia Pacific	Number of Trainees	-	712	89	623	712
	Number of Completed Trainees	-	712	89	623	712
	Completion Rate	-	100%	100%	100%	100%
Europe and America	Number of Trainees	-	75	20	55	75
	Number of Completed Trainees	-	75	20	55	75
	Completion Rate	-	100%	100%	100%	100%
Total	Number of Trainees	483	3,802	651	3,634	4,285
	Number of Completed Trainees	483	3,802	651	3,634	4,285
	Completion Rate	100%	100%	100%	100%	100%



The following personnel were not included in the training scope:

1.Consultants 2.Mainly serving related companies 3.Unable to attend training due to special reasons (such as leave or expected resignation) 4.Non-full-time employees

## 1.2.2 Internal Controls and Audits

Winbond's internal audit unit is directly under the Board of Directors. The appointment and dismissal of the audit chief shall be approved by the Audit Committee and the Board of Directors. In addition to reviewing and verifying the internal control self-assessment results of the internal control system for each unit and subsidiaries, the internal audit unit also evaluates the control operations of various operating activities of Winbond's internal control system to measure the effectiveness and compliance of the existing internal control and its impact. The frequency and content of each periodic audit are determined according to the laws and regulations as well as the risk assessment; other important procedures or special cases may be audited by the auditing personnel at any time or irregularly.

The audit unit conducts audits according to the annual audit plan approved by the Board of Directors to determine the effectiveness of the internal control system's design and implementation. Audit findings are followed up until corrective actions have been completed to ensure the appropriate measures were taken by the relevant units timely. The audit chief reports to the independent director (convener of the Audit Committee) monthly after the completion of audit reports and the follow-up reports and delivers them to the independent directors for examination before the end of next month following the completion of the audit. The audit chief reports to the Board of Directors and Audit Committee quarterly. 2023 audit plan has been implemented in accordance with regulations, and audit results and follow-up improvements have been reported to the Audit Committee and the Board of Directors.

Winbond has established a complaint channel for stakeholders. The internal and external individuals may report to this channel anonymously or non-anonymously if employees engage in illegal activities, such as unfair business practices, bribery or earning illegal profits, fraud, and coercion. Reported cases are directly accepted by the audit unit of the Winbond and sent to the Audit Committee at the same time. The handling process is in accordance with the "[Ethical Management Violation Handling Guidelines](#)".



## 1.3 Productivity and Business Performance

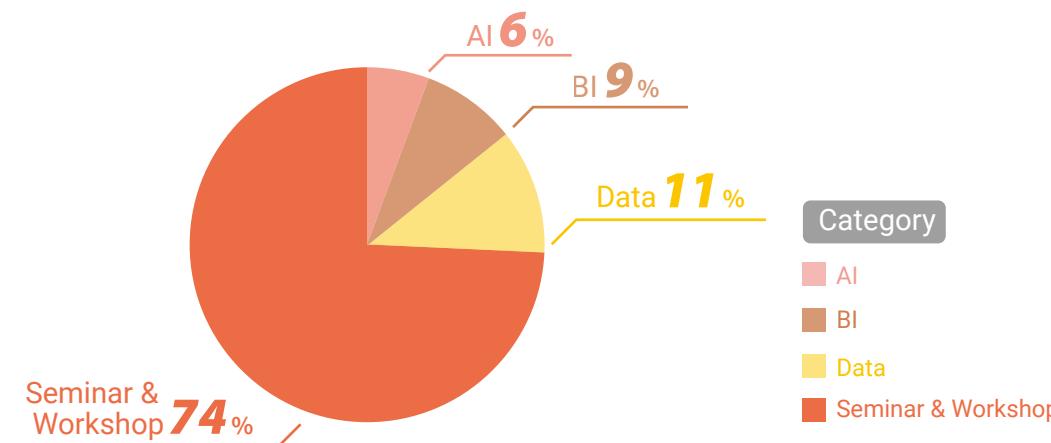
### 1.3.1 Productivity Performance

Productivity and operational performance are critical factors for continuous growth and enhanced competitiveness. By improving productivity, costs can be reduced, waste minimized, and revenue expanded, ultimately leading to increased profitability and operational efficiency.

In 2023, Winbond successfully completed 35 digital transformation initiatives and training sessions, surpassing the initial target of 24. These activities aimed to enhance employees' understanding and application of digital tools and processes, thereby improving overall work efficiency and productivity. As part of the short-term goals, Winbond plans to accomplish at least 72 digital transformation initiatives and training sessions between 2023 and 2025, laying a solid foundation for digital transformation and productivity enhancement.

Additionally, in 2023, Winbond achieved the optimization of the AP Request Portal, which was part of the Productivity Tracking System. Through this systematic approach, Winbond effectively tracks and manages productivity improvements across various departments resulting from IT system development. With ongoing enhancements to the productivity tracking system, the company has set a short-term goal to complete the system by 2025. Looking ahead, the company's medium, and long-term objective for 2030 is to achieve 100% employee participation in digital transformation and further enhance Winbond's productivity and stable profitability through continuous innovation and internal management optimization.

#### Number of the Training Sessions



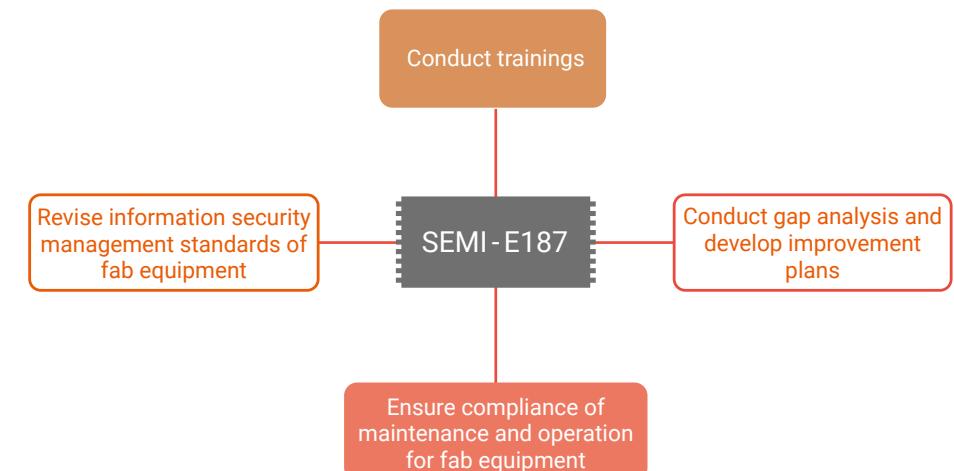
#### Introduction of SEMI-E187 Specification for Cybersecurity of Fab Equipment

##### SEMI-E187 Specification for Cybersecurity of Fab Equipment

SEMI E187-Specification for Cybersecurity of Fab Equipment is the first Taiwan's security standard for semiconductor production line equipment. It was initiated by industry leaders and developed in collaboration with academic and research institutions. The standard covers four major aspects: operating system specifications, network security, endpoint protection, and information security monitoring. Its purpose is to define common and foundational information security requirements for wafer fab equipment, assisting manufacturers and their supply chains in enhancing their cybersecurity posture.

##### Purpose of Implementation

For Winbond, ensuring the stable operation of production lines is crucial for maintaining business continuity. If production line equipment is impacted by security incidents, it not only reduces production efficiency but can also cause severe financial and reputational damage to the company. By implementing the SEMI-E187 standard as a guiding principle for equipment procurement, installation, and maintenance, Winbond can further strengthen information security and operational stability in production operations. Additionally, this standard contributes to enhancing cybersecurity resilience among partners, collectively reducing operational risks.



### 1.3.2 Economic Performance

In 2023, Winbond's consolidated revenue amounted to NT\$75 billion, a decrease of 20.65% from 2022; our consolidated net earnings after tax reached NT\$34 million, and our after-tax EPS was negative NT\$0.29. For more explanation and analysis of financial performance, please refer to [Winbond's 2023 Annual Report](#).

### 2023 Consolidated Financial Performance



Item	2021	2022	2023
Operating Revenue	99,570	94,530	75,006
Non-operating Revenue (expense)	(205)	1,512	933
Direct Economic Value [A]	99,365	96,042	75,939
Operating Cost	57,089	51,479	52,610
Employee Remuneration and Benefit Expenses <small>(Personnel expenses)</small>	17,325	19,706	16,775
Payments to Investors	1,324	5,506	6,492
Payments to the Government	274	3,799	974
Community Investment	6	7	7
Direct Economic Value Distributed [B]	76,018	80,497	76,858
Residual Economic Value [A-B]	23,347	15,545	(919)
Net Profit Before Tax	18,223	18,046	(698)
Net Profit	15,000	14,987	34
Earning/Loss per Share [Attributable to the parent company] (NT\$)	3.42	3.25	(0.29)

### Sales Distribution and Product Categories and Revenue Ratios of Winbond Group's Applications in 2 Years

Item	Asia	Europe	America	Others
2023 Sales Ratio <small>(100%)</small>	92%	5%	3%	-
2022 Sales Ratio <small>(100%)</small>	90%	4%	6%	-

Item	Dynamic Random Access Memory (DRAM) Products	Flash Memory Products	Logic Products	Others
2023 Sales Ratio <small>(100%)</small>	19%	32%	46%	3%
2022 Sales Ratio <small>(100%)</small>	23%	32%	44%	1%

- Note 1.Total wafer production was 407.6 (thousand pcs), while total die production was 7,153,705 (thousand pcs).  
2.For Winbond's financial performance and sales volume in 2023, please refer to [Winbond's 2023 Annual Report](#).

### 1.3.3 Investing in Taiwan

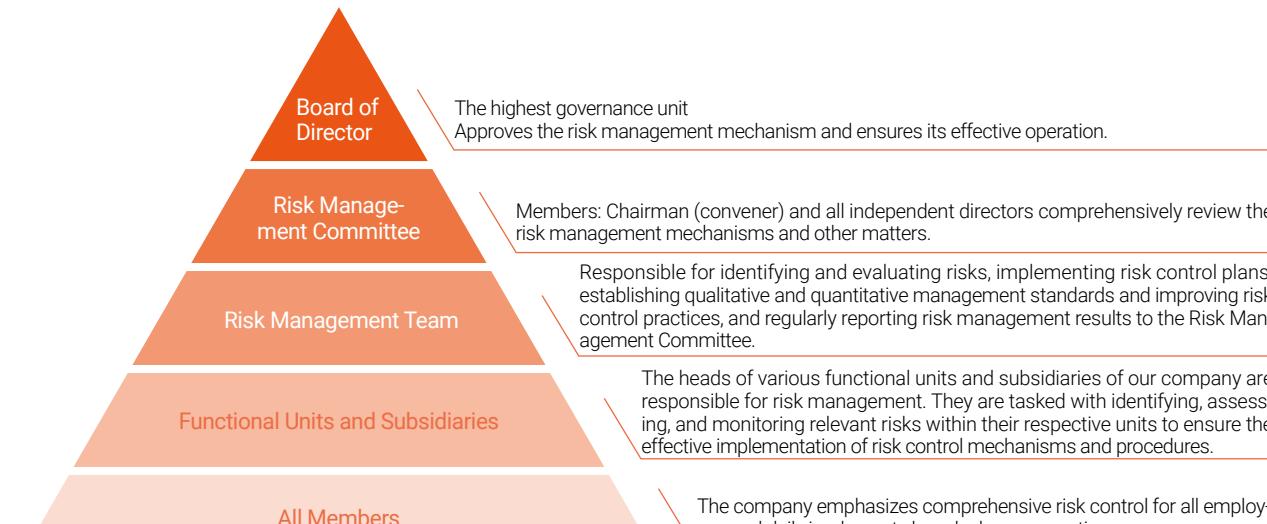
Winbond's headquarters and the first Fab were established in the Central Taiwan Science Park. Echoing the programs for investing in Taiwan, in 2020, we applied for the "Action Plan for Welcoming Overseas Taiwanese Businesses to Return to Invest in Taiwan" for the first time to increase investment in the Central Taiwan Science Park (CTSP) Fab to expand production capacity and upgrade technology, implement intelligent automation equipment and provide high value-added products. Construction of Winbond's second Fab was completed in the Kaohsiung Science Park in 2022. In March 2023, Winbond was granted the second approval of the "Action Plan for Welcoming Overseas Taiwanese Businesses to Return to Invest in Taiwan", which was binding to the sustainability-linked loan contract signed in April 2023. The funds will be used to expand the production capacity of the Kaohsiung Fab and the CTSP Fab, upgrade advanced manufacturing process, purchase advanced equipment and develop our own innovative technologies to cope with the long-term growth trend of the memory industry. The Kaohsiung Fab will continue to recruit employees and encourage local talents born in southern Taiwan to return to their hometown to work. In addition to gathering semiconductor supply chain in the Kaohsiung area, we will further implement the concept of investing in Taiwan.

## 1.4 Risk Management

Winbond belongs to the semiconductor manufacturing industry. Facing natural disasters, accidents, human-made incidents, changes in international political and economic situations, the emergence of new technologies, and changes in policies and regulations may all cause serious impacts on its operations and finances. Therefore, Winbond established a "Risk Management Committee" under the Board of Directors. This committee is one of the functional committees and organizes existing departments or units responsible for risk to enhance the overall risk management organizational structure. It formulates sound internal management regulations and operating procedures for each unit's scope of responsibility and conducts risk management.

In 2023, Winbond revised the "Risk Management Committee Chapter" and formulated the "Risk Management Policy and Procedures" after receiving approval by the Board of Directors. It actively manages the four major types of risks faced by contemporary enterprises: "strategic," "operational," "financial," and "information security." It develops comprehensive plans and processes for pre-assessment, risk avoidance, loss prevention, and crisis management for various operational activities and regularly reports to the management and governance units to ensure that all corporate risk control goals are achieved. The risk management team should pay attention to the development of international and domestic risk management systems and changes in internal and external operating environments, adjust control mechanisms, report to the Risk Management Committee and the Board of Directors for approval, and enhance the effectiveness of risk management implementation. For details on the operation of the Risk Management Committee, please refer to [Section 1.1.2 Operations and Main Duties of the Functional Committee](#).

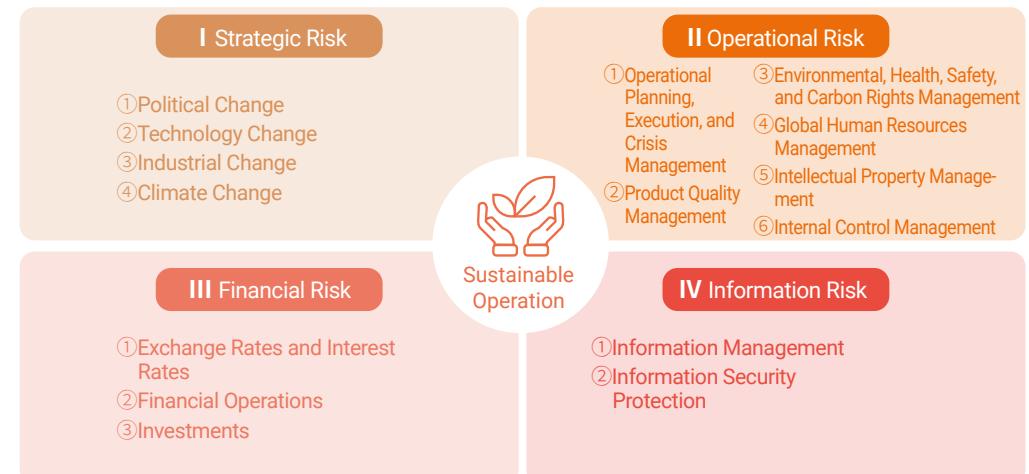
### Risk Management Committee Organizational Structure



Winbond Risk Management Policies and Procedures

- includes but not limit to
- ① Risk management objectives.
- ② Risk management organizational structure and responsibilities.
- ③ Risk management procedures.

### 4 Scope of Risk Management



Winbond Risk Management Objectives

Winbond aims to manage various risks that may impact the achievement of company goals through a comprehensive risk management framework. By integrating risk management into operational activities and daily management processes, Winbond aims to achieve the following objectives:

- ① Achieve company goals.
- ② Enhance management efficiency.
- ③ Provide reliable information.
- ④ Allocate resources effectively.

Winbond's risk management procedures include at least five elements: risk identification, risk analysis, risk assessment, risk response, and supervision and review mechanism. The specific procedures and methods for each element are as follows:

#### 1. Risk Identification:

- Each functional unit and subsidiary should identify the risks of the short-, mid-, and long-term objectives and the business operations based on the company's risk management policies and procedures.
- Various feasible analysis tools and methods (such as process analysis, scenario analysis, questionnaire surveys, PESTLE analysis, etc.) should be used for risk identification. Risks should be analyzed from both top-down and bottom-up perspectives, considering internal and external risk factors, stakeholder concerns, etc., to comprehensively identify potential risk events that may affect the company's goals or cause losses or adverse impacts.

#### 2. Risk Analysis:

- Each functional unit and subsidiary should analyze the probability and impact of identified risks based on existing control measures, past experiences, industry cases, etc., and calculate the risk value accordingly.

##### 1.Risk Analysis Measurement Standards

- The risk management team should establish appropriate quantitative or qualitative measurement standards based on the company's risk characteristics as the basis for risk analysis.
- Qualitative measurement standards refer to expressing the probability and impact of risk events through textual descriptions, while quantitative measurement standards refer to expressing the probability and impact of risk events through specific measurable numerical indicators (such as days, percentages, amounts, numbers, etc.).

##### 2.Risk Appetite

- The risk management team should develop risk appetite (risk tolerance) and report it to the Risk Management Committee and the Board of Directors for determining the company's acceptable risk threshold. Based on the risk appetite, the risk management team should discuss the corresponding risk levels for each risk value and the response methods for each risk level, serving as the basis for subsequent risk assessment and risk response.

#### 3. Risk Assessment:

- Each functional unit and subsidiary should, based on the results of risk analysis, align with the risk appetite approved by the Risk Management Committee and the Board of Directors. They should then plan and execute subsequent risk response measures according to the risk levels.
- The relevant results of risk analysis and assessment should be accurately documented and reported to the Risk Management Committee.

#### 4. Risk Response:

- After assessing business risks, each unit should propose appropriate risk response measures and control operations and report them to the risk management team for review.

#### 5. Supervision and Review:

- The risk management team should regularly report the implementation results of risk management procedures to the Risk Management Committee as a reference, and report major risk events to the Risk Management Committee and the Board of Directors, as necessary.



Winbond has included climate change risk into the long-term operation and management of the enterprise, and in order to understand its impact on the environment and operations, since 2021, Winbond has adopted the Task Force on Climate-Related Financial Disclosures' (TCFD) framework, and based on the observation on international regulatory trends and market outlook, every year, we regularly identify and disclose the financial impacts of climate-related risks and opportunities (both quantitative and qualitative), providing comments on the situation as well as proposing a management strategy. Winbond will continue to monitor the impact of risks brought by the climate, strengthen the company's operational capabilities, promote various carbon reduction plans, improve energy efficiency, and steadily move towards sustainable development. Please refer to [1.6 Climate Change Management](#) for detailed information.

## Risk Analysis Table Strategical Risk

Risk Type	Description of Impact Assessment	Response Measures	Response / Performance Management
Geopolitical and Economic	<ul style="list-style-type: none"> <li><b>International situation risk:</b> G2 geopolitical disputes have formed two major market segments dominated by China and the United States. The Chinese market has gradually turned to domestic products, while the European and American markets have gradually stopped using products produced by Chinese companies</li> </ul>	<ul style="list-style-type: none"> <li>In response to the globalization market structure (globalization), it is rapidly developing towards regionalization (localization), actively expanding the European, American, Japanese and Korean markets and international Tier -1 customer orders, and developing Tier -1 High value-added products required by customers</li> </ul>	<ul style="list-style-type: none"> <li>Listed in the annual plan and regularly review the plan</li> </ul>
	<ul style="list-style-type: none"> <li><b>Technological and technical risk:</b> PIM (Processor in Memory) technology may have a significant impact on traditional chip computing architecture; NOR Flash is approaching the limits of device performance and shrinkage</li> </ul>	<ul style="list-style-type: none"> <li>Pay close attention to PIM technology and invest some R&amp;D resources in research and development</li> <li>In addition to process R&amp;D and emerging memory research, we strengthen research on the integration of heterogeneous memory and logic chips to generate innovative applications in large-capacity and fast read-write memories</li> </ul>	<ul style="list-style-type: none"> <li>Listed in the annual plan and regularly review the plan</li> </ul>
	<ul style="list-style-type: none"> <li><b>Technology development risk:</b> New technology development may encounter unforeseen difficulties, leading to delays in the development schedule</li> </ul>	<ul style="list-style-type: none"> <li>Maintain a strong relationship with major equipment suppliers to engage and exchange the latest solutions</li> <li>Implemented TFMEA analysis to assess potential risks in advance and seek effective solutions</li> </ul>	<ul style="list-style-type: none"> <li>Regularly hold technical seminars with major equipment suppliers</li> <li>Technology development periodic review TFMEA</li> </ul>
Strategical Risk	<ul style="list-style-type: none"> <li><b>Geopolitical and competitive risk:</b> G2 may cut customers and markets, affecting future performance scale. At the same time, science and technology are changing with each passing day, and industry models are shifting rapidly. If technology and products are relatively backward, the impact might be significant</li> </ul>	<ul style="list-style-type: none"> <li>Develop a decentralized production strategy, understand the needs of specific customers, and reduce the risks and impacts that G2 may bring</li> </ul>	<ul style="list-style-type: none"> <li>Adjust operating strategies and include them in annual plans</li> </ul>
		<ul style="list-style-type: none"> <li>In response to geopolitics and customer requirements, seek to diversify production bases and expand global markets; actively innovate to enhance product differentiation, and develop high-end customers to enhance operational competitiveness</li> <li>Strengthen partnerships with key customers; hold regular meetings to understand customer needs; and ensure consistency of long-term development blueprints for both parties</li> <li>Study the ecological chain of each application, understand its pain points and proactively provide customer solutions</li> </ul>	<ul style="list-style-type: none"> <li>In response to the rapid shift of industry paradigms, technology and product development can be adjusted immediately, and the organization can be adjusted in a timely manner</li> </ul>
Industrial	<ul style="list-style-type: none"> <li><b>Climate change risk:</b> In the context of global warming and extreme climate intensification, transition climate risks and physical climate risks may have impacts on the company's financial and operational aspects</li> </ul>	<ul style="list-style-type: none"> <li>Introduce the TCFD management structure to identify the sources of climate risks and assess their impacts, and formulate mitigation and adaptation measures accordingly to reduce the impact of climate risks and enhance the company's operational resilience</li> </ul>	<ul style="list-style-type: none"> <li>Published a climate-related financial disclosure report (TCFD) to review Winbond's operational resilience in facing climate issues and improve information transparency</li> </ul>
	<ul style="list-style-type: none"> <li>Set a goal of using 90% green electricity in CTSP Fab by 2030</li> <li>Plan and purchase renewable energy power, and evaluate investments in renewable energy projects</li> <li>Promote water-saving measures; install water storage equipment; increase the proportion of recycled water</li> <li>Conduct energy resource usage surveys on suppliers every year to understand scope 3 carbon emissions and suppliers' carbon management levels, further plan reduction measures, and conduct regular tracking and communication</li> </ul>	<ul style="list-style-type: none"> <li>The renewable energy usage rate of CTSP Fab in 2023 is 0.4%</li> <li>The water recovery rate of the Fabs in 2023 is 82.2%</li> </ul>	

## Risk Analysis Table | Operational Risk

Risk Type	Description of Impact Assessment	Response Measures	Response / Performance Management
Operational Risk	Planning, Executing, and Emergency Management	<ul style="list-style-type: none"> <li><b>Operational risk:</b> Due to increased shipments or unexpected quality abnormalities, it is necessary to quickly find out the real cause and propose improvement plans to avoid causing quality problems in the customer's products in the end market</li> </ul>	<ul style="list-style-type: none"> <li>Utilize the latest instruments, quality management techniques and comprehensive education and training to strengthen the analytical ability to independently inspect product abnormalities, quickly implement improvement plans, improve interaction with customers and obtain immediate feedback, build mutual trust and increase cooperation opportunities</li> </ul>
	Product Quality Management	<ul style="list-style-type: none"> <li><b>Quality improvement risk:</b> Various requirements arising from customer product upgrades or development of new product applications, including: increasingly stringent product reliability and validity specifications, requirements for continuous improvement of yield rates, requirements for early introduction and use of new technologies for manufacturing, etc. Causes the quality of newly manufactured products to face unprecedented challenges</li> </ul>	<ul style="list-style-type: none"> <li>Promote Zero Defect 2.0 activities and implement them in all units of the company</li> </ul>
	Environment, Safety, and Health	<ul style="list-style-type: none"> <li><b>Epidemic risk:</b> The impact of the epidemic on personnel health or loss of business interruption</li> </ul>	<ul style="list-style-type: none"> <li>Kaohsiung Fab uses digital transformation to increase Virgin Yield</li> </ul>
	Carbon Credit Management	<ul style="list-style-type: none"> <li><b>Liquidity risk:</b> The domestic carbon rights market trading and swap regulations are not yet mature, and may face risks such as insufficient liquidity in carbon rights trading and high volatility</li> </ul>	<ul style="list-style-type: none"> <li>There were no personnel health impacts or operational disruptions caused by the epidemic in 2023</li> </ul>
	Global Talent Management	<ul style="list-style-type: none"> <li><b>Human rights risk:</b> Ignoring human rights in corporate governance may bring risks of legal action, supply chain misconduct, regulatory compliance issues, brand reputation damage, and loss of support from socially responsible investors; ignoring employee trust in the company can also increase the risk of losing talent</li> </ul>	<ul style="list-style-type: none"> <li>Starting from 2022, Winbond has been participating in voluntary carbon rights market transactions and continuously expanding its channels for obtaining diversified carbon rights to respond promptly to market changes. As of 2023, carbon rights issues have had no negative impact on Winbond's operations</li> </ul>
	Patent Risks Management	<ul style="list-style-type: none"> <li><b>Infringement risk:</b> It may constitute an illegal act and cause the management bears civil and criminal liability in serious cases. In minor cases, it may also cause losses to the company's finances or goodwill</li> <li><b>Intellectual property risks:</b> Unfavorable patent licensing negotiations, increased royalties and the possibility of patent litigation</li> </ul>	<ul style="list-style-type: none"> <li>Chairman signed Winbond Human Rights Policy in 2022</li> <li>Conducted the first company-wide human rights due diligence in 2022. Among the 28 issues, there were no high-risk issues that require immediate resolution</li> <li>Since 2016 to date, Winbond has not been involved in any infringement lawsuits or disputes</li> <li>Adhering to the principle of seeking win-win results, and relying on mutual respect and rational interaction with rights holders, Winbond has effectively controlled patent-related risks, and no adverse results have occurred to Winbond</li> </ul>

## Risk Analysis Table Financial Risk

Risk Type	Description of Impact Assessment	Response Measures	Response / Performance Management
Financial Risk	<b>Exchange Rate &amp; Interest Rate</b> <ul style="list-style-type: none"> <li><b>Exchange rate risk:</b> Primarily arises from foreign currency positions related to import and export business, as well as derivative financial instruments associated with corresponding commitments. These measures are implemented to mitigate the exchange rate risk stemming from foreign currency positions</li> </ul>	<ul style="list-style-type: none"> <li>When engaging in derivative financial product transactions and selecting objects, the first priority is to consider credit risk to avoid losses due to the failure of the other party to perform the contract</li> <li>Winbond keeps abreast of financial market information, judges trends, is familiar with financial products, regulations and investment operation techniques, and provides sufficient and timely information for the reference of management and relevant departments</li> <li>For derivative financial product transactions, the financial unit regularly evaluates twice a month, prepares reports, and submits them to the head of the financial unit and senior executives authorized by the Board of Directors for review</li> </ul>	<ul style="list-style-type: none"> <li>The exchange rate fluctuation risk and the exchange gain or loss in 2023 were both within manageable limits</li> </ul>
	<b>Financial Operation</b> <ul style="list-style-type: none"> <li><b>Interest rate risk:</b> Mainly occurs from floating interest rates on long-term borrowings incurred for operational needs such as improving manufacturing processes or expanding production capacity</li> </ul>	<ul style="list-style-type: none"> <li>Strive for better interest rate conditions based on current market conditions to reduce the impact of interest rate fluctuations. The corporate bonds issued by Winbond have fixed interest rates, are denominated in New Taiwan dollars, and are measured at amortized cost, so interest rate fluctuations will not affect its cash flow and fair value</li> </ul>	<ul style="list-style-type: none"> <li>It was estimated that the impact of interest rate changes on the company's operations in 2023 within the controllable range</li> </ul>
	<b>Investment</b> <ul style="list-style-type: none"> <li><b>Credit risk:</b> Excessive financial leverage or poorer than expected risk assessment may cause the company to fall into credit risks such as default</li> </ul>	<ul style="list-style-type: none"> <li>Through continuous and dynamic financial simulation, we can truly understand the company's capital flow and possible future changes in order to reduce uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>2023, in response to operational needs, we raised funds through multiple channels to ensure a stable long-term financial structure</li> </ul>
			<ul style="list-style-type: none"> <li>The investment decision-making process in 2023 was in compliance with Winbond's internal and external regulations of the competent authorities</li> </ul>

## Risk Analysis Table Informational Security Risk

Risk Type	Description of Impact Assessment	Response Measures	Response / Performance Management
Informational Security Risk	<p><b>Cybersecurity</b></p> <ul style="list-style-type: none"> <li><b>Hacker attack risk:</b> It may lead to network interruption, data theft / deletion / encryption and blackmail</li> </ul>	<ul style="list-style-type: none"> <li>Perform vulnerability and vulnerability management, including completing security monitoring reports and anomaly event analysis on a weekly basis, arranging monthly downtime operations for major Microsoft updates and patching, performing vulnerability scans quarterly, and using Security Scorecard to monitor external service risks, while collaborating with information security advisors and intelligence centers to quickly assess and remediate reported vulnerabilities</li> </ul>	<ul style="list-style-type: none"> <li>There was no major security incidents in 2023, and we have been actively repairing high-risk weaknesses to ensure that the Security Scorecard score remains above A class</li> <li>Continuously conduct information security monitoring and reporting and processing of abnormal events, strengthen abnormal event analysis and investigation reports, and plan and implement improvement measures</li> </ul>
	<p><b>Information Security</b></p> <ul style="list-style-type: none"> <li><b>Social engineering attack:</b> It may result in loss of property and reputation, and increase the risk of hacker attacks</li> </ul>	<ul style="list-style-type: none"> <li>Enable the phishing email blocking mechanism and enhance employees' information security awareness; and organize education and training to enhance employees' information security awareness</li> </ul>	<ul style="list-style-type: none"> <li>In 2023, we completed 12 information security promotions, with a total of 14,500 people trained</li> <li>Effectively blocks phishing emails and handles reported incidents immediately, without any incident</li> </ul>
	<p><b>Disaster Recovery for Information Systems</b></p> <ul style="list-style-type: none"> <li><b>Sensitive information leakage risk:</b> It may affect the company's competitiveness and corporate reputation, property losses, and legal liability</li> <li><b>Application of emerging technologies:</b> Careless use of generative AI tools may lead to the leakage of sensitive information</li> </ul>	<ul style="list-style-type: none"> <li>For sensitive data, evaluate data classification and solutions, and develop data protection and control mechanisms</li> <li>Precautions related to the use of generative AI tools, and evaluate the introduction of technical control tools</li> </ul>	<ul style="list-style-type: none"> <li>Completed crafting data protection strategies and preliminary implementation plans as well as the evaluation of data classification</li> <li>Conducted 2 information security promotions and 1 training of using Generative AI tools in 2023</li> </ul>



## 1.5 Green Investment & Sustainability-Linked Loan

The whole world is facing the impact of climate change. As one of Taiwan's intensive electronics industry, we set up a green investment management unit to achieve the goal of green investment and create long-term value for investors and shareholders.



As the basic operating unit, the Finance Department further submits relevant proposals to the board of directors for resolution, and the board of directors to participate in relevant decision-making together.



Assess the environmental, social and governance risks of investment projects, ensure that projects meet sustainable development goals, and make sustainable investment decisions.

In 2022, Winbond carried out a comprehensive renewable energy usage plan for the future electricity consumption of the enterprise itself, and had an in-depth understanding of the status of various types of renewable energy industries and whether they could be applied to Winbond's electricity usage. Apart from establishing on-site solar photovoltaic systems to create a renewable energy source, Winbond has also invested in the renewable energy development company, CHIA-HO Green Energy Co., Ltd., in 2022, to participate in solar photovoltaic field development, marking a significant first step towards a net-zero emissions pathway.

Winbond successfully completed its first renewable energy procurement in 2023, with an estimated annual generation of nearly 10 million kWh of renewable energy. This surpasses the electricity consumption of Winbond non-production facilities within Taiwan service locations. By taking practical actions, Winbond contributes to mitigating climate change and simultaneously enhances the company's operational resilience.

### 1.5.1 Green Energy Investment



#### NT\$55 million renewable energy investment plan

Cumulative investments in renewable energy development from 2022 to 2023, continuing collaboration and communication with green industry suppliers.

In May 2022, Winbond acquired 15% equity in CHIA-HO Green Energy Corporation for NT\$555 million, whose main business is to develop solar energy fields. Considering that its parent company, Taiwan Cement Corporation, has valuable practical experience in the renewable energy industry. It will bring positive benefits to Winbond in fulfilling its corporate sustainable development goals, and help Winbond obtain part of the renewable energy electricity needed to move towards net-zero emissions goals.

In November 2023, Winbond announced its participation in the joint establishment of Kai-Hong Energy Co., Ltd., with an investment of NT\$400 million. Kai-Hong Energy's primary business involves investing in solar power generation and wind power generation infrastructure projects in Taiwan. Winbond's involvement in this joint venture not only aligns with the global and Taiwan 2050 net-zero goals, but also demonstrates its proactive engagement in green energy development. Apart from contributing to the company's net-zero emissions target through renewable energy, Winbond is progressively fulfilling its commitment to sustainable development.

As of April 2024, the Board of Winbond has approved a cumulative NT\$955 million in renewable energy investment plan. Going forward, Winbond will continue to seek suitable targets for green energy investment, laying the foundation for achieving net-zero emissions goal.

### 1.5.2 International Voluntary Carbon Credits



#### A total of 13,500 tCO<sub>2</sub>e carbon credits

have been obtained since 2022 from voluntary carbon credit projects in 9 countries across Asia and Africa, creating diverse sustainable benefits.

In response to the global carbon neutrality trend and the 2050 net-zero goal, Winbond not only joined Singapore's global carbon exchange Climate Impact X (CIX) in 2022 and continued to participate in international carbon trading, but also became one of the first international carbon credits purchasers on Taiwan Carbon Solution Exchange (TCX) in 2023. By the end of 2023, Winbond had cumulatively obtained 13,500 metric tons of voluntary carbon credits from 9 countries in Asia and Africa.

The carbon credits obtained by Winbond are issued by international independent organizations such as Verra or Gold Standard. These credits cover various areas, including nature conservation, high-efficiency stoves, clean water sources, solar power generation, and wind power generation. The goal is not only to offset the company's own carbon emissions through carbon trading but also to achieve diverse sustainable benefits, such as protecting terrestrial and marine ecosystems, restoring water-related ecosystems, promoting investment in energy infrastructure and clean energy technology, and respecting the rights of local residents. Winbond's carbon credit projects align with 16 out of the 17 United Nations Sustainable Development Goals (SDGs).

While focusing on the semiconductor industry, Winbond also dedicates continuous and stable resources to participating in global carbon reduction initiatives, contributing to the sustainable survival and development of our planet.



The carbon credit projects include international voluntary carbon credit initiatives related to nature conservation, high-efficiency stoves, clean water sources, solar power generation, and wind power generation.



## Delta Blue Carbon – The world largest blue carbon project

The Delta Blue Carbon - 1 project (DBC-1) is a reforestation and restoration project of mangroves and wetlands in the Indus Delta region of Pakistan. The project covers an area of 350,000 hectares and is expected to reduce carbon emissions by more than 142 million tons of carbon dioxide equivalent during the 60-year project period from 2015 to 2075.

The Indus Delta consists of a richly landscaped system of channels, low-lying islands, intertidal zones and mangroves. The mangroves here are the largest arid climate.

Mangroves in the world and lie on the main migration routes of thousands of bird species. In recent years, the major inducement for mangrove deforestation in the region has been the use of mangroves as a source of fuelwood, fodder, and pasture for grazing, etc. Over 42,000 people live in the 60 coastal villages within the project area, over 70 percent of whom live below the poverty line, with many communities lacking access to clean drinking water, basic education, sanitation and sanitary facilities, and relying on agriculture as their primary income source; the depletion of freshwater has increased the salinity of mangrove and delta soils, and agricultural and coastal fisheries have gradually reduced their yields.DBC-1.

The DBC-1 project hopes to alleviate these problems and prevent biodiversity loss in this critical biodiversity area by regenerating mangroves and controlling the causes of mangrove deforestation and degradation, which will be achieved through the reforestation of more than 224,000 hectares of mangroves and by involving local communities in the planning and implementation of the project's activities. Local residents participate in conservation activities in various ways, including the mangrove supervision agreement, in which local residents are hired as supervisors, and the local residents also work as partners on the project in mangrove forest restoration, protection and sustainable management; other program actions include increasing education, sources of safe drinking water and health care, improving law enforcement, developing local businesses, microfinance programs, promoting gender equality, preserving historic heritage, and developing revenue streams.

## Why Blue Carbon

Blue carbon typically occurs in coastal wetlands dominated by mangroves, salt marsh plants, and seagrass. These wetlands, similar to terrestrial forests, store carbon through biomass. However, their uniqueness lies in their ability to capture mobile carbon from upstream sources, acting like a filtering system that captures carbon in vast river deltas. Thanks to this dual carbon capture process, coastal wetlands remove carbon at a rate forty times faster than terrestrial forests. The blue carbon project is currently one of the most effective and valuable carbon removal systems. Additionally, coastal wetlands contribute to protecting the surrounding environment from the numerous impacts of climate change.

Verification	Location	Type
VCS-2250(CCB)	Pakistan	Removals Afforestation, reforestation, and rehabilitation (ARR) Wetland restoration and conservation (WRC)
Year of Issue	Regional Area	Expected Annual Carbon Reduction
2016-2021	350,000 Hectares	2,407,629 tCO <sub>2</sub> e

	Protect and restores <b>350,000</b> ha in the Sindh Indus Delta Region		Expected to remove <b>142</b> million tCO <sub>2</sub> e over the project's 60-year lifetime
	Over <b>42,000</b> residents are benefits from this projects		<b>400</b> people daily are provided with clean drinking water through the rehabilitation and management of reverse osmosis plants
	<b>15,100</b> people benefit from the health condition improved by this project		<b>34,600</b> people benefits from the increasing fishing

### ■ 1.5.3 Sustainability-Linked Loan

#### Achieve sustainability indicator performance

Winbond signed a NT\$20 billion Sustainability-Linked Loan in April 2023, incorporating specific sustainability indicators such as carbon reduction, power saving, and corporate governance into condition assessments, regularly checking the performance of actual sustainability indicators, and connecting the performance to interest rate reduction. In June 2023, the bank confirmed that Winbond has achieved the annual sustainability indicator performance, and the interest reduction conditions would be applied to subsequent drawdowns until the next annual review time. Winbond also regularly tracks the achievement of various indicators within the company to ensure the implementation of sustainable actions and move towards the goal of sustainable finance together with the banking group.

### ■ 1.5.4 Sustainability Fixed Deposits

In response to the international sustainability trend, Winbond has progressively engaged in sustainable development time deposits with banks since 2023, with a minimum deposit period of at least 3 months. The funds are lent by the bank to other companies for use in green financing projects that comply with regulations or to support green industries such as investments and financing for renewable energy or solar power plants. Winbond's participation in diverse channels of sustainable finance further demonstrates its commitment to sustainable development.

## 1.6 Climate Change Management

Winbond introduced the Task Force on Climate-related Financial Disclosures (TCFD) framework to assess the risks and opportunities that climate change may bring by referring to the TCFD issued by the Financial Stability Board (FSB) TCFD task force. Winbond released its first TCFD Report, examining Winbond's operational resilience in the face of climate issues and enhancing climate information transparency. In the same year, Winbond also established the TCFD platform, providing a convenient management tool for climate change issues. The independent [2023 Task Force on Climate-related Financial Disclosures Report](#) has been released in the first half of 2024.



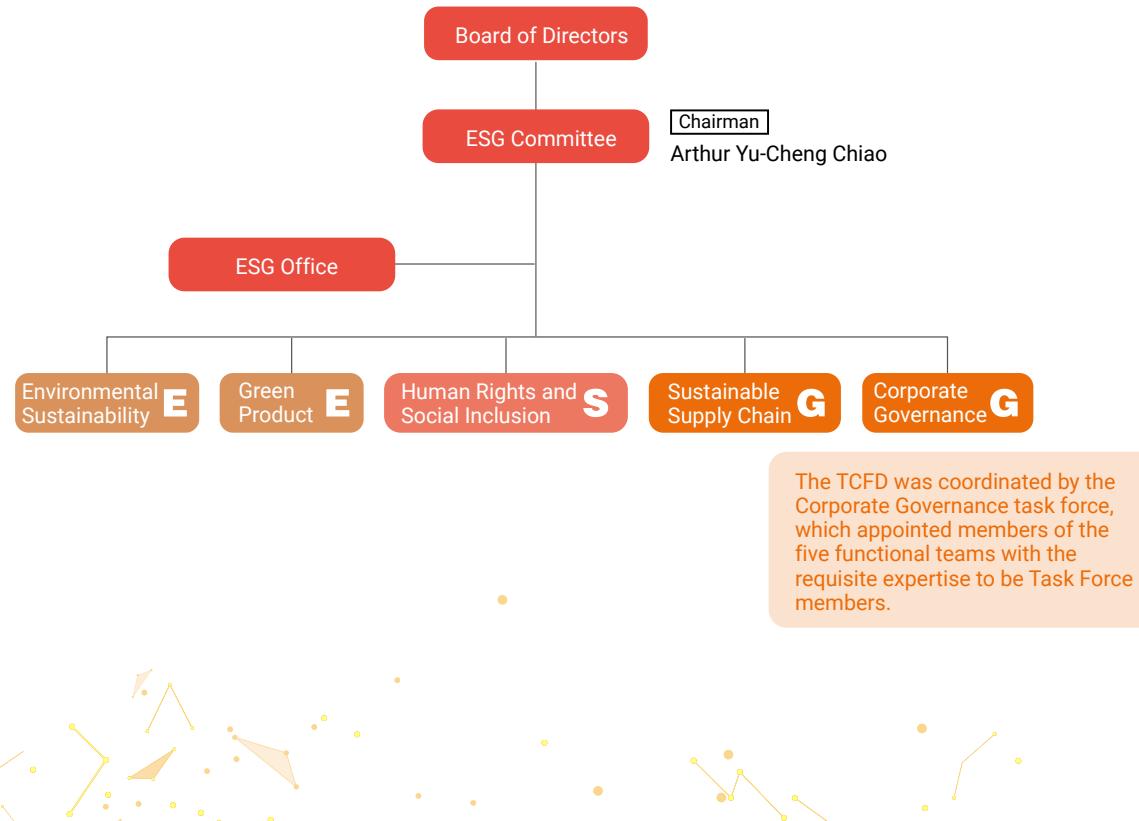
## Climate Change Management Framework (TCFD) Implementation Overview

Winbond Strategy/ Actions	 <b>Governance</b> <ul style="list-style-type: none"><li>The Board of Directors, as the highest governance body for climate change, is responsible for guiding the company's response to and decision-making on climate change.</li><li>The ESG Committee is established under the Board of Directors and chaired by the Chairman. It regularly reports to the Board of Directors every year on the implementation results of the ESG Committee related to climate change, etc., so as to ensure the promotion and implementation of the work related to the sustainable development of the enterprise.</li></ul>	 <b>Strategy</b> <ul style="list-style-type: none"><li>Discussion and identification of short-, medium- and long-term climate risks and opportunities by the interdepartmental TCFD.</li><li>Assessment of the possible impact on the company's financial or operation aspects for major risks and opportunities with high impact and high probability of occurrence.</li><li>Scenario analysis for major transition risks and physical risks.</li></ul>	 <b>Risk Management</b> <ul style="list-style-type: none"><li>Manage climate-related risks and integrate processes into the companywide risk management framework.</li><li>Establish a climate risk identification process with reference to the TCFD framework.</li><li>For major risks and opportunities with high impact and high probability of occurrence, relevant units are asked to review and develop mitigation and adaptation measures.</li></ul>	 <b>Metrics and Targets</b> <ul style="list-style-type: none"><li>Every year, statistics are gathered on the greenhouse gas emissions and water consumption of the CTSP Fab and the Kaohsiung Fab. The key performance indicators (KPI) - greenhouse gas emissions per unit of product and water recovery rate are set.</li><li>The greenhouse gas emissions are verified by a third-party unit every year (ISO 14064-1).</li><li>Target: Reduce greenhouse gas emissions by 60% by 2030 and achieve net-zero emissions by 2050.</li></ul>
2023 Implementation Status	<ul style="list-style-type: none"><li>The Board of Directors passed a number of important climate-related proposals and reports to actively respond to the risks and challenges brought about by climate change, including the joint establishment of Kai-Hong Energy Co., Ltd., the proposed increase budget for energy-efficient equipment, and renewable energy electricity procurement.</li></ul>	<ul style="list-style-type: none"><li>7 major climate risks and 7 minor climate risks were identified, as well as 5 major climate opportunities and 7 minor climate opportunities.</li><li>Qualitative or quantitative analysis of the financial or operational impact of major risks and opportunities.</li><li>In terms of transition risks, three scenarios were used to simulate, including: (1) National Net-Zero Pathway ; (2) SSP1-1.9 scenario of IPCC AR6; (3) Science-Based Targets Net-zero path.</li><li>Regarding physical risks, Winbond followed the IPCC climate risk model, considered the three risk factors of hazard, vulnerability and exposure, and evaluated the risk value of the three potentials of flooding, debris flows and landslides caused by extreme rainfall under the four warming scenarios of RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5.</li></ul>	<ul style="list-style-type: none"><li>The Risk Management Committee under the Board of Directors of the Winbond has established sound internal management regulations and operating procedures by organizing the existing departments or risk responsible units to carry out risk management on the areas of operation they are responsible for, and has incorporated climate change risk into long-term business operation management.</li><li>The interdepartmental TCFD project team was established by appointing relevant members from five task forces under the ESG Committee, including Environmental Sustainability, Green Products, Human Rights and Social Inclusion, Sustainable Supply Chain, and Corporate Governance. The TCFD project team discussed the impact of climate risks and opportunities toward finance and operations through workshops.</li><li>Established the TCFD platform, which enhanced the efficiency of the TCFD project team by systematic tools.</li><li>Disclosed the climate risks and opportunities related assessment results and response practices in the TCFD report for review by the Winbond ESG Committee and representatives of various department heads to enhance the basis of promoting climate mitigation and adaptation actions.</li></ul>	<ul style="list-style-type: none"><li>Winbond obtained/used green power in September and received the first renewable energy certificate (T-REC) in December 2023.</li><li>Promoted the tree-planting and carbon reduction project at the Kaohsiung Fab, and completed tree planting activities in 2023.</li><li>Invested in process research and development to reduce power consumption and increase productivity.</li><li>Through the ISO 50001 energy management system, the equipment for major energy use was optimized. In 2023, new measures saved about 29.98 million kWh of electricity per year.</li><li>Committed to sustainable procurement strategies and activities, sustainable risks assessment and management, and digital management of supplier's ESG activities.</li><li>Winbond use the amount of average greenhouse gases emitted to produce one 12-inch wafer photomask layer as a metric for measuring our greenhouse gas intensity per product unit. In 2023, Winbond emitted 15.5 kilograms of carbon dioxide equivalents per layer, which is approximately a 17.4% YoY increase (kilogram of carbon dioxide equivalent/Layer - wafer photomask) in carbon emissions per product unit. This is due to the global economic downturn in 2023 leading to lower total production capacity, and the new Kaohsiung Fab not yet reaching full economic scale, which in turn had caused carbon emission per product unit to rise.</li><li>The company-wide water recovery rate was 82.2%, both meeting the self-defined target value.</li></ul>

## 1.6.1 Climate Governance Framework

Winbond established the Winbond Corporate Social Responsibility (CSR) Committee in 2015 to serve as the key driver of the Company's sustainable development; in May 2022, the ESG Committee, which operates directly under the Board of Directors, was officially established as well. The Committee meeting should be held at least twice a year and is chaired by the Chairman. The purpose of the Committee is to plan the Company's sustainable development strategy and goals, formulate action plans, integrate company resources, and implement sustainability initiatives to enhance operational competitiveness.

The ESG Office and its five functional teams focusing on the areas of Environmental Sustainability, Green Product, Human Rights and Social Inclusion, Sustainable Supply Chain, and Corporate Governance were formed under the ESG Committee, which gives annual reports regarding the performance of the Committee to the Board of Directors to ensure the progress and implementation of corporate sustainable development. Members of the functional teams with the requisite expertise were tapped to form the TCFD project team.



## 1.6.2 Procedures for Identifying Climate Change Risks and Opportunities

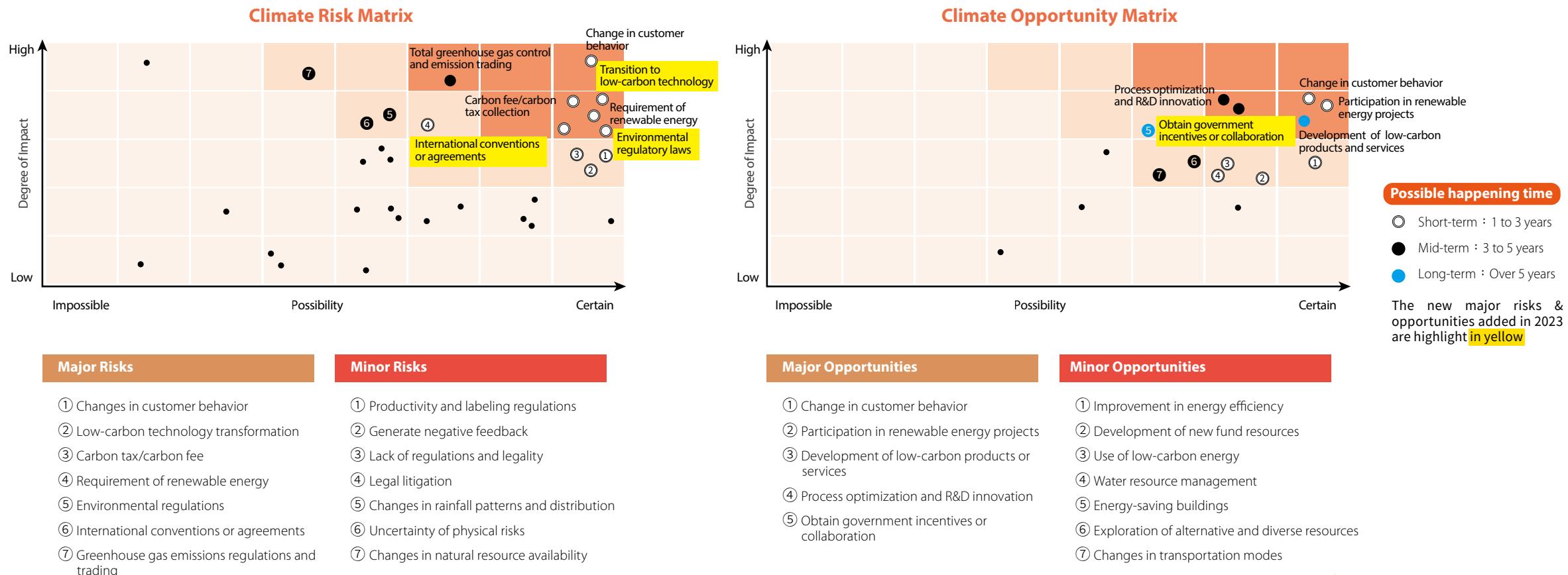
Continuing the framework and workflow from the previous year's TCFD, in 2023, Winbond convened 15 department-level units and nearly 30 members to establish the TCFD project team. Members were divided into teams according to the nature of their job. Each team discussed climate change issues with relevance to their area of operations, utilizing Winbond TCFD platform to identify and generate the matrixes. The evaluation results had been reported in the ESG Committee meetings.



- 01** **Form a TCFD project team**  
Formed by members from over 15 units, including R&D, Sales, Marketing, Fab Facility, Procurement, Environmental Safety and Health, Finance, Legal, and Human Resources.
- 02** **Create climate risk and opportunity lists**  
Includes 35 climate risks and 18 climate opportunities.
- 03** **Define evaluation criteria**  
Conducted evaluation based on impact degree, possibility of occurrence and time of occurrence.
- 04** **Generate risk matrix and opportunity matrix for each team**  
Each team identified major short-term, medium-term, and long-term risks and opportunities based on their impacts, possibility of occurrence , while considering their own business relevance.
- 05** **Develop the consolidated risk matrix and opportunity matrix**  
Aggregated the results from each team to generate the Winbond Climate Risk Matrix and Opportunity Matrix.
- 06** **Evaluate the financial and operational implications of major risks and opportunities**  
Conducted qualitative and quantitative analysis to assess potential financial impacts resulting from high-impact and high-liability risks and opportunities.
- 07** **Discuss response measures**  
Engaged relevant units to review and develop response measures for major risks and opportunities.

### 1.6.3 Climate Risk and Opportunity Matrix

Through the course of workshops and educational training, and by utilizing Winbond TCFD platform to identified climate risks and opportunities. Winbond has identified seven major climate risks and seven minor climate risks from 35 climate risks, as well as five major climate opportunities and seven minor climate opportunities from 18 climate opportunities.



## Major Climate Risks

Climate Risk	Time of Occurrence	<b>Potential Financial or Operational Impacts</b> (-) represents a negative impact (+) represents a positive impact	Response
<b>Changes in customer behavior</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Decrease in sales of non-low-carbon products (-)</li> <li>▪ Increased communication with customers, which also resulted in higher labor costs (-)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continuously stay informed about the requirements and specifications for green products from clients. Compile this information into a database to facilitate the provision of low-carbon, carbon-reduction, and energy-efficient green products that meet demand.</li> <li>▪ Promoting the introduction of new product designs (design in) to meet customer needs, increasing the portfolio of green or low-energy consumption products.</li> <li>▪ Utilize carbon information platform to assess product carbon footprints and hotspots, and formulation of reduction pathways and optimization plans</li> <li>▪ Participation in domestic and international sustainability evaluations to enhance transparency in terms of sustainability practices.</li> </ul>
<b>Low-carbon technology transformation</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Capital expenditure for new equipment (-)</li> <li>▪ R&amp;D cost increase (-)</li> <li>▪ Reduction in carbon emissions leading to a decrease in carbon tax/fee expenditures(+)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Devote efforts to process improvement to reduce greenhouse gas usage. This includes accelerating the replacement of energy-saving components at machine terminals and installing tail gas treatment equipment. Continuously execute energy-saving projects for production machinery and facility infrastructure.</li> <li>▪ Incorporate renewable energy sources to decrease greenhouse gas emissions.</li> <li>▪ Engage in ongoing discussions with outsourcing partners regarding low-carbon technologies and production planning.</li> </ul>
<b>Carbon tax / Carbon fee</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Increase in indirect costs(-)</li> <li>▪ Suppliers pass on their carbon tax/fee expenditures, leading to increased procurement costs (-)</li> <li>▪ Limited capacity expansion(-)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Company-wide target of net-zero emissions in 2050.</li> <li>▪ Develop a carbon accounting system.</li> <li>▪ Devote efforts to process improvement to reduce greenhouse gas usage. This includes accelerating the replacement of energy-saving components at machine terminals and installing tail gas treatment equipment. Continuously execute energy-saving projects for production machinery and facility infrastructure.</li> <li>▪ Incorporate renewable energy sources to decrease greenhouse gas emissions.</li> <li>▪ Encourage high-electricity-consuming suppliers to conduct greenhouse gas inventories. Monitor and collect information on suppliers listed by environmental agencies.</li> <li>▪ Provide training courses on carbon costs and valuation to increase supplier awareness and motivation for carbon reduction. Maintain a resource usage investigation mechanism for sustainable supply chain management, adjusting survey questions based on annual results and regulatory trends.</li> <li>▪ Join the Singapore Carbon Exchange (Climate Impact X, CIX) and the Taiwan Carbon Solution Exchange (TCX) to diversify carbon credit acquisition channels and stay informed about developments in carbon offset systems.</li> </ul>
<b>Requirement of renewable energy</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Higher green energy prices result in increased production costs(-)</li> <li>▪ Reducing carbon emissions leads to a decrease in carbon tax/fees (+)</li> <li>▪ Suppliers pass on their renewable energy expenditures, leading to increased procurement costs(-)</li> <li>▪ Limited production due to difficulty in acquiring renewable energy(-)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Establish a Customer Green Energy Demand Survey System to accurately understand our customers' green energy demand.</li> <li>▪ Communicate customer requirements for green energy to suppliers and discuss related plans with packaging and testing outsourcing partners based on Winbond's resolution on renewable energy usage.</li> <li>▪ Collect information on the impact of purchasing green energy on negotiation prices and devise corresponding strategies.</li> <li>▪ In 2023, complete the first purchase of renewable energy electricity, with an expected annual supply of nearly 10 million kilowatt-hours of renewable energy. Continuously plan for additional renewable energy purchases.</li> <li>▪ In 2023, participate in the establishment of Kai-Hong Energy Co., Ltd. and continue evaluating other renewable energy investments.</li> <li>▪ The rooftop renewable energy generation system at the CTSP fab will be converted to self-use in 2024. Also, additional renewable energy generation are under continuous evaluation.</li> <li>▪ Plan and implement an REC management system to systematically manage green energy demand and internal and external production planning.</li> </ul>
<b>Environmental regulations</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Compliance costs increase due to regulatory requirement(-)</li> <li>▪ Penalties for non-compliance(-)</li> <li>▪ Rising environmental fee as indirect costs(-)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Plan effective compliance management systems, including inventory unit compliance execution methods and designing a compliance platform.</li> <li>▪ Increase human resources for researching relevant regulations and actively participate in legislative discussions.</li> <li>▪ Implement three measures for supply chain management: real-time information aggregation and dissemination, organizing ESG workshops for suppliers, and conduct regular surveys on the usage of supplier resources.</li> </ul>
<b>International conventions or agreements</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Indirect costs arising from post-agreement commitments(-)</li> <li>▪ Capital expenditures resulting from post-agreement commitments (-)</li> <li>▪ Reducing carbon emissions decreases carbon tax/fee expenses(+)</li> </ul>	<ul style="list-style-type: none"> <li>▪ In 2023, the Taiwan Semiconductor Industry Association declared a joint goal of achieving net-zero emissions: using 2020 greenhouse gas emissions as a baseline, aiming for an absolute reduction of 10% by 2030 (compared to BAU reduction of 40%). The goal is to achieve net-zero emissions by 2050.</li> <li>▪ Commit to process improvements to reduce greenhouse gas usage: accelerate the replacement of energy-saving components in machinery, install exhaust treatment equipment, execute energy-saving projects for production machinery and facilities, and utilize renewable energy to lower emissions.</li> </ul>
<b>Greenhouse gas emissions regulations and trading</b>	Mid-term	<ul style="list-style-type: none"> <li>▪ Penalties for excessive emissions increase indirect costs(-)</li> <li>▪ Early replacement of existing equipment reduces asset value(-)</li> <li>▪ Introducing renewable energy increases production costs(-)</li> <li>▪ Capacity expansion constraints(-)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increase human resources for researching relevant regulations and actively participate in legislative discussions.</li> <li>▪ Continuously monitor voluntary greenhouse gas reduction projects and the management of incremental emissions offsets.</li> <li>▪ Acquire carbon credits at advantageous prices to offset excess emissions and closely track carbon price trends.</li> </ul>

## Major Climate Opportunities

Climate Opportunities	Time of Occurrence	Potential Financial or Operational Impacts	Response
<b>Changes in customer behavior</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Product portfolio changes that accelerate positive development across entire supply chain</li> <li>▪ Obtaining orders and expanding revenue</li> <li>▪ Increased order stability and reduced revenue fluctuations</li> <li>▪ Improved company reputation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continuously stay informed about the requirements and specifications for green products from clients. Compile this information into a database to facilitate the provision of low-carbon, carbon reduction, and energy-efficient green products that meet demand.</li> <li>▪ Drive the design and integration of new products to meet customer needs, emphasizing green or low-energy consumption product combinations.</li> <li>▪ Utilize carbon information platforms to assess product carbon footprints and identify carbon hotspots. Establish reduction pathways and optimization plans for product carbon emissions.</li> <li>▪ Participate in sustainability evaluations both domestically and internationally to enhance sustainability transparency.</li> </ul>
<b>Participation in renewable energy projects</b>	Short-term	<ul style="list-style-type: none"> <li>▪ Reduction in carbon emissions leading to a decrease in carbon tax/fee expenditures</li> <li>▪ Diversified sources of electricity to mitigate risks</li> <li>▪ Support for compliance with renewable energy regulations and achieving corporate goals</li> </ul>	<ul style="list-style-type: none"> <li>▪ In 2023, complete the first round of renewable energy electricity procurement, aiming to provide nearly ten million kilowatt-hours of renewable energy annually.</li> <li>▪ Plan for additional renewable energy electricity procurement.</li> <li>▪ Invested in Jiawei Green Energy Co., Ltd. in 2022 and participated in the establishment of Kai-Hong Energy Co., Ltd. in 2023, evaluating other renewable energy investment opportunities.</li> <li>▪ The rooftop renewable energy generation facility at the CTSP fab will transition to self-use in 2024, with ongoing assessments for additional renewable energy installations.</li> </ul>
<b>Development of low-carbon products or services</b>	Long-term	<ul style="list-style-type: none"> <li>▪ Increased Product Prices</li> <li>▪ Expansion in market share and increase in revenue</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand customer needs and evaluate possibilities to customize low-carbon/green products</li> <li>▪ From the supply chain perspective, we focus on specific products or services with low carbon potential based on raw material carbon emission factors and factory usage.             <ul style="list-style-type: none"> <li>✓ Organize sustainable supply chain upgrade forums and advanced packaging technology forums to enhance supplier awareness of product carbon footprints and low-carbon technology development.</li> <li>✓ Collaborate with outsourcing partners to explore advanced low-carbon packaging technologies.</li> <li>✓ Participate in the Ministry of Economic Affairs' "Large Lead Small" low-carbon subsidy program, conducting product carbon footprint assessments for suppliers with high carbon intensity at the CTSP fab. Specific suppliers are required to identify improvement areas during the assessment process and submit improvement reports.</li> </ul> </li> </ul>
<b>Process optimization and R&amp;D innovation</b>	Mid-term	<ul style="list-style-type: none"> <li>▪ Reduction in carbon emissions leading to a decrease in carbon tax/fee expenditures</li> <li>▪ Reduction in water and resource consumption leading to lower production costs</li> <li>▪ Obtain orders to expand revenue.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Invite suppliers to share energy-saving keys related to products and technical services, as well as how to utilize advanced electronic materials to stabilize specific process quality.</li> <li>▪ Collaborate with outsourcing partners to explore advanced low-carbon packaging technologies.</li> </ul>
<b>Obtain government incentives or collaboration</b>	Mid-term	<ul style="list-style-type: none"> <li>▪ Reduce capital expenditures by obtaining government subsidies.</li> <li>▪ Lower indirect costs by obtaining government subsidies.</li> <li>▪ Enhance the company's reputation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In 2023, collaborate with 13 suppliers to apply for the Ministry of Economic Affairs' "Large Lead Small" low-carbon subsidy, receiving a full subsidy of NT\$30 million. The total investment for this project exceeds NT\$200 million, with an expected annual reduction of 5,886 tCO<sub>2</sub>e from the project's completion.</li> </ul>

## Transition Risk Scenario Analysis

Winbond conducted risk simulations using three scenarios:(1)National Net-Zero Pathway, in Taiwan which mainly assesses domestic regulatory risks.(2)SSP1-1.9 Low Emission Scenario from the Intergovernmental Panel on Climate Change (IPCC): Derived from the IPCC's sixth scientific assessment report.(3)An annual reduction rate of 4.2% as required by the Science-Based Targets Net-Zero (SBT-NZ) Standard for carbon emissions.

External Scenarios	Description	Assessed Sources of Emissions
National Net-zero Pathway	Based on Taiwan's current net-zero target	
SSP1-1.9	Based on the SSP1-1.9 pathway in the IPCC Sixth Assessment Report	Scope 1 + Scope 2
SBT-NZ	Based on the emissions reduction pathway required to achieve the SBT's net-zero criteria by 2050	

Climate change issues may have financial implications for Winbond in terms of regulations, technology, the market, and reputation. In particular, the implementation of carbon tax and carbon fee, compliance with regulations for intensive electricity users to use of renewable energy electricity are expected to result in a financial impact of approximately 0.3-4.0% of revenue in 2030.

Carbon Tax Imposition			
External Scenarios	Assumption	Financial Impact on Revenue in 2030	
		Amount	Revenue Impact
National Net-zero Pathway	Estimated at US\$2 to 10/tCO <sub>2</sub> e from 2021 to 2050 by referring to SSP2-4.5	<NT\$0.2 billion	0.1% to 0.2%
SSP1-1.9	It will reach about US\$650 per ton CO <sub>2</sub> e in 2050 by referring to SSP1-1.9	> NT\$1 billion	2.0% to 4.0%
SBT-NZ			

Carbon Fee Imposition			
External Scenarios	Assumption	Financial Impact on Revenue in 2030	
		Amount	Revenue Impact
National Net-zero Pathway	Carbon exemption quota of 25,000 metric tons per year is estimated at NT\$1,500 per metric ton of CO <sub>2</sub> equivalent.	<NT\$0.2 billion	0.1% to 0.2%

**Note** Considering the current international trend towards carbon taxation, carbon fee collection is only considered in the National net-zero pathway scenario.

Regulation of Renewable Energy		Financial Impact on Revenue in 2030	
External Scenarios	Assumption	Amount	Revenue Impact
National Net-zero Pathway			
SSP1-1.9	Procurement costs are estimated based on the average wholesale price of Taipower's renewable energy power plus power supply costs	< NT\$50 million	< 0.03%
SBT-NZ			

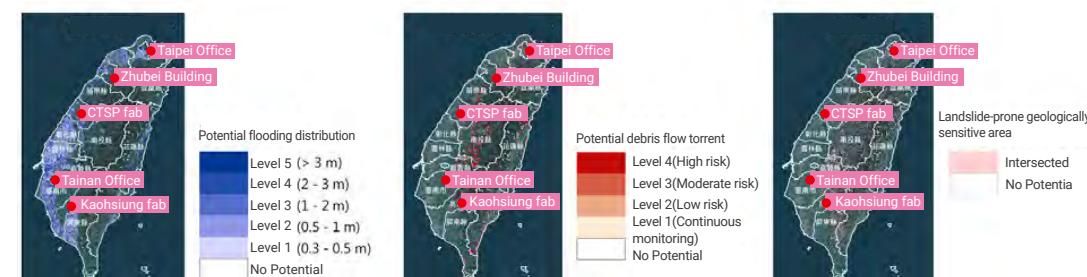
## Physical Risk Scenario Analysis

Winbond follows the IPCC's Climate Models to evaluate the risks of flooding, debris flows, and landslides resulting from extreme precipitation. We conduct scenario simulations using data from the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), National Science and Technology Council (NSTC), National Science and Technology Center for Disaster Reduction (NCDR), and various climate models to avoid biased results.

The following results show that by the end of the 21st century, Winbond's main fabs and offices (including the CTSP Fab, Kaohsiung Fab and Zhubei Building) have a risk level of 0 (low possibility of flooding, debris flows, and landslides) under the four global warming scenarios.

For further information related to climate risk financial disclosure, please refer to Winbond's annual independent [2023 Task Force on Climate-related Financial Disclosures Report](#).

## Physical Risks Scenario Analysis for Winbond Major Factories and Office Locations



# Green Innovation • Earth Protection





# SUSTAINABLE PRACTICES

## Green Products

**71** | 2.1 Research, Development, and Innovation

**79** | 2.2 Quality Management for Product and Services

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Winbond has integrated our core innovative technology competencies with sustainable energy conservation and carbon reduction goals. Through green product design, digitalizing information systems, and improving production efficiency, Winbond can develop and optimize our products in various areas, strictly controlling each step of our product process. Winbond promises to deliver the highest quality products to customers, minimizing the carbon emissions required to deliver our products into the hands of customers and consumers. While benefiting from the convenience brought about by technology, Winbond is lowering the impact to environment and helping the overall value chain effectively reducing carbon emissions.

### 2023 Performance Highlights

#### 33% less power consumption

- Optimized HyperRAM operating voltage to a minimum of 1.2V
- 1.2V HyperRAM saves 33% power consumption compared to 1.8V HyperRAM

#### 45% less power consumption

- Launched the world's first NOR Flash supporting an operating voltage of 1.2V
- 1.2V NOR Flash uses 45% less power than 1.8V NOR Flash (please refer to p.72 for details)

#### TIPS Certification Class A

- Received the Taiwan Intellectual Property Management System certification

#### Ranked as a "Top 100 Global Innovators" from Clarivate

- Recognized as the global top 100 innovators for 2 consecutive years

#### Over 4,900

- Global patents granted in total



## 2.1 Research, Development, and Innovation

### 2.1.1 Innovation in Technology and Services

Winbond provides global customers with comprehensive specialty Memory solutions. Core products include Code Storage Flash Memory, TrustME® Secure Flash Memory, Specialty DRAM, and Mobile DRAM, making Winbond the only Taiwanese manufacturer with proprietary technologies in both Flash and DRAM. Winbond leverages the synergies generated by its product portfolio and adopts a green product design philosophy to meet diverse customer needs. This enables customers to combine their expertise with Winbond's innovative green products for applications in hand-held devices, consumer electronics, computer peripherals, artificial intelligence, automotive, and industrial electronics markets. To achieve environmental friendliness and sustainable growth while providing customers with high-quality and innovative products and services, Winbond continuously invests in research and development, technology, and talent. Winbond is committed to developing innovative products and technologies and remains focused on the following issues:

1. Development of green products in Flash memory, Secure Flash memory, Specialty DRAM, and Mobile DRAM

2. Development and production processes of green products, along with achievements in carbon reduction and energy saving

3. Key technology development focusing on high performance, small size, low energy consumption, high quality, and security

4. Refinement in design and process miniaturization

5. Innovation and intellectual property management

**Jen-Lieh Lin**

Vice President, Flash Memory IC Business Group

Net-zero emissions are a global consensus. Winbond achieves carbon reduction and energy saving goals through actions such as using green materials, green product design, green electricity production, and reducing carbon emissions. Winbond continuously optimizes product design and manufacturing processes. Through design, we reduce chip size, lower power consumption, and use small and low-temperature welding materials for packaging. This effectively saves materials and reduces carbon footprint per unit, while also decreasing energy consumption. By minimizing energy usage, we aim to achieve the vision of being a hidden champion enriching human life through green semiconductors.

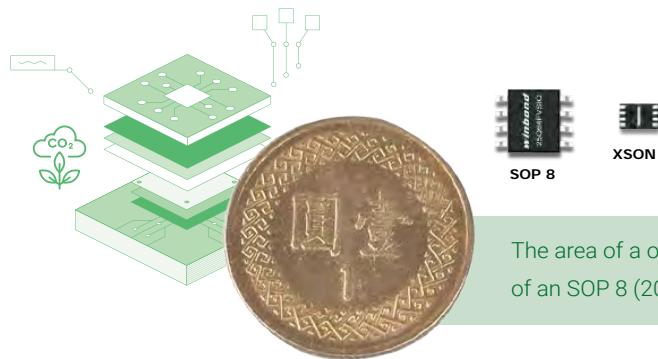
Key Technology	Highlight Products	Application
Low-Power NOR Flash Memory	<ul style="list-style-type: none"><li>▪ <b>1.2V Flash Memory</b><ul style="list-style-type: none"><li>▪ Winbond launched the market's first 1.2V 64Mb SpiNOR Flash Memory: W25Q64NE</li><li>▪ 128Mb and 256Mb are expected to be launched in 2024.</li></ul></li></ul>	<ul style="list-style-type: none"><li>✓ Wearable devices and other low-power demand application products</li><li>✓ Meets the low operating voltage requirements of advanced processes, eliminating the need for Power Management IC (PMIC), further reducing costs and minimizing sizes.</li></ul>
High-performance NAND Flash Memory	<ul style="list-style-type: none"><li>▪ <b>8-Channel NAND Flash (Octal NAND)</b><ul style="list-style-type: none"><li>▪ Winbond's 46nm serial NAND Flash Memory technology, introduces the first high-speed NAND Flash Memory in the market to support 8-channel input and output</li><li>▪ Supports products that require higher capacity and higher transfer speed</li></ul></li></ul>	<ul style="list-style-type: none"><li>✓ Automotive electronics (e.g. dashboard and Advanced Driver Assistance Systems...etc.) can meet the requirement of rapid firmware startup and quick updates</li><li>✓ Smart visual doorbells can meet the application demands for fast startup detection.</li></ul>
Secure Flash Memory	<ul style="list-style-type: none"><li>▪ <b>Anti-quantum computing attack. Integrating PQC (Post-Quantum Computing Cryptography) Leighton-Micali (LMS) algorithm</b><ul style="list-style-type: none"><li>▪ Supports asymmetric key encryption algorithm (LMS : Leighton-Micali) , enabling devices to achieve secure OTA through LMS-OTS (one-time signature) specified by NIST800-208.</li><li>▪ The component supports a high-performance Quad-SPI interface of 166MHz, expands the support of Replay-Protected Monotonic Counter (RPMC) increases to 8 counters, and is suitable for security enhancement and data protection of personal computers (UEFI and BIOS).</li></ul></li></ul>	<ul style="list-style-type: none"><li>✓ The first memory supplier to integrate the LMS algorithm, meeting emerging security regulatory requirements and setting new standards in the industry. Optimized for industrial IoT, network, server, and critical infrastructure applications.</li></ul>
Low-Power Mobile Memory	<ul style="list-style-type: none"><li>▪ <b>1.2V Low Voltage Mobile Memory</b><ul style="list-style-type: none"><li>▪ Compared to traditional SDRAM/DDR 3.3V, HyperRAM 1.8V operating power is only 25%.</li><li>▪ The new generation of HyperRAM operating voltage is further reduced to 1.2V, further reducing 33% power consumption, prolong usage time of wearable devices.</li></ul></li></ul>	<ul style="list-style-type: none"><li>✓ Digital wearables devices, IoT devices, and digital meters and other related products.</li></ul>





## Code Storage Flash Memory

As a leading manufacturer of Flash memory, Winbond continuously strives to reduce product manufacturing carbon footprints and energy consumptions. Taking Winbond's NOR Flash as an example, with the evolution of processes to the new generation 58 and 45 nanometers products, the area of a single chip has been significantly reduced. Additionally, the new generation products also support smaller packaging types, greatly reducing the carbon footprint of Flash products in wafer manufacturing and packaging stages. For instance, in the new generation 58nm RV series, the 8Mb 3V NOR Flash has reduced the chip area by 60% compared to products with the same capacity at 90nm, and it can also support smaller XSON packaging. Ultimately, the carbon footprint is reduced by 34% compared to the 90nm DV series.



The area of a one-dollar coin is approximately **11 times** the size of an SOP 8 (208 mil), and **52 times** the size of an XSON 8 (3x2).

Additionally, in terms of power consumption and extending battery life, Winbond developed new processes and circuit architectures. It introduced the world's first NOR Flash supporting an operating voltage of 1.2V. When paired with SoCs designed with advanced processes for low voltage, it achieved high-performance reading while significantly reducing power consumption, thus meeting the goals of high efficiency and energy savings.

### 1.2V NOR Flash

Total power consumption	<b>45% less power consumed compared to the 1.8V NOR Flash in mainstream use today</b> In the scenario of daily operation for 8 hours in a true wireless application environment, with the total sales volume of 1.2V NOR Flash in 2023, compared to 1.8V NOR Flash, approximately 1,160,785 kWh of power consumption is saved, with an equivalent of 4,178,826 MJ. This saving is roughly equivalent to reducing 574.6 metric tons of carbon dioxide emissions, which is also approximately equivalent to the carbon absorption capacity of 1.49 Daan Forest Parks ( <sup>Note</sup> ).
Performance	Maintains similar transition level as 1.8V/3V Flash
Product applications	Wireless headphones, smart watches, smart wristbands, smart glasses, and other wearable devices with high power-saving requirements

<sup>Note</sup> Based on the 2022 electricity emission factor of 0.495 published by the Ministry of Economic Affairs, and data from the Foresty and Nature Conservation Agency of the Ministry of Agriculture and the Department of Land Administration of the Taipei City Government: with an area of 25.93 hectares and a carbon sequestration rate of 14.9 tCO<sub>2</sub>e per hectare per year, Daan Forest Park annually absorbs approximately 386 tCO<sub>2</sub>e.

## Specialty DRAM and Mobile DRAM

In 2022, Winbond launched the HyperRAM 3.0. This series of products is ideal for use in low power consumption IoT devices such as wearable devices. It is able to support voice control and tinyML calculations, and can also be used in vehicle dashboards, entertainment systems, machine vision, HMI displays, and communications modules. To meet the emerging consumer trends of low-power wearable and smart devices, Winbond launched the HyperRAM 3.1 product series in 2023, featuring low voltage and small size packaging options such as the 1.2V WLCSP and 1.35V BGA49. These became crucial components for low-power wearable devices. With the expansion of the Internet of Things (IoT) market, the number of portable devices is rapidly increasing. The ultra-low power performance of this series effectively extends battery life. Leveraging the low power advantage of HyperRAM 3.1, it is applied in wearable smart sports and lifestyle products. Its 16-bit interface accelerates data transfer rates, speeding up the loading and transmission of high-resolution images. This sets new benchmarks in low power consumption, smart processing, and UI display fields, providing customers with simplified, competitive, and long-lasting battery life smart wearable design solutions.

Joint Electron Device Engineering Council (JEDEC) standard DDR3 Specialty DRAM is widely used in various products. Through technological advancements, product power consumption is reduced. In addition, Winbond continues to expand its product lines to meet the needs of various applications, such as DDR4 and higher bandwidth and speed ASIC DRAM products, applied in networking and emerging artificial intelligence applications.

	<b>Low Power</b> by Hybrid Sleep Mode (HSM)	<b>Design Simplicity</b> with less pins; without compromising performance	<b>Space Saving</b> by low pin count
			
<b>HyperRAM™ 3.1</b>		<b>HyperRAM Form Factor</b>	
The 3.1 generation of our HyperRAM™ products utilizes the all-new 16-bit extended Hyper-Bus™ interface, supporting data transfer speeds up to 1 Gbps through the same commands, bit address signals, and data bus format. It features the same standby power consumption, and only requires an adjustment to a small number of signal pins. The product also features a higher frequency.		Winbond initially introduced the BGA 24 6x8mm <sup>2</sup> package in the new HyperRAM™ series, which, compared to SDRAM's BGA 54, reduces carbon emissions by 10%. In 2023, Winbond continued to improve packaging types and introduced the BGA 49 size, which supports a 16-bit data width. Furthermore, the size was reduced to 4x4mm <sup>2</sup> , resulting in a 20% reduction in carbon emissions compared to BGA 54.	
<b>DDR3</b>		Shrinking from 25snm to 20nm. Operating efficiency goes up with each technology node, and our 2Gb DDR3 products have 10% reduced power consumption. Winbond has continued to supply DDR3 products, making sure to satisfy long-term customer demand.	



## Secure Flash Memory

"Security" is not only a technical issue but also a societal and ethical one. Security has significant impacts on the welfare and rights of society, economy, environment, individuals, and organizations, especially in today's digital transformation era and the economic losses and security threats caused by hackers through security vulnerabilities. Security ensures the confidentiality, integrity, and availability of data, information, and assets, preventing unauthorized access, modification, or destruction. Security also enables trust, privacy, and compliance in various sectors such as finance, healthcare, education, and government. However, security is not a one-time task or a static state. It requires continuous monitoring, updating, and improvement to address evolving challenges and risks. Security involves multiple layers, from hardware to software, from networks to the cloud, from users to devices. Therefore, security requires a comprehensive approach covering all aspects of systems and their environments.

In today's internet-connected world, daily life electronic devices and IoT devices rely on Flash memory to store control code and data protection. However, the widespread presence of these devices also makes them targets for hackers. Hackers often exploit system security vulnerabilities to access end-user's private data, plan large-scale attacks on enterprise infrastructure through networks and IoT devices, and even sabotage and espionage activities on government infrastructure.

Winbond recognizes the severity of these challenges and has pioneered the development and launch of the TrustME® Secure Flash Memory product line. Secure memory is used to store sensitive data and code such as encryption keys, passwords, certificates, and firmware. Secure memory ensures that data and code are protected from unauthorized access, modification, or leakage both physically and logically. Secure memory also provides functions such as encryption, authentication, tamper detection, and self-destruction to enhance security levels and prevent attacks. These cutting-edge solutions are designed to protect Winbond customers' assets and create secure platforms, thus safeguarding end-users in various fields. Winbond's secure Flash memory is applied in consumer IoT, industrial IoT, servers, networks, and automotive sectors. Winbond is committed to protecting customers from emerging cybersecurity threats. In anticipation of the upcoming post-quantum computing era, Winbond recently launched secure Flash memory enhanced with post-quantum encryption technology (PQC), ensuring that customers continue to enjoy robust protection in the evolving cybersecurity environment.



TrustME® Secure Serial Flash Memory W75F



TrustME® Secure Serial Flash Memory  
W77Q / W77T Series

The W75F memory series was developed in response to the high security identify verification needs of mobile payment services and other applications, and due to confidential data storage requiring encrypted system hardware modules to possess EAL 5+ security certification. Products in the W75F series are the first secure Flash memory solution in the world to obtain Common Criteria (CC) EAL 5+ certification. They also support secure eXecute-in-Place (XiP), and are able to protect the confidentiality and integrity of codes and data stored in IoT devices.



Code and Data Protection



Authentication



Secure Software  
Updates with  
Rollback Protection



Platform Resiliency



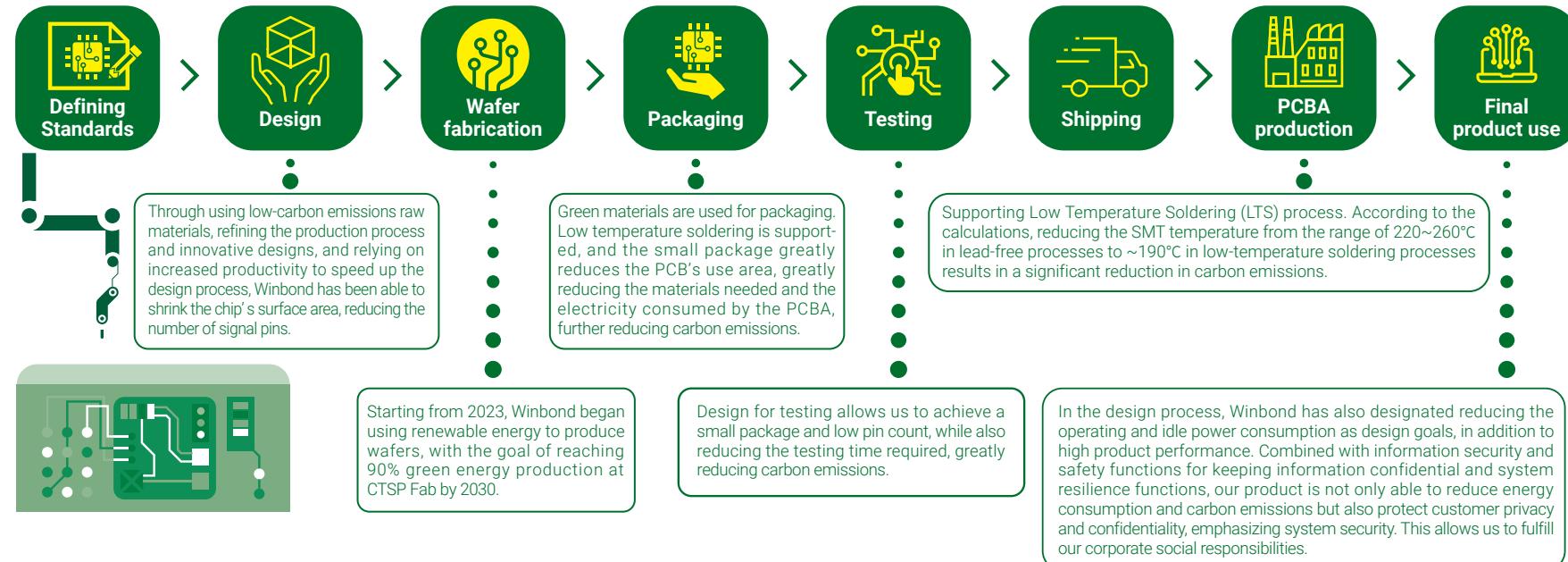
Secure Supply Chain

## 2.1.2 Green Products

Winbond foresees the market trends of new generation products and continuously invests resources in pursuing green semiconductor design, energy-saving and carbon-reducing production technologies, green energy production, and sustainable innovation of products, aiming to enhance the competitive advantage of green products while providing customers with high-quality products and service support.



### Winbond green product development: Design considerations that take into account the product life cycle and reducing carbon emissions



## Hazardous Substance Management

Winbond strictly adheres to international standards and regulations such as the "Hazardous Substance Process Management System Standard" (QC 080000), the "Restriction of Hazardous Substances Directive" (RoHS) of the European Union, the "Registration, Evaluation, Authorization, and Restriction of Chemicals" (REACH) regulation, California Proposition 65, the Toxic Substances Control Act (TSCA) of the United States, and the Canadian Convention to ensure that Wafer, Chip, Package IC, and other related products manufactured by Winbond comply with international environmental regulations and meet customer requirements for green products, thus avoiding environmental pollution and harm to human health. Winbond has established internal regulations for "Hazardous Substance Control" and formed a cross-departmental hazardous substance management team to control the design, procurement, production, and sales processes of products. Suppliers and subcontractors are required to incorporate green product requirements into their management systems to ultimately provide products free of hazardous substances (HSF) that meet customer demands. Winbond conducts its operations, including research and development, procurement, production, operations, and services, based on the following principles to reduce the company's impact on the natural environment and human health:

1. Reduce the resource and energy consumption of products and services.
2. Reduce emissions of pollutants, toxic substances and wastes; and properly dispose of the waste.
3. Improve the recyclability and reusability of raw materials or products.
4. Optimize the sustainable use of renewable resources.
5. Extend the durability of products.
6. Enhance the effectiveness of products and services.



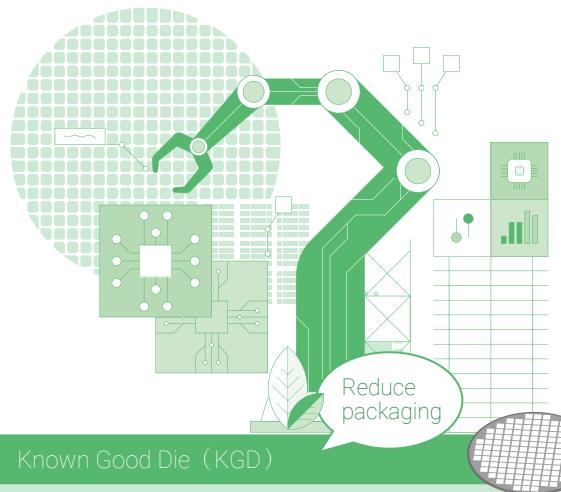
Winbond's HSP policy is dedicated to designing, procuring, manufacturing, and selling products free of hazardous substances to comply with international regulations, meet customer demands, and strive to protect the environment, thereby fulfilling its corporate social responsibility. Additionally, Winbond has established a Hazardous Substance Process Management (HSPM) system, wherein management representatives convene annually for management review meetings to discuss and review policies, objectives, regulations, relevant audit results, and management performance, with the aim of continuously improving the effectiveness of the hazardous substance management system.

### Targets achieved in 2023

- No non-compliance issues related to hazardous substances monitoring have occurred
- 100% of Winbond personnel have completed hazardous substance training
- No non-compliance detected by customers' hazardous substance audits

## Semiconductor Industrial Chain

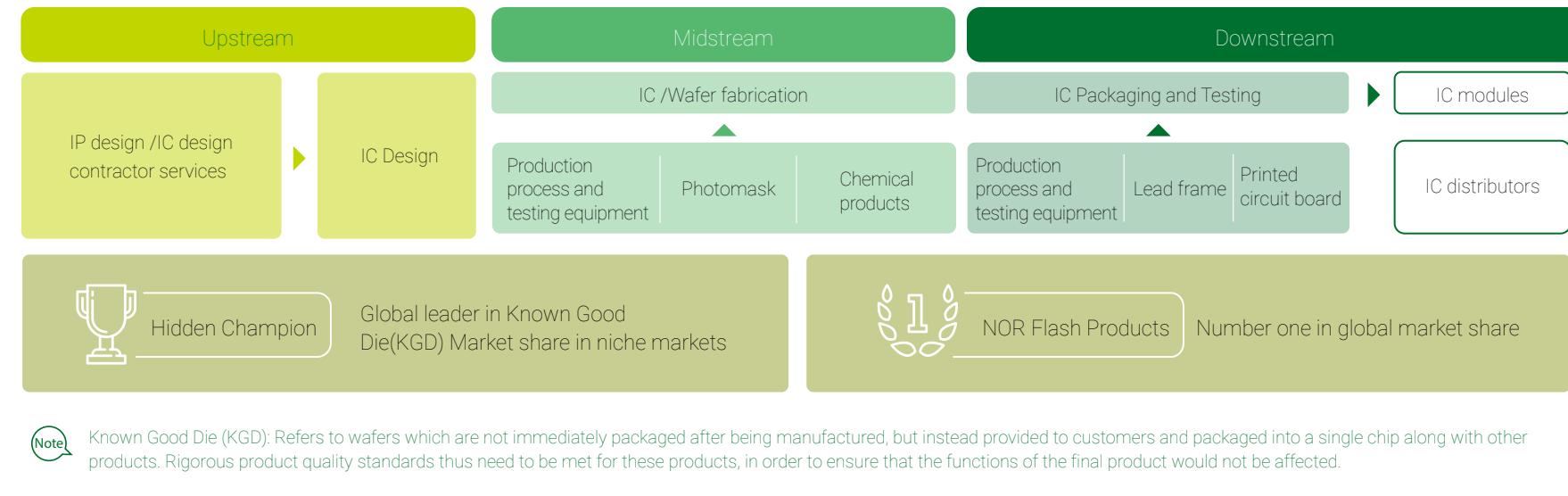
Winbond possesses an advanced and complete semiconductor industrial chain and professional specialization. This includes IP (Intellectual Property Rights) design and IC (Integrated Circuit) design, wafer fabrication, chip probing, and outsourced assembly and testing.



Known Good Die (KGD)

In the era of portable electronic products and the Internet of Things (IoT), Winbond continues to reduce the carbon footprint of its products. With years of expertise in KGD technology, Winbond collaborates with chip manufacturers to provide System in Package (SiP) multi-chip packaging solutions. This involves packaging memory chips together with logic chips in a KGD sales model, contributing to net-zero and environmental sustainability efforts by creating energy-efficient and low-carbon footprint end-products.

Many customers leverage Winbond's expertise to use KGD flash memory products for System-in-Package (SiP) solutions. Flash memory chips are stacked with controller chips and placed into single packages or modules to provide SiP solutions. Other components' KGD can also be stacked with flash memory KGD, leading to savings in packaging materials, improved performance, reduced power consumption, and chip area optimization.



**Note** Known Good Die (KGD): Refers to wafers which are not immediately packaged after being manufactured, but instead provided to customers and packaged into a single chip along with other products. Rigorous product quality standards thus need to be met for these products, in order to ensure that the functions of the final product would not be affected.

## Low-temperature soldering process (LTS)

Winbond supports the low-temperature soldering process, resulting in a reduction of 57 mt of CO<sub>2</sub> emissions per year note for each surface-mount technology production line.

To mitigate global warming, Intel introduced the Low Temperature Soldering (LTS) process as early as 2017. According to calculations, reducing the Surface Mount Technology (SMT) temperature from the 220~260 °C range of lead-free processes to approximately 190°C in low-temperature soldering processes significantly reduce carbon emission. The International Electronics Manufacturing Initiative (iNEMI) predicts that the market share of products using low-temperature soldering technology will increase from around 1% to over 20% by 2027, demonstrating the electronics industry's commitment to environmental issues and sustainable development. In line with the "green electronics" trend, Winbond has launched flash memory products compatible with the low-temperature soldering process. These products comply with JEDEC standards and have undergone reliability verification procedures such as drop, vibration, and temperature cycling tests. This ensures that the products fully support the LTS process without quality concerns, contributing to environmental protection and sustainable development efforts.



Quoted from pages 18-19 of Intel's 2017 introduction to Low Temperature Solder (LTS) process.

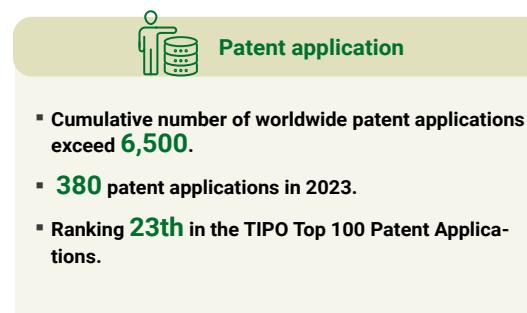
## 2.1.3 Intellectual Property Management

Intellectual property (IP) are important assets for maintaining corporate sustainability. In order to protect the research and development resources and results invested by Winbond, Winbond has established IP policies in line with the Winbond's operating goals. By institutionalized IP management, Winbond nurtures a corporate culture of innovation and strengthens the IP protection awareness of employees. Winbond encourages the continuous innovation and IP right creation of our employees during work which strengthens the sustainable competitive advantages.

Winbond has established annual IP goals based on an overall assessment of the business objectives and research and development resources, connecting our business objectives with our IP strategy. As of 2023, the cumulative worldwide patent applications have exceeded 6,500 and the cumulative worldwide granted patents has exceeded 4,900.

Winbond has established IP Department and Patent Committee responsible for IP right management, assessment, promotion, and utilization. Started from the incubation stage, Winbond rigorously reviews the patent proposals based on official patent examination guidance from various countries and the commercial value so as to improve our patent qualities and protect our research and development outcomes appropriately.

Winbond provides generous incentives and bonuses which encourage our employees to learn the requirements of patent rights and submit patent proposals proactively. In addition, Winbond provides training courses customized for each department which sought to inspire our employees to think innovatively by presenting them with cases relevant to their work, leading to more high-quality inventions being proposed.



Data sourced from the Ministry of Economic Affairs, Intellectual Property Office

### Officially implemented the Taiwan Intellectual Property Management System(TIPS) in 2023

In 2023, Winbond officially introduced the Taiwan Intellectual Property Management System (TIPS) and obtained class-A certification. By implementing TIPS, Winbond formulated intellectual property policies and objectives aligned with its operational goals, fostering an innovative culture within the company and enhancing employees' awareness of intellectual property protection. This initiative encourages employees to continuously innovate and produce high-quality intellectual property, thereby strengthening Winbond's sustainable competitive advantage.

### Promotion of Trade Secret Registration System

Since 2022, Winbond has included trade secrets as part of its intellectual property management strategy, initiating strategic planning for the implementation of a trade secret registration system. Winbond has also awarded the Excellent Trade Secret Award to encourage employees to register their R&D innovations, thereby enhancing the company's technological competitive advantage. Winbond has integrated technical content from its existing systems into the trade secret registration system, transforming it into a library of technical and innovative knowledge, where the company's competitive trade secrets are securely stored. In 2023, the total number of registered cases exceeded 11,000.

### Winbond Selected as One of the Top 100 Global Innovators by Clarivate

"Aggressively Innovate" is one of Winbond's core cultural values. Winbond was selected as one of the Top 100 Global Innovators by Clarivate. The selection criteria for this award include not only a total of 500 or more invention patents but also factors such as the industrial influence of patents, successful track record, globalization, and technological applications. Winbond was recognized from among 3,500 global candidate organizations, showcasing its innovative R&D capabilities and the impact of its globally distributed patents. This international recognition demonstrates Winbond's commitment to R&D investment, pursuit of innovation-driven growth, and sustainable operations. Winbond focuses on using low-carbon materials and developing green products with high efficiency, low energy consumption, and low resource requirements from the product design stage, aiming to protect the environment and reduce negative impact.



## 2.1.4 Digital Transformation

From 2020 onwards, Winbond has been pushing for the Company to undergo a full digital transformation. Winbond has established the Digital Transformation Committee for Business (DTCB) and the Digital Transformation Committee for Manufacturing (DTCM), which are responsible for driving the digital transformation of our business, production, and manufacturing operations. The President shall regularly convene meetings to discuss the progress being made by these Committees. Additionally, senior management shares articles on digital transformation each week; and our human resources departments have invited external speakers to provide training related to digital transformation. Winbond has also established a platform for internal collaborations. The adoption of digital technologies and tools for digital transformation has become the core system for Winbond's intelligent operations.

### Utilizing industrial AI (Artificial Intelligence) technology to promote the application of smart manufacturing

DTCM(Digital Transformation for Manufacturing)4 Digital Transformation System

Four Major Digital Transformation Systems	Explanation of System Usage	Results
Flaws and Yield Analysis System	Consolidates measurement data from various module machines online, helping the research and development department analyze and make connections between data on development operations, analyzing and consolidating data with high efficiency.	<ul style="list-style-type: none"><li>Greatly reduces data analysis times.</li><li>Increase engineer productivity.</li><li>Improved analysis system helps engineers increase data analysis efficiency by 50%.</li></ul>
Automated Engineering Reports System	Rapidly and automatically looks up and consolidates measurement data online.	<ul style="list-style-type: none"><li>Effectively supports information processing operations.</li><li>Helps the research and development team analyze and weigh experiment conditions, continuously optimizing the process.</li><li>Automated system helps engineers more efficiently create engineering reports, increasing productivity by 80%.</li></ul>
Digitalize and Standardize Online Measurement and Electrical Data	Assists Winbond employees in adjusting process module conditions in a timely manner based on the data to meet requirements.	<ul style="list-style-type: none"><li>Greatly improves the prediction and analysis of the key electrical properties of memory elements.</li><li>Allows for good predictions to be made for key parameters.</li><li>System able to improve productivity by 15%.</li></ul>
Memory Element Reliability Analysis System	Effectively consolidates and organizes massive amounts of measurement data, discovering the optimal operating parameters for use in product CP/FT testing.	<ul style="list-style-type: none"><li>Significantly increases the data analysis speeds of our engineers.</li><li>Increases data analysis efficiency by 70% through the system.</li></ul>



### Wafer Fab Intelligence - Digital Transformation

Through the transformation enabled by data science methods, we aim to become an intelligent factory with highly efficient production and quality control.



**1** Product Quality Improvement



**2** Machine Stability



**3** Work Efficiency Enhancement

## Digital Power × Productivity: "Digital Transformation" Becomes the Core Competitiveness of Enterprises

DTCB- (Digital Transformation Committee for Business)

Project	Description	Benefits
1. Employee service refactoring	200 services applied by employee were integrated into 19 business modules, and 120 services. The purpose is to improve employee work efficiency, enhance employee participation in the enterprise, and simplify a series of affairs related to human resources and daily work.	1.99% Acceptance rate of the new user interface 2.Improved around 175 business functions and processes 3.Saved around 83 labor cost annually 4.Rewrote around 120 services with main IT technology
2. Introduction of Microsoft Dynamic 365 to improve customer relationship management process	Integrate sales forecasts, quotations, monthly performance achievement rates, market size assessments, and business opportunity registrations into a unified platform for management.	1.Enhances customer and agent maintenance, sales forecast maintenance, and the productivity of production-sales collaboration. 2.Easy access to comprehensive facts and insights for customers and sales. 3.Achieves a complete closed loop in marketing behavior, accurately sets targets in sales behavior, and quotes. 4.Understands relevant performance execution status and business grasp and makes judgments for improvement.
3. Intelligence cost-analysis platform (GM Simulation Platform)	Simulate and estimate the cost of different processes, obtain the cost structure and gross profit information of the product in real-time, and propose improvement points to optimize the cost structure.	1.More than 2,000K simulation reference data are used for gross margin simulation and analysis. 2.Real-time presentation of detailed cost structure items, achieving price setting and reducing test time goals. 3.Users can create personal simulation databases and iterate simulation optimization of cost structures through association. 4.Establishes a permission management model that complies with information security regulations.
4. Electronize Inventory Operation	Perform annual inventory operations through the platform.	Saves approximately NT\$6,000 in paper costs per year, saves 1,016 hours of manpower, equivalent to a cost savings of NT\$406,400.



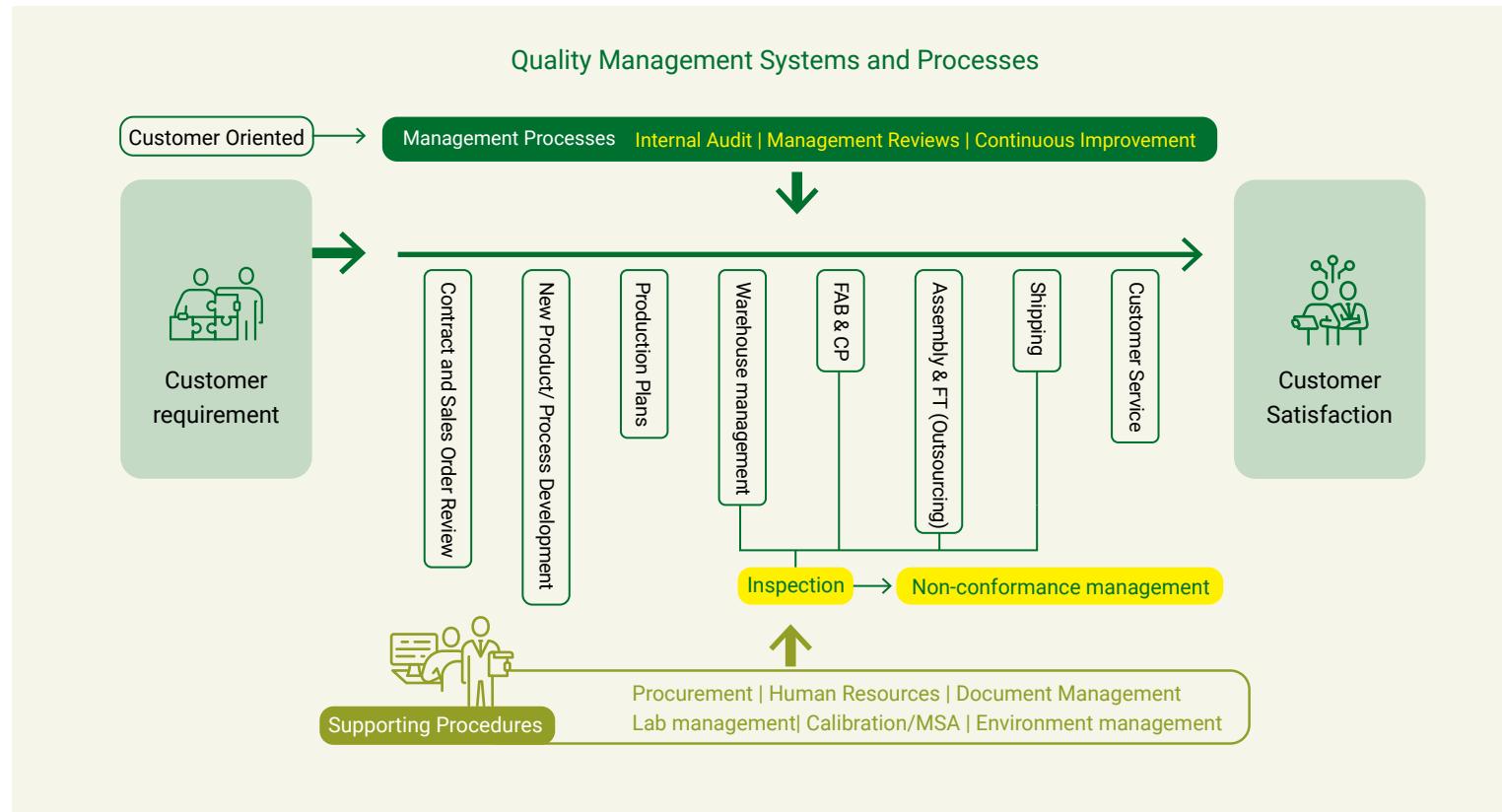
## The Paperless Transformation of the New Inventory System

The implementation of a paperless inventory system has brought several significant benefits to the existing inventory process. Apart from the economic advantages, the new inventory system also has a positive impact on the environment. The substantial reduction in paper usage contributes to the conservation of forest resources and minimizes environmental pollution. This reflects the company's commitment to environmental responsibility and is an integral part of corporate social responsibility. Moreover, it represents a crucial improvement for the company in terms of ESG, efficiency, and adaptability. These benefits not only enhance internal operational efficiency but also greatly improve the efficiency and accuracy of inventory procedures.

Item	Description	Savings/Benefit
Paperless	Previously, 4 inventories were provided annually, totaling approximately 20,000 sheets of paper, saving paper and costs.	Approximately NT\$6,000 in paper costs, while also reducing the impact on the environment.
Instant Communication	Accounting can communicate directly with inventory staff, speeding up problem resolution.	Improved communication efficiency
Accelerated Inventory Time	Average inventory time is shortened; inventory is completed earlier, reducing labor costs.	Each year, 1,016 hours of manpower can be saved, equivalent to a cost savings of NT\$406,400.
Addressing Anomalies	Immediate response and resolution of abnormal items, improving data processing speed.	Improved accuracy.
Digital Inventory Information	Facilitates subsequent inventory difference analysis, inventory status comparison, and inventory report collation.	Improved analytical capabilities.
Remote Inventory Check	In response to epidemics or temporary inability to be present, remote inventory can be performed using video tools.	Improved responsiveness.

## 2.2 Quality Management for Products and Services

Winbond has formulated a quality policy that aims to establish a comprehensive quality management, zero-defect, and quality-first corporate culture through continuous improvement processes. The goal is to provide customer-satisfying products and services and become a world-class company. In accordance with this policy, Winbond has established various regulations and guidelines. In addition to ensuring that product quality and labeling comply with national and regional regulatory requirements, Winbond also manages quality through internationally recognized quality management systems verified by third-party inspection organizations, including ISO 9001, IATF 16949, and ISO 26262. Emphasis is placed on setting and tracking quality performance indicators and implementing continuous improvement measures. Various control processes, such as FMEA, SPC, and MSA, are employed to comprehensively inspect, assess, and improve product quality to meet customer needs and expectations.



### 2.2.1 International Standards Certification

Winbond continues to establish rigorous production process control and quality management operations. This includes not only the robust and well-established CTSP fab but also the Kaohsiung factory, which began production in 2022 and successfully obtained IATF 16949, ISO 9001, and QC 080000 international system certifications. To enhance product quality, Winbond continuously improves product quality through strengthened yield analysis, supply chain management, and understanding customer requirements. Additionally, Winbond ensures compliance with international standards such as RBA and ESG through comprehensive verification, adheres to high customer standards, manages hazardous substances, and maintains responsible corporate practices.



**ISO 9001**  
**IATF 16949**  
**QC 080000**

More international standards, please refer to the annual recognition and acknowledgment.

## 2.2.2 Culture of Pursuing Quality

### Quality Award Recognition

In the 2023 Taiwan Continuous Improvement Award (TCIA), Winbond once again demonstrated its outstanding performance in product quality and process improvement. In 2023, Winbond had four professional teams participating, with three of them successfully advancing to the finals. They respectively received two Golden Awards and one Silver Award, showcasing the company's commitment to continuous improvement and its achievements.

The Team Collaboration at the CTSP fab, with its innovative production process optimization and intelligent monitoring system, effectively improved production line yield and won the Golden Five-Star Award in the competition. Leveraging tools such as JMP, ANOVA, and big data statistics, along with experimental design methods, the team not only accurately predicted component failures but also optimized production processes, overcoming limitations of aging equipment and bringing long-term stability in quality improvement for the company.

Meanwhile, the Team Perseverance made breakthroughs in quality and efficiency in AI-enabled manufacturing. Through in-depth research and improvement of the internal error correction circuits (ECC) for NAND Flash, the team successfully reduced failure rates through cross-departmental collaboration and innovative thinking, resulting in substantial savings in capital expenditure for the company.

The achievement of these awards is a recognition of the employees' enthusiasm for learning, the high value placed on quality, and the continuous improvement efforts. It also represents the best feedback from customers' trust in Winbond products. Winbond will continue to uphold its conduct business with integrity and ethical behavior, accountable teamwork, enthusiasm of learning, aggressively innovate, and sustainable contribution. By integrating the spirit of Quality Improvement Teams (QIT), Winbond will continue to cultivate professional teams and promote a culture of quality, aiming to reach new heights and move towards the goal of being a leading company in achieving net-zero carbon emissions, driven by the spirit of being an invisible champion enriching human life with green semiconductor technology.

Team Name	Event Theme	Prize
Team Perseverance	Reduce the occurrence rate of open-circuit faults in F32 bit lines.	Golden Award
Team Collaboration	Reduce the wafer scrap rate at CTSP fab	Golden Award
Team Summit	Reduce the failure rate of D25 OTP	Silver Award



Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Golden Award	1	0	1	1	0	0	1	0	2	2	2
Silver Award	0	1	0	1	2	2	3	4	2	2	1
Bronze Award	1	1	0	1	2	1	0	0	0	0	0

### Fostering a Culture of Excellence in QE 2.0

Winbond not only ensures product quality through international quality management systems to achieve its goals but also actively promotes a culture of quality to enhance its competitive edge. As early as a decade ago, in response to the high-quality product and service requirements of the automotive electronics market, Winbond initiated a "Zero Defect" and "Quality First" culture, known as Quality Excellence 1.0 (QE 1.0). After ten years of internal and external environmental changes and ongoing policy improvements and internal discussions, Winbond has now introduced an upgraded version of quality excellence, QE 2.0, aiming for zero defects and doing things right the first time. Through tools like FMEA, 5-Why, QIT, TQM, and customer satisfaction as its five pillars, Winbond promotes a comprehensive quality consciousness training, issues Quality Q reports, conducts monthly quality activities, spreads awareness of quality consciousness, and trains FMEA/QIT/5-WHY seed instructors to promote its quality culture, embedding the belief in pursuing excellence in quality deeply into the hearts of its employees. Quality represents not only the characteristics of products or services but also embodies our relentless pursuit of excellence, with surpassing customer expectations as the goal. To achieve QE 2.0, in November 2023, Winbond organized an Excellent Quality Forum, inviting experts from various fields and all Winbond executives to discuss the importance of excellent quality and how to address future challenges. This forum was recorded and made into training materials, becoming a mandatory course for all employees. Additionally, to internalize FMEA as Winbond's quality DNA, the company holds an annual FMEA Best Practices Sharing Meeting, allowing employees to learn from each other's FMEA-related cases and concepts.



## 2.3 Customer Relationship Management

### 2.3.1 Maintaining Customer Relationships

#### Customer Satisfaction

We understand deeply that in the business operation, the customer is important and highly critical. Customers are closely linked to the values of the enterprise, and their satisfaction directly influences the sustainable development of the business. Therefore, Winbond has always been committed to meeting the needs of customers, adhering to the customer-centric philosophy, hoping to grow together with customers and achieve sustainable operation.

In this endeavor, we regularly conduct customer satisfaction surveys to ensure a deep and comprehensive understanding of our customers' requirements. This is not only a response to market changes but also a crucial step in building strong relationships with our customers. In the 2023 customer satisfaction survey, we divided it into three major areas: sales and service, product and technical support, and product quality. In terms of sales and service, we achieved an 86% satisfaction rate; for product and technical support, we received an 85% satisfaction rate; and regarding product quality, customers gave us an impressive 89% satisfaction rate. These numbers reflect our continuous efforts across different domains to provide customers with the highest quality products and services. Overall, our customer satisfaction rate exceeded 85%, which signifies high praise from our customers. It's not only a result of our past efforts but also an affirmation of the trust and support our customers place in us.

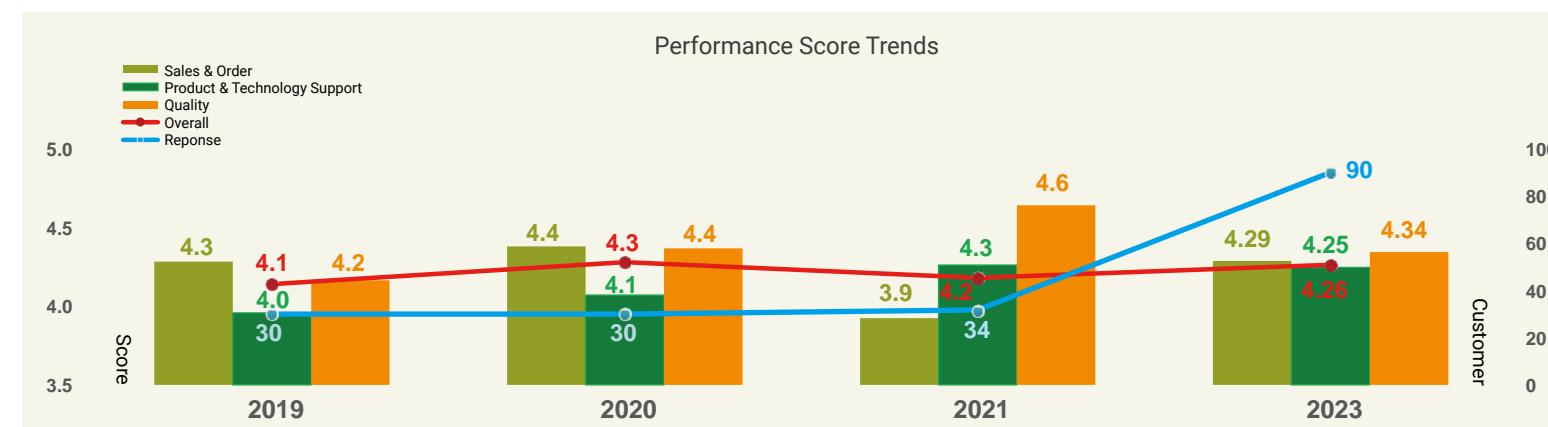
Moving forward, we will continue to maintain close connections with our customers and enhance our product and service levels to meet their ever-changing needs.

#### Satisfaction Survey Result

Objective	Continuously improve our customer services quality and product competitive
Scope	「Sales & Order」、「Product and Technical Support」、「Quality」
Goal	Satisfaction index 3.5 (70%)
Target Customer Selection	Specific target customer from different areas and business application
Customer Satisfaction Index	Total score=Σ (Satisfaction * Importance) / Σ Importance
Frequency	Once a year
Standard	B0000-2800 Customer satisfaction process (ISO 9001/ IATF 16949/ QC 080000)

#### Satisfaction Score Trends

- From the feedback of 90 clients in 2023, the overall rating has increased to 4.26.
- Compared to 2021, the ratings in the "Product and Technical Support" and "Quality" domains have decreased, while the rating for "Sales and Orders" has improved.



## ■ Tracking Customer Intentions

Winbond places great importance on its own brand value and continuously reviews its services. In 2023, a total of 1,289 customer complaints were received. Among these cases, 522 were clarified unrelated to Winbond's quality or service issues after testing, accounting for 43% of the total. With past complaint experiences, current customer conditions and perspectives, Winbond customized the approach to clarify and resolve customer issues, which is an integral part of our customer service. When calculating based on the number of shipped units, the complaint cases represent only 0.000033% of the total shipments, indicating a very favorable level.

Analyzing confirmed failure cases in customer complaints allows identification and resolution of the root causes leading to deficiencies. Subsequently, relevant failure mode testing and improvement plans are proposed, along with source process enhancement initiatives. These efforts ensure the provision of optimal service and products to our customers. Calculating Winbond's failure rate as (number of defective ICs / total shipments) yields an impressively low level of 0.3 ppm (2023: 0.26 dppm), contributing to maintaining customer satisfaction and stable operational performance, resulting in a win-win situation.

## ■ Quality Workshop

Winbond actively organizes regular Quality Workshops, which not only provide a platform for in-depth understanding of customer product requirements and suggestions but also invite professionals and industry experts to participate in discussions on quality and technical issues. Through this exchange platform of the Quality Workshop, Winbond can promptly respond to customer inquiries, provide solutions, and continuously improve product and service quality to enhance customer satisfaction. Additionally, Winbond gains access to more industry information and technical knowledge through this platform, continuously enhancing its technical expertise and product quality.

As of 2023, Winbond has successfully organized seven Customer Quality Workshops and remains committed to achieving its goal of completing eight Customer Workshops by 2024, aiming to achieve a win-win situation for both Winbond and its customers. We firmly believe that Quality Workshops will continue to play a crucial role in the future development, tirelessly striving for the mutual growth of Winbond and its customers.

## 2.3.2 Customer Privacy Protection

Winbond strictly controls customer-related information. Documents, data, and other business information related to customer interactions are all safeguarded by Winbond's highly secure internal systems. The approval and granting of operational permissions for internal personnel are carried out in accordance with relevant operational norms and procedures. This ensures that the company protects customer privacy, prevents theft or leakage of trade secrets and intellectual property, and maintains a robust information security protection system. In 2022, Winbond obtained ISO 27001 certification for its information security management system, further enhancing its security measures. Since the enforcement of the General Data Protection Regulation (GDPR) by the European Union in May 2018, Winbond has made necessary adjustments in accordance with GDPR requirements. The company has modified its website and reviewed member data to comply with GDPR standards. Additionally, GDPR-related provisions have been incorporated into the online personal data protection courses, with a total of 3,386 participants completing the training in 2023. These participants achieved a 100% pass rate in the exams, accumulating a total training time of 1,693 hours.





# SUSTAINABLE PRACTICES

## Environmental Sustainability

84 | 3.1 Energy and Greenhouse Gas Management

88 | 3.2 Water Resource Management

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91 | 3.4 Air Pollution Control

92 | 3.5 Green Investment



Winbond has worked with the world to implement green sustainability measures, proactively reducing the impact that our business operations have on the environment. Apart from having no major violations of environmental laws, Winbond has also committed innovative new technologies and significant resources into adopting measures for reducing energy consumption and greenhouse gas emissions, improving resource utilization rates, and improving waste and emissions management, taking concrete action to implement our sustainable development blueprint.

### 2023 Performance Highlights



Introduced and implemented Energy Management System **ISO 50001**



**Cumulative energy savings of 456 million kWh**

From 2019 to 2023, a total of 456 million kWh of energy has been saved, approximately equivalent to the annual electricity consumption of 130,136 households.



**98% Reduction rate of volatile organic compounds**



**4,000 million liters of water saved**

From 2019 to 2023, a cumulative water saving of 4,000 million liters.



**ISO 46001 & ISO 14046 Introduced**

Implemented ISO 46001 Water Efficiency Management Systems and ISO 14046 Environmental Management - Water Footprint.



**Cumulative reduction of 2.28 million tCO<sub>2</sub>e**

Since 2006, participating in the Taiwan and World Semiconductor Council's perfluorocarbon greenhouse gas emissions reduction program, along with company-wide emission reduction activities.



**The Fab-wide water recovery rate reached 82.2%**

Amount of water recycled reached 13.15 million cubic meters of all factories, reaching 82.2% of the water recovery rate.



**90.9% Recycling rate**

12,361 metric tons waste recycled, with a recycling rate of 90.9%.



## 3.1 Energy and Greenhouse Gas Management

In recent years, Winbond has implemented data governance to quantitatively manage energy and greenhouse gases. Inventory work began in 2020 and was expanded to subsidiaries in 2023. Based on the inventory results, Winbond has taken various reduction actions and regularly tracks the data.

### 3.1.1 Energy Management

In 2022, the CTSP Fab obtained the ISO 50001 energy management system certification, effectively standardizing the facility's management processes and allowing it to be managed by our engineering units. The newly constructed Kaohsiung Fab also adopted ISO 50001 in 2023, expanding the scope and benefits of energy management, with verification expected in 2024.

The reduction target for energy and electricity consumption is by 2030 1% YOY reduction of electricity usage per unit product. In 2023, the energy consumption index per unit product was 100.7 megajoules in average to produce a 12-inch wafer photomask layer. Compared to the 82 megajoules consumed in 2022, electricity consumption per product unit increased by approximately 22.8% YoY (MJ/layer - wafer photomask). The challenge in meeting targets was linked to the global economic recession in 2023, resulting in decreased production capacity. Furthermore, the Kaohsiung Fab has not yet attained economies of scale, contributing to elevated average electricity consumption and emissions per unit product. In the future, we will continually focus on implementing energy-conserving programs, including equipment replacement, consumption reduction, process optimization, and the advancement of energy efficiency through intelligent energy-saving measures, aiming to enhance environmental sustainability benefits.

**Wen-Hua Lu**

Vice President, Memory IC Manufacturing Business Group

Risks are also opportunities. We provide abundant resources to stabilize the supply chain and continuously explore business models that create value for our customers. Through product and process innovation, Winbond hopes to establish long-term and sustainable win-win relationships with our customers.



Winbond adheres to the commitment of "environmental sustainability, and value creation" and focuses on four aspects of environmental sustainability: (1) Energy and greenhouse gas management, (2) Water resource management, (3) Waste management, and (4) Air pollution control. Through continuous improvement, we have achieved a series of positive outcomes and benefits in these areas.



**1. Energy and Greenhouse Gas Management :** Through technological innovation and efficiency improvement, we control energy consumption and actively participate in monitoring and reducing greenhouse gas emissions.



**2. Water Resource Management :** Measures such as water conservation and recycling are implemented to protect and utilize water resources sustainably.



**3. Waste Management :** Waste reduction, classification, and recycling measures are adopted to minimize the negative impact on the environment.



**4. Air Pollution Control :** Emissions are controlled, and process technologies are improved to minimize the impact on the atmospheric environment.



Winbond continues to invest in environmental stewardship, ensuring the implementation of the development strategy for sustainable environment. The Company, through specific environmental management indicators, demonstrates its commitment and efforts in promoting a sustainable environment. We look forward to working hand in hand with you to build a better future.



### 3.1.1.1 Energy Usage

In recent years, due to the expansion of the Kaohsiung Fab and the addition of new equipment, the usage of various raw materials/fuel has increased. In 2023, the total energy consumption of Taiwan fabs was approximately 2,958,834 GJ, while the total energy consumption of the subsidiaries was approximately 269,202 GJ.

#### Energy use and energy intensity for each product unit

Item	Unit	2021		2022		2023	
		Taiwan Region	Taiwan Region	Taiwan Region	Subsidiary		
Purchased Electricity (Excluding Renewable Energy)	GJ	1,988,490	2,479,988	2,592,983	258,670		
Renewable Energy (Electricity)	GJ	-	-	7,571	447		
Electricity Subtotal	(MJ/layer - wafer photomask)	79.3	82.0	100.7	-		
Natural Gas	GJ	242,327	314,966	345,558	9,903		
Diesel Fuel	GJ	1,934	10,023	10,899	148		
Automotive Gasoline/Diesel	GJ	2,088	2,200	1,823	35		
<b>Total Energy Consumption</b>	<b>GJ</b>	<b>2,234,839</b>	<b>2,807,178</b>	<b>2,958,834</b>	<b>269,202</b>		



1. Energy usage has been converted to joules. Except for natural gas, which is calculated based on the heat value provided by the supplier, all other conversions are based on the Environmental Protection Administration's CO<sub>2</sub> emission factor. 1 kWh of electricity = 3,600 kJ, 1 cubic meter of natural gas = 8,793 kcal, 1 liter of diesel = 8,400 kcal, 1 liter of gasoline = 7,800 kcal, 1 calories = 4.184 joules.

2. All energy consumption data were derived from measurements on billing receipts, monthly natural gas consumption statements and materials requisition/inventory movement verification sheets. No estimations are involved.

3. 2023 data includes consolidated financial information from subsidiary companies (Nuvoton).

### 3.1.1.2 Energy Conservation Action Plan

The colleagues voluntarily proposed and continued to implement energy-saving measures in 2023, with a total of 108 items across 7 categories. These measures include equipment replacement, machine improvement, efficiency enhancement, usage reduction, process optimization, smart energy management, and new machine design. Among them are initiatives such as using smart air conditioning, optimizing Make-up Air Unit (MAU) air washer systems, and adopting energy-saving heating tape for machines. Compared to 2022, the electricity-saving amount increased by approximately 107,896 GJ, around 30 million kWh, approximately equivalent to the annual electricity consumption of 8,553 households.



The calculation is based on the average annual electricity consumption of 3,504 kWh per household in Taiwan in 2018, approximately 12.6 GJ.

Type	Action plan(Example)	Measures	Electricity Savings (10,000 kWh)	GJ	GHG Emission Reduction (tCO <sub>2</sub> e)
Equipment Replacement	Replacement of energy-efficient motors Replacement of energy-efficiency heating/cooling equipment	10	1,200	43,187	5,938
Usage Reduction	Machine heating/cooling equipment settings Optimized machine exhaust reduction	61	493	17,739	2,439
Machine Improvement	Enhanced insulation of machine heating/cooling systems Replacement of energy-saving components in machines	8	98	3,512	483
Process Optimization	Switching machine cooling to PCW cooling water circulation Optimization of vacuum pumps and ovens usage time	19	481	17,312	2,380
Efficiency Enhancement	Enhanced MAU System Performance Enhanced the plate heat exchanger efficiency of PCW	7	432	15,561	2,140
Smart Energy Management	AI smart air-conditioning	1	273	9,820	1,350
New Machine Design	Use FRP fan for cooling tower Use vertical washer pumps for MAU	2	21	765	105



1. The baseline year is 2021.

2. The CO<sub>2</sub> emissions coefficients for electricity is 0.495 KG CO<sub>2</sub>e / kWh.

### 3.1.1.3 Energy Conservation Case Studies



#### Smart Energy Saving

**Trilogy of Smart Chilled Water Systems Upgrade :** The chilled water system equipment is equipped with variable frequency control; to expand and establish a temperature database, with additional temperature sensors; and introduce AI data prediction models to optimize the overall system operation. The energy-saving rate is approximately 8.4%, equivalent to saving approximately 9.96 million kWh of electricity per year.



#### Smart chillers

Intelligence Ice Machine:  
Optimized Installation

✓ Variable Frequency Control for  
Water Pump and Cooling Water Fan

Automated Flow Control



Adding frequency converters



#### Smart Air Conditioning

Smart Air Conditioning: Establishment  
of Data Database

✓ Adjust Water Temperature of  
Chillers With Data Feedback

Automated temperature control



Database Establishment with sensor feedback



#### AI Smart Air Conditioning

AI Smart Air Conditioning: Introduction of AI Data

✓ Implemented AI Data Predictive Parameter Model  
to Smart Chillers Operation

AI model prediction



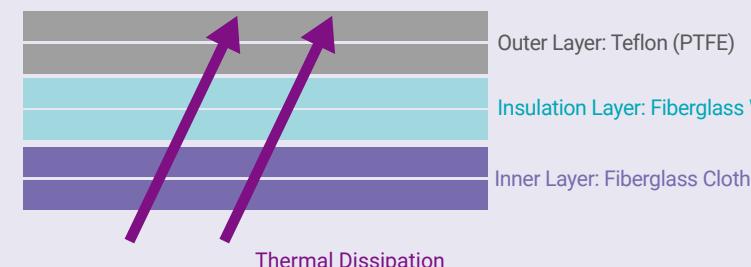
Data import for model training



#### Energy-saving Heating Equipment

In semiconductor manufacturing processes, it is common to operate in a vacuum environment. To maintain the cleanliness of vacuum pipelines and prevent the accumulation of contaminants on the pipe walls, heating tapes are used to maintain the temperature of the vacuum lines. Prolonged temperature maintenance can result in significant energy consumption. Winbond has recently adopted the latest nano-energy-saving heating tape, which modifies the insulation layer material to achieve better insulation efficiency. This change has substantially reduced energy consumption by 43%, equivalent to saving approximately 620,000 kWh annually.

##### Fiber Glass Wool (Old Model)

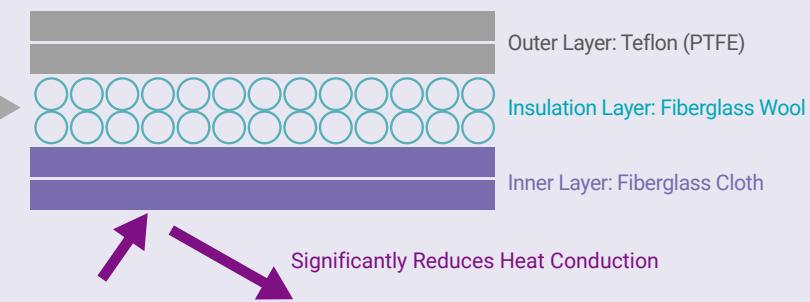


Outer Layer: Teflon (PTFE)

Insulation Layer: Fiberglass Wool

Inner Layer: Fiberglass Cloth

##### Nano Cotton with Porous Design (New Version)



Outer Layer: Teflon (PTFE)

Insulation Layer: Fiberglass Wool

Inner Layer: Fiberglass Cloth

Significantly Reduces Heat Conduction

### 3.1.2 Greenhouse Gas Management

Winbond has proactively cooperated with the government in conducting inventory and verification of greenhouse gas emissions. Winbond has implemented greenhouse gas management systems within our fab facilities, adopted the operational control approach, and adopted ISO 14064-1 standards to carry out comprehensive greenhouse gas emissions inventory and verification. Winbond has also set emission reduction targets, looked for opportunities to reduce emissions, and proposed improvement plans.

#### 3.1.2.1 Greenhouse Gas Inventory

Winbond continues to expand its scope of greenhouse gas management. At its Taiwan facilities, it has fully implemented ISO 14064-1, conducting regular inventories and verifications of greenhouse gas emissions across various factory areas. This practice allows Winbond to monitor greenhouse gas emissions and validate the effectiveness of its reduction efforts.

##### ▪ Scope 1 Emissions Source List

Type	Scope 1 Emissions (tCO <sub>2</sub> e)			
	2020	2021	2022	2023
Carbon Dioxide (CO <sub>2</sub> )	14,279	14,721	19,709	21,444
Methane (CH <sub>4</sub> )	68	70	86	97
Nitrous Oxide (N <sub>2</sub> O)	17,348	3,859	3,976	3,980
Hydrofluorocarbons (HFCs)	3,129	3,243	3,368	2,527
Perfluorocarbons (PFCs)	11,621	12,860	13,071	11,631
Sulfur Hexafluoride (SF <sub>6</sub> )	3,919	964	1,252	1,269
Nitrogen Trifluoride (NF <sub>3</sub> )	2,907	3,043	2,911	3,201

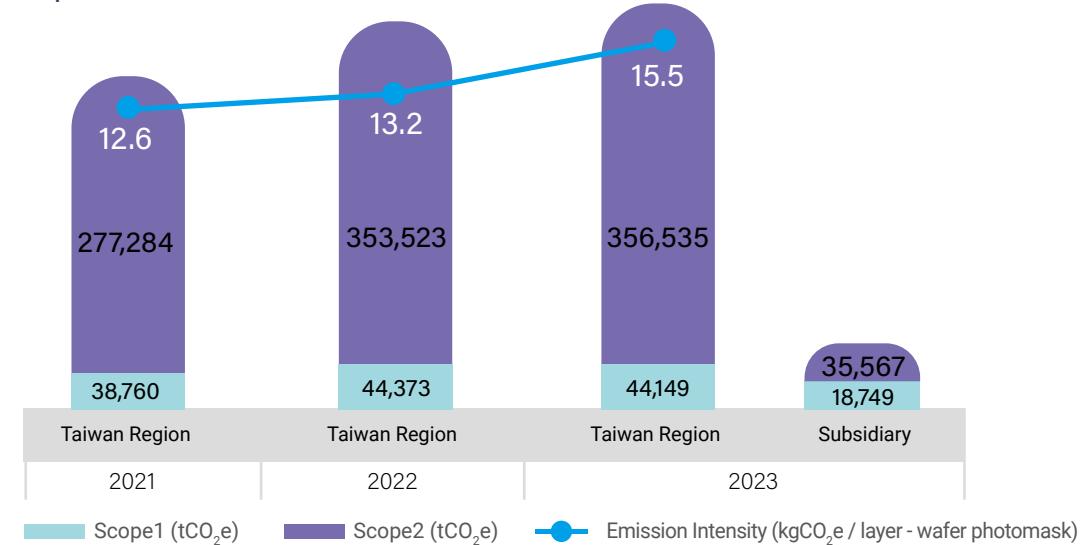
##### ▪ Scope 3 Emissions Source List

Type	Item	Scope 3 Emissions (tCO <sub>2</sub> e)
Indirect emissions from transportation	Upstream transportation	1,181
	Employee commuting	3,784
	Business travel	340
Indirect emissions from product use	Purchased goods and services	206,836
	Waste generated	2,408
	Outsourced assembly and testing	239,672

The greenhouse gas emissions target is to achieve a yearly reduction of 5% in greenhouse gas emissions intensity YoY by 2030. In 2023, the unit greenhouse gas emissions intensity indicator, "average greenhouse gas emissions per layer of photomask for 12-inch wafer production," was 15.5 Kg CO<sub>2</sub>e, compared to 13.2 Kg CO<sub>2</sub>e in 2022, representing an approximately 17.4% YoY increase in product carbon emissions.

The challenge in meeting the target stemmed from various factors, including the global economic downturn in 2023, which resulted in reduced demand, and the Kaohsiung Fab not yet achieving economies of scale, leading to higher than anticipated average electricity consumption per unit of product. Moving forward, our focus will remain on promoting reductions in process gas FCs emissions (through process enhancement and the installation of exhaust gas treatment equipment), energy conservation (via program optimization, efficiency enhancements, smart energy-saving initiatives, etc.), and the adoption of renewable energy sources.

##### Scope 1 & Scope 2 Emissions



- 1.In response to greenhouse gas reduction and control, the 2023 report boundary has been expanded to include the subsidiary (Nuvoton) in order to have more complete emission data. Therefore, the baseline year for the greenhouse gas inventory is tentatively set as 2023.
- 2.The Global Warming Potential (GWP) for 2021 and 2022 was sourced from the IPCC Fourth Assessment Report (2007), and the source for 2023 was the IPCC Fifth Assessment Report (2019).
- 3.Greenhouse gases include nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), nitrogen trifluoride (NF<sub>3</sub>), etc.
- 4.All energy usage comes from meter readings, the natural gas monthly settlement form/requisition form, and the AS400/part number inventory change record check list. The table contains no estimates.
- 5.The emission factor sources: Uncertainty data for emission factors are referenced from the latest version of the Climate Change Administration's greenhouse gas emission factors. Uncertainty assessment of activity data is referenced from the technical specifications of the measuring instrument.
- 6.Values for 2023 are estimated values, as the emissions factor of electricity for 2023 has not yet been announced.
- 7.The data from the consolidated financial statements of subsidiaries (e.g., Nuvoton) was incorporated in 2023 data

### 3.1.2.2 Greenhouse Gas Reduction

#### ▪ Greenhouse Gas Reduction Strategy

Winbond's primary greenhouse gas emissions come from fluorocarbons (FCs) used in processes and purchased electricity, which together account for over 90% of Scope 1 and Scope 2 greenhouse gas emissions. Therefore, Winbond's key greenhouse gas reduction strategies include direct reduction of FC emissions (process improvements, installation of exhaust treatment equipment), along with indirect reduction through energy efficiency and the use of renewable energy sources. In the future, Winbond intends to advance a range of carbon reduction initiatives and enhance energy efficiency. Additionally, Winbond aims to establish a Carbon Emission Information Platform to integrate and manage carbon emission data, achieving green and low-carbon production. Winbond also supports the Science Based Targets initiative and plans to use 90% renewable energy at CSTP and reduce greenhouse gas emissions by 60% by 2030. By 2050, Winbond aims to achieve net-zero emissions.

#### ▪ Implementation Action Plan

Winbond is committed to the concept of green semiconductor manufacturing. It focuses on process improvements to reduce greenhouse gas usage, accelerating the replacement of energy-saving components in equipment, installing exhaust treatment equipment, implementing energy-saving projects for production equipment and facilities, using renewable energy, and reducing the consumption of gas and chemical raw materials. The additional projects implemented in 2023 cover Scope 1, Scope 2, and Scope 3 emissions, resulting in a further emissions reduction of 25,743 tCO<sub>2</sub>e annually, equivalent to 67 times the annual carbon sequestration by the Da'an Forest Park.

**Note** Based on data from the Forestry and Nature Conservation Agency and the Taipei City Government's Department of Land Administration, Da'an Forest Park covers 25.93 hectares and has a carbon fixation rate of 14.9 tCO<sub>2</sub>e per hectare per year. As a result, the park contributes to the annual absorption of approximately 386 tCO<sub>2</sub>e.

#### ▪ Reduction of Fluorinated Greenhouse Gases

Since 2000, Winbond has participated in the Perfluorocarbons (PFCs) greenhouse gas emission reduction program led by the Taiwan Semiconductor Industry Association (TSIA) and the World Semiconductor Council (WSC). Through process adjustments, alternative gas usage, and the installation of PFCs reduction equipment, Winbond has reduced greenhouse gas emissions by approximately 180,000 tCO<sub>2</sub>e in 2023. This reduction helps mitigate climate risks, enhances Winbond's ability to adapt to climate change, improves industry competitiveness, and creates value.

#### ▪ Indirect Greenhouse Gas Emission Reduction from Transportation

In order to reduce the number of times that our employees would need to drive from our Zhubei Building to our CTSP Fab (in Central Taiwan Science Park), Winbond has arranged for a public transport shuttle bus that makes 6 trips a day between the Zhubei Building and our CTSP Fab on working days. Winbond has encouraged our employees to use this shuttle bus as much as possible. Our CTSP Fab also provides shuttle bus services to our engineering assistants (with routes to the Taichung city center, and with routes heading both north and south), allowing our engineering assistants to use these shuttle buses for their work commute and reducing fuel consumption and air pollution.

#### ▪ Indirect Greenhouse Gas Emission Reduction from Employee Lifestyle

To reduce emissions generated from employee activities, Winbond has replaced conventional rolled toilet paper with centrally dispensed toilet paper that is Forest Stewardship Council (FSC) certified. This change reduces pulp consumption by approximately 48%, not only lowering greenhouse gas emissions but also ensuring sustainable forest management and biodiversity preservation.

## 3.2 Water Resource Management

Winbond's main source of water is tap water supplied by the Taiwan Water Corporation, sourced from the Liyutan, Deji and A Gong Dian Reservoir. A small portion of the water comes from rainwater and air conditioning condensate. Following the water shortage issue in 2021, Winbond has secured stable natural water sources. Moreover, the factory is equipped with a 75,000-cubic-meter underground water reservoir, sufficient to support factory operations during water scarcity or restriction crises. In 2022, Winbond received a "B" rating in water security assessment by CDP.

In 2023, Winbond's total water consumption was approximately 4,356,250 cubic meters. Metric for measuring water intensity per product unit, Winbond averaged 170 liters of water usage to produce one 12-inch wafer photomask layer. Compared to 134 liters per layer in 2022, there was a YoY increase of about 26.9% in water usage per product. This increase is primarily attributed global economic deterioration in 2023, leading to lower demand, and the water demand during the trial production phase of the new factory. As the new factory has not yet reached economic scale, there is still a need for a certain scale of water usage, resulting in an increase in water consumption. Winbond will continue to optimize the efficiency of its water recycling system and enhance water usage efficiency.

	Water Withdrawl, Discharge, and Consumption (Unit: million cubic meters / year)		2020	2021	2022	2023	Subsidiary
	Taiwan Region	Taiwan Region	Taiwan Region	Taiwan Region			
Water Withdrawal	By sources	Tap water (third-party)	3,633	3,293	4,131	4,356	396
	Total Water Withdrawl		3,633	3,293	4,131	4,356	396
Water Discharge	By end using	Wastewater treatment plant (third-party reprocessing)	2,417	2,318	3,172	2,924	317
	By treatment	Third treatment	2,417	2,318	3,172	2,924	-
Water Consump-tion	Secondary treatment		-	-	-	-	317
	Total Water Discharge		2,417	2,318	3,172	2,924	317
Water Consump-tion	Total Water Consumption		1,216	975	960	1,432	79
	Change in water storage		0	0	0	0	0

**Note** 1. Winbond's water withdrawl comes from tap water provided by third-party suppliers and does not include surface water, groundwater, seawater, or produced water. The third-party water source consists of surface water (freshwater with total dissolved solids ≤ 1,000 mg/L). The total water withdrawl is calculated as the sum of surface water (total), groundwater (total), seawater (total), produced water (total), and third-party water (total).

2.2023 inclusion of subsidiary statistics (Nuvoton) from consolidated financial statements.

#### ■ Water Resource Risk Assessment:

Winbond conducts water resource risk assessments using the Aqueduct Water Risk Atlas tool developed by the World Resources Institute (WRI). Through analysis using the Aqueduct website, Winbond incorporates Taiwan's water resource distribution to understand that all operational sites in Taiwan are located in areas with low water resource pressure risk.

#### ■ Rainwater and Condensate Water - Diverse Alternative Water Sources

Rainwater and condensate water can serve as alternative water sources that can be effectively utilized to reduce environmental impact on water resources. Winbond primarily uses rainwater and condensate water for irrigation and secondary water usage, with a total consumption of 1.83 million cubic meters in 2023.

### 3.2.1 Water Resource Conservation and Reuse

The medium to long-term goal for water resource management is to achieve a water recycling rate of over 80% annually by 2030. In 2023, the total water recycling volume reached 13.15 million cubic meters, with a factory-wide water recycling rate of approximately 82.2% and a process water recycling rate of about 90.1%. These figures comply with the environmental assessment commitments of the Science Park (factory-wide water recycling rate exceeding 77% and process water recycling rate exceeding 85%).

#### ■ Water Conservation Measures

Winbond continues to increase the reuse rate of recycled water, implementing 6 new water-saving measures in 2023, resulting in an increased water savings of approximately 390,000 cubic meters. The cumulative water savings from 2019 to 2023 amounted to about 4,000 million liters, equivalent to 0.8 times the effective capacity of the Baoshan Reservoir.

#### ■ Implementation of ISO 46001

In 2023, Winbond adopted ISO 46001, with the CTSP Fab obtained certification in January 2024, and the Kaohsiung Fab expected to achieve certification in the latter half of 2024. Through the ISO 46001 Water Efficiency Management Systems, Winbond effectively manages the relevant risks associated with water resource supply, measures and monitors water resource usage, improves overall performance, and reduces water consumption to minimize environmental impact.

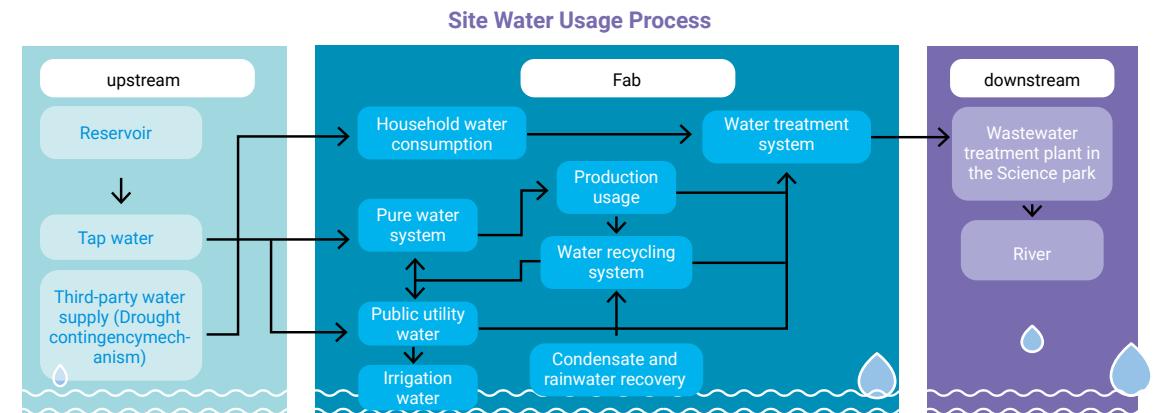
#### ■ Implementation of ISO 14046

Winbond obtained ISO 14046 Environmental Management - Water Footprint certification in 2021, enhancing its water resource management system.

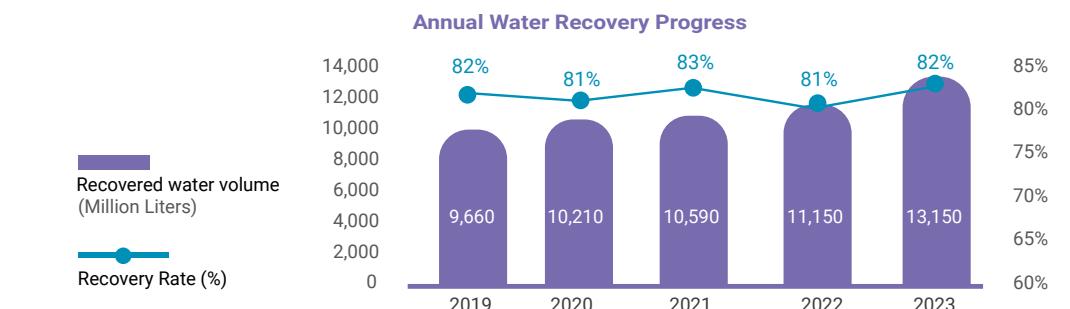
#### ■ 2023 Water Conservation Measures (Unit : megaliters/year)

Item	Water Conservation Measure	Explanation	Water Conserved
1	Water-saving of UPW (Ultra-Pure Water) System	Water consumption parameters adjusted for production machines	210.6
2	SW water saving for exhaust gas treatment equipment	Adjustment for exhaust gas treatment equipment	125.3
3	Water-saving and drought-resistant measures during water restriction periods	Reduction of cooling tower discharge water volume and increase in wastewater treatment system recovery capacity	31.9
4	Optimization of external air conditioning box water washing system	Installation of water-blocking plates to reduce splashing losses in washing equipment	20.4
5	Optimization and improvement of condensate water recovery in Gas Yard evaporator	Improvement of evaporator air-cooled de-icing system to enhance recovery of ice-condensed water	1.9
6	Optimization of fire system environmental pipeline leak prevention	Reduction of water leakage rate by improving environmental pipeline damage in fire system	0.3

(Note) The scope of water-saving measures is limited to the Taiwan fab area.



(Note) Public utility water includes the following: cooling tower circulating water and central/local scrubber circulating water.



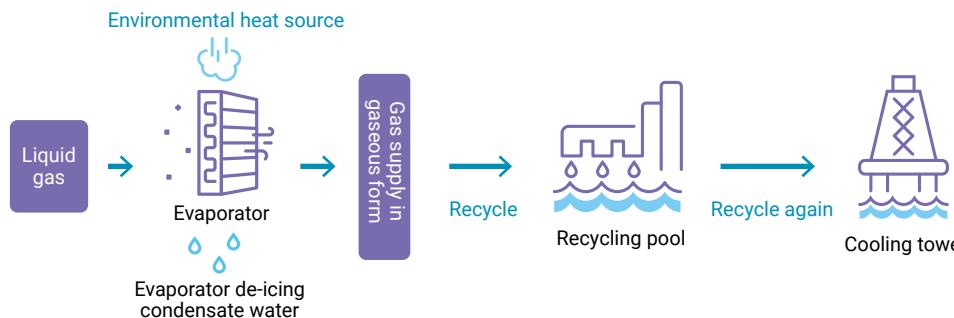
(Note) Fab water recovery rate = (Recycled Condensate + Recycled Process Water + Recycled Reclaimed Wastewater) / (Tap Water + Recycled Condensate + Recycled Process Water + Recycled Reclaimed Wastewater - Evaporation).

## 3.2.2 Water Conservation Case Study



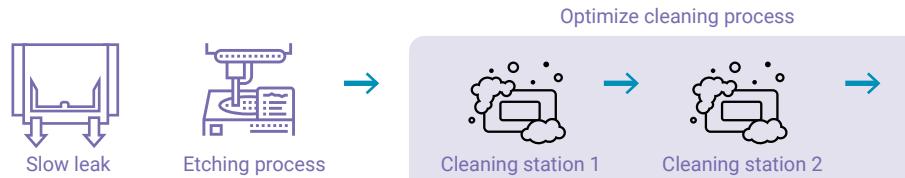
### Condensate Water Recycling Optimization

As semiconductor manufacturing processes evolve, the consumption of water resources during production gradually increases, making the rational management of water resources an urgent issue. Winbond is committed to achieving water conservation through various measures. By harnessing the characteristic of liquid gas to convert into gas through the heat absorption reaction in the evaporator, an evaporator gas-cooled de-icing system (pneumatic fan) is added to effectively recycle the ice-condensed water back to the cooling tower for reuse. This system can save 1,900 tons of tap water annually, significantly reducing the use of water resources.



### Process Water Conservation

Winbond actively enhances water resource efficiency through "optimization." When process machines are idle, they continue to slowly drain water to maintain cleanliness. By optimizing machine parameters, the flow of drainage is reduced. During the manufacturing process, innovative approaches are employed to reduce cleaning time and adjust the flow of cleaning water. For continuous cleaning stations, cleaning procedures are simplified to reduce the overall amount of water used in cleaning. This results in an annual saving of 210,600 tons of tap water, reducing water resource consumption and wastewater discharge.



## 3.2.3 Water Pollution Prevention

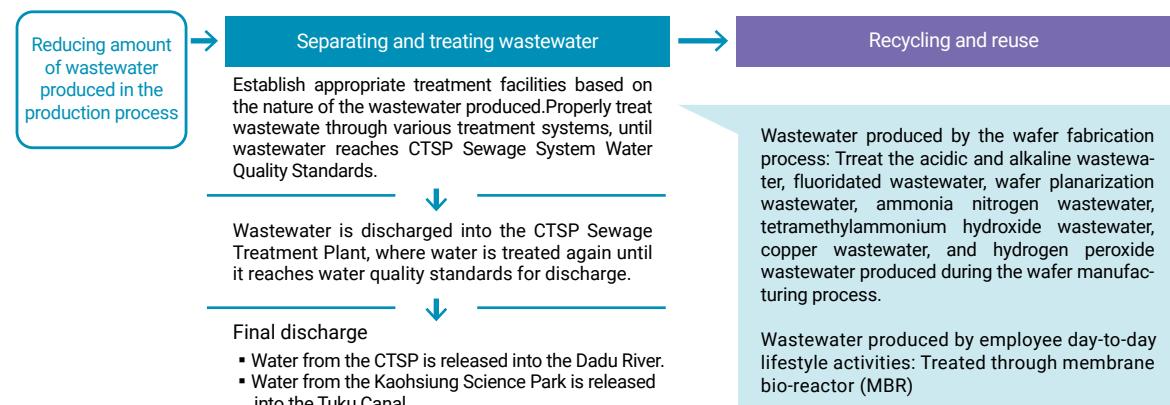
### ▪ Wastewater Treatment Facility

During the initial design phase, operations wastewater is collected through up to 20 different pipelines to standardize water quality. Subsequently, 11 major wastewater treatment facilities are constructed based on the characteristics of the wastewater. To reduce environmental burden and chemical usage in the wastewater treatment facilities, plans are made for the treatment and recycling of wastewater from washing towers, cooling towers, process cooling, and process soft water. After treating the recycled wastewater, it is supplied for secondary water use within the plant.

### ▪ Discharge Water Quality Testing

In accordance with relevant regulations on water pollution prevention and control, as well as Soil and Groundwater Pollution Control Act, discharge permits are applied and operations are set up accordingly. This involves conducting tests twice a year at laboratories accredited by environmental inspection agencies to ensure that the discharged water quality meets the standards set by the industrial park management. Additionally, efforts are continuously made to improve related water pollution control facilities to reduce biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solids (SS), and sludge reduction. The testing data for BOD, COD, and SS in 2023 were all superior to the water quality standards set by the Central Taiwan Science Park Bureau and the Southern Taiwan Science Park Bureau.

### Winbond's 3 major principles for plant wastewater treatment



### ▪ Discharged Water Quality

	Influence Standard/Threshold Value (mg/L)	Chemical Oxygen Demand	Suspended Solids	Biochemical Oxygen Demand
CTSP Fab	CTSP Influent Standard (mg/L)	500	300	300
	Measured in first half of 2023	92.2	47.4	53.4
	Measured in second half of 2023	19.2	11.8	7.8
Kaohsiung Fab	Kaohsiung Science Park Influent Standards (mg/L)	450	250	250
	Measured in first half of 2023	317	64	1.0
	Measured in second half of 2023	365	32.4	1.0

## 3.3 Waste Management

To ensure the proper and safe disposal of waste generated during operations, Winbond has established waste management procedures and conducts regular and irregular audits. By reducing or reusing waste and increasing recycling rates, Winbond aims to minimize the environmental impact caused by pollution. In 2023, Winbond's waste output was approximately 13,595 metric tons, with an average waste output of about 0.531 kilograms per layer mask for 12-inch wafers; all hazardous industrial waste is processed by qualified domestic waste treatment facilities.

### ▪ Waste Production, Disposal, and Transfer (Unit: Metric Tons)

Item	2020	2021	2022	2023	
	Taiwan Region	Taiwan Region	Taiwan Region	Taiwan Region	Subsidiary
General waste	Recycling	3,960	4,137	4,784	7,030
	Incineration	97	76	185	172
	Landfilling	0	0	0	67
	Chemical treatment	7	5	7	6
	Waste generated	4,064	4,218	4,976	7,208
	Recycling rate	97%	98%	96%	98%
Hazardous waste	Recycling	2,119	3,074	3,849	5,331
	Incineration	384	432	756	1,054
	Landfilling	0	0	0	0
	Solidification	3	3	3	2
	Waste generated	2,506	3,509	4,608	6,387
	Recycling rate	85%	88%	84%	83%
Total Recycling Rate		92.5%	93.3%	90.1%	90.9%
					71%

▪ The long-term goal for waste management is by 2030 to achieve a waste recovery rate of 90% annually for the Taiwan Fabs. In 2023, the waste recovery volume amounted to 12,361 metric tons, resulting in a waste recovery rate of 90.9%.



**Note** 1. Waste output was reported according to waste cleaning regulations.

2. All waste produced within Winbond was directly handled by qualified external disposal facilities, without direct disposal on-site.

3. Waste recycling was aimed at material reuse.

4. 2023 inclusion of subsidiary statistics (Nuvoton) from consolidated financial statements.

## 3.4 Air Pollution Control

### ▪ Source Reduction and Efficient Treatment

Winbond's air pollution prevention strategy starts with reducing emissions at the source. Process improvements are used to reduce the amount of pollutants generated to a reasonable level. Pollutants in the missions are then treated with high-performance control equipment to ensure that atmospheric emissions exceed government standards for pollutant content. All past measurements found that Winbond emissions were all lower than EPA emission standards.

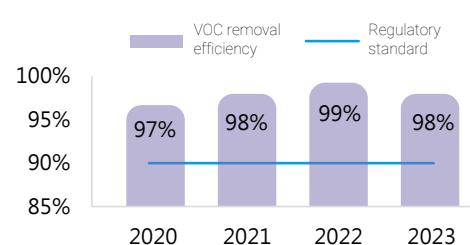
### ▪ Proper Treatment, Exceeding Regulatory Standards

Winbond has installed local scrubber equipment for certain hazardous, flammable, FCs and PFCs emissions from our production processes. These emissions go through absorption and incineration treatment processes before being delivered to the central scrubber to be washed and have their organic acids and alkaloids neutralized. Emissions that contain volatile organic compounds are sent directly to the zeolite rotor for absorption before being treated by vertical incinerators. In 2023, the average removal rate of VOC emissions reached 98%, exceeding regulatory requirements.

### ▪ Real-time Monitoring, Stable Operation

Our air pollution prevention system can be immediately switched to a backup system in an emergency or during maintenance. They are equipped with emergency power backup systems as well as an advanced real-time monitoring system that tracks changes in the system's operating parameters 24 hours a day. An alert is immediately sent if a pre-set threshold is exceeded for immediate action to ensure reliable and continuous operations 24 hours a day, 365 days a year. The effective treatment of air pollutants conforms with the relevant regulations of the "Air Pollution Control and Emissions Standards for Semiconductor Industry" and the "Standards for Air Pollutant Emissions from Stationary Pollution Source."

### ▪ Air Polluting Emissions (Unit: Metric Tons)



### ▪ Air Polluting Emissions (Unit: Metric Tons)

Item	2020	2021	2022	2023
NOx	12.06	10.89	12.18	13.65
SOx	0.45	0.42	0.47	0.54
VOCs	4.8	4.22	4.26	4.3

**Note** The emission volume of gases is reported according to local regulatory requirements.

## 3.5 Green Investment

### ▪ Environmental Protection Investment

Winbond adheres to the principle of green manufacturing, incorporating carbon emission reduction as an important goal. Starting from the research and development stage, Winbond aims to become an advocate for green products by optimizing processes and introducing zero-carbon emission technologies. With its core capabilities, Winbond strives to achieve a significant green impact. Each year, Winbond allocates environmental protection funds for investing in and maintaining hardware and software equipment related to the environment. Projects include improving and enhancing air pollution control, water pollution prevention, and waste management. In 2023, a total of NT\$ 942 million were invested in environmental protection measures, accounting for approximately 2.51% of the annual revenue, to continuously reduce environmental impact.

#### ▪ Environmental Investment (Unit: NT\$ 1000)

Expense Type	Expenditure Items	2020	2021	2022	2023
New installation of pollution control/treatment equipment	Air pollution control equipment	95,355	3,500	388,432	315,616
	Water pollution control equipment	2,900	23,600	440,803	58,108
Operation and maintenance of pollution control equipment	Air pollution control equipment	93,889	98,582	129,979	127,846
	Water pollution control equipment	113,214	162,020	259,322	284,495
Waste disposal costs	General industrial waste	34,558	33,839	40,390	72,953
	Hazardous industrial waste	32,833	56,697	75,029	82,793
Total		372,749	378,238	1,333,955	941,811
Revenue (Individual)		39,649,875	57,532,802	51,139,171	37,561,043
Ratio to Revenue (Total Expenses / Revenue)		0.94%	0.66%	2.61%	2.51%

### ▪ Economic Benefits of Environmental Investment

The economic benefits derived from environmental protection investments are significant. In 2023, the economic benefits of investing in environmental protection amounted to approximately NT\$ 439 million.



#### ▪ Economic Benefits of Environmental Investment (Unit: NT\$ 1000)

Cost Categories	Item	2020	2021	2022	2023
Revenue	Waste recycling	8,100	6,008	6,324	5,786
Saving	Energy-saving measures	170,500	189,780	329,639	419,553
	Water-saving measures	7,512	10,594	9,180	13,243
Total economic value creation		186,112	206,382	345,143	438,581



# SUSTAINABLE PRACTICES

## Sustainable Supply Chain

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Considering corporate sustainability from the perspective of the value chain, sustainability factors must be incorporated into the work design and training from inbound logistics and manufacturing to outbound logistics to effectively promote sustainable supply chain management.

In 2023, Winbond focused on a dual-axis transformation strategy, encompassing digitalization and decarbonization, complemented by an ecosystem approach in work design to implement sustainable supply chain management initiatives. This encompasses managing supplier from the source, conducting internal sustainability training, executing procurement tasks, establishing internal green logistics systems, and closely collaborating with outsourcing partners. Faced with a challenging business environment, Winbond emphasizes the importance of maintaining innovative management thinking and the ability to rapidly adjust and react. This ensures the evolution of timely and adaptive business capabilities with suppliers, ultimately achieving the goal of a sustainable supply chain.

### 2023 Performance Highlights



#### Over 16,965 Hours

- Total accumulated learning hours for the supply chain ecosystem



#### 100% Completion Rate

- Product carbon footprint for major packaging product types (BGA, SOP, SON, WLCSP, RDL)



#### 63,000 tCO<sub>2</sub>e

- Accumulated Scope 3 emission reduction



#### Supply Chain Decarbonization

- Brought 13 suppliers and obtained a full subsidy of NT\$30 million from IDB, MOEA for the post-pandemic "Leading Small by Large Supply Chain Decarbonization Project" initiative



#### 100% Coverage Rate

- Proportion of ESG self-assessment surveys conducted by tier-one key suppliers

## 4.1 Sustainable Supply Chain Management Framework and Mechanisms

### 4.1.1 Sustainable Supply Chain Management Strategy and Policy

Under the ESG Committee, Winbond has established a Sustainable Supply Chain Task Force responsible for devising and implementing sustainable supplier management strategies. In response to extreme climate change, global economic, trade, and geopolitical risks, Winbond integrates its existing supplier management policies across three main dimensions: sustainable procurement strategies, sustainability risk assessments, and digitalization of supply chain management. This integration encompasses RBA, Hazardous Substance Free (HSF) policy, traditional supplier management aspects (quality, price, delivery time, and process technology capabilities), and Authorized Economic Operator (AEO) certification, forming the Winbond Sustainable Supply Chain Management Framework. Detailed strategies, management policies, and measures have been developed accordingly.


**Shu-Cheng Chang**

Technology Executive, Prod. Control and Sub. Management Center

Supply chain is the relationship between a company and its suppliers, including aspects such as materials, equipment, and services. Winbond, continuously established partnerships and work with suppliers to achieve ESG goals and promote sustainable development. This effort further enhances business ethics, environmental protection, social care, and transparency in governance structure.

### ■ Sustainable Supply Chain Management Strategies and System

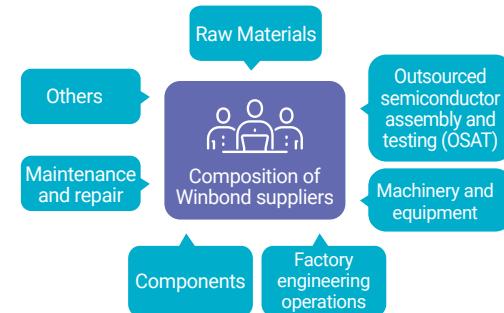
Three Strategies for Sustainable Supply Chain Management	Management Policy/Measures/Activity
 Responsible Procurement	<ul style="list-style-type: none"> <li>Evaluation of new suppliers</li> <li>Winbond Supplier Code of Conduct Commitment Letter</li> <li>Winbond's Corporate Social Responsibility (CSR) and Integrity Policies</li> <li>Hazardous Substance Free (HSF)</li> <li>Non-use of Conflict Minerals</li> <li>Regular supplier evaluations</li> </ul>
 Strengthening Supply Chain Resilience	<ul style="list-style-type: none"> <li>Authorized Economic Operator(AEO)</li> <li>Sustainable risk Due Diligence in the supply chain</li> <li>Supplier on-site audits, coaching, improvement, and enhancement</li> <li>ESG co-learning workshops for key suppliers</li> <li>Various supplier training, negotiation, and communication activities</li> </ul>
 Low-carbon Supply Chain	<ul style="list-style-type: none"> <li>Sustainable Procurement Work (including local procurement, circular procurement, green procurement)</li> <li>Tier-one Suppliers Resource Usage Survey</li> <li>Carbon emissions management for Contractors (packaging and testing)</li> <li>Establishment of green logistics systems</li> <li>Government Project – Winbond decarbonization cooperation through "Large leads Small"</li> </ul>

### 4.1.2 Supply Chain Composition and Structure

As one of the global key memory manufacturers, Winbond operates along the industry chain, catering to upstream IC/IP design demands, engaging in 12-inch wafer manufacturing, and outsourcing to packaging and testing facilities to complete memory production. In 2023, Winbond's most important operating location is Taiwan, while the other important

locations distributed across China, Japan, Korea and Israel. In 2023, Winbond engaged with a total of 1,027 suppliers for various transactions, categorized by procurement type and application area, including raw materials, outsourced semiconductor

assembly and testing vendors, machinery and equipment suppliers, factory engineering, parts, maintenance and repair, and others (transport logistics, waste disposal merchants, waste removal merchants, information equipment and software, as well as miscellaneous affairs). In order to meet the global supply demands, key (critical) suppliers are from Japan, the United States, South Korea, Belgium, and Germany. There were no significant changes in activities, value chains, or other business relationships compared to the previous reporting period. Additionally, Winbond conducted annual supply chain sustainable risk assessments for suppliers directly related to product composition to ensure stable operations and minimize risks.



### ■ Supply Chain Management Framework



Winbond Electronics Supplier Platform

- Supplier Routine Operations (Shipping and Receiving, Payment for Imports and Exports)
- Supplier ESG Interactive Network
- Packaging and Testing Product Carbon Footprint Data Exchange Module
- Green Product Logistics Management Module

## 4.1.3 Supplier Management Process and Mechanisms



### 2023 Results of Key Supplier Sustainability Management

- **100%** Signing rate of Winbond Supplier Code of Conduct Commitment (CoC) Letter
- **100%** Signing rate of declarations on non-use of banned substances and conflict materials
- **100%** Compliance rate of new traceability suppliers with economic, environmental and social standards



### Suppliers Management Process



With the aim of achieving sustainable supply chain development in mind, building a solid long-term relationships with Winbond suppliers is the foundation of a stable management system. Winbond has designed the sustainable supply chain management system based on systematic Plan-Do-Check-Act (PDCA) procedures. These procedures allow us to trace and select new suppliers, regularly evaluate qualified suppliers, and finally track and improve any deficiency. Winbond has proactively implemented SDG 17.16 "Enhance the Global Partnership for Sustainable Development", applying strict internal quality standards to the raw materials provided by suppliers. Externally, Winbond has carried out regular supplier evaluations, on-site audits, deficiency identification, and improvement, discovering new ways to improve the operational and manufacturing operations with the suppliers. Through methods such as regular tracking, discussing improvements, and other methods to refine the business operations, Winbond is dedicated to collaborating with its suppliers in embodying the principles of sustainable supply chain development.

## ■ Regular Evaluation of Qualified Suppliers

Winbond conducts regular evaluations of its qualified suppliers annually, with a specific focus on suppliers and outsourcing partners (packaging and testing) due to the division of labor in Winbond's product manufacturing process. The evaluation criteria encompass various aspects such as quality (product/technology), delivery time, service, and pricing. Based on the evaluation results, the management mechanisms for suppliers and outsourcers are categorized into two groups. For suppliers, the management mechanisms are categorized as A, B, or C (Excellent, Good, Requires Review); while for packaging and testing outsourcers, that are categorized as superior, Class A, Class B, or Class C. These classifications serve as the basis for different management and improvement approaches.

As key technology partners in packaging and testing gradually possess energy-saving testing technology required by Winbond, sustainability performance was officially included in the regular evaluations in 2023. Sustainability evaluation criteria includes organizing sustainability-related activities, formulating green energy goals, setting energy-saving and carbon reduction targets, and considers major environmental or occupational safety incidents as deduction factors, ensuring the fairness of the evaluation process. In 2023, due to proactive advocacy and communication efforts, all qualified suppliers received an A rating in the regular evaluations, with no significant quality issues related to products or technology.

In the future, the inclusion of sustainability performance in the evaluation process will begin with packaging and testing suppliers and gradually expand to other types of suppliers. This approach not only encourages suppliers to consider sustainability performance as part of their competitiveness but also contributes to the long-term transformation and sustainable development of the entire supply chain.

### ▪ Suppliers/Contractors Evaluation and Management Mechanism

Type of vendors	Rating and Management Mechanism			Outsourcers ESG Evaluation Items
<b>Suppliers</b>	Level A ( $\geq 85$ )	Level B( $70 \leq \text{score} < 85$ )	Level C ( $< 70$ )	Participation in Winbond's ESG activities <b>40%</b>
	Continuous cooperation	Provide improvement measures, down-grade to Level C if rated Level B in two consecutive evaluations	Reduce quantity or discontinue	Results of Energy-Saving and Carbon-saving <b>30%</b>
<b>Outsourcers</b>	Superior ( $\geq 90$ )	Level A ( $80 \leq \text{score} < 90$ )	Level B ( $75 \leq \text{score} < 80$ )	Green Energy Planning and Management <b>30%</b>
	Increase quantity recommended	Continue monitoring	Reduce quantity recommended	Negative Factors Points deducted (1 point per case) for significant occupational safety accidents, environmental penalties, labor disputes, or other litigations that occur within the year.
				Terminate cooperation

## Qualified Supplier Audit and Improvement

In response to the rapid pace of digital transformation and the information convergence, Winbond will incorporate information security as a key audit criterion for suppliers, bolstering the resilience of the supply chain in this digital era. To ensure effective oversight of all qualified suppliers' operations, the Winbond supplier audit team conducts targeted sampling audits annually. The written audits cover various certification aspects such as "Quality Management" and "Green Review." On-site visits and audits focus on the core elements outlined in the RBA 7.1.2 audit manual, specifically addressing "Social Responsibility Audits." In 2023, a total of 31 audits were conducted, including 19 raw material suppliers and 12 packaging and testing outsourcers. Notably, audit outcomes across these three key areas aligned with Winbond's standards, with no disqualifications due to significant environmental, social, or governance issues among qualified suppliers. To foster sustainable collaboration with suppliers in product/technical services, management, and operations, Winbond compiled 151 improvement suggestions from 31 audits conducted in 2023. Suggestions include process control, environmental health and safety management, supplier management, quality management, and management systems. Through proactive engagement with the Winbond supplier audit team, suppliers proactively identified potential risks in their daily operations, thereby implementing preventive measures to meet audit requirements and effectively enhanced their sustainability capabilities.

### ▪ Improvement Items in Economic, Environmental, and Social for Qualified Suppliers and Winbond Responses

	Improvement Items	Winbond responses
	<b>Environmental and Safety Health</b>	<ul style="list-style-type: none"> <li>▪ Unclear labeling of storage height limits in storage areas</li> <li>▪ Lack of accidental activation protection measures for machine emergency buttons</li> </ul>
	<b>Labor &amp; Ethics</b>	<ul style="list-style-type: none"> <li>▪ Failure to fully implement an anonymous complaint feedback mechanism</li> </ul>
	<b>Product &amp; Technical Quality</b>	<ul style="list-style-type: none"> <li>▪ Unclear recording of machine maintenance measurement data</li> <li>▪ Inaccurate records of related cleaning operations</li> </ul>
	<b>Management System</b>	<ul style="list-style-type: none"> <li>▪ Lack of effective execution of supplier audit plans</li> <li>▪ Incomplete labeling of material storage</li> </ul>

### ▪ Pass rate of Key Suppliers/Outsourcers for the Audit's Economic, Environmental, and Social Items (Unit: %)

ESG aspect	Audit Items	Pass rate
Economic	ISO 9001 Quality Management Systems	<b>100%</b>
	IATF 16949	<b>100%</b>
Environmental	ISO 14001 Environmental Management Systems	<b>100%</b>
	REACH	<b>100%</b>
Social	RoHS	<b>100%</b>
	HSPM Hazardous Substance Process Management	<b>100%</b>
Social	RBA Social Responsibilities	<b>100%</b>

## 4.2 Sustainable Supply Chain Risk Management



### 2023 Results of Supply Chain Risk Management

- **100%** Signing rate of suppliers committing to compliance with Winbond's Corporate Social Responsibility (CSR) and Integrity Policies
- **100%** of tier-one key suppliers implementing sustainable risk assessments



### Risk Management Process



1 Establish-  
ment of Risk  
Management  
Logic

2 Catego-  
rize &  
identify  
risk types

3 Design of  
Management  
Systems and  
Methods

4 Inci-  
ents review,  
improve, and  
prevent

Based on Winbond's purchasing activities, composition of our supply chain consists of suppliers from different types and companies from different production bases. In light of this, in supply chain risk management, first, Winbond monitors and assesses impacts using the systematic thinking of ISO 31000 risk management. Secondly, it identifies the types and sources of risks, categorized into internal risks, intra-partnership risks, and external risks. Thirdly, in response to the differences in risk sources and types, appropriate management approaches are established. Finally, each management event is reviewed, and improvements are made based on the deficiencies identified in the event, to mitigate future risks' impact on supply chain management. The following details the content of various risks and the corresponding management systems.

## 4.2.1 Supply Chain Risk Management Mechanism

To address the varying impacts and stages of different risks, Winbond designed different management systems, ensuring the overall stability of the supply chain operations.

Categories Identification	Material Risk	Intra-partnership Risk	External Risk
Definition	Risk that directly related to the production and Manufacturing	Integrity risks that arising from conflict of interest	External risks are divided into three categories: climate change, natural disaster, and non-natural risks (political, economic and social risks, etc.).
Management System/ Measure	<ul style="list-style-type: none"> <li>▪ Winbond regards the Responsible Business Alliance (RBA) requirements for conflict-free minerals as a core management principle. Annually, Winbond conducts due diligence investigations on critical suppliers using the Conflict Minerals Reporting Template (CMRT) provided by the Responsible Minerals Initiative (RMI) and publishes an annual Conflict Minerals Due Diligence Report.</li> <li>▪ To uphold product quality, Winbond has established the Process/Product Change Notice (PCN) management principle for suppliers. This management mechanism is activated whenever there is any change in raw materials or in suppliers' raw material, process, or packaging materials.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Require newly qualified suppliers to sign Winbond's Supplier Code of Conduct Commitment Letter.</li> <li>▪ Conduct biannual ethics and integrity policy advocacy for all suppliers.</li> <li>▪ State Winbond's information security management policy in the order, require suppliers of qualified transactions to strictly abide by it, and outline the response and compensation responsibilities of both parties when information security risks occur.</li> <li>▪ In controlling the impact of climate change, Winbond has analyzed the disaster potential of more than 1,400 domestic suppliers at their operating sites according to various warming scenarios (refer to the <a href="#">2023 Task Force on Climate-related Financial Disclosures Report</a>).</li> <li>▪ Regarding political-economic risks (e.g., Russia-Ukraine and Israel wars) and social risks (e.g., supplier factory safety accidents, strikes) that may cause supply disruptions, Winbond promptly establishes an emergency response team to manage situation reporting, compilation, notification, analysis, and assessment.</li> <li>▪ Winbond strictly adheres to the regulations of the Customs Administration, Ministry of Finance, regarding "Authorized Economic Operator" (AEO) status, and requires contractors to comply with and improve trade security management.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In the event of natural disasters such as earthquakes, Winbond utilizes its Emergency Response System to promptly reflect seismic intensity worldwide, allowing procurement colleagues to assess the impact on suppliers.</li> </ul>

## 4.2.2 Supply Chain Sustainable Risk Assessment

Winbond employs RBA 7.0 and ISO 20400:2017 Sustainable Procurement as the core frameworks to establish the content of supplier ESG sustainable risk assessment. In 2023, Winbond conducted surveys targeting tier 1 critical suppliers, including raw materials, packaging and testing, critical spare parts (such as quartz, photomasks, PAD), with significant procurement amounts and direct relevance to production and manufacturing. The response rate exceeded 90%.

Firstly, among the surveyed suppliers, the overall average ESG score was 84.2 points, with higher scores observed for raw material suppliers and outsourcing assembly and testing partners. Secondly, by observing the implementation items of each sub-assessment category for tier 1 critical suppliers, it was found that most suppliers performed well in areas such as service quality management, occupational health and safety, human rights, and labor protection, with average scores ranging from 92 to 95 points.

However, regarding the enhancement of the overall resilience of the supply chain, surveyed suppliers still need to strengthen the implementation of formal corporate sustainability measures (such as formal organization, management systems, etc.) and enhance execution in response to and protection against environmental changes. In the future, to effectively and continuously manage the overall risk impact and sustainability of the supply chain, Winbond will implement three major measures regarding the enhanced resilience of the supply chain mentioned above. First, through the Sustainable Supply Chain Upgrade Forum, suppliers will regularly be provided with the correct management mindset, enhancing their knowledge of governance structures to improve their capabilities in environmental and social aspects. Second, resources from our country's government, industry, academia, and research sectors will be introduced to provide the necessary improvement resources for suppliers, thereby reducing their financial burden. Third, using the Winbond Supplier ESG Interaction Network as a platform, we will proactively provide various corporate sustainability and training information.

Looking ahead, to gradually enhance proactive risk management, Winbond plans to expand the scope of surveys to cover all suppliers, broadening the range of risk control. Additionally, existing supplier performance evaluations and on-site audits will incorporate ESG assessment criteria. Winbond will exert its utmost efforts to collaborate with suppliers to discuss improvement methods, jointly striving to enhance the resilience of the overall supply chain.



## Content of supplier ESG risk assessments

Management	Environment	Society	Governance
Definitions	Starting with product life cycle traceability and supply, Winbond has committed to requiring our partnered suppliers to operate in an environmentally-friendly and economic manner	Suppliers are required to sign the Winbond Supplier Code of Conduct Commitment Letter, ensuring that our suppliers provide a safe and healthy workplace compliant with international labor rights standards.	Suppliers are required to conduct business operations ethically and with integrity, the highest standard for business ethics, and ensure that this standard is applied to all internal business operations.
Assessment items	<ul style="list-style-type: none"> <li>▪ Environmental Management Systems</li> <li>▪ Air Pollution Prevention</li> <li>▪ Water Management</li> <li>▪ Waste Management</li> <li>▪ Greenhouse Gas Management</li> <li>▪ Biodiversity Management</li> <li>▪ Hazardous and Shared Substance Management</li> </ul>	<ul style="list-style-type: none"> <li>▪ Human Rights Protection</li> <li>▪ Employment and Labor Rights Protection</li> <li>▪ Occupational Health and Safety, and General Health Management</li> <li>▪ Business Continuity and Management</li> <li>▪ Supply Chain Management</li> <li>▪ Service Quality Management</li> <li>▪ Business Ethics and Philanthropy</li> <li>▪ Corporate Governance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Degree to Which Corporate Sustainability has been Formally Incorporated</li> <li>▪ Sustainability Impact and Degree of Disclosure</li> <li>▪ Business Continuity and Management</li> <li>▪ Supply Chain Management</li> <li>▪ Service Quality Management</li> <li>▪ Business Ethics and Philanthropy</li> <li>▪ Corporate Governance</li> </ul>

- Note**
1. Definition of key supplier refers to: directly related to production and manufacturing, single source of supply, critical and affecting production of spare parts (photomasks, PAD, quartz, packaging for shipment).
  2. Definition of local supplier: mainly refers to suppliers in Taiwan.

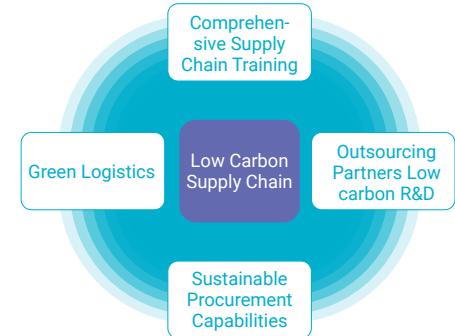
## Supplier Sustainability Risk Assessment Results and Future Management Promotion Activities

The main strategy for improving sustainability risks among suppliers	<ul style="list-style-type: none"> <li>▪ Promote the use of renewable energy as the primary source of electricity.</li> <li>▪ Facilitate and execute assessments of products' carbon footprint.</li> <li>▪ Drive biodiversity initiatives and establish relevant management policies and systems, encouraging suppliers to publicly declare their policy content.</li> <li>▪ Utilize the influence of responsible procurement to implement biodiversity management in internal procurement activities.</li> <li>▪ Dedicate efforts to improving production, manufacturing, and processes that affect environmental ecology, while enhancing circular technologies in various engineering fields.</li> </ul>
Sustainable Learning Forum Training	<ul style="list-style-type: none"> <li>▪ Promote human rights due diligence assessments.</li> <li>▪ Encourage suppliers to consider epidemiological trends and assist in arranging appropriate preventive treatments for on-site employees (such as influenza or COVID-19 vaccinations).</li> <li>▪ Require suppliers to design facilities according to the total number of company employees.</li> <li>▪ Mandate suppliers to precisely comply with regulatory requirements for machinery-related permits, licenses, and testing reports.</li> <li>▪ Ensure that suppliers establish machine risk assessments and safety protection plans to ensure the safety of their employees while operating machinery.</li> </ul>
Introduce industry-government-academia collaboration Resource Subsidy Project	<ul style="list-style-type: none"> <li>▪ Encourage suppliers to regularly maintain and manage the intellectual property or patent portfolio related to their products/services.</li> <li>▪ Encourage suppliers to provide regular training courses to strengthen governance functions at the highest levels of the company.</li> <li>▪ Provide the latest domestic and international governance standards, guiding suppliers to implement due governance from the perspective of market institutional investment.</li> <li>▪ Encourage suppliers to promote sustainability initiatives based on international standards such as GRI, SASB, and IFRS.</li> </ul>
Sustainable learning resources Digital and real-time Government	<ul style="list-style-type: none"> <li>▪ Encourage suppliers to regularly maintain and manage the intellectual property or patent portfolio related to their products/services.</li> <li>▪ Encourage suppliers to provide regular training courses to strengthen governance functions at the highest levels of the company.</li> <li>▪ Provide the latest domestic and international governance standards, guiding suppliers to implement due governance from the perspective of market institutional investment.</li> <li>▪ Encourage suppliers to promote sustainability initiatives based on international standards such as GRI, SASB, and IFRS.</li> </ul>

## 4.3 Sustainable Supply Chain Impact

### 4.3.1 Green and Low-carbon Supply Chain

Since 2022, Winbond has established the Co-Sustainability Project to communicate its carbon reduction goals and priorities to the supply chain through activities and sustainability supply chain resource usage surveys. In 2023, Winbond further segmented its efforts in supply chain decarbonization into four areas. First, it promotes the transformation of the supply chain towards low-carbon to achieve a 10% carbon reduction by 2030, This including comprehensive training, surveys, and the introduction of resources from industry, government, and academia. Second, it enhances sustainable procurement capabilities (including local procurement, circular procurement, and green procurement). Third, it strengthens the management of low-carbon work by outsourcing partners. Finally, it actively develops internal green logistics systems.



#### 2023 Results of Supply Chain Influence

- Tier one main suppliers <sup>(Note)</sup> sustainability supply chain resource usage surveys response rate: >90%
- Completion Percentage of carbon footprint inventory for major packaging types of products: 100%
- The first semiconductor manufacturer received full subsidies of NT\$30 million from the IDA of MOEA for "Large Leads Small Initiative."

**Note** The primary suppliers in the first stage refer to those who supplied to Winbond in 2023 and were directly or indirectly related to the products, technologies, or services comprising Winbond's offerings.

#### Low Carbon Supply Chain Management Process



## Low Carbon Supply Chain Initiatives

Management Process	Item	Description
Identify conflicts and establish a reciprocal mindset	<ul style="list-style-type: none"> <li>▪ ESG co-learning workshop for suppliers</li> <li>▪ Internal ESG Training</li> </ul>	<ul style="list-style-type: none"> <li>▪ Utilizing the Supplier ESG Learning Forum as a platform, starting in 2022, invite critical suppliers who have been engaged in carbon reduction for many years with outstanding performance to exchange views on carbon reduction work.</li> <li>▪ In 2023, we plan to expand the scope of internal staff ESG education and training to enhance the empathy of internal staff towards supplier carbon reduction work. Encourage, assist, and reciprocate instead of demanding to reduce resistance from various suppliers towards carbon reduction work, facilitating the subsequent disclosure of information in category three and gradually improving the transparency of carbon information in the supply chain.</li> </ul>
Declare carbon reduction goals and establish sustainability objectives	<ul style="list-style-type: none"> <li>▪ Sustainable Supply Chain Upgrade + Forum</li> </ul>	<ul style="list-style-type: none"> <li>▪ Publicly disclose the supply chain 2030 reduction target as 10%, achieving net-zero in 2050.</li> </ul>
Collect and enhance supply chain carbon emission data transparency	<ul style="list-style-type: none"> <li>▪ Sustainable Supply Chain Resource Usage Survey</li> <li>▪ Outsourced Product Carbon Footprint Inspection and Calculation</li> </ul> 	<ul style="list-style-type: none"> <li>▪ In 2023, an assessment was conducted on Tier 1 primary suppliers, evaluating their performance in electricity consumption, water usage, waste generation, greenhouse gas emissions, international climate governance efforts, and the energy consumption and carbon footprint of various resources used in their production processes <sup>(Note 1)</sup>.</li> <li>▪ Number of survey participants: 152</li> <li>▪ 2030 supply chain carbon reduction target: 10%</li> <li>▪ Annual electricity savings: 39 million kWh</li> <li>▪ Annual water conservation: 2.828 million metric tons</li> <li>▪ Annual waste reduction: 77,500 metric tons</li> <li>▪ Number of ISO 14064-1:2018 Certified Companies: 35</li> <li>▪ Number of greenhouse gas reduction companies: 91</li> <li>▪ Number of ISO 14067:2018 Certified Companies: 14</li> <li>▪ Number of ISO 50001 Certified Companies: 19</li> <li>▪ Number of Companies Participating in CDP Survey: 58</li> <li>▪ Types of Packaging with Product Carbon Footprint: BGA, SOP, SON, WLCSP, RDL <sup>(Note 2)</sup></li> </ul> 
Conduct training and open discussions	<ul style="list-style-type: none"> <li>▪ Sustainable Supply Chain Upgrade + Forum</li> <li>▪ Advanced Packaging Technology Forum</li> </ul>	<ul style="list-style-type: none"> <li>▪ Since 2023, Winbond holds three Sustainable Supply Chain Upgrade+ Forums to enhance suppliers' knowledge of sustainability.</li> <li>▪ The topics of the forums include international standards, management benchmarks, and disclosure. Professionals are invited to serve as speakers and outstanding suppliers are also invited to share their experiences. Each forum concludes with a Q&amp;A session and further discussion. Through this platform, Winbond and suppliers unify their efforts towards sustainable learning.</li> </ul>
Introduce resources from industry, government, and academia to collaborate on carbon reduction	<ul style="list-style-type: none"> <li>▪ Winbond Leads and Supports Small Suppliers</li> <li>▪ Institute for Information Industry (III) and College Teams Provide Carbon Reduction Guidance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Led by Winbond, a total of 13 suppliers including raw materials, packaging and testing, machinery and equipment, and plant engineering were invited to form an ESG sustainable supply chain team. Winbond applied to the Industrial Development Administration (IDA) of the Ministry of Economic Affairs for the "Large Leads Small Initiative: Advancing Low-Carbon and Smart Transformation in the Manufacturing Industry" and successfully secured full subsidies amounting to NT\$30 million.</li> <li>▪ Incorporating carbon reduction consulting resources from the Institute for Information Industry and university teams (including Ming Chi University of Technology, Southern Taiwan University of Science and Technology, and National Cheng Kung University Sustainability Center) for the tier one suppliers in the first stage.</li> </ul>



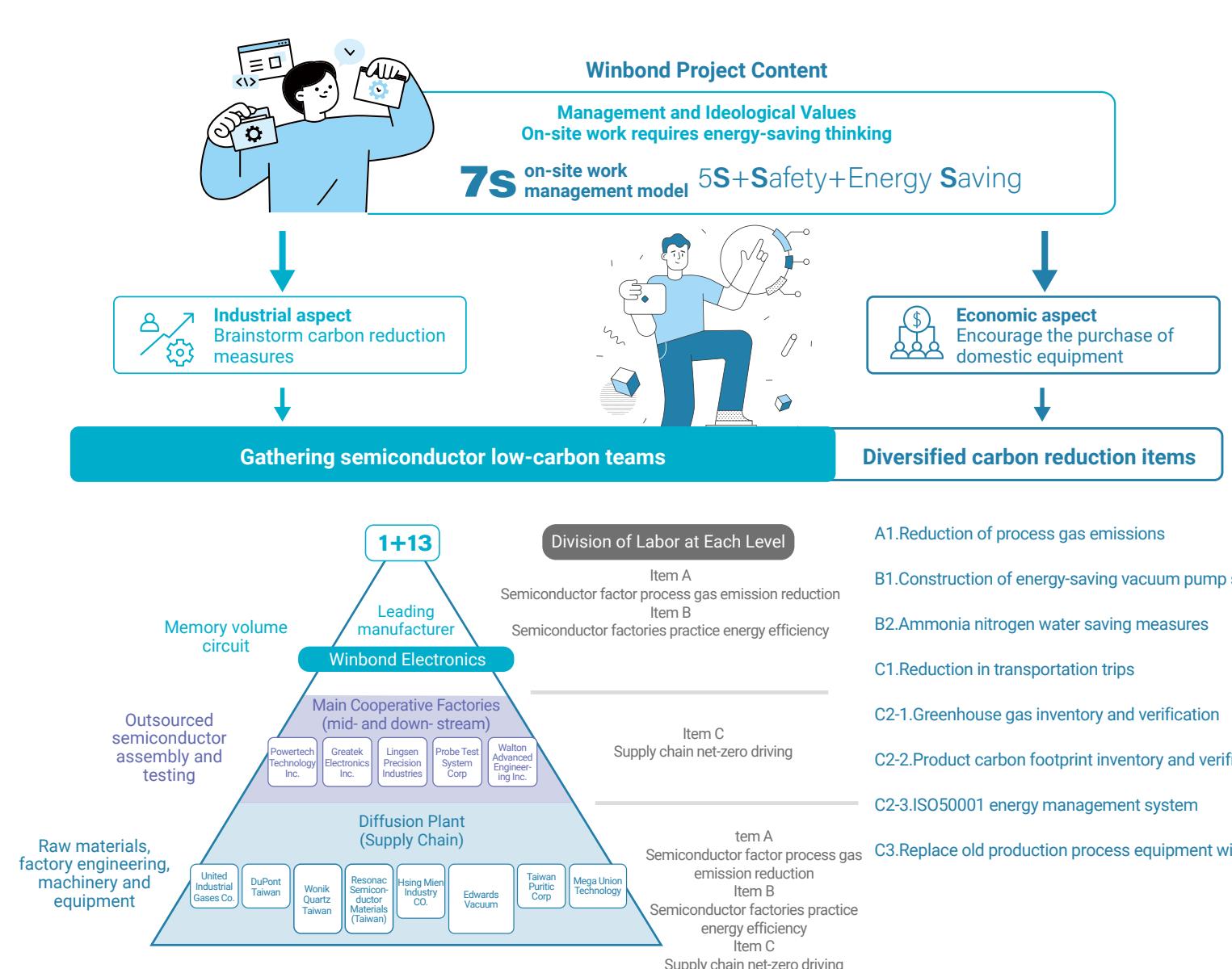
1. The electricity conservation volume was the difference between the electricity consumption calculated from the Scope 2 emissions in 2022 and the baseline year (2021). The emissions for both years were verified by a verification body. The water conservation volume and waste reduction volume were management data provided by suppliers based on the principle of good faith.

2. Ball-grid arrays (BGA), Small Outline Package (SOP), Small Outline No-lead Package (SON), Wafer Level Chip Scale Package (WLCSP), Redistribution Layer (RDL).

## Advancing Low-Carbon and Smart Transformation in the Manufacturing Industry

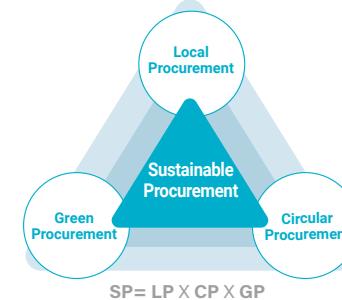


In 2023, Winbond collaborated with 13 companies including Powertech Technology Inc., Greatek Electronics Inc., Probe Test System Corp., Lingsen Precision Industries, Walton Advanced Engineering, Inc., DuPont Taiwan, Resonac Semiconductor Materials (Taiwan), Wonik Quartz Taiwan Co., LTD., United Industrial Gases Co., LTD., Hsing Mien Industry CO., LTD., Edwards Vacuum, Taiwan Puritic Corp., and Mega Union Technology Inc. to execute three major projects: "Reduction of Factory Process Gas Emissions," "Implementation of Lean Electricity and Water Conservation Measures in Factories," and "Promotion of Greenhouse Gas Inventory and Hotspot Analysis in the Supply Chain." During the collaborative period of this project, a total investment of over 200 million New Taiwan Dollars was made. Within two years, these initiatives aimed at promoting low-carbon transformation gradually increased their carbon reduction capacity. It is anticipated that when the projects completed in 2025, an annual reduction of approximately 5,866 tCO<sub>2</sub>e will be achieved, equivalent to 14 times the annual carbon sequestration by the Daan Forest Park annually. This achievement not only serve as a model promoting the low-carbon transformation of the semiconductor industry supply chain but also showcases the multifaceted qualitative and quantitative operational methods with benefits, which make Winbond the first semiconductor to receive a full subsidy of NT\$30 million. Therefore, the Ministry of Economic Affairs' Industrial Development Administration invited Winbond to the "2023 Supply Chain Transformation and Innovation Forum" as a representative of the semiconductor industry to share its experiences in sustainable operations and low-carbon transformation.



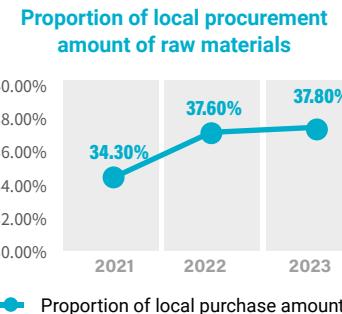
## Sustainable Procurement

Since 2023, Winbond has redefined the proactive significance of procurement work in sustainability and has planned corresponding procurement strategies. These strategies include local procurement, which effectively reduces GHG emissions generated by international transportation distances, circular procurement to promote material recycling and reuse, and green procurement to encourage domestic suppliers to provide green products/services. These initiatives are integrated into Winbond's sustainable procurement promotion efforts. In the future, the green procurement is highlighted by leveraging the economic value generated by procurement activities and collaborating with suppliers to implement our sustainable development.



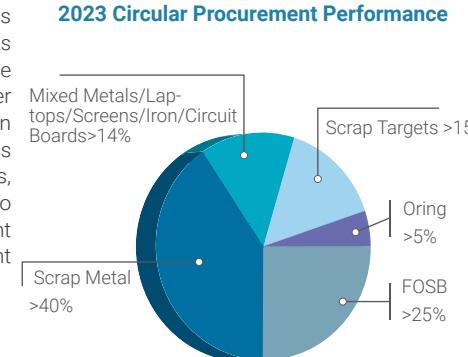
## Local Procurement

To ensure the sustainability of CTSP and Kaohsiung Fabs, the focus of local procurement was on materials directly related to wafer manufacturing, including chemicals, gases, targets, wafers, and key consumables. In 2023, Winbond actively adjusted the procurement ratios of various raw material suppliers, due to the external impacts such as climate change, inflation control, and conflicts in Ukraine, Israel, etc., and internal demands for green products and process improvements. The proportion of local procurement increased from 37.6% in 2022 to 37.8%, marking a 0.2% annual increase. Looking ahead, Winbond will continue to explore the potential for localizing various raw materials to minimize carbon emissions and supply chain risks while optimizing management costs.



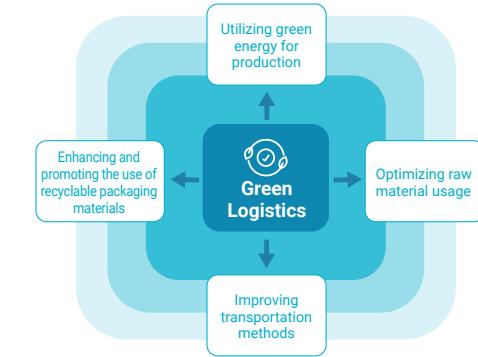
## Circular Procurement

Following the EU's definition of circular procurement, Winbond applies the concept of closing the loop in the circular economy to identify products or services that can generate economic benefits through circularity in the operations of CTSP and Kaohsiung fabs. By leveraging its bargaining power and negotiating with suppliers, Winbond achieved over NT\$2.3 million in sales performance from the recycling and sale of various waste products in 2023, including Scrap Targets, O-rings, FOSBs, mixed metals, laptops, screens, iron, and tray pallets. Looking ahead, Winbond will continue to seek products that can be repaired, reused, or recycled in the procurement process, emphasizing resource efficiency through circular procurement to achieve sustainable development goals.



## Internal Green Logistics

In recent years, the demand for carbon-neutral products from international customers has been growing. In 2023, Winbond actively responded to this demand by incorporating plans for low-carbon production into its internal logistics system, based on considerations within the company's value chain. This includes continuously improving production forecasting capabilities during the input stage of production to optimize the usage of raw materials and avoid unnecessary waste. At the stage of completing the manufacturing of DRAM and NOR Flash finished products, efforts were made to reduce greenhouse gas emissions by improving transportation management. In 2023, these logistics and transportation operations saved 110.9 tCO<sub>2</sub>e emissions. Suppliers were requested to prioritize the use of recycled materials for packaging while maintaining quality standards. In 2023, over 70% of waste pulp was used in packaging cardboard, and 100% of plastic pallets were manufactured from recycled materials.



## Outsourcer' Low-carbon Technology Development Capability



In 2023, Winbond leveraged government subsidies and carbon reduction guidance resources from the Institute for Information Industry to motivate outsourcer to eliminate high-energy-consuming or inefficient machinery and equipment. They were also encouraged to identify carbon emission hotspots and significant energy uses through GHG emission verification and by implementing the ISO 50001 energy management system. From the analysis of product carbon footprints, outsourcers were encouraged to rethink process improvements from the source. In summary, the low-carbon technology development among outsourcers in 2023 focused on three aspects: Firstly, monitoring the input of energy and resources in each stage of testing and packaging processes, and actively communicating with outsourcers to reduce energy usage; secondly, evaluating the development of green materials and prioritizing the use of raw materials that meet environmental and regulatory standards; collaborating with outsourcers to brainstorm ideas for low-carbon processes. Third, by optimizing upstream material inputs, waste generation during the outsourcing phase is minimized, effectively lowering overall waste disposal across Winbond's supply chain.



## 4.3.2 Supply Chain Inclusion



### 2023 Results of Sustainable Supply Chain Learning Ecosystem

- TSupplier ESG workshop training hours accumulated: **9,438 hours**
- Large forums training hours accumulated: **5,000 hours**, Satisfaction rate: **4.55**
- Employee's ESG training hours accumulated: **1,800 hours**



### Communication Process



To effectively advance supply chain management towards sustainability, Winbond integrates technical and quality-oriented approaches with innovative thinking and management models in its existing supplier collaboration efforts. In addition to regular environmental, safety, and health (ESH) training for suppliers/contractors and outsourcers conferences, new initiatives have been added to the agenda. For example, Supplier ESG Learning Hub, Internal ESG Education Training for Colleagues, Sustainable Supply Chain Upgrade+ Forum, and Advanced Packaging Technology Forum. In 2023, Winbond conducted a total of 5,977 hours of regular ESH training for suppliers/contractors, accumulated 9,438 hours of learning in the Supplier ESG Learning Hub, and exceeded 1,800 hours in Internal ESG Education Training for Colleagues. A total of five forums, accumulating over 5,000 hours, were organized. In the future, Winbond will continue to match appropriate training resources for various suppliers, working together to implement corporate sustainability.

## Regular ESH Training for Suppliers/Contractors

To effectively maintain safety in the workplace at Winbond and enhance suppliers' awareness of occupational safety during work, Winbond annually provides relevant training for supplier employees engaged in on-site work or stationed at the facilities. This training covers workplace equality and epidemic prevention. Given the specific environment of semiconductor work, Winbond conducts comprehensive hazard notification and special operation education training for incoming supplier employees each year to ensure occupational safety and health. In 2023, a total of 5,977 hours of training were conducted, including sessions at the Zhubei Building, the CTSP and the Kaohsiung fabs.

## Suppliers / Contractors' Regular Environmental, Safety, and Health training

Topic	Content	Number of people	Total training hours (people * hours)	Factory
Equality in workplace	Training and advocacy on workplace bullying, abuse, harassment, etc.	26	13	CTSP fab
		22	11	Kaohsiung
		10	5	Zhubei
Epidemic prevention advocacy	Temperature monitoring and mask-wearing for employees/visitors/contractor personnel upon entry	26	26	CTSP fab
		22	22	Kaohsiung
		10	10	Zhubei
Occupational safety and health	Hazard notification and special operation education training for suppliers/contractors entering the premises	1,705	2,264.5	CTSP fab
		2,436	3,156	Kaohsiung
		318	556.5	Zhubei

## Deep Engagement – Suppliers ESG Co-learning workshop

Since 2023, Winbond has expanded the scope of its mutual learning workshop to include in-depth discussions on environmental resource reduction, climate change adaptation measures, greenhouse gas and carbon management, human rights and labor protection, as well as corporate governance and ethics. With the participation of 24 companies and a total of 286 attendees, the workshop accumulated a total of 9,438 hours of training. In addition to staying updated on the latest trends and developments in the semiconductor industry's ESG practices, Winbond gains diversified ESG insights through the selfless sharing of benchmark suppliers. This enables Winbond to acquire diverse ESG practices and obtain relevant new knowledge, such as low-carbon gas substitution and human rights due diligence. Internally, the workshop provides the latest industry information to various departments, facilitating Winbond's planning and execution of sustainability initiatives throughout its supply chain. Externally, the workshop gradually becomes a platform for members to showcase their sustainability beliefs and practices.



## Large -scale External Training – Upgrade + Forums/Advanced Packaging Technology Forum

### Internal ESG Training

Since 2022, Winbond has been implementing 'ESG Intelligence Enhancement Education and Training' initially aimed at its materials staff. Starting in 2023, staff involved in supply chain management, such as those from the materials department and outsourcing engineering department, have also been included in the ESG education and training programs. The training covers a wide range of topics, including sustainable cultural literacy, current climate change events, ESG fundamentals, carbon issues, and green energy development. In total, the training has provided 28 hours per person, amounting to 1,870 hours in total. Looking ahead, Winbond plans to introduce concepts of mandatory and elective courses and incorporate resources from academia and research institutions to assist staff in innovating within their existing roles and to continue advancing on the sustainability journey.

Course Categories	Times of hold
Supplier on-site training	3
ESG understanding and overview	3
Policies and regulations analysis	1
Carbon issues	2
Green energy overview	2
Sustainable discussions	1



■ Suppliers on-site visit

■ Monthly ESG training



### Sustainable Supply Chain Upgrade + Forums

The purpose of organizing the "Sustainable Supply Chain Upgrade +" forum is to enhance the acquisition of sustainable professional knowledge among suppliers and motivate them to implement this knowledge through professional courses and an open discussion format. The forum also encourages suppliers to invite other colleagues to leverage the learning and information diffusion effect, and to implement sustainable DNA in the operation of each supplier. In 2023, Winbond held a total of 3 forums. The topics include popular carbon issues, water resource management, supply chain resilience, and human rights due diligence management. The invited supplier categories include raw materials outsourced assembly and testing, machinery equipment, plant engineering, maintenance and spare parts, and waste management, etc. Besides providing professional courses, it is also a place to communicate key management policies. The total learning hours exceeding 5,000 hours.

#### Structure of Upgrade + Forums



### Advanced Packaging Technology Forum

Innovation is also a critical success factor for sustainable supply chains. Enhancing the R&D capabilities of outsourcing partners is tantamount to boosting the competitiveness of Winbond's products. This forum aims to facilitate direct communication between various units within Winbond and the outsourced assembly and testing sectors through bilateral communication, thereby inspiring products R&D that better serve future lifestyles. In 2023, the "Advanced Packaging Technology Forum" covered topics such as advanced packaging process introduction, Flash burning application, and appearance inspection solutions. Participants included engineers from various units of Winbond and outsourced assembly and testing factories, with a total learning hours exceeding 400 hours.



## Feedback From Ecosystem Members

To firmly advance alongside with suppliers on the sustainable journey, in 2023, Winbond expanded its sustainable operations in the supply chain from an ecosystem perspective (Note). In terms of the environment, cooperation focuses on low-carbon initiatives and joint beach cleanups; in terms of governance, Winbond invited suppliers to conduct procurement education and training together, thereby strengthening the sense of partnership between suppliers and Winbond. In terms of social inclusion, Winbond actively responds to the expectations of various stakeholders for sustainable supply chain management. Winbond firmly believes that in the face of a changing and challenging business environment, it is necessary to break away from linear thinking based on the supply chain, value chain, and industry chain, and to systematically reorganize and manage sustainability-related work with suppliers using a systemic approach in order to establish a sustainable growth mindset that embraces cooperation and mutual benefit in the long term.



**Note:** The definition of a Supply Chain Ecosystem refers to the planning and organization of various types of business activities, including flows of people, information, goods, money, and facilities, from the inside out in a value-co-creation and integrated manner

## ESG perspective



## Environmental



▲ Winbond's Large Leads Small initiative



▲ Winbond X DHL beach cleanup



## Governance



▲ Sustainable procurement training



## Social



▲ Sustainable seminar



▲ Kaohsiung fab visit

## Feedback from Ecosystem Members

## Greatek Electronics Inc.

Through the "Large Corporations Lead Smaller Ones On Energy Conservation and Carbon Reduction" project, we can feel that Winbond actively promotes energy conservation and carbon reduction. Its vision and dedication are worth learning from. During the process, both parties shared a common commitment to sustainability and created green value. This not only achieves mutual benefits in business but also serves as a concrete practice of responsibility to society and the environment.

## Walton Advanced Engineering, Inc.

Thanks to Winbond's invitation to participate in the "Large leads Small" project and government subsidy, we can accelerate the replacement of high-energy-consuming equipment to achieve energy-saving and carbon-reduction goals. By using the ISO 14067 carbon footprint standard, we aim to identify carbon emissions hotspots in our products. We look forward to establishing a mutually beneficial partnership with Winbond and taking steady steps towards the 2050 net-zero target!

## DHL Group

As a leading international logistics brand, DHL actively promotes sustainable development and provides innovative solutions to help customers implement green supply chains. We are honored to participate in the "ESG Learning Forum" hosted by Winbond this year, where we shared DHL's experience in promoting sustainable logistics. Furthermore, over 40 Winbond colleagues were invited to participate in a beach cleaning activity organized by DHL in Changhua, contributing to marine conservation efforts. We appreciate Winbond's invitation, which not only facilitates ESG exchanges but also helps convey our mutual commitment to sustainability and environmental goals. We look forward to expanding the scope of cooperation and embarking on the journey towards sustainable carbon reduction together.

## Topco Quartz Products Co., Ltd

It was an honor for us that Winbond led colleagues to our company for a visit and ESG exchange in 2023. Through mutual exchanges, we were able to convey our commitment and goals for sustainable development. We look forward to partnering with Winbond to achieve net-zero emissions and establish a win-win partnership.

## Department of Transportation and Logistics of Feng Chia University Department of Supply chain Management of Singapore University of Social Sciences

The semiconductor industry is one of Taiwan's highly competitive strategic industries and a key focus of global talent development. We appreciate Winbond's invitation to the Supply Chain Management Departments of Feng Chia University and Singapore University of Social Sciences to participate in a sustainability seminar on carbon emission monetization. We shared practical experiences in sustainable supply chain management in Taiwan's semiconductor industry and exchanged academic perspectives on carbon emission monetization. Winbond's dedication to corporate sustainability and proactive response to the expectations of various stakeholders is evident.

## The Allied Association for Science Park Industries – Procurement Committee and Water, Electricity, Gas, and ESH protection Committee

We deeply understand Winbond's pervasive culture of promoting carbon reduction and sustainable thinking during the visit to the green and low-carbon production advanced base in the Kaohsiung Fab. Winbond is not only a trusted partner for suppliers but also an exemplary company in Taiwan's electronics industry.

### 2023 Outsourcer Conference: Inspiring Sustainable Performance through Innovative Thinking

The success of Winbond Memory in the highly competitive market is attributed not only to the collective quality control efforts of all Winbond employees but also to the advanced and stable quality technologies proposed by various packaging and testing outsourcing suppliers. In 2023, outsourcers including PowerTech Technology Inc., Winstek Semiconductor Co., Ltd., KING YUAN ELECTRONICS CO., LTD., IMOS-ChipMOS TECHNOLOGIES INC., Createk Electronics Inc., Formosa Advanced Technologies Co., Ltd., Lingsen Precision Industries, Probe Test System Corp., and Walton Advanced Engineering, Inc.. Senior executives from these companies participated in the Outsourcer Conference with a 100% attendance rate.

At the conference, the Winbond CEO provided an in-depth analysis of the semiconductor industry market conditions to strengthen the collaborative efforts among outsourcers. Emphasizing the core competence of quality in memory products, heads of Winbond's manufacturing departments shared their experiences and insights on digital transformation, renewable energy, and carbon reduction management measures implemented in recent years. The goal was to promote sustainability within the supply chain.

With the incorporation of ESG criteria into the regular evaluation of outsourcers in 2023, Winbond conducted a comprehensive assessment based on factors such as packaging technology research and development, quality, delivery schedule, cost, service, and sustainability performance. Outstanding outsourcer awards were given in recognition of the outsourcers' continuous support and as an incentive for them to further enhance their green and low-carbon technologies.



#### ▪ 2023 Outsourcer Conference



PowerTech  
Technology Inc.



KING YUAN  
ELECTRONICS CO.



IMOS-ChipMOS  
TECHNOLOGIES INC.



Lingsen Precision  
Industries , Ltd.

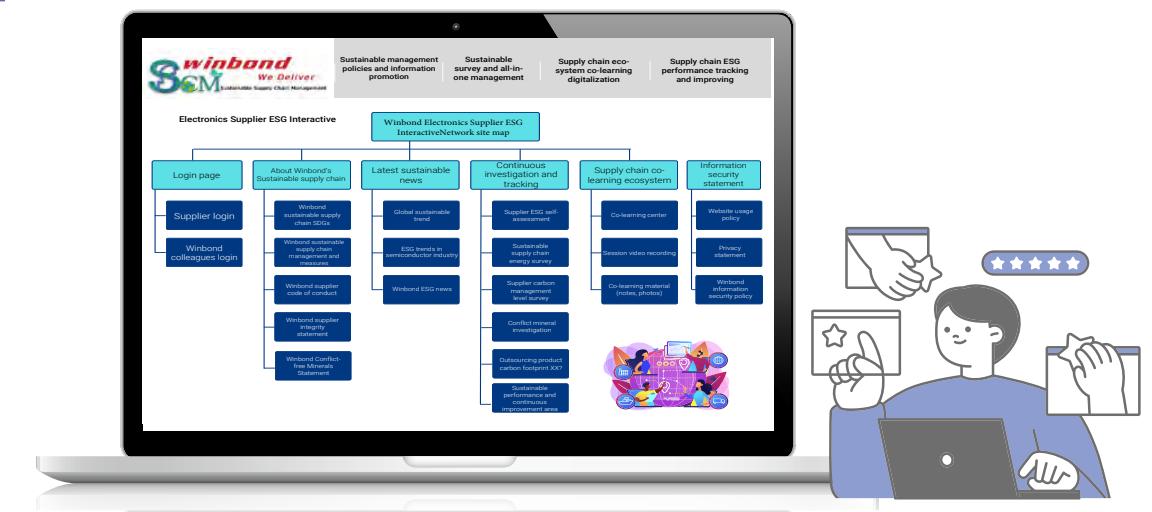


### Winbond Supplier ESG Interactive Network

In 2023, Winbond established the Supplier ESG Interactive Network, which integrates four major functions: sustainable management policy and information dissemination and promotion, one-stop management of sustainable surveys, digitization of supply chain ecosystem learning activities, and continuous tracking and improvement of supplier sustainability performance. Suppliers of Winbond can firstly access the latest trends in sustainable development in the semiconductor industry on the platform. Secondly, by reviewing their own records in resource management and ESG performance, they can directly obtain learning materials for sustainability training on this platform. Notably, Winbond is a pioneer in the semiconductor industry in the collection of information on outsourced product scope 3 emissions. Following the Pathfinder Framework 2.0 guidelines (note1), the platform has established a carbon emission standard data exchange module. These initiatives not only help reduce the burden on suppliers in providing data but also enhance the disclosure of carbon emission information in the supply chain.

Note1 The Pathfinder Framework 2.0 guidelines, established by the World Business Council for Sustainable Development (WBCSD), are a standard data specification created to enhance the transparency of greenhouse gas emissions in supply chains

#### ▪ Digital Management : ESG Interactive Network Map



## 4.4 Responsible Sourcing of Minerals

Winbond actively promotes the requirements of the Responsible Business Alliance (RBA) within supply chain, considering them to be fundamental elements of supply chain management. Following the management recommendations of the Organization for Economic Co-operation and Development (OECD) on due diligence, Winbond firstly issued a conflict-free minerals statement; and secondly, based on the composition of its products, conducts material analysis to identify suppliers that require focused investigation for further due diligence implementation. Suppliers are strictly required to select qualified smelters and update information within the validity period. Finally, each year, Winbond produces and publicly declares a conflict minerals due diligence report based on the investigation results. In 2023, a total of 17 suppliers directly related to Winbond's products and involving 3TG metals, cobalt, mica, and other minerals were investigated, with a 100% qualification rate.



### 2023 Results of Responsible Sourcing Management

- **100%** Coverage rate of suppliers receiving the conflict-free mineral policy advocacy
- **100%** New suppliers signed the Winbond CoC (including the conflict-free minerals)
- **100%** Qualification rate of surveyed suppliers



### Responsible Sourcing Management Process



### 4.4.1 Winbond Conflict-free Minerals Statement

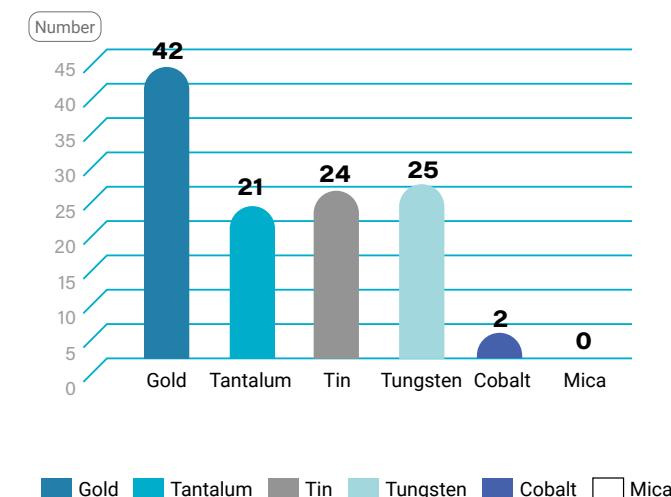
Winbond follows the Responsible Minerals Initiative (RMI) to conduct due diligence on the sources and governance of tantalum, tin, tungsten, gold, cobalt, and mica in its manufactured products to ensure that its procurement practices comply with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas or an equivalent and recognized due diligence framework. At the same time, Winbond also requires all suppliers to adhere to and sign relevant codes of conduct and ethical standards related to sustainability, employee ethics, the Universal Declaration of Human Rights, and the Tripartite Declaration of Principles concerning multinational enterprises and social policy by the International Labour Organization. They are also required to adopt green products, adhere to environmental protection policies, and comply with the Responsible Business Alliance (RBA) standards. In 2023, all qualified suppliers signed Winbond's Code of Ethics and Integrity and Winbond's Supplier Code of Conduct Commitment (including clauses related to RBA and conflict minerals statements), ensuring the absence of "conflict minerals from non-conforming smelters" and products from the Democratic Republic of Congo or adjacent countries and regions and compliance with applicable regional and international laws regarding responsible minerals.

### 4.4.2 Identification and Results of 3TG Metal Sources

Winbond initially determines the composition of each source product based on the Safety Data Sheets provided by suppliers, identifying whether they contain specific metals. Subsequently, Winbond uses the Conflict Minerals Reporting Template (CMRT) and Extended Minerals Reporting Template (EMRT) to investigate the sources of gold (Au), tantalum (Ta), tin (Sn), tungsten (W), cobalt (Co), mica, and other responsible minerals published by the Responsible Minerals Initiative (RMI) within suppliers' product components. In 2023, a total of 17 surveyed suppliers were investigated, with smelters of various metals located in 26 countries across North America, South America, Europe, Asia, and Central Asia.

A total of 114 qualified smelters met the requirements and did not engage in the sale of prohibited products to Winbond. In the future, Winbond will continue to adhere to the policy of conflict-free minerals and will regularly issue due diligence investigations and annual responsible sourcing due diligence reports. Winbond will also further plan on-site audits of each supplier and their associated smelters to ensure the integrity and transparency of the disclosed information.

**Number of Qualified Smelters for Various Source of Metal**





# SUSTAINABLE PRACTICES

## Human Rights and Social Inclusion

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- 127 |** 5.5. Social Impact



Winbond adheres to internationally recognized human rights standards as the highest guiding principles, along with relevant labor regulations. We are committed to safeguarding employees' rights to freedom of association and expression, without discrimination based on factors such as race, age, gender, sexual orientation, disability, pregnancy, politics, or religion. Our goal is to create a workplace environment free from discrimination.

At Winbond, we uphold a "people oriented" approach and adhere to international human rights conventions and labor-related regulations. Through our human resources department, we establish comprehensive personnel systems to ensure diversity, equality, and human rights protection within the company. In 2022, following a human rights due diligence investigation, we continued to optimize and reduce risks in 2023. We conducted employee surveys on core values and commitment, further enhancing our human rights governance measures. Notably, there were no violations of social-related regulations in 2023. Winbond will continue to lead employees in contributing to social welfare, creating value, and expanding our positive social impact.

### 2023 Performance Highlights

- 97% Employee Retention Commitment**  
Based on the results of the 2023 Employee Core Values and Engagement Survey, a significant number of employees expressed their intention to continue their careers at Winbond and contribute to the company for the next five years
- First Human Due Diligence Report**  
Published the first independence report in 2023
- +19% weighted number of disabled Employees**  
By the end of 2023, the number of employees with disabilities at Winbond increased to 56, after adjusting for the degree of disability.
- 100% Global Training Rate**  
of Human Rights and Labor Ethics Trainings
- Over NT\$330 million in childcare subsidies**  
Total NT\$331,974,559 was disbursed from 2011 to 2023
- NT\$ 1,590,000 average salary  
For full-time non-managerial employees**
- Nearly NT\$10 million was invested in the Semiconductor Program**  
Cultivating interdisciplinary semiconductor talents through collaboration with National Cheng Kung University
- Total NT\$ 18,110,000**  
Investment in social welfare in 2023

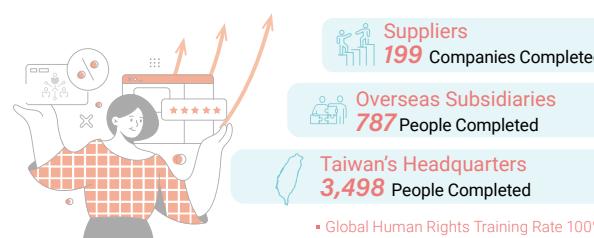


## 5.1 Human Rights Governance

Winbond places great emphasis on the development of human rights issues and, in line with the company's development updates, has continuously revised its [Winbond Human Rights Policy](#). The company has been actively involved in human rights management activities for many years. In 2022, for the first time, Winbond conducted a comprehensive [human rights due diligence investigation](#) among all employees. Based on the results of the investigation, in 2023, the company continued to optimize its human rights management practices in areas such as human rights training, working hour management, friendly workplace management, and talent development to reduce the occurrence and impact of human rights risks. Additionally, Winbond conducted an "Employee Core Values and Engagement Survey" to gauge employees' perceptions of core values, their implementation, and their commitment. This feedback is utilized to adjust company strategies, aiming to strengthen the commitment between the company and its employees in a mutually reinforcing manner.

### 5.1.1 Global Human Rights Training Rate

In 2023, Winbond conducted "Human Rights and Labor Ethics Training" for a total of 4,285 employees across 9 global subsidiaries, including those in the United States, Japan, Germany, Israel, and China. The training covered various topics such as working hours, forced or compulsory labor, bullying, and harassment, aiming to cultivate human rights awareness and shape a workplace culture that respects human rights. The global training rate reached 100%. Beyond internal initiatives Winbond extended human rights training to its suppliers. During the "Winbond Sustainable Supply Chain Upgrade+ Forum" in 2023, a session on "Supply Chain Human Rights Risk Management" training was held. This session included discussions on global trends in human rights legislation and analysis of human rights risks. A total of 199 suppliers participated both online and offline. These suppliers included raw materials suppliers, outsourced assembly and testing companies, machinery and equipment providers, plant engineering firms, maintenance and spare parts providers, and waste management companies. Through diverse communication channels and exchanges, Winbond advocated for the importance of addressing human rights issues, aiming to drive improvements and optimizations among its suppliers.

**Hsiang-Yun Fan**

Vice President, DRAM Product Business Group

In the commitment to upholding human rights and promoting social integration, the pursuit is endless; there is always room for more; in achievements in safeguarding human rights and promoting social integration, the standard is not merely 'good enough' but always striving for 'better'. This embodies Winbond's steadfast dedication to its employees and society, as well as the enduring goal of its management team.



### 5.1.2 Improvement and Optimization Of Human Rights Risk Management

Based on the 2022 [Due Diligence investigation](#), no high risks were discovered in this assessment. Winbond continues addressing the 6 issues, reducing their occurrence and the impact. The action plans are described in the table below:

Risk	Preventive Measures	Remediation Measures
Working Hours	<ul style="list-style-type: none"><li>Winbond has reviewed production capacity and manpower requirements regularly for talent recruiting and work arrangement.</li><li>Winbond has analyzed and addressed the issue through a mechanism and system for managing working hours.</li><li>Winbond has arranged regular annual training to enhance awareness of working hour management.</li></ul>	<ul style="list-style-type: none"><li>Winbond provides a variety of management tools to reinforce working hour management. These tools include daily, weekly, and overtime hour statistics sheets, to assist supervisors at all levels effectively monitor the overtime status of their subordinates and managing overtime work.</li><li>Regarding working hour management and regulations against forced labor or compulsory labor, continuous efforts are made to enhance employee awareness through annual "Human Rights and Labor Ethics Training." In 2023, to strengthen supervisors' understanding of working hour management regulations and regulations against forced labor or compulsory labor, supervisor training was conducted, with a total of participants, achieving a training completion rate of 93%.</li></ul>
Forced Labor	Annual training on forced labor issues for supervisors was arranged to enhance management awareness.	

**Table 1: Improvement and optimization of human rights risk management**

Risk	Preventive Measures	Remediation Measures
Bullying and Harassment	<ul style="list-style-type: none"> <li>▪ The measures for preventing workplace unlawful infringement and preventing workplace harassment, including sexual harassment, have been strictly implemented.</li> <li>▪ Winbond has held regular anti-bullying and anti-harassment management courses, and courses on communication techniques were arranged.</li> <li>▪ The prohibition of workplace unlawful infringement is regularly promoted through channels such as email, bulletin boards, or posters to ensure that employees understand the company's regulations.</li> <li>▪ An internal complaints channel is established, as well as a follow-up tracking procedure, in order to provide employees with sufficient channels for receiving help.</li> </ul>	<ul style="list-style-type: none"> <li>▪ To enhance awareness of unlawful infringement and improve supervisors' communication skills, the "Recognizing Wrongdoing" course was continued to be conducted annually in 2023. A total of 333 supervisors received training, and additional courses on practical communication and case studies were introduced covering prevention of wrongdoing, sexual harassment, and performance management. These courses were attended by 286 supervisors to ensure their understanding of the rules regarding wrongdoing and the correct crisis management procedures.</li> <li>▪ To reduce misunderstandings and disputes, the "Cross-Generational Dialogue and Leadership" course was launched in 2023. A total of 163 people participated in this training, assisting supervisors and colleagues in transforming their thinking and understanding principles of cross-generational communication.</li> <li>▪ Regular employees undergo "Human Rights and Labor Ethics Training," accompanied by public announcements prohibiting unlawful infringements in the workplace. Internal complaint channels are available, along with established follow-up and resolution procedures, providing employees with ample recourse options. Please refer to section 5.3, "Employee Relations."</li> </ul> 
Talent Training and Development	<ul style="list-style-type: none"> <li>▪ The comprehensive training and development programs are planned based on the Winbond's vision and core culture.</li> <li>▪ Internal job opportunities are announced, and channels are provided employees to apply.</li> <li>▪ Succession programs for key positions are established, focusing on long-term cultivation of key talents.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In 2023, various training initiatives were continuously promoted to develop business and expand training resources, encouraging employees to engage in proactive learning. A total of 126,224 trainees participated, accumulating a total of 189,725 training hours. For more details, refer to section 5.2.4 "Talent Development and Learning Outcomes."</li> <li>▪ Internal recruitments persisted in developing employee potential and offering a variety of development opportunities. Colleagues were encouraged to actively apply for internal job vacancies aligned with their individual career plans. In 2023, there were a total of 47 internal job postings, resulting in 8 internal transfers.</li> <li>▪ The management-level development program was sustained through 2023, with 39% of senior executives engaging in rotation-based training. For additional details, please refer to section 5.2.4 "Talent Development and Learning Outcomes."</li> </ul> 
Work Life Balance	<p>Winbond regularly organizes events such as parenting seminars and wellness workshops to provide employees with information and support for their personal lives, and to enhance their work-life balance.</p>	<ul style="list-style-type: none"> <li>▪ In 2023, a series of courses were planned, including topics on stress relief and sleep improvement, hypertension prevention, CPR &amp; AED training for all, and traffic safety seminars to enhance danger perception. A total of 33 sessions were conducted, with 3,885 participants. For more details, refer to section 5.4.1 "Health Services and Promotion."</li> </ul>
Physical and Mental Health	<ul style="list-style-type: none"> <li>▪ Diverse health promotion activities are regularly organized to provide our employees with accurate health information, and to enhance their ability to manage and improve their personal health.</li> <li>▪ Winbond regularly uses employee health check survey to assess employees' health risks and provide reminders and follow-up assistance to help improve their health.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Professional counseling services were provided in collaboration with the Employee Counseling Center to address various aspects of employees' lives, including career development, family relationships, emotional well-being, stress management, legal matters, financial issues, and workplace management, helping employees balance their physical and mental well-being.</li> <li>▪ In 2023, 3,314 employees completed workload assessment surveys and health check-ups. The company's healthcare center provided follow-up care for employees and facilitated appointments with physicians for consultations within the company premises. The care rate reached 100% in 2023.</li> </ul>

## 5.2 Talent Attraction and Development

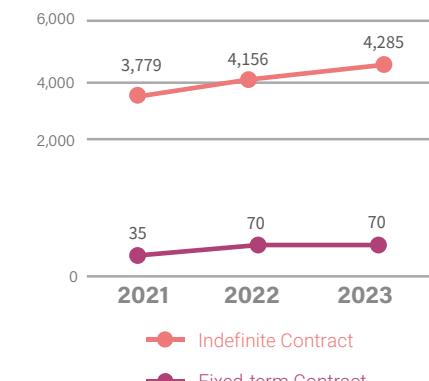
Winbond continues to enhance its human resource management system and optimize its human resource integration system. This includes improvements in recruitment, retention, compensation, benefits and talent development. Winbond is committed to promoting a people-centric corporate culture, increasing employee engagement with Winbond, and dedicating substantial resources to talent attraction and retention. In the face of global uncertainties, Winbond strives to maintain a strong competitive edge.

### 5.2.1 Workforce Structure

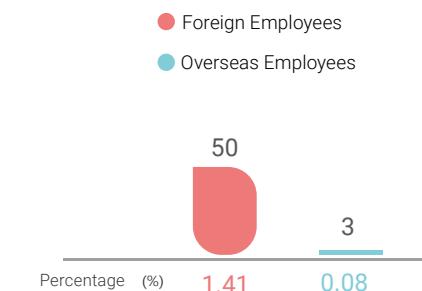
#### ■ Global Talent Deployment

As of 2023, the total number of employees at Winbond's Taiwan headquarters is 3,546, including 2,844 executives in research and development/production, administration/sales, as well as 702 production support personnel. The total number of overseas employees is 809, which includes 603 executives in research and development/production, administration/sales, as well as 206 production support personnel. The global workforce distribution is primarily in Asia, with the increase attributed to the acquisition of relevant semiconductor companies in Japan. This expansion continues to enrich global talent diversity and cultivate global international talent competitiveness.

#### ▪ Global Workforce Distribution (Unit: person)



#### ▪ Distribution of Foreign and Overseas Employees for the Taiwan Head Office



**Note** 1.Overseas employees are defined as expatriate employees dispatched from the Taiwan region.

2.The proportion of foreign and overseas employees is calculated by dividing the number of foreign and overseas employees by the total number of employees at the Taiwan headquarters.

#### ▪ Global Workforce Distribution (Unit: person)

Item	Headquarter (Taiwan)		Asia (excluding Taiwan)		North America		Middle East		Europe	
	Fixed-term Contract	Indefinite Contract	Fixed-term Contract	Indefinite Contract	Fixed-term Contract	Indefinite Contract	Fixed-term Contract	Indefinite Contract	Fixed-term Contract	Indefinite Contract
Male	16	2,360	11	598	2	58	5	27	3	1
Female	24	1,146	6	70	0	14	3	10	0	1
Subtotal	40	3,506	17	668	2	72	8	37	3	2
Total	<b>3,546</b>		<b>685</b>		<b>74</b>		<b>45</b>		<b>5</b>	



Employees classification according to GRI corresponds to fixed-term contract employees classified as temporary staff; indefinite contract employees classified as permanent staff. Winbond does not employ staff without guaranteed working hours.

## 2023 Employee Composition

Winbond conducts regular reviews of its workforce composition and formulates effective talent recruitment strategies to attract suitable professional talents, ensuring the company's competitiveness in the semiconductor industry. In 2023, Taiwan headquarters achieved 52% ratio of hiring master's and doctoral degree holders and a 35% ratio of bachelor's degree holders. Also, the overseas subsidiaries achieved 42% ratio of hiring master's and doctoral degree holders and 52% ratio of bachelor's degree holders to cater to the knowledge-intensive nature of the industry. Regarding age distribution, Winbond strictly adheres to domestic and international labor laws and the Responsible Business Alliance (RBA) Code of Conduct. The human resource department verifies the actual age of applicants to ensure compliance and refrains from employing child labor or individuals who have not completed compulsory education, guaranteeing that all employees are aged 18 and above. Generally, the age of our staff member ranges from 31 to 50 years old, accounting for approximately 74% of the total workforce while it's 64% in overseas subsidiaries.



### Ratio of Male to Female Employees



### Distribution of Employees' Educational Backgrounds



### Average Number of Non-Employee Workers per Month

2023	Zhubei	CTSP	Kaohsiung Fab	Overseas Subsidiaries	Average
	924	9,252	9,512	3,476	23,164



This number is calculated by averaging the total number of entries and exits from January 1, 2023, to December 31, 2023, over 12 months. Non-employee workers include, but not limit to those involved in waste disposal, transportation of finished or semi-finished products, environmental cleaning, security services, equipment maintenance, gas and chemical supply and filling, kitchen services, and equipment vendors.

### Distribution of Employee Roles



### Employee Age Structure

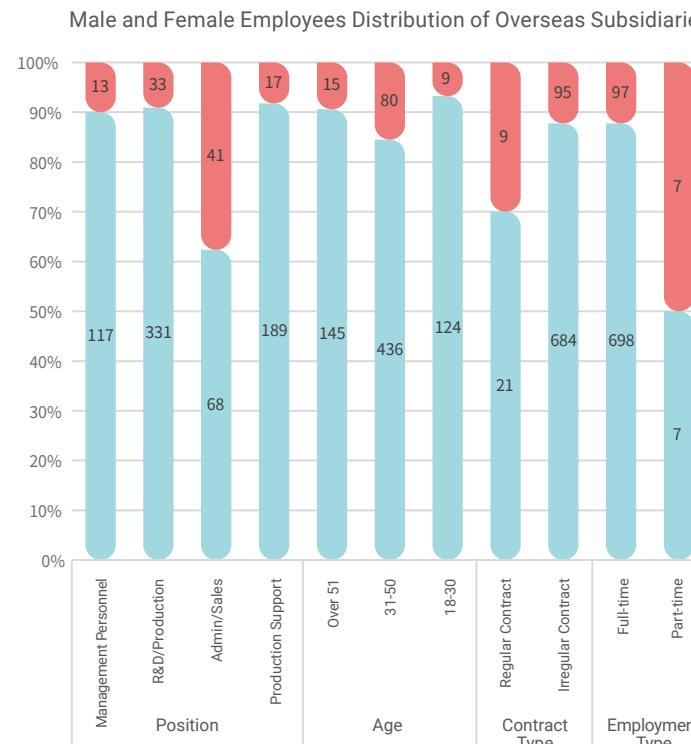
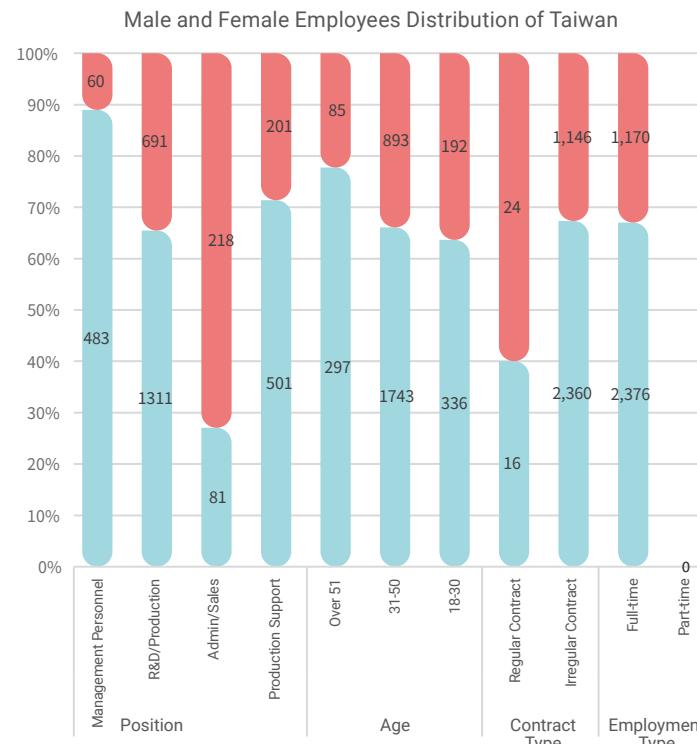


**Note:** The ratio is based on the total headcount as of December 31, 2023.

## Gender Distribution of Employees

Due to the nature of the technology industry and factors in the job market factors, the majority of Winbond's employees are male. In Taiwan, the total number of male and female employees is 2,376 and 1,170, respectively, with a male-to-female ratio of approximately 2:1. At overseas subsidiaries, the totals are 705 males and 104 females. Winbond maintains a certain proportion of female employees, treats employees equally, and provides job security without gender bias affecting talent selection or promotion. Despite the semiconductor industry being traditionally male-dominated nature, Winbond is committed to diversity and inclusion, continuously nurturing female talent in research and development. From 2021 to 2023, the proportion of female researchers has remained stable at over 20%,underscoring Winbond's dedication to providing equal opportunities for women in the semiconductor research and development field. In Taiwan, the employee structure is divided by job roles, with 543 supervisory staff and 3,003 non-supervisory staff. The age distribution of employees predominantly falls between 31 and 50 years old, with a male-to-female ratio of approximately 2:1. The predominant employment type at Winbond is non-fixed-term contracts, accounting for 3,506 employees, with no part-time employees in the region.

Overseas subsidiaries categorize employees by job roles, with 130 in supervisory staff and 679 non-supervisory staff. The age distribution of employees mainly falls between 31 and 50 years old, featuring a male-to-female ratio of approximately 7:1.The majority of employees at overseas subsidiaries are hired on a non-fixed-term contract basis, totaling 779, while 795 are employed full-time.



## 5.2.2 Talent Recruitment and Performance Evaluation

Winbond offers a competitive salary and benefits package that exceeds legal requirements, adhering to the principle of equality to attract and retain exceptional talents. We conduct quarterly reviews of benefits, as well as compliance with gender-related regulations. Additionally,we regularly survey the industry market conditions to adjust our employee compensation and benefits standards. Furthermore, we combine this with a robust performance evaluation system to reward outstanding performers. Through strategic talent management and appropriate workforce planning, we continuously introduce fresh ideas and perspectives to Winbond, contributing to our overall development goals.

## Diverse Recruitment Channels

Winbond values workplace diversity and actively recruits talent from different regions, age groups, and fields through various channels. These include job platforms, campus recruitment, social media, industry-academia collaboration, and internal referrals. Winbond also promotes internal job rotation to encourage colleagues to develop their skills and talents in suitable positions. This approach allows excellent talent to thrive within the company.

Since 2022, in response to the easing of the epidemic, Winbond has launched a summer internship program to provide students with opportunities for self-exploration and workplace understanding. In 2023, the program was expanded to include a series of courses, seminars, and internship projects, assisting students in enhancing their understanding of career paths and the [IDM semiconductor technology industry](#). The average hours completed by interns in the "Intern Self-Exploration and Pre-Employment Training" in 2023 is approximately 17.4 hours per person, significantly increasing compared to that of 2022. This ensures that each intern is equipped with the necessary skills for formal employment. In response to the company's diverse talent recruitment efforts, the internship employment rate in 2023 reached 88%, with a 12% increase in the proportion of female interns compared to the previous year. This ensures that the internship program helps students entering the workforce to eliminate gender gaps and encourage outstanding female talents to join the company. Through a series of summer internship programs, Winbond creates opportunities for excellent student to achieve mutual success.

## 2023 Recruitment and Retention

Winbond is dedicated to creating a diversified and inclusive workplace, providing an equal working environment, and firmly believes in the value of a diverse management team and employee composition. This approach enables Winbond to effectively capture market trends, understand customer needs, promote innovation results, and maintain a competitive advantage.

In 2023, Winbond recruited 161 new employees based at the head office in Taiwan and our annual new hire rate was 4.55%. Among the new hires, 46% were from the younger age group below 30 years old, while 50% were in the age range of 31 to 50 years old. This recruitment initiative aims to revitalize the organizational energy by injecting fresh talent and enhancing organizational effectiveness through the inclusion of experienced professionals. Meanwhile, Winbond's overseas subsidiaries companies recruited a total of 84 new employees in 2023, with an recruitment rate of 11.99%. Approximately 84% of these new employees were under 50 years old. Notably the new employee recruitment rate for female employees in Winbond Taiwan stood at 5.92% in 2023, higher than the overall annual recruitment rate of 4.55%. When including Winbond's overseas subsidiaries, the new employee recruitment rate for female employees in 2023 was 6%, also higher than the overall annual recruitment rate of 5.9%. This indicates that the recruitment rate of female employees is gradually exceeding that of male employees, and Winbond welcomes more outstanding female talents to join the semiconductor industry in the future.

In 2023, despite a decrease in talent demand within the semiconductor industry, Winbond maintained a healthy retention rate, and Winbond Taiwan's retention rate remained relatively stable compared to industry peers. An analysis revealed that the turnover rate for employees with less than one year of tenure at Winbond Taiwan was approximately 14%, which represents a nearly 10% decrease from the previous year's turnover rate for new employees. This decrease indicates that Winbond's retention policies, focusing on new employee training and corporate culture cultivation, have been significantly effective. Furthermore, statistical analysis showed that the turnover rate for employees with less than one year of tenure and aged below 30 at Winbond Taiwan was approximately 20.5%. This group accounted for about 25% of employees with less than one year of tenure, marking a significant decrease from the nearly 50% proportion observed last year. It is speculated that these employees are in a career exploration phase. To address this issue, Winbond launched a summer internship program, providing students with the opportunity to gain practical insights into job responsibilities. This program not only enable Winbond to connect with outstanding students but also fulfills our social responsibility by aiding in the career development of young professionals in the workplace.

### New Hiring and Turnover Statistics

Category	2023 New Hires			
	Taiwan		Overseas Subsidiaries	
	Number of People	Proportion of employees in category	Number of People	Proportion of employees in category
Female	69	43%	15	16%
Male	92	57%	79	84%
Over 51 Years old	7	4%	15	16%
31~50 Years old	80	50%	44	47%
Under 30 Years old	74	46%	35	37%

### Turnover Statistics

Category	Employee Turnover in 2023			
	Taiwan		Global Subsidiaries	
Number of People	Proportion of employees in category	Number of People	Proportion of employees in category	
Female	85	42.1%	7	13.5%
Male	117	57.9%	45	86.5%
Over 51 Years old	26	12.9%	13	25%
31~50 Years old	109	54.0%	32	61.5%
Under 30 Years old	67	33.1%	7	13.5%

The percentage of new hires/resigned employees to that employee category is that gender or age group divided by the number of new hires/resigned employees in 2023.

### New Hire Ratio

Year	Male		Female		Total	
	Number of people	Ratio	Number of people	Ratio	Number of people	Ratio
2021	457	20%	236	23%	693	21%
2022	426	18%	293	24%	719	20%
2023	171	6%	84	6%	255	6%

New hire rate is calculated as the number of new recruits for the year divided by the total number of employees of the same gender on December 31 of the same year. The global data is included since 2023.

### Employee Turnover Ratio

Year	Male		Female		Total	
	Number of people	Ratio	Number of people	Ratio	Number of people	Ratio
2021	207	9%	115	11%	322	10%
2022	236	10%	144	12%	380	10%
2023	162	6%	92	5%	254	6%

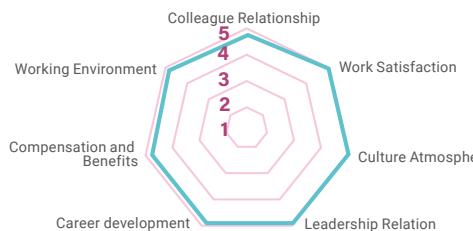
Employee turnover rate is calculated as the number of new recruits for the year divided by the total number of employees of the same gender on December 31 of the same year. The global data is included since 2023.

## Employee Core Values and Engagement Survey Analysis

**\*97% of employees are committed to contributing their talents to Winbond for the next five years.**

Winbond conducts the "Employee Core Values and Engagement Survey" every two years to adjust company strategies based on understanding employees' perceptions, implementation levels, and dedication to core values, aiming to strengthen the commitment between the company and its employees. In 2023, a survey was conducted for all employees and engineering assistants at the Taiwan headquarters, with a total of 2,738 responses collected, with a response rate of 78%, slightly higher than in 2021. The survey questionnaire is centered on five core values and includes additional questions related to leadership, career, and remuneration, totaling twenty-three questions. The survey results are categorized into seven dimensions based on the content of the questions. The overall average satisfaction score for the survey reached 4.85 points on a 5-point scale. Among them, the aspect of working environment had the highest average satisfaction score of 4.91 points. Additionally, Regarding job satisfaction, over 97% of the colleagues expressed their commitment to Enthusiastically contribute to improving Winbond and continue their employment with the company for the next five years. This high level of loyalty demonstrates their strong attachment to Winbond.

### Results of Employee Core Values and Engagement Survey by category



	Category	Response Rate	Average Satisfaction	Percentage of Agreement to Commitment
Tenure	Less than one year	77.04%	4.88	98.29%
	1-10 years	78.24%	4.84	97.47%
	11-20 years	77.80%	4.85	98.32%
	More than 20 years	78.06%	4.80	97.39%
Job Category	General Staff	78.05%	4.85	97.81%
	Middle Management	80.09%	4.81	97.79%
	Junior Level Management	62.50%	4.71	98.00%
Work Location	North	77.40%	4.81	97.10%
	Central	79.79%	4.86	98.29%
	South	75.35%	4.85	97.55%

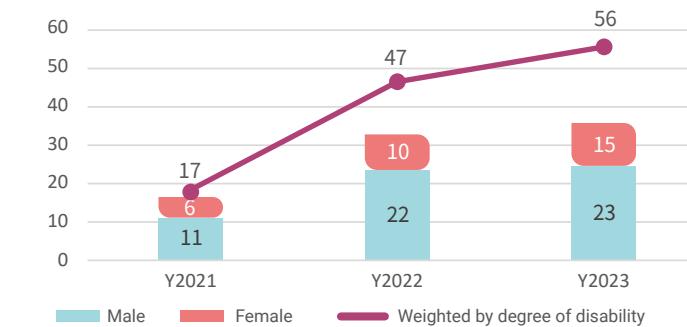
The survey results are used as a reference for policy formulation by taking into account differences in employee tenure, job category, and work location. Employees are also given the opportunity to anonymously provide suggestions to the company through the questionnaire, allowing the company to better understand the expectations and needs of its employees. This enables the company to promote a more conducive work culture, contributing to employee retention and improving the performance and efficiency of employees in different categories, thereby creating a more positive and friendly work environment.

## Recruitment of Disabilities

Winbond is committed to hiring people with disabilities and enhancing their employment rate. Our team is still working with disability-related organizations to search and recruit qualified workers with disabilities. By the end of 2023, we had 38 employees with disabilities, and 56 after applying weighted factors for disability severity. This is a significant 19% increase from last year, and it exceeds the legal requirement.

We value the contributions of our employees with physical and mental disabilities to our operations. Before they join us, we assess their individual needs and help them navigate practical matters such as transportation and work procedures. Our team also provide them with suitable assistance, equipment, and a supportive work environment, so they can work comfortably and show their talents. Since 2022, Winbond have also hired visually impaired massage therapists, who offer massage and acupressure services to our staff. This initiative helps reduce fatigue, improve health and well-being, and create job opportunities for visually impaired workers.

### Number of employees with disabilities



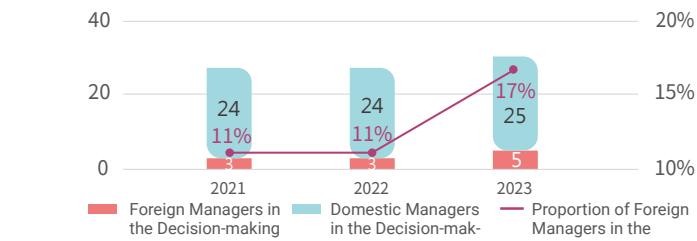
## Recruitment of Foreign Experts

On the path of sustainability, Winbond recruits talented individuals from around the world, offering equal opportunities for professional development to candidates from different countries. Through various channels, Winbond continues to reach out to foreign talent and provides comprehensive services to newly hired international employees, assisting them and their families with relocation, settling into their new lives, and offering other necessary support.

To expand the recruitment and attraction of global talents, in 2023, Winbond broadened the use of global talent recruitment platforms across all its international companies such as LinkedIn, thereby strengthening its global talent network in key regions including in Japan, United States, Israel, and China. By integrating external platforms with the Winbond recruitment website, the company effectively showcases various aspects of its work environment and increases opportunities for interaction with foreign candidates. Concurrently, Winbond is committed to fostering a diverse work environment. Through the 'Youth Salon' podcast program, titled 'Gathering World Talents in Taiwan, Working with International Colleagues, Are You Ready?' Winbond highlights its inclusive and open work culture, aiding foreign talents in understanding the company's culture and the opportunities for growth.

After several years of cultivating the foreign talent market, the average number of new foreign hires at Winbond experienced a significant increase from 2020 to 2022. However, in 2023, due to challenging external circumstances, recruitment slowed down. By the end of 2023, Winbond's foreign employees in Taiwan hailed from 9 different countries, with the majority coming from Japan and South Korea. We actively recruit professionals from various countries who are studying in Taiwan and have a keen interest in furthering their involvement in the semiconductor industry here, thereby enriching our team's diversity. Among all foreign employees, 37% hold managerial positions, with 26% serving as directors or higher-level executives. Additionally, Winbond continues to diversify its decision-making circle, with the proportion of foreign decision-makers increasing to 17% in 2023, fostering cultural integration and encouraging more innovative approaches.

### Proportion of Foreign Managers in the Decision-making Circle



Managers in the decision-making refer to managers above the rank of deputy director.

## Recruitment of Indigenous People

Winbond's embraces diversity, and in 2023, the Taiwan headquarters had a total of 15 employees with indigenous backgrounds. To safeguard their rights to participate in cultural activities, Winbond offers the option to apply for indigenous festival leaves, demonstrating the company's commitment to preserving and respecting Taiwan's precious indigenous culture.

- Number of Indigenous Employees and Applications for Tribal Festival Leave

Year	Number of Indigenous Employees	Applications for Tribal Festival Leave	
		Number of People	Percentage
2021	12	0	0%
2022	16	2	13%
2023	15	6	40%

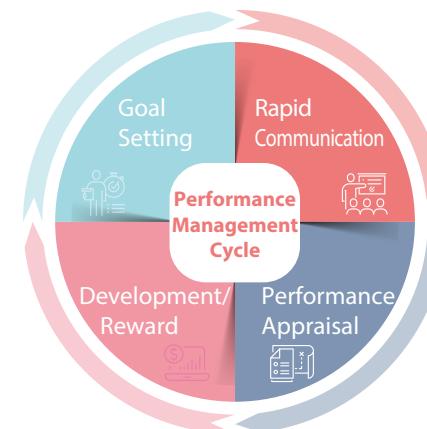
## Compensation Policy

To align the company's strategic direction with the performance goals of supervisors and frontline employees, Winbond has established a comprehensive performance management system. Through ongoing performance communication and discussions based on goal setting in daily activities, Winbond continuously evaluates " achievement of goals. This process assists employees in their work and in developing their personal capabilities. It also ensures two-way communication and real-time feedback between employees and their direct supervisors, thereby enhancing the company's competitiveness and the overall organizational performance.

During the probationary period of new hires, Winbond has implemented a mechanism for evaluate these employees. This involves gathering feedback directly from the new employees and assessing their performance by their supervisors, enabling the prompt confirmation of whether the new hires are suitable for their roles.

To ensure that employees can leverage their strengths and develop their potential, create organizational value, and achieve the company's overall operational objectives, Winbond has established a fair and impartial performance evaluation system. At the beginning of each year, performance goals are collaboratively set with employees. Progress towards these goals is regularly reviewed and tracked to identify areas for improvement. Mid-year and end-of-year evaluations are conducted through the performance management system to assess employees' goal attainment, review their job performance, and integrate competency assessment items, including core competency assessment, to enhance the company's culture (including sustainable contributions). Management and professional competency

assessments are also conducted to understand talent capabilities and identify talent gaps, emphasizing long-term and future career development planning for employees. Performance evaluation results serve as the basis for reward allocation, promotions, performance coaching, and other related activities. In 2023, both direct and indirect staff underwent performance evaluation assessments, with a participation rate of 100%.



### 5.2.3 Compensation and Benefits

Talent is a critical asset for any company, and at Winbond, we recognize the importance of attracting and retaining the best talent. To achieve this, we offer a highly competitive salary system and comprehensive benefits package, including generous base salaries, allowances, employee bonuses, and incentives. Employee performance evaluations are based on a holistic assessment of their job performance and professional knowledge and skills. Accordingly, employees receive corresponding bonuses and rewards. We believe in immediate bonus distributions, sharing the success of our operations with our employees, and continuously boosting their morale and motivation in the workplace.

The individual compensation is determined based on job responsibilities and professional skills, with bonuses and remuneration provided as rewards for comprehensive individual performance and contributions. Salary, benefits, evaluations, promotions, and other aspects are all objectively considered based on human rights principles, without discrimination based on gender, race, color, religion, political affiliation, sexual orientation, age, marital status, pregnancy, disability, blood type, zodiac sign, or representative status as a labor union member.

In 2023, Winbond's global entry-level employees' basic monthly salaries were all higher than the statutory minimum wage, and annual surveys of market salary levels were conducted to review and adjust salaries based on performance, rewarding and retaining talent. In the Taiwan region, the median ratio of the annual total compensation between the highest-paid employee and the general staff was 24.2:1 <sup>(Note)</sup>; and that the annual total compensation change ratio in 2023 was 0.6:1.

**Note:** Winbond calculates the ratio by averaging the total compensation (including fixed and variable pay) of the highest-paid employee in the organization over the past three years (from 2021 to 2023) and comparing it to the median average of total compensation of other general employees over the same period.

- Ratio of Entry-Level Salary to Local Minimum Wage

Region	Item	2022	2023
Taiwan	Direct Employee	1.4 times	1.3 times
	Indirect Employee	1.7 times	1.7 times
Hong Kong	Indirect Employee	1.2 times	1.2 times
Japan	Indirect Employee	1.6 times	1.6 times
China	Indirect Employee	3.9 times	3.9 times

**Note:** Direct employees are paid based on the basic monthly salary for inexperienced candidates. Indirect employees, on the other hand, are paid based on the basic monthly salary for inexperienced candidates with a college degree.

- Ratio of Entry-level Salary between Male and Female Employees

Region	2023 Minimum Starting Salary		Minimum Wage
	Female	Male	
Taiwan	1.7	1.7	1
Hong Kong	1.2	1.2	1
Japan	1.6	1.6	1
China	3.9	3.9	1

**Note:** Standard salaries are not different based on gender.

#### ■ Salary Statistics of Full-time Employees in Non-Management Roles

Item	2022	2023	Annual Difference
Number of Full-time Employees in Non- Management Roles	3,312persons	3,488persons	5.31%
Total Salary of Full-time Employees in Non- Management Roles	NT\$6,377,932,000	NT\$5,540,880,000	-13.12%
"Average Salary" of Full-time Employees in Non-Management Roles	NT\$1,926,000	NT\$1,589,000	-17.50%
"Median Salary" of Full-time Employees in Non-Management Roles	NT\$1,580,000	NT\$1,382,000	-12.53%

(Note) The above statistics are calculated according to the regulations of the Taiwan Stock Exchange.

#### ■ Employee Salary Ratio

Region	Type of Personne	Female	Male
Taiwan	Management	1	1.2
	Non-Management	1	1.1
Overseas subsidiaries	Management	1	1.3
	Non-Management	1	1.2

(Note) Management refer to employees who hold a position at the department head level or above and provide assistance and guidance to other department staff.

## ■ Outstanding Benefits

Globally, Winbond offers comprehensive benefits and measure for all employees, encompassing various aspects of their well-being. All the benefits are based on the local policy and better than that. These benefits range from performance-driven incentives and bonuses in the workplace to living allowances and employee vacations. Additionally, we provide diverse social clubs to foster a vibrant work environment. By availing these benefits, our employees gain motivation, achieve work-life balance, and find a sense of fulfillment in both their professional and personal lives.

In 2023, the total employee benefits <sup>note</sup> cost amounted to NT\$16,774,873,000 , including subsidiaries. This figure includes NT\$15,825,181,000 for short-term employee benefits and NT\$879,675,000 for post-employee benefits, and employee stock compensation NT\$70,017,000.

- (Note)
1. All welfare items are handled in accordance with relevant regulations, with the data presented primarily from the Taiwan headquarters.
  2. Short-term employee benefits refer to the employee benefits that are expected to be settled within the 12 months following the end of the period during which the employees render the related services (excluding severance benefits).
  3. Employee benefits expense includes health insurance, club subsidies, retirement benefits, and equity.

In response to the COVID-19 in 2023, Winbond continued to provide COVID-19 vaccine for employees. They were entitled to a one-day "Paid Vaccination Leave" to receive their COVID-19 vaccination. Furthermore, employees with children aged 11 or below who received COVID-19 vaccinations were eligible to apply for a one-day "Paid Pandemic Care Leave" to support their caregiving needs. This policy was in place until May 2023, when it was cancelled following the dissolution of the Central Epidemic Command Center.

#### ■ Total Employee Care

Bonuses	Festival Bonuses, Special Bonuses, Operating Performance Bonus, Motivation Fund, Winbond Star Bonus, Patent Bonus, Pension
Subsidies/ Insurance	Childbirth Allowance, Marriage Allowance, Childcare Allowance, Group Insurance, Retirement and Transfer Program
Leave	LOHAS Leave, Unpaid Parental Leave
Lifestyle Support	Foreign Employee Care, Health Exam, Health Care, Health Promotion
Clubs & Activities	Clubs(Sports, Arts, LOHA, Public Welfare), Family Day

#### Bonuses: Diverse Incentives

In 2023, Winbond utilized a diverse incentive bonus system to motivate employees towards innovation and enthusiastic learning. Three teams were acknowledged and awarded the "Winbond Star Bonus" for their exceptional contributions. The teams recognized include the D20 DRAM Process Development Team, the F45 NOR Flash Technology Development Team, and the DTCM People Empowerment Team.

#### ■ Diverse Incentive Bonuses

Item	Explanation
Special Bonuses	Winbond provides immediate rewards and recognition to employees who demonstrate outstanding performance in their job responsibilities or excel in special projects.
Operating Performance Bonus	Share operational achievements with colleagues quarterly based on the company's operational status.
Employee Remuneration	Every year, the company's profits are shared with employees based on the company's regulations, determining the total amount to be distributed. The rewards are then given to employees based on their contributions to the company and individual performance, acknowledging their dedication and efforts.
Motivation Fund	Winbond provides funding for colleagues to organize activities and gatherings, fostering a sense of camaraderie and strengthening the bonds among team members. These events serve to boost morale, maintain a positive work atmosphere.
Winbond Stars Bonus	Quarterly commendation of individuals and teams who demonstrate the core values of Winbond ("Conduct business with integrity and ethical behavior," "Accountable teamwork," "Enthusiasm of learning," "Aggressively innovate," and "Sustainable contribution." )and make significant contributions to the company.
Patent Bonus	Winbond encourages colleagues to engage in creative inventions and innovations related to product design, manufacturing, testing, application, marketing, and other areas.
In 2023, NT\$131,370,000 was awarded for the Taiwan area, and NT\$273,611,000 for overseas subsidiaries through our diverse range of incentives and bonuses.	



### Allowance/Insurance : Childcare Allowance

In response to government's encouragement of childbirth, Winbond has been implementing the "Childcare Allowance" policy since April 2011. Under this policy, each newborn child of Winbond employees receive a monthly allowance of NT\$6,000, which continues until the child reaches the age of 4. This initiative has significantly contributed to improving the birth rate among our employees. Since the policy's inception in 2011 until 2023, a total of 1,847 employees' children have received the allowance. Winbond has become a strong supporter for employees in caring for their families. This initiative not only eases the financial burden for new parents but also increases the retention rate of employees who choose to continue their careers while raising their children. As a result, our employees' overall happiness and well-being have been positively impacted, fostering a more family-friendly and fulfilling work environment.

#### ▪ Childcare Allowance Performance Statistics

Item	Description
Effect	<ul style="list-style-type: none"> <li>▪ Cumulative number of application and subsidy amount for children: From the implementation in 2011 to the end of 2023, a total of 1,847 children of employees have benefited from this program, with a cumulative disbursement of NT\$ 331,974,559</li> <li>▪ Total allowances in 2023: NT\$33,141,686</li> </ul>

### Allowances/Insurance: Group Insurance

Winbond's Taiwan and overseas subsidiaries provide comprehensive group health insurance systems based on the care for employees. In Taiwan, in addition to the labor insurance and national health insurance required by law for each employee, Winbond also offers a comprehensive group medical insurance system. This system includes regular life insurance, accident insurance, hospitalization medical insurance, and cancer insurance. The coverage extends not only to employees themselves but also includes their spouses and children. Furthermore, we offer optional self-paid group insurance plans that cover employees, their spouses, children, and parents. This approach allows employees to choose different coverage options based on their individual needs. With these comprehensive family group insurance plans, we aim to provide complete protection for both our employees and their families' healthcare needs, ensuring their peace of mind while working at Winbond. In 2023, the total premium payments for these insurance plans amounted to NT\$27,626,000.

### Allowances/Insurance: Pension Fund and Transfer Program

Winbond follows the local retirement laws and regulations in Taiwan and overseas subsidiaries to ensure employees' retirement benefits. In Taiwan, Winbond sets

aside retirement reserves for each full-time employee (old scheme) or contributes to retirement savings (new scheme). For those entitled to retirement benefits under the "Retirement Regulations" stipulated by the Labor Standards Act, they may apply for retirement with the company. The payment of employee retirement benefits is calculated based on years of service and the average salary for the six months before the approved retirement date and is paid within thirty days of the employee's retirement date. Employees with up to 15 years of service (inclusive) receive two units per year of service, while those with more than 15 years of service receive one unit per year of service, capped at a maximum of 45 units. In addition to contributing 2% of the monthly salary to retirement reserves, Winbond regularly reviews the contribution rate annually. If the balance is insufficient to cover the retirement benefits of eligible employees for the next year, the shortfall will be contributed to a special account held by the Labor Retirement Reserve Supervisory Committee at the Bank of Taiwan before the end of March of the following year. As of the end of 2023, Winbond's planned fair value of assets (consolidated) amounted to NT\$2,490,778,000, and the amount required to be set aside for future legal obligations has been recorded as accrued retirement benefit liabilities, resulting in a net defined benefit liability (consolidated) of NT\$ 1,683,585,000.

Under the contemporary Labor Pension Act scheme, Winbond contributes 6% of each employee's monthly salary to their individual retirement fund, corresponding with the salary grade. Employees are also encouraged to make voluntary contributions within the 6% limit to their retirement accounts based on personal preference. In 2023, the combined expenses for the retirement reserve (old scheme) and the retirement fund contributions (new scheme) reached NT\$264,053,000. Further information can be found in Winbond's consolidated financial report for 2023.

In the event of significant operational changes, Winbond will comply with the regulations of each operating location and provide advance notice to employees. We will offer necessary assistance, such as internal transfers or support in applying for relevant government subsidies, to ensure a smooth transition during such changes.

### Leave: Leave better than policies

To promote a healthy work-life balance for our employees, Winbond provides a "LOHAS Leave" system that exceeds the requirements of labor laws. From their first year of employment, employees are entitled to seven days of leisure leave per year (based on the proportion of time worked in that year). We also offer a flexible leave system where employees can take leave on an hourly basis, allowing them to plan their time off according to their needs. Furthermore, Winbond encourages employees to plan for longer vacation periods each year, enabling them to spend quality leisure time with their families and friends. This approach helps achieve a harmonious work-life balance and adds vibrant colors to their lives. In 2023, a total of 3,073 employees utilized the leisure leave, resulting in an 82% utilization rate.

Overseas subsidiaries also provide vacation benefits that exceed local regulations. For example, Winbond's Japanese subsidiary, AMTC, offers expectant mothers 14 days of maternity leave, which is more than the statutory requirement. Winbond's Japanese subsidiary, METC, provides newly hired employees with 22 days of paid leave from their date of employment, exceeding the statutory requirement of 10 days within the first 6 months of employment. In addition to statutory annual leave, subsidiaries in mainland China also implement a seniority-based leave system. Employees are entitled to seniority-based leave from their first year of employment, with the number of days increasing based on their years of service. Employees can also take leave by the hour or by the day, providing greater flexibility to encourage work-life balance. The utilization rate of seniority-based leave reaches 100% annually.

#### ▪ Leave : Unpaid Parental Leave

Winbond values the family and career development of its employees and encourages them to have children by offering extended unpaid leave for child-rearing. Through our flexible leave management system, employees can freely utilize leave to take care of their children and feel assured during their childrearing journey. In 2023, a total of 21 employees applied for extended unpaid leave for child-rearing. In 2023, 21 employees took advantage of this benefit. Compared to 2022, when the COVID-19 pandemic affected many people, the return-to-work rate in 2023 rose significantly to more than 88%. Moreover, all the employees who came back to work stayed with us, showing that Winbond supports its employees' families well. Winbond's overseas subsidiaries also have generous parental leave policies that go beyond the government welfare regulations, helping employees to balance their work and new family responsibilities.

#### ▪ Unpaid Parental Leave Statistics

Type of people	Male	Female
Number of employees entitled to unpaid parental leave in 2023 <sup>(Note 1)</sup>	342	118
A: Number of employees on unpaid parental leave in 2023	7	14
B: Number of employees that should be reinstated in 2023	8	18
C: Number of employees actually reinstated in 2023	7	16
D: Number of employees reinstated in 2022	2	6
E: 2022 reinstatements - Number of employees still with the company after one year <sup>(Note 2)</sup>	2	6
Return to work rate % = C/B	88%	89%
Retention rate % = E/D	100%	100%

<sup>Note 1</sup> Based on the government regulations that allow employees to apply for childcare leave for up to two years before their child reaches the age of three, an estimation was made based on the number of employees who took maternity leave or paternity leave since 2020.

<sup>Note 2</sup> From the effective date of the employee's return to work, counting continuously for one year without any leaves, the calculation period was until December 31, 2023.

## Lifestyle Support: Foreign Employee Care

To enhance our processes and elevate the quality of our research and development talent, Winbond actively seeks to attract outstanding overseas professionals. When foreign employees relocate to Taiwan, they may initially encounter challenges adapting to new living habits, language, and culture. To support our colleagues and their families in this transition, we meticulously manage their housing arrangements and assign dedicated personnel to maintain close communication with them from pre-arrival to onboarding. This ensures we accurately understand the needs of our foreign colleagues and their families. We arrange airport pickups and accommodations in advance and, during the pandemic, provided comprehensive guidelines for entry into Taiwan, ensuring real-time updates on epidemic prevention information. Furthermore, our dedicated team at Winbond offers assistance in every aspect of life and work for our foreign employees. This includes help with residency permit applications, work document processing, school enrollment for their children, finding accommodation in Taiwan, and providing guidance on company policies and government regulations. We take pride in being a solid support system for our foreign colleagues in this foreign land. As of the end of 2023, the average tenure of our foreign employees at Winbond is 5.9 years, with 43% having been with the company for five years or more.

**Note** Including their tenure at the subsidiaries

## Lifestyle Support: Health Promotion

In 2022, Winbond has been hiring professional masseurs to provide massage services for our employees. This initiative not only creates employment opportunities for people with disabilities but also enhances employee benefits by offering free massage services to our colleagues. Our aim is to help our employees alleviate fatigue, boost work efficiency, and create a more relaxed and productive work environment. In 2023, Kaohsiung fab also started this service to benefit more people. In 2023, a total of 7,000 more employees enjoyed these massage services, which help to loosen muscles, alleviate shoulder and neck pain, enabling our employees to release work-related stress during their short breaks.



Provide employees with free visually impaired massage services

## Club & Activities : Clubs

Winbond has established a variety of diverse clubs to encourage employees to engage in activities that promote health and well-being, as well as participate in community service. We have implemented the "Employee Welfare Committee Club Subsidy Management Measures" to support and promote these clubs' activities.

As of 2023, there are a total 34 registered clubs(5 newly established), categorized into four types based on their activities: sports, leisure, arts, and culture, and community services. Because Due to the easing of the COVID-19 pandemic, various clubs have begun to hold physical activities one after another, making the company clubs more active.

### Diverse Club Activities

#### Club type: sports

There is a total of 23 sports clubs, encompassing various ball sports, cycling, running, and other related activities, accounting for 57% of all clubs. Notably, several high-level executives actively participate in these clubs, setting an example and encouraging their departmental colleagues to engage in sports and foster a healthy lifestyle. Among these clubs, the CTSP Badminton Club and Softball Club have consistently achieved outstanding results in the "CTSP Cup Annual Ball Sports Competition" year after year.



#### Club type: public philanthropy

There is a total of 1 club, representing 2% of all clubs. Named "Silent Givers Club," its mission is to silently engage in charitable activities, focusing on activities such as caring for the underprivileged, providing social services, and promoting environmental sustainability. The club aims to fulfill its corporate social responsibility as a good corporate citizen. Since its establishment in 2010, the Silent Givers Club has organized various initiatives, including environmental cleanups in local communities, dream-fulfilling events, environmental repairs in childcare institutions, environmental engineering projects, and the Happy Children's Breakfast Program.



## Club & Activity: Family Day

### Carbon Neutral Family Day

The 2023 Winbond Carbon Neutral Family Day, themed 'Embracing AI for a Sustainable Green Future,' symbolizing the company's leadership in future ESG sustainability through the integration of AI technology. From the planning stage, the Family Day was designed to implement various sustainable actions, enhancing the sustainable value of the event.

Since 2022, Winbond has responded to the trend towards net-zero carbon emissions by hosting its first Carbon Neutral Family Day, using the purchase of voluntary carbon credits to offset emissions. To continue the sustainability concept, for the second consecutive year, the Family Day event underwent carbon emission inventory. Carbon emissions were offset using Winbond's own voluntary carbon credits, with formal offsets applied through the CIX platform from international carbon credit certification agencies, thereby creating another Winbond "Carbon Neutral Family Day."



### Implemented Sustainable Life in Every Aspect

#### Environmental



- For the first time, electronic payments were implemented through a dedicated app at the booths.
- Encouraged employees to use eco-friendly tableware with discounts.

#### Economic



- Priority support for local manufacturers.
- Procuring environmentally friendly products.
- Driving more cross-sector collaboration.
- Inviting nonprofit organizations to set up booths.

#### Social



- Winbond extended invitations to both its employees and the children sponsored by the company to participate in the Family Day event, which included a visit to the National Palace Museum Southern Branch for a cultural and artistic journey.
- Sustainability education was promoted through the creation of an online ESG digital community and the organization of physical "Sustainable Engagement" experiential activities.

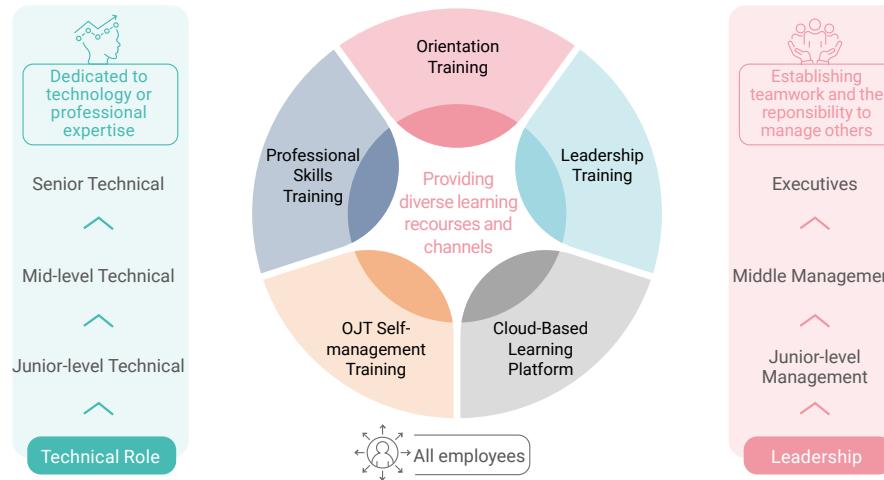
### Corporate Song Presents Our Sustainability Culture

During the Family Day, Winbond's Chairman and CEO, Arthur Yu-Cheng Chiao, President, James Pei-Ming Chen, and senior executives led the colleagues in a spirited rendition of the Winbond corporate song, fostering cohesion and perpetuating corporate culture, inspiring everyone to face future challenges together.



## 5.2.4 Talent Development and Learning Outcomes

Every year, Winbond aligns its training and development programs with the company's strategy, vision, business decisions, and core culture. These initiatives are further supported by training needs assessments, which allow for the planning and implementation of various training programs based on organizational levels, professional capabilities, and specific target groups. Under "dual-track talent development system", employees have the flexibility to choose between continuously enhancing managerial skills or deepening expertise in specialized technical areas, depending on their individual development goals and job requirements. Additionally, in 2023, Winbond continues to emphasize digital transformation, including the establishment of an AI learning roadmap, certification systems, promotion of data analytics tools, and the promotion of a diverse and inclusive workplace environment.



### Training Effectiveness Evaluation

To track and ensure the effectiveness of training programs, Winbond employs a four levels education and training evaluation model based on the nature of the courses. This evaluation process examines whether the training align with their intended objectives. Moreover, Winbond encourages employees to apply what they have learned directly to their work. As part of this approach, certain training include assessments, post-training assignments, project presentations, and one-on-one interviews to reinforce the principle of adult learning, which emphasizes the immediate application of acquired knowledge and skills.

#### Satisfaction with Talent Cultivation Courses in 2023



Average rating for  
in-person  
courses

4.6/5 points



Average rating for  
online  
courses

4.2/5 points

Winbond provides a diverse range of training resources and activities aimed at enhancing the professional competence of its employees. For direct employees, the focus of training lies in on-the-job learning, machine operation training, and company culture or strategy promotion events. This approach ensures continuous improvement and development. For indirect employees, professional training is tailored according to their job functions and respective hierarchical levels. Given that a higher proportion of female employees work in administrative support units, their required professional knowledge and skills are primarily acquired through on-the-job learning. As a result, the average training hours for male employees are slightly higher than for female employees.

#### Number of Employees Receiving Professional Training and Number of Hours

Course type	Number of courses held	Total number of trainees	Total training hours
Core	131	8,014	10,063
Professional Specialization	2,627	96,395	125,745
Data Science	616	12,963	32,094
Management	289	8,852	21,823

#### Total Number of Education and Training Hours Sorted by Gender and Employee Type

Total employee education and training (hours)	Management	Non-management	Total training hours
Female	4,389	29,377	33,766
Male	32,698	123,261	155,959
Total training hours	37,087	152,638	189,725

#### Number of Employees Receiving Training Categorized by Employee Gender and Type

Category	Management	Non-management	Total number of people
Female	76	685	761
Male	565	2,496	3,061
Total training hours	641	3,181	3,822

Note: The training hours are calculated for all global staff.

#### Average Employee Training Hours Sorted by Gender and Employee Type

Category	Management	Non-management	Total average training hours
Female	58	43	44
Male	58	49	51
Total training hours	58	48	50

Note: Supervisors refer to employees at the level of section chief or above who assist and guide departmental staff.

## ■ Designing A Training System Based On Competency Concepts

Winbond's training blueprint encompasses three dimensions: core competencies (company culture), professional competencies, and managerial competencies. This design allows colleagues from different units to receive training according to the abilities required for their positions. In 2024, Winbond will continue to prioritize the enhancement of data science capabilities (including AI skills) within the professional domain.

### ■ Orientation Training

In 2023, Winbond used an online learning platform to provide new employees with online training courses when they reported to work, including life guidance, culture promotion and introduction of various company policies. 21 courses were provided in total. The average satisfaction rating for all training courses in 2023 was 4.23 (out of 5) and the completion rate was 100%.

Winbond organizes a two-week "New Recruits Boot Camp" for new employees with less than three years of professional experience. The program aims to provide them with comprehensive training, including knowledge and skills acquisition, sharing of experiences from senior colleagues and supervisors, and immersive cultural experiences. The boot camp is designed to foster a sense of organizational identity and enhance employee retention. In 2023, after the pandemic, the new training program aimed to strengthen elements of physical interaction and communication, which were lacking during the pandemic period. The training integrated real-world puzzles and tasks to convey Winbond's knowledge and cultural essence over a two-week period, assisting participants in enhancing their team awareness. The satisfaction rating for this training session averaged 4.67 out of 5.

## ■ Cultivating Management Talent and Leadership Succession

Winbond's well-established leadership talent development program facilitates smoother management operations within the company. In 2023, Winbond remains committed to prioritizing the development of management talents. The company systematically nurtures key talent pipelines in areas such as business administration, professional technical skills, and leadership.

### Continuously Developing Leadership

In the face of organizational globalization, Winbond places particular emphasis on the selection and long-term development of its supervisors. Contin-

uously, through a suite of assessment tools, job rotations, project experiences, management training courses, and external training at prestigious international institutions like Harvard, Winbond fosters the exchange and development of management talents.

- Frontline supervisors are crucial cornerstones for maintaining the organization's day-to-day operations. A developmental training framework of "Assess → Learn → Practice → Evaluate" guides supervisors in making informed talent selection decisions through systematic selection processes. It also supports them in setting effective goals for their subordinates and fostering confidence and accountability within the performance management cycle, thereby enabling peak performance. In 2023, about 70% of new supervisors completed this training series.
- The performance management system serves to align company policies and organizational goals downwards accurately and consistently. Simultaneously, it serves as a basis for employee cultivation and development. In 2023, 67% of frontline supervisors at Winbond continued to enhance their performance management capabilities through participation in performance communication meetings and performance management courses.
- Professional and managerial experience is an essential internal asset for enterprises, especially in the era of globalization and integration. In 2023, Winbond's internal management wisdom-sharing sessions featured short talks of 20-30 minutes by domestic and international mid-to-senior-level executives. This initiative not only hones the public speaking skills of supervisors but also digitally archives their vast experience, thereby continuously enriching the pool of digital course resources.
- Ongoing collaboration with esteemed external professional consulting teams has enabled in 96% of mid-to-senior-level executives understanding their strengths and areas for development through management competency and personality trait assessment tools. This aids in discussing and planning their personal development plan.
- Continuing the rotation mechanism to cultivate supervisors' cross-functional capabilities and inheritance of organizational experience among supervisors, since 2022, 39% of supervisors at the department-level and above have undergone unit rotations or promotions, including cross-border rotations for senior executives.
- In 2023, the establishment of the "Senior Executive Development Committee" invited directors to serve as workplace mentors for managers, passing on leadership experience and management wisdom. Additionally, external training resources are supplemented to expand managers' knowledge beyond their field and enhance their international perspective.



### Diverse Achievements, Extraordinary Results

- In 2023, Winbond promoted a diverse and inclusive workplace environment through language assistance measures, training programs, and seminars.
- The average ESG-related training hours per person were 1.75 hours, aiming to enhance understanding and integration of ESG values into daily work.
- To encourage cross-language communication, Winbond continued to offer language assistance in English, Japanese, and Korean, providing 50% subsidy for language training upon achieving learning outcomes. Employees could also apply for rewards upon reaching language proficiency levels.
- Throughout the year, seminars in English and Japanese covered cultural understanding, conversation skills, and leveraging AI tools to strengthen language proficiency, facilitating smoother cross-cultural communication.
- A "Cross-Generational Dialogue and Leadership" course was conducted to promote understanding and respect for employees from different generations, enhancing communication quality and relationship building. The course received a satisfaction rating of 4.88 out of 5.
- An "Unconscious Bias Elimination" course was held to help supervisors recognize and address biases, with practical exercises to apply learning in daily work, achieving a satisfaction rating of 4.6 out of 5.
- In recognition of the importance of women's influence, Winbond organized special seminars and training courses in 2023 to help female employees recognize their importance in the workplace, build confidence, and challenge themselves.



**Promoting Continuous Enhancement of AI Competencies in Digital Transform**

To enhance and promote AI courses, an internal AI Learning Certification System has been established within the company, allowing learners to easily access course information and track their progress. Supervisors can also use the platform to understand the learning status of their team members and their latest certification progress.

- The AI Learning Certification System not only provides online course resources but also accumulates a total of 15,768 training hours across the series of online courses.
- Additionally, the AI Learning Certification System synchronously integrates AI practical classes, and outcome presentations as training resources. Five rounds of AI practical classes have been conducted since the beginning of 2022 until the end of 2023, with a total of 183 participants and 4,758 training hours accumulated, achieving a 100% pass rate.
- Colleagues follow the AI learning certification roadmap and can obtain AI learning certification only after completing courses, passing exams, and presenting achievements.
- With the launch of the ChatGPT chatbot by the end of 2022, Winbond has gradually promoted various applications of ChatGPT to enhance employees' productivity and efficiency through the introduction of various generative AI tools. In 2023, Winbond provided a series of courses including ChatGPT concept seminars, Github Copilot implementation training, and Microsoft 365 Copilot introduction, with a total of 4,375 training attendees.
- Winbond has developed its first proprietary generative AI application tool - Winbond-exclusive ChatGPT, which provides employees with access to information and learning new knowledge in a secure environment. Before using Winbond- exclusive ChatGPT, employees must pass certification courses. As of 2023, 540 employees have been certified and started experiencing this tool.



## 5.3 Employee Communication and Relations

Winbond conducts regular market surveys to adjust its employees' salary and benefits standards in line with industry trends. Together with comprehensive performance evaluation system, the company offers a compensation package that not only exceeds legal requirements and is competitive to attract and retain exceptional talent. In 2023, Winbond was honored with the "2023 Happy Enterprise Gold Award" by 1111 Job Bank. Winbond also highly values employee feedback and rights, offering a variety of communication channels for employees to express their views and engage effectively with the company at any time.



The Gold Level Award For '2023 Happy Enterprise' From 1111 Job Bank

### 5.3.1 Open Employer-Employee Communication

Winbond respects employees' freedom of assembly and collective bargaining rights, as stated in the "Corporate Social Responsibility Management Procedure," detailing employees' rights. While Winbond has not established a labor union, it facilitates various functional, regular communication meetings, including quarterly labor-management meetings, supervisor management discussions, production management meetings, and quality retraining sessions. The company offers diverse, open, and transparent communication channels, such as physical suggestion boxes, the 75234 ("I want to complain") hotline, the "Care" Employee suggestion mailbox, the Sexual Harassment Employee Complaint Committee, employee welfare committees, and environmental and safety committees. In the current year, a total of 12 labor-management meetings were convened to regularly review labor-related laws and ensure compliance with regulations, with the findings jointly reviewed during labor-management meetings. Additionally, 4 manager management discussion meetings were held, involving a total of 2,099 participants and achieving an average attendance rate of 88%.

Winbond employees have the option to express their opinions or offer suggestions either anonymously or by name through various communication channels. The company employs confidential measures tailored to each channel's nature for the handling, processing, and content of complaints, ensuring that the complaint handling process and content remain strictly confidential. Individuals responsible for addressing complaints or reports are obligated to maintain absolute confidentiality regarding the identity and content shared by complainants/reporters. Cases are treated and managed as confidential projects, with identities disclosed only with the complainant/reporter's consent. Moreover, Winbond actively gathers employee feedback, both regularly and irregularly, through focus groups and individual interviews, utilizing this input as a foundation for enhancing management policies and service quality. Additionally, training sessions are organized for all newly hired employees or unit managers to guarantee comprehensive awareness of the available communication channels.

In 2023, Winbond processed a total of 48 proposals received through both physical and online suggestion boxes, channeling employee feedback to the relevant business units for enhancement. Subsequently, responses were provided to the employees who submitted the proposals, ensuring effective internal communication channels. The "75234 (I want to complain)" employee feedback hotline and the Care Complaints mailbox collectively addressed 14 cases. These included 5 cases of workplace misconduct (bullying), 2 cases of sexual harassment, 3 suspected violations of work rules, and 4 communication disputes along with workplace environment maintenance disputes. All reported cases were managed in accordance with Winbond's internal complaint procedures, including relevant investigations, hearings, and decisions. For cases involving workplace misconduct, a specialized investigation team was formed in line with national guidelines on workplace misconduct. Once decisions were determined, efforts were made to communicate with both the complainant and the accused to reach a consensus on the resolution.

In 2023, the Sexual Harassment Employee Complaint Committee investigated 1 case and provided appropriate solutions for the individuals involved, including access to employee assistance programs and psychological counseling interventions. Moreover, in-house training focusing on sexual harassment and workplace bullying was intensified to raise awareness about relevant laws, incident patterns, and preventive measures. All case processing steps and decisions complied with national laws and Winbond's internal policies. After reaching investigation conclusions, the effectiveness of the implemented solutions was continuously monitored, and the well-being of the employees who lodged complaints was closely observed for three months to guard against any retaliatory actions. In instances related to management issues or negative workplace attitudes and behaviors, personal details were kept confidential, and company-wide announcements were made to raise awareness. Simultaneously, management was notified to assist units in conducting employee education and training on work rules to prevent similar incidents.


**Diverse Channel for Employee Feedback**

**Suggestion Boxes**

Near the employee cafeteria and production line restrooms, there are suggestion boxes provided for all employees to share their feedback and suggestions related to work and life.


**Grievance Hotline**

Winbond has established the "75234 (I Want to Complain)" hotline for employees to provide their feedback and complaints. To file a complaint, employees are required to complete the "Internal Complaint Form" and submit it either in writing or by mail to the human resource department or the designated "Employee Feedback Box." A dedicated team is responsible for handling and addressing these complaints. Furthermore, in order to safeguard the rights and interests of employees and job seekers and to ensure a work environment free from sexual harassment, Winbond has established the "Workplace Sexual Harassment Prevention Measures" in accordance with the Gender Equality in Employment Act. The company has set up a "Sexual Harassment Prevention Awareness Website" and formed the "Sexual Harassment Complaint Review Committee" to handle sexual harassment cases.


**Factory Communication and Discussion Meetings**

Every six months, factory supervisors host communication and discussion meetings with direct personnel to engage in two-way communication on management and production issues, as well as online operations. Additionally, there are also focused re-education courses on quality or Responsible Business Alliance (RBA) Code of Conduct to ensure compliance with industry standards and guidelines.


**Labor-Management Meetings**

Regular labor-management meetings are held to facilitate open dialogue between all employees. Labor representatives are elected by the workforce on a periodic basis. During these meetings, employee suggestions and feedback are collected every quarter. The discussions revolve around labor-management relations, promoting cooperation, improving working conditions, enhancing welfare, and increasing work efficiency. The aim is to foster effective communication, address concerns, and find solutions collaboratively.


**Management Conference**

The purpose of management conferences is to facilitate direct two-way interaction between all managers and the Chairman and President. The main objective is to engage in open discussions and communications on various aspects of company operations, management systems.

## 5.4 Occupational Safety and Health

### Safety, Health, and Environmental Policy

The Winbond endeavors to meet advanced international safety, health, and environmental standards and is committed to providing employees with a compliant and healthy working environment through respect, care, counseling, and participation mechanisms. Continuous improvement is used to promote employee safety, eliminate hazards, implement enterprise with sustainable development. For details, please refer to the [Safety, Health, and Environmental Policy](#).

### 5.4.1 Occupational Safety and Health Management System

Winbond endeavors to meet the advanced international safety, health and environmental standards and is committed to providing employees with a complying and healthy working environment through respect, caring and counseling, and participation mechanisms. Continuous improvement is used to promote employee safety, eliminate hazards, reduce environmental, health, and safety, and asset risks, being committed to zero accidents, zero work-related injuries, and reducing environmental loads. Through the optimization of prevention and improvement measures, we gradually reduce the rate of personnel injury, implement the concept of safety and health, and become a green enterprise with sustainable development. The safety, health, and environmental protection policies and objectives can be found on our company's sustainability website.

The participation of front-line workers is also important. Winbond has established relevant procedures to ensure that labor representatives can participate in ESH policy revisions and related safety proposals and communications. In the composition of the Winbond Occupational Safety and Health Committee, the proportion of labor representatives is better than the legal requirements, reaching 44%. The relevant proposals and communications in 2023 mainly fell into three categories: safety, health and environmental protection. The business management unit made responses in the meeting, which were confirmed by the Chairman; and all cases were closed.

At the beginning of the safety and health plan, Winbond has already considered relevant frontline workers. For instance, the risk hazard identification enforcement personnel are all trained by the unit workers before carrying out their duties.

- Additionally, during the semi-annual environmental monitoring or abnormal accident discussions, labor representatives are also required to participate.

#### ESH Committee

Member	A total of 34 members, composed of representatives from management, representatives nominated by various departments, labor representatives elected by employees, and safety, health, environmental, and health management personnel. Among them, the 15 labor representatives elected by employees exceed regulatory requirements.
Frequency	Regular meetings are held every quarter to discuss safety, health and environmental protection issues.
Responsibilities	Provide adequate channels for employees and managers to communicate face-to-face on safety, health and environmental protection issues; each department has a safety, health and environmental protection officer, who mainly assists, consults and promotes related safety, health and environmental protection business, so as to make all employees aware.

### Occupational Safety and Health Management System

Winbond's production bases in Taiwan have received certification for the ISO 45001 Occupational Health and Safety Management System and the Taiwan Occupational Health and Safety Management System (TOSHMS), with all workers being 100% covered. In alignment with the goal of zero accidents in the ESH policy, Winbond continues to utilize quantitative indicators such as the annual Disabling Injury Frequency Rate (FR) and Disabling Injury Severity Rate (SR), along with setting medium and long-term goals to achieve half of the industry average.

To achieve these objectives, Winbond employs measures such as independent inspections by unit supervisors, supervisor safety observations, on-site safety proposals, and incentives for reporting near-misses. These efforts aim to gradually reduce the personnel injury rate. Moreover, specific requirements are set for unit supervisors based on the characteristics of each unit. For example, supervisory personnel at equipment units are required to conduct inspections at least four times per month, while higher-level supervisors such as department-level supervisors must perform inspections at least once a month.

Relevant risk assessments include relevant contractors to avoid transferring high-risk operations solely to non-employees.

#### ▪ Number of Employees Covered by the Occupational Health and Safety Management System

2023	Number of People Covered by Management System		Total Personnel in Organization		Ratio(%)	
	Employees	Non-employees	Employees	Non-employees	Employees	Non-employees
Not Audited	0	0	0	0	0%	0%
Passed internal audit	2,689	617	2,689	617	100%	100%
Audited or verified by external body	2,689	617	2,689	617	100%	100%



1: The scope of personnel statistics is limited to Winbond's production bases in Taiwan.

2: The number of persons is based on data from December 31, 2023.

3: The method for calculating non-employee headcount is based on the total number of person-days for the full year of 2023, divided by 365 days.

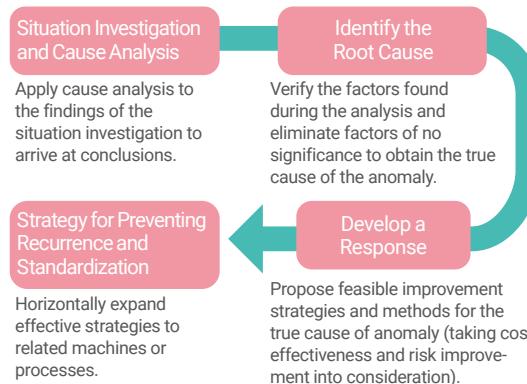
In 2023, the primary accident-causing incidents at Winbond, Taiwan, were one case each of stumbling, cutting, pinching, falling, and crushing; notably, there were no accidents involving contractors. Between 2020 and 2023, there were no cases of occupational disease fatalities among employees and contractors, nor were there any cases diagnosed as occupational diseases or work-related illnesses by a specialist in occupational medicine.

For Winbond's occupational injury statistical analysis, based on the important disabling injury statistical indicators announced by the Ministry of Labor, the Disabling Injury Frequency Rate (FR) and the Disabling Injury Severity Rate (SR) are selected for analysis. The statistics do not include off-site traffic accidents. In 2023, there were 5 cases of employee disabling injuries, with an SR of 4 and an FR of 0.72, with the FR not reaching the set goal. Among the 5 accidents in 2023, stumbling and falling accidents were caused by environmental factors, so besides reinforcing operational safety discipline requirements, enhancements were made to on-site signage. The remaining three accidents were primarily caused by personnel operational behavior, mainly due to insufficient safety awareness. Therefore, in addition to strengthening various preventive measures for operations, supervisors in each unit are also required to convey the importance of safety awareness to frontline employees through activities such as supervisor inspections and safety observations.

## ■ Accident Investigation and Injury Prevention

A complete standard operating procedure on accident investigation has been established by Winbond to reduce accident damage and risk. This SOP is applicable to all Winbond employees, contractors, and visitors. In the event of an accident, different levels of investigation and investigation teams are carried out based on the severity and type of the accident. The level of investigation also determines the composition of the investigation team. The operation of the ESH management system undergoes routine internal audit, review and update every 6 months. An external audit is also conducted every year so that Winbond can continue to ensure a safe working environment for employees, control potential risk factors and make continuous improvements.

#### ▪ Standard Accident Investigation Process



## ■ 2023 Analysis of Occupational Injuries and work-related Diseases

#### ▪ Winbond ESH Policy Analysis and Management Process

Data collection and analysis  
Referring to stakeholders + Industry information

Identification of high-level risks

Deciding on major occupational safety and health related issues

1.Safety and health protection and health promotion of Winbond workers  
2.Regulations for contractors

Strengthening of self-control and health inspection, and compliance with Winbond safety and health requirements

Planning of short-term, medium- and long-term safety and health quantitative goals

#### ▪ Work-Related Injuries Statistics for Employees in Headquarter

Year	Total Hours of work	Occupational Injury			Ratio of deaths due to work-related injuries	Ratio of severe work-related injuries	Ratio of work-related injuries on record
		Number of employees with severe work-related injuries	Number of Fatalities	Number of employees with work-related injuries on record			
2021	6,056,008	0	0	0	0	0	0
2022	6,956,696	0	0	3	0	0	0.43
2023	6,931,264	0	0	5	0	0	0.72

#### ▪ Work-Related Injuries Statistics for Non-Employees in Headquarter

Year	Total Hours of work	Occupational Injury			Ratio of deaths due to work-related injuries	Ratio of severe work-related injuries	Ratio of work-related injuries on record
		Number of employees with severe work-related injuries	Number of Fatalities	Number of employees with work-related injuries on record			
2021	842,000	0	0	0	0	0	0
2022	334,000	0	0	0	0	0	0
2023	1,890,040	0	0	0	0	0	0

#### ■ Work-Related Injuries Statistics for Employees at Global Locations and Subsidiaries

Year	Total Hours of work	Occupational Injury			Ratio of deaths due to work-related injuries	Ratio of severe work-related injuries	Ratio of work-related injuries on record
		Number of employees with severe work-related injuries	Number of Fatalities	Number of employees with work-related injuries on record			
Overseas subsidiaries	1,363,221	0	0	0	0	0	0
NTC	2,978,152	0	0	0	0	0	0

#### ■ Work-Related Injuries Statistics for Non-Employees at Global Locations and Subsidiaries

Year	Total Hours of work	Occupational Injury			Ratio of deaths due to work-related injuries	Ratio of severe work-related injuries	Ratio of work-related injuries on record
		Number of employees with severe work-related injuries	Number of Fatalities	Number of employees with work-related injuries on record			
Overseas subsidiaries	333,712	0	0	0	0	0	0
NTC	20,288	0	0	0	0	0	0

**Note:** Subsidiaries including WEHK, AMTC,METC,WTL,WECN,WEG,Callisto ,WEIPL ,Miraxia,WECA,WECJ

In terms of supply chain / value chain impact management, Winbond has established relevant management regulations for contractors. After receiving orders, vendors provided relevant fab codes of conduct, and monthly communication, counseling, and implementation of education and training with vendors was conducted through engagement organizations. Last year, a total of 3,447 persons were trained on hazard notification in the fab area, and 1,012 persons were professionally certified for special operations personnel, and the evaluation results of each vendor were calculated through the evaluation method in the contracting procedure, which will be announced in the engagement organizations and relevant safety meetings, providing reference for the responsible unit head of each project to select contractors. When necessary, the chairman or vice-chairman of the Environmental Safety and Health Management Committee of the fab may request the supervisors of relevant units to report in the meeting.

#### ■ Occupational Health and Safety Education and Training and Injury Prevention

Winbond conducts annual occupational health and safety education and training to reduce the occurrence of occupational injuries and enhance employees' understanding of safety and health regulations. To accommodate different learning preferences, multiple channels for both online and in-person courses have been established, including the option for employees to access relevant training videos through the learning system. Feedback on the training is collected via questionnaires, covering aspects such as satisfaction and the gap in understanding before and after the course, to ensure that the trainers meet the corporate lecturer certification standards set by the human resources division. According to 2023 statistics, a total of 12,004 individuals underwent training, amounting to 18,240 training hours. Regarding middle-aged and senior workers, their age has been taken

into consideration in the planning of health management and promotion measures, and appropriate measures have been discussed with occupational medicine physicians. For contract management, Winbond requires all 100% vendors to pass the fab entering hazard notification before they can apply for construction permits. To perform high-risk operations, a special operation education and training course shall be taken, and the assessment shall be passed to obtain certification before performing the operation.

#### ■ 2023 Analysis and Statistics of Occupational Injury Types

Occupational Injury Type	Item	Number of cases	Subject	Description of Incident	Handling Process	Improvement Measures
Stumbled	Cutting	1	Employees	Employee accidentally stumbled on the machine base after turning around following computer operation, resulting in a scrape on the right knee.	Employees received medical treatment at the clinic and were handled according to internal procedures.	1. Relocating computer workstations to spacious areas. 2. Installing high side panels as warning signs on machine bases.
Pinching	Cutting	1	Employees	Employee adopted a kneeling posture to inspect labels placed on the thigh, causing a cut on the left thigh.	Employees, after receiving preliminary treatment at the clinic, were referred to the hospital for further examination of the injury, followed by internal reporting and processing procedures.	1. Placing labels on the front panel of objects. 2. Prohibiting the use of body parts to support items; difficult tasks should be performed by two persons.
Falling	Pinching	1	Employees	While pushing the pump, the employee encountered a faster speed and deviation in the route, resulting in a collision with a fire door and a pinching injury on the right palm from the pump's edge.	Employees, after receiving preliminary treatment at the clinic, were referred to the hospital for further examination of the injury, followed by internal reporting and processing procedures.	1. Lowering the speed of pump pushing; stopping at corners and then resuming pushing after turning. 2. Wearing cut-resistant gloves during pump pushing operations.
Crushing	Falling	1	Employees	Colleague walking in the clean-room failed to notice the floor condition, tripped over an opening in the transparent elevated floor, resulting in abrasions on the legs and hands.	Injured colleagues were treated and confirmed the extent of injuries at the clinic, resumed normal activities, and were handled according to internal procedures.	1. Ensuring the use of triangular cones for warning signs before, during, and after work. 2. Adding warning tapes to transparent covers for easy identification by personnel.
			Employees	Employee underneath the machine for part replacement accidentally hit the equipment cover during resetting, causing the cover to fall and crush the employee's fingers.	Colleagues went to the hospital for X-ray examination and received relevant treatment, followed by internal reporting and processing procedures.	1. Implementing a mechanism for machine cover resetting before, during, and after operations. 2. Adding mechanisms such as door bolts and chains to prevent cover dropping.

**▪ Occupational Nurse Training Performance**

Item	Content	Number of Employees Trained in 2023
	Regularly conduct first aid training for all employees and the medical staff of the emergency response team so that there is no time difference in first aid.	In response to the epidemic, the employees are divided into groups, and 1,765 employees completed the training
	Management regulations and relevant education and training were put into place to help all employees understand preventive measures and introduce them to the company's internal complaints and reporting mechanisms. Promotion measures are provided for all employees every year as well.	A total of 333 people have completed the management level training course
	Advanced courses on crisis response impart correct concepts managers may need to assist in emergencies or at-risk employees (special cases, mental illness, emotional breakdown, Suicide risk, employees with pending complaint) in the workplace.	A total of 305 people have completed the management level training course

Regarding occupational health services and worker health promotion, Winbond employs a number of nurses that exceed regulatory requirements to offer health management and health promotion services. These services are available to both employees and non-employees, who may consult the nurses for health care advice and emergency medical assistance as needed. Employers of relevant non-employee workers are also mandated to provide appropriate safety and health management in line with laws and regulations. The performance of the aforementioned health management initiatives is as follows:


**▪ Influenza vaccination**
**▪ Injury Prevention Management Performance**

Item	Content	2023 Performance
Prevention and Management of Ergonomic Hazards	<ul style="list-style-type: none"> <li>Caring for employees with musculoskeletal soreness:</li> <li>Introduce e-questionnaire: Arrange fab employees to fill out questionnaires every 3 years, and arrange interview with occupational medicine specialist for persons with potential risk</li> <li>Automated process development, employee muscular endurance and other health promotion</li> </ul>	<ul style="list-style-type: none"> <li>Medical treatment improved 7 employees with suspected potential risk</li> <li>The injury / disease benefits for occupational musculoskeletal injuries and diseases is 0 for three consecutive years.</li> </ul>
Preventing and Managing Disorders Triggered by Abnormal Workloads	<ul style="list-style-type: none"> <li>The system automatically reminds supervisors and employees to pay attention to working hours on a daily and monthly basis</li> <li>Annual questionnaire survey of all employees to conduct risk identification and risk level of employees with abnormal workload</li> </ul>	<ul style="list-style-type: none"> <li>Winbond arranged interviews with professional doctors to guide 108 employees with potential risk</li> <li>All employees received a health education e-mail from the nurse, providing expert consultation on stress relief and sleep improvement / referral to the Employee Assistance Program (EAPc) according to individuality</li> </ul>
Management of Unlawful Infringement Prevention in the Workplace	<ul style="list-style-type: none"> <li>Review the company's internal workplaces every year, and evaluate and improve from the two aspects of "physical environment" and "workplace design"</li> <li>Conduct hazard identification and risk assessment for workplace unlawful infringement prevention every 3 years</li> </ul>	<ul style="list-style-type: none"> <li>There were no new potential risks, and for the identified risk factors, relevant control and protection measures have already been established</li> <li>Conducted every 3 years</li> </ul>
Maternal Health and Management for Female Employees	<ul style="list-style-type: none"> <li>Interviews with medical staff explaining hazard identification, risk assessment, work content confirmation, and postpartum health education during pregnancy</li> <li>Taking the initiative to provide information about subsidies and allowances</li> </ul>	<ul style="list-style-type: none"> <li>45 pregnant female employees received maternal health protection</li> </ul>

**▪ Health Services and Promotion**

Employee Health Protection Services	<ul style="list-style-type: none"> <li>Uninterrupted health services: The number of nurses exceeds the number required in the regulations, and the health budget exceeds NT\$23 million</li> <li>First aid: Work with teaching hospitals around the fab area on the green channel</li> <li>Health examination: Provide additional special check-up items for newcomers' health examination results, and health examination items better than that required by laws and regulations to in-service employees</li> </ul>
Employee Health Improvement	<ul style="list-style-type: none"> <li>Professional consultation services: Cooperate with the employee consultation center to provide career and work, family and parent-child, male-female relations, physical and mental stress, legal, finance, workplace management consultation</li> <li>Winbond employee health website: The infirmary cares for the reexamination of the employees and assists in making appointments with doctors for consultation. In 2023, the care completion rate is 100%.</li> <li>Education and training / health lectures: Plan a series of courses such as stress relief and sleep, high blood pressure prevention, CPR &amp; AED for all, traffic safety and defensive driving promotion and locomotive security inspection activities. In 2023, a total of 33 sessions were held, with 3,885 participants.</li> <li>Influenza vaccination campaign: A total of 1,773 people participated in the vaccination in 2023.</li> <li>Sports promotion participation: In 2023, a total of 30,476 participants, with a cumulative consumption of 10,362,995</li> </ul>

## 5.4.2 Environmental Safety and Health Risk Assessment

The "ESH Risk Assessment Operating Procedure" was established by Winbond to safeguard employee safety in the workplace and minimize risks. This procedure encompasses the identification of ESH (Environmental, Safety, and Health) risks and opportunities related to activities, products, or services impacting the environment, personnel, and hygiene. Risk levels are determined based on past operational history and the current situation, considering potential situations, effects, or impacts (e.g., personnel injury, environmental impact, production disruption, or financial loss) and their probability. Subsequently, improvement measures are prioritized for risk reduction in the following order: elimination, replacement, engineering control, signage/warning/management control, and personal protective equipment. Winbond conducts an internal audit at least annually, along with annual reviews, to ensure the "ESH Risk Assessment Operating Procedure" is effectively implemented. Significant changes to production processes, facilities, and operational content necessitate a new assessment.

## ■ System Assessment and Management

Winbond, Taiwan integrates its management system with an online system to enhance the transparency and accessibility of relevant statistical data. In 2023, the number of medium and high-risk operations (related to safety and health risks) was zero. Through Winbond's internal proposal system, employees can express their needs through various channels, such as reporting hazards and making suggestions, ensuring follow-up on proposals and responses from management units. In the context of education and training reinforcement reminders, if hazardous conditions are identified during an operation, it is essential to immediately cease the operation and report the situation. The priority is to safeguard the lives and health of workers, and exercising the right to retreat does not result in disciplinary action. Winbond has established relevant safety regulations for high-risk operations, requiring all contractors to complete special operation certification at a 100% rate. Additionally, before, during, and after the operation, checks must be conducted as required to ensure the entire process proceeds safely. For instance, in the case of hot work operations, prior to commencing work, any flammable materials within an 11-meter radius must be removed or covered with a fire blanket. After completing the work, an on-site confirmation that there are no open flames or ignition sources is necessary within 4 hours. Safety remains paramount throughout the entire operation.

In assessing class A dangerous workplaces, Winbond exceeds general practices by fully utilizing the HAZOP (Hazard and Operability Study) method to evaluate workplace equipment. For addressing abnormal accident conditions, FMEA (Failure Mode and Effects Analysis) or the 5-Why analysis is also employed to identify key risk factors. Additionally, Winbond has developed an independent chemical management system for hazard management. This involves reviewing the safety data sheet and hazard label content provided by vendors, verifying compliance with Winbond's list of prohibited and restricted substances, and conducting assessments on storage, supply, and waste gas/liquid treatment, along with related risk assessments. Countermeasures

are proposed based on these evaluations. Currently, 1,804 chemicals are under management, encompassing 288 types of Safety Data Sheets (SDS).

Regarding the exposure assessment of hazardous substances, Winbond conducts its environmental monitoring to measure related allowable concentrations or internationally established threshold limit values, setting standards that surpass legal requirements. To pass the monitoring, levels must be lower than 1/10 of the Permissible Exposure Limit (PEL) to align with Winbond's stringent standards; and re-monitoring is conducted every six months.

## 5.4.3 Emergency Response Measures

Winbond Taiwan, has established emergency response procedures to address internal anomalies and external natural disasters, including fire alerts/alarms, gas leak alarms, chemical spills, earthquakes, and odors. These procedures serve as the foundation for internal units to develop corresponding response processes, assemble response teams, and conduct drills and training.

### ▪ Occupational Health and Safety Risk Identification and Response Strategies

Risk Type	Risk Identification	Strategy/Action Adopted
Operational Risks	<ul style="list-style-type: none"><li>▪ Fire</li><li>▪ Power Outage</li><li>▪ Chemical Spill</li><li>▪ Abnormal Emissions of Air Pollution/Waste-water Emissions</li></ul>	<ul style="list-style-type: none"><li>▪ The design of the fire protection system and its installation is based on international standards (NFPA, FM) and domestic fire safety regulations. It includes the fire detection and alarm system, various automatic fire suppression systems, and fire compartmentalization.</li><li>▪ Installation of emergency generators and uninterruptible power systems.</li><li>▪ Plant facilities and protection are designed and constructed to international industrial standards. Machinery and equipment must also conform to international safety standards (SEMI-S2, FM4910).</li><li>▪ 24-hour monitoring system for emissions/wastewater treatment facilities.</li></ul>
Natural Disaster Risk	<ul style="list-style-type: none"><li>▪ Earthquake</li><li>▪ Water Shortage</li></ul>	<ul style="list-style-type: none"><li>▪ Plant buildings are designed to withstand earthquakes up to 7.0. Machinery and equipment incorporate shock-resistant design.</li><li>▪ Installation of reserve water tanks.</li></ul>
Regulatory Risk	<ul style="list-style-type: none"><li>▪ Occupational Safety and Health Act</li><li>▪ Fire Services Act</li><li>▪ Environmental Protection Act</li></ul>	<ul style="list-style-type: none"><li>▪ Regularly carry out compliance inspections.</li><li>▪ Identify and respond to the impact of new regulations or amendments</li><li>▪ Make regular inspections and reports as required by law.</li></ul>

## ■ Emergency Response Team Organizational

An Emergency Response Team (ERT) is stationed in each area throughout the sites. The ERT is commanded by a division or higher level manager. ERT team members are required to undergo regular training and drills. In the event of an emergency, the mission of the ERT is to minimize casualties, financial losses and disruption to production.

## ■ Long-term Preventive Emergency Measures

Winbond actively engages in safety-related meetings at various levels, including monthly safety meetings in the fabrication area and quarterly safety and health committee meetings. The company also utilizes its internal ESH (Environmental, Safety, and Health) management electronic system for relevant tracking to ensure that all corrective and preventive measures are fully implemented. In 2023, there were 20 instances of close calls. At the monthly safety meetings, Winbond acknowledges those who proactively report by offering prizes as a reward for reporting false alarms, and conducts analyses on the causes of these near-misses along with related processes to prevent future occurrences.

Throughout 2023, Winbond conducted a total of 154 emergency drills covering scenarios such as fire, chemical leaks, gas leaks, and massive water leaks. These drills involved not only employees and non-employees within the fabrication area but also collaboration with the Science Parks' joint response team, and worked with the Science Park Bureaus to extend the scope of the joint defense drills to include surrounding factories and residents, enhancing community-wide safety and preparedness.

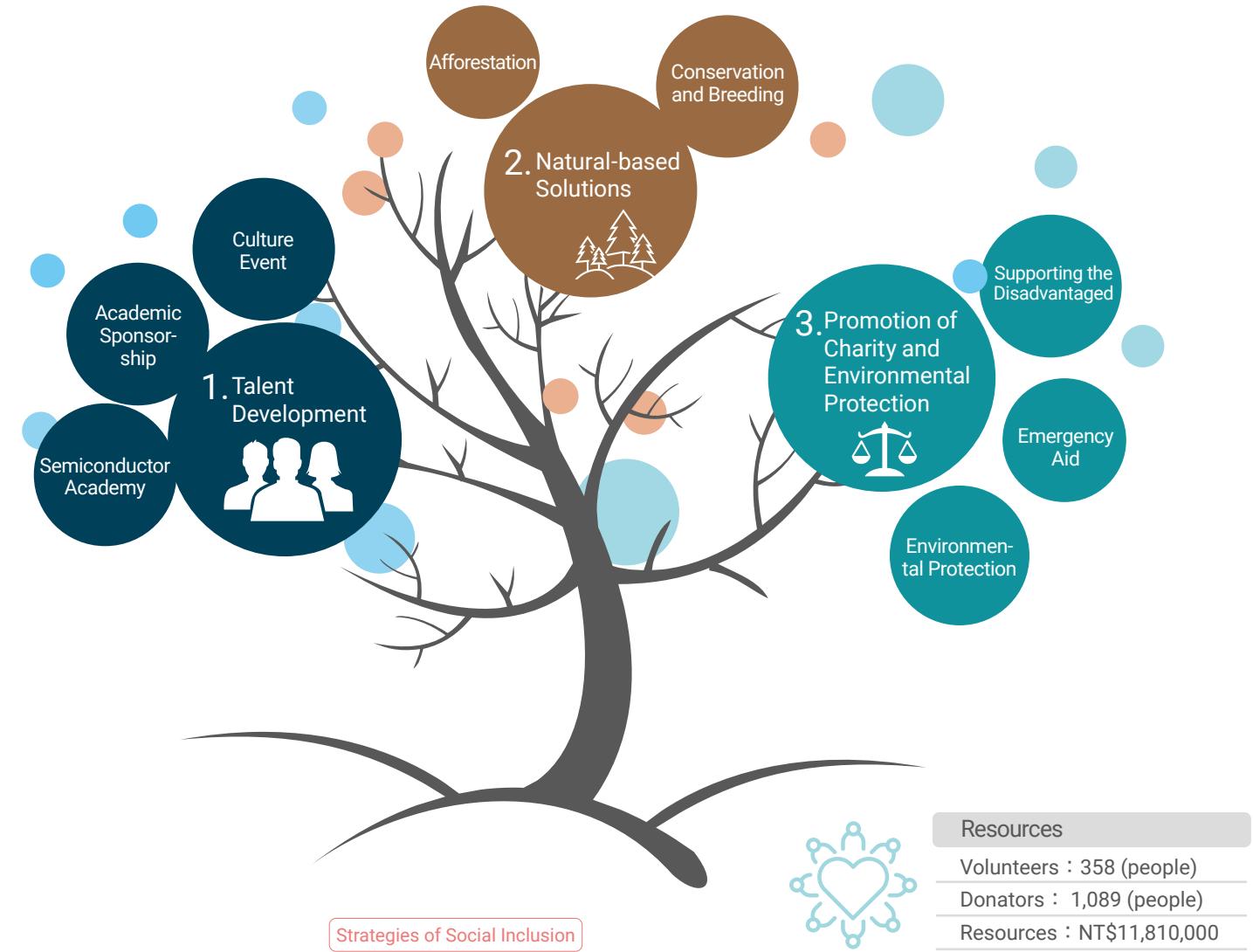
### ▪ 2023 Emergency Response Drills



## 5.5 Social Impact

Starting from its ESG vision, Winbond aligns with the United Nations Sustainable Development Goals (SDGs) to tackle various societal challenges. It incorporates Winbond's core strengths into three main strategic initiatives: Talent Development, Nature-based Solutions, and the Promotion of Charity and Environmental Protection, aiming to leverage resources for social impact.

- Talent Development: Winbond is committed to fostering individuals by imparting new knowledge and skills, thereby offering opportunities for their development. Notable initiatives in 2023 include the "Semiconductor Academy," "Academic Sponsorship," and organizing "Cultural Events."
- Natural-based Solutions: In line with achieving the 2050 net-zero target, Winbond collaborates with various sectors to promote industry-academia-government cooperation programs. Key projects in 2023 include "Afforestation" and "Conservation and Breeding," aimed at carbon removal from the atmosphere and enhancing biodiversity simultaneously.
- Promotion of Charity and Environmental Protection: Winbond dedicates resources to assist vulnerable groups and improve livelihoods. Key initiatives in 2023 include "Supporting the Disadvantaged," "Emergency Aid," and "Environmental Protection."





## 5.5.1 Talent Development

### Semiconductor Academy

Through the integration of Winbond core operational capabilities, collaboration with industry, government, academia, and research institutions, and in response to government technology policies, Winbond is committed to promoting school-enterprise cooperation and jointly cultivating talent. In 2023, we continue to assist National Cheng Kung University (NCKU) in establishing the Smart Semiconductor and Sustainable Manufacturing College, with the aim of nurturing semiconductor professionals. This initiative not only enhances students' knowledge and skills but also reduces the gap between theory and practice. Simultaneously, by providing internship opportunities and encouraging students to engage with practical sponsored lectures and professors, we attract outstanding faculty members to remain in Taiwan and contribute to the cultivation of semiconductor talent.



#### Establishment of Semiconductor Program to Actively Cultivate the Next-Generation

**360** students enrolled in key semiconductor technology and leadership practical courses.

**20** experts actively involved in teaching key semiconductor technology and leadership practical courses.

Committed to advancing Taiwan's semiconductor industry and nurturing talent, Winbond invests nearly tens of millions of dollars annually. This investment supports initiatives like aiding National Cheng Kung University in the establishment of the Smart Semiconductor and Sustainable Manufacturing College. Since 2022, Winbond has collaborated to promote the "Semiconductor Leadership Program" and a 3-credit course on "Key Semiconductor Technology and Leadership Practice." These programs and courses, designed by senior Winbond executives, aim to equip students with the knowledge to lead in the future semiconductor industry and understand the fundamental concepts of artificial intelligence. Furthermore, Winbond offers scholarships, internship/visiting opportunities, guaranteed interview opportunities, and signing bonuses to motivate the new generation of talent to enter the semiconductor industry.



#### Sponsorship of Visiting Professor Research to Retain Outstanding Professors

Supporting National Yang Ming Chiao Tung University's "Visiting Professor Research Fund" project, assisting the university in enhancing its academic standards, attracting and retaining scholars of outstanding achievements domestically and internationally, and supporting professors to continuously improve their teaching and research. This effort contributes to the continuous advancement of academic research and talent cultivation in the field of information and communications. Through collaboration with academic resources, Winbond aims to enhance the environmental quality of the semiconductor industry.



### Academic Sponsorship

Sponsorship of seminars such as VLSI-TSA and VLSI-DAT, as well as the Taiwan Semiconductor Association Annual Meeting, to promote the development of the semiconductor industry. Winbond also supported high school students' participation in international robotics competitions for the first time, cultivating young STEM education talent.



#### Empowering Dreams: Sponsoring Nanke Experimental High School to Enter the US Robotics World Championship

Winbond sponsors high school students' participation in the international robotics competition, competing on the global stage, and enabling the team to promote STEM education to schools and the public in Taiwan. Through inspiration from knowledge and technology, diverse interests and abilities are cultivated, applying what is learned to solve global issues in daily life.



#### Sponsorship of International Semiconductor Technology Symposium VLSI-TSA/VLSI-DAT and Taiwan Semiconductor Association Annual Meeting

Through long-term support for International Symposium on VLSI-TSA and VLSI-DAT and Taiwan Semiconductor Association Annual Meeting, Winbond can accelerate the upgrade of Taiwan's information and communications industry and increase the exchange of industrial technologies domestically and abroad. We contribute to the advancement of Taiwan's semiconductor technology by promoting a platform for the exchange of cutting-edge technologies among researchers in the semiconductor field.



#### Campus Talent Development Program: Campus Career Seminars

In 2023, Winbond held multiple campus career seminars to provide participants with a preliminary understanding of the semiconductor industry. Through the "Winbond Workplace Internship Program," students can experience the operation of the workplace.



## Culture Events

Winbond collaborates with arts and cultural organizations alongside charitable units to foster the spirit of arts and culture. By sponsoring the production of documentaries, it aims to generate a cycle of cultural and economic value, thereby enhancing the creation of cultural values in Taiwanese documentaries.



### Sponsoring the "On the Road" Documentary Series

In 2023, Winbond sponsored the production of the "On the Road"(working title) documentary series, directed by the French-based filmmaker Ms. Li Xuichun. The series focuses on the stories of foreign Catholic priests in Taiwan, shedding light on the contributions of over 100 priests from countries such as France and Switzerland to Taiwan's political, economic, and social progress over the past 70 years. The documentary was filmed in various locations in Taiwan and Europe, completed in 2024, and screened in both Europe and Taiwan.



Winbond aspires that through the sponsorship of this documentary and its subsequent promotion, it will foster meaningful interactions with those interested in the subject, ultimately bringing these impactful stories to the wider public.



### Journey to the Southern Branch of National Palace Museum

**6,120** employees, dependents, and students participated in the art and cultural tour.

In alignment with the government's initiative to foster cultural consumption habits, Winbond hosted a one-day family day event in 2023 at the National Palace Museum Southern Branch. This event offered a blend of cultural appreciation and educational experiences, featuring performances by Yoyo Family's sisters, the Catholic Mindao Home percussion band, and the Gift Box Theater, all centered around ESG-related themes.

Embracing the spirit of philanthropy, the family day event also welcomed children from the St. Francis nonprofit organization and the Eden social welfare foundation to partake in the activities and explore the Southern Branch of the National Palace Museum. This visit enabled 6,065 employees and their families, along with 55 children from the invited institutions, to develop an appreciation for the arts, deepening the cultural experience and enriching the significance of Winbond Family Day. The total expenditure for this cultural event was NT\$7,291,504.



## 5.5.2 Natural-Based Solution

### Afforestation

**Winbond is committed to removing carbon from the atmosphere while considering the benefits of biodiversity.**

In its journey towards achieving its net-zero goal, Winbond has initiated research into methods of atmospheric carbon removal. Scientists acknowledge that capturing and storing carbon dioxide is a critical component of attaining successful net-zero outcomes. Through partnerships across industry, academia, and government, Winbond is engaging in afforestation, tree adoption, and seedling breeding projects aimed at extracting carbon from the atmosphere. These efforts are undertaken with a keen awareness of the added benefits to biodiversity.



### Afforestation Project

**9,000** trees planted to reduce carbon emissions by **1,380 tCO<sub>2</sub>e**.

Winbond embarked on a tree planting initiative in collaboration with National Chung Hsing University. At the Kaohsiung fab, native species including Bischofia javanica, Palaquium formosanum, Acacia confusa, Melia azedarach, and Fraxinus griffithii were planted. This effort led to the planting of approximately 1,300 new trees as part of a 30-year afforestation project, which is estimated to sequester 390 tCO<sub>2</sub>e over its duration.

Meanwhile, Winbond engaged in the Forestry and Nature Conservation Agency's tree adoption program, in collaboration with Chiayi Branch, through tripartite collaboration between industry, government, and academia, adopting forests in Dainei District, Tainan City; Alishan Township, Chiayi County; and Dapu Township, Chiayi County. This partnership across industry, academia, and government facilitated the planting of 7,700 native tree species such as Zelkova serrata, Liquidambar formosana, Acacia confusa, and Melia azedarach. Spanning 30 years, this afforestation project is expected to sequester 990 tCO<sub>2</sub>e, while also enhancing local biodiversity, providing habitats for various species, and maintaining ecological balance.



### Conserving Seedlings

Winbond integrates its corporate resources to launch seedling breeding projects, specifically targeting indigenous tree species in Taiwan. The initial phase of these project centers on the selection of plants from the Theaceae family, undertaking collection and breeding efforts to cultivate Taiwan's native plant sources.

There are a total of **42** species of Theaceae plants in Taiwan, of which **27** have been collected and cultivated. **1** species is evaluated as critically endangered, **1** as endangered, **5** as vulnerable, and **3** as near-threatened in the Red List.



## 5.5.3 Promotion of Charity and Environmental Protection

### Supporting the Disadvantaged

Winbond leverages its corporate resources to enhance employee involvement in social welfare, actively supporting and contributing to local communities while extending care to vulnerable groups.

#### School Renovation Project

Winbond's Israeli employees volunteered at the Zoran School in Tzur Yigal contributing their time and effort to improve equipment and refurbish the school's old garden. Winbond aims for these volunteer efforts to provide the children with a safer and healthier environment.



#### 2023 Southern Taiwan Science Park Charity Picnic

Winbond established a booth at the "2023 Southern Taiwan Science Park Charity Picnic" for a charity sale, with all the proceeds amounting to NT\$15,000 being donated to charitable causes. Furthermore, an additional NT\$100,000 was donated to the Social Affairs Bureau of Kaohsiung City Government to enhance the basic living and learning quality of disadvantaged families in the vicinity of the Southern Taiwan Science Park.



#### Cleaning Volunteer Services for Childcare Institutions

Winbond invited employees and their relatives to participate in the "Clean-Up Volunteer Activities" in 2023. A total of 3 clean-up volunteer activities were held in 2023, with a cumulative participation of 45 person-times.

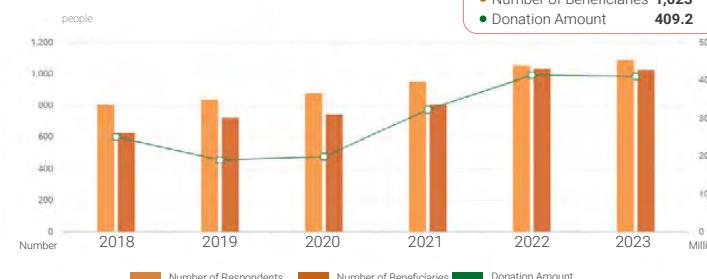


#### Fundraising for Impoverished Students Education Financial Aid

Since 2017, Winbond has collaborated with the Taiwan Fund for Children and Families to enhance educational resources for children from impoverished families, ensuring their regular school attendance. By encouraging employee contributions towards educational financial aid, Winbond has made a significant impact. In 2023, 1,089 employees collectively raised \$4,092,000, supporting 1,023 elementary school students for an entire year.



#### Results of the fundraising



#### Happy Breakfast Program for School Children in Rural Areas

Since 2011, Winbond has been making voluntary donations through a non-profit organization to support the Happy Breakfast Program for rural elementary schools in Hsinchu and Taichung. This initiative aims to improve breakfast options for school children in rural areas, providing them with the necessary nutrition and support to sustain their basic needs and health. By ensuring children are well-nourished, the program helps them to be physically and mentally prepared to explore the world. In 2023, Winbond contributed NT\$590,000 towards breakfast funding to continue supporting the healthy learning environment for school children. Furthermore, Winbond employees also engaged in on-site visits to better understand the program's impact, allowing for further evaluation and potential enhancement of the initiative.



### Emergency Aid

Winbond embodies its social care philosophy through various initiatives, including donating medical equipment, organizing blood donation drives, and offering emergency assistance and loan programs for employees. These actions reflect Winbond's strong commitment to social responsibility and the welfare of its employees.

#### Enhancing Healthcare Services

In 2023, Winbond's Israeli employees donated medical equipment valued at 84,000 to local healthcare institutions. The company encouraged its employees and their families to contribute medical supplies, aiming to ensure comprehensive care for the institutions in need.



#### Blood Donation

Winbond calls on its employees to become blood donors annually. By taking practical steps, they embody a culture that deeply values the sanctity of life. In 2023, 4 blood donation events were organized, attracting 200 participants who collectively contributed a total of 320 blood bags.



#### Emergency Care for Employees

Winbond has set up employee emergency aid and loan programs to help employees in financial distress when the employee or his/her family suffers sudden calamity, such as injury, disability, death, or accident, to make sure they can continue to work and live with assurance that their livelihood is secure.

## Environmental Protection

From a biodiversity standpoint, Winbond persistently engages in coastal adoption and beach cleaning to provide environmental education experiences, thereby heightening awareness about the critical need to protect biodiversity and the environment. With the objective of achieving carbon neutrality, Winbond intends to concentrate on environmental education courses themed around carbon reduction and biodiversity. By leveraging its corporate influence, Winbond aims to enhance participants' understanding of climate change and environmental sustainability, underscoring the importance of proactive engagement in these crucial areas.



Online Lecture Series  
on the "Beauty of Fazi River"

Come and Enjoy  
Birdwatching! Nature  
Experience

Biodiversity Club:  
Dakan Tian Shu  
Ecological Tour

Biodiversity Lectures & Activities



### Guard Fazi River: Do Sports for Charity, Stay Healthy for the Earth

Winbond established a booth at the "2023 Southern Taiwan Science Park Charity Picnic" for a charity sale, with all the proceeds amounting to NT\$15,000 being donated to charitable causes. Furthermore, an additional NT\$100,000 was donated to the Social Affairs Bureau of Kaohsiung City Government to enhance the basic living and learning quality of disadvantaged families in the vicinity of the Southern Taiwan Science Park.



### Biodiversity Activities Promoted Online and Offline

Winbond organized an online lecture series on the Beauty of Fazi River, where professional speakers from the Wilderness Conservation Association vividly presented the various creatures inhabiting the creek to Winbond employees. Through on-site videos and images, the crisis facing flora and fauna was exemplified, leading employees to deeply realize the harm caused by human activities to their habitats and understand the necessity of taking action.



In the "Come and Enjoy Birdwatching!" nature experience activity, Winbond employees and their families participated in bird ecology and environmental observation. Equipped with binoculars, they explored various bird species, accompanied by trained "bird guides" who provided expert guidance. As different bird species were discovered, participants gained a deeper understanding of the ecological environment.



### Beach and stream cleaning activities

**Guarding coastal cleanliness to ensure sustainable management of ecological resources.**

Winbond volunteers respond to beach cleaning activities with practical actions, collectively upholding the spirit of clean oceans and sustainable resources. In 2023, volunteers accumulated 264 service hours in beach cleaning activities, clearing a total of 993 kilograms of trash, striving for the protection of marine ecosystems.



Name of Activities	Participants	Trash Cleanup (kg)	Description
Beach Cleaning Winter Camp of Taichung Guo-Ann elementary School	60 children	37	Winbond sponsored the "Taichung Guo-Ann Elementary School Winter Stream Cleaning Camp," where 60 children acted as little green warriors by the stream, collectively cleaning up 37 kilograms of trash and waste.
"Beautiful Fazi Riverway" Cleanup	54 participants	70	Winbond employees participated in the "Beautiful Fazi Riverway" stream cleaning activity, where they and their relatives braved the sun, moved along the stream, rolled up their sleeves, and fully engaged in garbage cleanup.
Zhongyun Beach	60 participants	100	-
Changhua beach cleaning holding by DHL Express	90 employees from DHL and Winbond	786	Winbond was invited to participate in the beach cleaning event organized by supplier DHL Express. Through collaboration with the supplier, Winbond and 90 DHL employees joined forces to protect the coast. In the end, they cleared 786 kilograms of garbage.



### Sponsoring Houfeng Bikeway

In 2023, Winbond took on the role of sponsoring public recreational facilities, collaborating with the Tourism and Travel Bureau of the Taichung City Government in the enterprise sponsorship of the Houfeng Bikeway. Winbond has committed to regular maintenance tasks such as road cleaning and tree thinning to ensure the beauty and safety of the Houfeng Rail Bike Trail. By joining forces, Winbond contributes to preserving the cleanliness of public recreational facilities in Taichung City, thereby elevating the recreational experience for all visitors.



# APPENDIX

**133** | Appendix 1: About this Report

**135** | Appendix 2: Memberships

**136** | Appendix 3: GRI Content Index

**142** | Appendix 4: SASB Standards Index

**144** | Appendix 5: TWSE Sustainability Index - Semiconductor Industry

**145** | Appendix 6: Climate Related Index

**151** | Appendix 7: UN Global Compact

**152** | Appendix 8: Assurance Statement

## Appendix 1: About this Report

### About this Report

The 2023 Sustainability report (as "this report") of Winbond Electronics Corp (Winbond), provides transparent and complete disclosure on the impact of our business operations in the Environmental, Social and Governance (ESG) aspects as well as our actions on sustainability topics. Related measures have been implemented through the promotion and spread of business activities as a response to stakeholder expectations and requirements of Winbond's sustainability and management.

### Editorial Principles and Guidelines

This report was compiled following the GRI Standards issued by the Global Reporting Initiative, the industry standards issued by the Sustainability Accounting Standards Board (SASB), and the TCFD framework issued by the Task Force on Climate-related Financial Disclosures (TCFD) framework established by the Financial Stability Board (FSB).

### Management Process



### Management Methods

Internal Audit	<ul style="list-style-type: none"> <li>The contents of this report were reviewed and approved by the heads of departments, Winbond ESG Committee, the general manager and the chairman of the board.</li> <li>Being raised to the level of the Board of Directors, the ESG Committee established the ESG Office and five task forces, including Environmental Sustainability, Green Products, Human Rights and Social Inclusion, Sustainable Supply Chain, and Corporate Governance. Meetings are convened regularly at least 2 times a year and chaired by the Chairman to report to the Board of Directors on the implementation results of the ESG Committee.</li> </ul>	Publication Time	<p>The Winbond Sustainability Report is published annually, and this is the 10th report. Paperless operations are promoted by Winbond to save energy, reduce carbon emissions, protect the environment, and care for planet Earth. This report therefore continues the tradition of being published in an electronic format on the Winbond website for all stakeholders to read.</p> <ul style="list-style-type: none"> <li>Current version: Published in July 2024</li> <li>Previous version: Published in August 2023</li> <li>Next version: To be published in June 2025</li> </ul>
External Audit	<ul style="list-style-type: none"> <li>The financial data was audited and verified by the accounting firm Deloitte Taiwan. The default currency is New Taiwan Dollars.</li> <li>Independent verification of this report was conducted by BSI Taiwan in March 2024 in accordance with the AA 1000 APS 2018 Addendum Type I Assurance Standard. Please refer to the independent assurance declaration included in the appendix of this report for more details on the results</li> </ul>	Contact	<p>Feel free to contact us if you have any suggestions or feedback regarding to this report. Contact Details are as follow: Winbond Electronics Corp. Sustainability Development Department</p> <ul style="list-style-type: none"> <li>Address: 19th Floor, No. 539, Sec. 2, Wenxing Rd., Zhubei City, Hsinchu County 30273</li> <li>Tel: +886-3-567-8168</li> <li>Email: <a href="mailto:ESG@winbond.com">ESG@winbond.com</a></li> <li>Winbond Website: <a href="http://www.winbond.com">www.winbond.com</a></li> <li>ESG website: <a href="http://esg.winbond.com">esg.winbond.com</a></li> </ul>
Management system verification	<ul style="list-style-type: none"> <li>Quality management system: ISO 9001, IATF16949</li> <li>Environmental management system: ISO 14001</li> <li>Energy management system: ISO 50001</li> <li>OHS management system: ISO 45001/TOSHMS</li> <li>Responsible Business Alliance: RBA VAP</li> </ul>		
Data Quality Management	<ul style="list-style-type: none"> <li>Financial data: Deloitte Taiwan (DTTL)</li> <li>GHG emission verification: ISO 14064-1: BSI 、 DNV</li> <li>Sustainability Information: AA 1000 APS 2018 Addendum Type I Assurance Standard: BSI</li> <li>Occupational Safety and Health Management Systems: DQS Taiwan Inc.</li> </ul>		

## Reporting Scope

The scope of this report covers from January 1, 2023, to December 31, 2023. Except for financial performance, which is provided within the scope of the consolidated financial statements, the rest of the content is primarily focused on the operations of Winbond's Taiwan region. Subsidiaries are not included in the disclosure scope; however, considering the sustainable development of the corporate group, some sustainable performance of the subsidiaries will also be presented in this report. In addition to the presentation of data from Winbond, the report also includes material information on suppliers, demonstrating Winbond's influence and sense of responsibility towards the value chain. For the scope of information and data in the report, the financial information consolidates all entities of Winbond, which is consistent with the disclosure of the financial statements. There are no restatements of information in this year's "2023 Sustainability Report" compared to the "2022 Sustainability Report" last year.

Indicates that complete information has been collected.

Indicate that partial information has been gathered, but some details are still outside the scope of data collection.

Not included in the information collection boundary yet.

Topics	Taiwan <sup>(Note 1)</sup>	WECA	WECJ	WETL	WEVN	METC	AMTC	NTC	NTCJ	Other <sup>(Note 2)</sup>
Business Integrity and Corporate Governance								—	—	
Regulatory Compliance								—	—	
Risk Management								—	—	
Research, Development and Innovation								—	—	
Productivity and Business Performance								—	—	
Supply Chain Management		—	—	—	—	—	—	—	—	—
Green Product								—	—	
Energy and Carbon Emission Management								—	—	
Talent Management								—	—	

1. Includes Taiwan Headquarters, CTSP Fab, and Kaohsiung Fab.

2. Winbond's subsidiaries and offices in Germany, Singapore, India, and those of Nuvoton Technology in the United States, China, Israel, India, Singapore, South Korea, Japan, and Germany.

## Appendix 2: Membership

### Participation in Non-profit organization

To enhance the operational quality of Taiwan's industries, our company actively participates in various industry associations and societies, holding positions as directors, supervisors, and representatives in these organizations. Through these industry associations, we exchange operational experiences with peers, share the latest market trends, supply and demand changes, and technological information with the industry, aiming to contribute to the overall industry. Regarding our company's important roles in various associations, the details are as follows:

Participation in Industry Associations	2023 Participation
<b>Taiwan Climate Partnership (TCP)</b> TCP responds to the requirements of international brand customers with practical actions, and at the same time raises the attention of Taiwanese companies and all walks of life to the issue of climate change through international initiatives and linkage.	<b>Chairman Arthur Yu-Cheng Chiao</b> served as the director
<b>Taiwan Electrical and Electronic Manufacturers' Association (TEEMA)</b> TEEMA serves as a bridge between the government and the industry. It provides members with a diverse range of services on expanding international trade, promoting international relations, supporting industry development, information services, legal advice, and talent development.	<b>Chairman Arthur Yu-Cheng Chiao</b> served as the strategy consultant
<b>Taiwan Semiconductor Industry Association (TSIA)</b> TSIA activities are aimed at building consensus on industry development in order to promote cooperation in competition and the sound development of the industry as a whole.	<b>President Pei-Ming Chen</b> served as the director
<b>The Allied Association for Science Park Industries</b> The Association serves as a bridge for communication of policies and feedback between the government and industry. It coordinates industry efforts and promote the stable development of science park industries.	<b>Vice President Hsiang-Yun Fan</b> served as the director (2023/05/25)
<b>Taiwan High-Tech Facility Association</b> The Association provides a communication platform for direct dialogue and collaboration between academia and industry, business owners and cooperating vendors, so as to work together to improve the technology and management of Taiwan's high-tech factory facilities.	<b>Technology Executive Ming-Jun Lu</b> served as the director
<b>Cross-Straits CEO Summit</b> During the Cross-Straits CEO Summit, working with all members and members of the industrial collaboration promotion team, it's hoped to develop a new picture and new vision for cross-strait industrial cooperation, so as to promote the mutual benefit and common prosperity of the cross-strait economies.	<b>Chairman Arthur Yu-Cheng Chiao</b> served as the executive supervisor



#### Donation and Political Contribution Policy

All donations made by the company are based on considerations of giving back to the community and fulfilling social responsibilities, without any political contributions aimed at lobbying purposes. During the reporting period, no political contributions were made. Significant donations to related parties and non-related parties must be approved by the Board of Directors before being made.



## Appendix 3: GRI Content Index

- Statement of Use: Winbond Electronics Corporation has followed the GRI guidelines to report the content from January 1, 2023, to December 31, 2023.
- GRI 1 used: GRI 1 : Foundation 2021
- Applicable GRI Sector Standard(s): There were no applicable GRI Sector Standards during the reporting period of this report.

GRI 1 Foundation 2021					
GRI 2 General Disclosure 2021					
GRI Standard	Disclosure	Corresponding Section	Page	Remarks	
1. The Organization and Its Reporting Practices					
2-1	Organizational details	About Winbond <a href="#">1.1 Corporate Governance</a> <a href="#">Appendix 1: About this report</a>	7 43 133		
2-2	Entities includes in the organization's sustainability reporting	About Winbond	7		
2-3	Reporting period, frequency and contact point	<a href="#">Appendix 1: About this report</a>	133		
2-4	Restatements of information	<a href="#">Appendix 1: About this report</a>	133	No restatements of information	
2-5	External assurance	<a href="#">Appendix 8: Assurance Statement</a>	152		
2. Activities and Workers					
2-6	Activities, value chain and other Business Relationships	About Winbond <a href="#">1.3.2 Economic Performance</a> <a href="#">4.1 Sustainable Supply Chain Management Framework and Mechanisms</a>	7 53 94	No significant changes during the reporting period	
2-7	Employees	<a href="#">5.2.1 Workforce Structure</a>	110		
2-8	Workers who are not employees	<a href="#">5.2.1 Workforce Structure</a>	110		
3. Governance					
2-9	Governance structure and composition	<a href="#">1.1 Corporate Governance</a>	43		
2-10	Nomination and selection of the highest governance body	<a href="#">1.1.1 Board of Directors</a>	43		
2-11	Chair of the highest governance body	<a href="#">ESG Implementation Framework</a> <a href="#">1.1.1 Board of Directors</a>	26 43		
2-12	Role of the highest governance body in overseeing the management of impacts	<a href="#">A message from our Chairman and CEO</a> <a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">1.1.3 Shareholder Relations and Rights</a>	5 28 48		
2-13	Delegation of responsibility for managing impacts	<a href="#">ESG Implementation Framework</a> <a href="#">1.1.2 Operations and Responsibilities of the Functional Committees</a> <a href="#">1.1.3 Shareholder Relations and Rights</a> <a href="#">1.4 Risk Management</a>	26 46 48 54		



GRI Standard	Disclosure	Corresponding Section	Page	Remarks
2-14	Role of the highest governance body in sustainability reporting	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">Appendix 1: About this report</a>	28 133	
2-15	Conflicts of interest	<a href="#">1.1.1 Board of Directors</a>	43	
2-16	Communication of critical concerns	<a href="#">1.1.1 Board of Directors</a>	43	
2-17	Collective knowledge of the highest governance body	<a href="#">1.1.1 Board of Directors</a>	43	
2-18	Evaluation of the performance of the highest governance body	<a href="#">1.1.1 Board of Directors</a> <a href="#">1.1.2 Operations and Responsibilities of the Functional Committees</a>	43 46	
2-19	Remuneration policies	<a href="#">1.1.2 Operations and Responsibilities of the Functional Committees</a>	46	
2-20	Process to determine remuneration	<a href="#">1.1.2 Operations and Responsibilities of the Functional Committees</a>	46	
2-21	Annual total compensation ratio	<a href="#">5.2.3 Compensation and Benefits</a>	115	
4. Strategy, Policies, and Practices				
2-22	Statement on sustainable development strategy	<a href="#">A message from our Chairman and CEO</a>	5	
2-23	Policy commitments	<a href="#">4.1 Sustainable Supply Chain Management Framework and Mechanisms</a> <a href="#">5 Human Rights and Social Inclusion</a>	94 107	
2-24	Embedding policy commitments	<a href="#">4.1 Sustainable Supply Chain Management Framework and Mechanisms</a> <a href="#">5.1 Human Rights Governance</a>	94 108	
2-25	Processes to remediate negative impacts	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">1.4 Risk Management</a> <a href="#">5.3 Employee Communication and Relations</a>	28 54 121	
2-26	Mechanisms for seeking advice and raising concerns	<a href="#">1.2.1 Internal Controls and Audits</a>	51	
2-27	Compliance with laws and regulations	<a href="#">1.2 Business Integrity</a> <a href="#">3 Environmental Sustainability</a> <a href="#">5 Human Rights and Social Inclusion</a>	50 83 107	
2-28	Membership associations	<a href="#">Appendix 2: Memberships</a>	135	
5. Stakeholder Engagement				
2-29	Approach to stakeholder engagement	<a href="#">Materiality Analysis and Stakeholder Engagement</a>	28	
2-30	Collective bargaining agreements	<a href="#">5.3 Employee Communication and Relations</a>	121	No collective bargaining agreements as no union has been formed

GRI Standard	Disclosure		Corresponding Section	Page	Remarks
<b>Productivity and Business Performance*</b>					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">1 Corporate Governance</a>	28 42	
	3-2	List of material topics			
	3-3	Management of material topics			
GRI 201: Economic Performance 2016	201-1	201-1 Direct economic value generated and distributed	<a href="#">1.3.2 Economic Performance</a>	53	
	201-2	201-2 Financial implications and other risks and opportunities due to climate change	<a href="#">1.6 Climate Change Management</a>	62	
	201-3	201-3 Defined benefit plan obligations and other retirement plans	<a href="#">5.2.3 Compensation and Benefits</a>	115	
	201-4	201-4 Financial assistance received from government	<a href="#">1.1.4 Tax Management</a> <a href="#">4.3.1 Green and Low-carbon Supply Chain</a>	48 98	
<b>Business Integrity and Corporate Governance*</b>					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">1 Corporate Governance</a>	28 42	
	3-2	List of material topics			
	3-3	Management of material topics			
GRI 205: Anti-Corruption 2016	205-1	Operations assessed for risks related to corruption	<a href="#">1.2.1 Internal Controls and Audits</a>	51	
	205-2	Communication and training about anti-corruption policies and procedures	<a href="#">1.2 Business Integrity</a>	50	no incidents of corruption
	205-3	Confirmed incidents of corruption and actions taken	<a href="#">1.2 Business Integrity</a>	50	
GRI 206: Anti-competitive Behavior 2016	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	<a href="#">1.2 Business Integrity</a>	50	no incidents of anti-competitive behavior
<b>Energy and Greenhouse Gas Management*</b>					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">3 Environmental Sustainability</a>	28 83	
	3-2	List of material topics			
	3-3	Management of material topics			
GRI 302: Energy 2016	302-1	Energy consumption within the organization	<a href="#">3.1.1 Energy Management</a>	84	
	302-3	Energy intensity	<a href="#">3.1.1 Energy Management</a>	84	
	302-4	Reduction of energy consumption	<a href="#">3.1.1.2 Energy Conservation Action Plan</a>	85	
	302-5	Reductions in energy requirements of products and services	<a href="#">2.1.1 Innovation in Technology and Services</a>	71	
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	<a href="#">3.1.2 Greenhouse Gas Management</a>	87	
	305-2	Energy indirect (Scope 2) GHG emissions	<a href="#">3.1.2 Greenhouse Gas Management</a>	87	
	305-3	Other indirect (Scope 3) GHG emissions	<a href="#">3.1.2 Greenhouse Gas Management</a>	87	
	305-4	GHG emissions intensity	<a href="#">3.1.2 Greenhouse Gas Management</a>	87	
	305-5	Reduction of GHG emissions	<a href="#">3.1.2 Greenhouse Gas Management</a> <a href="#">3.1.1.2 Energy Conservation Action Plan</a>	87 85	
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	<a href="#">3.4 Air Pollution Control</a>	91	

GRI Standard	Disclosure		Corresponding Section	Page	Remarks
<b>Water Resource Management</b>					
GRI 303: Water and Effluents 2018	303-1	Interactions with water as a shared resource	<a href="#">3.2 Water Resource Management</a>	88	
	303-2	Management of water discharge-related impacts	<a href="#">3.2 Water Resource Management</a>	88	
	303-3	Water withdrawal	<a href="#">3.2 Water Resource Management</a>	88	
	303-4	Water discharge	<a href="#">3.2 Water Resource Management</a>	88	
	303-5	Water consumption	<a href="#">3.2 Water Resource Management</a>	88	
<b>Waste Management</b>					
GRI 306: Waste 2020	306-3	Waste generated	<a href="#">3.3 Waste Management</a>	91	
	306-4	Waste diverted from disposal	<a href="#">3.3 Waste Management</a>	91	
<b>Talent Management*</b>					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">5 Human Rights and Social Inclusion</a>	28 107	
	3-2	List of material topic			
	3-3	Management of material topics			
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	<a href="#">5.2.2 Talent Recruitment and Performance Evaluation</a>	112	
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	<a href="#">5.2.3 Compensation and Benefits</a>	115	
	401-3	Parental leave	<a href="#">5.2.3 Compensation and Benefits</a>	115	
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	
	403-2	Hazard identification, risk assessment, and incident investigation	<a href="#">5.4.1 Occupational Safety and Health Management System</a> <a href="#">5.4.2 Environmental Safety and Health Risk Assessment</a>	122 126	
	403-3	Occupational health services	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	
	403-4	Worker participation, consultation, and communication on occupational health and safety	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	
	403-5	Worker training on occupational health and safety	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	
	403-6	Promotion of worker health	<a href="#">5.2.3 Compensation and Benefits</a> <a href="#">5.4.1 Occupational Safety and Health Management System</a>	115 122	
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	<a href="#">5.4.1 Occupational Safety and Health Management System</a> <a href="#">5.4.3 Emergency Response Measures</a>	122 126	
	403-8	Workers covered by an occupational health and safety management system	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	
	403-9	Work-related injuries	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	
	403-10	Work-related ill health	<a href="#">5.4.1 Occupational Safety and Health Management System</a>	122	No incidents of Occupational Diseases



GRI Standard	Disclosure		Corresponding Section	Page	Remarks
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	<a href="#">5.2.4 Talent Development and Learning Outcomes</a>	119	
	404-2	Programs for upgrading employee skills and transition assistance programs	<a href="#">5.2.4 Talent Development and Learning Outcomes</a>	119	
	404-3	Percentage of employees receiving regular performance and career development reviews	<a href="#">5.2.2 Talent Recruitment and Performance Evaluation</a>	112	
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	<a href="#">1.1.1 Board of Directors</a>	43	
			<a href="#">5.2.1 Workforce Structure</a>	110	
			<a href="#">5.2.2 Talent Recruitment and Performance Evaluation</a>	112	
GRI 406: Non-discrimination 2016	406-1	Ratio of basic salary and remuneration of women to men	<a href="#">5.2.3 Compensation and Benefits</a>	115	
	406-1	Incidents of discrimination and corrective actions taken	<a href="#">5 Human Rights and Social Inclusion</a>	107	No incidents of discrimination occurred
GRI 408: Child Labor 2016	408-1	Operations and suppliers at significant risk for incidents of child labor	<a href="#">5.2.1 Workforce Structure</a>	110	No incidents of child labor occurred at operational sites and among suppliers.
<b>Supply Chain Management*</b>					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">4 Sustainable Supply Chain</a>	28 93	
	3-2	List of material topics			
	3-3	Management of material topics			
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	<a href="#">4.1.3 Supplier Management Process and Mechanisms</a>	95	
	308-2	Negative environmental impacts in the supply chain and actions taken	<a href="#">4.1.3 Supplier Management Process and Mechanisms</a>	95	
			<a href="#">4.2 Sustainable Supply Chain Risk Management</a>	96	
GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	<a href="#">4.1.3 Supplier Management Process and Mechanisms</a>	95	
	414-2	Negative social impacts in the supply chain and actions taken	<a href="#">4.3 Sustainable Supply Chain Impact</a>	98	
			<a href="#">4 Sustainable Supply Chain</a>	93	
<b>Product and Service Quality</b>					
GRI 417: Marketing and Labeling 2016	417-2	Incidents of non-compliance concerning product and service information and labeling	<a href="#">1.2 Business Integrity</a>	50	No incidents of non-compliance concerning product and service information and Labeling
	417-3	Incidents of non-compliance concerning marketing communications	<a href="#">1.2 Business Integrity</a>	50	No incidents of non-compliance Concerning marketing Communications

GRI Standard	Disclosure		Corresponding Section	Page	Remarks
Information Security and Personal Information Protection					
GRI 418: Customer Privacy 2016	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	<a href="#">2.3 Customer Relationship Management</a>	81	No substantiated complaints Regarding concerning breaches of customer privacy and losses of customer data
Green Product*					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">2 Green Product</a>	28 70	
	3-2	List of material topics			
	3-3	Management of material topics			
Self-defined topics – Green product	—	—	<a href="#">2 Green Product</a>	70	
Research, Development and Innovation*					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">2.1 Research, Development, and Innovation</a>	28 71	
	3-2	List of material topics			
	3-3	Management of material topics			
Self-defined topics – Research & Develop- ment and innovation	—	—	<a href="#">2.1 Research, Development, and Innovation</a>	71	
Risk Management*					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">1 Corporate Governance</a>	28 42	
	3-2	List of material topics			
	3-3	Management of material topics			
Self-defined topics – Risk management	—	—	<a href="#">1.4 Risk Management</a>	54	
Regulatory Compliance*					
GRI 3	3-1	Process to determine material topics	<a href="#">Materiality Analysis and Stakeholder Engagement</a> <a href="#">1 Corporate Governance</a>	28 42	
	3-2	List of material topics			
	3-3	Management of material topics			
Self-defined topics – Regulatory compliance	—	—	<a href="#">1.2 Business Integrity</a> <a href="#">3 Environmental Sustainability</a> <a href="#">5 Human Rights and Social Inclusion</a>	50 83 107	

## Appendix 4: SASB (Sustainability Accounting Standards Board) Standards Index

Topic	Code	Category	Metric	Year 2022	Year 2023	Remarks
Greenhouse Gas Emissions	TC-SC-110a.1	Quantitative	(1) Gross global Scope 1 emissions	44,373 tCO <sub>2</sub> e	Taiwan : 44,149 tCO <sub>2</sub> e Subsidiaries : 18,835 tCO <sub>2</sub> e	Not subject to Scope 1 related emission controls 3.1.2 Greenhouse Gas Management
			(2) Amount of total emissions from per-fluorinated compounds	13,071 tCO <sub>2</sub> e	11,631 tCO <sub>2</sub> e	
	TC-SC-110a.2	Discussion and Analysis	Discussion of long-and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	3.1.2 Greenhouse Gas Management		3.1.2 Greenhouse Gas Management
				Winbond's goal is to use 90% renewable energy in the CTSP Fab by 2030, and in compliance with the ISO 50001 energy management policy, gradually increases the use of renewable energy each year. By 2050, it will use 100% renewable energy. As of 2023, solar power has been installed at the CTSP Fab, while the Kaohsiung Fab is in the active assessment stage. In the future, there will be continued planning to collaborate with other companies to establish new solar power plants and actively expand the use of renewable energy green power, etc.		
Energy Management in Manufacturing	TC-SC-130a.1	Quantitative	(1) Total energy consumed	About 2,807,178 GJ	Taiwan : About 2,958,834 GJ Subsidiaries : About 269,250 GJ	3.1.1 Energy Management
			(2) Percentage grid electricity	88.30%	87.89%	3.1.1 Energy Management
			(3) Percentage renewable	-	0.3%	3.1.1 Energy Management
Water Management	TC-SC-140a.1	Quantitative	(1) Total water withdrawn	4,131 megaliters	Taiwan : 4,356 megaliters Subsidiaries : 396 megaliters	3.2 Water Resource Management
			(2) Total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress			Locations of operations in Taiwan are all located in low risk areas of water resource pressure
Waste Management	TC-SC-150a.1	Quantitative	Amount of hazardous waste from manufacturing and percentage recycled	▪ 4,608 metric tons of hazardous waste ▪ Hazardous waste recycling rate 84%	▪ Taiwan - 6,387 metric tons of hazardous waste - Hazardous waste recycling rate 83% ▪ Subsidiaries: - 407 metric tons of hazardous waste - Hazardous waste recycling rate 95%	3.3 Waste Management

Topic	Code	Category	Metric	Year 2022	Year 2023	Remarks
Workforce Health & Safety	TC-SC-320a.1	Discussion and Analysis	Description of efforts to assess, monitor, and reduce exposure of workforce to human health hazards	<p><b>5.4 Occupational Safety and Health</b></p> <ul style="list-style-type: none"> <li>The “ESH Risk Assessment Operating Procedure” has been formulated by Winbond to identify the ESH risks and opportunities to the environment, personnel and hygiene from activities, products or services</li> <li>Risk level is calculated based on past operational history and the current situation. The potential situation, effect or impact and probability are assessed. Improvement measures are then drawn up for risk reduction in the following order: elimination, replacement, engineering control, signage/warning /management control, and personal protective equipment</li> <li>In Taiwan fab, internal audit is conducted at least once a year along with annual reviews; any major changes to production processes, facilities and operational content will all trigger a new assessment.</li> </ul>	No penalties associated with Occupational Safety and Health violations in 2023.	<a href="#">5.4 Occupational Safety and Health</a>
	TC-SC-320a.2	Quantitative	Total amount of monetary losses as a result of legal proceedings associated with employee health and safety violations			
Recruiting & Managing a Global & Skilled Workforce	TC-SC-330a.1	Quantitative	(1) Percentage of employees that are foreign nationals	1.30%	1.41%	<a href="#">5.2.1 Workforce Structure</a>
			(2) Percentage of employees that are nationals located offshore	0.00%	0.08%	<a href="#">5.2.1 Workforce Structure</a>
Product Lifecycle Management	TC-SC-410a.1	Quantitative	Percentage of products by revenue that contain IEC 62474 declarable substances	No IEC 62474 declarable products		
	TC-SC-410a.2	Quantitative	Processor energy efficiency at a system level for: (1) servers, (2) desktops and (3) laptops	Not producing servers, desktops and laptops.		
Materials Sourcing	C-SC-440a.1	Discussion and Analysis	Description of the management of risks associated with the use of critical materials	<p><b>4.1 Sustainable Supply Chain Management Framework and Mechanisms</b></p> <p>A Sustainable Supply Chain team is set up under the ESG committee to be responsible for developing supplier management policies and related sustainable development issues.</p> <p>2023 Supplier Sustainability Management Results:</p> <ul style="list-style-type: none"> <li>Signing rate of Winbond Supplier code of conduct commitment letter: 100%</li> <li>Percentage of suppliers who have signed agreements not to use prohibited materials: 100%</li> <li>Compliance rates of newly traced suppliers with respect to economic, environmental, and social standards: 100%</li> </ul>		<a href="#">4.1 Sustainable Supply Chain Management Framework and Mechanisms</a>
Intellectual Property Protection & Competitive Behaviour	TC-SC-520a.1	Quantitative	Total amount of monetary losses as a result of legal proceedings associated with anti-competitive behaviour regulations		No violations of anti-competitive regulations in 2023.	<a href="#">1.2 Business Integrity</a>
Activity Metrics	TC-SC-000.A	Quantitative	Total production	Total wafer production was 2.1 thousand pcs Total die production was 3,397,345 thousand pcs	Total wafer production was 2.6 thousand pcs Total die production was 3,769,936 thousand pcs	For financial performance and sales volume in 2023, please refer to <a href="#">Winbond's 2023 Annual Report</a> , p.76
	TC-SC-000.B	Quantitative	Percentage of production from owned facilities	100%	100%	

## Appendix 5: TWSE Sustainability Index - Semiconductor Industry

No.	Indicator	Indicator Type	Annual Disclosure	Page
1	Total energy consumption, percentage of purchased electricity, utilization rate of renewable energy	Quantitative	<ul style="list-style-type: none"> <li>▪ The total energy consumption is about 2,958,834 GJ</li> <li>▪ 100% purchased electricity</li> <li>▪ 0.3% Renewable energy usage</li> </ul>	85
2	Total water withdrawn, total water consumption	Quantitative	<ul style="list-style-type: none"> <li>▪ Total water withdrawal: <b>Taiwan:</b> 4,356 thousand m<sup>3</sup>, <b>Subsidiaries:</b> 396 thousand m<sup>3</sup></li> <li>▪ Total water consumption: <b>Taiwan:</b> 1,432 thousand m<sup>3</sup>, <b>Subsidiaries:</b> 79 thousand m<sup>3</sup></li> </ul>	88
3	Total hazardous waste generated, and percentage recycled	Quantitative	<ul style="list-style-type: none"> <li>▪ Total hazardous waste: <b>Taiwan:</b> 6,387 metric tons, <b>Subsidiaries:</b> 407 metric tons</li> <li>Hazardous waste recycling rate: <b>Taiwan:</b> 83%, <b>Subsidiaries:</b> 95%</li> </ul>	91
4	Types of, number of employees in and rate of occupational accidents	Quantitative	<ul style="list-style-type: none"> <li>▪ Occupational accident types: crushing injury caused by falling objects, chemical splash injury, personnel fall accident</li> <li>▪ Number of employees with work-related injuries on record: 5 entries</li> <li>▪ Ratio of work-related injuries on record: 0.72</li> </ul>	123
5	Product Lifecycle Management Disclosure: including weights of scraps and electronic waste and percentage recycled <sup>(Note 1)</sup>	Quantitative	<p>3.3 Waste Management</p> <ul style="list-style-type: none"> <li>▪ Produced waste: <b>Taiwan:</b> 13,595 metric tons, <b>Subsidiaries:</b> 675 metric tons</li> <li>The overall waste recycling rate reached: <b>Taiwan:</b> 90.9%, <b>Subsidiaries:</b> 71%</li> </ul>	91
6	Description of the management of risks associated with the use of critical materials	Qualitative description	<p>4.1 Sustainable Supply Chain Management Framework and Mechanisms</p> <p>A Sustainable Supply Chain team is set up under the ESG committee to be responsible for developing supplier management policies and related sustainable development issues.</p> <p>2023 Supplier Sustainability Management Results:</p> <ul style="list-style-type: none"> <li>▪ Signing rate of Winbond Supplier code of conduct commitment letter: 100%</li> <li>▪ Percentage of suppliers who have signed agreements not to use prohibited materials: 100%</li> <li>▪ Compliance rates of newly traced suppliers with respect to economic, environmental, and social standards: 100%</li> </ul>	94
7	Total amount of monetary losses as a result of legal proceedings associated with anticompetitive behavior regulations	Quantitative	No violations of anti-competitive regulations in 2023	50
8	Production by product category	Quantitative	<ul style="list-style-type: none"> <li>▪ Total wafer production was 2.6 thousand pcs</li> <li>▪ Total die production was 3,769,936 thousand pcs</li> </ul>	For financial performance and sales volume in 2023, please refer to <a href="#">Winbond's 2023 Annual Report</a> , p.72

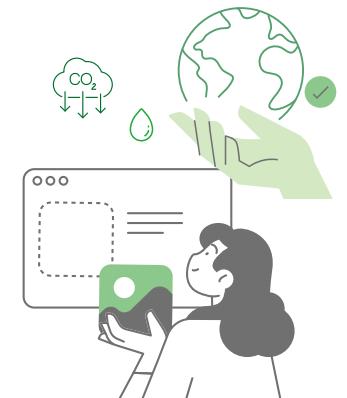


Including the sale of scrap materials or other recycling processes, relevant explanations should be provided.

## Appendix 6: Climate Related Index

Risks and opportunities brought by climate change to the company and related countermeasures taken by the company. Please refer to section [1.6, Climate Change Management](#), or [Winbond's 2023 Task Force on Climate-related Financial Disclosures Report](#).

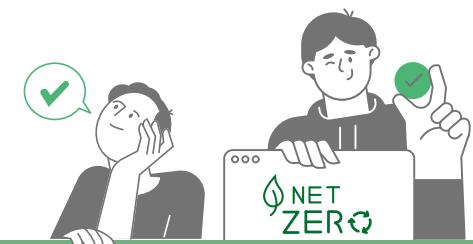
Item	Implementation Status			
1. Description of the Board of Directors' and management's oversight and governance of climate-related risks and opportunities	<p>The Board of Directors, as the highest governance body for climate change, is responsible for guiding the company's response to and decision-making on climate change.</p> <p>The ESG Committee, established under the Board of Directors and chaired by the Chairman, provides annual reports to the Board on the implementation outcomes related to climate change and other ESG initiatives. This ensures the effective promotion and execution of the company's sustainable development efforts.</p>			
2. Description of how the identified climate risks and opportunities affect the business, strategy and finances of the company (short-, medium- and long-term).	Climate Risks	Climate Opportunities	(4) Obtain government incentives or collaboration Mid-term	(5) Development of low-carbon products or services Long-term
3. Description of the financial impact of extreme weather events and transition actions.	<p><b>(1) Change in customer behavior</b> Shor-term</p> <ul style="list-style-type: none"> <li>Decrease in sales of non-low-carbon products (-)</li> <li>Increased communication with customers, which also resulted in higher labor costs (-)</li> </ul> <p><b>(2) Low-carbon technology transformation</b> Shor-term</p> <ul style="list-style-type: none"> <li>Capital expenditure for new equipment (-)</li> <li>R&amp;D cost increase (-)</li> <li>Reduction in carbon emissions leading to a decrease in carbon tax/fee expenditures (+)</li> </ul> <p><b>(3) Carbon fee / Carbon tax levy</b> Shor-term</p> <ul style="list-style-type: none"> <li>Increase in indirect costs (-)</li> <li>Suppliers pass on their carbon tax/fee expenditures, leading to increased procurement costs (-)</li> <li>Limited capacity expansion (-)</li> </ul> <p><b>(4) Requirement of renewable energy</b> Shor-term</p> <ul style="list-style-type: none"> <li>Higher green energy prices result in increased production costs (-)</li> <li>Reducing carbon emissions leads to a decrease in carbon tax/fees (+)</li> <li>Suppliers pass on their renewable energy expenditures, leading to increased procurement costs (-)</li> <li>Limited production due to difficulty in acquiring renewable energy (-)</li> </ul>	<p><b>(5) Environmental regulations</b> Shor-term</p> <ul style="list-style-type: none"> <li>Compliance costs increase due to regulatory requirement (-)</li> <li>Penalties for non-compliance (-)</li> <li>Rising environmental fee as indirect costs (-)</li> </ul> <p><b>(6) International conventions or agreements</b> Shor-term</p> <ul style="list-style-type: none"> <li>Indirect costs arising from post-agreement commitments (-)</li> <li>Capital expenditures resulting from post-agreement commitments (-)</li> <li>Reducing carbon emissions decreases carbon tax/fee expenses (+)</li> </ul> <p><b>(7) Greenhouse gas emissions regulations and trading</b> Mid-term</p> <ul style="list-style-type: none"> <li>Penalties for excessive emissions increase indirect costs (-)</li> <li>Early replacement of existing equipment reduces asset value (-)</li> <li>Introducing renewable energy increases production costs (-)</li> <li>Capacity expansion constraints (-)</li> </ul>	<p><b>(1) Change in customer behavior</b> Shor-term</p> <ul style="list-style-type: none"> <li>Product portfolio changes that accelerate positive development across entire supply chain</li> <li>Obtaining orders and expanding revenue</li> <li>Increased order stability and reduced revenue fluctuations</li> <li>Improved company reputation</li> </ul> <p><b>(2) Participation in renewable energy projects</b> Shor-term</p> <ul style="list-style-type: none"> <li>Reduction in carbon emissions leading to a decrease in carbon tax/fee expenditures</li> <li>Diversified sources of electricity to mitigate risks</li> <li>Support for compliance with renewable energy regulations and achieving corporate goals</li> </ul> <p><b>(3) Process optimization and R&amp;D innovation</b> Mid-term</p> <ul style="list-style-type: none"> <li>Reduction in carbon emissions leading to a decrease in carbon tax/fee expenditures</li> <li>Reduction in water and resource consumption leading to lower production costs</li> <li>Obtain orders to expand revenue</li> </ul>	<p><b>(4) Obtain government incentives or collaboration</b> Mid-term</p> <ul style="list-style-type: none"> <li>Reduce capital expenditures by obtaining government subsidies</li> <li>Lower indirect costs by obtaining government subsidies</li> <li>Enhance the company's reputation</li> </ul> <p><b>(5) Development of low-carbon products or services</b> Long-term</p> <ul style="list-style-type: none"> <li>Increased product prices</li> <li>Expansion in market share and increase in revenue</li> </ul>



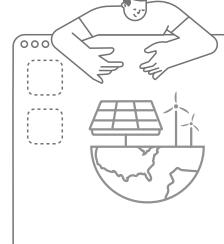
Item	Implementation Status
<b>4. Description of how the identification, assessment, and management processes for climate risks are integrated in the overall risk management system.</b>	<p>In 2023, Winbond convened 15 department-level units and nearly 30 colleagues to establish the TCFD project team. Referring to the division of responsibilities by the ESG Committee's working groups, team members were grouped based on the nature of their business. Each group discussed climate change issues relevant to their business and reported the assessment results during the Sustainable Development Committee meetings.</p> 
<b>5. If scenario analysis is used to assess resilience to climate change risks, the scenarios, parameters, assumptions, analysis factors and major financial impacts used shall be explained.</b>	<p><b>External Scenarios /Hypothetic/Financial impact on revenue in 2030</b></p> <p><b>(1) Carbon Tax</b></p>  <ul style="list-style-type: none"> <li>National Net-zero Pathway / Estimations based on SSP2-4.5 indicate a range of US\$2 to 10 per metric ton of CO<sub>2</sub> equivalent from 2021 to 2050. / 0.1%~0.2%.</li> <li>SSP1-1.9 / Referring to SSP1-1.9, achieving approximately US\$650 per metric ton of CO<sub>2</sub> equivalent by 2050. / 2.0%~4.0%.</li> </ul>  <p><b>(2) Carbon Fee</b></p>  <ul style="list-style-type: none"> <li>The government's net-zero pathway includes a carbon exemption quota of 25,000 tCO<sub>2</sub>e/year; the carbon fee is estimated at NT\$1,500 per tCO<sub>2</sub>e, accounting for 0.1% to 0.2%.</li> </ul>  <p><b>(3) Regulatory Requirements for Using Renewable Energy Electricity</b></p>  <ul style="list-style-type: none"> <li>Government Net Zero Pathway: Procurement costs estimated by adding the average price of Taiwan Power Company's renewable energy electricity resale to the supply cost: &lt;0.03%.</li> <li>SSP1-1.9: Procurement costs estimated by adding the average price of Taiwan Power Company's renewable energy electricity resale to the supply cost: &lt;0.03%.</li> <li>SBT-NZ: Procurement costs estimated by adding the average price of Taiwan Power Company's renewable energy electricity resale to the supply cost: &lt;0.03%.</li> </ul> 



Item	Implementation Status	
	Climate-related risk transition plan	Climate-related metrics and goals
6. If there is a transition plan for managing climate-related risks, describe the content of the plan, and the indicators and goals used to identify and manage physical risks and transition risks.	<p><b>(1) Green Product :</b></p> <ul style="list-style-type: none"> <li>■ Enhancing productivity</li> <li>■ Decreasing power consumption of products in use</li> <li>■ Reducing power consumption and extending battery life</li> <li>■ Supporting environmentally friendly and low-energy consumption low-temperature soldering processes</li> </ul> <p><b>(2) Sustainable Supply Chain :</b></p> <ul style="list-style-type: none"> <li>■ Promoting the transformation of supply chains towards Decarbonization</li> <li>■ Enhancing sustainable procurement</li> <li>■ Strengthening low-carbon management of outsourcers</li> <li>■ Actively establishing internal green logistics systems</li> </ul> <p><b>(3) Energy and Greenhouse Gas Management:</b></p> <ul style="list-style-type: none"> <li>■ Implementing energy-saving measures</li> <li>■ Planning for the use of renewable energy</li> <li>■ Adopting Greenhouse Gas Management processes</li> <li>■ Establishing greenhouse gas emission reduction targets in production and manufacturing</li> <li>■ Creating a carbon emission information platform</li> </ul> <p><b>(4) Water Management :</b></p> <ul style="list-style-type: none"> <li>■ As of 2023, all locations of operations in Taiwan are all located in low-risk areas of water resource pressure</li> </ul> <p><b>(5) Sustainable Investment and Financing :</b></p> <ul style="list-style-type: none"> <li>■ Continuing to layout renewable energy</li> <li>■ Participating in sustainable finance through various channels</li> </ul>	<p><b>(1) Green Product :</b></p> <ul style="list-style-type: none"> <li>■ 1.2V HyperRAM mass production : 20% reduction in GHG emissions throughout the products' life cycle.</li> <li>■ 3V Spi NOR RV series mass production : GHG reduction of 110,000 tCO<sub>2</sub>e in 2030</li> </ul> <p><b>(2) Sustainable Supply Chain :</b></p> <ul style="list-style-type: none"> <li>■ Supply chain carbon reduction: reduce carbon emissions by 10% by 2030 (based on the year 2021)</li> <li>■ Sustainable risk assessment completion rate for key suppliers: 100% by 2030</li> <li>■ Construction and utilization rate of outsourced product carbon data exchange standard modules: 100% utilization rate by 2030</li> <li>■ Planning rate of internal green logistics system and green electricity product production system: 100% utilization rate by 2030</li> </ul> <p><b>(3) Environmental Sustainability :</b></p> <ul style="list-style-type: none"> <li>■ Greenhouse Gas Emission Intensity: Reduce by 5% YoY by 2030</li> <li>■ Total Power Saving: &gt;2~3% by 2030</li> <li>■ Renewable Energy Usage/Proportion: 90% use of renewable energy in the CTSP fab area by 2030</li> <li>■ Unit Product Power Consumption: Reduce by 1% YoY by 2030</li> <li>■ Fab-wide Water Recycling Rate ≥80% in 2030</li> </ul> <p><b>(4) Adaptation to Climate Risk :</b></p> <ul style="list-style-type: none"> <li>■ Operational Interruptions Caused by Climate Disasters (Days): 0 days</li> </ul>





Item	Implementation Status
7. If internal carbon pricing is used as a planning tool, the basis for the price setting shall be stated.	 <p>A series of plans for carbon emission management are being implemented, currently focusing on greenhouse gas inventory and carbon accounting system establishment. Carbon pricing will be discussed in accordance with the above plans.</p>
8. If climate-related goals are set, information such as the activities covered, the scope of greenhouse gas emissions, the planned schedule, and the progress achieved each year shall be stated; if carbon offsets or Renewable Energy Certificates (RECs) are used to achieve relevant goals, the source and quantity of carbon reduction credits or the number of RECs offset shall be stated.	 <p><b>Climate-related activities:</b></p> <ul style="list-style-type: none"><li>▪ Process gas reduction, process tail gas reduction</li><li>▪ Energy efficiency improvement, zero carbon energy, low carbon value chain</li><li>▪ Carbon offset</li><li>▪ In 2023: we utilized renewable energy electricity and obtained 2,103 Taiwan Renewable Energy Certificates (T-RECs).</li><li>▪ 2021-2050 Net Zero Emission Pathway:</li><li>▪ 2030: The CTSP Fab aims to use 90% green energy for its electricity needs, with a 60% carbon reduction from supply chain.</li><li>▪ 2050: The goal is to achieve net-zero emissions</li></ul>
9. Greenhouse gas inventory and assurance situation <small>(See 1-1 and 1-2)</small>	 <p><a href="#">1-1 Greenhouse Gas Inventories and Verification Information for the Most Recent Two Years</a></p> <p><a href="#">1-2 Greenhouse Gas Reduction Targets, Strategies, and Specific Action Plans</a></p>



## 1-1 Greenhouse Gas Inventories and Verification Information for the Most Recent Two Years

**Greenhouse Gas Inventories Information:** This section provides details on greenhouse gas emissions (in tCO<sub>2</sub>e), intensity (in tCO<sub>2</sub>e per NT\$ million), and data coverage for the most recent two years.

- **Greenhouse Gas Verification Information:** This section describes the verification status for the past two years, including the scope of verification, verifying organization, verification criteria, and verification opinions.

### Basic Information

- Companies in the steel or cement industries with a capital of more than NT\$10 billion
- Companies with a capital of more than NT\$5 billion but less than NT\$10 billion
- Companies with a capital of less than NT\$5 billion

**According to the provisions of the sustainable development roadmap of the TWSE/TPEX-listed companies, the disclosure shall at least include**

- Parent company only inventory
- Inventory of subsidiaries in the consolidated financial statements
- Parent company only assurance
- Assurance of subsidiaries in the consolidated financial statements



Scope 1	Total Emissions (tCO <sub>2</sub> e)		Intensity (tCO <sub>2</sub> e/NT\$ million)		Assurance Provider	Description of the Assurance Situation		
	Year	2022	2023	2022	2023	2022	2023	2023
Winbond	44,373	44,149	0.868	1.175	• BSI Taiwan • DNV Taiwan	BSI Taiwan	In the total greenhouse gas emissions, 44,373 tCO <sub>2</sub> e (representing 100% of total emissions) have been assured by a verification body in accordance with ISO 14064-3 standard, with the assurance opinion being reasonably assured.	In the total greenhouse gas emissions, 44,149 tCO <sub>2</sub> e (representing 100% of total emissions) have been assured by a verification body in accordance with ISO 14064-3 standard, with the assurance opinion being reasonably assured.
Total	44,373	44,149	0.868	1.175	• BSI Taiwan • DNV Taiwan	BSI Taiwan		
Scope 2	Total Emissions (tCO <sub>2</sub> e)		Intensity (tCO <sub>2</sub> e/NT\$ million)		Assurance Provider	Description of the Assurance Situation		
Year	2022	2023	2022	2023		2022	2023	2023
Winbond	353,523	356,535	6.913	9.492	• BSI Taiwan • DNV Taiwan	BSI Taiwan	In the total greenhouse gas emissions, 353,532 tCO <sub>2</sub> e (representing 100% of total emissions) have been assured by a verification body in accordance with ISO 14064-3 standard, with the assurance opinion being reasonably assured.	In the total greenhouse gas emissions, 353,535 tCO <sub>2</sub> e (representing 100% of total emissions) have been assured by a verification body in accordance with ISO 14064-3 standard, with the assurance opinion being reasonably assured.
Total	353,523	356,535	6.913	9.492	• BSI Taiwan • DNV Taiwan	BSI Taiwan		
Scope 3 (Voluntarily)	443,204	454,221	8.667	12.093	• BSI Taiwan • DNV Taiwan	BSI Taiwan	In the total greenhouse gas emissions, 443,204 tCO <sub>2</sub> e (representing 100% of total emissions) have been assured by a verification body in accordance with ISO 14064-3 standard, with the assurance opinion being reasonably assured.	In the total greenhouse gas emissions, 454,204 tCO <sub>2</sub> e (representing 100% of total emissions) have been assured by a verification body in accordance with ISO 14064-3 standard, with the assurance opinion being reasonably assured.

## 1-2 Greenhouse Gas Reduction Targets, Strategies, and Specific Action Plans

### Specify the base year and data for greenhouse gas reduction, reduction targets, strategies, specific action plans, and the achievement of reduction targets

1.Baseline year: In 2022, 13.2 kilograms CO<sub>2</sub>e

2.Reduction targets and achievements

- ✓ The greenhouse gas emission target is to reduce the unit greenhouse gas emission intensity YoY by 5% annually by 2030. The unit greenhouse gas emission intensity indicator for 2023 - "Average greenhouse gas emissions per layer of photomask for 12-inch wafer production" is 15.5 kilograms of carbon dioxide equivalent, compared to 13.2 kilograms of carbon dioxide equivalent in 2022, representing a YoY increase in unit product carbon emissions of about 17.4%. The reason for not achieving the target is due to factors such as the global economic recession in 2023 leading to a decrease in production capacity and the new plant in Kaohsiung not yet reaching its economic scale, resulting in an increase in unit product average emissions.
- ✓ Reduce 60% emission at CTSP Fab, in 2030.

3.Strategies: In the future, continue to promote the reduction of process gases FCs (process improvement, installation of exhaust gas treatment equipment) and energy saving (process optimization, performance improvement, smart energy saving, etc.), as well as plans such as using renewable energy to continue reducing carbon emissions.

4.Action Plan: please refer to [3.1.1.2 Energy Conservation Action Plan](#)

## Appendix 7: UN Global Compact

	Principles	Explanation and Policies	Chapter
Human Rights	1 Businesses should support and respect the protection of internationally proclaimed human rights.	Winbond commits to adhering to internationally recognized human rights standards as the highest guiding principles. These standards include the United Nations Guiding Principles on Business and Human Rights, the International Labor Organization's Declaration on Fundamental Principles and Rights at Work, and the Universal Declaration of Human Rights. Winbond implements relevant guidelines from the Code of Conduct - Responsible Business Alliance to support and safeguard human rights, ensuring a safe and ethically sound working environment. For further details, please refer to the sections on <a href="#">5.1 Human Rights Governance</a> and <a href="#">Human Rights Policy</a> .	<a href="#">5.1 Human Rights Governance</a>
	2 Make sure that they are not complicit in human rights abuses.	In accordance with the Responsible Business Alliance (RBA) Code of Conduct, Winbond ensures that they do not purchase or use minerals from conflict areas controlled by non-governmental military groups or illegal military factions in the Democratic Republic of the Congo. These conflict minerals include gold (Au), tantalum (Ta), tungsten (W), and tin (Sn). The signing rate of the Winbond Supplier Code of Conduct Commitment Letter reached 100% among our key suppliers. For more details, refer to chapter <a href="#">4. Sustainable Supply Chain</a> and <a href="#">Winbond Responsible Minerals Due Diligence Report</a> .	<a href="#">4. Sustainable Supply Chain</a>
Labor	3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.		<a href="#">5.1 Human Rights Governance</a> <a href="#">5.3 Employee Communication and Relations</a>
	4 The elimination of all forms of forced and compulsory labor.	Winbond places significant emphasis on the development of human rights issues and actively engages in Human Rights Management activities. In order to comprehensively assess the current state of human rights risks and facilitate continuous improvement, Winbond conducted its first-ever human rights due diligence survey for all employees in 2022. The results of this survey did not reveal any high-risk issues. However, Winbond remains committed to optimizing and minimizing the occurrence and impact of six important human rights issues. For detailed information on the investigation process, improvement measures, and tracking items, please refer to the sections on <a href="#">5.1 Human Rights Governance</a> and the <a href="#">2022 Human Rights Due Diligence Report</a> .	<a href="#">5.1 Human Rights Governance</a>
Environment	5 The effective abolition of child labor.		<a href="#">5.1 Human Rights Governance</a> <a href="#">5.2 Talent Attraction and Development</a>
	6 The elimination of discrimination in respect of employment and occupation.		<a href="#">5 Human Rights and Social Inclusion</a>
Anti-Corruption	7 Businesses should support a precautionary approach to environmental challenges.	While engaged in business operations, Winbond actively practices sustainable development to align with international trends. Through corporate citizenship, Winbond aims to enhance national economic contributions, improve the quality of life for employees, communities, and society, and foster sustainable development as a competitive advantage. For further details, please refer to company regulations on <a href="#">Sustainable Development Best Practice Principles</a> .	<a href="#">3 Environmental Sustainability</a>
	8 Undertake initiatives to promote greater environmental responsibility.	Winbond stands shoulder to shoulder with global nations and businesses in implementing green sustainability. They actively reduce the environmental impact of their operational processes, ensuring alignment with the Sustainable Development Goals (SDGs). For detailed information, refer to <a href="#">Chapter 3 Environmental Sustainability</a> .	<a href="#">3 Environmental Sustainability</a>
Anti-Corruption	9 Encourage the development and diffusion of environmentally friendly technologies.	Winbond's vision is to "Be a hidden champion in providing sustainable semiconductors to enrich human life." They are committed to developing high-performance, compact, energy-efficient, and high-quality green memory products and processes. Winbond pledges to leverage innovative technology to create energy-saving and low-carbon emission solutions.	<a href="#">2.1 Research, Development, and Innovation</a>
	10 Businesses should work against corruption in all its forms, including extortion and bribery.	Business Integrity is Winbond's highest ethical standard. The Human Resources department is responsible for fostering a corporate culture of Business Integrity. This involves establishing and developing norms, continuous improvement, monitoring and control, creating proper reporting channels, implementing confidentiality measures, and providing education and training. Winbond adheres to the Responsible Business Alliance (RBA) Code of Conduct and the Business Integrity Guidelines for listed companies. For further details, please refer to the <a href="#">Procedures for Ethical Management and Guidelines for Conduct</a> and the <a href="#">Rules for Handling Breach of Ethics in Corporate Management</a> .	<a href="#">1.2 Business Integrity</a>

## Appendix 8: Assurance Statement

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**INDEPENDENT ASSURANCE OPINION STATEMENT**

**Winbond 2023 Sustainability Report**

The British Standards Institution is independent to Winbond Electronics Corporation (hereafter referred to as Winbond in this statement) and has no financial interest in the operation of Winbond other than for the assessment and verification of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of Winbond only for the purpose of assuring its statements relating to its sustainability report, more particularly described in the Scope below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by Winbond. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to Winbond only.

**Scope**

The scope of engagement agreed upon with Winbond includes the following:

1. The assurance scope is consistent with the description of Winbond 2023 Sustainability Report.
2. The evaluation of the nature and extent of the Winbond's adherence to AA1000AP (2018) in this report as conducted in accordance with type 1 of AA1000AS v3 sustainability assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.

This statement was prepared in English and translated into Chinese for reference only.

**Opinion Statement**

We conclude that the Winbond 2023 Sustainability Report provides a fair view of the Winbond sustainability programmes and performances during 2023. The sustainability report subject to assurance is free from material misstatement based upon testing within the limitations of the scope of the assurance, the information and data provided by the Winbond and the sample taken. We believe that the performance information of Environment, Social and Governance (ESG) are fairly represented. The sustainability performance information disclosed in the report demonstrate Winbond's efforts recognized by its stakeholders. Our work was carried out by a team of sustainability report assures in accordance with the AA1000AS v3. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that Winbond's description of their approach to AA1000AS v3 and their self-declaration in accordance with GRI Standards were fairly stated.

**Methodology**

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a top level review of issues raised by external parties that could be relevant to Winbond's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers on approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 17 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the findings of internal audits.
- review of supporting evidence for claims made in the reports.
- an assessment of the organization's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness, and Impact as described in the AA1000AP (2018).

**Conclusions**

A detailed review against the Inclusivity, Materiality, Responsiveness, and Impact of AA1000AP (2018) and GRI Standards is set out below:

**Inclusivity**

This report has reflected a fact that Winbond has continually sought the engagement of its stakeholders and established material sustainability topics, as the participation of stakeholders has been conducted in developing and achieving an accountable and strategic response to sustainability. There are fair reporting and disclosures for the information of Environment, Social and Governance (ESG) in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the Winbond's inclusivity issues.

**Materiality**

Winbond publishes material topics that will substantively influence and impact the assessments, decisions, actions and performance of Winbond and its stakeholders. The sustainability information disclosed enables its stakeholders to make informed judgements about the Winbond's management and performance. In our professional opinion the report covers the Winbond's material issues.

**Responsiveness**

Winbond has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for Winbond is developed and continually provides the opportunity to further enhance Winbond's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the Winbond's responsiveness issues.

**Impact**

Winbond has identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. Winbond has established processes to monitor, measure, evaluate, and manage impacts that lead to more effective decision-making and results-based management within the organization. In our professional opinion the report covers the Winbond's impact issues.

**GRI Sustainability Reporting Standards (GRI Standards)**

Winbond provided us with their self-declaration in accordance with GRI Standards 2021 (For each material topic covered in the applicable GRI Sector Standard and relevant GRI Topic Standard, comply with all reporting requirements for disclosures). Based on our review, we confirm that sustainable development disclosures with reference to GRI Standards' disclosures are reported, partially reported, or omitted. In our professional opinion the self-declaration covers the Winbond's sustainability topics.

**Assurance level**

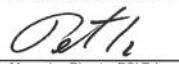
The moderate level assurance provided is in accordance with AA1000AS v3 in our review, as defined by the scope and methodology described in this statement.

**Responsibility**

The sustainability report is the responsibility of the Winbond's chairman as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

**Competency and Independence**

The assurance team was composed of auditors experienced in relevant sectors, and trained in a range of sustainability, environmental and social standards including AA1000AS, ISO 14001, ISO 45001, ISO 14064, and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.

For and on behalf of BSI:  
  
Peter Pu, Managing Director BSI Taiwan

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Statement No: SRA-TW-804819  
2024-04-17

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