Winbond Story

Advancing the Path toward Sustainable Growth— Driving Long-term Value through a Sustainability-driven Growth Strategy

At a critical juncture marked by the accelerated global AI wave, the transition toward net zero emissions, and the rapid restructuring of industrial landscapes, the Winbond Group upheld its sustainability vision of "being a hidden champion in providing sustainable semiconductors to enrich human life." Sustainability was positioned as a core engine for long-term competitiveness and value creation, rather than mere regulatory compliance. As AI and digital technologies continued to profoundly reshape the industry, Winbond consistently delivered high-performance, low-power, and highly reliable semiconductor solutions to support the dual development of smart applications and sustainable transformation.

With a systems-oriented mindset, the Winbond Group integrated sustainability principles with AI- and data-driven decision-making, embedding them deeply into corporate strategy, operational management, and organizational culture. This approach enabled environmental responsibility, social value, and business growth to reinforce one another in a positive cycle. Through the synergistic advancement of technological innovation and sustainable governance, Winbond continued to enhance operational resilience and international competitiveness, steadily creating long-term value in a new era.

Sustainable Growth at Winbond: Driving Long-term Value through Three Core Pillars

The Winbond Group systematically advanced sustainable growth through three core pillars—Strategy × Digital × Culture—transforming sustainability from a vision into an executable, measurable, and scalable competitive advantage.

I. Strategy: Embedding Sustainability at the Core to Build Enduring Competitive Advantages

Low-carbon Business Models × Customer-centricity to Drive Long-term Competitiveness

Winbond' s sustainability strategy was deeply integrated with its core business from the outset. The Company continuously promoted the development of low-carbon, high-efficiency products and processes to respond to customer demand for energy-saving, low-carbon, and highly reliable semiconductor solutions. By embedding sustainability value directly into its products, Winbond helped customers reduce their overall environmental footprint while strengthening long-term partnerships.

Strengthening Supply Chain Resilience to Enhance Overall Operational Stability

In response to heightened uncertainty arising from climate change and geopolitical risks, Winbond regarded supply chain resilience as a critical component of its sustainability strategy. Through ESG assessments, data-driven management, and partner enablement programs, Winbond collaborated with suppliers to enhance sustainability capabilities and risk management maturity, thereby reducing the risk of operational disruptions and reinforcing the stability and competitiveness of the entire value chain.

From Capital Management to Sustainable Competitiveness: Green Finance Initiatives by the Finance Function

Guided by long-term corporate strategy, the finance function actively promoted green finance and sustainability-linked loans, incorporating sustainability performance into financing conditions with clearly defined and measurable targets to encourage enterprise-wide energy conservation and carbon reduction. By linking environmental responsibility with capital costs, Winbond not only reduced financing costs but also enhanced governance transparency and brand credibility, translating sustainability into tangible financial and competitive advantages.

II. Digital × Sustainability: Deepening ESG Digital Governance through Platformization and Scaled AI

The Digital Transformation Pathway: From Infrastructure to Governable and Replicable Capabilities

Winbond' s digital transformation was not a series of isolated projects, but a continuously scalable capability-building journey. Centered on trusted digital platforms, the transformation simultaneously supported operational efficiency, risk control, and sustainability objectives. By continuously upgrading core systems and data capabilities, Winbond reduced operational and cybersecurity risks and established a trusted and controllable foundation for data integration and AI applications.

Platform-based governance: establishing Group-wide Process and Governance Backbones

Through group-wide shared platforms that integrated previously fragmented systems, Winbond formed a closed loop spanning data collection, governance, analytics, and AI applications. By 2025, these platforms covered core domains including systems, data, business intelligence, intelligent application services, system monitoring, and Large Language Models (LLMs), supporting consistent governance and operational resilience across regions and subsidiaries.

In R&D and manufacturing, platform-based approaches advanced smart manufacturing through defect and yield analysis, automated engineering reports, reliability analysis, manufacturing data and AI platforms, and CMS & CUBE collaboration platforms. These initiatives accelerated data analytics and process optimization, enabling engineering teams to focus more on root-cause analysis and improvement, continuously enhancing quality and reliability while strengthening competitiveness.

Data-driven Decision-making: Enhancing Decision Quality with Consistent, Real-time, and Trusted Information

Through cross-system integration and shared reporting platforms, Winbond significantly reduced data silos and manual errors while improving decision timeliness. In 2025, daily data queries reached approximately 470,000, with 3.7 TB of data processed per day and 4,300 active reports. Employees were empowered to independently build analytical reports, comprehensively enhancing organizational productivity.

Scaling AI into Daily Operations: From Pilot Projects to a "Natural Assistant" in Workflows

With shared AI platforms and robust governance mechanisms, mature applications were rapidly replicated across finance, customer service, project collaboration, environmental health and safety compliance, and process equipment domains. AI was progressively embedded into daily workflows, becoming a critical enabler for improving efficiency and quality.

III. Culture: An Inside-out Engine for Transformation

For the Winbond Group, sustainability represented a multifaceted and deeply rooted concept.
It embodied a corporate spirit capable of enduring for generations.
It represented a core capability for creating value and sustaining competitiveness in a rapidly changing world, driving Winbond to become a pillar of sustainable development for human society.
It also served as a reminder to use limited resources wisely and to safeguard the planet we all share.
Winbond translated this sustainability ethos into five core values: Integrity, Accountability, Passion for Learning, Proactive Innovation, and Sustainable Contribution.
Integrity formed the foundation of conduct.
Accountability ensured that principles were translated into action.
Learning continuously expanded horizons and capabilities.
Innovation enabled the Company to evolve with the times and respond to societal needs.
Most importantly, Winbond people were constantly reminded that contributing to society through their own efforts was the essence of corporate sustainability. By embedding safe and low-carbon technical practices into daily work, Winbond treated sustainability as a core competitive strength and advanced step by step to meet society' s high expectations for environmental sustainability.

Low-carbon Business Models × Customer-centricity to Drive Long-term Competitiveness

Winbond embedded customer-centricity into its daily operations. Similar to Thomas Edison' s deep insight into real societal pain points—recognizing the limitations of kerosene lamps in safety, brightness, and durability, and inventing electric lighting capable of long-term safe use—this philosophy aligned closely with the core spirit of Winbond' s CMS (Customized Memory Solution). CMS addressed highly diversified and in-depth customer requirements on a daily basis, ranging from memory dimensions and interfaces to 3D packaging architectures, far exceeding the complexity of standard products. To meet these demands, product design, process development, and testing workflows required exceptional flexibility to respond to evolving technical challenges.

In advancing cultural transformation, Winbond translated "always putting customers at the center" into three concrete actions:

- Jointly Defining Success
- Jointly Sharing Development Costs
- Transforming Delivery Into A Replicable Capability.

Jointly Defining Success and Alleviating Carbon Anxiety by Turning Energy Efficiency into Competitive Advantage

Amid the global decarbonization trend, Winbond recognized the intense ESG supply chain scrutiny and carbon footprint audit pressures faced by customers. Success was no longer defined solely by component performance, but by enabling customers to achieve their carbon targets. Winbond explicitly incorporated low-voltage and low-power designs into its development roadmap, launching products such as 1.2V NOR Flash and 16nm DDR4, which enabled up to 37% energy-saving and carbon-reduction performance at the application level.

In parallel, Winbond proactively promoted Product Carbon Footprint (PCF) disclosure and supplied renewable-energy-manufactured products, providing transparent and auditable carbon information that enabled customers to compete with confidence in sustainability-driven markets.

Winbond first launched the world' s first 1.2V ultra-low-power NOR Flash, reducing power consumption by 50% and driving nearly tenfold sales growth during 2024–2025. In 2025, the portfolio expanded to a full range of 8Mb–256Mb products. Through optimized circuitry and leakage detection technologies, overall power consumption was further reduced by 40%, helping customers enhance energy efficiency and achieve end-application decarbonization goals, while reinforcing Winbond' s leadership in the low-carbon memory market.

Products manufactured with renewable energy began mass shipment in December 2024 to key ESG-focused customers, marking a significant milestone in aligning with ESG market trends and addressing growing demand for green, energy-efficient products. Compared with conventionally manufactured products, these offerings reduced product carbon emissions by at least approximately 60%. By the end of 2025, Winbond shipped 451 million renewable-energy-manufactured products, reducing approximately 35,044 tCO_2e—equivalent to the annual carbon sequestration capacity of 91 Daan Forest Parks.

Winbond believed that the future of the planet and corporate sustainability were inextricably linked. Ensuring that innovation and environmental responsibility advanced together was essential for long-term growth. The launch of renewable-energy-manufactured products represented a major milestone in Winbond' s sustainability journey.

Creating Platforms and Sharing Development Costs to Safeguard Long-term Stable Supply and System Security

In automotive and industrial control applications, product lifecycles often spanned 10 to 20 years, where even minor changes or security vulnerabilities could lead to severe consequences. In edge AI applications, extensive innovation also required rigorous validation. To ensure customers could innovate confidently while maintaining long-term supply stability, Winbond shared the cost increases associated with high customization and established CMS and CUBE collaboration platforms to reduce overall development costs.

At the same time, Winbond embedded cybersecurity at the foundational level of its products by developing the Secure Flash product line, proactively mitigating potential threats at the source. By jointly shouldering system validation and security risks, Winbond safeguarded customer brand trust.

Making Delivery a Replicable Capability : Pioneering AI Services to Eliminate End-of-Life Risks

When key components reached end-of-life (EOL), customers often faced high costs and production line shutdown risks associated with redefining requirements. To address this critical pain point, Winbond subsidiary Miraxia pioneered the "MCU EOL Requirement Definition" AI service. By mobilizing internal technical resources, the service enabled customers to quickly identify alternative solutions and shorten development timelines. This award-winning innovation transformed one-off problem-solving into standardized, replicable empowerment services, ensuring uninterrupted customer operations.

True customer-centricity resided in every R&D decision and service detail. Guided by this belief, Winbond continued to move forward alongside all stakeholders, transforming customer challenges into driving forces for progress.

A Resilient Supply Chain Framework to Enhance Overall Operational Stability

Winbond positions the supply chain as a critical domain for scaling sustainability impact and sustaining operational resilience. Starting in 2022, Winbond advanced low-carbon governance in sequence — beginning with capability co-learning and cross-sector initiatives, then progressing toward a sustainable value chain anchored in data, systems, and measured decarbonization outcomes.

2022–2024 | 2024–2025 | 2025-

Phase 1: Building Consensus and Capability

Resource and expertise gaps defined the early stage of supply chain sustainability transformation. Winbond addressed these gaps through supplier co-learning as the entry point. Between 2022 and 2024, Winbond hosted Supplier ESG Co-Learning Workshops and Sustainable Supply Chain Management Forums, drawing thousands of cumulative participants. Learning topics included: SBTi reduction targets, Facility energy conservation, Low-carbon raw materials, Data center decarbonization, Hydrogen applications, Collaborative supply chain decarbonization

Winbond also connected suppliers to government resources, hosting supply chain transformation diagnostic subsidy briefings to help small and medium-sized suppliers navigate policy tools and lower transition barriers. Winbond promoted certifications such as iPAS Net zero Planning Manager to close the sustainability talent gap. Sustained engagement established a shared low-carbon vocabulary across the supply chain, reframing low-carbon from a compliance requirement into a strategically managed and actively discussed business topic.

Phase 2: Institutionalization and Digitalization

With foundational capabilities in place, Winbond accelerated the institutionalization of low-carbon governance from 2024 and completed key milestones in 2025. Winbond deployed a carbon accounting management system across Scopes 1, 2, and 3. Because Scope 3 emissions originate largely from the supply chain, Winbond embedded product carbon information — including Product Carbon Footprint (PCF) — directly into the supplier quotation process, requiring suppliers to submit carbon data alongside pricing. Carbon information now circulates within the transaction mechanism. Winbond established supplier capacity-building and training mechanisms for carbon data to enhance partners' capabilities in system operations and data interpretation. By the end of 2025, the system held more than 13,000 product and service carbon records, providing a foundation for supply chain decarbonization decisions.

Winbond reinforced supply chain resilience at the source through a rigorous New Supplier Evaluation Mechanism. The mechanism covers core indicators across quality and delivery, and integrates the RBA Code of Conduct and corporate sustainability requirements. As an ICP member of the Ministry of Economic Affairs, Winbond cross-references international sanctions lists at the sourcing stage to secure the supply chain. Compliant suppliers must additionally submit: Third-party quality verification, Process change notification management principles, Hazardous substance management questionnaires.

For security products, outsourced manufacturing suppliers must additionally provide third-party verification certificates and complete the "Security Product Outsourced Processing Safety Control Audit Questionnaire." Among the 13 new suppliers added in 2025, 100% passed environmental, social, and economic standard evaluations, strengthening supply chain risk resilience at the foundation.

Phase 3: Full Realization of Decarbonization Outcomes

With institutional and data foundations in place, 2025 marked the year of measurable outcomes for Winbond's low-carbon value chain. During the project period, Winbond deepened the "Large Leads Small" low-carbon collaboration model across upstream transportation, back-end packaging and measurement services, and waste treatment. Key progress included: More than 30 decarbonization initiatives completed, and cumulative reductions of 19,995 tCO_2e, 240% above the original target. These results demonstrate the multiplier effect of collaborative supply chain decarbonization.

In logistics and procurement, Winbond completed multi-source qualification for critical materials and converted selected items to local sourcing, lowering transportation emissions. Winbond introduced shared logistics models, advanced paperless import/export shipping, and optimized packaging. In 2025, Winbond deployed energy-efficient testing equipment in back-end packaging and testing, lowering emissions from energy consumption. In packaging and resource circularity, Winbond drove packaging reduction, recycling and reuse, and alternative solutions, and lowered the IPA waste-liquid incineration ratio — converting multiple waste streams from incineration to reuse and embedding low-carbon principles into manufacturing processes and daily operations.

Winbond adopted ISO 31000 risk management thinking to mitigate climate-related supply chain threats. Under climate change scenarios, Winbond assessed biodiversity impacts across global supplier locations and used emergency response systems to monitor global natural disaster impacts in real time. In 2025, Winbond conducted rigorous ESG sustainability due diligence on all Tier-1 suppliers for the first time, identifying 11 high-risk suppliers based on scoring results — 100% of which were required to submit improvement plans. Through "preventive controls" and "active coaching," Winbond reduced supply chain disruption risks from climate change and external events, strengthening overall supply chain resilience.

Please refer to Section "2.3 Supply Chain Engagement and Impact"

Deepening ESG Digital Governance through Platformization and AI at Scale

I. Advancing the Winbond Group's Digital Transformation

Winbond's digital transformation is not a single project but a continuously scalable capability-building pathway. Winbond progressively internalizes digital capabilities as the operational foundation, enabling technology investments to sustain operational efficiency, risk control, and sustainability objectives over the long term. The pathway covers four core domains:

1. **System Modernization:**
   Building a Reliable, Compliant, Security-Hardened, and Agile Foundation

   Winbond continuously upgrades core operational systems, including ERP and data and analytics platforms. New architectures deliver higher security, stability, and availability — reducing operational disruption and information security risks, and establishing a trusted foundation for downstream data integration and AI applications.

2. **Platformization:**
   Establishing a Globally Consistent Operations and Governance Backbone

   Winbond consolidates application systems distributed across business units into shared digital platforms, including digital collaboration, project management, customer service, and system monitoring platforms. This strategy supports global operations with consistent processes, reduces duplicated build costs, and strengthens governance transparency. By 2025, the Winbond Group had established core platforms across the following domains:

   - Data integration and system development platform: unifies application development and deployment environments, raising system delivery efficiency and operational consistency.
   - System monitoring platform: provides real-time visibility into critical systems and service status, detects anomalies proactively, and lowers operational disruption risk.
   - Data platform: integrates manufacturing, R&D, sales, finance, and ESG data to support analytics and AI model training.
   - Business intelligence platform: delivers standardized dashboards and reports to support management meetings and operational decisions.
   - Knowledge management platform: structures organizational knowledge to enable cross-team collaboration and knowledge reuse.
   - AI application intelligence platform: serves as the shared foundation for Group-wide AI and automation applications, enabling rapid replication of validated use cases across business domains.

   Platformization enables Winbond to establish consistent processes and governance standards across subsidiaries and regions. The strategy reduces duplicated build and maintenance costs and accelerates the sharing and accumulation of knowledge and data.

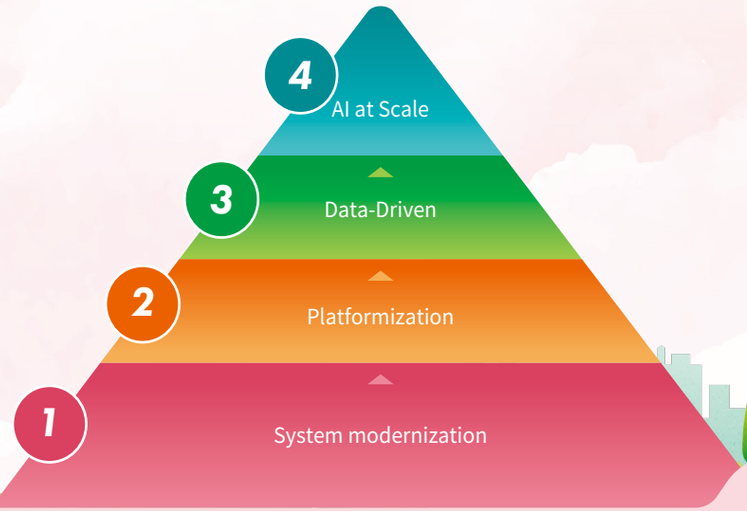
3. **Data-Driven:**
   Elevating Decision Quality through Real-Time Information

   Winbond establishes cross-functional and cross-system data integration mechanisms. Visualization dashboards give management and front-line employees real-time access to consistent and trusted information for daily operations and management decisions. Data applications span finance, manufacturing, R&D, and ESG indicators, shifting the management model from after-the-fact reporting to forward-looking management and risk early warning — elevating decision quality and response speed.

4. **AI at Scale:**
   From Isolated Projects to Pervasive Adoption

   Shared AI platforms and governance mechanisms enable Winbond to replicate validated success patterns across business domains, including financial analysis, customer service, process parameter optimization, knowledge search, and workflow automation. Application depth and breadth expand progressively. The core objective: embed AI into daily operations and decision processes as a long-term enabler that helps employees and equipment deliver higher efficiency.

| Digital Transformation Framework Across Four Strategic Domains |



II. 2025 Key Progress

1. R&D and Manufacturing Excellence (Systematic Tools and Platforms):

The Group accelerates data analytics and process optimization through critical digital systems, helping engineering teams focus on root-cause analysis and improvement while elevating product quality and reliability.

Defect and Yield Analysis System:
automates collection and classification of defect images, enabling engineers to focus on root-cause analysis more rapidly.

Automated Engineering Report Generation System:
uses templates and automated data ingestion to help engineers generate standardized reports rapidly.

Memory Component Reliability Analysis System:
integrates test data systematically to improve product life and reliability assessment efficiency.

Manufacturing Data and AI Platform:
integrates multi-site manufacturing data, reports, and monitoring with AI knowledge assistants for real-time analysis and decision support.

CMS & CUBE Collaboration Platform:
delivers a system platform supporting customized memory operations, maintaining close customer engagement and co-creating value through collaboration.

2. Smart Manufacturing Implementation:

Group companies integrate "digital platforms, talent empowerment, and project execution" to embed smart manufacturing into daily operations.

Platform dimension:
Centered on a digital platform integrating "manufacturing data, reports, monitoring, deployment, and AI knowledge assistants," Winbond deploys unified manufacturing data governance and information security mechanisms. The platform hosts more than 600 knowledge bases and 200 AI assistants, providing real-time decision support on the shop floor.

Talent dimension:
Tiered certification programs and hands-on workshops advance widespread adoption of data and AI capabilities. Certification penetration reaches 45% for data analytics, 27% for foundational AI, and 15% for advanced AI, cultivating cross-domain smart manufacturing talent.

Project dimension:
Winbond has completed more than 150 major projects, improved the process capability index (Cpk) by approximately 10–20%, and reduced approximately 1,388 metric tons of carbon emissions — delivering manufacturing efficiency and environmental sustainability in parallel.

Process Defect Analysis and Quality Optimization Automation:
Systematic and automated approaches integrate process, measurement, and defect data, upgrading defect analysis from manual interpretation to data- and visualization-driven decision mechanisms. Systematic Defect MAP analysis and early-stage automated electrical-characteristic defect analysis enable engineering teams to identify defect distribution and root causes with greater precision, reducing over-kill risk and accelerating problem localization and improvement. Annual outcomes:

- Operating cost savings of approximately NT$22 million
- Engineering hour savings of approximately 2,484 hours (covering defect map creation and electrical-characteristic preliminary analysis)
- Improved yield and process stability
- Reinforced product reliability and overall operational effectiveness

3. Customer Service Value Enhancement (CRM × AI):

To meet high customer expectations for delivery, quality, and technical support, Winbond combines CRM systems with AI applications to elevate service efficiency and quality, develop value-added service models, and reinforce customer trust through intelligent services and rigorous information security and compliance management — expanding service-based business models.

Intelligent Chatbot and D365 Customer Service Module Integration:
delivers 24-hour global real-time response, handling routine inquiries and document lookups, enabling customer service and technical staff to focus on high-value topics.

Embedded System EOL Service Innovation:

When MCUs reach end-of-life (EOL), system vendors typically must invest substantial engineering resources in redevelopment. Insufficient design documentation — for example, a lack of systematic design processes or high dependence on individual engineer experience — drives resource requirements significantly higher. Winbond subsidiary METC combines years of embedded design experience with generative AI, formally launching the MCU EOL "Requirement Definition" service in 2025. As long as original source code remains available, the service rapidly completes the system requirement definition needed for MCU replacement. This can shorten customer development timelines, lower production-line shutdown risk, faster product generation evolution for component suppliers, excellence award at Japan's Edgetech+ exhibition.

III. Continuing to Expand Impact

Looking ahead, the Winbond Group will continue to position "building sustainable competitiveness" as the core objective, deepening the connection between digital transformation and ESG strategy. Building on existing outcomes, Winbond will progress from "tool adoption" toward "value focus and scaled expansion" — using more precise, measurable, and governable approaches to elevate operational resilience, efficiency, and transparency in response to stakeholder expectations on sustainability and growth.

1

Focusing on High-Impact Domains: Aligning Digital Investment with Operational Effectiveness and Sustainability Metrics

Building on the widespread deployment of digital and AI capabilities, Winbond will focus the next phase on high-ROI and highly replicable core processes. Winbond will strengthen the value management closed loop of "requirement definition → deployment validation → scaled replication → outcome measurement," ensuring digital projects link directly to: efficiency improvements, cost optimization, delivery and quality improvements, carbon reduction, compliance transparency

This approach ensures every investment delivers measurable operational and sustainability benefits.

2

Strengthening Group-Level Platforms and Digital Governance: Supporting Global Operational Resilience with Consistent Standards

As operations continue to scale across regions and subsidiaries, Winbond will expand the coverage and governance maturity of Group-shared platforms, standardizing critical processes and data to establish a more resilient and controllable global operations backbone.

3

Advancing AI Deep Application: Evolving from "Efficiency Tools" to "Operational Agents and Decision Capabilities"

Winbond will continue to advance AI applications at scale, shifting future focus from "expanding usage" toward "deepening application value." AI will integrate more closely into workflows and decision mechanisms as a long-term enabler of productivity and operational resilience. Guided by the principles of "governable, measurable, and replicable," Winbond will prioritize application scenarios with clearly defined benefits, progressively expanding to more real-time and proactive operational support models. Outcomes: higher cross-functional collaboration efficiency, shorter information retrieval time, faster shop-floor problem localization and improvement

4

Deepening Talent and Culture: Making "Participate, Learn, and Lead" a Continuously Evolving Organizational Driver

The endpoint of digital transformation is not deploying more tools but building organizational capabilities that continuously evolve. Winbond will continue to deepen the "Participate, Learn, and Lead" cultural mechanism. Through the deepening of talent and culture, Winbond will extend digital capabilities beyond a few teams to become the shared language and source of resilience across the entire organization in the face of uncertainty.

5

Advancing "Robust Governance × Rapid Innovation" in Parallel: Responding to Stakeholder Expectations on Trust and Compliance

As AI and digital technologies evolve rapidly, Winbond will continue to refine its governance architecture, balancing innovation speed with risk control across information security, data privacy, model risk, and compliance requirements.

Winbond will establish traceable and auditable management mechanisms through more systematic approaches, ensuring digital transformation outcomes accelerate growth while elevating trust and transparency — responding to expectations from investors, customers, regulators, and society on corporate governance and sustainability responsibility.

For details, please refer to Section "1.3 Productivity and Business Performance."