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Nuvoton Sustainability Report

2023 Sustainability Report

Environment Social Governance

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CH0
Introduction

About this report

Message from Management

Achievements and Recognition in 2023

2023 Sustainable Development Strategy and Performance Highlights

About this Report

Framework and Writing Principles of the Report

Since 2021, Nuvoton Technology Corporation (hereafter referred to as "Nuvoton" or "the Company") has been voluntarily publishing Corporate Social Responsibility (CSR) reports, which were renamed Sustainability Reports in 2021. Since 2012, Nuvoton has also been publishing English reports to enhance its level of communications. Following the guidelines set forth by the Global Sustainability Standards Board (GSSB) in 2021, the Global Reporting Initiative (GRI) Standards, the industry-specific standards issued by the Sustainable Accounting Standards Board (SASB) in 2023, and the framework of the Task Force on Climate-related Financial Disclosures (TCFD), this 2023 report provides stakeholders with an understanding of Nuvoton's achievements in and plans for fulfilling environmental, social, and governance aspects (ESG).

Scope and Disclosure Period of the Report

The content and data disclosed in this report cover the fiscal year 2023 (from January 1 to December 31) for Nuvoton Taiwan and its subsidiary, Nuvoton Technology Corporation Japan (NTCJ). The former includes the Research and Development (R&D) Center in Hsinchu, as well as its offices in Zhubei, Taipei, and Tainan. The latter includes the Libo, Yuza, Niigata, and Nagaokakyo plants, marking the first inclusion of Nuvoton Japan within the scope of the report. Financial data is presented in New Taiwan Dollars, and the financial data of Nuvoton Japan is converted using the exchange rate of 1 Japanese Yen to 0.2079 New Taiwan Dollars, based on the exchange rate data from the Bank of Taiwan as of December 29, 2023 (the last trading day of 2023).

Issuance Dates:

Current Year: May 2024

Previous Year: June 2023

Next Year: Planned for June 2025

External Assurance

This report has been verified by an independent third-party organization, SGS Taiwan Ltd., to confirm compliance with GRI Standards (2021) and assurance at the moderate level according to AA1000AS TYPE I verification standard. The verification statement is included in the appendix of this report for reference.

Report Review and Management Process

Information or data disclosed in this report is provided by respective departments. After the completion of the Sustainability Report, it is submitted to department heads for confirmation and undergoes internal audit according to the operational procedures of sustainability reporting and assurance. Subsequently, it will be presented to the Board of Directors on July 30, 2024.

- **Collection** (each unit collects and provides relevant information and data for the reporting year)
- **Compilation** (consolidating the information and data provided by each unit to draft the annual report)
- **Review** (submitting the draft report to the unit supervisors for review of content and data)
- **Finalization** (after review by the Chairman and approval by the Board of Directors, the finalized report is published by the highest company official, the Chairman)

Feedback

If you have any feedback or suggestions regarding this report, please feel free to contact us through the following channels:

Nuvoton Technology Corporation

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Phone: +886-3-5770066 ext. 23246

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Words from the Chairman

Looking back at the challenges of the past, particularly the supply shortages in 2021 and 2022, we recognize the compromise in our continuous strive towards becoming a hidden champion. However, the journey towards hidden champion status has no finish line, and it aligns seamlessly with our pursuit of business resilience.

To all dedicated colleagues in Nuvoton Taiwan and Japan, who tirelessly work to create the best interests for our shareholders and give back profits to society and the country, we possess a diversified product portfolio across eight business groups, three in Taiwan, including a 6" wafer fab, and five in Japan, utilizing our unique advantage in product diversification.

Therefore, in 2023, despite facing an overall market contraction and a challenging economic environment, thanks to the unwavering commitment and concerted efforts of Nuvoton employees, under the planning of our diversified across eight business groups, we leveraged our unique advantage in product diversification to smoothly transition into 2024. In the future, we should focus on connecting the key concepts of hidden champion status and business resilience, including market share, globalization, and closeness to customers, as three key priorities to drive our continued success.

Facing market uncertainties, we are committed to strengthening our market share, thereby solidifying the competitiveness of our product lines and laying the foundation for business stability and predictability.

Globalization brings both challenges and opportunities. Our diversified product supply will expand our global presence. Establishing a brand on an international scale and leveraging our extensive product portfolio to maximize opportunities.

Customers are at the core of our success. The value of Nuvoton comes from innovative ideas after communicating with our stakeholders and customers, carefully listening to their needs, and exceeding customer expectations and maintaining strong relationships are important components of our strategy.

In addition to striving to maintain our operational strength, since 2023, Nuvoton has set four main axes in social participation and focusing on climate change: "social welfare, diversity and inclusion, rural education, and environmental protection," maintaining our commitment to net-zero, actively investing resources to achieve our carbon reduction roadmap; and combining external partners and resources to exert social influence; continuing to strengthen the corporate governance structure, establishing a solid internal control system, and finally, through this sustainability report, illustrating our performance in various aspects. And maintaining closeness with stakeholders, continuously cultivating, and moving towards a net-zero future.

Chairman

Yuan-Mou Su

Words from the President

In 2023, we faced global market fluctuations and economic downturns, but through demonstrating Nuvoton's resilience and teamwork, we successfully navigated a challenging year. Looking ahead, Nuvoton will continue to:

Adapt to evolving landscapes

As the world around us continues to rapidly change, in 2024, we prioritize enhancing our competitive edge, optimizing internal processes, and increasing productivity.

Get closer to the market, closer to customers

By fostering closer partnerships, we aim to respond more swiftly to customer needs and desires. Customer-centric innovation will guide us, with adjusted resource allocations to drive product and technological advancements, solidifying long-term competitiveness.

Embrace agility, embrace success

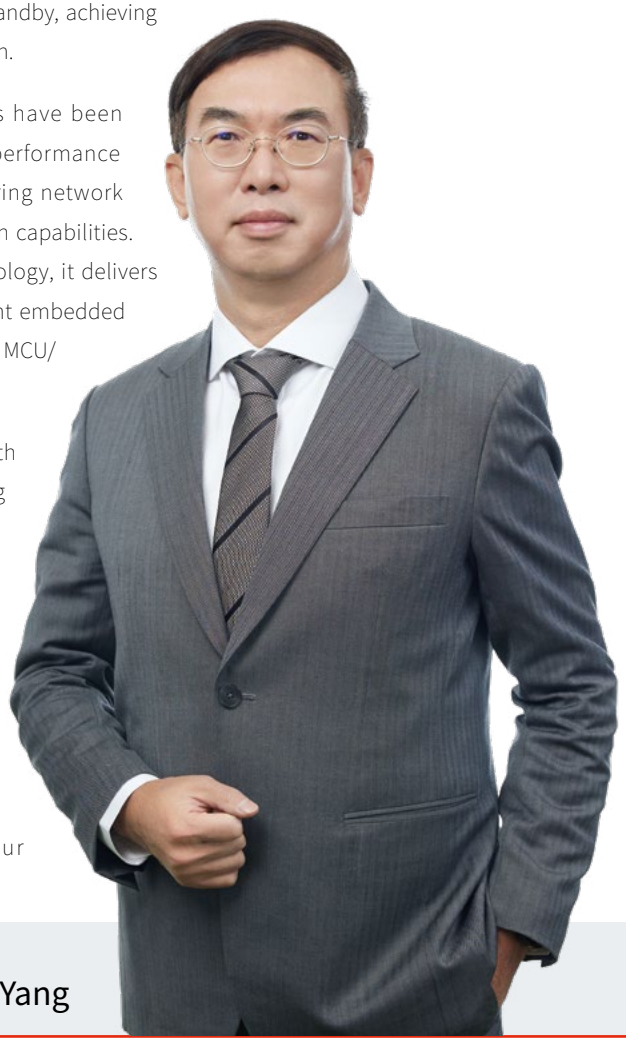
In the face of rapid change, we will be agile and bold, expanding our skill sets, and pursuing excellence and breakthroughs in our work.

Aligned with these strategic directions

Nuvoton will sustain innovation in existing product lines, actively expanding into solutions for electric vehicles, smart manufacturing, cloud computing, and renewable energy. This optimization of our product portfolio showcases Nuvoton's robust capabilities in innovation and technological development. Furthermore, Nuvoton views research and development innovation as momentum towards sustainable transformation, leveraging advanced technology to conserve materials, enhance product execution efficiency, and reduce operational power consumption. For instance, our new 32-bit microcontrollers have reduced volume by 40% compared to the previous generation, with nearly half the power consumption during execution and standby, achieving advantages in chip power saving and size reduction.

Nuvoton's product innovation achievements have been recognized externally, notably with the high-performance NuMicro® M467 series microcontrollers, featuring network communication and robust hardware encryption capabilities. Optimized with Skymizer neural network technology, it delivers leading inference performance for highly efficient embedded systems, earning the EE Awards Asia 2023 - Best MCU/ Driver IC Product Award.

Nuvoton will continue to advance along the path of green products and green processes, pursuing operational growth while enhancing product efficiency and reducing environmental impact. Guided by the vision of being the "invisible champion of green semiconductor technology enriching human life," Nuvoton outlines its long-term strategy and industry layout. We remain committed to responsibly engaging stakeholders such as customers, investors, shareholders, and employees to achieve our sustainable business goals.



President

Hsin-Lung Yang

Message from the President of Nuvoton Japan

This report is the first to include the activities of our subsidiary, Nuvoton Japan, within the scope of Nuvoton's ESG initiatives. In 2020, Nuvoton integrated the Panasonic semiconductor business which boasts a 60-year history, adding to our global R&D capabilities. Beyond focusing on the integration of finance, R&D, quality, environmental safety and health, and human resources, Nuvoton Japan, as an integral part of Nuvoton's global operations, also actively promotes the participation of our Japanese employees in implementing our three main pillars: commitment to the environment, our customers, and social contribution. This includes achieving a reduction of more than 50% in Scope 1 and Scope 2 emissions by 2030 compared to 2020, and collaborating with suppliers on reducing Scope 3 emissions. We are dedicated to developing smaller, low-energy, high-efficiency environmentally friendly products for our customers, with a goal of reducing new product energy consumption by more than 15% by 2025. We engage with local communities through cleanup activities and also attract potential outstanding employees through scholarships and student loans, with plans to increase the employment rate of people with disabilities in the future, demonstrating Nuvoton Japan's emphasis on and care for society.

The 2023 sustainability report, in addition to detailing our achievements and contributions in ESG, shows our commitment to sustainable development through cooperation with stakeholders. We aspire to achieve our vision, exert influence, and continue giving back to society.

President, NTCJ

Kazuhiro Koyama

Message from the Chairman of the Sustainable Development Committee of Nuvoton Taiwan

Nuvoton has set a long-term target of achieving net zero emissions by 2050 and has established short-, medium-, and long-term goals to actively respond to the global trend of net zero emissions. Nuvoton has implemented and certified an Energy Management System (ISO 50001) to reduce indirect CO_2 emissions caused by burning fossil fuels during electricity usage through systematic and traceable energy-saving plans.

For Scope 1 and 2, Nuvoton reviews its operations and manufacturing processes, installs greenhouse gas treatment equipment to reduce energy consumption, decrease emissions, and improve operational efficiency. Nuvoton is also actively increasing its renewable energy capacity, with its installed solar power system expected to generate 880,000 kWh of green electricity annually.

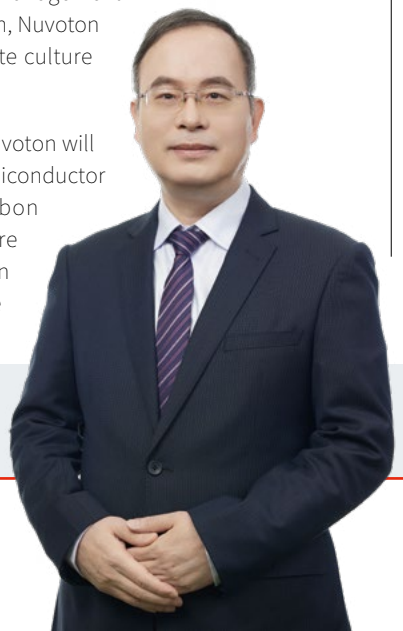
In Scope 3, the company continues to collaborate with suppliers to collect greenhouse gas inventory data across the supply chain and helps customers reduce energy consumption during product use through improved product performance, thus achieving energy savings and carbon reduction.

On the path to carbon reduction, Nuvoton aims not only to move quickly but also to progress alongside its partners in the value chain. Nuvoton adheres to a"people-oriented" philosophy, considering talent as key capital for sustainable development. The company emphasizes talent cultivation and development, strives to create a friendly workplace, and provides a safe and healthy working environment. By implementing a comprehensive human resource management system and optimizing human resource integration, Nuvoton continually promotes a people-oriented corporate culture and enhances employees' sense of belonging.

Practicing sustainability is a long-term journey. Nuvoton will continue to enrich human life through green semiconductor technology and actively promote various carbon reduction measures. By collaborating with more partners who share ESG-related values, Nuvoton is committed to becoming a green enterprise dedicated to sustainable development.

Vice President

Kuang-Lun Lin,



Message from the Chairman of the Sustainable Development Committee of Nuvoton Japan

NTCJ is committed to environmental, social, and governance (ESG) activities to achieve a sustainable society and aims to be a company trusted by society. The year 2023 marked the beginning of NTCJ's ESG activities, during which we established a new system in collaboration with NTC Taiwan. This system is designed to advance the activities of Taiwan and Japan as a whole. We have established seven major sustainability working groups, each dedicated to disclosing the details of our corporate sustainability activities and performance to all stakeholders in a transparent and open manner to gain understanding and trust.

Through regular integration meetings among the seven working groups, we share progress on various activities and set future short-, medium-, and long-term goals. This promotes a unified direction for corporate sustainability management for both NTC Taiwan and Japan. We anticipate that, through solid planning, we can simultaneously grasp risks and opportunities, laying the foundation for achieving our goals. It is crucial to turn our aspirations into actions, continuously creating value through semiconductors to achieve sustainable development in human society, and working proactively with a sense of mission.

NTC has a clear vision: "Be a hidden champion in providing sustainable semiconductors to enrich human life." We will continue our efforts to contribute to the realization of a sustainable society.

Chairman of the Sustainable Development Committee / Assistant vice president, NTCJ

Naoki Nakanishi

Achievements and Recognition in 2023

Continued selected as one of the **"Top 100 Enterprises in Carbon Competitiveness in 2023"** by Business Weekly.

Awarded a **"B Management"** level rating in the CDP Carbon Disclosure Project for "Climate Change."

Included in the Taiwan Stock Exchange's **"Taiwan High Salary 100 Index"** constituent stocks.

Received the **2023 SGS ESG Award** for Sustainability Reporting Award from SGS Taiwan Ltd.

Won the **Silver Award** in the Electronics and Information Manufacturing Industry category for Sustainability Reporting at the 2023 Taiwan Corporate Sustainability Awards (TCSA).

The NuMicro® M467 series microcontroller won the **«Best MCU/Driver IC of the Year»** award at the 2023 EE Awards Asia.

2023 Sustainable Development Strategy and Performance Highlights

Promoting Green Technology

SDG 7 Affordable and Clean Energy

- Achieved the installation of renewable energy capacity equivalent to 8% of contracted capacity (producing 880,000 kWh annually).

SDG 9 Industry, Innovation, and Infrastructure

- Nuvoton is the first embedded controller (EC) and super input/output (SIO) chip supplier to pass the U.S. Federal Information Processing Standards (FIPS) 140-3 certification.
- Accumulated over 4,500 approved patents globally.

SDG 12 Responsible Consumption and Production

- Generated approximately 8.62 billion NT dollars in green revenue.
- Introduced the new eBMC chip, reducing package size by 67% compared to the previous generation, reducing silicon material demand during chip manufacturing, and saving circuit board material and space in terminal system applications.
- Developing Ultra-low-power Next-generation Microcontroller MG51, execution power consumption is reduced by 35% to 40% compared to the previous-generation low-power microcontroller N76E003, extending battery life.

SDG 13 Climate Action

- Awarded a "B Management" level rating in the CDP Carbon Disclosure Project for "Climate Change."
- Conduct a climate risk assessment for Nuvoton in Taiwan and Japan, and issue the first TCFD report.

Fostering a Happy and Safe Workplace

SDG 1 No Poverty

- The goodwill initiative, "Read to Love," gathered a total of 944 second-hand books.
- In 2023, a total of 1,337 individuals participated in volunteer activities and responded to donation calls, resulting in a combined contribution of 1,201,062 New Taiwan Dollars. The total service hours amounted to 2,859 hours.

SDG 3 Good Health and Well-being

- Implemented contractor management and supervision, achieving a contractor injury rate of 0 for six consecutive years.
- A total of approximately 19.53 million NT dollars was disbursed for childcare subsidies from 2021 to 2023.
- The return-to-work rate after maternity leave was 91.6%, and the retention rate was also 91.6%.

SDG 4 Quality Education

- Nuvoton Taiwan employees' total training hours reached 41,699.87 hours, with an average of 26.82 hours per person; Nuvoton Japan employees' total training hours reached 22,510 hours, with an average of 13.55 hours per person.

THE GLOBAL GOALS
For Sustainable Development

Accountable Governance

SDG 8 Decent Work and Economic Growth

- Included in the Taiwan Stock Exchange's "Taiwan High Salary 100 Index" constituent stocks.
- In 2023, the combined revenue was 35.348 billion NT dollars, with a net profit after tax of 2.42 billion NT dollars, and an after-tax earnings per share of 5.77 NT dollars.

Industry, Innovation, and Infrastructure

- Customer satisfaction response rate was 88%, with an overall average satisfaction score of 8.85.
- In 2023, the number of patent applications for Nuvoton Taiwan was 283, and the number of granted patents reached 305. For Nuvoton Japan, the number of patent applications was 204, with 125 patents granted.

SDG 12 Responsible Consumption and Production

- Nuvoton Taiwan's local procurement amount reached a record high, accounting for 41.6% of the company's total procurement amount; Nuvoton Japan's local procurement amount accounted for 52% of the company's total procurement amount.

SDG 16 Peace, Justice, and Strong Institutions

- Nuvoton Taiwan conducted the "Promotion of Corporate Integrity and Sustainable Development Guidelines" course, while Nuvoton Japan held five courses related to legal compliance, with a completion rate of 100% for both.

CH1
Sustainability Communication

1.1 Company Profile

1.2 Nuvoton's Values

1.3 Governance for Sustainable Development

1.4 Analysis of Material Topic and Stakeholder Communication

1.1 Company Profile

In the name of Nuvoton Technology Corporation: Nuvoton is the combination of "Nuvo" and "Ton." "Nuvo" in French is pronounced close to "Nouveau" (new). "Ton" in English is pronounced close to "Tang" as in the Tang Dynasty. The Tang Dynasty was one of the most prosperous dynasties in the history of China. The Tang Dynasty attained stellar achievements in international cultural exchange, economic trade, and technological innovation, making it the center of the world. Nuvoton Technology shall uphold the innovation spirit of excellence in development and the close customer relationship as well as converge talents around the globe to live up to the vision of Nuvoton—Be a hidden champion in providing sustainable semiconductors to enrich human life. Meanwhile, it signals the spirit of Nuvoton to usher in the whole new epoch like the Tang Dynasty in the IC industry.

Nuvoton Technology Corporation (Stock Code: 4919.TW) was founded to bring innovative semiconductor solutions to the market in 2008. Nuvoton Technology was spun-off as a Winbond Electronics affiliate in July 2008 and went public in 2010 on the Taiwan Stock Exchange (TWSE). Nuvoton Technology focuses on IC products in microcontroller, microprocessor, smart home, cloud security, battery monitoring, visual sensing, IoT applications, and semiconductor components, pioneering in the industrial, automotive, communication, consumer electronics, and computer markets. In addition, Nuvoton Technology owns a 6-inch wafer fabrication plant equipped with diversified process technologies to provide professional foundry services.

Nuvoton will adhere to our consistent but diversified corporate strategy and continue expanding our target markets and product applications to enhance our flexibility in facing market and environmental fluctuations. Meanwhile, we are committed to green innovation and sustainable development, promoting digital transformation to improve operational efficiency, and deepening collaboration with the global semiconductor supply chain and clients across various products. This approach will enable Nuvoton to continue creating new value in an ever-changing market. Nuvoton Technology has offices in the USA, Mainland China, Israel, India, Singapore, Korea, and Japan to strengthen regional customer support and global management.

Company Profile

Capital
NT$4,197,652,680

The World Number of Employees 3,658

Global Locations

Business Performance in 2023

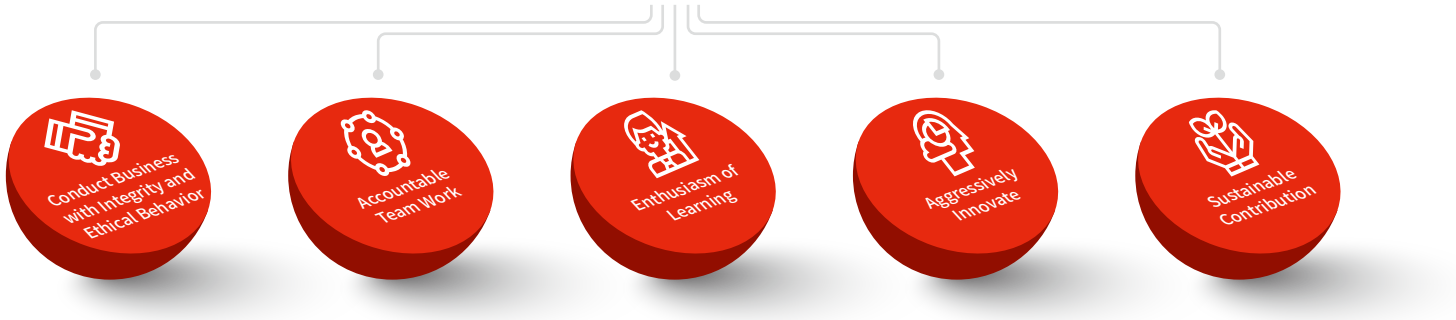
Revenue
NT$353.4 billion

Earnings per share
NT$5.77

Net Profit
NT$24 billion

Business Philosophy & Corporate Culture

With an agile capability in innovative technology, comprehensive product solutions, and excellent technical synergy combined, Nuvoton offers cost-effective products and better services to its clients on the basis of the existing solid foundation. It lives up the corporate culture of "Conduct Business with Integrity and Ethical Behavior; Accountable Team Work; Enthusiasm of Learning; Aggressively Innovate; Sustainable Contribution" in the various business activities, working toward the vision "Be a hidden champion in providing sustainable semiconductors to enrich human life."



External Collaborations

Nuvoton actively participates in domestic and international industry and R&D technology associations. Through regular and irregular meetings with association members, it builds bridges of communication with the industry. Engaging in discussions with other industry leaders and expert scholars enables Nuvoton to gain insights into industry dynamics and future development trends, while also sharing its own experiences and gaining valuable insights. Participation in association activities also contributes to enhancing the company's brand image and visibility, garnering more recognition, increasing trust among customers and partners, and promoting business expansion and market competitiveness. In summary, participation in association activities is not only a responsibility but also a valuable opportunity and resource to enhance the company's professional image and market influence.

Organization Participated	Title / Status
JEDEC Solid State Technology Association	Member/Participation in the member meeting
IEEE Enterprise	Member/Participation in the member meeting
Global Semiconductor Alliance (GSA)	Member/Participation in the member meeting
PIDA GaN Power and Microwave Alliance	Member/Participation in the member meeting
Taiwan Compound Semiconductor and Equipment Industry-Academia Alliance	Member/Participation in the member meeting
Micro Sensors and Actuators Technology Consortium (MEMS Industry-Academia Alliance)	Member/Participation in the member meeting
The Allied Association for Science Park Industries (ASIP)	Member/Participation in the member meeting
Taiwan Electrical and Electronic Manufacturers' Association (TEEMA)	Member/Participation in the member meeting
The Chinese National Association of Industry and Commerce, Taiwan (CNAIC)	Member/Participation in the member meeting
Hsinchu Science Park Water and Electricity Supply Committee	Group member/Information reception
Hsinchu Science Park Chemical Accident Mutual Aid Group - Hsinchu City Team B	Group leader/Information reception

Organization Participated	Title / Status
Japan Electronics and Information Technology Industries Association（JEITA）	Member/Participation in the member meeting
Semiconductor Industry Association in Japan（JSIA）	Member/Participation in the member meeting
Japan Industrial Imaging Association	Member/Participation in the member meeting
Vehicle Information and Communication System Center（VICS）	Member/Participation in the member meeting
HDMI Forum, Inc.	Member/Participation in the member meeting
Video Electronics Standards Association（VESA）	Member/Participation in the member meeting
Congress of Japan Railway Cybernetics	Member/Participation in the member meeting
Japan ID Connect with Secure Authentication Promotional association（JICSAP）	Member/Participation in the member meeting
Japan Business Machine and Information System Industries Association（JBMIA）	Member/Participation in the member meeting
Japan Automotive ISAC	Member/Participation in the member meeting
The Japan Institute of Power Electronics	Member/Participation in the member meeting
The Institute of Electrical Engineers of Japan	Member/Participation in the member meeting
Japan Society of Refrigerating and Air Conditioning Engineers	Member/Participation in the member meeting
Edge Platform Consortium（EPFC）	Member/Participation in the member meeting
Nippon Electronic Device Industry Association（NEDIA）	Member/Participation in the member meeting

1.2 Nuvoton's Values

From IC design and production technology to product applications, Nuvoton continuously pursues providing customers with low-power, lighter green products, aiming to reduce environmental impact during the production process and create societal impact. For instance, through medical equipment, IoT devices, and smart city solutions. These products not only enhance efficiency and performance but also bring more convenience and accessibility to society, enhancing Nuvoton's long-term market competitiveness and seizing green business opportunities in the global market.

Key focuses in design and development

- Shrinking chip size
- reducing harmful substances and emissions in the manufacturing process
- lowering manufacturing costs

Innovative product advantages

- Enhancing product efficiency
- increasing product energy usage efficiency
- reducing manufacturing energy consumption
- achieving smaller sizes
- reducing environmental pollution

Product Types	Microcontroller[1]	Audio	Cloud Computing	Semiconductor Components	Image Sensing Technology	Battery Monitoring
Areas of application	· 5G · energy management · smart IoT · industrial control · edge AI · IoT security · base stations · servers · Smart Home · Communication Devices · Electric Vehicle Electronics · Consumer Electronics · Audiovisual Equipment · Gaming Devices	· Smart industry · smart robots · conference systems · Smart Appliances · Smart Speakers · Smart Home Entertainment · Smart Cars · Smart Interactive Toys	· Edge computing · remote management for server-specific purposes · power management · computer hardware monitoring · Communication Devices (Mobile Phones and Laptops) · Remote Work	· Industrial equipment · fiber optics communication · Wearable Devices · Smartphones · Tablets	· Autonomous mobile robots (AMR) · human behavior recognition · obstacle sensing · Photographic Equipment · Medical Endoscopes	· Electric vehicles · Home Appliances · Fan Motors

1 This includes products from Nuvoton's Microcontroller Business Group and IoT with Security Business Group.

1.3 Governance for Sustainable Development

Sustainability Development Committee

Nuvoton is committed to becoming an "invisible champion enriching human life with green semiconductor technology." Under the leadership of its management, the company upholds integrity, innovation, and passion to continuously enhance its corporate value while keeping an eye on global trends, caring for social issues, and responding to stakeholder expectations. Nuvoton has devised a strategic framework for its vision from three dimensions of ESG (Environmental, Social, and Governance), aligning with action plans to implement the United Nations Sustainable Development Goals (SDGs). By integrating sustainability principles into its core capabilities, Nuvoton aims to foster new futures in talent, processes, and technology, thus creating better possibilities for society. Nuvoton is committed to achieving its sustainability vision by setting "sustainable operation" as its goal and adopting "innovation improvement" as its approach.

To ensure the adherence to sustainable business practices and establish a sustainable governance framework, Nuvoton has internally set up a Sustainability Development Committee. This committee serves as the highest governing body for the company's sustainable development operations. It is either chaired by the president or a senior executive appointed by the president, who is responsible for driving sustainability initiatives. The committee oversees the organization's sustainable impacts and sustainable development management policies in the areas of economy, environment, and people (including human rights). Working groups have been established in both Nuvoton Taiwan and Nuvoton Japan to address seven major functions, each tasked with setting short-, medium-, and long-term goals. These working groups are responsible for developing annual action plans, which are monitored quarterly by the Sustainability Development Committee. The committee chair regularly reports progress to the Board of Directors.

Official regulations can be found on the company website

To implement corporate sustainability and management, Nuvoton promotes sustainable development in the areas of economy, governance, environment, and society. The Sustainability Development Committee has formulated the "Nuvoton Technology Corporation Sustainability Practice Guidelines," which have been approved by the Board of Directors as the highest guiding principles for Nuvoton's sustainability practices. These guidelines adhere to the Taiwan government's "Corporate Sustainability Practice Guidelines for Listed and OTC Companies." Upholding the concept of sustainable operation, Nuvoton continually monitors domestic and international sustainability guidelines and regulatory trends to ensure that its sustainability-related business activities comply with legal requirements.

The Nuvoton Sustainability Development Committee provides regular reports to the Board of Directors on ESG sustainability promotion, greenhouse gas emissions (including those in Taiwan and Japan), and the implementation of measures to balance the interests of stakeholders and promote integrity in operations[2]. Board members offer timely guidance on various aspects of sustainability management and provide suggestions for long-term sustainability development directions.

2 The communication and integrity management progress with stakeholders for the fiscal year 2023 was reported to the Board of Directors on October 31, 2023.

Key Sustainability Initiatives for 2023

	Key Projects	Collaborators	Impact and Benefits
E Environmental	**Investment in energy-saving and carbon reduction equipment**	Suppliers	Increased energy usage efficiency Reduced energy costs Lowered carbon emissions
	Research and development for green design and process innovation	Customers Suppliers	Decreased energy consumption and carbon emissions Reduced environmental impact
	Setting short, medium, and long-term greenhouse gas reduction goals	Verification units Customers Suppliers	Establishment of company's path to net-zero
	Deployment of renewable energy	Engineering companies	Increased utilization of green energy
	Reduction of pollutant emissions	Engineering companies Communities External consultants Schools	Reduced environmental impact
S Social	**Community investment in supporting the underprivileged**	Local communities Non-profit organizations	Improved learning environments Enhanced community prosperity and well-being
	Protection of workplace safety	Suppliers	Reduced occupational injury rates Enhanced overall employee safety
	Volunteer participation	Local communities Hsinchu County, Taiwan Zhutian Elementary School, Pingtung County, Taiwan Nuvoton at Nagaokakyo City, Japan	Maintain community environment Increase employee environmental awareness Encourage employee participation in cultural activities
G Governance	**Identification of climate risks and opportunities (TCFD)**	External consultants	Response to stakeholders Identification of risks and opportunities of extreme weather
	Information Security Management System (ISMS)	External consultants	Enhanced information security protection Reduced risk of information leakage Establishment and operation of a secure operation center system
	Corporate governance evaluation	Regulatory agencies	Improved corporate governance scores

1.4 Analysis of Material Topic and Stakeholder Communication

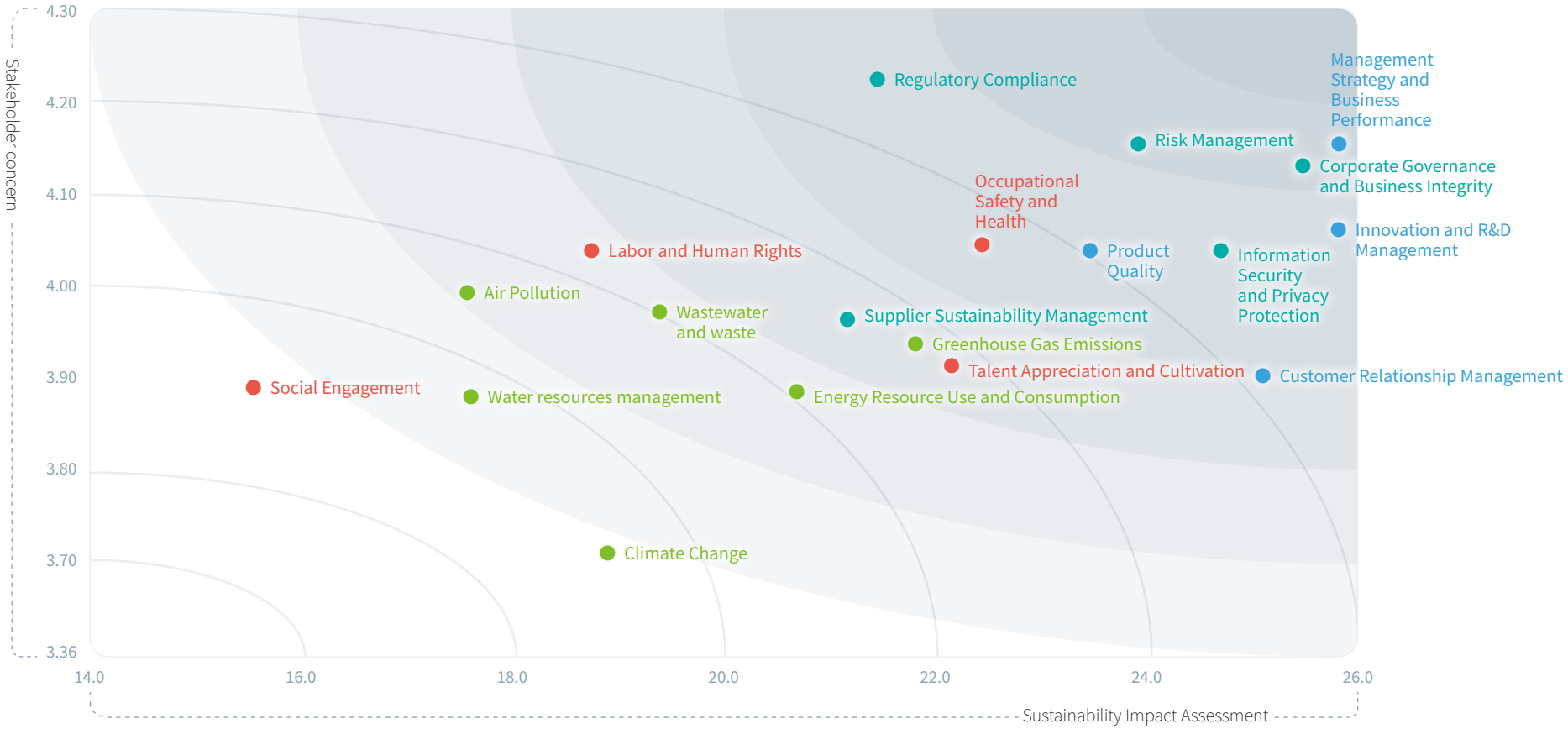
Analysis of Material Topic

Nuvoton pursues corporate sustainability by referencing the 2021 version of the Global Reporting Initiative (GRI) Standards and the AA1000 Accountability Principles Standard issued by the Global Reporting Initiative (GRI). It identifies Material Topic based on the principles of inclusivity, materiality, responsiveness, and impact. Following the GRI 3: Material Topics 2021 framework, it constructs a process for analyzing Material Topic to assess the positive and negative impacts of these issues on the environment, economy, and people (including human rights).

Analysis Process of Material Topic

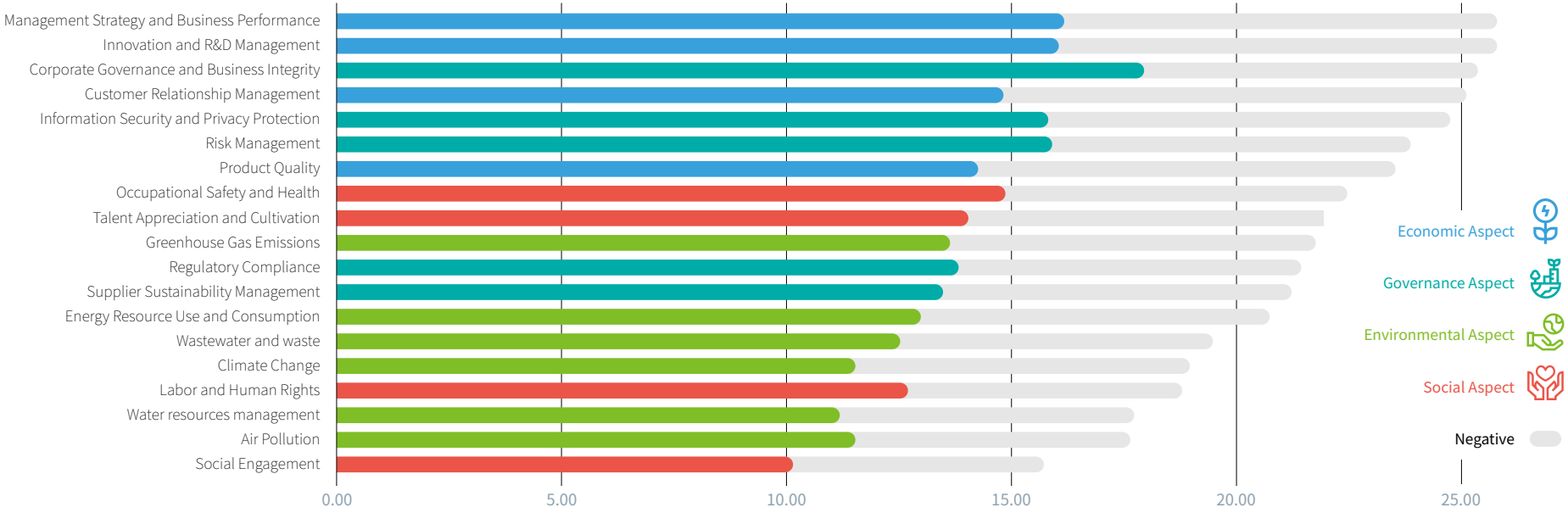
01	02	03	04	05
Establishing Sustainability Issues Database	Surveying Issues of Concern by Stakeholders	Evaluating Sustainability Impacts	Ranking and Confirming Material Topic	Approval of Material Topic
19 sustainability issues	40 weighted surveys of stakeholder 1,685 surveys on stakeholder concerns	36 surveys for assessing sustainability impact	10 Material Topics	Presented to the Board of Directors for approval
Drawing upon past sustainability issue databases, we examine industry sustainability practices in alignment with international trends to establish this year's sustainability issue repository. This repository encompasses sustainability issues across four dimensions: economic, governance, environmental, and social.	To gauge the level of stakeholder concern regarding sustainability issues, we distributed stakeholder concern surveys to various stakeholders. Simultaneously, senior executives from Nuvoton Taiwan and Nuvoton Japan, along with representatives from working groups, completed stakeholder importance surveys to ascertain the significance of various stakeholders to the company. Finally, weighted scores for stakeholder concern regarding sustainability issues were calculated based on the results of both surveys.	Representatives from senior management of Nuvoton Taiwan and Nuvoton Japan, as well as representatives from working groups under the Sustainability Development Committee, evaluated the positive and negative impacts and likelihood of occurrence of sustainability issues on the environment, economy, and population (including human rights) using sustainability impact assessment questionnaires.	Building upon the significance of impacts determined from the results of Phases 02 and 03 of the questionnaire by the Sustainability Development Committee, the top two issues from each of the economic, governance, environmental, and social dimensions were selected, considering adjustments to the company's sustainable development priorities, to form the final 10 Material Topic.	The Sustainability Development Committee reviewed the analysis results of the Material Topic and working groups formulated management policies for each material topic. Finally, these were presented to the Board of Directors for approval.

Matrix on Material Topic



Economic Aspect	Governance Aspect	Environmental Aspect	Social Aspect
Management Strategy and Business Performance	Corporate Governance and Business Integrity	Greenhouse Gas Emissions	Occupational Safety and Health
Innovation and R&D Management	Information Security and Privacy Protection	Energy Resource Use and Consumption	Talent Appreciation and Cultivation
Customer Relationship Management	Risk Management	Wastewater and waste	Labor and Human Rights
Product Quality	Regulatory Compliance	Air Pollution	Social Engagement
	Supplier Sustainability Management	Climate Change	
		Water resources management	

Sustainability Impact Assessment



List of Material Topic※ and Their Impact

Corresponding GRI Themes and Standards	Aspects of Impact (Positive/Negative)	Description of Economic, Environmental, and/or Social Impact (Response to Risks and Opportunities)	Related Chapter	Lead Divisions
Material Topic : Corporate Governance and Business Integrity Significance for Nuvoton: Corporate governance assessment of key issues is critically significant for Nuvoton, as it helps ensure the company's sustainable development, meet stakeholder expectations, comply with relevant regulations, effectively manage risks, maintain long-term competitiveness, and establish credibility. These elements are crucial for the company's long-term prosperity.				
· 205 Anti-Corruption · 206 Anti-competitive Behavior	Positive · Sound corporate governance and business integrity. Through the formulation and implementation of relevant rules and guidelines, establish standards of conduct for operational activities, generating positive impacts on the company, society, and the environment. Negative · Failure to execute comprehensive corporate governance and business integrity may lead to the misuse of company resources for activities detrimental to the company, society, and the environment, negatively impacting stakeholders, and even resulting in additional costs related to legal proceedings and lawsuits due to violations.	Economic · Operating with integrity and good corporate governance principles are fundamental to business operations, instilling confidence in stakeholders towards Nuvoton, encouraging investment in and commercial transactions with Nuvoton, thereby positively affecting revenue and the economy. Environmental · Embracing the concept of integrity in business operations and having robust governance systems can prevent companies from engaging in environmentally harmful practices and reduce the occurrence of cost shifting to the environment due to economic considerations. Social · Effective corporate governance systems and business integrity practices can prevent companies from facing legal penalties or even closure due to violations, as well as prevent the misuse of company resources, thereby safeguarding employees' rights and ensuring equal treatment.	3.1 Corporate Governance 3.3 Sustainable Business Management	· Sustainability Development Committee Corporate Governance Working Group · Nuvoton Japan Internal Control Office, Nuvoton Japan Corporate Strategy Office

※ Changes in the List of material topics: Risk Management, Compliance with Laws and Regulations, and Customer Satisfaction were material topics for 2022. After this round of analysis, they did not enter the top rankings, but considering that all three are long-term issues promoted by the company, they will continue to be fully disclosed externally. New major issues added in 2023 include "Corporate Governance and Integrity Operation," "Sustainable Supplier Management," "Climate Change," "Occupational Health and Safety," and "Talent Appreciation and Cultivation." To comply with the guidance of GRI 3 on material Topics, the combination of talent attraction and retention, as well as talent development, is consolidated to address social aspects.

Corresponding GRI Themes and Standards	Aspects of Impact (Positive/Negative)	Description of Economic, Environmental, and/or Social Impact (Response to Risks and Opportunities)	Related Chapter	Lead Divisions
Material topic: Management Strategy and Business Performance Significance for Nuvoton: Management strategy and business performance are key to Nuvoton's sustainable development. Developing comprehensive business strategies can maximize cost utilization and increase revenue, thereby improving corporate profits and operational efficiency.				
· 201-1 Direct economic value generated and distributed by the organization · 201-3 Defined benefit obligations and other retirement plans	Positive · Developing comprehensive short, medium, and long-term business strategies and goals effectively enhances operational performance and maintains market competitiveness. Negative · Failure to anticipate market changes may result in missed business opportunities, leading to loss of customers and orders.	Economic · Collaborating with academia for early-stage research and implementation, maintaining AI development momentum, and increasing long-term revenue opportunities. Environmental · Introducing digital technology into energy-saving applications and facility management can enhance operational efficiency and have a positive impact on the environment. Social · Developing applications for smart manufacturing to enhance efficiency, process quality, and product yield in work and production.	3.2 Operational Performance	· President's Office
Material topic: Innovation and R&D Management Significance for Nuvoton: Innovation and research capabilities serve as the engine for Nuvoton's continuous growth.				
· Customized Topic	Positive · Continuously enhancing enterprise innovation and growth momentum by providing novel products and services and increasing market share. Negative · Failure to retain advanced technologies may result in the inability to provide innovative services or products in response to market changes, reducing market competitiveness.	Economic · Practicing innovation, creativity, and entrepreneurship annually to promote the idea of industry digital prosperity through innovation. Environmental · Integrating environmental and intelligent technologies to expand applications can accelerate data integration and monitoring, reducing environmental impacts. Social · Encouraging employees to contribute innovative ideas and rewarding selected proposals, actively promoting innovation through strategic and concrete actions.	2.1 Innovation in Research & Development	· Product Working Group of the Sustainability Development Committee
Material topic: Information Security and Privacy Protection Significance for Nuvoton: Ensures the company's long-term stable development and customer satisfaction while protecting corporate and customer assets and reputation.				
· Customized Topic	Positive · Enhancing customer satisfaction. · Creating business value and reputation. · Complying with information security and privacy laws to avoid fines for violations. Negative · May reduce business efficiency. · Increased costs due to security investments. · Information security controls may affect customer experience. · Human errors leading to information leakage, resulting in security risks and losses.	Economic · Enhancing brand image and reputation in customers' minds to expand market size and explore new business opportunities. · Increasing customer loyalty. · Avoiding legal risks and liabilities to maintain corporate reputation and image. Environmental · Securely maintaining and upgrading information equipment to improve efficiency, reduce energy consumption, and promote the development and application of green technology. Social · Ensuring the non-abuse, disclosure, and infringement of personal information of employees and customers to safeguard basic human rights and corporate social responsibility.	3.3 Sustainable Business Management	· Information Security Advocacy and Social Engineering Education Training · Nuvoton Japan Information Security Promotion Committee

Corresponding GRI Themes and Standards	Aspects of Impact (Positive/Negative)	Description of Economic, Environmental, and/or Social Impact (Response to Risks and Opportunities)	Related Chapter	Lead Divisions
Material topic: Supplier Sustainability Management Significance for Nuvoton: Suppliers provide Nuvoton with the raw materials necessary for its operations and production. Nuvoton is committed to pursuing mutual growth with its suppliers.				
· 204 Procurement Practices · 308 Supplier Environmental Assessment · 414 Supplier Social Assessment	Positive · Establishing a sound supplier management mechanism and collaborating with suppliers to build a sustainable supply chain. Monitoring suppliers' implementation of human rights protection and achieving energy-saving, carbon-reduction, and cost-reduction objectives together. Negative · Failure to implement supplier sustainability management may result in the inability to monitor suppliers' human rights and environmental management practices, potentially leading to adverse impacts on the company, society, and the environment.	Economic · Establishing a comprehensive supply chain management system to stabilize the supply of goods and improve operational efficiency, leading to increased revenue. Environmental · Collaborating with suppliers to enhance sustainability performance, including developing energy-saving and carbon-reduction plans. Neglecting environmental management in the supply chain may increase the risk of regulatory violations. Social · Incidents of human rights disputes in the supply chain may decrease customer trust and order quantity.	3.4 Sustainable Supply Chain	· Sustainability Development Committee Supplier Management Working Group
Material topic: Climate Change Significance for Nuvoton: Nuvoton recognizes the importance of climate change on business sustainability. Considering the financial risks climate change may pose to operations, Nuvoton follows the TCFD's recommendations to identify climate-related risks and opportunities and incorporates them into the company's risk management framework as one of the sustainability development strategies.				
· Customized Topic	Positive · Integrating climate change into management practices, product research and development, and operational goals can help the company address the impacts of each climate risk and opportunity. Negative · Failure to integrate climate change into management practices, product research and development, and operational goals may result in an inability to proactively address climate-related risks and opportunities and mitigate the impacts of climate change.	Economic · Assessing the impact of each climate risk and opportunity on development strategies and financial implications to expand the scale of green product development, enhancing competitiveness and industry chain value. Environmental · Improving the energy conversion efficiency of production equipment and reducing energy consumption. · Identifying the impact of extreme weather on supply chains and adjusting production line configurations in advance. Social · Addressing and implementing measures to mitigate the potential impacts of climate change on employees' work and life in advance.	4.1 Climate Change	· Responsibility lies with the financial unit and is jointly supervised by the Sustainability Development Committee.
Material topic: Greenhouse Gas Emissions Significance for Nuvoton: The issue of greenhouse gas causing global warming affects the sustainability of the global ecology. Nuvoton cannot stay aloof and considers it a key issue for corporate sustainable development, while actively promoting energy conservation and carbon reduction.				
· 305 Greenhouse Gas Emissions	Positive · Understanding the company's greenhouse gas emissions, effectively managing data, and planning future carbon reduction pathways and strategies. Negative · Failure to effectively manage greenhouse gas emissions increases the risk and expenditure of future carbon tax and fees.	Economic · Procuring energy equipment that meets the low-energy standards announced by the Energy Administration of the Ministry of Economic Affairs and establishing energy-saving certification for energy equipment. Environmental · Conducting organizational greenhouse gas inventories and planning carbon reduction strategies. Social · Strengthening employees' awareness of environmental protection and energy conservation.	4.2 Greenhouse Gas Management	· Sustainability Development Committee Energy Conservation and Carbon Reduction Working Group

Corresponding GRI Themes and Standards	Aspects of Impact (Positive/Negative)	Description of Economic, Environmental, and/or Social Impact (Response to Risks and Opportunities)	Related Chapter	Lead Divisions
Material topic: Energy Resource Use and Consumption Significance for Nuvoton: Nuvoton adheres to the concept of "environmental sustainability" to minimize the environmental impact during product design, services, activities, and production. We commit to complying with energy-related regulations and meeting the needs of stakeholders, aiming to create a green and energy-efficient environment through the implementation of energy management systems.				
· 302 Energy	Positive · Enhancing the company's energy efficiency and implementing energy conservation and carbon reduction measures. Negative · Failure to effectively manage energy resource consumption may increase future risks and operational costs.	Economic · Establishing an environmental management system to plan, implement, and inspect energy resource management, thereby improving energy resource utilization efficiency. Environmental · Installing solar energy-saving equipment to increase the proportion of renewable energy usage. Social · Strengthening employee awareness of environmental protection and energy conservation.	4.3 Energy Resources Management and Circular Economy	· Sustainable Development Committee Energy Conservation and Carbon Reduction Working Group · Occupational Safety and Health Working Group
Material topic: Talent Appreciation and Cultivation Significance for Nuvoton: The company's growth is built on the professionalism and management capabilities of its employees. Recruiting, retaining, and developing talented individuals is a critical task for the company. Human capital is an indispensable key factor in the company's operations, and maintaining talent superiority is synonymous with maintaining the company's competitiveness. At Nuvoton, talent is recognized as a crucial cornerstone for the sustainable development of the enterprise. The company's technological advancements and competitive advantages are continuously maintained in the market due to outstanding talent.				
· 401 Labor Relations · 404 Training and Education	Positive · The company emphasizes employee remuneration, benefits, development, and empowerment, leading to an activated corporate culture and improved service/production efficiency and product quality, thereby enhancing the company's competitive advantage in the market. Negative · Neglecting employee remuneration, benefits, and development may result in talent loss, inadequate training, decreased product quality, or operational errors, leading to a decline in the company's competitiveness.	Economic · Talent is the foundation of enterprise growth. By valuing and continuously developing employees, it is possible to enhance their innovation and efficiency, thereby increasing the company's competitiveness and revenue growth momentum. Environmental NA Social · Nuvoton values and actively cultivates its employees. This approach helps attract and retain talent, leveraging the benefits of talent to enhance employee engagement and satisfaction in their work.	5.2 Talent Attraction and Growth	· Sustainability Development Committee Labor Rights Working Group
Material topic: Occupational Safety and Health Significance for Nuvoton: Occupational safety and health are not only a legal obligation for companies but also the cornerstone of establishing a healthy, safe, and sustainable corporate culture. By actively investing in and practicing occupational safety and health management, companies can achieve long-term sustainable operation.				
· 403 Occupational Safety and Health	Positive · Through a well-planned occupational safety and health system, employee and contractor workplace safety and health can be effectively maintained, reducing direct and indirect damage caused by occupational accidents Negative · Lack of a comprehensive occupational safety and health system may jeopardize personnel safety and health, affecting the company's image, product quality, and labor relations.	Economic · An effective occupational safety and health management system can help companies identify workplace risks, enabling them to prevent accidents in advance and reduce the probability of legal penalties due to occupational safety and health incidents. Environmental · A proper occupational safety and health management system can assist companies in managing hazardous substances, ensuring proper monitoring and disposal of organic solvents, dust, specific chemicals, and other hazardous substances in the workplace, thereby reducing environmental burden. Social · A good occupational safety and health management system can effectively protect the safety of contractors and employees, establishing a safe and healthy workplace.	5.3 Occupational Safety and Health	· Sustainable Development Committee Occupational Safety and Health Working Group

Material Topic and Action Plans

Nuvoton Taiwan and Nuvoton Japan each have seven working groups dedicated to addressing Material Topic and implementing action plans. These groups establish short, medium, and long-term objectives for managing their respective significant issues and are responsible for drafting annual action plans. Supervised by the Sustainability Development Committee, their progress is tracked quarterly. The committee chair regularly reports progress to the Board of Directors.

Material topic	Scope	Strategy	Achievements in 2023	2024 Short-Term Goal	2025 to 2030 mid-&Long- term goal
Economic and Governance					
Corporate Governance and Business Integrity	**Nuvoton Taiwan**	Corporate governance Evaluation (Listed Companies) within 20%	All goals achieved Corporate governance evaluation within 6-20%.	1. Corporate governance evaluation (for listed companies) within 20%. 2. Continuously promote integrity management and compliance education and training, with a 100% pass rate for HQ personnel training exams.	Implementing sustainable development initiatives to enhance the company's social image and foster trust among investors and stakeholders, while continuously improving corporate governance performance.
	Nuvoton Japan	1. Convene Board of Directors Meetings 2. Conduct Internal Audits 3. Implement Compliance Education	All goals achieved	Adhering to relevant regulations on corporate governance and integrity management, conducting business operations in accordance with domestic and international standards.	Adhering to relevant regulations on corporate governance and integrity, and conducting business operations in accordance with domestic and international norms.
Management Strategy and Business Performance	**Nuvoton**[1]	Develop market strategies and explore new markets, continuously maintain the company's operational profitability status.	All goals achieved Revenue in 2023 was NT$35.348 billion, with a post-tax net profit of NT$2.42 billion	Regularly convene QBR meetings to review business performance and enhance operational efficiency.	1. Introduce new products or services to expand the market. 2. Establish supply chain resilience and sustainability. 3. Promote digital transformation to enhance business efficiency and innovation capability. 4. Continuously monitor and incorporate SDGs into the company's business strategy.
Innovation and R&D Management	**Nuvoton Taiwan**	1. The carbon reduction performance of energy-saving and carbon-reducing products decreased from 1.18 to 0.73 kg CO_2/grain in 2023. 2. The carbon reduction performance of energy-saving and carbon-reducing products decreased from 1.18 to 0.73 kg CO_2/grain in 2023. 143 new patent applications filed in 2023	All goals achieved	1. Continuously maintain the scale of patents, with 141 new patent applications filed. 2. Enhance product environmental benefits, set carbon footprint reduction targets for energy-saving and carbon-reducing products to exceed 38%.	1. Continuously innovate and develop products, creating environmentally friendly products. 2. Enhance product execution efficiency and reduce power consumption during execution through advanced technology research and development.
	Nuvoton Japan	1. Develop environmentally friendly products that are compact, low-consumption, and highly efficient. 2. By 2025, reduce the power consumption of new products by 15% compared to 2021.	New standards for Green Products certification have been established (details of related achievements in 2023 can be found in Chapter II Green Product Management Policy).	To maintain its leading position in the existing market and industry, Nuvoton will continue to introduce TMOS' slow Ron advanced technology for lithium-ion batteries in smartphones.	

1 This includes both Nuvoton Taiwan and Nuvoton Japan.

Material topic	Scope	Strategy	Achievements in 2023	2024 Short-Term Goal	2025 to 2030 mid-&Long- term goal
Information Security and Privacy Protection	**Nuvoton Taiwan**	1. Implement and verify the new ISO27001:2022 international information security management system standard. 2. Strengthen endpoint security protection by implementing and deploying EDR and enhancing monitoring mechanisms. 3. All employees receive information security training, with a completion rate of over 97%.	All goals achieved 1. Follow ISO 27001 international standards for internal "gap analysis, asset inventory, risk improvement plans, and establishment of management norms that comply with international information security standards." 2. Complete the product evaluation of the "Endpoint Detection and Response (EDR) tool." 3. Achieve a 98% completion rate for all employees receiving information security training.	1. Pass the initial verification of ISO 27001:2022 with zero major non-compliance findings in the audit. 2. All employees receive information security training, with a completion rate of 100%. 3. Zero major information security incidents affecting company operations.	1. Enhance the information security incident monitoring mechanism and expand the deployment of "Endpoint Detection and Response (EDR) tools." 2. Strengthen business continuity management to ensure uninterrupted operations during disruptive incidents. 3. Establish data protection management norms and continuously promote awareness among employees, and introduce technical solutions to prevent incidents of sensitive data or personal information leakage. 4. Integrate AI-based information security solutions to detect internal and external threats and prevent hacking attacks, achieving an efficient response mechanism through automated processes to minimize the impact of information security incidents.
	Nuvoton Japan	1. ISO 27001:2013 review, with zero major non-compliance findings in the audit results. 2. All employees receive information security training, with a completion rate of 100%. 3. Zero major information security incidents affecting company operations.	All goals achieved 1. Achieve "zero major non-compliance findings in ISO 27001 audit results." 2. Achieve "100% completion rate for all employees receiving information security training." 3. Achieve "zero major information security incidents affecting company operations."		
Supplier Sustainability Management	**Nuvoton Taiwan**	1. Comply with regulations and customer specifications regarding the absence of harmful substances in products. 2. Achieve a verification rate of 79% for major suppliers[1] obtaining ISO 14064 or equivalent international standards certification. 3. Have 86% of major suppliers publish ESG reports. 4. Complete verification for 50% of major suppliers through RBA VAP.	All goals achieved	1. Achieve a 25% SAQ (Self-Assessment Questionnaire) completion rate for major suppliers BCP (Business Continuity Plan). 2. Attain an 86% verification rate for major suppliers obtaining ISO 14064 or equivalent international standards certification. 3. Have 93% of major suppliers publish ESG reports. 4. Achieve a 75% completion rate for major supplier BCP SAQ.	1. Achieve a 75% SAQ completion rate for major suppliers BCP. 2. Ensure 100% of major suppliers obtain ISO 14064 or equivalent international standards certification. 3. Have 100% of major suppliers publish ESG reports. 4. Complete verification for 100% of major suppliers through RBA VAP.
	Nuvoton Japan	1. Supplier CSR activity status survey response rate 100% (every 2 years) 2. Supplier conflict mineral investigation response rate 100% annually 3. Business continuity survey response rate 100% annually (every 2 years) 4. High concern substance (presence of SVHC in purchased materials) investigation response rate 100% annually 5. Carbon neutrality investigation response rate 100%	All goals achieved	1. Supplier CSR activity status survey response rate 100% (every 2 years) 2. Supplier conflict mineral investigation response rate 100% annually 3. Business continuity survey response rate 100% annually (every 2 years) 4. High concern substance (presence of SVHC in purchased materials) investigation response rate 100% annually 5. Carbon offset investigation response rate 100%	1. Supplier CSR activity status survey response rate 100% (once every 2 years) 2. Supplier conflict mineral investigation response rate 100% annually 3. Business continuity survey response rate 100% annually (once every 2 years) 4. High-concern substance (presence of SVHC in purchased materials) investigation response rate 100% annually 5. Carbon neutrality investigation response rate 100% annually

1 The primary suppliers consist of 14 companies, accounting for approximately 92% of the transaction volume in 2023.

Material topic	Scope	Strategy	Achievements in 2023	2024 Short-Term Goal	2025 to 2030 mid-&Long- term goal
Environmental					
Climate Change[2]	**Nuvoton Taiwan**	1. Implement water-saving initiatives to reduce water usage by 1% compared to the previous year. 2. Execute energy-saving and carbon-reduction projects (engineering improvements take precedence) to continuously reduce greenhouse gas emissions by 25% compared to 2022. 3. Establish a carbon inventory platform to monitor the carbon emissions of each machine in real-time.	All goals achieved 1. Implement water-saving initiatives to reduce water usage by 2.8% compared to the previous year. 2. Execute energy-saving and carbon-reduction projects (engineering improvements take precedence) to continuously reduce greenhouse gas emissions by 25% compared to 2022. 3. Complete the Power BI inventory platform, which allows real-time monitoring of the carbon emissions of each machine.	1. Promote water-saving measures - Reduce water usage by 2.7% compared to the baseline year. 2. The installation of fluorinated gas reduction equipment resulted in a 16% annual reduction in fluorinated gas emissions compared to 2023. 3. Establish a carbon accounting system - Draft a plan for 2024 to propose business requirements.	1. Promote water-saving measures - By 2030, reduce water usage by 10% compared to the baseline year. 2. Install equipment to reduce fluorinated gas by 2030, reduce fluorinated gas emissions in the process by 70% compared to the baseline year. 3. Establish a carbon accounting system by 2025 - Utilize carbon accounting to determine internal product carbon pricing by 2030.
	Nuvoton Japan	Greenhouse gas emissions reduced by 40% compared to the baseline year	All goals achieved Greenhouse gas emissions reduced by 40% compared to the baseline year	Greenhouse gas emissions reduced by 49% compared to the baseline year	Greenhouse gas emissions reduced by 50% compared to the baseline year
Greenhouse Gas Emissions[3]	**Nuvoton Taiwan**	1. Implement energy-saving and carbon reduction projects to continuously reduce greenhouse gas emissions by 20% compared to 2022. 2. Install fluorinated gas reduction equipment - Fluorinated gas reduced by 40% compared to the previous year.	All goals achieved 1. Reduce greenhouse gas emissions by 25%. 2. Reduce fluorinated gas emissions by 48% compared to the previous year.	Achieve a 40% reduction by 2024 compared to 2020 targets.	1. Achieve a 50% reduction by 2025 compared to 2020 targets. 2. Achieve a 56% reduction by 2030 compared to 2020 targets. 3. Long-term goal to achieve net zero emissions by 2050.
	Nuvoton Japan	Compared to the baseline year, greenhouse gas emissions have decreased by 40%.	All goals achieved Greenhouse gas emissions reduced by 41% compared to the baseline year.	Implement a plan to introduce solar power generation	Achieve net-zero emissions by 2050 as a long-term reduction goal
Energy Resource Use and Consumption	**Nuvoton Taiwan**	1. A decrease of 1% in electricity consumption compared to the previous year (2022). 2. Completion of solar energy equipment installation reaching contractual capacity of 8%. 3. Completion of ISO 50001 system establishment.	All goals achieved 1. Decrease of 1.8% in electricity consumption compared to the previous year (2022). 2. Completion of solar energy equipment installation reaching contractual capacity of 8%. 3. Completion of ISO 50001 system establishment.	2% decrease in electricity consumption compared to 2023.	10% decrease in electricity consumption compared to 2020 (baseline year).
	Nuvoton Japan	Average annual decrease in energy resource usage intensity of 1% compared to the previous year.	All goals achieved	Average annual decrease in energy resource usage intensity of 1% compared to the previous year.	Average annual decrease in energy resource usage intensity of 1% compared to the previous year.

2 The reference year mentioned here is 2020.

3 The greenhouse gas emissions target here refers to Scope 1 and Scope 2.

Material topic	Scope	Strategy	Achievements in 2023	2024 Short-Term Goal	2025 to 2030 mid-&Long- term goal
Social					
Talent Appreciation and Cultivation	**Nuvoton Taiwan**	1. Turnover rate less than 8.5%. 2. Providing training courses on individual professional skills and basic/intermediate managerial skills for employees. 3.Enhancing knowledge of senior executives on political, economic situations, and future trends, offering relevant training courses.	All goals achieved 1. Turnover rate of 5.6%. 2. 100% attendance for professional and managerial training courses. 3. Attendance rate of 90% for senior executive courses.	1. Strengthening employer branding. 2. Expanding recruitment channels. 3. Promoting career development. 4. Achieving 100% completion rate for professional skills inventory. 5, Average employee education and training hours reaching 30 hours	1. Strengthening professional and managerial skills. 2. Improving remuneration and benefits. 3. Enhancing retention mechanisms. 4. Achieving an 80% completion rate for training key position talents. 5. Average employee education and training hours reaching 45 hours.
	Nuvoton Japan	Turnover rate less than 4%.	All goals achieved Turnover rate of 3.6%		
Occupational Health and Safety	**Nuvoton Taiwan**	1. Training attendance rate for occupational safety education exceeding 80%. 2. Average incident rate per thousand persons decreased by 30% compared to the baseline average of 1.81. 3. Zero cases of occupational diseases. 4. Employee cancer screening rate exceeding 30%.	All goals achieved	1. Training attendance rate for occupational safety education exceeding 95%. 2. Average incident rate per thousand persons decreased by 40% compared to the baseline average of 1.81. 3. Zero cases of occupational diseases. 4. Employee cancer screening rate exceeding 50%.	1.Continued maintenance of training attendance rate for occupational safety-related education. 2. Average incident rate per thousand persons decreased by 60% compared to the baseline average of 1.81. 3. Zero cases of occupational diseases. 4. Employee cancer screening rate exceeding 75%.
	Nuvoton Japan	1. Work stoppage or above: 0 cases 2. No work stoppage: 3 cases 3. Severity rate (below 0.06) = 0	All goals achieved	1. Occupational safety and health general training attendance rate exceeding 90%. 2. New employee occupational safety and health training attendance rate of 100%. 3. Risk registration improvement rate of 100%. 4. Zero cases of occupational diseases. 5. Achieving the target value of increasing suitable lifestyle habits through the life clinic[4] program: 3.56	1. Continued maintenance of occupational safety and health-related training attendance rate. 2. Continuously maintaining a 100% improvement rate for risk registration. 3. Zero cases of occupational diseases. 4. Achieving the target value of increasing suitable lifestyle habits through the life clinic program: 4.0

4 Calculates the proportions of lifestyle habits, such as diet, walking, sleep, smoking, etc., as they change over time. The target value is the average calculated based on the quantity of suitable habits.

Material Topic and Impact on Nuvoton's Value Chain

Material topic	Value Chain Impact Boundary ※				
	Upstream	**Nuvoton Operations**		**Downstream**	
	Suppliers (Raw Materials/ Equipment)	Research, Development, and Design	Wafer Foundry	Packaging/Testing	Customer Usage
Corporate Governance and Business Integrity	● ○	● ○	● ○	● ○	● ○
Business Strategy and Performance	● ○	● ○	● ○	▲ △	▲ △
Innovation and R&D Management	▲ △	● ○	● ○	● ○	● ○
Information Security and Privacy Protection	▲ △	● ○	● ○	● ○	● ○
Supplier Sustainability Management	● ○	● ○	● ○	● ○	● ○
Climate Change	▲ △	▲ △	● ○	▲ △	▲ △
Greenhouse Gase Emissions	● ○	▲ △	● ○	▲ △	● ○
Energy Resource Use and Consumption	▲ △	▲ △	● ○	▲ △	● ○
Talent Appreciation and Cultivation	▲ △	● ○	● ○	▲ △	▲ △
Occupational Safety and Health	▲ △	● ○	● ○	▲ △	▲ △

※ Significant positive impact: ● ; Significant negative impact: ○ ; Potential positive impact: ▲ ; Potential negative impact: △

Stakeholder Communication

Nuvoton follows the five assessment principles of the AA1000 Stakeholder Engagement Standard (AA1000 SES), including responsibility, influence, tension, diverse perspectives, and dependency. We identify seven categories of key stakeholders, including employees, customers, suppliers/contractors, government agencies/public associations, shareholders/investors, community groups and non-profit organizations, and the media. We have a dedicated investor relations unit to respond to investors' inquiries or letters periodically and establish diverse and transparent communication channels to effectively understand stakeholders' concerns regarding economic, environmental, and social (including human rights) issues and specific opinions, providing timely responses to stakeholders' suggestions. After communication and negotiation with stakeholders and relevant units, the responsible units track the significance of issues and regularly report to the Board of Directors.

The company offers a comprehensive complaint mechanism for stakeholders. Relevant units collect and manage complaints, and corresponding management units track them. Major incidents are discussed at functional committees. For significant sustainability issues, the Sustainability Development Committee summarizes ESG performance indicators and major sustainability themes of the year, which are then included in the agenda of the Board of Directors for communication and feedback. The Sustainability Development Committee reports the results of ESG performance indicator implementation and annual major sustainability themes to the Board of Directors.

Stakeholder Categories	Significance to Nuvoton	Key Concerns	Communication Channels and Frequency	2023 Communication Achievements and Responses to Issues
Employees	Employees are vital assets to Nuvoton and are crucial to supporting the company's competitiveness.	· Corporate Governance and Business Integrity · Business Strategy and Performance · Talent Appreciation and Cultivation · Occupational Safety and Health	· Labor-management meetings (quarterly) · Supervisor quarterly meetings (quarterly) · Supervisor operational intelligence sharing sessions (quarterly) · Employee welfare committee (quarterly) · Employee suggestion box (irregular) · Complaint mailbox and hotline (irregular) · Internal website (irregular) · Various organizational meetings (irregular) · Training courses (irregular)	· Conducted 4 labor-management meetings · Conducted 4 supervisor quarterly meetings · Held 4 supervisor operational intelligence sharing sessions · Organized 4 Town Hall Meetings · Addressed 7 internal communication channel issues · Published 52 articles on the employee website homepage · Issued TO ALL announcements on the internal website
Customers	Customers are the main source of Nuvoton's revenue. The company is committed to providing the highest quality products and services.	· Corporate Governance and Business Integrity · Business Strategy and Performance · Innovation and R&D Management · Information Security and Privacy Protection · Supplier Sustainability Management · Climate Change · Greenhouse Gase Emissions · Energy Resource Use and Consumption	· Customer satisfaction surveys (annually) · Customer surveys or on-site audits (irregular) · Company website member area (irregular) · Technical seminars (irregular) · Telephone, email (irregular)	· Organized a total of 42 online or offline high-value innovation product customer training seminars and communicated with potential customers, discussing market trends and product/technical support information, receiving favorable feedback from customers · Ensured smooth communication channels such as company website emails, chat windows, technical communities, offline telephones, and daily visits and utilized the D365 customer service system to optimize the immediacy of technical support knowledge base and responses · Continuously updated online digital documents, audio, and technical support resources to assist customers in rapid product development

Stakeholder Categories	Significance to Nuvoton	Key Concerns	Communication Channels and Frequency	2023 Communication Achievements and Responses to Issues
Suppliers / Contractors	Suppliers provide the raw materials needed for the company's operation and production. Nuvoton is committed to pursuing mutual growth with suppliers.	· Corporate Governance and Business Integrity · Innovation and R&D Management · Supplier Sustainability Management · Climate Change · Greenhouse Gase Emissions · Occupational Safety and Health	· Supplier ESG & RBA self-assessment (annually)	· Completed annual evaluations of major suppliers · 100% of suppliers signed the RBA Code of Conduct · 100% of suppliers signed the "Conflict Minerals Declaration" · 100% of suppliers signed the "Hazardous Substance Declaration" · 86% of major suppliers published ESG reports · Conducted greenhouse gas emission surveys (ISO 14064) for major suppliers · Collected baseline and reduction targets for greenhouse gas emissions from major suppliers
Government Agencies / Public Associations	Nuvoton will comply with local government regulations and actively cooperate with relevant policies to eliminate any form of illegal behavior.	· Corporate Governance and Business Integrity · Climate Change · Greenhouse Gase Emissions · Energy Resource Use and Consumption	· Official documents (irregular) · Regulatory briefing sessions (irregular) · Communication through industrial associations and regulatory authorities in the science park (irregular)	· Participated in 12 meetings of environmental and safety regulatory authorities※ · Received 18 official documents from the Science Park Association · Received 9 documents related to solar photovoltaic projects
Shareholders / Investors	Corporates or individuals who have invested or are willing to invest in Nuvoton.	· Business Strategy and Performance · Corporate Governance and Business Integrity	· Annual General Meeting (AGM) (annually) · Analyst Meetings (quarterly) · Annual Financial Report (annually) · Company Website (periodically) · Stock Market Updates (regularly/ periodically)	· Held quarterly online analyst meetings in 2023, totaling 4 sessions with a cumulative attendance of over 500 people. · Conducted 1 shareholder meeting · Disclosed annual reports once · Disclosed consolidated financial reports 4 times · Monthly revenue announcements 12 times · Periodically disclosed significant company information · Regularly disclosed operational information in accordance with the law
Community and Non-profit Organizations	Nuvoton seeks social harmony and progress, focusing on local community issues and building a better society.	· Corporate Governance and Business Integrity · Greenhouse Gase Emissions · Energy Resource Use and Consumption · Talent Appreciation and Cultivation	· Company Website (periodically) · Email (periodically) · Facebook Fan Page/Instagram (periodically)	· Conducted 2 community visits · Organized 2 blood donation activities, totaling 112 bags of blood donated · Held 1 lecture by a renowned individual · Organized 1 second-hand book donation event "Reading, Loving, Sharing" · Conducted 5 campus forums
Media	The media serves as a bridge between Nuvoton and its stakeholders, ensuring timely access to information released by Nuvoton, and assisting Nuvoton in disclosing positive sustainaibilty information to stakeholders.	· Corporate Governance and Business Integrity · Talent Appreciation and Cultivation · Innovation and R&D Management · Business Strategy and Performance	· Analyst Meetings (quarterly) · Issued press releases for major operational news (irregularly) · Issued press releases for exhibitions/ awards (irregularly)	· Conducted 4 analyst meetings · Published 30 press releases

※ Taiwan Power Company's power-related meetings: 2 sessions; Hsinchu Science Park Administration meetings: 9 sessions; Industrial Association meetings in the park: 1 session; Total: 12 sessions.

CH2
Green Products

2.1 Innovation in Research & Development

2.1.1 Strategy for Innovation in Research & Development

2.1.2 Achievements in Research & Development by the Business Group

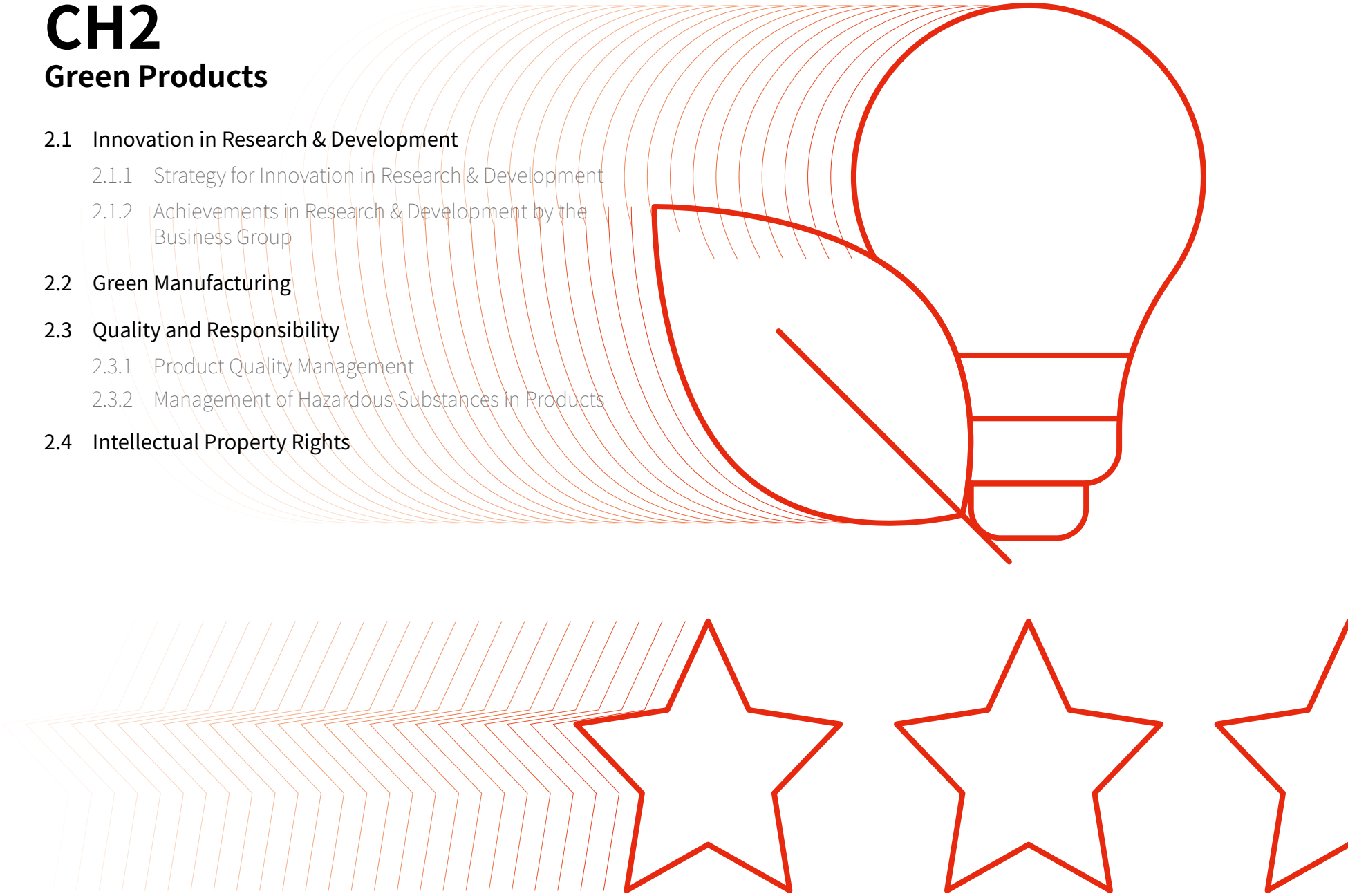
2.2 Green Manufacturing

2.3 Quality and Responsibility

2.3.1 Product Quality Management

2.3.2 Management of Hazardous Substances in Products

2.4 Intellectual Property Rights



Material Topic: Innovation and R&D Management

Policies and Commitments	2023 Goals		Future Goals			Specific Actions
	Description of Goal	Achievements	Short-term (2024)	Mid-term (2025)	Long-term (2030)	
· Regularly disclose R&D expenditures and newly acquired patent counts · Through the implementation of innovation and R&D management, maintain the company's leading position in the industry and continue to provide customers with cutting-edge technology products	**Nuvoton Taiwan** · Total carbon footprint reduction of 38% (1.18 → 0.73) (kg CO_2/die) for energy-saving and carbon reduction products※ · 143 new patent applications in 2023 · Develop innovative product R&D	**Nuvoton Taiwan** All goals achieved	**Nuvoton Taiwan** · The number of products using advanced processes in 2024 will grow by more than 50% compared to 2023 · Maintain patent scale, with 141 new patent applications · Enhance product environmental benefits, set a target of more than 38% total carbon footprint reduction for energy-saving and carbon reduction products	**Nuvoton Taiwan** · The number of products using advanced processes in 2025 will grow by more than 60% compared to 2023	**Nuvoton Taiwan** · Set an additional target of more than 90% growth in the number of products using advanced processes in 2025 compared to 2030 **Nuvoton** · Continue to develop innovative product R&D, develop eco-friendly products; through advanced technology R&D, use technology to enrich human life, improve product execution efficiency and reduce power consumption during execution, and assist the world in moving towards sustainability	· Continue to invest in R&D funds and recruit R&D talents to expand innovation and R&D capabilities · Provide incentives for new inventors, approved proposals, patent applications, and patent certifications
	Nuvoton Japan · Develop miniaturized, low-power, and high-efficiency eco-friendly products · New products' power consumption in 2025 to be 15% lower than in 2021	**Nuvoton Japan** All goals achieved A new green product certification standard has been established, aiming for a 15% reduction in power consumption of new products in 2025 compared to 2021. Relevant achievements in 2023 are as follows: · Chip area/PKG capacity reduced for 5 products (more than 5% reduction compared to previous models) · TMOS on-resistance reduced for 5 products (more than 15% reduction compared to previous models) · LSI power consumption reduced for 4 products (more than 15% reduction compared to previous models) · Luminous efficiency of laser components increased for 2 products (more than 10% increase compared to previous models)	**Nuvoton Japan** · To maintain the leading position in the existing market and industry, will continue to introduce advanced low-Ron TMOS technology for lithium-ion batteries in smartphones	**Nuvoton Japan** · Along with the growth of the electric vehicle market, continue to develop and increase sales of vehicle-mounted BMS products		

※ The product carbon footprint calculation involves collecting the carbon footprint data for each IC manufacturing process and packaging type from suppliers. This data is used to calculate the difference in carbon footprints between the new generation and the previous generation of green products.

Nuvoton sees "research and innovation" as the driving force for the sustainable transformation of semiconductor IC design products. We are committed to developing the latest technologies in the industry, while continuously reducing the environmental impact throughout the process of design, production, packaging, and logistics. We introduce new technologies, high computational efficiency, and safer green products to meet energy-saving and carbon reduction goals. In addition to environmental benefits, Nuvoton also pursues social contributions through product innovation, including medical equipment, IoT devices, and smart city solutions that bring added convenience to society. Nuvoton rigorously controls product quality through quality management systems and conducts systematic hazardous substance management.

01 Enhancing Product Performance

- Improving power consumption
- Achieving faster computational efficiency
- Higher performance computing core units

02 Improving Quality

Continuously improving product quality in three major aspects: quality control, reliability assurance, and failure analysis.

03 Controlling Pollution

- Reducing consumables generated during the manufacturing process, lowering carbon footprint emissions.
- Establishing a system for managing hazardous substances in products, reducing or eliminating harmful substances included in products in a "process-oriented" manner.

04 Layout of Patents and Intellectual Property Protection

- Adopting international standards in the internal proposal stage of patent applications to enhance patent quality and application success rates.
- Improving the protection of intellectual property rights through internal education and training, signing confidentiality agreements, etc.

05 Ensuring Information Security and Confidentiality

Strengthening information security technologies, continuously providing advanced security function designs in products.

06 Achieving Smaller Size

EdgeBMC Continuously developing technologies to shrink wafer chip area compared to the previous generation of products, including ultra-low-power next-generation microcontroller MG51 chip, voice synthesis playback chip, edge computing management control chip EdgeBMC.

07 Reducing Production Energy Consumption

- By reducing wafer chip area and shortening production time, more products are produced with the same process, reducing energy consumption per wafer.
- Selecting low power and low leakage processes.

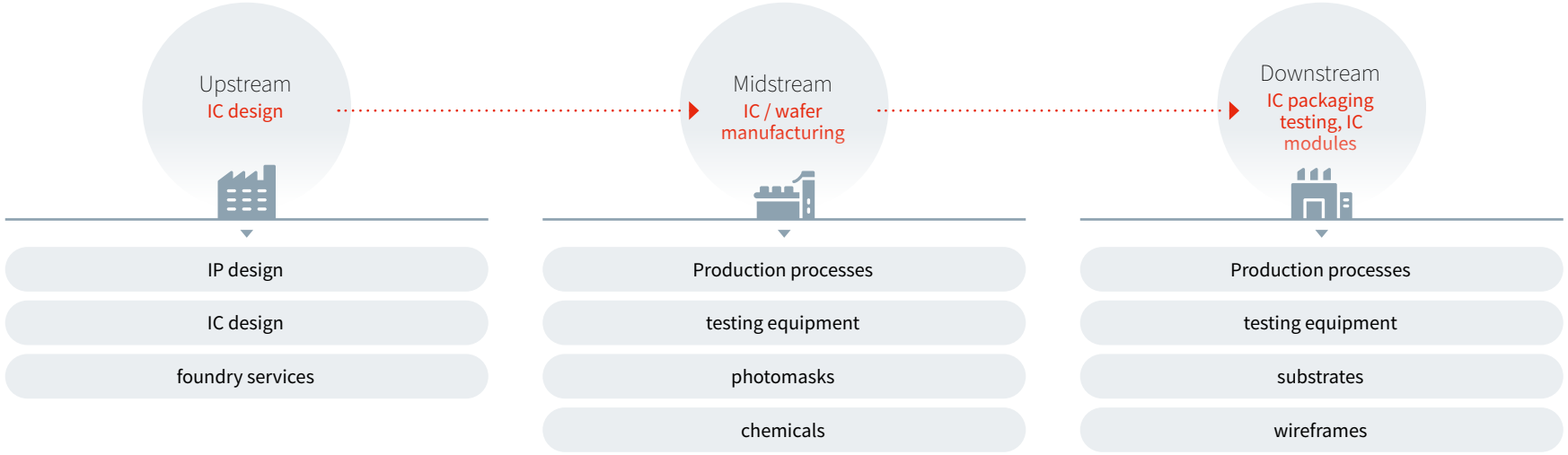
2.1 Innovation in Research & Development

The development of green semiconductor technology can have a positive impact on the future for humankind and our environment. Nuvoton envisions itself as the "invisible champion enriching human life with green semiconductor technology." It regards "research and innovation" as the driving force for the sustainable transformation of semiconductor IC design products, and aspires for its products to continue expanding their footprint in overseas applications. At the same time, in response to new trends in the international market, Nuvoton is expanding resources to pursue product optimization in major areas of development, such as microcontrollers, cloud computing, and automotive industrial control networks. Products are designed and applied at terminals to achieve energy-saving and carbon reduction goals, continuously providing customers with high-quality products and new solutions, thus maintaining Nuvoton's leading position in the IC Design House market.

2.1.1 Strategy for Innovation in Research & Development

Semiconductor Industry Chain Positioning

Nuvoton is an IC design company positioned upstream in the semiconductor industry chain, facing the front line impact of changes in market demand. Our technical research and development requires flexibility, advancement, and integration. From the perspective of the supply chain, Nuvoton's products serve as the control and computing core of end products. In the field of cloud computing ICs, Nuvoton provides downstream customers with development of microcontrollers, microprocessors, smart home solutions, cloud security, battery monitoring, image sensing, IoT, and other related application ICs and semiconductor components, with deep expertise cultivated over many years. Additionally, Nuvoton is one of the few domestic IC design companies with wafer fabrication capabilities, owning a 6-inch wafer fab in Taiwan. It manufactures its own IC products and provides specialized wafer foundry services, establishing long-term and stable cooperation models with upstream players (raw material and equipment suppliers).



Nuvoton has four main missions in technical innovation

Becoming a Trusted Partner for Customers

Deeply understanding and cultivating relationships with customers, Nuvoton is committed to becoming a trusted partner by accurately designing and manufacturing solutions that meet customer needs.

Talent Cultivation

Empowering employees and fostering an environment of open learning, Nuvoton equips its staff with comprehensive skills and encourages agile responses to market changes and challenges.

Team Collaboration

Collaborating across borders and between teams both internally and externally, Nuvoton maintains its leading position and continuous development in multiple core technologies. Internally, teams collaborate across borders, learning from each other, leveraging experiences, exploring new opportunities, and creating new product directions together.

Digital Technology

Nuvoton keeps a close eye on market technology developments. Continuously integrating various digital technologies and tools, Nuvoton enhances operational efficiency and product design and manufacturing quality.

Based on the four innovation missions, Nuvoton has formulated management policies for its product development-related business groups to ensure consistency in product planning and design across different periods. It is committed to launching new technologies, high computational efficiency, and safer green products to meet energy-saving and carbon reduction goals.

Business Group Names

The Microcontroller Application Business Group focuses on MCU/MPU products and audio products. MCU/MPU products prioritize user product safety and information security as the fundamental requirements. They incorporate energy-saving improvements and endpoint AI trends, exploring and defining key IPs or architectures in line with customer, market, and environmental trends for technical and product development. Audio products are application-oriented, introducing technologies to save battery consumption, reduce power consumption, achieve lighter and thinner packaging, minimize peripheral component and board material consumption, and gradually invest in high-end AI intelligent interaction research to develop comprehensive management strategies.

Microcontroller Application Business Group

In the global trend towards energy-saving efficiency, the Manufacturing Business Group continues to cultivate high-voltage process platforms for various application areas, providing customers with green semiconductors. In the HVIC process, development and implementation for customer products were completed in 2022, advancing to 600V application voltage by 2023, demonstrating technological innovation capabilities. In the future, close cooperation with customers will be established to invest in developing customized technologies, enabling customers' products to firmly establish a foothold in market demand and create value together. Additionally, resources will be invested in promoting smart manufacturing operations, executing innovative projects, monitoring carbon emissions automatically, improving operational efficiency, and reducing environmental consumption to achieve sustainable production goals.

Cloud Security Business Group

The Cloud Security Business Group's application areas include data centers, cloud servers, edge computing, and end-device-related computing device ecosystems, covering applications, such as security architecture, interface processing, and energy management. In response to the trends of remote work and education, the business group is dedicated to developing low-power, high-computing performance products. Additionally, for rapidly evolving cloud data centers, a highly secure remote control module is being constructed to meet the security environment requirements for personal and corporate cloud data processing. The business group focuses on two main directions for developing green products:

1. Energy-saving and carbon reduction in manufacturing processes: reducing wafer chip area, shortening production time, and producing more products per unit wafer energy consumption in the same process.
2. Energy-saving and carbon reduction in product functionality: products feature faster computational efficiency, integration of more interfaces, higher-performance computing core units, and system integration from multiple chips into one chip, overall improving customer system efficiency and reducing unit time energy consumption.

"In 2023, Nuvoton continued to expand its R&D scale, with R&D expenses exceeding NT$9.1 billion for the year, accounting for approximately 26% of total revenue. With more than 1,200 R&D personnel from Nuvoton Japan participating in improving product design, technology development, testing, and production efficiency, Nuvoton demonstrates its determination and commitment to product and technological innovation."

with R&D expenses exceeding
NT$9.1

accounting for approximately
26%

With more than
1,200
R&D personnel from

2.1.2 Achievements in Research & Development by the Business Groups

Nuvoton's three major product-related business groups continue to develop key technologies and have released notable products in recent years, spanning multiple application areas, showcasing Nuvoton's abundant capabilities in IC design. Since its acquisition in 2020, Nuvoton Japan, the subsidiary of Nuvoton, has further supplemented research and development capabilities in the automotive electronics field, enhancing Nuvoton's overall competitiveness in the international semiconductor and automotive markets.

	Key Technology	Highlighted Product	Areas of Application
Nuvoton - Microcontroller Application Business Group	Efficient and energy-saving Cortex-A35 dual-core 64/32-bit MA35H0 microprocessor, with built-in DDR memory, H.264 video decoder, and operating temperature range of -40° C to 125° C (Tj)	NuMicro® MA35H0 series microprocessor for industrial human-machine interface (HMI) applications	Industrial automation, industrial HMI, new energy, smart buildings, smart homes, smart appliances, smart healthcare, etc.
	Wide temperature operating range, up to 125° C, complete Controller Area Network (CAN) solution	NuMicro® M463 series microcontroller	Sensors and control data for gaming, automotive electronics, and industrial applications
	Network communication and strong hardware encryption capabilities, combined with software optimization using Skymizer neural network technology, providing leading inference performance for machine learning in high-efficiency embedded systems. Winner of the EE Awards Asia 2023 - Best MCU/Driver IC Product Award	NuMicro® M467 series microcontroller	Smart home automation, smart cities and infrastructure, lightweight edge AI in IoT, smart manufacturing, etc.
	High precision, high integration, high output rate	NADC24 series 24-bit Delta-sigma analog-to-digital converter	Industrial control and measurement
	Exclusive LLSI (LED Light Strip Interface) patented technology supporting LED control, supports up to 2 sets of I3C functions	NuMicro® NUC1263 series microcontroller	Industrial sensors, lighting control, gaming lighting control, smart home-related applications
	Low voltage application 1-Battery boost control chip, with built-in Nuvoton patented low voltage boost circuit and overload protection circuit	N566LP boost control chip	Market for smart toy applications
	Industry's first standard voice chip, integrated with Nuvoton's voice "high compression and high quality" chip features	NSP2340A voice chip	Consumer electronics, industrial voice-related applications
Nuvoton - Manufacturing Business Group	600V device technology	High-voltage integrated circuit (HVIC) process platform	Motor drive, power tools, electric bicycles, white goods, etc.
	120V BCD technology	BCD (Bipolar CMOS DMOS) process platform	DC/DC transformers, driver chips, automotive electronics, etc.
Nuvoton - Cloud Security Business Group	computer security computer manageability	EdgeBMC Edge computing management control chip EdgeBMC	Edge computing computers, industrial computers, embedded Internet of Things (IoT), embedded computers, cloud servers, and data centers.
	Low-power, high-performance cores, providing personal computer peripheral input/output interfaces, power management functions, plus Nuvoton's hardware root of trust (RoT) technology	Embedded controller NPCK397mnX for high-integration, mobile-specific solutions	Portable products such as tablets, detachable convertible laptops, and traditional laptops

Nuvoton Japan strengthens its competitive advantage in the automotive market

Electric vehicles represent the long-term trend of green energy technology, and Nuvoton Japan has shown remarkable performance in automotive-related components such as MCU, BMIC, and HMI-IC. For example, in BMIC products, Nuvoton Japan began mass production of the third-generation electric vehicle battery management chip (BMIC) in 2023, responding to the extensive demand in the Chinese electric vehicle market. In the future, Nuvoton Japan will release the fourth-generation electric vehicle BMIC, capable of high-precision measurement of the voltage, temperature, and current of battery cells.

Highlighted Products

HMI-IC

Human-Machine Interface Chip (HMI-IC)

Utilizes ISP/DSP as key technology; adopted by a major Chinese automotive manufacturer as a component for Head-Up Display (HUD)

A Japanese automotive manufacturer launched a model equipped with digital rearview mirrors using Nuvoton Japan's HMI-IC.

BMIC

Battery Management Chip

The third-generation electric vehicle BMIC is in mass production

The fourth-generation electric vehicle BMIC will be released, capable of high-precision measurement of the voltage, temperature, and current of battery cells.

MCU

Microcontroller

Newly developed Arm® Cortex®-M4F core motor control MCU has commenced mass production.

2.2 Green Manufacturing

Developing green products

Nuvoton's main products are IC chips, which are widely and diversely used in terminal markets and devices. Therefore, Nuvoton is committed to considering the environment during the chip design phase. Through technological innovation, Nuvoton continues to develop chips with lower power consumption and smaller sizes. Nuvoton's principles and actions for producing green products are evident in the four aspects of design, process, packaging, and logistics:

01

Design

Nuvoton focuses on minimizing product chip size to reduce raw material usage and waste. Additionally, efforts are made to improve product efficiency and reduce power consumption to minimize environmental impact.

02

Process

Nuvoton's Cloud Security Business Group prioritizes the use of advanced processes for new products to achieve higher computing performance, lower energy consumption, smaller chip sizes and packaging, and to establish a healthier and more durable production supply chain. Representative products in 2023, such as the EdgeBMC edge computing management control chip and the Embedded Controller for commercial notebooks, optimize chip processes and performance. In the Manufacturing Business Group, the 600V HVIC process platform introduced in 2023 reduces overall power consumption by 40% compared to the 120-250V process developed in 2022. The 120V BCD process platform reduces power consumption by 25% compared to the 80V process, with four fewer photomask layers.

03

Packaging

Nuvoton adopts the circular economy concept for packaging materials, allowing them to be reused multiple times throughout their lifecycle to reduce environmental impact.

04

Logistics

Nuvoton focuses on consolidating shipments, increasing carrying capacity, optimizing delivery routes, and supporting green logistics networks.

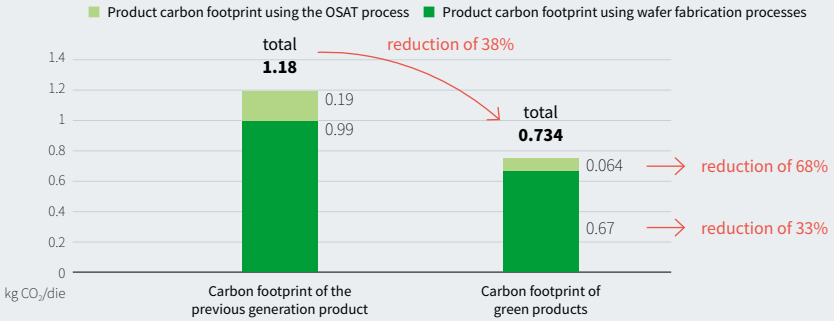
Nuvoton's commitment to energy efficiency and high performance is integrated into product design from the early development stage. Precise control designs are implemented based on user scenarios to minimize unnecessary circuit designs and increase logic gates in each function to ensure that each microcontroller consumes less power in different usage scenarios, reducing overall microcontroller power consumption.

Nuvoton Japan plans to obtain ISO 14067 certification for products with high customer demand by 2025. To understand resource consumption during the product lifecycle, Nuvoton develops products with green design to reduce resource consumption during production. The company has identified product emissions during the raw material and production stages and developed low-energy products to reduce emissions during the usage stage.

In addition to outsourced production, Nuvoton also has in-house process platforms. Products manufactured sustainably outside the wafer fab service gradually account for a significant proportion. Key results in the development of three key components focusing on "high efficiency, high integration, and low power consumption" were achieved. Products produced by Nuvoton Taiwan are based on 6-inch wafers. In 2022, Nuvoton completed a carbon footprint assessment of 6-inch wafers according to ISO 14067:2018 and underwent third-party verification.

These innovative products not only benefit the environment but also bring a positive impact on society. The low-power characteristics of the new generation of microcontrollers mean more compact, lightweight products, which are helpful in various applications such as medical devices, IoT devices, and smart city solutions. The introduction of these products not only improves efficiency and performance but also brings more convenience and accessibility to society.

In 2023, the carbon footprint target for green products is 0.73 kg CO_2/die, achieving a reduction of -38%.



green revenue generated reached approximately **8.62** billion NT dollars

In 2023, Nuvoton's products were widely used in various sustainability-related fields, such as automotive (e.g., autonomous driving systems/power management systems, charging piles/batteries), consumer electronics (home appliances/smart homes), industrial control (environmental monitoring sensors/energy management and distribution), and security management. The **green revenue generated reached approximately 8.62 billion NT dollars**. The total carbon footprint reduction achieved by energy-saving and carbon-reducing products compared to the previous generation was calculated to be 38%.

Nuvoton's Green Products

Reduced Power Consumption

- **General-purpose 32-bit Microcontroller M2003C** Compared to the previous-generation M051 microcontroller, both execution and standby power consumption are reduced by up to 50%.
- **Ultra-low-power Next-generation Microcontroller MG51** By improving product power consumption and selecting low-power, low-leakage processes, execution power consumption is reduced by 35% to 40% compared to the previous-generation low-power microcontroller N76E003, extending battery life.
- **HMI、Motor Driver IC** Power consumption is reduced by over 15% compared to previous models.

Saved Chip Size

- **General-purpose 32-bit Microcontroller M2003C** Chip size is reduced by 40% compared to the previous-generation M051 microcontroller, decreasing material usage during manufacturing and lowering carbon footprint emissions.
- **Ultra-low-power Next-generation Microcontroller MG51** Chip size is reduced by 29% compared to the previous-generation low-power microcontroller N76E003, contributing to reduced material usage during manufacturing and lower carbon footprint emissions.
- **Smart Audio Amplifier** Chip size is reduced by 30% compared to the previous-generation smart audio amplifier.
- **Audio Optimization Chip** Chip size is reduced by 30% compared to the previous-generation audio optimization chip.
- **Speech Synthesis Playback Chip** Chip size is reduced by 70% compared to the previous-generation speech synthesis playback chip.
- **N589 Voice Chip (New Product)** Utilizes smaller flash memory units, reducing flash memory size by 45% compared to the previous-generation chip, and transitioned from 8" to 12" process, adopting a more environmentally friendly process to reduce environmental impact.
- **N55T24 Touch Sensing Chip** A single chip with 24 touchpoints replaces the previous solution of two chips with 16 touchpoints, resulting in a 32% reduction in chip size.
- **System Speech Processing Chip** Chip size is reduced by 50% compared to the previous-generation system speech processing chip.
- **EdgeBMC (Edge Computing Management Control Chip)** Introduced as a new product in 2023, it utilizes a more efficient chip package, reducing chip package size by 67% compared to the previous generation. This reduces the demand for silicon raw materials during chip manufacturing and saves space on terminal system application circuit boards.

Lower On-resistance

- **TMOS** On-resistance is reduced by over 15% compared to previous models.

Increased Operational Efficiency

- **Motor Driver IC Brushless DC Motor** High efficiency brushless DC motor conducive to energy savings. With its high design flexibility, it is used in various markets and offers multiple voltage, speed, and load options.
- **8bit KM101 MCU** Developed by Nuvoton Japan, equipped with an 8-bit original CPU microcontroller series. Low power consumption, high code efficiency, and performance comparable to other companies' 16-bit microcontrollers.
- **Arm® Cortex®-M7 MCU** KM1M7 series is a 32-bit flash memory microcontroller equipped with Arm® Cortex®-M7. It features high processing capability and low power consumption, with high-performance PWM, high-speed, high-precision AD converter, and feedback control auxiliary functions suitable for motor control/digital power control applications, making it an ideal choice for power electronic control.
- **LD** Luminous efficiency is increased by over 10% compared to previous models.+++

In our planning for the future, Nuvoton will continue to develop products that can reduce energy consumption and minimize size to save resources. We will also strive to improve processes, reducing environmental impact while meeting market demands and operational strategies. Nuvoton will integrate our expertise in servers and personal computers, actively cultivating the three layers of cloud, edge, and terminal. We will develop high-efficiency, low-power computer chip products that meet the latest security standards, offer zero-compromise security, and incorporate artificial intelligence based on enterprise and market needs. At the same time, we will continue to improve our TMOS, HMI, motor drivers, microcontrollers, and LD products. In the short term, Nuvoton will launch new products with market-leading security features, high performance and low power consumption, as well as the ability to be applied across multiple domains.

Digital Transformation and Smart Manufacturing

voton is fully promoting digital transformation, integrating digital technology into all areas of the enterprise to create organizational competitive advantages. Both Nuvoton Taiwan and Nuvoton Japan have established digital transformation committees, with members from production, sales, human resources, R&D, finance, and other units. We strive to introduce digital tools to assist in optimizing internal management and improving corporate productivity. The short-term goal is to raise awareness of the importance of digital transformation across the company. In 2023, Nuvoton Taiwan held 12 digital transformation sharing sessions, while Nuvoton Japan conducted digital transformation education and training, with 1,631 participants.

In addition to organizational upgrades through the use of digital tools, Nuvoton also places a heavy importance on smart manufacturing at the factory level. We began promoting smart manufacturing in 2010, referring to concepts such as Industry 4.0 and Industry 3.5 during this period to plan a smart manufacturing blueprint for our 6-inch wafer foundry. The factory launched its smart manufacturing infrastructure in 2010, and from 2012 to 2019, it started the digitization of production information. In 2020, a smart manufacturing management team was established, incorporating relevant projects into KPIs for regular progress reviews to ensure the implementation of relevant strategies. Currently, the smart manufacturing initiative has progressed to the software upgrade stage, where we continue to introduce software development and AI technologies to reduce repetitive operations and labor-intensive tasks. The team is continuously driving various innovative projects with the hope of creating an energy-efficient, environmentally friendly, and highly productive smart manufacturing factory, fulfilling the company's vision of being an "Invisible Champion Enriching Human Life with Green Semiconductor Technology."

2023 Smart Manufacturing and Industrial AI Project Achievements

Project Name	Linear Dispatching System	Real-time dispatching operations achieved through tablet and inventory management system	Intelligent Wafer Test Yield Analysis Management	Automatic Optical Defect Inspection AI Classification System	Optimized Wastewater Dosing System	Wafer Test Pattern Search Engine
Project Description	By setting output targets for micro-lithography process nodes, achieve stable throughput of work-in-progress to maximize output	Established a Wi-Fi environment in the semiconductor manufacturing plant, allowing operators to check production dispatch orders and product inventory locations anytime through portable devices	Established an automatic wafer test data acquisition and automatic fault analysis system to replace manual operations	Utilizes AI algorithms and image recognition technology for defect classification, reducing the workload of inspection personnel and providing faster analysis results	Established a dosing equipment system to automatically adjust valves based on pH value changes	Utilizes AI algorithms and image recognition technology to search for similar wafer test patterns to determine the root cause of product quality anomalies
Project Effectiveness	2% increase in productivity	3% reduction in engineering assistant operation time	83% reduction in fault analysis time	97% increase in defect (anomaly) classification speed	100% reduction in operation time	98% reduction in query time

2.3 Quality and Responsibility

2.3.1 Product Quality Management

Nuvoton's philosophy on quality management is to use a spirit of continuous innovation to provide excellent product and service quality, and become an irreplaceable partner for customers. Nuvoton establishes, implements, maintains, and continually improves its quality management system based on the IATF 16949 international standard management principles, including necessary processes and their interactions, to enhance the organization's quality performance. Internally, the company continuously improves product quality and meets customer requirements through three aspects: quality control, reliability assurance, and failure analysis.

Quality Management Systems and Processes

Quality Control

Implements a series of quality control mechanisms covering all stages of the production process. By monitoring the manufacturing process, it enables rapid and effective detection of problems, root cause analysis, correction, and prevention.

Reliability Assurance

Each manufacturing stage undergoes continuous review, analysis, and evaluation, with corrective actions taken to improve future quality and reliability, meeting international standards such as JEDEC (Joint Electron Device Engineering Council) and AEC (Automotive Electronics Council) requirements for product quality and reliability.

Failure Analysis

Nuvoton uses advanced failure analysis equipment to determine the cause of product failures, provide corrective actions, and conduct risk assessments using the FMEA (Failure Mode and Effect Analysis) method to identify potential issues.

In chip packaging, Nuvoton continuously monitors the manufacturing process at every stage, collecting feedback and information on various aspects, and rapidly and effectively detects, evaluates and analyzes issues to implement corrective measures, thereby constructing a product line with high quality and reliability. In terms of packaging technology and outsourcing management, Nuvoton closely cooperates with packaging companies to provide packaging forms that allow components to perform at their fullest potential, while meeting customers' special requirements. Nuvoton also strictly screens outsourcing companies to ensure they can deliver high-quality products.

To ensure that all employees possess the knowledge, skills, abilities, and attitudes necessary to perform their duties, Nuvoton continuously conducts internal and external quality management education and training annually. The types include new employee training, on-the-job education, and professional staff training, comprehensively strengthening employees' quality awareness and application of quality control methods, including quality circle activities, seven quality control tools, statistical analysis methods, FMEA, and other quality-related training. The following is the implementation of quality management education and training courses in 2023:

Course Name	Course Hours	Cumulative Attendees
QC080000 Hazardous Substance Process Management System	1	944
Basic FMEA Concepts	2	1,125
FMEA	6	302
SPC	3	276
QIT	3	538
7 QC Tools	3	263
General Education on ISO9001/ ISO14001/ISO45001	1	1,841

Nuvoton bases its management systems on various international standards, such as ISO 9001, IATF 16949, IECQ QC080000, ISO 14001, and ISO 45001, covering aspects like product quality, green products, environmental protection, and occupational health and safety. This helps improve operational efficiency and effectiveness, enhance product and service quality, and ensure the fulfillment of sustainability responsibilities. Meanwhile, Nuvoton Japan has established an ISO 9001 quality management system and obtained ISO 9001:2015 quality certification, as well as certifications for ISO 9001, ISO 14001, ISO 45001, ISO 27001, and ISO 21434 international standards.

Nuvoton's International Standard Certifications

2.3.2 Management of Hazardous Substances in Products

Nuvoton implements a rigorous five-step process to manage hazardous substances in all its products. This stringent self-imposed regulatory framework has been recognized by customers, including Sony Green Partner certification since 2009 and regular Sony Green Partner audits. Building on ISO 9001 and IATF 16949 management systems, Nuvoton achieved IECQ QC 080000, the International Electrotechnical Commission's (IEC) Hazardous Substance Process Management Standard, in 2008. This "process-oriented" approach minimizes or eliminates hazardous substances in products, enabling systematic hazardous substance management that meets RoHS, REACH, WEEE, and other customer-specific requirements, effectively operating a robust hazardous substance management system.

STEP 1

Declare a Hazardous Substance-Free Policy

Nuvoton is committed to designing, procuring, manufacturing, and selling hazardous substance-free products to comply with international regulations, meet customer demands, and fulfill its environmental responsibility.

STEP 2

Establish a Hazardous Substance Control List

Based on international environmental regulations and major customer requirements, Nuvoton maintains a controlled substance list that includes prohibited, restricted, and declarable substances. This list is reviewed and updated annually based on current conditions.

STEP 3

New Material Evaluation System

Nuvoton has established a new material evaluation process to ensure that newly developed products and materials comply with Nuvoton's hazardous substance management procedures and environmental, health, and safety requirements.

STEP 4

Green Procurement and Supplier Management

Raw material suppliers and subcontractors are required to sign a "Non-Use of Hazardous Substances Certificate" and provide third-party testing reports annually to ensure their products meet international standards.

STEP 5

Hazardous Substance Testing

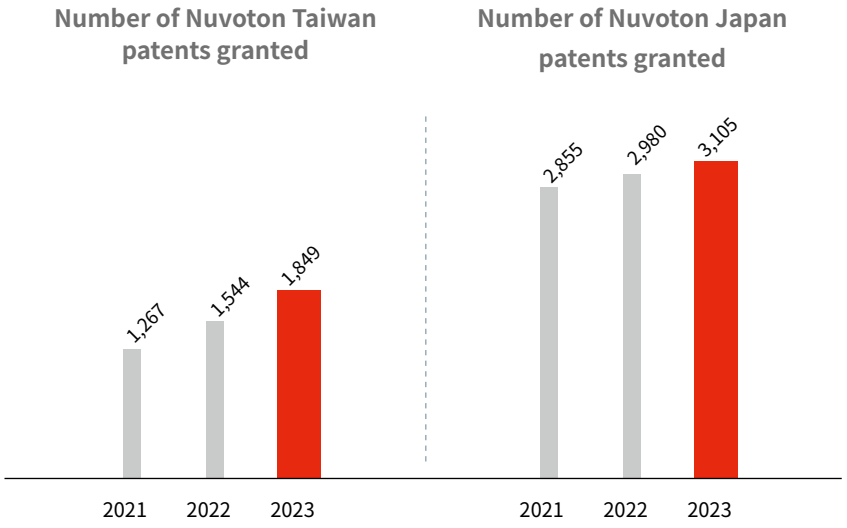
Nuvoton annually samples Wafer & ICs for hazardous substance content, including RoHS and halogen content. Independent third-party organizations measure and monitor prohibited substances with environmental impact and health hazards in raw materials and products to meet RoHS and halogen-free requirements.

2.4 Intellectual Property Rights

Nuvoton recognizes research and development (R&D) and innovation as essential competitive strengths for sustainable business operations and survival. Intellectual property (IP) protection is a crucial factor in safeguarding brand value. To reinforce its industry leadership and protect its hard-earned advanced technological achievements, the company has formulated an IP strategy that aligns with its business objectives and R&D resources. This strategy establishes an operational model for protecting the company's R&D and technological innovations, thereby enhancing its competitive edge and solidifying the foundation for its development. The company's patent management strategy primarily encompasses patent portfolio deployment strategies, mechanisms for identifying and cultivating key patents, and expanding patent application portfolios. Through the implementation of application and review mechanisms, incentive systems, education and promotion, and talent training at the execution level, the company protects its R&D outcomes and technological leadership, continuously accumulating IP strength. Nuvoton has established an IP department and a patent review committee to strengthen its IP management strategy work, including patent evaluation and review, awards and incentives for innovative results, creativity-stimulating activities, and strategic utilization of IP.

To improve the number of patent applications and approvals, the company adopts international standards in the internal proposal stage of patent applications, following patent laws, examination guidelines, and commercial potential of various countries to review each proposal. This approach aims to improve the quality of patents and the probability of successful approval, ensuring that the company's R&D innovations can receive adequate legal protection. In addition, the company sets patent application targets at the beginning of each year and designs a variety of innovation incentive mechanisms to continuously encourage employees to submit invention applications. It also establishes a systematic IP management system, utilizes digital transformation tools to establish a patent knowledge platform to share patent information, and holds multiple creative brainstorming activities to assist colleagues in generating patent proposals more efficiently. In 2023, Nuvoton filed 283 patents in Taiwan and over 2,500 patents globally. The number of patents granted in 2023 reached 305, with over 1,800 patents granted globally, ranking 23rd among domestic corporations in patent applications in 2023. Nuvoton filed 204 patents in Japan and over 4,300 patents globally. The number of patents granted in Japan was 125, with over 3,100 patents granted globally.

tection and management of trade secrets for comprehensive IP protection. The company's new employee training programs include a theme to remind new employees to safeguard the company's trade secrets. In 2023, the new employee training course, "Legal Issues that Knowledge Workers Should Pay Attention" was conducted, with a total of 129 trainees. In addition, Nuvoton signs confidentiality agreements with long-term cooperating suppliers or customers at the initial stage of contact to protect Nuvoton's confidential information and trade secrets. In 2023, Nuvoton did not encounter any disputes involving breach of confidentiality agreements or infringement of trade secrets.



CH3
Excellence in Governance

3.1 Corporate Governance
- 3.1.1 Board of Directors
- 3.1.2 Functional Committees

3.2 Operational Performance
- 3.2.1 Economic Performance
- 3.2.2 Tax Management

3.3 Sustainable Business Management
- 3.3.1 Regulatory Compliance and Integrity Management
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3.4 Sustainable Supply Chain
- 3.4.1 Supply Chain Composition and Overview
- 3.4.2 Sustainable Supply Chain Management
- 3.4.3 Conflict Minerals
- 3.4.4 Customer Service

Material topic: Business Strategy and Performance						
Policy and Commitments	2023 Objectives		Future Goals			Specific Actions
	Objective Explanation	Achievement Status	Short-term(2024)	Mid-term(2025)	Long-term(2030)	
· Optimize business strategy and management models to enhance corporate competitiveness and market share.	· Develop market strategies and explore new markets to sustain company profitability.	All goals achieved · Achieve annual revenue of 35.348 billion yuan and after-tax net profit of 2.42 billion yuan.	· Regularly convene QBR meetings to support operational reviews and enhance business performance.	· Expand target markets by entering new regions or markets.	· Continuously introduce competitive new products or services. · sustainable supply chains. · Implement digital transformation strategies to improve business efficiency, innovation capabilities, and data security. · Strengthen internal training and development programs to enhance employee skills. · Pay continuous attention to Sustainable Development Goals (SDGs) and incorporate them into the company' s business strategy.	· Regularly convene QBR meetings to support ongoing operational reviews and strategic adjustments.

Material topic: Corporate Governance and Business Integrity						
Policy and Commitments	2023 Objectives		Future Goals			Specific Actions
	Objective Explanation	Achievement Status	Short-term(2024)	Mid-term(2025)	Long-term(2030)	
· Establish a corporate culture of business integrity to promote sustainable development	Nuvoton Taiwan · Corporate Governance Evaluation (Listed Company) within 20%	Nuvoton Taiwan All goals achieved · Corporate governance evaluation within 6-20%.	Nuvoton Taiwan · Corporate Governance Evaluation (Listed Company) within 20% · Continuously promote integrity operation and compliance education training, with a 100% pass rate for HQ staff training tests	Nuvoton Taiwan · Maintain corporate governance evaluation ranking within 20%	Nuvoton Taiwan · Promote sustainable development's social responsibility program, enhance the company's social image, improve investor and stakeholder trust, and continuously improve corporate governance performance	Nuvoton Taiwan · Establish a Sustainable Development Committee and ESG activitiesConduct external evaluations of Board of Directors performance · All directors complete mandatory continuing education hours · Regularly report communication with stakeholders to the Board of Directors · Invest in energy-saving or green energy-related environmentally sustainable machinery and equipment, and disclose investment details and specific benefits
	Nuvoton Japan · Convene Board of Directors meetings · Execute internal audits · Implement compliance education	Nuvoton Japan All goals achieved	Nuvoton Japan · Comply with corporate governance and business integrity -related regulations, conduct corporate operations according to domestic and foreign relevant standards	Nuvoton Japan · Comply with corporate governance and integrity operation-related regulations, conduct corporate operations according to domestic and foreign relevant standards	Nuvoton Japan · Comply with corporate governance and integrity operation-related regulations, conduct corporate operations according to domestic and foreign relevant standards	Nuvoton Japan · Establish a Sustainable Development Committee and ESG activities

Material topic: Information Security and Privacy Protection						
Policy and Commitments	2023 Objectives		Future Goals			Specific Actions
	Objective Explanation	Achievement Status	Short-term(2024)	Mid-term(2025) · ·	Long-term(2030)	
· We aim to become a "trusted global corporate citizen." According to information security regulations, we have established an information security system to manage confidentiality, integrity, and availability appropriately to ensure compliance with regulatory, operational, and contractual requirements.	Nuvoton Taiwan · Implement and verify the new ISO27001:2022 international information security management system standard. · Strengthen endpoint security protection by implementing and deploying EDR and enhancing monitoring mechanisms. · All employees receive information security training, with a completion rate of over 97%.	All goals achieved · Follow ISO 27001 international standards for internal "gap analysis, asset inventory, risk improvement plans, and establishment of management norms that comply with international information security standards." · Complete the product evaluation of the "Endpoint Detection and Response (EDR) tool." · Achieve a 98% completion rate for all employees receiving information security training.	Nuvoton · Pass the initial verification of ISO 27001:2022 with zero major non-compliance findings in the audit. · All employees receive information security training, with a completion rate of 100%. · Zero major information security incidents affecting company operations.	Nuvoton · Strengthen information security risk management and internal information security audits. · Enhance the information security incident monitoring mechanism and expand the deployment of "Endpoint Detection and Response (EDR) tools." · Zero major information security incidents affecting company operations.	Nuvoton · Strengthen business continuity management to ensure uninterrupted operations during disruptive incidents. · Establish data protection management norms and continuously promote awareness among employees, and introduce technical solutions to prevent incidents of sensitive data or personal information leakage. · Integrate AI-based information security solutions to detect internal and external threats and prevent hacking attacks, achieving an efficient response mechanism through automated processes to minimize the impact of information security incidents.	Nuvoton Taiwan · Implemented the new ISO27001:2022 international information security management system, understood the standard clauses, conducted asset inventory, and analyzed the differences between the current situation and the ISO27001 standards. · Evaluated the endpoint detection and response (EDR) solutions, including product comparisons and proof of concept (POC) of product functions.
	Nuvoton Japan · ISO 27001:2013 review, with zero major non-compliance findings in the audit results. · All employees receive information security training, with a completion rate of 100%. · Zero major information security incidents affecting company operations.	All goals achieved · Achieve "zero major non-compliance findings in ISO 27001 audit results." · Achieve "100% completion rate for all employees receiving information security training." · Achieve "zero major information security incidents affecting company operations."				Nuvoton Japan · Established a Security Operations Center (SOC) and began formal operations, with the deployment of EDR product tools completed.

Material topic: Supplier Sustainability Management						
Policy and Commitments	2023 Objectives		Future Goals			Specific Actions
	Objective Explanation	Achievement Status	Short-term(2024) ·····	Mid-term(2025) ·····	Long-term(2030)	
· In addition to meeting basic occupational safety and environmental protection requirements in supply chain management, Nuvoton has formulated a supplier sustainability management policy and incorporated ESG into supplier evaluation and audit items, with the aim of leveraging its influence to work hand-in-hand with suppliers to emphasize and promote corporate sustainability, achieving the vision of a sustainable supply chain. · Nuvoton has established a conflict minerals management policy, committing to 100% non-use of "conflict minerals", and requires suppliers to comply as well. · Require suppliers to sign the "Declaration of Non-Use of Conflict Minerals" to comply with the clause prohibiting the use of "conflict minerals". · Require relevant suppliers to regularly conduct thorough investigations and confirm that no metals from conflict regions are used in their products.	Nuvoton Taiwan · Comply with regulations and customer requirements related to hazardous substance-free products · 79% of major suppliers obtain ISO 14064 or equivalent international certification · 86% of major suppliers publish ESG reports · 50% of major suppliers complete RBA VAP · 100% of major suppliers promoted to set GHG emissions reduction targets	All goals achieved	Nuvoton Taiwan · 25% of major suppliers complete BCP (Business Continuity Plan) SAQ · 86% of major suppliers obtain ISO 14064 or equivalent certification · 93% of major suppliers publish ESG reports · 50% of major suppliers complete RBA VAP	Nuvoton Taiwan · 40% of major suppliers complete BCP (Business Continuity Plan) SAQ · 93% of major suppliers obtain ISO 14064 or equivalent international certification · 93% of major suppliers publish ESG reports · 57% of major suppliers complete RBA VAP	Nuvoton Taiwan · 75% of major suppliers complete BCP SAQ · 100% of major suppliers obtain ISO 14064 or equivalent certification · 100% of major suppliers publish ESG reports · 100% of major suppliers complete RBA VAP · Based on major suppliers' GHG emission reduction targets, overall 15% reduction estimated for suppliers (using 2020 as base year)	Nuvoton Taiwan · Complete annual evaluation of major suppliers · All suppliers have signed the RBA Code of Conduct declaration. · All suppliers have signed the "No Use of Conflict Minerals Declaration." · All suppliers have signed the "No Use of Hazardous Substances Declaration." · Key suppliers have published ESG (Environmental, Social, and Governance) reports. · Key suppliers have conducted greenhouse gas emissions inventories (ISO 14064) and collected baseline emissions and reduction targets.
	Nuvoton Japan · 100% response rate for supplier CSR activity survey (every 2 years) · 100% annual response rate for supplier conflict minerals survey · 100% response rate for business continuity survey (every 2 years) · 100% annual response rate for survey on substances of very high concern · 100% annual response rate for carbon neutrality survey	All goals achieved	Nuvoton Japan · 100% response rate for supplier CSR activity survey (every 2 years) · 100% annual response rate for supplier conflict minerals survey · 100% response rate for business continuity survey (every 2 years) · 100% annual response rate for survey on substances of very high concern · 100% annual response rate for carbon neutrality survey	Nuvoton Japan · 100% response rate for supplier CSR activity survey (every 2 years) · 100% annual response rate for supplier conflict minerals survey · 100% response rate for business continuity survey (every 2 years) · 100% annual response rate for survey on substances of very high concern · 100% annual response rate for carbon neutrality survey	Nuvoton Japan · 100% response rate for supplier CSR activity survey (every 2 years) · 100% annual response rate for supplier conflict minerals survey · 100% response rate for business continuity survey (every 2 years) · 100% annual response rate for survey on substances of very high concern · 100% annual response rate for carbon neutrality survey	Nuvoton Japan · Issued CSR self-assessment questionnaires to 37 suppliers and contractors, achieving a 100% response rate. · Utilized CMRT and EMRT to survey and recover waste minerals from smelters to suppliers. · Investigated whether suppliers' externally purchased parts, products, and materials contain SVHC and other harmful environmental substances, with a 100% response rate for survey results. · Surveyed Scope 3 emissions for 32 suppliers in preparation for ISO 14064 certification.

1 There are 14 main suppliers, accounting for approximately 92% of the transaction volume in 2023.

3.1 Corporate Governance

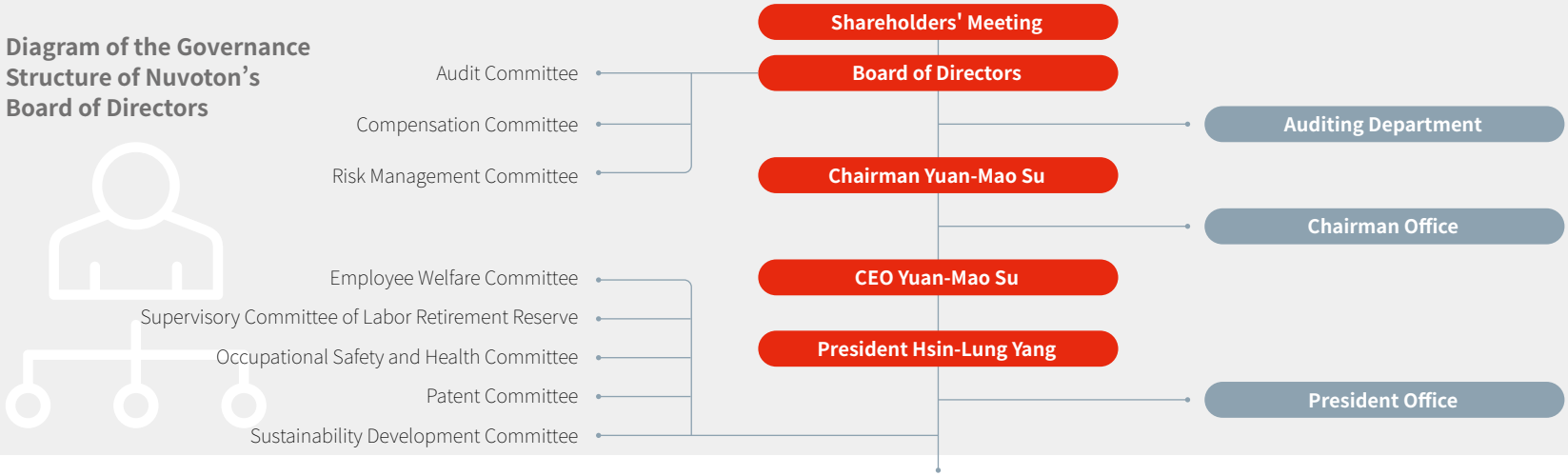
3.1.1 Board of Directors

Operation of the Board of Directors

The Board of Directors (hereinafter referred to as "the Board") serves as the company's highest governing body. The Board carries out its relevant duties in accordance with government regulations and the company's charter, including appointing and supervising the company's management, overseeing operational performance, and preventing conflicts of interest, while exercising authority over shareholder meeting resolutions. Both directors and independent directors share responsibility for corporate governance and operational strategies, guided by principles that prioritize the interests of shareholders while also considering the interests of stakeholders, such as employees, customers, suppliers, government, and non-governmental organizations. The organizational structure beneath the Board primarily consists of four major business groups and four major centers, with various committees established to handle different functions and promote business initiatives. The Chairman of the Board also serves as the CEO, while the position of General Manager is held by a professional manager who is not a board member. This arrangement aims to enhance the operational performance of the group, increase shareholder interests, and achieve the vision of sustainable business operations. In response to these considerations, the number of independent director positions has been increased from the statutory three to four, as outlined in the company's Corporate Governance Best Practice Guidelines, to maintain objectivity and oversight. The primary goals are to enhance the operational performance of the group, increase shareholder interests, and achieve sustainable business operations while avoiding and mitigating related conflicts of interest. Please refer to the 2023 Annual Report, for more details.

In 2023, Ms. Hsiu-Fen Lai, Vice President of the company's Finance Center, assumed the role of Corporate Governance Director. With over 26 years of financial professional experience and qualifications meeting legal requirements, she assists the Board of Directors and individual directors in fulfilling their duties. This includes arranging Board meeting schedules and agendas, planning director training, providing information during and outside of Board meetings, and regularly informing directors of relevant information. The Corporate Governance Director ensures the proper functioning of the Board of Directors and governance-related matters.

Diagram of the Governance Structure of Nuvoton's Board of Directors



To communicate significant events to the Board of Directors, not only are regular quarterly meetings held, but also ad hoc meetings are arranged. To better formulate goals and strategies, the following measures are taken:

Quarterly Strategy Workshops	Through these workshops, the operational and financial status is reported by the management team. If any significant discrepancies arise, the Board of Directors actively encourages managers to analyze and review them, facilitating timely adjustments to operational plans and annual budgets. This helps strengthen interaction and communication between the management team and the Board of Directors, while also enhancing transparency of company operational information. When necessary, authorization is delegated to relevant units for handling or reporting significant economic, environmental, and human (including human rights) sustainability issues to the Chairman or the Board of Directors. In 2023, four strategy workshops were conducted.
Sustainability Development Committee Reporting to the Board of Directors	The Sustainability Development Committee coordinates sustainability direction and establishes short, medium, and long-term goals and management policies through seven working groups covering various aspects such as corporate governance, labor rights, environment, and safety, supply chain management, net-zero, social engagement, and green products. Quarterly meetings are held to oversee cross-departmental communication, resource integration, coordination, and check the progress and achievement rate of each working group's activities. Quarterly reports are submitted to the Board of Directors on ESG performance results and future work plans. This helps the Board of Directors gain comprehensive insights into the company's sustainability performance and challenges, thereby improving governance transparency and sustainability. In 2023, the Sustainability Development Committee reported to the Board of Directors four times.
Risk Management Committee Reporting on Identified Risks	The Risk Management Committee meets at least twice a year, as needed, to discuss technical risks in the market and other risk issues that the company needs to address, and reports to the Board of Directors to ensure effective management and response. In 2023, one meeting was held in total.

Composition of the Diverse Board of Directors

Based on the company's charter, the selection of directors adopts a candidate nomination system and adheres to corporate governance best practices emphasizing diversity among Board members. The Board of Directors configures its members based on the company's diversity policy, succession planning, and performance evaluation results. Director candidates are selected based on principles of diversity, sustainability, organizational impact, and ability to execute duties, assisting in operational decision-making and long-term strategic planning. The most recent election was held on June 2, 2022, resulting in the selection of the seventh term (until the year 114) Board of Directors members. Through the participation of female and independent directors, and the recruitment of elites from different generations and professional fields, the election results of the 2022 shareholder meeting have achieved the diversity policy and sustainable operation goals of the Board of Directors. For details on the selection process and methods, please refer to the official website regulations.

The seventh term Board of Directors consists of eleven directors, including four independent directors, accounting for 36%, and one female director, accounting for 9%. In terms of age distribution, directors aged 50 and above account for 91%, while those aged below 50 account for 9%. Directors who do not hold positions as company executives or employees occupy more than two-thirds of the director seats. Though there are two individuals with spousal or second-degree relatives relationships, this does not exceed half of the Board of Directors seats, complying with the provisions of Article 26-3 of the Securities Exchange Act. All members of the Board of Directors possess extensive industry management experience, with a wide age range, diverse knowledge, and professional backgrounds covering different fields, possessing the necessary capabilities to fulfill director duties, supervise, and provide constructive opinions. Winbond Electronics Corporation and Chin Xin Investment Corporation are the main shareholders of the company. Amongst them, Winbond Electronics Corporation is the parent company of Nuvoton and the largest shareholder holding more than half of the company's shares, as well as serves as director of the company to date.

Member diversity of the seventh term Board of Directors

For more information about the backgrounds and details of the Board of Directors members, please refer to the annual report for further details.

Job Title	Name / Legal Representative of the Corporation	Gender	Current Position	Core Diversity Elements					Attendance Rate of the Board of Directors in 2023 (The Board of Directors convened 5 times in 2023)
				Business Management	Leadership Decision Making	Industry Knowledge	Financial Accounting	information	
Chairman of the Board	**Legal Representative of Winbond Electronics Corporation: Yuan-Mao Su (Risk)**[2]	Male	CEO of Nuvoton Technology Corporation	●	●	●	●	●	100% (5/5)
Vice Chairman of the Board	**Karen K. Chiao**	Female	Director and President of Callisto Holding Limited	●	●	●	●		100% (5/5)
Director	**Arthur Yu-Cheng Chiao**	Male	Vice President of Winbond Electronics Corporation	●	●	●	●	●	100% (5/5)
Director	**Legal Representative of Chin Xin Investment Corp: Jen-Lieh Lin**	Male	Chairman and CEO of Winbond Electronics Corporation		●	●		●	100% (5/5)
Director	**Chi-Lin Wea**	Male	Chairman of Waterland Financial Holdings	●	●	●	●	●	100% (5/5)
Director	**Royce Yu-Chun Hong**	Male	Director & President of IPEVO Corp	●	●	●	●	●	100% (5/5)
Director	**Liang-Gee Chen (Risk)**	Male	Director of Himax Technologies, Inc.. and Independent Director of Everlight Electronics Co., Ltd.		●	●		●	100% (5/5)
Independent Director	**Mark Wei (Audit, Risk, Remuneration)**[3]	Male	Chairman of Shin Kong Life Insurance Co., Ltd.	●	●	●	●		100% (5/5)
Independent Director	**David Shu-Chyuan Tu (Audit, Risk, Compensation)**	Male	Chairman of BestCom Info Tech Corp. and General Manager of Synnex Technology International Corp. – Group Business Development & Strategy	●	●	●		●	100% (5/5)
Independent Director	**Allen Hsu (Audit, Risk, Remuneration)**	Male	Chairman of Unus Tech Co., Ltd. and Yi Zhong Technology Co., Ltd., and Independent Director of Winbond Electronics Corporation	●	●	●	●		100% (5/5)
Independent Director	**Kuang-Chung Chen (Audit, Risk Management, Remuneration)**	Male	Independent Director of Diodes Incorporated	●	●	●	●	●	100% (5/5)

2 (Risk) represent the Risk Management Committee.

3 The labels "(Risk)", "(Audit)", "(Remuneration)" respectively represent that the director simultaneously serves as a member of the Risk Management Committee, Audit Committee, or Remuneration Committee.

Board of Directors Remuneration and Performance Evaluation

The Remuneration Committee is responsible for establishing and reviewing the performance evaluation and remuneration policies, systems, standards, structures, and individual remuneration of directors and managers. It sets forth the "Measures for the Compensation and Performance Evaluation of Directors / Managers" to ensure that overall remuneration is competitive and enhances operational performance to achieve maximum long-term benefits. The remuneration of the company's managers is handled in accordance with the company's charter and the "Measures for the Compensation and Performance Evaluation of Directors / Managers," which covers salary, bonuses, and employee compensation systems and standards. In addition to considering role responsibilities, contributions to the company's operations, and benchmarking against industry standards, operational performance, profitability, management effectiveness, and the practice of core corporate values and sustainable development goals (including environmental, social, and corporate governance aspects) are also taken into account as reference indicators for manager performance evaluations and remuneration allocation. After individual reviews and assessments by the Remuneration Committee, the overall reasonableness of compensation is submitted to the Board of Directors for resolution. This includes monthly salary disbursements, performance bonuses based on operational performance, and employee remuneration based on annual profit conditions. There are no provisions regarding manager "signing bonuses or recruitment incentives and clawback mechanisms." For senior executives' retirement benefits, the "Regulations on Manager Retirement" are established to ensure retirement security for senior executives.

To implement corporate governance and enhance the functionality of the Board of Directors, Nuvoton has established the "Measures for the Compensation and Performance Evaluation of Directors" to strengthen performance evaluations, while conducting annual performance evaluations of the Board of Directors based on five aspects: the degree of participation in company operations, improvement in decision-making processes, composition and structure of the Board of Directors, selection process for directors and continuous education, and internal controls. The results of the evaluation are summarized by the Board of Directors' deliberative unit, reported to the Remuneration Committee and the Board of Directors, and used to formulate the plan to improve performance for next year. This continuous enhancement aims to improve the company's governance and increase long-term shareholder value. The Board of Directors and functional committees' performance evaluations for 2023 have been completed, and the overall results indicate that "the Board of Directors and its functional committees operate well." Additionally, Nuvoton stipulates that the Board of Directors' performance evaluation must be conducted by an external independent organization at least every three years. This includes on-site interviews with the chairman, president, conveners of functional committees, corporate governance executives, and internal audit executives, with the evaluation results reported to the Board of Directors. In 2023, the company commissioned an external organization, Taiwan Corporate Governance Association, to conduct a performance evaluation of the Board of Directors. The results were reported to the Board of Directors on March 5, 2024. For the results of the external evaluation of the Board of Directors, please refer to Nuvoton's official website.

Board of Directors Professional Development

Nuvoton arranges annual training courses for directors on economic, environmental, and social issues related to operations to enhance their capabilities. Additionally, to facilitate ongoing learning, the company periodically sends information on economic, environmental, and social issues related to the Board of Directors. The training hours for courses related to environmental sustainability (carbon rights, climate change, sustainable finance) amount to 85 hours, those for courses related to corporate governance and risk management total 41 hours, and those for courses related to economics (regional economics, global political and economic situations) total 50 hours. By the end of 2022-2023, the total training hours for directors amounted to 194 hours, with an average of 18 hours of training per director.

3.1.2 Functional Committees

To strengthen oversight functions and enhance management capabilities, Nuvoton has established the three committees of Audit, Remuneration, and Risk Management under the Board of Directors in accordance with their authority and functions, enhancing the company's governance framework. Functional Committees are composed of or involve independent directors to ensure the objectivity and impartiality of the committees' decisions and recommendations for the effective implementation of mechanisms for independent oversight and checks and balances. This ensures that all decisions and actions of the Board of Directors are reported to and discussed by the Board, with directors abstaining from involvement in matters involving their own interests or those of the entities they represent. Some matters are also reported to and discussed at shareholder meetings, aligning with the best interests of stakeholders.

Responsibilities and Composition of Functional Committees

Committee Name	Members and Attendance	Responsibilities	organizational procedures
Remuneration Committee	The Remuneration Committee is composed of 4 independent directors. In 2023, a total of 2 meetings were convened with a 100% attendance rate.	The committee is responsible for formulating and regularly reviewing the annual and long-term performance goals and remuneration policies, systems, standards, and structures for directors and executives. It also periodically evaluates the achievement of performance goals for directors and executives, and determines the content and amount of their individual compensation.	
Audit Committee	The Audit Committee consists of 4 independent directors. During the annual shareholders' meeting on June 2, 2022, Nuvoton elected its seventh Board of Directors and the third Audit Committee assumed office on the same day. In 2023, the Audit Committee held 5 meetings, with a 100% attendance rate.	The primary function of the Audit Committee is to assist the Board of Directors in overseeing the quality and integrity of the company's accounting, auditing, financial reporting processes, and financial controls. For external investors, it represents the company's supervisory function and independence, effectively safeguarding investor interests.	
Risk Management Committee	On August 2, 2022, Nuvoton's Board of Directors approved the establishment of the Risk Management Committee. The committee comprises several directors appointed by the chairman, as well as four independent directors who account for a majority. The members collectively nominate one person to serve as the convener and meeting chair, representing the committee externally. The Risk Management Committee is mandated to convene meetings at least twice a year, with the flexibility to adjust as needed. In 2023, a total of 1 meeting was convened, with a 100% attendance rate.	The committee is responsible for overseeing the overall risk management of the company. It formulates risk management policies, frameworks, and establishes qualitative and quantitative management standards. Adjustments are made based on the company's actual development needs or changes in the external environment.	

3.2 Operational Performance

3.2.1 Economic Performance

Financial Performance

In 2023, Nuvoton was impacted by market conditions and customer inventory, leading to a decrease in total revenue compared to 2022, with a decline of 15.6%. The consolidated total revenue for 2023 amounted to NT$35,340.8 million. After-tax net profit was NT$2,420 million, representing a decrease of 43% compared to the previous year. Earnings per share for 2023 were NT$5.77, with a cash dividend of NT$3 per share (dividend payout ratio of 52%). The total consolidated income tax expense was NT$360 million, accounting for 0.9% of revenue, showing a year-on-year increase of 65.5%. The total income tax paid was NT$720.8 million, reflecting a 1.7% increase compared to the previous year.

2023 Consolidated Financial Performance

Unit: NT$ Million

Item	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023
Operating Revenue	41,456	41,872	35,348
Non-operating Income and Expenses	218	629	1,036
Gross Profit (Retained Economic Value)	16,856	17,494	14,342
Operating Expenses	13,529	13,016	12,652
Operating Income	3,327	4,478	1,690
Profit (Loss) Before Tax	3,545	5,107	2,726
Profit (Loss) After Tax	2,941	4,221	2,420
Employee Salaries and Benefits (Personnel Expenses)	7,859	9,110	8,336
Community Investments	0.1	1	3
Payments to Government	393	716	728
Payments to Shareholders	377	2,133	2,982
Earnings Per Share (NT$)	7.27	10.06	5.77

Nuvoton's business spans four major areas: automotive and industrial control, communications, consumer electronics, and computers. The diversified product line helps mitigate the risk brought by the recent softness in demand for consumer electronics, thereby enhancing the company's resilience.

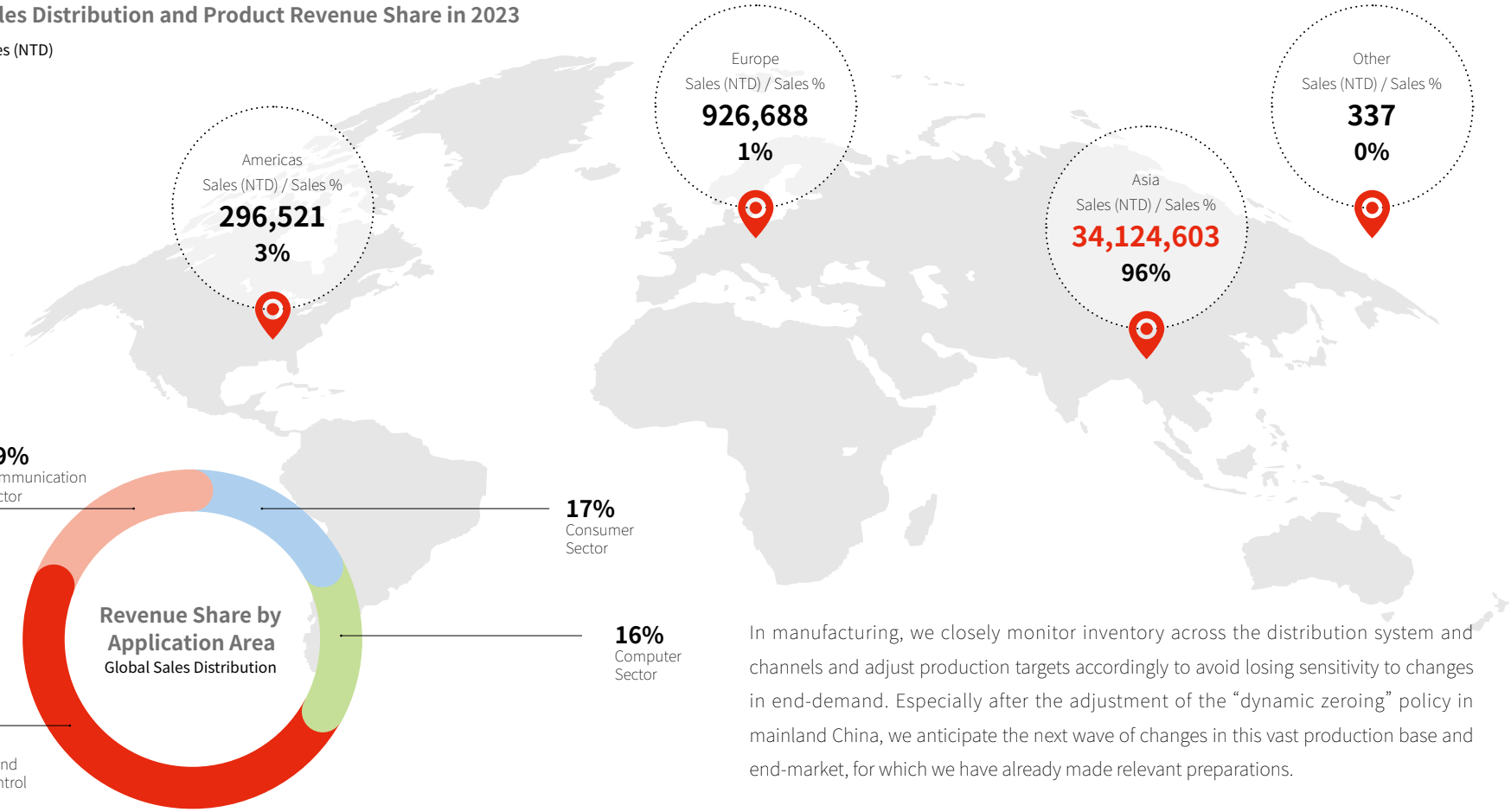
After a year of global market contractions for the semiconductor industry in 2022, it is anticipated that 2023 will be a year of divergence in global central bank policies, affecting economic growth across different regions. Facing the uncertainties of the overall economy and the macro environment in 2023, Nuvoton expects adjustments in channel inventory to continue for some time. Therefore, the management team at Nuvoton has set a strategy of "proactive development, cautious manufacturing" to adapt to the current market environment.

In terms of business development, we have plans to expand our sales territories by establishing new business offices worldwide, deepening strategic cooperation with customers, and actively exploring global markets. Strengthening partnerships with key customers is crucial for Nuvoton's sustained growth. As a result, we engage in dialogue with customers across various levels and provide long-term value.

In product development, in addition to continuous innovation and reinforcement of existing product lines, we are also promoting a series of solutions related to edge artificial intelligence, electric vehicles, smart manufacturing, and new energy in line with the global trend of sustainable development. This not only optimizes the company's product portfolio but also demonstrates our strength in innovation and technology development.

Sales Distribution and Product Revenue Share in 2023

Sales (NTD)



In manufacturing, we closely monitor inventory across the distribution system and channels and adjust production targets accordingly to avoid losing sensitivity to changes in end-demand. Especially after the adjustment of the "dynamic zeroing" policy in mainland China, we anticipate the next wave of changes in this vast production base and end-market, for which we have already made relevant preparations.

Revenue Share by Application Area

Global Sales Distribution

Consumer Sector	Computer Sector	Automotive and Industrial Control Sector	Communication Sector
17%	16%	48%	19%

Product Revenue Share by Type

Sales %

General IC Products	Wafer Foundry	Other Income
92%	7%	1%
32,365,005	2,447,858	535,286

Sales (NTD)

3.2.2 Tax Management

Nuvoton is committed to enhancing tax transparency within the Group and aligning with global trends to combat tax avoidance. We actively update tax knowledge, appoint external tax advisors, and ensure compliance with tax regulations and reporting obligations. The responsibility for tax governance is overseen by the Audit Committee, which regularly monitors internal control processes related to accounting, finance, taxation, financial reporting, and subsidiary supervision. The Accounting Department is responsible for routine tax operations and management, and consults with accounting firms and tax advisory institutions when necessary. This ensures compliance with local tax laws and timely fulfillment of tax obligations and disclosure of information. Additionally, employees periodically participate in tax-related courses and policy advocacy programs to update their tax expertise and practical experience.

Nuvoton's tax policy is guided by six principles

01 Comply with local tax laws, honestly declare and pay taxes within prescribed deadlines, and fulfill the social responsibility of taxpayers.

02 Evaluate the impact of changes in local and international tax regulations comprehensively and make prompt decisions to respond accordingly.

03 Disclose tax information regularly in financial and annual reports to ensure transparency of information.

04 Conduct transactions between related enterprises based on regular transaction principles and comply with the international transfer pricing standards published by the OECD.

05 Establish a relationship of mutual trust and honest communication with tax authorities.

06 Consider the tax implications in all major transactions and decisions of the company.

3.3 Sustainable Business Management

3.3.1 Regulatory Compliance and Integrity Management

Nuvoton conducts its business based on principles of integrity and actively prevents dishonest behavior. The company has established the "Rules for Ethical Corporate Management," which has been approved by the Board of Directors and publicly disclosed on the company's website. These rules specify the matters that employees should pay attention to when performing their duties and include provisions prohibiting bribery, unreasonable gifts, entertainment, and measures to prevent harm to stakeholders. Furthermore, Nuvoton upholds principles of integrity, transparency, sustainable contribution, and prioritizing shareholder interests in its operations, guiding the behavior of all members to adhere to ethical standards, prevent misconduct, and ensure stakeholders understand the company's ethical standards by establishing various regulations and guidelines, such as the "Rules for Ethical Corporate Management," "Code of Conduct for Corporate Social Responsibility," "Corporate Social Responsibility Best Practice Principles," and "Regulations Governing Contributions." These are disclosed on the Market Information Post System and the company's website, covering criteria for identifying improper behavior as well as reporting and processing procedures. We incorporate these guidelines and methods for integrity management into training courses and performance evaluations for employees in each department, thereby achieving the goal of prevention.

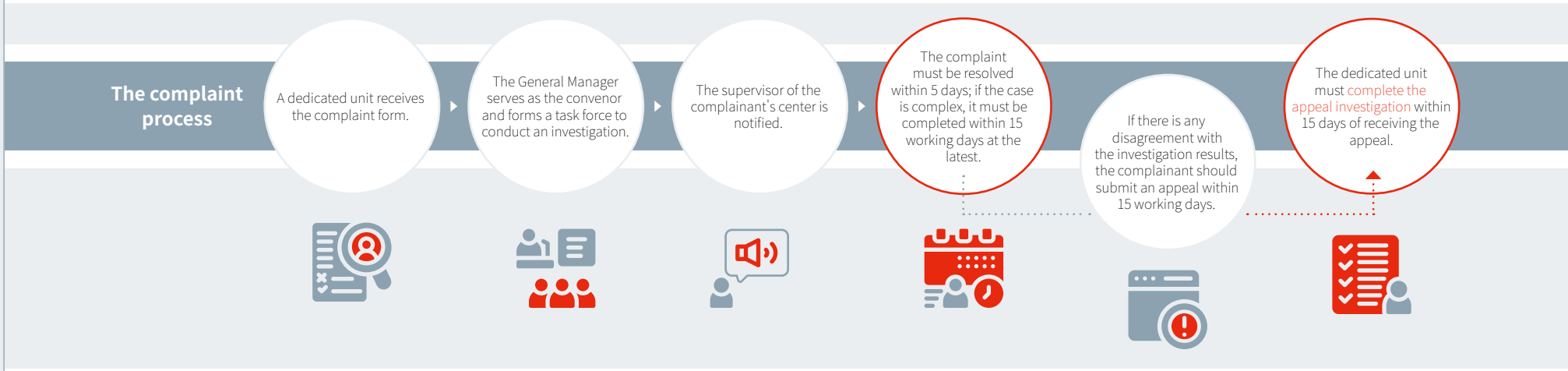
Nuvoton's customer base spans the globe, and in our commitment to upholding operational integrity and complying with laws and regulations, we vigilantly monitor both domestic and international policies that could impact the company's operations and finances. We consistently advocate for core business values of integrity and prioritize adherence to relevant laws and regulations concerning labor, ethics, environmental protection, health, and corporate governance. A dedicated unit conducts quarterly assessments to ensure the applicability and compliance of newly enacted or revised regulations. These findings are reported at meetings of the Sustainable Development Committee, and pertinent information is updated on the company's internal corporate social responsibility webpage for employee reference. In addition to continually tracking and updating all policies and regulations that could affect our operations, we regularly underscore the significance of corporate governance and ethical conduct among our employees. To ensure compliance with internal regulations and the latest legal requirements, we conduct quarterly regulatory compliance checks in accordance with the Responsible Business Alliance (RBA) Code of Conduct. The results from these checks demonstrate our ongoing compliance with applicable laws, with notable changes identified in 2023. Furthermore, the audit unit conducts audits on compliance with laws and regulations as outlined in the annual plan, and issues reports. In 2023, no significant deficiencies were found.

Complaint Mechanism and Channels

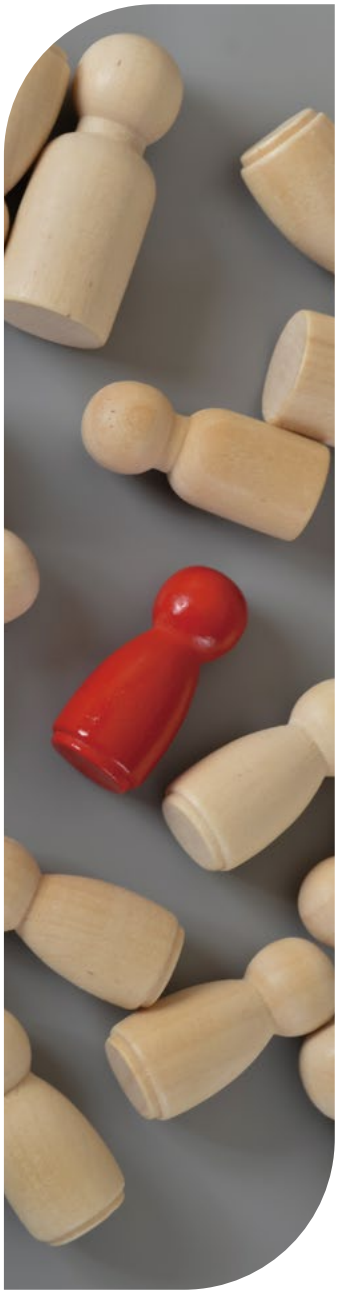
Nuvoton has established the "Reporting Violations of Integrity Conduct Regulations" to address Material Topic and provide clear operational guidelines. This procedure includes a variety of channels for complaints and reports to ensure the confidentiality of complainants and their concerns. Whether anonymously or non-anonymously, both internal and external stakeholders can report improper or unfair actions through these channels. All reports are handled by the designated Sustainable Development Committee. If violations of relevant laws or Nuvoton's integrity-related policies are confirmed, appropriate actions will be taken in accordance with the established procedures, including disciplinary measures outlined in the "Reporting Violations of Integrity Conduct Regulations", "Work Regulations" and "Reward and Penalty Handling Regulations." The company ensures prompt cessation of any relevant actions and appropriate resolution. Details of reported incidents and their resolutions are disclosed on the internal website. If necessary, legal actions may be pursued to protect the company's reputation and interests.

In addition to the previously mentioned themes of responsible business conduct and operational integrity, Nuvoton has established complaint channels specifically addressing issues, such as harassment, labor rights, and working conditions. These channels are accessible to employees, suppliers, contractors, customers, shareholders, and other stakeholders. All complaints are handled with utmost confidentiality, and designated contact points oversee each channel to ensure proper information management and limited access restricted to relevant personnel only. Upon receipt of a complaint, an investigation team is promptly assembled, prioritizing the protection of the complainant's privacy throughout the process. All case records are meticulously maintained in compliance with legal requirements and company regulations. Only authorized personnel involved in case management have access to this information, ensuring the continued protection of complainants' privacy.

Nuvoton is committed to upholding human rights in the workplace and endeavors to cultivate a safe environment where employees feel empowered to voice their concerns without fear of retaliation or mistreatment. To support this commitment, the company has implemented internal regulations, including the "Prevention of Workplace Harassment Regulations," "Prevention Plan for Unlawful Acts in the Performance of Duties," "Company Complaint Management Regulations," and "Reporting Violations of Integrity Conduct Regulations." These measures are designed to explicitly protect the rights of individuals who raise complaints. Nuvoton strictly prohibits any form of retaliation against complainants or individuals involved in investigations, and such actions will be met with disciplinary measures in accordance with company policies.



	Complaint Theme	Complaint Channel
Nuvoton Taiwan	Integrity in Operation	1. Whistleblowing channels for Ethical Management Violation 2. Company Complaint Management Procedures - Company Complaint Form
	Labor Rights Health and Safety Environmental Protection Diverse and inclusive workplace equality Other Suggestions	1. Email for Sustainability Committee: ESG@nuvoton.com 2. (Non-factory area)Complaint Channel on the Official Nuvoton Website: https://www.nuvoton.com/about-nuvoton/ESG/stakeholder-engagement/communication-channel/ 3. Physical suggestion box at factory/office premises 4. Company Complaint Management Procedures - Company Complaint Form 5. Harassment Complaint Hotline: 03-577-0066 6. Harassment Complaint Email: SHP@nuvoton.com 7. Communication Meetings: Labor-Management Meetings, Regular Committee Meetings, Occupational Safety and Environmental Protection Committee Meetings, Managerial Discussions, Town Hall Meetings, New Employee Forums
Nuvoton Japan	Responsible Operations and Integrity in Business	1. Internal Complaint Email: sys_ntcj_hotline@nuvoton.com 2. External Complaint Email: hotline-ntcj@clo.gr.jp
	Human Rights and Labor Safety	1. Occupational Health and Safety Committee 2. Regular Labor-Management Meetings 3. Direct Communication with the Management Team 4. Face-to-Face Meetings with Human Resources



Integrity and Compliance Management in 2023

- Nuvoton Taiwan conducted the "Corporate Integrity and Sustainable Development Code of Conduct Advocacy" training program (including anti-corruption advocacy), with a total of 1,514 employees trained, achieving a completion rate of **100%**. Nuvoton Japan held 5 courses on compliance-related topics (including Japan's Japanese Premiums[1] and Representations Act[2], The Subcontract Act, Antitrust Laws, Anti-Corruption, etc.), with a completion rate of **100%**.
- 2There were no complaints filed through the reporting channels alleging violations of integrity and ethical conduct in 2023.
- In 2023, Nuvoton was not involved in any integrity-related incidents such as fraud, insider trading, corruption, anti-competitive behavior, antitrust violations, market manipulation, or any significant violations of laws and regulations related to environmental protection or the economy. There were no legal penalties exceeding NT$1 million imposed on the company for major regulatory violations.
- There were no environmental or social legal disputes or penalties in 2022 related to Nuvoton. However, in 2023, Nuvoton Taiwan was fined NT$20,000 for violating the Gender Equality in Employment Act. The company has implemented improvements in operational processes and personnel training to ensure compliance with legal requirements. Nuvoton is committed to creating a respectful and equitable work environment, ensuring that every employee has fair opportunities and treatment, and will continue efforts to comply with gender equality laws.

1 The Premiums and Representation Act in Japan is a law aimed at opposing unfair premiums and deceptive statements, preventing unreasonable additional or unexpected benefits, and misleading representations.

2 The Subcontract Act in Japan is a law established to protect the operations of small companies and prevent large companies from bullying smaller ones by leveraging their substantial capital advantages.

Anti-Corruption Management Measures

To ensure robust integrity across its operations, Nuvoton Technology implements integrity management measures internally and throughout its business dealings. This includes stringent protocols for personnel hiring and requirements for suppliers to uphold integrity policies. Oversight of these initiatives falls under the purview of various company entities, including the Sustainable Development Committee and its finance, audit, and human resources units. These bodies are tasked with monitoring the implementation of internal integrity policies and prevention programs. Through the establishment of norms, continuous improvement efforts, rigorous supervision and control mechanisms, as well as comprehensive education and training initiatives, employees are thoroughly acquainted with the principles of integrity management. Nuvoton has developed a framework of norms, including the "Rules for Ethical Corporate Management," "Integrity Management Regulations," "Code of Conduct for Corporate Social Responsibility," "Sustainable Development Practices Guidelines," and "Regulations Governing Contributions," to deeply ingrain integrity management practices into the company's culture.

Nuvoton places significant emphasis on anti-corruption management. The Sustainable Development Committee regularly reports to the Board of Directors on the outcomes of promoting and executing integrity management training each year. Relevant units conduct self-assessments and reviews annually, followed by audits conducted by the audit unit to ensure compliance with internal controls and relevant legal regulations. In 2023, the company did not experience any incidents of employee corruption or other breaches of integrity management.

3.3.2 Risk Management

In response to the changing global economic environment and the operational impacts caused by sustainability risks, Nuvoton is committed to integrating the entire organization into its scope of risk management. The company adopts its own risks as management items and introduces best practices for continuous management.

In Taiwan, the Sustainable Development Committee is responsible for identifying relevant risks that may impact the company's sustainable development and devising subsequent strategies to realize the vision of sustainable development. This approach aligns with the key concerns of stakeholders and international trends. The risk management process involves identifying, assessing, responding to, and tracking risks based on the company's core business and external environmental conditions, covering economic, environmental, and social aspects of sustainability.

In Japan, the Risk Management Promotion Committee has been established, chaired by the President of Nuvoton Japan. This committee is responsible for establishing, operating, and continuously improving the risk management system of Nuvoton Japan. It conducts company-wide risk assessments annually, selects major risks for the year, formulates response plans, and reports the status of their implementation to the management team quarterly. For results from the risk assessment of Nuvoton Japan in 2023, please refer to the company's official website.

Operational Risks

Risk Type	Risk Content Description	Control Strategy	Performance Indicator
Interest Rate Fluctuation	· from liabilities and financial investments associated with operational activities. · income and expenses are affected by fluctuations in interest rates in Taiwan and the United States.	· We monitor future market interest rate trends and gather information from various banks, assessing existing borrowing rates in a timely manner. · Building strong relationships with banks, we leverage our good bank financing credit records to secure relatively favorable borrowing rates.	· operating cash inflows to meet funding needs. · of financial investments, the company mainly invests in fixed deposits to ensure principal safety and maintain liquidity.
Exchange Rate Fluctuation	· More than half of the procurement expenses for raw materials are paid in currencies other than New Taiwan Dollars, such as the US Dollar. · As the main revenue comes in the form of the US Dollar, significant international exchange rate fluctuations impact the financial position.	· The company utilizes derivative financial instruments (such as forward foreign exchange contracts) to hedge against recognized or anticipated foreign exchange exposures. These hedges mitigate most of the financial impacts caused by exchange rate fluctuations but do not completely eliminate them. · The financial unit closely monitors exchange rate movements and maintains close communication with major counterpart banks to stay updated on exchange rate trends. This allows relevant management personnel to fully grasp exchange rate trends and make timely adjustments as needed. · establishment of procedures for handling derivative financial instruments specifies the transaction, risk management, supervision, and auditing of derivative financial instrument-related operations to reduce transaction risks associated with operating derivative financial instruments related to exchange rates.	· Nuvoton primarily uses forward foreign exchange contracts to mitigate exchange rate risks arising from assets and liabilities. · 2023, positive exchange rate impacts were generated through effective foreign exchange operations, resulting in a net gain on exchange of 117,593 million NTD.
Inflation **Deflation** **Market Volatility**	· The expected changes in market inflation and deflation have a significant impact on the global economy. · will reduce market efficiency and disrupt investment decisions.	· Due to the nature of our products and services, our company is not heavily affected by inflation or deflation. Additionally, we actively manage costs and operational expenses to mitigate the impact of inflation on our operations.	· We establish strong relationships with suppliers and customers to mitigate the impact of market price fluctuations on our company's profitability.
Financing Risk	· The ability of Nuvoton to obtain financing depends on factors such as the company's future financial condition, operational performance, cash flow, and market financing activities.	· We maintain good relationships with financial institutions. When financing is necessary, we will assess the actual funding requirements and plan appropriate short-term or long-term bank loans or other fundraising tools. The aim is to minimize the impact of interest rate fluctuations and funding costs on the company's operations.	· We have established procedures, such as "Acquisition or Disposal of Assets Procedure," "Funds Loan to Others Operating Procedure," "Endorsement Guarantee Method," and "Derivative Financial Instrument Transaction Procedure" as the basis for relevant transactions to control financial transaction risks.

Risk Type	Risk Content Description	Control Strategy	Performance Indicator
Environmental Risk	· In response to global attention to environmental sustainability issues, environmental regulations are becoming increasingly stringent. In the future, it may be necessary to retrofit or upgrade pollution control equipment to comply with regulations or meet the expectations of stakeholders.	· We focus on the best available pollution prevention and control technologies in the industry. · We strengthen the management and maintenance of existing pollution control facilities to effectively utilize their functions. · We pay attention to the needs of stakeholders and trends in regulatory changes, and strive to grasp them early to increase the buffer period for improvements.	· Nuvoton continues to monitor relevant environmental regulations and the best available pollution prevention and control technologies in the industry. In 2023, after reviewing the performance of existing pollution control equipment and with the introduction of new emission standards by the government, the company allocated relevant expenses for improvements. After completing the improvement plan, all pollution control equipment is within manageable limits.
Supply Chain and Critical Raw Material Risk	· Risk Associated with Supplier Lead Time, Quality, and Price Changes	· diverse sources for products, procuring raw materials from different suppliers and regions to ensure a reliable supply of raw materials. · Adhering to the principle of sourcing critical raw materials from multiple suppliers in different locations, signing long-term supply contracts with manufacturers, and maintaining zero supply risk by using consignment arrangements. · When unable to establish a secondary supplier for a particular item, requiring manufacturers to maintain safety stock at production sites and with agents, and adopting a Just-in-Time (JIT) production approach to minimize supply risks.	· In 2023, there were no incidents of critical shortages in raw materials.
Intellectual Property Risk	· Involves infringement of patents, trademarks, copyrights, and trade secrets.	· Product design and development teams collaborate with the intellectual property department to conduct searches, research, and analysis related to intellectual property rights. They employ strategies such as avoidance design or obtaining legal authorization to minimize (intentional) infringement. · Actively address and resolve issues raised by plaintiffs, whether for commercial reasons, defense of intellectual property rights, collection of royalties, or other undisclosed purposes. · Engage in discussions with external lawyers to develop response strategies, fostering rational interaction with mutual respect and seeking win-win outcomes.	Implementation of the Intellectual Property Management Plan in 2023: · Mandatory education and training for all new employees. · Quarterly social engineering education training and monthly information security awareness campaigns to enhance employee awareness of phishing emails and cybersecurity defense. · Signing of confidentiality agreements with customers and relevant suppliers to mutually protect confidential information. · Periodic use of software tools for software audits. · The patent portfolio is competitive among industry peers, with a significant increase in the composite scores for patent quality and value

3.3.3 Internal Audit and Internal Control

In accordance with legal requirements, the company has established an effective internal control system along with related measures. Internal audit personnel conduct regular audits to ensure the continued effectiveness of the design and implementation of various systems. Both Nuvoton Taiwan and Nuvoton Japan have internal audit units subordinate to the Board of Directors. The appointment and dismissal of the audit director in Nuvoton Taiwan require approval from the Audit Committee and the Board of Directors. In Nuvoton Japan, the appointment and dismissal of the audit director require approval from the Chairman and reporting to the Board of Directors. Based on these control systems, Nuvoton follows legal requirements to establish internal control systems and has internal audit implementation regulations to measure the effectiveness of current control systems for all operations, including those of its subsidiaries.

The internal audit units of Nuvoton draft annual audit plans based on the results of risk assessments. The audit plans of Nuvoton Taiwan are approved by the Audit Committee and the Board of Directors, while those of Nuvoton Japan require approval from the Board of Directors. Nuvoton Taiwan submits the "Audit Plan for the Following Year" to the competent authority by the end of December each year and executes the work according to the annual audit plan. Suggestions for improving deficiencies and abnormalities in the internal control system are made, and audit reports are prepared and regularly reported to the Audit Committee and the Board of Directors.

Moreover, important procedures and special cases may be audited at any time, or irregularly. The audit director of Nuvoton Taiwan reports to the independent directors (Audit Committee convener) monthly after completing the audit and tracking reports. The reports are submitted for review by the independent directors before the end of the following month, and are reported quarterly to the Audit Committee and the Board of Directors. The audit director of Nuvoton Japan submits audit reports and tracking reports to the supervisor by the end of the following month after completion, and quarterly reports on audit operations are submitted to the Board of Directors. The audit plans of Nuvoton Taiwan and Nuvoton Japan for 2023 have already been implemented. Nuvoton Taiwan reports on internal audit findings regarding deficiencies in internal control systems and improvement situations by the end of May each year.

The internal audit unit checks the internal control systems and operations of the company to assist the Board of Directors and management in reasonably confirming the achievement of related goals, such as operations, reporting, and compliance: operational effectiveness and efficiency, including achieving operational and financial performance goals and maintaining asset security; the reliability, timeliness, transparency, or compliance of internal and external financial reporting and non-financial reporting according to relevant regulations and laws.

The internal audit unit supervises internal units and subsidiaries to conduct regular self-checks on the effectiveness of internal control systems each year. The internal audit unit then reviews the self-check reports and the effectiveness of the internal control system of each unit and subsidiary, and integrates the self-check results as the basis for the Board of Directors and the General Manager to issue an internal control system. Please refer to the internal control system statement in the 2023 annual report, page 76.

3.3.4 Information Security

Nuvoton has established the " Nuvoton Security Policy" and "Information Security Management Measures" to create a secure information management system and implement control measures. This ensures a safe information environment, protecting company and customer data from theft, cybercrime, industrial espionage, or other threats. Confidentiality agreements with partners and customers prevent unauthorized disclosure of sensitive information. Regular internal security audits ensure effective control measures. To reduce overall information security risks, Nuvoton enhances employee awareness with monthly security promotions and quarterly social engineering training.

In December 2022, Nuvoton established a dedicated information security unit and appointed a supervisor to oversee information security-related operations and ensure the effectiveness of the company's information security and risk management mechanisms. To assure our customers of secure collaboration with us, Nuvoton Taiwan launched an ISO/IEC 27001 information security management system project in September 2023. This project organization is supervised by Nuvoton's president, vice presidents of various business groups, and center supervisors, with related unit supervisors and colleagues forming project teams. Actively implementing the information security management system, Nuvoton Taiwan completed "information asset inventory," "business continuity exercises," "risk identification and improvement," and "information security control mechanisms" in 2023.

Additionally, in terms of product safety, Nuvoton Taiwan has passed the ISO/IEC 15408 Common Criteria certification by the international security organization, proving that the production process complies with international standards as reliable security products, thus protecting customer information and assets. Nuvoton Japan obtained ISO 27001:2013 certification shortly after its establishment. Additionally, due to its business involving IC cards and automotive-related products, Nuvoton Japan has also acquired ISO/IEC 15408 and ISO/SAE 21434:2021 certifications.

Facing the increasing threats of cyber hacker attacks and the use of more complex and advanced attack methods, Nuvoton Taiwan has evaluated the implementation of Endpoint Detection and Response (EDR) solutions to enhance the monitoring and protection capabilities against hacker activities and malicious attacks. This aims to accelerate threat detection and automated response mechanisms, analyze potential hacker activities, improve the efficiency of investigating and tracking hacker activities, and comply with information security control trends and compliance requirements. After completing the EDR solution selection and functionality verification, a phased implementation and deployment plan was carried out to gradually strengthen the group's overall depth defense architecture and the breadth and depth of threat detection, as well as enhance the response mechanism and speed to hacker attack activities. Nuvoton Japan's EDR endpoint protection solution was completed in 2023.

Introduction
CH1 Sustainability Communication
CH2 Green Products
CH3 Excellence in Governance
CH4 Environmental Sustainability
CH5 Safe Workplace
CH6 Social Prosperity
Appendix

2023 Information Security Risk Control Measures

	Specific Measures	Effectiveness in 2023
Enhancing Staff Awareness of Information Security	Monthly Information Security Awareness Campaigns Quarterly Information Security Education and Training (Social Engineering Training) Annual Personal Data Protection Education and Training Ad hoc Information Security Updates on Current Affairs or Major Events	Nuvoton Taiwan: Conducted 4 sessions of social engineering education and training courses, and 12 cybersecurity awareness sessions. Achieved a 98% completion rate for information security training among all employees. Nuvoton Japan: Conducted 6 joint morning meetings for cybersecurity awareness, published 6 training materials, and held 9 Cybersecurity Promotion Committee meetings with released meeting records. Achieved a 100% completion rate for information security training among all employees.
Information Security Monitoring and Handling of Anomalous Events	Provide monitoring records and analysis reports weekly. Hold weekly information security monitoring meetings to discuss events and take response measures.	Nuvoton Taiwan & Japan: Enhanced reporting mechanisms by automating virus alerts and abnormal logins to cloud services, ensuring direct notification to relevant parties for prompt resolution, thereby accelerating response times. In 2023, both Nuvoton Taiwan and Nuvoton Japan had no major cybersecurity incidents.
Weakness and Vulnerability Management	For on-premises servers, conduct quarterly vulnerability scanning operations and schedule regular maintenance shutdowns monthly. Apply critical updates from Microsoft regularly. For external services, monitor risks using the SSC cloud scanning tool.	Nuvoton Taiwan & Japan: The SSC cloud monitoring platform achieved an average total score > 90 points (Grade A), with a total of 51 risks mitigated, including 13 classified as high/critical risks.
Identity Access Control	For cloud services, we utilize conditional access and multi-factor authentication, allowing access only to compliant devices and using specific programs. For remote connections, we implement identity verification, multi-factor authentication, and device whitelisting, ensuring connection under specified conditions. Regular password updates are conducted as well.	Nuvoton Taiwan & Japan: Conducted daily information reports on cloud login and remote access, analyzing and investigating unauthorized access attempts and unregistered devices. In 2023, both Nuvoton Taiwan and Nuvoton Japan had no major incidents.
Physical Security Protection	Access to different areas is restricted based on employee roles, requiring the use of access cards for identity verification when entering each designated area.	Nuvoton Taiwan & Japan: Complied with the access control security requirements of the ISO 15408 Common Criteria international standard. Nuvoton Japan replaced the old card readers and employee access cards with new ones.
Code Security	The application department is required to conduct code security checks when launching new systems, external service systems, or major updates. High-risk code should be patched to enhance the security of the system upon deployment. Regular updates to the code scanning database are performed to improve code detection efficiency.	Nuvoton Taiwan & Japan: In 2023, a total of 13 new systems were launched. The improvement rate for high-risk code corrections was 100%, and the program coverage rate for source code scanning was also 100%.
Email Security	Enhanced email server security settings by configuring SPF to authorize designated mail servers for sending emails on behalf of the company. Implemented DKIM and DMARC settings to prevent email spoofing and tampering. Utilized secure Outlook plug-ins to verify recipients, content, and attachments before sending emails, thereby preventing erroneous email transmissions.	Nuvoton Taiwan & Japan: All emails must pass through a legitimate email server verification process, resulting in a 100% success rate for external deliveries. Replaced with a new plugin containing additional features. Nuvoton Japan utilizes the email monitoring feature of the IT equipment management tool (AssetView) to oversee the sending of inappropriate emails.

Information security education and training

Company	Target Audience	Training Items	Content	Frequency	Total Hours	Completion Rate
Nuvoton Taiwan	General Staff	General Information Security Awareness	12 topics	Once a month	4	100%
		General Social Engineering Awareness	Recognizing Phishing Emails, Social Engineering Techniques	Once a quarter	4	97%
		General Personal Privacy Protection	Personal Data Privacy Protection	Once a year	1	100%
	Product Security Personnel	Product Security, General Courses	Product Security Training	At least once a year	6	100%
	Information Security Personnel	Product + General + Professional Courses	Information and Communication Security Technology, Relevant Regulations	At least once a year	8	100%
Nuvoton Japan	General Staff	Information Security Awareness	Familiarity with Information Security Risks and Risk Management Measures	Once a year	0.2	100%
		Email Self-Inspection	Precautions when Sending Emails	Twice a year	0.5	100%
		Self-Inspection on Handling "Company Mobile/Smartphones"	Implementation Overview and Issues	Once a year	0.2	100%
		Inspection on Handling "Laptop Computers"	Precautions for Taking Laptops out of the Office	Once a year	0.2	100%
	Members of the Information Security Promotion Committee	New Committee Member Training	Basic Status of Information Security Promotion	Once a year	0.5	100%

Customer Privacy Protection

With the view of customers as strategic partners, Nuvoton strives to meet their needs and expectations. We also prioritize the protection of customer confidentiality and information. Customer-related information, documents, and data exchanged with customers are strictly controlled and stored within Nuvoton's highly secure internal systems. Additionally, confidentiality agreements are signed with important vendors and customers to mutually protect sensitive information and prevent the exposure of customer information privacy and trade secrets. Through the ISO 27001 Information Security Management System, Nuvoton has established a more comprehensive information security protection system. In 2023, Nuvoton did not encounter any complaints regarding violations of customer privacy rights or loss of customer data.

Customer Privacy Protection

Action	Explanation
Internal Management	As cybersecurity threats continue to rise, Nuvoton strengthens its information security protection, expands the scope of international standard certifications for cybersecurity and personal data protection operations, and ensures that the company achieves the protection of customer privacy and prevents the theft or leakage of trade secrets and intellectual property rights. In addition to conducting regular internal control self-assessment operations annually, Nuvoton sets control points based on personnel, customer, and vendor data, regularly inspects and records the execution status of control points, and conducts annual review and inspection operations to establish a comprehensive information security environment, thereby avoiding the occurrence of major incidental events and penalties, and maintaining the reputation of the company and its customers. Nuvoton Japan publicly releases its privacy policy and obtains consent from customers and business partners before processing personal information. When receiving from or providing personal data to third parties, it adheres to the Personal Information Protection Law.
ISO 15408	In 2014, Nuvoton Taiwan obtained the ISO 15408 Common Criteria EAL 4+ product security certification. The verification covered the stages of "Design & Development," "Production," and "Delivery" of the product. This indicates that Nuvoton Taiwan's controls for product information security meet the requirements of the International Security Organization Common Criteria, enabling the production of security products that meet international standards and protect customer information and assets. Nuvoton Japan has obtained ISO/IEC 15408 Common Criteria EAL 5+ product security certification for its promotion of IC card business.
Compliance with Privacy Laws	To ensure compliance with privacy protection regulations, such as the Personal Data Protection Act, the General Data Protection Regulation (GDPR) in the European Union, and the California Consumer Privacy Act (CCPA) in the United States, Nuvoton's parent company conducted training on the "Personal Data Protection Act" for all employees in the 2023 fiscal year. The training included an introduction to GDPR and Taiwan's personal information protection laws, with a completion rate of 100%. In Nuvoton Japan, training materials on personal information, including GDPR, were published on the company's internal portal (e-learning), allowing all employees to access them at any time.
Signing Confidentiality Agreements	While Nuvoton focuses on enhancing customer service, it places a strong emphasis on safeguarding customer privacy and intellectual property rights. Confidentiality agreements are signed with customers to protect sensitive information, and confidential data protection procedures are established to ensure there is no risk of leakage of sensitive information, thereby safeguarding customer privacy effectively.

3.4 Sustainable Supply Chain

3.4.1 Composition and Overview of Supply Chain

Since its establishment, Nuvoton has aimed to establish a semiconductor supply chain that is robust and resilient in the long term. It prioritizes the localization of raw material production, continuously increasing the proportion of local procurement, and gives preference to environmentally friendly products that are low in pollution and recyclable. By implementing social and environmental responsibilities in the supply chain, Nuvoton seeks to have a positive impact on society, the environment, and the economy. All suppliers are required to sign agreements including the "Compliance Commitment Code of Conduct," "Confidentiality Agreement," and "Conflict-Free Minerals Declaration," with sustainability projects integrated into supplier evaluations. Nuvoton has set goals to gradually increase the proportion of key suppliers passing RBA VAP and publishing sustainability reports, encouraging them to obtain international certifications such as ISO 14001 for environmental management systems.

Economic

Tracking Business Continuity Plans

- Tracking Major Suppliers' Completion Rate of BCP (Business Continuity Plan) SAQ

Society

Ensuring Labor Rights

- Adherence to the Code of Conduct Commitment
- Declaration of Non-Usage of Conflict Minerals
- Establishment of Conflict Minerals Management System, Conducting Due Diligence on Conflict Minerals

Supplier Evaluation

- Issuance of Supplier ESG&RBA Self-Assessment Questionnaires Annually
- RBA VAP Tracking Major Suppliers' Completion of RBA VAP

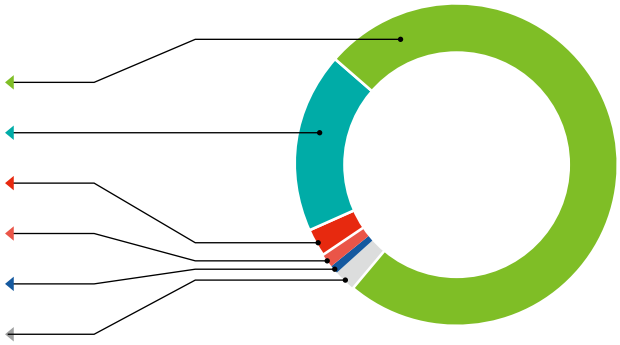
Environment

Reducing Environmental Impact

- Major Suppliers Obtaining ISO 14064 or Equivalent International Standard Certification
- Compliance with Relevant Regulations on Harmful Substances in Products

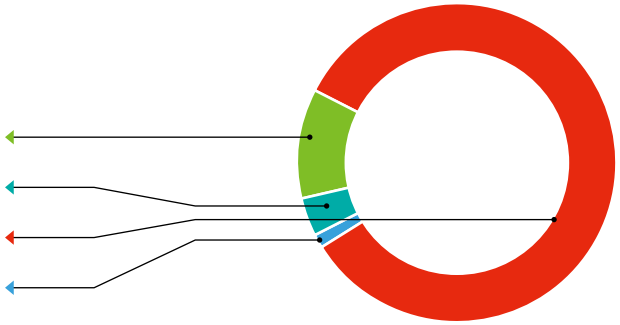
In 2023, Nuvoton had a total of 143 suppliers across various categories including raw materials, quartz, photomasks, outsourcing processing, subcontracting, wafer foundry, and logistics providers. The majority, about 74.8%, were local businesses registered in Taiwan, followed by 18.2% from China, 2.8% from Japan, 1.4% from South Korea, 0.7% from the United States, and 2.1% from other regions. These suppliers have established long-term cooperation and provided stable supplies, with no significant changes in the supply chain observed in 2023. In the same year, Nuvoton Japan had a total of 127 suppliers, with 114 located domestically in Japan and 13 overseas. The majority, accounting for 92%, were local businesses registered in Japan.

Nuvoton Taiwan	Year 2021	Year 2022	Year 2023
Taiwan	76.6%	73.6%	**74.8%**
China	14.9%	18.1%	**18.2%**
Japan	2.1%	2.8%	**2.8%**
South Korea	1.4%	2.1%	**1.4%**
USA	1.4%	1.4%	**0.7%**
Others	3.6%	2%	**2.1%**

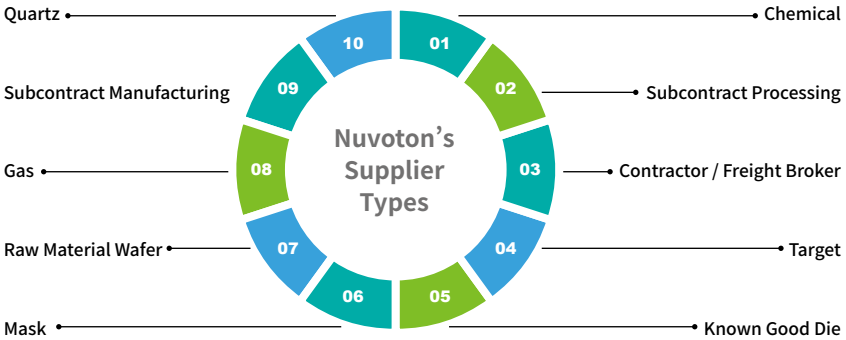


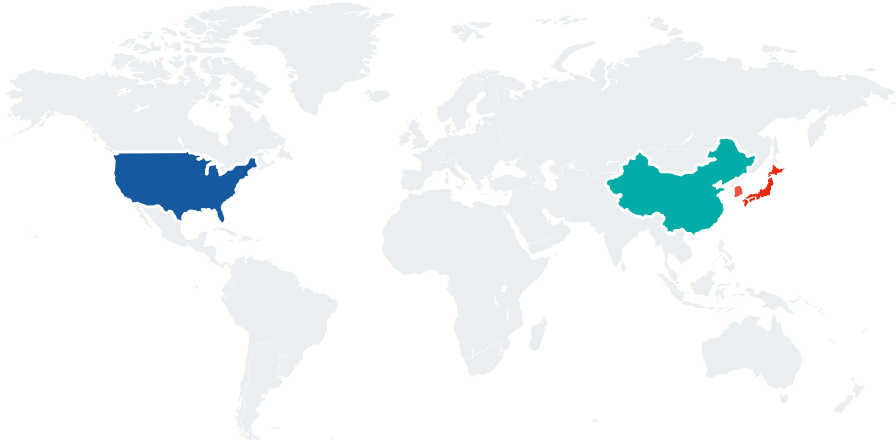
Nuvoton Taiwan
The distribution of Nuvoton Taiwan's suppliers by geographical location is as follows

Nuvoton Japan	Year 2021	Year 2022	Year 2023
Taiwan	14.4%	1.2%	**11.1%**
China	2.7%	3.7%	**3.7%**
Japan	81.1%	81.5%	**81.5%**
Singapore	0%	1.2%	**1.2%**



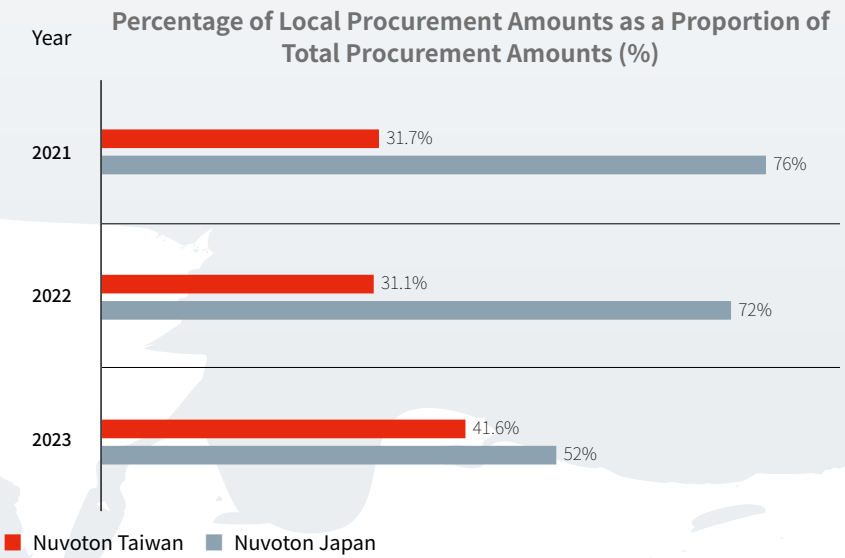
Nuvoton Japan
The distribution of Nuvoton Japan's suppliers by geographical location was as follows

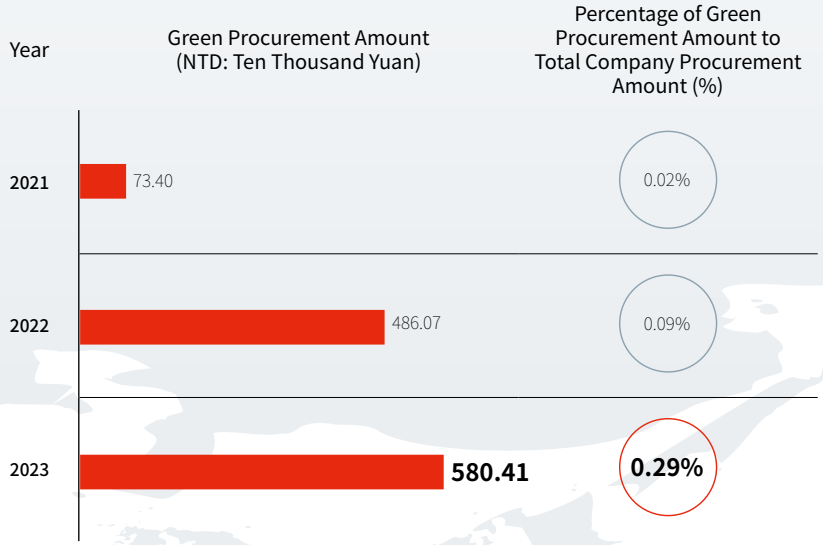




In recent years, Nuvoton has been committed to localizing the production of raw materials to reduce transportation costs, carbon emissions, and risk diversification. Additionally, it aims to promote local production in Taiwan to increase employment opportunities. Local suppliers for Nuvoton Taiwan are primarily from the Taiwan region, with important operational bases located at the Taiwan headquarters. Similarly, local suppliers for Nuvoton Japan are from the Japan region, with important operational bases located at the Japan headquarters. In 2023, the proportion of locally sourced raw materials for Nuvoton Taiwan reached 41.6%, marking a three-year high. Meanwhile, for Nuvoton Japan, this proportion was 52% in 2023, indicating that local sourcing remains an important strategy for supplier selection. Despite the limitations imposed by industry characteristics, Nuvoton will continue to maintain close relationships with local suppliers in the future, striving to reduce costs and risks together.

Committed to environmental protection, Nuvoton continuously promotes energy-saving and carbon-reduction measures in its offices and various locations. Additionally, it supports the Taiwan government's green procurement policy by prioritizing and procuring environmentally friendly products that comply with "low pollution, resource conservation, and recyclability" criteria. Moreover, Nuvoton incorporates green procurement concepts into its procurement management system to achieve energy saving, carbon reduction, and operational cost reduction goals.





Note: This table only includes data from Nuvoton Taiwan.

3.4.2 Sustainable Supply Chain Management

Nuvoton has established a Supplier Management Team under the Sustainable Development Committee that is responsible for formulating policies related to sustainable supplier management. It leverages its influence and collaborates with suppliers to prioritize and promote corporate sustainability, achieving the vision of a sustainable supply chain. Nuvoton's strategy for promoting a sustainable supply chain includes developing risk management methods for critical materials, setting short, medium, and long-term goals to increase the percentage of major suppliers completing RBA VAP and publishing sustainability reports.

As a key player in the semiconductor supply chain, with a focus on chip design upstream and wafer manufacturing midstream, Nuvoton closely collaborates with suppliers in the industry chain to form partnerships based on specialized division of labor and mutual cooperation. As a global semiconductor industry leader, collaborating with suppliers to build a sustainable supply chain is a key indicator of Nuvoton's sustainable development management. Nuvoton pays attention to labor rights in the supply chain, requiring suppliers to operate in compliance with relevant laws of their operating countries and comply with relevant international industry codes of conduct, including the Responsible Business Alliance (RBA) Code of Conduct and any amendments thereto. All suppliers are required to sign the "Compliance with the Code of Conduct Commitment" and "Confidentiality Agreement." Over the past three years, 100% of Nuvoton's suppliers have signed the Supplier Code of Conduct. In 2023, Nuvoton's suppliers did not experience any human rights disputes related to child labor, forced labor, violation of the freedom of association or collective bargaining rights of employees.

In the risk management of critical materials (wafers, chemicals, gases, targets), Nuvoton employs three main control strategies. In 2023, there were no instances of critical material shortages:

Nuvoton employs three main control strategies

1. Diversifying product sources: Nuvoton procures raw materials from different suppliers and regions to ensure a secure supply of materials.

2. In adherence to the principle of sourcing from multiple suppliers across various locations, key raw materials are secured through long-term supply contracts with manufacturers. Apart from maintaining proprietary inventories, the risk of supply is further mitigated through consignment arrangements.

3. For projects in which establishing a second supplier is not feasible, Nuvoton requires suppliers to maintain secure inventories at production sites and with agents to reduce supply risks through just-in-time production.

Supplier Selection and Evaluation

Nuvoton's selection mechanism for new suppliers is designed with reference to RBA standards. It considers multiple factors, such as the use of hazardous substances, quality, price, and environmental considerations. Suppliers meeting Nuvoton's requirements must sign agreements including the "Code of Conduct Commitment," "Confidentiality Agreement," and "Declaration of Non-Usage of Conflict Minerals." Nuvoton also requires suppliers to faithfully execute all transactions without harming Nuvoton's interests or reputation to become qualified suppliers. Additionally, Nuvoton encourages suppliers to obtain international certifications such as ISO 14001 for environmental management systems. If suppliers cannot obtain these certifications promptly, Nuvoton requires them to provide a schedule for obtaining the certification.

Selection Mechanisms for Suppliers

Environmental Management System Certification	Nuvoton encourages its supply chain manufacturers to obtain international certifications such as ISO 14001 for environmental management systems. If they cannot obtain them promptly, they are required to establish a schedule for obtaining the certification.
Code of Conduct	Nuvoton actively adopts the standards of the Responsible Business Alliance (RBA) Code of Conduct. It requires all supplier factories to jointly sign the "Code of Conduct Commitment" and "Confidentiality Agreement." Suppliers must faithfully execute all transactions without harming Nuvoton's interests or reputation.
Conflict Minerals Management	Relevant suppliers are required to sign the "Declaration of Non-Usage of Conflict Minerals," including wafer foundry subcontractors, packaging plants, and raw material suppliers.

In 2023, we conducted RBA risk assessments for our top 92% suppliers by revenue, covering ESG risk evaluation content (including environmental, social, and governance aspects). Starting from 2024, key suppliers are required to undergo regular assessments, including completing a self-assessment questionnaire (SAQ) on the Business Continuity Plan (BCP) and compliance with product-related regulations and customer specifications. Nuvoton commits to continually assessing supplier risks, measuring the extent of negative environmental and social impacts, and devising improvement plans to enhance the resilience of the overall supply chain.

Method for Supply Chain Management

Nuvoton manages and guides qualified suppliers through three major aspects, while also requiring them to obtain third-party quality system certifications such as ISO 9001, IATF 16949, or QC 080000. Additionally, suppliers must sign Nuvoton's "Code of Conduct Commitment" and undergo document review, with on-site audits being a necessary condition for outsourced processing vendors.

Supplier Evaluation

In 2023, Nuvoton had a total of 14 major suppliers, accounting for approximately 92% of total supplier transactions. An annual RBA VAP audit process was conducted, with 7 suppliers completing the RBA VAP assessment.

3.4.3 Conflict Minerals

Nuvoton's Conflict Minerals Management System

Publicly declare the non-usage of conflict minerals.

Require suppliers to sign a "Declaration of Non-Usage of Conflict Minerals" and disclose detailed reports from due diligence investigations of conflict minerals.

Conduct annual due diligence investigations of conflict minerals, covering raw materials, outsourcing, and subcontracting suppliers.

The scope of due diligence investigations on conflict materails includes tin, tungsten, tantalum, gold, cobalt, and mica.

To safeguard international human rights, Nuvoton attaches great importance to the issue of conflict minerals. It has established a Conflict Minerals Management System and publicly announced the Declaration of Non-Usage of Conflict Minerals on the official Nuvoton website. Nuvoton is committed to avoiding the use of metals obtained from illegal mining operations that violate human rights in both product materials and production processes. Suppliers are required to sign a "Declaration of Non-Usage of Conflict Minerals," including wafer outsourcing manufacturers, packaging factories, and raw material suppliers, with a signing rate of 100% over the past three years.

Nuvoton has established Conflict Minerals Management Measures, including:

1. Requiring suppliers to sign a "Declaration of Non-Usage of Conflict Minerals" to comply with the prohibition of using conflict minerals.
2. Requiring relevant suppliers to conduct regular and thorough investigations to ensure that metals from conflict areas are not used in the products.

To safeguard human rights, Nuvoton attaches great importance to the issue of conflict minerals. And commits to conducting due diligence in accordance with the standards outlined in the Organization for Economic Cooperation and Development (OECD) "Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas," or an equivalent recognized due diligence framework. It is committed to avoiding the use of metals from illegal mining that violate human rights in the product materials and production processes. Nuvoton requires semiconductor foundry subcontractors, packaging plants, and raw material suppliers to sign a "Declaration of Non-Usage of Conflict Minerals" to state that tantalum (Ta), tin (Sn), tungsten (W), and gold (Au) all sourced from smelters listed as qualified on the official Responsible Minerals Initiative (RMI) website. Suppliers are also required to comply with the prohibition of using "conflict minerals" to be listed as qualified suppliers. Furthermore, Nuvoton requires suppliers to conduct thorough investigations and disclose due diligence reports on conflict minerals. The frequency of investigations follows updates to the Responsible Business Alliance (RBA) Code of Conduct. Conflict mineral investigations were conducted for the aforementioned suppliers (including subcontractors), all of which fully complied with the relevant regulations

Nuvoton adopts the Conflict Minerals Reporting Template (CMRT) released by the Responsible Minerals Initiative (RMI) for conflict minerals including tin, tungsten, tantalum, and gold. Conflict mineral due diligence investigations have been conducted since 2014, covering various suppliers, such as raw material suppliers, subcontractors, and contract manufacturers, to ensure that the mineral materials used in products come from smelters, refineries, or countries recognized by the RMI. In 2023, the tin, tungsten, tantalum, gold, and other mineral materials used by Nuvoton Taiwan came from 202 smelters spanning 63 countries, while those used by Nuvoton Japan came from 7 smelters spanning 6 countries. All smelters used were 100% recognized by the RMI.

In addition to 3TG minerals, Nuvoton has expanded the scope of its investigations. In 2021, investigations were conducted on cobalt and mica suppliers, with disclosure of the sources of their smelters to customers. In 2023, cobalt mineral materials used by Nuvoton Taiwan came from 10 smelters spanning 6 countries, with no suppliers using mica. Cobalt mineral materials used by Nuvoton Japan came from 8 smelters spanning 3 countries, while mica came from 3 smelters spanning 1 country. Nuvoton will continue to monitor and oversee the mineral sources provided by suppliers to ensure that its raw materials come from qualified suppliers.

Investigation Items	RMI Certification Qualified						Total
Mineral Name	Sn	W	Ta	Au	Cobalt	Mica	
Number of Nuvoton Taiwan Smelters	53	32	31	86	10	0	212
Number of Countries with Nuvoton Taiwan Smelters	15	9	10	29	6	0	69
Number of Nuvoton Japan Smelters	3	2	2	0	8	3	18
Number of Countries with Nuvoton Japan Smelters	3	1	2	0	3	1	9

3.4.4 Customer Service

Meeting customer needs and providing high-quality, competitive products have been Nuvoton's primary goals since its establishment, and they remain key to maintaining customer trust. Nuvoton offers diverse customer service solutions, including professional wafer foundry services, collaborative product development with partners, and Nuvoton product application training courses. Additionally, Nuvoton provides customers with the convenience of ordering products either physically or online, enhancing the accessibility of purchasing products. The company also offers various professional consultations, such as new product introductions, regional customer technical support, and consulting services. Moreover, Nuvoton provides multiple channels for inquiries, including business, distributor, agent, and online customer service.

To assist customers in achieving rapid development, mass production, and easy upgrades, and to provide customers with the best development experience, Nuvoton has designed the "NuDeveloper" ecosystem, which offers the following customer services:

Comprehensive development tool platform

Development boards, debuggers and programmers, software tools, Board Support Packages (BSP), and sample code, IDE drivers.

Rich offering of online digital resources

Providing online access to product knowledge, tutorial videos, product selection, finding/downloading development resources, purchasing products, and technical and sales support to meet various online and digital resource needs.

Collaborating with third-party vendors to provide a rich variety of software and hardware reference design solutions

Offering diverse cloud services and networking options, supporting multiple operating systems, and providing easy-to-use, professional graphical user interface software.

NuDeveloper

NuDeveloper Ecosystem – Make Engineers' Jobs Easier

nuvoton.com
Product Information / Documents / Selection

- Online Support: NuForum / Sales Support Mailbox / Online Chat
- Social Media & Knowledge Base: LinkedIn / Facebook / Twitter / WeChat
- Video Platform: YouTube / bilibili
- Open Resource: Github / Gitlab / Gitee

Online buy
- Nuvoton Direct
- Tmall
- TechDesign
- DigiKey

Digital Platform

arm KEIL | IAR Embedded Workbench | NuEclipse NuEdgeWise

IDE

Nu-Link2-Pro/Nu-Link2-Me
Nu-Link-Gang/Gang Writer

Debugger & Programmer

NuMaker Series /
Motor Control Series /
Power Control Series

Evaluation Board

MCU BSP（API Compatible）/
Linux BSP/ Peripheral Driver /
Library / Rich Sample Code
Third party resource

BSP & Example Code

NuIDE/
UltraoIO/ VR Lib /
CodeGenerator/ PinView /
PinConfig/ ClockConfig /
LCDView / TouchView/
ICP/ISP Programming/
Nu-Link Command/
USB to Serial Port /
NuAudio

Software Tool（NuTool）

Development Platform

HMI Platform

SEGGER, SQUARELINE, LVGL, Qt, altia

IoT Device and Gateway

arm MBED OS, amazon web services, WiFi, arm PELION, Microsoft Azure, Alibaba Cloud, RTOS, RT-Thread, Allxon, Azure RTOS, AliOS, NB-IoT, OpenWrt, LTE, Linux, Bluetooth, LoRa

DALI 2 Solutions

Supports all control gear and control/ input device certified library protocol.

102	103
202	301
206	302
207	303
208	304
209	

Platform

BMS	LCD Touch Key	Cold Chain	Thermostat
Lighting Control	HDMI2.1	USB Type-C PD3.1	AR & VR

Reference Design Platform

8051 / M0 / M23 / M4 / M7 / Arm9 / A35 based Microcontroller

NuMicro® Microcontroller Platform

※ All trademarks are the property of their respective owners.

To better understand customers' opinions regarding the services provided by Nuvoton, the Quality Assurance unit regularly collects feedback from customers on new product marketing/sales, delivery, quality improvement, technical support, and customer service through Nuvoton's annual Customer Satisfaction Survey (CSS). To facilitate effective communication with customers, after analyzing the results, Nuvoton convenes relevant units such as business departments, sales departments, research and development departments, and production management departments to formulate improvement plans based on customer feedback within one month, and responds to customers accordingly. The Quality Assurance unit also reports the analysis results to the management team as a basis for future resource allocation and improving customer satisfaction.

Research and Design

- Depth and Breadth of Product Line
- Development Cycle
- Sample Verification
- Technical Support
- Hazardous Substance Management
- Research and Design Team
- Professionalism

Production (Logistics)

- Order Acceptance
- On-Time Delivery
- Delivery Cycle
- Packaging

Quality and Improvement

- Product Quality and Yield
- Corrective and Preventive Measures

Customer Service

- Professionalism of Sales Staff
- Expertise of Technical Staff
- New Product Promotion
- Order Management
- Adaptability

Value Chain

- Business Model
- Competitive Advantage
- Intellectual Property Protection
- Corporate Social Responsibility
- Partnership Relations

Overall Satisfaction

- Corporate level

Importance of Each Factor	The rating ranges from moderately important (6 points) to extremely important (10 points). Since Nuvoton considers all factors to be important, there are no options for 1 to 5 points.

The content of Nuvoton's Customer Satisfaction Survey is divided into five main themes: research and design, production (logistics), quality and improvement, customer service, and value chain. Its content includes aspects such as new product marketing/sales, delivery, quality improvement, technical support, customer service, and corporate image. Customers are also asked to rate the importance of each factor to facilitate sorting of the analysis results.

Nuvoton analyzes the results of the Customer Satisfaction Survey using the Importance and Performance Matrix (IPM) to identify areas that customers consider important but where there is still room for improvement in performance. This helps company executives decide on the allocation of limited resources. The results are presented in a quadrant visual representation, making it easier for stakeholders to read and understand.

Results of Customer Satisfaction Surveys

In December 2023, an external agency was commissioned to conduct the annual Nuvoton Customer Satisfaction Survey for the year 2023. The survey targeted customers accounting for the top 70% of total sales. A total of 66 customer satisfaction questionnaires were sent out, with 58 responses received, yielding an 88% response rate. Across the five major themes of Research and Development, Production (Logistics), Quality and Improvement, Customer Service, and Value Chain, the overall average satisfaction score was 8.85 out of 10.

Compared to 2022, measures were taken to control the development schedule, resulting in improved satisfaction with new product development projects in 2023.

Score range (out of 10), from lowest to highest: Extremely Dissatisfied, Dissatisfied, Neutral, Satisfied, Extremely Satisfied.

CH4
Environmental Sustainability

4.1 Climate Change

4.2 Greenhouse Gas Management

4.3 Energy Resources Management and Circular Economy

4.3.1 Energy Management

4.3.2 Water Resources Management

4.3.3 Circular Economy

4.4 Air Pollution Control

4.5 Hazardous Substances Management

4.5.1 Safety protection of chemical supply systems

4.5.2 Key Chemical Raw Materials

Material topic: Greenhouse Gas Emissions[1]

Policy and Commitment	2023 Goals		Future Goals[2]			Specific Actions
	Goal Description	Achievement Status	Short-term 2024	Mid-term 2025	Long-term 2030	
· Focus on green product development, promote green production, increase the use of renewable energy, actively reduce energy consumption and process greenhouse gas emissions, and commit to achieving net zero emissions by 2050.	**Nuvoton Taiwan** 1. Implement energy-saving and carbon-reduction projects to continuously reduce greenhouse gas emissions by 20% compared to 2022. 2. Install equipment to reduce fluorinated gas emissions—reduce fluorinated gas by 45% compared to the previous year. **Nuvoton Japan** · Reduce greenhouse gas emissions by 40% compared to the base year (2020).	**Nuvoton Taiwan** All goals achieved 1. Reduce greenhouse gas emissions by 25%[3] 2. Reduce fluorinated gas emissions by 48% compared to the previous year. **Nuvoton Japan** All goals achieved · Reduce greenhouse gas emissions by 41%.	**Nuvoton** · Reduce by 40%. **Nuvoton Taiwan** · 2 additional fluorinated gas reduction units are planned for the process, aiming to achieve a 60% annual reduction compared to the baseline year. · Update chiller hardware and use AI technology to intelligently control the air conditioning system to achieve energy savings. **Nuvoton Japan** · Develop a plan for the introduction of solar power generation.	**Nuvoton** · Reduce by 45% **Nuvoton Japan** · Introduce solar power generation	**Nuvoton** 1. Reduce by 50% 2. Achieve net zero emissions by 2050 as a long-term reduction goal.	**Nuvoton Taiwan** · Purchase energy-saving and carbon-reduction equipment to reduce greenhouse gas emissions. **Nuvoton Japan** · Choose energy-saving equipment when updating equipment to reduce greenhouse gas emissions. · Optimize the output of the cogeneration plant system[4] to reduce CO_2 emissions. · Stop low-operation production lines.

Material topic: Energy Resource Use and Consumption

Policy and Commitment	2023 Goals		Future Goals[5]			Specific Actions
	Goal Description	Achievement Status	Short-term 2024	Mid-term 2025	Long-term 2030	
Nuvoton's energy management policy focuses on four main aspects: · Comply with energy-related laws and regulations, with all employees participating in energy saving and carbon reduction, and strengthen management to reduce energy consumption. · Implement an energy management system, conduct regular management reviews, and continuously improve energy performance. · Launch digital transformation plans, introduce smart manufacturing systems, and optimize energy smart integration. · Support the procurement of energy-saving products, continuously improve equipment efficiency, and strive to achieve energy-saving goals.	**Nuvoton Taiwan** 1. Complete power-saving projects: 1% annual power savings compared to the previous year (2022). 2. Complete the installation of solar equipment to reach 8% of the contracted capacity. 3. Complete the establishment of the ISO 50001 system.	**Nuvoton Taiwan** All goals achieved · with power-saving projects set: 1.8% annual reduction compared to the previous year (2022). · Completed the installation of solar equipment to reach 8% of the contracted capacity. · Completed the establishment of the ISO 50001 system.	**Nuvoton Taiwan** · Reduce electricity consumption by 2% compared to 2023.	**Nuvoton Taiwan** · Reduce electricity consumption by 5% compared to the base year (2020).	**Nuvoton Taiwan** · Reduce electricity consumption by 10% compared to the base year (2020).	**Nuvoton Taiwan** Nuvoton Taiwan(See section 4.3 Energy Resource Management and Circular Economy for details.) · Install green energy equipment. · Establish an energy management system. · Optimize system load reduction. · Choose energy-efficient equipment when replacing old ones.
	Nuvoton Japan · Average annual energy resource usage intensity reduced by 1% compared to the previous year.	**Nuvoton Japan** All goals achieved · Achieved by stopping the production line of Building C in Uozu and reducing the power generation of the cogeneration system in Nagaokakyo.	**Nuvoton Japan** · Average annual energy resource usage intensity reduced by 1% compared to the previous year.	**Nuvoton Japan** · Average annual energy resource usage intensity reduced by 1% compared to the previous year.	**Nuvoton Japan** · Reduce average annual energy resource usage intensity by 1% compared to the previous year within five years from 2025.	**Nuvoton Japan** · Establish and manage energy-saving themes and progress. · Conduct monthly performance evaluations based on the annual energy plan.

1 This material topic pertains to greenhouse gas emissions in Scope 1 and Scope 2.

2 The base year is 2020.

3 According to Taiwan government regulations, the 2023 GHG emission inventory data is based on IPCC 2006/AR5, compared to the 2022 GHG emission inventory standard (IPCC 2006/AR4). According to these standards, the GHG emissions in 2022 were 72,125 tons of CO_2e, while in 2023, they were 54,244 tons of CO_2e, a reduction of 25% (including only Scope 1 and Scope 2).

4 Private power generation facilities using city gas as a heat source, providing both electricity and heat.

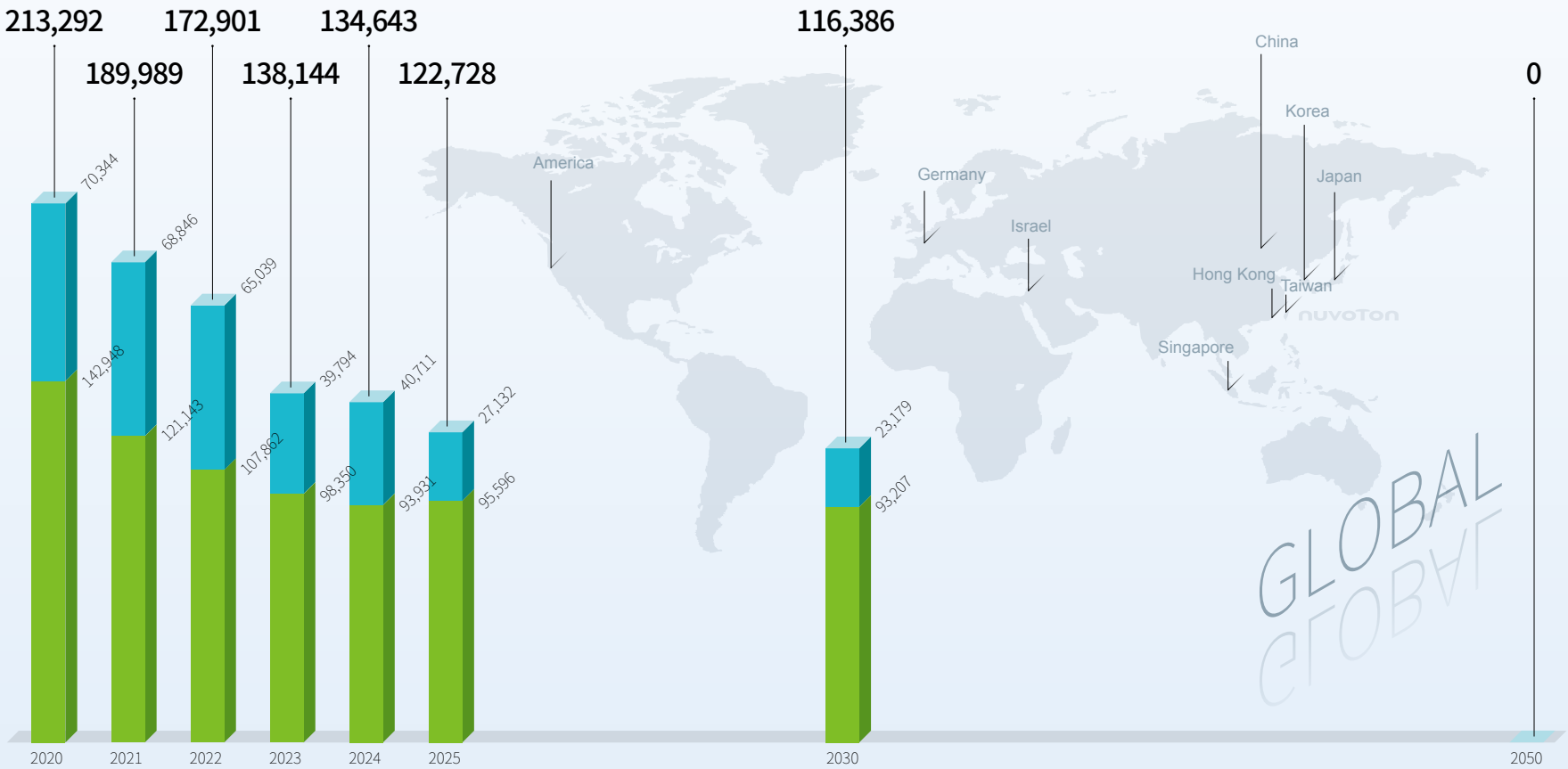
5 The base year is 2020.

Material topic: Climate Change						
Policy and Commitment	2023 Goals		Future Goals[1]			Specific Actions
	Goal Description	Achievement Status	Short-term 2024 · · · ·	Mid-term 2025 · · · ·	Long-term 2030	
· Nuvoton is committed to reducing greenhouse gas emissions and increasing the proportion of renewable energy. The company has adopted the risk management methods recommended by the Task Force on Climate-related Financial Disclosures (TCFD), focusing on four core elements: "Governance," "Strategy," "Risk Management," and "Metrics and Targets." This approach helps identify significant risks and opportunities related to operations, promoting various climate change mitigation and adaptation actions to continuously reduce risks, enhance resilience, and create sustainable development opportunities.	**Nuvoton Taiwan** 1. Implement water-saving initiatives[2] to reduce water usage by 1% annually compared to the previous year. 2. Implement energy-saving and carbon-reduction projects to continuously reduce greenhouse gas emissions[3] by 20% compared to 2022. 3. Establish a carbon inventory platform to monitor the carbon emission status of each machine in real-time.	**Nuvoton Taiwan** All goals achieved 1. Implement water-saving initiatives to achieve a 2.8% annual reduction in water usage compared to the previous year. 2. Implement energy-saving and carbon-reduction projects to continuously reduce greenhouse gas emissions by 25% compared to 2022. 3. Complete the Power BI inventory platform to monitor the carbon emission status of each machine in real-time	**Nuvoton Taiwan** 1. Promote water reduction initiatives - achieve a 2.7% annual reduction in water usage compared to 2023. 2. Install equipment to reduce fluorinated gas emissions - achieve a 16% annual reduction in fluorinated gas emissions compared to 2023. 3. Establish a carbon accounting system - formulate the 2024 plan and propose business requirements.	**Nuvoton Taiwan** 1. Complete risk assessments for operational sites reaching 100%. 2. Install equipment to reduce fluorinated gas emissions - achieve a 60% reduction in process fluorinated gases compared to the base year by 2025. 3. Establish a carbon accounting system - complete the setup by 2025.	**Nuvoton Taiwan** 1. Promote water reduction initiatives - reduce water usage by 10% compared to the base year by 2030. 2. Install equipment to reduce fluorinated gas emissions - achieve a 70% reduction in process fluorinated gases compared to the base year by 2030. 3. Establish a carbon accounting system - use carbon accounting to determine internal product carbon quantification by 2030.	**Nuvoton Taiwan** · Promote integration (Nuvoton Taiwan/ Nuvoton Japan) meetings (see section 4.1 Climate Change). · Water and energy-saving measures (see section 4.3 Energy Resource Management and Circular Economy).
	Nuvoton Japan · Reduce greenhouse gas emissions by 40% compared to the base year.	**Nuvoton Japan** All goals achieved · Reduce greenhouse gas emissions by 41% compared to the base year.	**Nuvoton Japan** · Reduce greenhouse gas emissions by 46% compared to the base year (2020).	**Nuvoton Japan** · Reduce greenhouse gas emissions by 51% compared to the base year.	**Nuvoton Japan** · Reduce greenhouse gas emissions by 55% compared to the base year.	**Nuvoton Japan** · Choose energy-efficient equipment when updating equipment to reduce greenhouse gas emissions. · Optimize the output of the cogeneration plant system to reduce CO_2 emissions. · Stop low-operation production lines.

1 The base year is 2020.
2 Refers to the recycling of wastewater after the activation of filter materials in the pure water system.
3 Nuvoton Taiwan calculates greenhouse gas emissions: Before 2022, the IPCC 2006 AR4 version announced by Taiwan's Environmental Protection Administration was used; the 2023 emission factors use the IPCC 2006 AR5 version announced by the aforementioned public department in 2024, and after 2024, the IPCC 2019 AR5 version will be used for calculation.

Nuvoton (Global) Net Zero Carbon Reduction Roadmap (CO_2e)

Year	2020	2021	2022	2023	2024	2025	2030	2050
Scope 1	70,344	68,846	65,039	39,794	40,711	27,132	23,179	0
Scope 2	142,948	121,143	107,862	98,350	93,931	95,596	93,207	0
Scope 1&2	213,292	189,989	172,901	138,144	134,643	122,728	116,386	0



Note 1 This chart shows the emissions and estimated values for all subsidiaries consolidated in the financial statements of Nuvoton.
Note 2 The values for 2024-2050 are estimates.
Note 3 The calculation of greenhouse gas emissions is based on the operational control approach, using the formula: activity data × emission factor × GWP value. The GWP values for 2020-2022 are based on the IPCC 2006 AR4 version, for 2023 they are based on the IPCC 2006 AR5 version, and the estimated data for 2024-2030 are based on the IPCC 2019 AR5 version.

Nuvoton is committed to achieving net zero emissions by 2050 as an overall environmental goal. The company has established three major environmental protection strategies: "Cherish Resource Use," "Reduce Pollution Emissions," and "Develop Green Products." By promoting green production, increasing the proportion of renewable energy, improving energy performance, optimizing equipment efficiency, and reducing pollutant emissions, Nuvoton actively implements various greenhouse gas and energy resource reduction measures at its sites in Taiwan and abroad. To address the impacts of climate change, Nuvoton continues to identify significant potential and actual risks and opportunities posed by climate change to its operations and promote various climate change mitigation and adaptation projects.

01

- Recycle secondary wastewater to the cooling tower through the DI activated carbon system.
- Promote waste classification and reduction, increase the reuse rate of hazardous waste, and enhance waste recycling and reuse rates.
- Install additional recycling machines to increase the recycling volume of waste sulfuric acid.
- Install smart meters for high-energy-consuming equipment in wafer manufacturing plants.
- Prioritize the purchase of energy-saving products when replacing old equipment.
- Continue planning and implementing various energy-saving and carbon reduction projects.

02

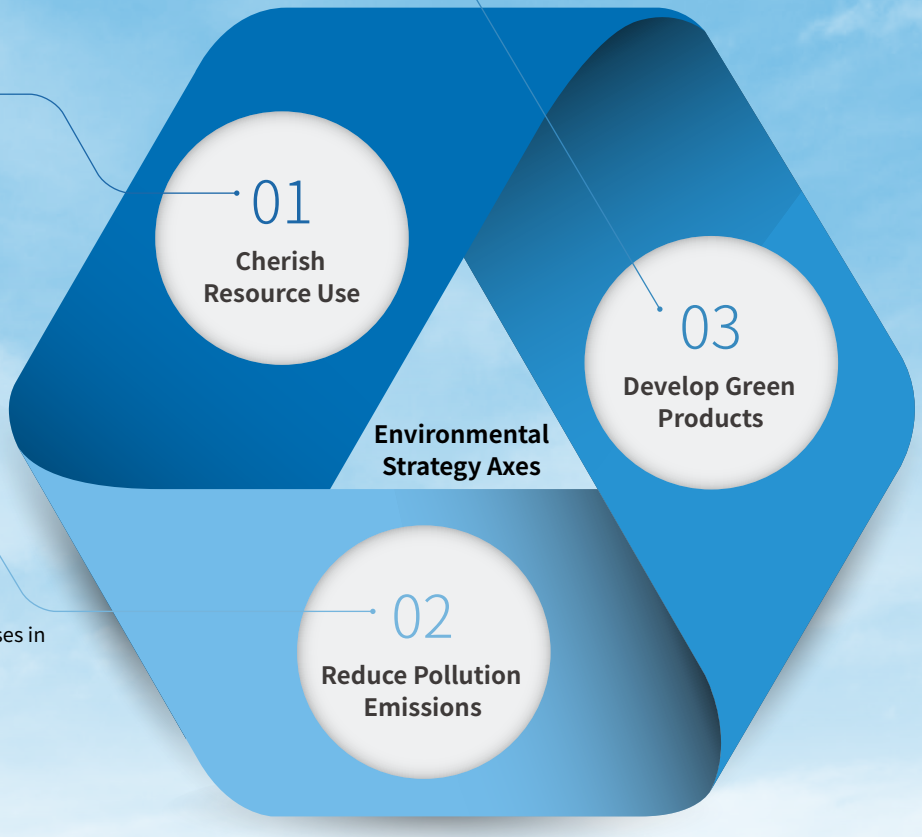
- Establish a carbon inventory platform to monitor the carbon emission status of each machine in real-time.
- Introduce smart manufacturing systems to optimize energy smart integration.
- Increase the installation rate of solar panels.
- Install equipment to reduce fluorinated gas emissions at the process end, with annual increases in reduction capacity.
- Enhance leak protection in chemical storage areas of warehouses.
- Continue planning and implementing various energy-saving and carbon reduction projects.

▲ Expansion of solar panels in the parking lot of the Yanshin Plant

▲ Installation of solar power systems in the plant area

03

- Adopt carbon reduction concepts in the product design phase, with volume or power consumption lower than the previous generation of products.
- Set overall carbon footprint reduction targets for green product production.



4.1 Climate Change

Environmental Management Policies and Goals

Nuvoton adopts "Cherish Resource Use," "Reduce Pollution Emissions," and "Develop Green Products" as the three main axes of its environmental protection strategy to gradually move towards a low-carbon transition. By taking concrete actions to mitigate environmental pollution risks in the production process and adhering to environmental regulations and relevant international standards, Nuvoton continues to fulfill its commitment to "becoming a sustainable green enterprise." Nuvoton has established an environmental management system (ISO 14001) to promote environmental management policies and has formed an environmental protection committee to regularly review issues of stakeholder concern, regulatory compliance, and continuous environmental improvement plans.

In addition, Nuvoton has established an occupational safety, health, and environmental protection committee, under which specific functional teams are formed to develop reduction targets and policies for major environmental issues and implement various energy-saving policies to achieve reduction goals. To address the challenges and opportunities brought by climate change, Nuvoton continuously operates its environmental safety and health management system with the spirit of P-D-C-A (Plan-Do-Check-Act) and deepens the disclosure of environmental phase goals and strategies to meet stakeholder expectations, with the long-term goal of achieving net zero emissions by 2050.

Starting in 2023, Nuvoton has been promoting communication meetings between Nuvoton Taiwan and Nuvoton Japan to integrate the consensus of Taiwan and Japan sites, including formulating common promotion goals and directions; sharing energy-saving and carbon-reduction solutions with each other to achieve global goals; and initiating carbon reduction inventory in the supply chain, requiring suppliers to conduct carbon inventories and reductions accordingly.

Biodiversity

Nuvoton has always placed great importance on biodiversity. All production sites and office locations worldwide are situated in government-permitted industrial development zones and are not established in any environmental conservation areas. This ensures that the natural ecosystem's original balance is not disturbed and that activities do not negatively impact the environment. At the same time, we strictly comply with environmental protection regulations, ensuring that wastewater, exhaust gases, and waste generated during production meet regulatory requirements. We actively participate in various environmental and ecological protection initiatives.

Specifically, in November 2023, Nuvoton Taiwan collaborated with the Wild Bird Society and organized 43 colleagues and their friends and family to gather at the Hengshan Citrus Orchard in Hsinchu County. This cooperation aimed to remove species that threaten biodiversity, such as Mikania micrantha, and restore the diversity of native aquatic plants.

The goal of this work is to protect the area's ecosystem and provide a suitable environment for biodiversity. Our volunteers actively participate in plant removal, plant protection, and environmental monitoring tasks to ensure the smooth progress and substantial results of the work.

Nuvoton continuously supports biodiversity and strives to reduce environmental impacts. These efforts not only demonstrate our company's commitment to ecological protection but also reflect our emphasis on biodiversity. Nuvoton will continue to collaborate with relevant organizations and actively participate in various environmental protection activities through exchanges between industry, government, academia, and research units. Nuvoton will also continue to evaluate various projects during forestry bureau activities and plan them accordingly, combining local design stages to reduce environmental footprints and impacts, contributing to a more eco-friendly Earth.

At the same time, we will continue to comply with environmental regulations to ensure that our company's activities do not negatively impact the environment, continuously practicing corporate social responsibility and striving to create a better future.

Three Major Environmental Protection Strategies and Actions in 2023

	Cherish Resource Use	Reduce Pollution Emissions	Develop Green Products
Actions	1. Recycle secondary wastewater from the DI activated carbon system to the cooling tower. 2. Increase the recycling volume of waste sulfuric acid and reduce the use of alkaline neutralizing agents in wastewater.	1. Install on-site combustion scrubbers to treat exhaust from 23 reaction chambers, reducing particulate matter concentration and fluorinated greenhouse gas emissions. 2. Increase the dedicated recovery of sulfuric acid etching machines by 2 units, reducing the discharge of waste sulfuric acid.	1. Implement green product design by adhering to carbon reduction concepts during the design phase. Set targets for volume (Die size or package size) or power consumption to be reduced compared to the previous generation of products to minimize environmental impact during production or end-use. 2. Additionally, set an overall carbon footprint reduction target for green product production: -38% (1.18 → 0.73) (kg CO_2/die).
Results	1. Recycle 300 tons of water per year. 2. Save 34.2 tons of alkaline neutralizing agents per year.	1. Reduce fluorinated process gas emissions by 25% compared to the previous year. 2. Reduce particulate matter emissions by 40%. 3. Reduce waste sulfuric acid emissions by approximately 17.1 tons per year.	1. Eight new product series released in 2023 have reduced volumes by up to 77%, achieving the overall carbon footprint reduction target for product production on schedule: -38% (1.18 → 0.73) (kg CO_2/die).

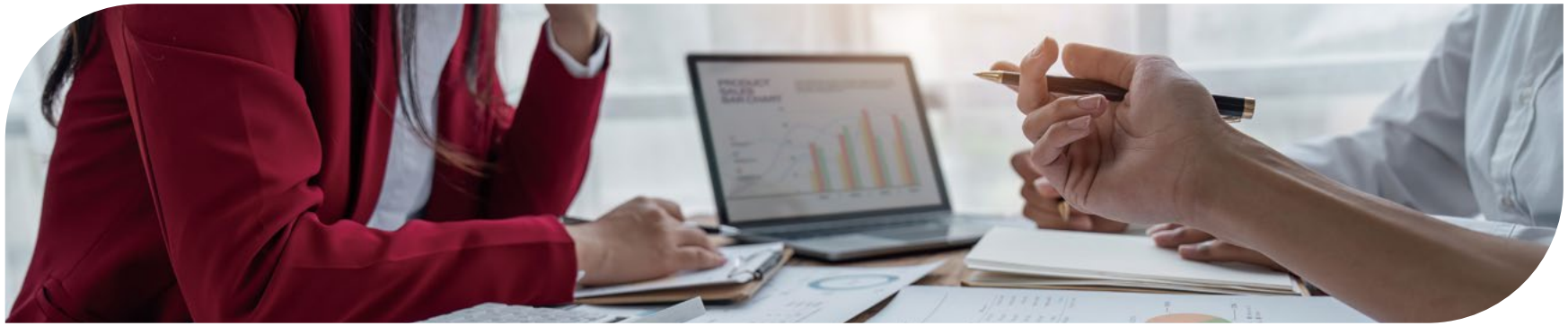
Nuvoton Taiwan 2023 Environmental Management Goals and Results

Item	Year 2022	Year 2023	2023 Reduction Target	2023 Actual Reduction
Electricity	72,294 mWh	71,853 mWh	1.0% / Year	Achieved 1.8% / Year
Greenhouse Gas(Scope 1 and 2)	72,112t-CO_2e	54,244t-CO_2e	20%	Achieved 25%
Waste Volume	813 tons per year, reuse rate 73%	727 tons per year, reuse rate 66%	Reuse rate 75%	Not achieved Note Reuse rate 66%, reduction of 86 tons
Total Water Withdrawal	414 million liters	402 million liters	1% per year	Achieved 2.8%/per year

Note Due to the upgrade of waste treatment equipment in 2023, the processing efficiency increased, leading to a rise in weight. As this waste was not reused, the reuse rate decreased.

Environmental Management System Implementation

管理系統	Year Implemented		External Verification Passed	Year Passed
ISO 14001 Environmental Management System	2008（Nuvoton Taiwan）	2009（Nuvoton Japan）	✓ Yes ○ No	2023
ISO 14064-1 Organizational Greenhouse Gas Emissions	2009（Nuvoton Taiwan）	Nuvoton Japan is expected to implement in 2024.	✓ Yes ○ No	2023
ISO 14067 Carbon Footprint Verification	2022（Nuvoton Taiwan）		✓ Yes ○ No	2022
ISO 45001 Occupational Health and Safety Management System	2008（Nuvoton Taiwan）	2009（Nuvoton Japan）	✓ Yes ○ No	2023
ISO 50001 Energy Management System	2023（Nuvoton Taiwan）	Nuvoton Japan is expected to implement in 2025.	✓ Yes ○ No	2023



Climate-Related Financial Disclosures

According to the 2023 Global Risks Report published by the World Economic Forum (WEF), extreme weather and climate action failure have been identified as mid- to long-term focal points. Since the Paris Agreement set the goal to limit global warming to 1.5 ° C, governments around the world have successively declared net-zero targets and actively formulated regulations to strengthen climate change responses. Addressing the impacts of climate change has become a global issue that requires joint efforts. Nuvoton understands the importance of the interactive impact of climate change on corporate sustainable operations and has adopted the risk management methods recommended by the Task Force on Climate-related Financial Disclosures (TCFD). This involves identifying significant risks and opportunities to operations based on the four core elements:"Governance," "Strategy," "Risk Management," and "Metrics and Targets." Nuvoton promotes various climate change mitigation and adaptation actions to continuously reduce risks, enhance resilience, and create opportunities for sustainable development.

STEP 1

Risk Identification

Every year, based on the climate risks and opportunities announced by the TCFD, and referencing climate-related risks and opportunities mentioned in peer sustainability reports while considering international trends, the company compiles climate risks and opportunities related to its operations and business.

STEP 2

Risk Assessment

Evaluate the impact of each climate risk and opportunity on the company's development strategy and finances, serving as the basis for judging the degree of financial impact on planning.

STEP 3

Risk Treatment

After identifying significant climate risks and opportunities, control measures will be formulated for these items to achieve a reduction in the likelihood of risk occurrence and the degree of impact on the company.

The types of response strategies the company adopts include:

1. Risk Avoidance: Cease activities that generate risk
2. Risk Reduction: Reduce the likelihood and impact of risk occurrence
3. Risk Transfer: Transfer the loss when the risk occurs
4. Risk Acceptance: Accept the loss when the risk occurs

STEP 4

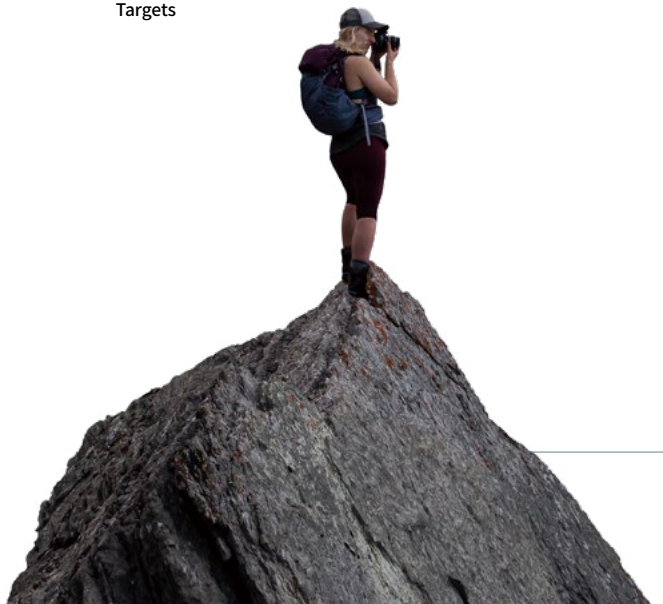
Risk Monitoring

The company compiles the results of risk identification, significant risks and opportunities judged by risk assessment, and the response strategies formulated by risk treatment, and reports them to the company's Sustainable Development Committee as the basis for formulating overall climate risk and opportunity policies, as well as for setting monitoring indicators and targets.

Nuvoton Climate Change Management Framework (TCFD)

Aspect	Strategy and Actions	2023 Implementation Status
Governance	· The board of directors is the highest supervisory unit for climate change management, responsible for reviewing annual risk management reports, implementation reports, and audit reports to ensure the effective implementation of climate-related risk management systems. · The Sustainable Development Committee is responsible for implementing and managing climate change risks and opportunities, reporting annually to the board of directors on corporate governance and sustainability operational risk issues (including climate change issues), risk assessments, and control measures. The board makes decisions on important issues. · The Finance Center is responsible for identifying and assessing climate change risks and opportunities, regularly organizing climate change discussion meetings, and convening the risk management team to identify physical risks, transition risks, and opportunities related to climate change. They guide the proposal of corresponding improvement measures and targets.	· The Sustainable Development Committee reports annually to the board of directors on company issues related to climate change, including carbon emissions, water resources, power supply risks, natural disasters, and regulations. · The chairman of the Sustainable Development Committee reports quarterly to the board of directors on greenhouse gas emissions, reduction measures in various scopes, and related environmental issues and activities.
Strategy	· Identify short-, mid-, and long-term climate-related risks and opportunities based on the TCFD framework (defining management periods: short-term is within 3 years, mid-term is 3-6 years, long-term is more than 6 years) · Actively develop solutions to reduce the operational and financial impacts caused by climate change, aiming to enhance organizational climate resilience · Introduce scenario analysis to understand the impact of climate change on Nuvoton	· Each unit identifies the results of climate risks and opportunities · Gradually introduce scenario analysis in 2023 to identify the impact of climate change on Nuvoton
Risk Management	· Identify climate change risks and opportunities following the TCFD framework · Plan and implement related response plans based on the results of climate risk identification · Incorporate climate risk identification and assessment into the company's risk management process	· Evaluate the financial qualitative impact of significant climate-related risks and opportunities identified by each unit · Use processes such as identification, assessment, treatment, and monitoring to manage potential climate risks

Aspect	Strategy and Actions	2023 Implementation Status
Metrics and Targets	· Set climate change-related management indicators · Disclose greenhouse gas emissions and assess impact · Set climate change management targets and review the achievement and performance of these targets	**In 2023, the following future targets for risks were set:**



Nuvoton Taiwan

- Promote water reduction: Reduce water usage by 10% by 2030 compared to the 2020 baseline year
- Install fluorinated gas reduction equipment: Reduce fluorinated gas emissions by 70% by 2030 compared to the 2020 baseline year
- Supplier greenhouse gas emission management: Establish and collect baseline greenhouse gas emissions and reduction targets from major suppliers, aiming for a 15% reduction by 2030 compared to the 2020 baseline year
- Use of natural gas boilers and local scrubbers for fluorinated gas treatment: Save energy, including 150,000 kWh/year, and install 2 natural gas fluorinated gas treatment units
- Increase energy-saving equipment: Replace energy-consuming motors, adjust production supply power (high-pressure air supply pressure), use LED lighting, etc., to reduce greenhouse gas emissions with a target of 1% annual reduction compared to 2022.
- Diverse energy use: Achieve 1% of total electricity consumption from solar power by 2024

Nuvoton

- Monitor government incentive policies: Continuously monitor government incentive policies and inform relevant departments of specific details to evaluate and utilize these incentives
- Digital transformation: Reduce labor costs for product development through digital transformation

Complete by 2025

- Establish a carbon accounting system: Create a carbon accounting system for each product through internal carbon emissions statistics and store sufficient carbon credits to achieve sustainable operations
- Increase energy-saving equipment: Including LED lighting to reduce greenhouse gas emissions, with a target of a 21.85% reduction based on the 2022 baseline year
- For more details, please refer to the TCFD report "Climate Change Related Metrics and Targets"

Climate Change Related Risk and Opportunity Identification Process

- To effectively manage climate-related risks and opportunities, the company's finance center includes climate change-related risks within the scope of overall corporate risk management tracking. This involves focusing on climate risks that may impact operations, including international regulatory norms and extreme weather events, estimating financial impacts and management costs, adjusting management mechanisms, and proposing response strategies to enhance the company's operational resilience.
- All departments jointly conduct climate risk assessments, comprehensively evaluating the potential impacts of related risks on operational processes. Through education and training, employees' awareness of global risk trends and climate change is enhanced, guiding them to identify potential climate-related risks and opportunities, and assess their likelihood, impact, and influence (for evaluation criteria, see the TCFD report).
- To establish a climate risk management mechanism and propose response strategies, the company convenes two meetings for consolidated risks and opportunities, attended by department supervisors or colleagues familiar with departmental business processes. They address high-risk and high-severity risks identified by each department and formulate appropriate management strategies (e.g., reduce, transfer, accept, or control).

01 Collection

- **Collect a list of climate change risks/opportunities**
  Identify relevant risks and opportunities through scenario simulations and internal and external information

02 Identification※

- **TCFD workshop Hold a TCFD workshop**
  Each department evaluates the climate change risk and opportunity factors with the greatest impact on their business
- **Summarize identification results**
  The finance center integrates climate change risk and opportunity factors related to each department's business

03 Materiality Identification

- **Climate change risk/opportunity matrix**
  Calculate the likelihood and impact of climate change risks and opportunities, and create a matrix

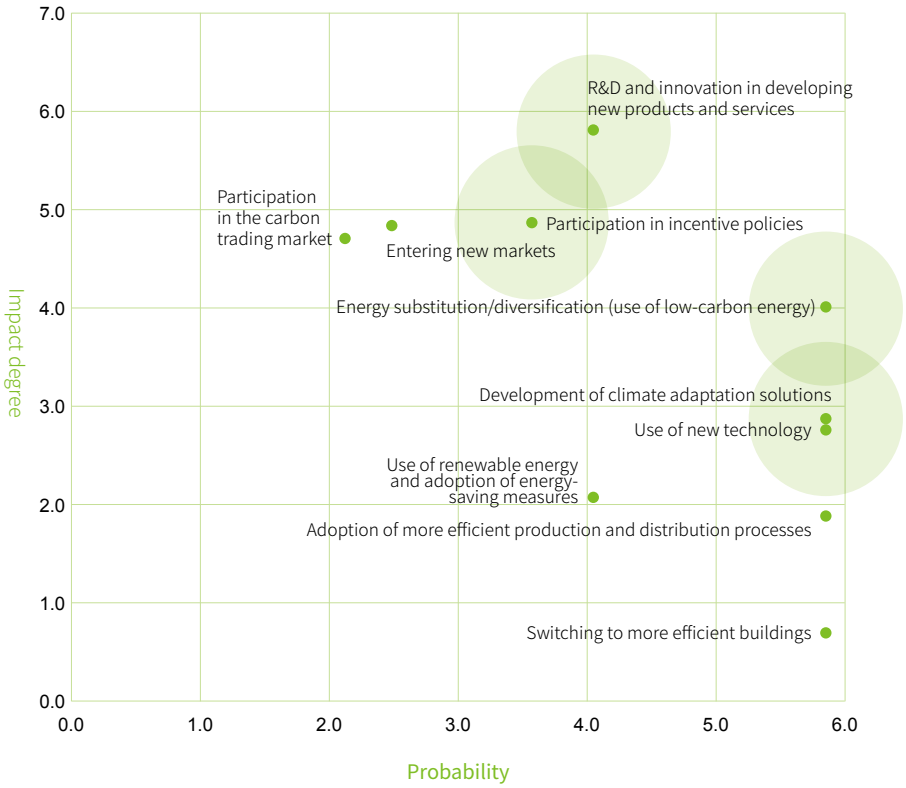
04 sponse Strategies and Financial Impact

- **Formulate response strategies**
  The responsible unit formulates strategies to respond to significant climate risks and opportunities
- **Calculate financial impact**
  The responsible unit calculates the financial impact and response costs of risks/opportunities
- **Set metrics and targets**
  The responsible unit sets corresponding metrics and targets to evaluate the implementation of related response strategies
- **Climate Change Management Policies and Related Work**
  The Sustainable Development Committee regularly tracks the implementation status and periodically reports to the board of directors as a reference for performance tracking.

※ Nuvoton follows the TCFD guidelines and references four climate change scenarios to identify climate-related risks and opportunities. Transition risks and opportunities use Taiwan's Nationally Determined Contribution (NDC) and IEA NZE 2050; physical risk scenarios are assessed using the global warming scenarios SSP 3-7.0 and SSP 5-8.5 from the IPCC Sixth Assessment Report to develop response strategies.

Climate Change Related Risk Matrix

Climate Change Related Opportunity Matrix



Identification and Response to Climate Risks and Opportunities

Nuvoton identifies climate risks/opportunities for regions (Taiwan and Japan), categorizing potential financial or operational impacts and formulating responses for each risk/opportunity.

Risk Aspects	Category	Risk Type	Occurrence Time※	Risk Description	Potential Financial or Operational Impact	Nuvoton Response
Transition Risks	Technology	Cost of transitioning to low-carbon technology	Short and Mid-term	Developing low-carbon products may increase R&D and production costs: additional R&D expenses are required to manufacture low-energy consumption products without reducing functionality; immature technology can lead to additional operational expenses. Differences in international energy-saving standards require product diversification, increasing operational costs. New technologies need process conversion, increasing costs for experiments, personnel training, and advanced equipment. If low-carbon products do not meet customer expectations, revenue may decrease. Low-carbon operations, such as using electric vehicles and energy-saving designs, also increase costs. Carbon taxes affect raw material costs, increasing operational expenses.	Increased operating costs Decreased revenue Increased expenses	Conduct market demand surveys to understand the market demand for low-carbon products, ensuring product design meets consumer preferences. Improve design and production efficiency through digital transformation and AI technology, while enhancing supply chain management to increase resilience. For capital allocation, as capital expenditures for low-carbon transitions increase, it may be necessary to adjust capital allocation or seek new financing plans. Response cost 166 million
	Policies and Regulations	Increase in greenhouse gas emission pricing	Short-term	Carbon taxes increase operating costs for enterprises, possibly requiring higher product prices, which can affect sales. In response to greenhouse gas policies, low-carbon raw materials and processes increase procurement costs. The global supply chain faces different climate policies in various countries, increasing supply chain uncertainty and risk.	Increased operating costs Decreased revenue	Increase investment in low-carbon equipment to reduce greenhouse gas emissions. At the same time, enhance supply chain resilience through diversification and sourcing alternative raw materials to reduce raw material cost risks, and establish stable supply chain relationships to withstand price fluctuations. Response cost 524 million
Physical Risks	Immediate	Increased severity of extreme weather events such as typhoons and droughts	Short-term	Drought-induced government water restrictions reduce factory capacity, leading to decreased revenue. Water-saving measures are needed, and production may be limited if insufficient. Alternative water sources or reuse may be necessary, increasing costs. Raw material supply is affected, increasing procurement costs. Limited water supply to the site may suspend services. Extreme weather damages machinery and equipment, increasing maintenance and operational costs. Supply chain disruptions affect revenue, and reputational damage may reduce customer trust and investment.	Increased direct costs Increased operating costs Decreased revenue Decreased opportunities to obtain capital	Enhance drought response capabilities: expand water storage and treatment facilities, strengthen supply chain management, regularly assess climate-vulnerable suppliers and improve their resilience. Increase operational resilience using climate monitoring technology for early warning, enhance building and infrastructure durability, and ensure business continuity. Response cost 296 million
	Long-term	Rising average temperatures	Short and Mid-term	Rising temperatures increase health and safety risks, such as heat stroke and infectious diseases, leading to higher labor costs and product price fluctuations. At the same time, high summer temperatures increase air conditioning electricity consumption, leading to higher operating costs.	Increased operating costs	Increase investment to improve the working environment and employee health and safety, and regularly assess global warming risks to optimize human resource management. Response cost 110 million

※ Definition of time frames: Short-term: 2024, Mid-term: 2025, Long-term: 2026-2030.

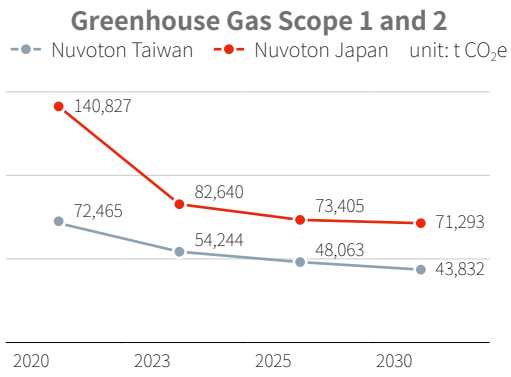
Risk Aspects	Category	Type	Occurrence Time	Opportunity Description	Potential Financial or Operational Impact	Nuvoton Response
Opportunities	Resilience	Energy Substitution/ Diversification	Short and Mid-term	Increase the use of diverse energy sources, such as solar and natural gas, to reduce operational interruption risks. Adopt low-carbon solutions to meet customers' low-carbon demands, enhance corporate image, and increase revenue. By establishing a low-carbon supply chain and adopting mature low-carbon technologies, reduce carbon emissions and related costs, increasing profitability.	Increased revenue Decreased operating costs Decreased business expenses	Install solar power systems and use natural gas equipment to reduce carbon emissions through diverse energy sources. Plan to increase the use of renewable energy and strengthen carbon management, including providing customers with carbon footprint reports and adding energy-saving devices. Achieve net-zero emissions through carbon reduction efforts and purchasing carbon offsets, increasing customer trust.
	Products and Services	R&D and Innovation in Developing New Products and Services	Short and Mid-term	Develop low-carbon products to enhance market competitiveness and revenue, meeting the increasing demand for energy-efficient and environmentally friendly products. Enter new markets, increase sales through the diversification of low-carbon products and technological innovation, and enhance corporate reputation and sustainability image. Additionally, the development of low-carbon technologies helps reduce production costs, especially in the automotive and industrial sectors.	Increased operating revenue Decreased operating costs	Increase investment in R&D and innovation, focusing on the development of low-carbon products and improving energy efficiency. Collaborate with suppliers to choose low-carbon raw materials, enhance the environmental standards of products and the supply chain, and meet market demand for low-carbon products. Increase the visibility of low-carbon products by expanding sales channels and strengthening marketing, adhering to sustainability principles, and enhancing brand image.
	Market	Participation in Incentive Policies	Mid-term	By reducing greenhouse gas emissions and promoting low-carbon products, the organization can receive government subsidies and tax incentives. Additionally, companies that meet climate change action standards are more likely to receive preferential financing from financial institutions, reducing financing costs while enhancing corporate image and reputation.	Reduced operating costs Increased opportunities to obtain capital	Continuously track and plan to apply for government incentive policies, formulate and implement carbon reduction targets and strategies. Conduct greenhouse gas inventories, communicate with stakeholders to reach consensus, and identify and manage sustainability risks, meeting financial institution assessment standards to strengthen sustainability management plans.
	Products and Services	Development of Climate Adaptation Solutions	Short and Mid-term	Strengthen operational and supply chain resilience by introducing business continuity plans (BCP/BCM), prioritizing the production of key products to ensure stable supply. This helps enhance customer trust and reputation, thereby increasing revenue. Additionally, systematically managing supplier and customer relationships further reduces operating costs.	Increased operating revenue Reduced operating costs	Establish BCP/BCM systems, select suppliers that meet standards, and increase development and evaluation costs. Introduce and obtain ISO14064 and ISO50001 certifications, increasing maintenance and IT construction costs, and investing necessary IT and human resources.

Climate Change Response Strategies

To address the risks and opportunities brought by extreme climate, Nuvoton, with the vision of "Invisible Champion enriching human life with green semiconductor technology," actively launches various carbon reduction actions and establishes greenhouse gas reduction targets within the group. The company has formed an energy-saving and emission reduction team to build a green low-carbon operating model and, through continuous technological innovation and R&D capabilities, enhance the green manufacturing process (green semiconductor technology) and improve green products. For more details, please refer to the TCFD report "3. Climate Change Response Strategies."

Net Zero Path

Nuvoton Taiwan and Japan have set reduction targets for Scope 1 and Scope 2 greenhouse gas emissions. For Nuvoton Taiwan, the total Scope 1 and Scope 2 emissions are to be reduced to 48,063 t CO_2e by 2025 and 43,832 t CO_2e by 2030. For Nuvoton Japan, the total emissions are to be reduced to 68,683 t CO_2e by 2025 and 65,792 t CO_2e by 2030.



Strategic Axes

Description (For detailed content, please refer to the strategy section of the TCFD report)

Green Products

From design, production, transportation, and usage to disposal stages, Nuvoton is committed to creating environmentally friendly green products through corresponding actions. For details, please refer to 2.2 Green Manufacturing "Development of Green Products."

Low-Carbon R&D and Investment

Nuvoton continues to invest in advanced processes, significantly reducing chip size through process improvement, enhancing resource utilization, and reducing energy consumption and greenhouse gas emissions, thereby lowering the overall carbon footprint of products. The following targets are set:
Short-term: Compared to 2023, the number of products using advanced processes in 2024 will increase by more than 50%
Mid-term: Compared to 2023, the number of products using advanced processes in 2025 will increase by more than 60%

Carbon Reduction Strategy

Green Manufacturing Process: Install equipment that effectively handles greenhouse gases and develop renewable energy
Green Operations: Introduce carbon pricing, improve energy efficiency, and reduce supplier carbon emissions
Green Products: Develop sustainable products and miniaturize chip sizes

Green Product Carbon Footprint

To enhance the recognition of low-carbon products and services, Nuvoton calculates the carbon footprint of green products (CFP) based on ISO 14067, reducing the environmental impact of green products. This approach aims to mitigate climate change by reducing greenhouse gas emissions while increasing corporate revenue growth. In 2023, the total reduction in the carbon footprint of green products was -38% (1.18 → 0.73) (kg CO_2/die).

4.2 Greenhouse Gas Management

Nuvoton, based on its safety, health, and environmental policy, continues to promote the reduction of energy resource usage and carbon reduction measures. Following the introduction of carbon fees, this will further enhance the economic benefit estimates of related carbon reduction efforts. In the future, Nuvoton will evaluate setting an internal carbon pricing better than carbon fees to improve the feasibility of implementing carbon reduction measures. Nuvoton commits to reducing global Scope 1 greenhouse gas emissions by 73% by 2025 and by 77% by 2030 compared to 2020 levels.

In 2023, Nuvoton implemented several measures to reduce greenhouse gas emissions (corresponding power-saving measures are detailed in 4.3.1 Energy Management). Consequently, according to third-party verification, the total Scope 1 and Scope 2 greenhouse gas emissions for Nuvoton in 2023 were 138,144 t-CO_2e, a reduction of 35,728 t-CO_2e (20.5%) compared to 2022. The total Scope 1 emissions in 2023 were 39,794 t-CO_2e; the total Scope 2 emissions were 98,350 t-CO_2e; the total Scope 3 emissions were 724,911 t-CO_2e (for other data, see Appendix I, Environmental Data, and Appendix VI, TWSE/TPEx-Listed Companies Climate-related Information).

	2022	2023	compared to the previous year
Scope 1	65,039	39,794	38.8%
Scope 2	108,820	98,350	9.6%
Total	**173,859**	**138,144**	**20.5%**
Scope 3	N/A	724,911	N/A

Nuvoton Taiwan

Since 2009, Nuvoton Taiwan has established a greenhouse gas inventory mechanism by following ISO 14064-1 greenhouse gas inventory standards and the "Guidelines for Greenhouse Gas Emission Verification and Registration" issued by the Environmental Protection Administration. The company regularly inventories Scope 1 and Scope 2 emissions within the wafer fab and obtains verification from third-party verification agencies.

Nuvoton Japan

Since 2023, Nuvoton Japan has also obtained third-party verification following ISO 14064-1 standards, similar to Nuvoton Taiwan, to ensure the credibility and quality of inventory data and reports.

Carbon Reduction Action

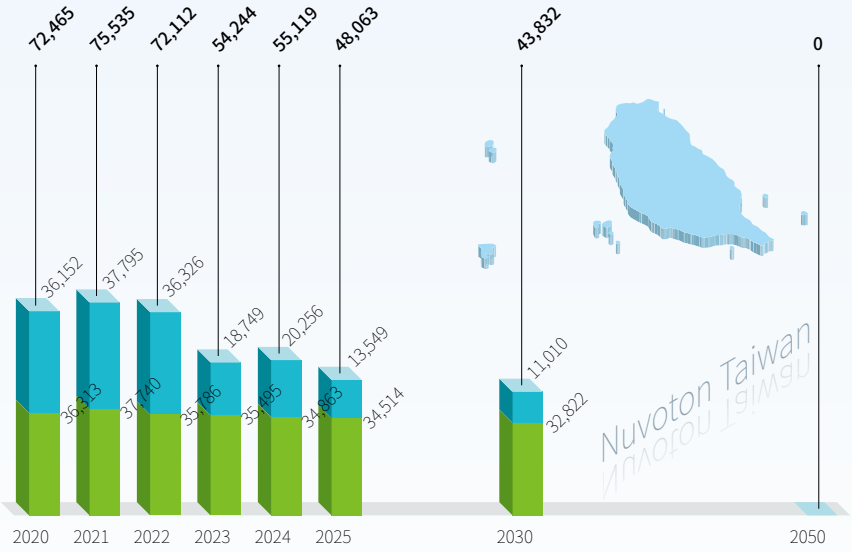
	Nuvoton Taiwan	Nuvoton Japan
Scope 1	Since the emissions from process gases at Nuvoton Taiwan account for more than 90% of the carbon emissions in this scope, reducing greenhouse gas emissions from processes is set as the main reduction target. The primary reduction strategy has evolved from substituting process gases for process optimization in the early stages to installing fluorinated gas reduction equipment at the process end in the current stage. In 2023, Nuvoton Taiwan completed the installation and formal operation of three pieces of fluorinated gas reduction equipment at the process end, improving the efficiency of the reduction equipment and planning to increase the number of units annually.	In 2023, reduced Scope 1 emissions by 27% through the cessation of production at the Uozu Plant C Building, reducing the output of the Nagaokakyo cogeneration plant, and upgrading the cooling units at the Arai plant from absorption to turbine.
Scope 2	In 2023, there was a reduction of approximately 290 t-CO_2e compared to 2022. Additionally, Nuvoton continues to monitor greenhouse gas emissions throughout the product life cycle and conducts product carbon footprint inventories to track greenhouse gas emissions from raw materials and production stages.	All plants adopted LED lighting and energy-saving equipment or designs, resulting in a 14% reduction in Scope 2 emissions that year.

Nuvoton Taiwan Net Zero Carbon Reduction Roadmap								
Year	2020	2021	2022	2023	2024	2025	2030	2050
Scope 1	36,152	37,795	36,326	18,749	20,256	13,549	11,010	0
Scope 2	36,313	37,740	35,786	35,495	34,863	34,514	32,822	0
Scope 1&2	72,465	75,535	72,112	54,244	55,119	48,063	43,832	0

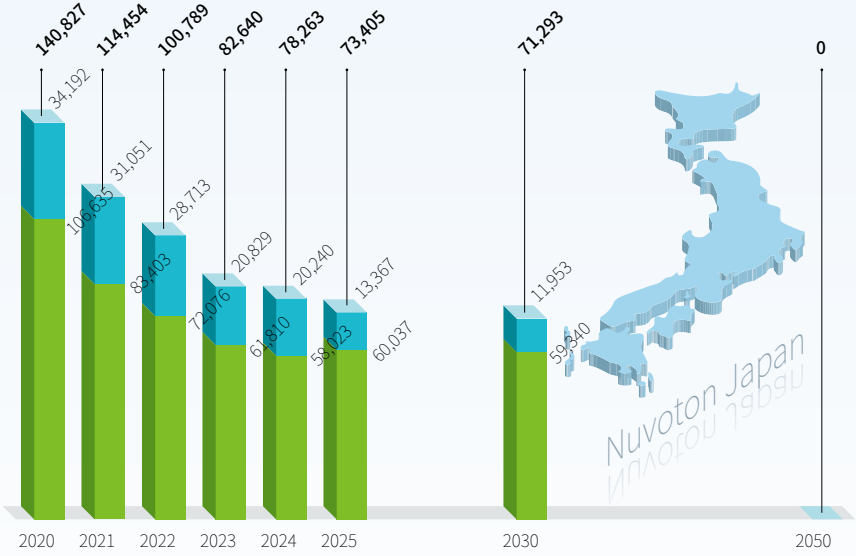
Nuvoton Japan Net Zero Carbon Reduction Roadmap								
Year	2020	2021	2022	2023	2024	2025	2030	2050
Scope 1	34,192	31,051	28,713	20,829	20,240	13,367	11,953	0
Scope 2	106,635	83,403	72,076	61,810	58,023	60,037	59,340	0
Scope 1&2	140,827	114,454	100,789	82,640	78,263	73,405	71,293	0

Scope 3 emission sources by category in 2023		
Emission sources	Nuvoton Taiwan emissions (tCO_2e)	Nuvoton Japan emissions (tCO_2e)
Purchased goods and services	85,493	450,932
Capital goods	3,015	11,151
Fuel- and energy-related activities (Not included in activities covered by the G4-EN3 indicator)	7,134	13,426
Upstream transportation and distribution	158	1,425
Waste generated in operations	103	45
Business travel	244	643
Employee commuting	496	433
Downstream transportation and distribution	1,068	155
Downstream leased assets	Not applicable	147,730
Investments	1,261	Not applicable
Subtotal	**98,972**	**625,940**
Total		**724,911**

Nuvoton Taiwan Net Zero Carbon Reduction Roadmap



Nuvoton Japan Net Zero Carbon Reduction Roadmap



Scope 1 Scope 2

Note 1 The calculation of greenhouse gas emissions is based on the operational control approach, using the formula: activity data * emission factor * GWP value. The GWP values for 2020-2022 are based on the IPCC 2006 AR4 version, for 2023 they are based on the IPCC 2006 AR5 version, and the estimated data for 2024-2030 are based on the IPCC 2019 AR5 version.

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4.3 Energy Resource Management and Circular Economy

4.3.1 Energy Management

Electricity is the main source of energy consumption for Nuvoton. In 2023, renewable energy accounted for 0.17% of the total energy types used by Nuvoton Taiwan, and purchased electricity accounted for 96.39%※. To this end, through the P-D-C-A (Plan-Do-Check-Action) mechanism, Nuvoton aims to increase energy use efficiency and raise the proportion of renewable energy use. Various energy-saving and carbon-reduction projects have been actively launched, and the energy management system has been implemented. In 2022, the ISO 50001 energy management system was introduced and certified in 2023. Additionally, a digital transformation plan was initiated, introducing smart manufacturing systems to optimize energy smart integration; Nuvoton continues to support the procurement of energy-saving products and optimize equipment efficiency to achieve energy-saving goals.

In 2023, Nuvoton Taiwan's energy reduction ratio decreased by 0.1% compared to the baseline year (2020), while Nuvoton Japan achieved a significant energy reduction ratio over the past three years, with a 26% decrease in 2023 compared to the baseline year (2020).

In 2023, energy-saving measures were undertaken in four main areas:

Install green energy equipment
Establish a solar power system, expected to generate 880,000 kWh/year

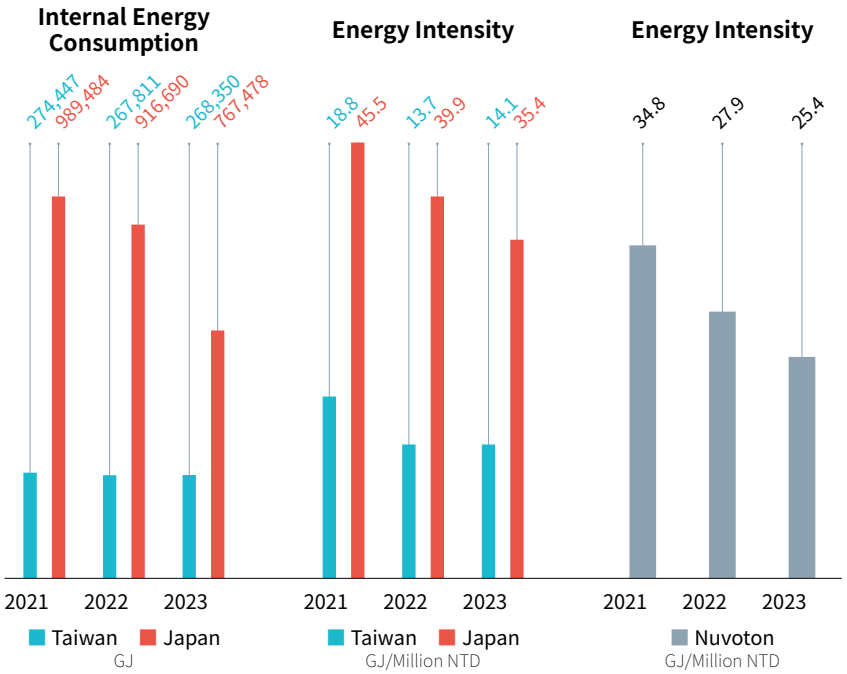
Establish an energy management system
Obtain ISO 50001 certification

System supply load optimization
Optimize HPA supply pressure (8.4 → 7.8 kgf/cm²), saving 182,000 kWh/year

Prioritize energy-saving equipment when replacing old equipment

※ In 2023, the types of energy used by Nuvoton Taiwan included purchased electricity, gasoline, diesel, natural gas, and renewable energy, totaling 268,350 GJ. Of this, renewable energy accounted for 447 GJ, with purchased electricity being the majority at 258,670 GJ.

Nuvoton Internal Energy Consumption and Energy Intensity



Nuvoton 2023 Energy-saving and carbon reduction projects promoted

Item	2023 Target	2023 Actual Results	Future Goals
Solar renewable energy.	In 2023, 8% of the contracted capacity for renewable energy was completed (annual production of 880,000 kWh).	Starting in Q4 2023, regional power generation began, with a total of 120,000 kWh generated in 2023.	Evaluating the addition of solar panels in the parking lot of the Tainan office.

Nuvoton 2023 Energy Saving Results[1]

	Electricity Saving (kWh/year)	Energy Saving (GJ/year)
Solar Power Installation	880,000	3,168
Update High Vacuum Unit 1 to Variable Frequency Machine	87,600	315
Optimize HPA Supply Pressure (8.4 → 7.8 kgf/cm²)	182,500	657
Replace Scrubber Fan with Energy-Saving Motor	10,000	36
Replace P5000, Lam Units with Energy-Saving Pumps12 Units	112,500	408
Replace LP-P with 2 Energy-Saving Pumps	30,000	108
Change Hsinchu Plant Sign Projector Lights and Landscape Lights to LED	1,906	7
Change Explosion-Proof Lights to LED	25,000	90

Total electricity saving

1,329,506

kWh/year

Total energy saving

4,786

GJ/year

Nuvoton Japan 2023 Energy Saving Results

(Including Nagaokakyo, Uozu, Arai Plants)

- Nagaokakyo, Uozu: Use LED Lighting
- Arai: Equip North and South Chilled Water Secondary Pumps in C Building with High-Efficiency Motors, Stop Existing Heat Source Building Absorption Chillers, Cease Operation of Existing Heat Source Building Absorption Chillers, Switch to LED Lighting, Use Air Conditioning Timers in Facility Offices

Total electricity saving

1,953,052

kWh/year

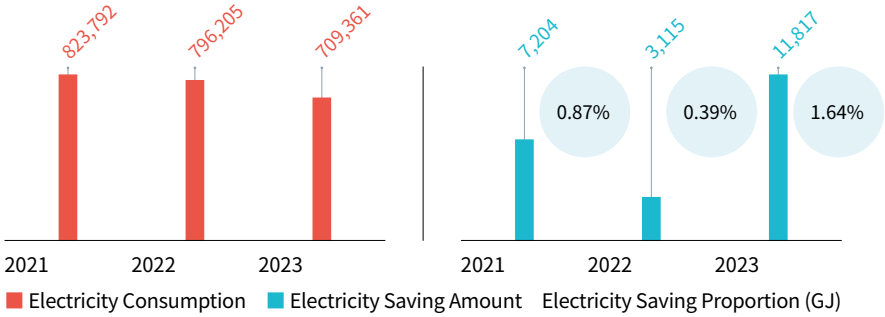
Total energy saving

7,031

GJ/year

1 Energy saving is calculated at 3.6×10-3 GJ per kWh.

Electricity Saving Amount and Proportion Over the Past Three Years[2]

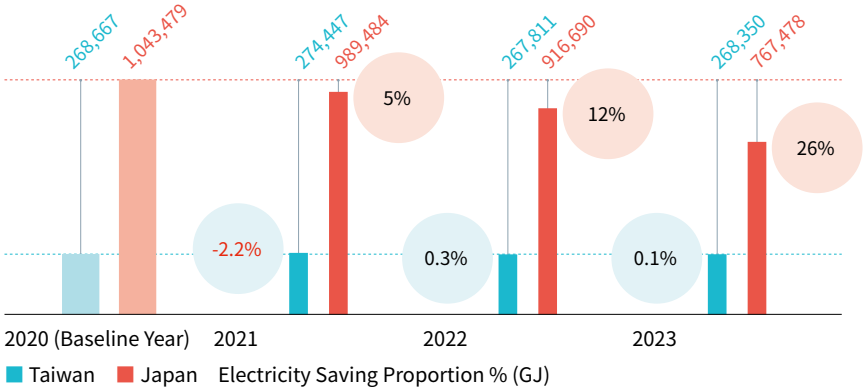


2 The scope includes Nuvoton Taiwan and Nuvoton Japan. Annual electricity saving rate = annual electricity saving amount / (annual electricity saving amount + annual electricity consumption) * 100%

Mid- and Long-Term Energy Saving and Carbon Reduction Targets and Planned Corresponding Actions

Strategy and Content	Mid-Term Target (2025)	Long-Term Target (2030)
Use of Renewable Energy	Solar power generation of 880,000 kWh/year	Continue to evaluate potential sites for installation
Improve Energy Use Efficiency	Achieve a cumulative energy-saving rate of 5% compared to the baseline year (2020)	Achieve a cumulative energy-saving rate of 10% compared to the baseline year (2020)

Total Internal Energy Consumption and Reduction Proportion[3]



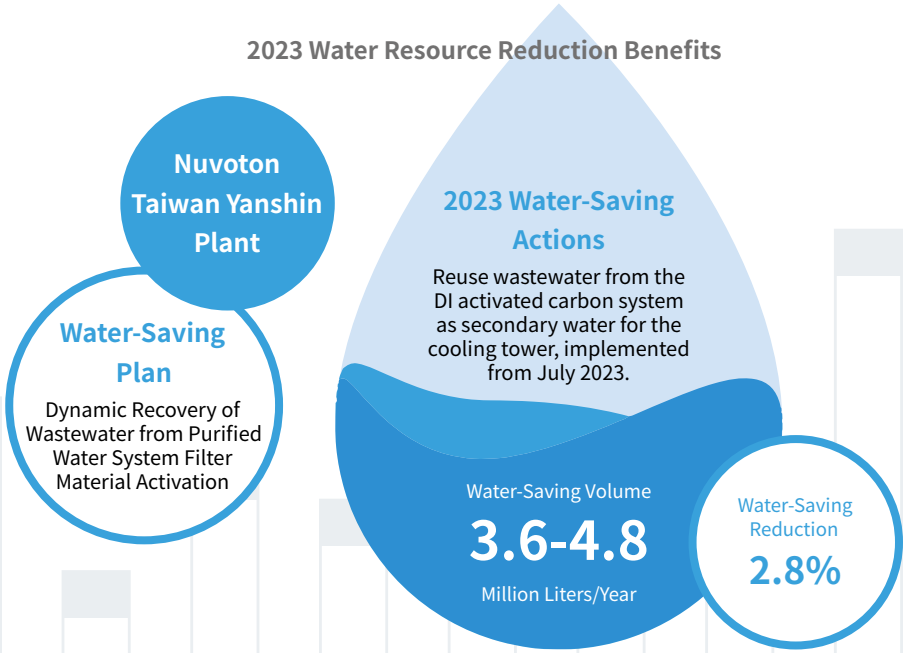
3 The reduction proportions for each year are compared to the baseline year of 2020.

4.3.2 Water Resource Management

In 2023, the distribution of water sources for Nuvoton's water usage was 86% from municipal water supplied by the water company, and 14% from recycled rainwater and air conditioning condensate as secondary water. For Nuvoton Japan, the sources were 0.6% from municipal water, 1.0% from industrial water, and 98.0% from groundwater. The two main strategies for saving water are to prioritize reducing usage at the source and recycling usage at the end to reduce water resource consumption.

Nuvoton sets annual water usage targets and promotes related plans, regularly reviewing progress and benefits, and analyzing and improving items that do not meet targets. Regarding upstream impacts, Nuvoton Taiwan regularly inspects reservoir conditions monthly, and when the effective water volume falls to the warning level, an external water source search procedure will be initiated. Regarding downstream impacts, Nuvoton Taiwan constantly monitors the standards of the Science and Technology Management Bureau, continuously monitoring related discharge data within the plant, and the management bureau regularly dispatches personnel for water sampling audits to ensure that discharged wastewater meets requirements. Nuvoton Taiwan cooperated with government policies to implement water-saving measures, achieving a 2.8% reduction in water usage in 2023 compared to the previous year.

2023 Water Resource Reduction Benefits



Nuvoton Taiwan cooperated with government policies to implement water-saving measures, achieving a 2.8% annual reduction benefit in 2023 compared to the previous year.

Nuvoton Taiwan's main production and operation site is located in the Hsinchu Science Park, with water sourced from the Baoshan Reservoir in Hsinchu. According to the "Aqueduct Water Risk Atlas" from the World Resources Institute, the total withdrawal and consumption percentages from areas with high or extremely high baseline water stress are zero, with no use of groundwater or seawater, indicating a low potential impact on local water use. The industrial and domestic wastewater generated by enterprises in the park is collected via sewer systems and sent to the park's wastewater treatment plant. After treatment, the water quality exceeds national discharge standards and is released through dedicated pipes into the Keya River, with no impact on the ecological environment and water quality.

In 2023, Nuvoton's total water withdrawal was 7,886 million liters; the total discharge volume was 3,637 million liters. All were reported in accordance with regulations, with no concerns about waste or wastewater leakage affecting the surrounding environment.

Wastewater primarily includes process wastewater and domestic wastewater. Process wastewater sources can be generally divided into cleaning, film formation, etching, development, and diffusion processes. Wastewater is categorized into acidic and alkaline wastewater, fluorinated wastewater, and grinding wastewater. Depending on their characteristics, treatments such as acid-base neutralization or adding calcium chloride to fluorinated wastewater, coagulation, and sedimentation are used to meet the standards for water pollution prevention measures. Regular biannual sampling and analysis confirm compliance before discharging into the Hsinchu Science Park wastewater treatment plant, which then discharges it into the Keya River. Domestic wastewater is directly discharged into the park's wastewater treatment plant through sewers.

Water Resource Usage

(For other water resource usage data, see Appendix I Environmental Data)

Discharge Water Bodies (Nuvoton Taiwan Yanshin Plant[1])	Unit	2020 (Baseline Year)	Year 2021	Year 2023	2023	Discharge Destination
Untreated (A)	Million Liters	20	17	15	15	Hsinchu Park Wastewater Treatment Plant
Secondary Treatment[2] (B)	Million Liters	298	302	297	302	Hsinchu Park Wastewater Treatment Plant
Third-Party Water[3]/Freshwater (A+B is the total discharge volume)	Million Liters	318	319	312	317	

Discharge Water Bodies (Nuvoton Japan)	Unit	2020 (Baseline Year)	Year 2021	Year 2023	2023	Discharge Destination
Untreated (A)	Million Liters	22	21	18	19	River Discharge (Side Ditch)
Secondary Treatment (B)	Million Liters	3,669	3,509	2,817	3,301	Sewer, River
Third-Party Water/Freshwater (A+B is the total discharge volume)	Million Liters	3,691	3,530	2,835	3,320	

To comply with the Science Park Administration's new inclusion item in 2021 - NMP concentration standards, Nuvoton Taiwan actively evaluated suitable methods. In 2022, the verification of new raw materials on products was completed, and in 2023, they were put into use, continuously monitoring the NMP in discharge water, achieving a 100% pass rate.

Nuvoton Taiwan 2023 Discharge Water Quality[4]

Discharge Water Components	Unit	Inclusion Standards	2022 First Half	2022 Second Half	2023 First Half	2023 Second Half
Suspended Solids	mg/L	300	6	12	4	3
Chemical Oxygen Demand (COD)	mg/L	500	74	32	26	34
Fluoride	mg/L	15	7	3	5	3
Ammonia	mg/L	50	10	6	10	8
Nitrate Nitrogen	mg/L	50	1	0.5	3	0.5

1 Nuvoton Taiwan Discharge Water Bodies Only Include Hsinchu Yanshin Plant.
2 Definition of Secondary Treatment: Remove residual, dissolved, or suspended components and substances in the water.
3 Third-party water refers to the Hsinchu Science Park Wastewater Treatment Plant.
4 This data only covers the Hsinchu Yanshin Plant. Due to different measurement units for inclusion standards in Taiwan and Japan.

4.3.3 Circular Economy

Nuvoton adheres to the "Safety, Health, and Environmental Policy" commitment and the goal of "not damaging the environment." The waste management strategy focuses on "minimizing waste treatment and maximizing resource recycling" by reducing waste at the source, enhancing waste recycling and reuse, and reducing the environmental burden of production.

IC design R&D and wafer foundry production components are provided to customers for assembling and selling electronic products. Faulty electronic products, part replacements, or disposal are handled by the customers. For waste generated during the production of components, internal source classification and reduction management are implemented. Efforts include extending material usage, optimizing production operations, and recycling packaging materials. Continuous evaluation of waste recycling and reuse is conducted to reduce waste generation and increase resource recycling.

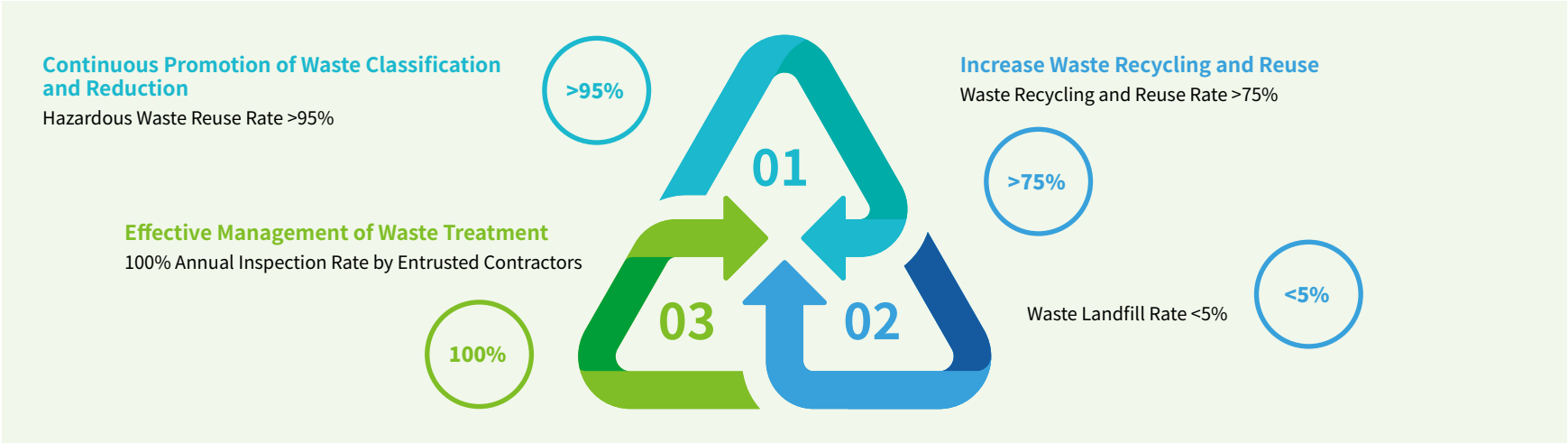
Nuvoton Taiwan Yanshin Plant Related Measures	Explanation of 2023 Implementation Progress
After the packaging and testing by contracted factories, the wafer boats are returned to the factory for recycling and reuse.	The recycling rate is 79%
After unpacking incoming materials, outer boxes and EPE cushioning materials from the foundry FAB are recycled and reused by contracted factories for packaging.	The recycled packaging materials used amounted to 8,931kgs
After "T&R" processing, the trays are returned to the factory for recycling and reuse.	
Empty boxes from scrapped defective products are recycled for use as void fillers in packaging for outbound shipments.	

Nuvoton follows the "Waste Management Procedures" for waste classification, collection, storage management, waste declaration, and supervision and auditing of outsourced waste disposal. Internal management involves regular inspections to accurately grasp the output of each process, promote process improvements to reduce waste, and ensure regulatory compliance. External contractors are carefully selected from legally permitted waste disposal and recycling companies. Before outsourcing, the disposal and recycling methods of the contractor are verified for appropriateness through an investigation procedure. Regular audits of waste contractors are conducted to ensure the legality of outsourced waste disposal, fulfilling the responsibility for waste generation. In 2023, a total of 26 audits were conducted, with no cooperation termination due to regulatory violations or related issues, and there were no improper waste disposal incidents at Taiwan and Japan plants.

Nuvoton Taiwan no import or export of waste is conducted, and the priority for waste disposal is reuse. Waste that cannot be reused is incinerated or landfilled. In 2023, the total waste output was 727 tons, divided into 320 tons (44%) of general industrial waste (including recyclable waste and office-generated domestic waste) and 407 tons (56%) of hazardous industrial waste. The amount reused (including recycled resources) was 480 tons (66%), the incinerated amount was approximately 179 tons (25%), and the landfilled amount was 68 tons (9%). The unit product waste output was 0.090 kg/layer-wafer mask, an increase from 2022 due to the replacement of wastewater plant facilities and increased sludge production. To continue maximizing resource recycling through outsourcing, in 2023, two more production machines were added for waste sulfuric acid recycling, and an evaluation of inorganic sludge (CaF_2 resource recycling) reuse was conducted, starting reuse in 2024.

The annual audit of waste contractors is based on the harmfulness of the waste, the amount generated, and the results of the previous audit scores. The severity of environmental impact risk and the level of processing risk probability are evaluated, and the audit frequency for waste contractors is determined using a risk matrix of severity and probability, along with regulatory requirements. An annual waste contractor audit plan is scheduled every 1 to 3 years, inspecting the operations of removal contractors and processing/recycling plants, and conducting real-time GPS tracking after waste removal to ensure proper waste treatment and effective control of waste processing risks.

Nuvoton Taiwan's future plans will continue to promote waste management, maintaining the same three major goals in 2024 as in 2023:



Plan

2023 Reduction Benefits

2023 Reuse Treatment Solutions

Nuvoton Taiwan Hsinchu Yanxin Plant

H_2SO_4 Recovery
Added 2 specialized sulfuric acid etching machines for recovery, increasing the reuse amount of waste sulfuric acid by approximately
17.1 tons/year

CaF_2 Sludge (Resource Circulation) Evaluation
Changed from landfill treatment to reuse, increasing the reuse amount of sludge by approximately
60 tons/year

Waste Sulfuric Acid
Recycled and diluted into industrial-grade dilute sulfuric acid for industrial use (not for drinking water treatment, medicine, or fertilizer additives)
Recycled 304 tons

Waste Hydrofluoric Acid
Recovered and used as raw material for industrial-grade sodium fluosilicate, applied as a flux agent
Recycled 57 tons

Waste Isopropanol
Recovered and distilled into industrial-grade isopropanol
Recycled 18 tons

Waste Organic Solvents
Recovered and distilled into industrial-grade organic raw materials
Recycled 38 tons

Waste Chemical Drums
Recovered, cleaned, and reused, or crushed and used as plastic or glass raw materials
Recycled 7.5 tons

Recycled Photomasks
Cleaned and pattern-removed, producing regenerated photomasks or optical materials
Recycled 0.6 tons

Recycled Mercury Lamps
Treated with mercury distillation equipment to vaporize and reuse mercury
Recycled 0.2 tons

Recycled Mixed Hardware
Including waste electronic components, scrap, and defective products: Recycled valuable and other metals after treatment
Recycled 22.5 tons

Recycled Waste
Waste paper, glass, scrap iron and aluminum, polystyrene, aluminum foil packaging, PET bottles, and waste plastics: Recycled by recycling companies
Recycled 27 tons

General Waste
Waste plastic, paper, and wood mixtures: Recycled through physical screening and treatment
Recycled 5.7 tons

Nuvoton Japan

Organic Sludge
Chemical additives, the waste treatment company will coagulate, precipitate, inorganicize, and recycle the materials.
0.6 tons

Waste Oil
Thermal and material recovery, incineration residue used as road base material
18.9 tons

Waste Acid
Material recovery, incineration residue used as road base material, neutralization for cement materials
33.6 tons

Waste Alkali
Material recovery, incineration residue used as road base material
10.6 tons

Waste Plastics
Thermal and material recovery
Incineration → Residual road base material
Crushing → Combustion aid
39.2 tons

Metals
Material recovery, separated and recycled after crushing
3.6 tons

Glass, Concrete, and Ceramic Waste
Material recovery, incineration residue used as road base material
0.3 tons

Special Pipelines
Waste Oil, Waste Acid: Material recovery, incineration residue used as road base material
88.6 tons

Shavings
Material recovery, incineration residue used as road base material
0.6 tons

Impact and Response to Waste

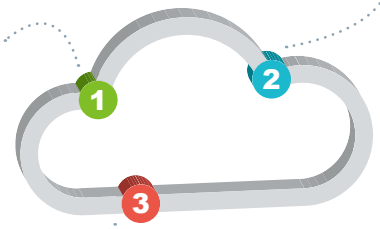
Nuvoton also values the actual and potential impacts of activities and processes on people, the environment, and society. On the manufacturing side, Nuvoton internally implements source classification and reduction management, and continuously evaluates waste recycling and reuse to reduce waste generation and increase waste resource utilization. In terms of waste reuse and disposal, in addition to carefully selecting legally authorized vendors, Nuvoton verifies the appropriateness of the removal, treatment, and reuse methods used by vendors before commissioning them, passing inspection procedures, and regularly auditing waste disposal vendors to maintain oversight.

4.4 Air Pollution Control

Committed to continuously reducing pollutant emissions, Nuvoton complies with government regulations and refers to international laws for air pollution control and emissions. Nuvoton's main air pollutants are produced by the production process and include volatile organic compounds (VOCs), nitrogen oxides, sulfur oxides, ammonia, chlorine, hydrochloric acid, nitric acid, and phosphoric acid. The strategy for managing air pollutants involves first conducting source control, optimizing processes to reduce the concentration and volume of exhaust gases, and then treating them according to their characteristics. All air pollutant treatment systems operate 24 hours a day, year-round, with continuous monitoring to ensure normal operation. The following details the treatment methods for different types of exhaust gases in the air pollutant treatment system:

For general acidic and alkaline exhaust gases, they are discharged to the central exhaust scrubber for neutralization treatment.

Some flammable, toxic, and FCs exhaust gases first undergo high-concentration effective treatment at the process equipment end through local scrubbers using adsorption, combustion, electric heating, or scrubbing facilities to reduce hazards, then are discharged to the central exhaust scrubber for neutralization treatment.



Exhaust gases containing volatile organic compounds are first adsorbed by a zeolite rotor and then incinerated in a direct-fired oxidizer; high-boiling-point organic exhaust gases are treated by condensation collection using temperature differences.

In addition to close monitoring within the plant, certified laboratories are commissioned annually to conduct testing, and the results are reported to the authorities. Testing items include non-methane hydrocarbons (NMHC), acidic and alkaline gases including sulfuric acid (H_2SO_4), hydrochloric acid (HCl), nitric acid (HNO_3), hydrofluoric acid (HF), phosphoric acid (H_3PO_4), and ammonia (NH_3). Over the years, Nuvoton's actual test results show that the concentration of air pollutant emissions is lower than the exhaust emission standards.

Air Pollutant Emissions

Nuvoton Taiwan

Unit: kg

Type	2020 (Baseline Year) Emissions	2021 Emissions	2022 Emissions	2023 Emissions
Nitrogen Oxides	3,032	2,895	3,141	3,357
Sulfur Oxides	1,428	1,459	1,521	885
Volatile Organic Compounds (VOC)	2,280	3,140	3,243	2,740
Particulate Matter (PM)	274	270	288	300
Others	0.05	0.07	0.07	0.05

Nuvoton Japan

Unit: kg

Type	2020 (Baseline Year) Emissions	2021 Emissions	2022 Emissions	2023 Emissions
Nitrogen Oxides	39,150	69,570	8,720	11,700
Sulfur Oxides	1,890	8,970	15,080	1,460
Volatile Organic Compounds (VOC[1])	-	-	-	-
Particulate Matter (PM) g/Nm$_3$ (Average Density[2])	0.0047	0.0034	0.0048	0.0057
Others	-	-	-	-

1 Due to the process not using VOCs, there are no relevant statistical data.

2 The reporting of particulate matter in Japan is done according to different units compared to Taiwan.

Nuvoton Process Emissions	Air Pollution Prevention Measures
General Exhaust Gases	Cooling exhaust from equipment, some may contain air pollutants
Acidic and Alkaline Exhaust Gases	Treated through scrubber towers with water washing
Organic Exhaust Gases	Adsorbed and concentrated using a zeolite rotor, then desorbed at high temperature and incinerated
High-Boiling-Point Organic Exhaust Gases	Condensed and then adsorbed using activated carbon

4.5 Hazardous Substance Management

Nuvoton's hazardous chemical management includes the construction of an exposure assessment model for chemical management, evaluating the risk levels of chemical use. Management methods require an application from the using unit, which must be reviewed and approved by the safety and health management unit. Necessary safety, health, and environmental protection measures must be confirmed before acceptance and use.

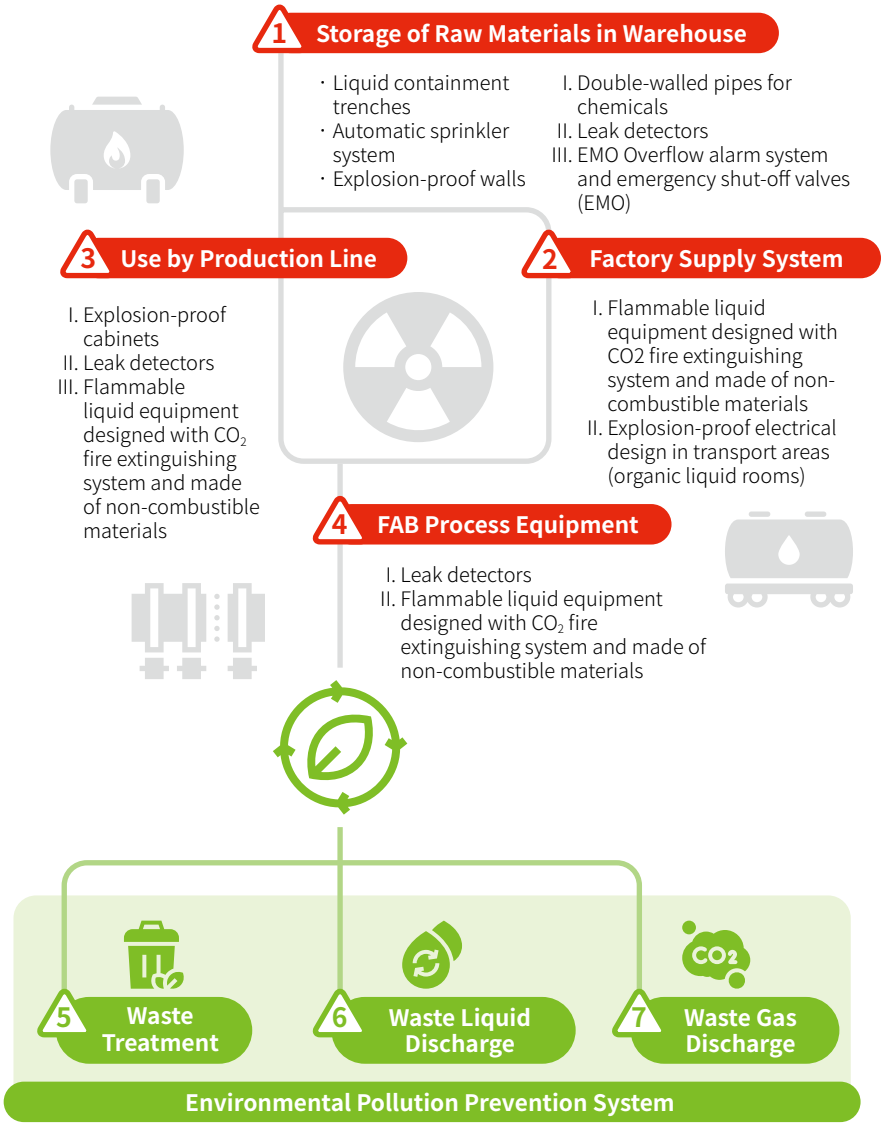
In terms of hazardous substance management, Nuvoton strictly complies with international regulations and customer requirements, such as the "Hazardous Substance Process Management Standard" (QC 080000), the "EU Restriction of Hazardous Substances Directive" (RoHS), the "Registration, Evaluation, Authorization, and Restriction of Chemicals" (REACH), and the California Proposition 65, to ensure that the hazardous substance content of Nuvoton products meets international environmental regulations and customer green product requirements, avoiding environmental pollution and harm to human health.

To reduce the use of hazardous substances and minimize the impact on employee health, Nuvoton prioritizes the evaluation of low-hazard chemicals. NMP is widely used in semiconductor processes, but due to its reproductive toxicity, Nuvoton Taiwan has vigorously pursued a plan to replace NMP with less harmful substances since 2022. New chemical tests and product verifications were conducted, and the project officially went online in August 2023. It is estimated that NMP usage will be reduced by 99% annually by 2024.

4.5.1 Safety protection of chemical supply systems

In terms of chemical substance management, Nuvoton ensures compliance with regulations and environmental, safety, and health requirements from the procurement and storage environment monitoring of raw materials, the safety protection of supply systems and equipment facilities, to the pollution prevention design for pollutants, toxic substances, and waste disposal. This ensures the safety and health of employees, avoids environmental pollution, and upholds the commitment to reducing the impact and harm of company operations on the natural environment and human beings.

Safety Protection of Chemical Substance Supply System



Nuvoton regularly reports its operations as required by central authorities and strengthens risk control to prevent potential accidents, prioritizing employee health and safety while providing environmentally friendly manufacturing services. Nuvoton imposes extended controls on chemicals with high health hazards and increased environmental burden risks, including bioaccumulative, persistent pollutants, carcinogenic, mutagenic, and reproductive toxic substances, as well as toxic and concerning chemicals.

2023 Management Actions

Work Items	Specific Actions
Regulations are identified by dedicated personnel. If there are changes in regulations applicable to the company, the relevant units will be notified to take appropriate measures.	Monthly inspections of containers and packaging labels.

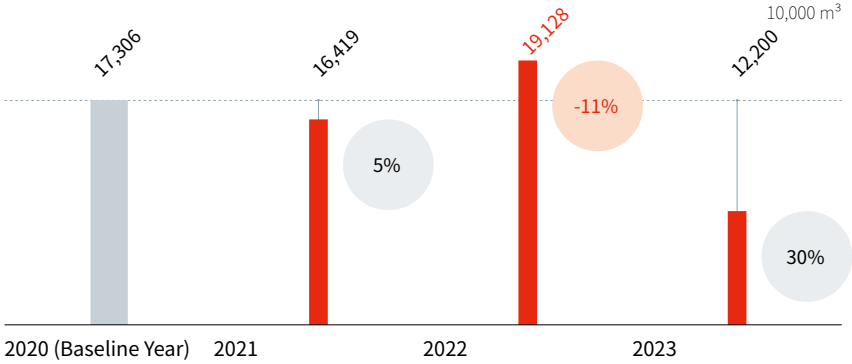
Nuvoton Taiwan Operation of Joint Defense Organizations

1. Annually plan 3 joint defense organization drills and collaborate with at least 6 support equipment sessions at neighboring plants to strengthen familiarity with emergency response equipment and procedures.
2. In 2023, the Hsinchu City Environmental Protection Bureau conducted an unscripted gas leak drill at the plant, which received high praise from the regulatory authorities.

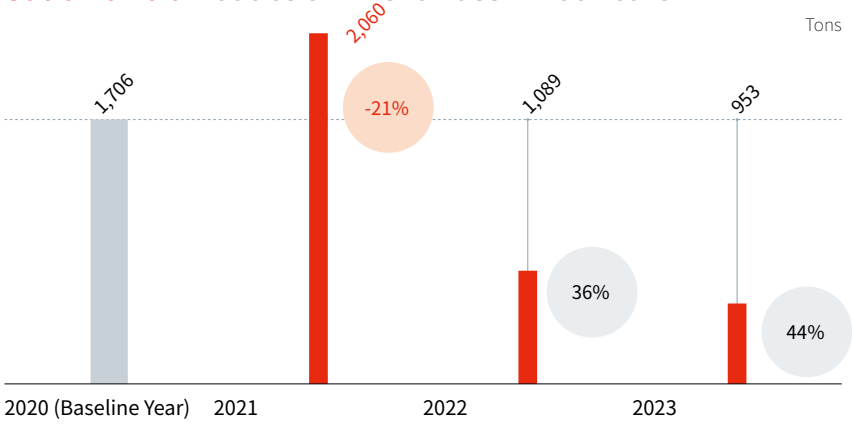
4.5.2 Key Chemical Raw Materials

Nuvoton has identified the use of nitrogen and sulfuric acid as relatively important factors affecting the carbon emissions throughout the product life cycle. Therefore, these two chemical raw materials are listed as primary targets for long-term monitoring and reduction, with 2020 set as the baseline year. Active reduction efforts have been promoted, resulting in a 30% reduction in nitrogen usage and a 44% reduction in sulfuric acid usage by 2023 compared to the baseline year.

Nitrogen Reduction in the Past Three Years※



Sulfuric Acid Reduction in the Past Three Years※



※ The scope of the survey includes Nuvoton Taiwan and Nuvoton Japan. For more data on nitrogen and sulfuric acid usage, see Appendix 1 Environmental Data.

CH5
Safe Workplace

5.1 Overview of Talent

5.2 Talent Attraction and Growth

5.2.1 Talent Recruitment and Retention

5.2.2 Talent Cultivation

5.2.3 Compensation and Benefits

5.3 Occupational Safety and Health

5.3.1 Workplace Safety

5.3.2 Healthy Workplace

5.4 Employee Care and Communication

Material Topic: Talent Appreciation and Cultivation						
Policies and Commitments	2023 Goals		Future Goals			Specific Actions
	Objective Explanation	Achievement Status	Short-term (2024) · · · ·	Mid-term (2025) · · · · ·	ong-term (2030)	
· Nuvoton's commitment to talent appreciation and cultivation goes beyond recruitment and retention. It also encompasses continuous learning, compensation and benefits, internal referral programs, and career development. This comprehensive talent strategy helps ensure that the company has a strong and competitive talent pool that drives long-term business growth. · 70% Talent pipeline readiness reaches 70% · Boost employee motivation for passionate learning	Nuvoton Taiwan · 2023 Employee Turnover Rate < 8.5% · Provide training courses to enhance employees' personal work performance and professional skills to help them improve productivity and career development. · Offer training courses on management skills for middle and base-level supervisors to enhance their management and leadership capabilities. · Organize training seminars for senior executives on global political and economic trends, AI, and other topics to prepare them for future challenges and opportunities.	Nuvoton Taiwan All Goals Achieved · Employee turnover rate: 5.6% · Attendance rate for professional and management training courses: 100% · Attendance rate for senior executive seminars: 90%	· Strengthen Employer Brand · Expand Recruitment Channels · Promote Career Development · Complete Assessment of Position-Specific Professional Skills (100% completion rate achieved) · Average Employee Training Hours Reaches 30 Hours	· Enhance Professional Skills · Cultivate Management Skills · Define Key Positions and Establish a 100% Talent Pool for Key Positions · Average Employee Training Hours Reaches 36 Hours	· Comprehensive Salary and Benefits · Strengthen Retention Mechanisms · Completion Rate of Talent Training for Key Positions at 80% · Average Employee Education and Training Hours Reaching 45 Hours	Nuvoton Taiwan · Host 4 town hall meetings (see section 5.4 Employee Care and Communication for details)
	Nuvoton Japan · 2023 Voluntary Turnover Rate < 4.0%	Nuvoton Japan All Goals Achieved · Employee turnover rate: 3.6%				Nuvoton Japan · Redesign personnel benefits system · Host family day · Innovate and improve reward system

Material Topic：Occupational Safety and Health

Policies and Commitments	2023 Goals		Future Goals			Specific Actions
	Objective Explanation	Achievement Status	Short-term (2024)	Mid-term (2025)	Long-term (2030)	
· Nuvoton regards occupational safety and health as a fundamental requirement. By promoting a "safety culture," we proactively identify potential occupational safety risks, establish a reassuring work environment, and safeguard the rights and safety of colleagues through transparent and open labor-management communication channels. · Following the "Occupational Safety, Health, and Environmental Protection Policy," Nuvoton continuously invests in and practices occupational safety and health management through various development strategies.	Nuvoton Taiwan · Occupational safety education training attainment rate >85% · Incident occurrence rate per thousand persons decreased by 30% compared to the baseline[1] average of 1.81 · Zero cases of occupational diseases · Employee cancer screening rate for health promotion >30%	Nuvoton Taiwan All Goals Achieved · Occupational safety education training attainment rate[2]: 98% · Incident occurrence rate per thousand persons: 1.29 · Zero cases of occupational diseases · Cancer screening rate: 40%	**Enhancing hazard prevention awareness** Nuvoton Taiwan · Occupational safety education training attainment rate >95% Nuvoton Japan · Occupational safety and health general education training attainment rate >90% · New employee Occupational safety and health training attainment rate 100%	**Enhancing hazard prevention awareness** Nuvoton Taiwan · Occupational safety education training attainment rate >95% Nuvoton Japan · Occupational safety and health general education training attainment rate >90% · New employee Occupational safety and health training attainment rate 100%	**Enhancing hazard prevention awareness** Nuvoton Taiwan · Occupational safety education training attainment rate >97% Nuvoton Japan · Occupational safety and health general education training attainment rate >90% · New employee Occupational safety and health training attainment rate 100%	Nuvoton Taiwan · Reviewing and standardizing maintenance operation procedures · Implementing effective health management · Improving work environment regarding fall incidents · Expanding drills
	Nuvoton Japan · Cases resulting in work stoppage: 0 · Cases not resulting in work stoppage: 3 · Severity rate (below 0.06) = 0[3]	Nuvoton Japan All Goals Achieved · Cases resulting in work stoppage: 0 · Cases not resulting in work stoppage: 1 · Severity rate = 0	**Hazard identification, risk assessment, and control** Nuvoton Taiwan · Incident occurrence rate per thousand persons decreased by 40% compared to the baseline average of 1.81 · Zero cases of occupational diseases Nuvoton Japan · Risk registration improvement rate 100% · Zero cases of occupational diseases	**Hazard identification, risk assessment, and control** Nuvoton Taiwan · Incident occurrence rate per thousand persons decreased by 50% compared to the baseline average of 1.81 · Zero cases of occupational diseases Nuvoton Japan · Risk registration improvement rate 100% · Zero cases of occupational diseases	**Hazard identification, risk assessment, and control** Nuvoton Taiwan · Incident occurrence rate per thousand persons decreased by 60% compared to the baseline average of 1.81 · Zero cases of occupational diseases Nuvoton Japan · Risk registration improvement rate 100% · Zero cases of occupational diseases	Nuvoton Japan · Conducting risk assessments and continuous improvement · Enhancing performance in Occupational safety and health · Strengthening response measures for the implementation of new chemical substance regulations, with 70 measures taken
			Employee health promotion Nuvoton Taiwan · Employee cancer screening rate >50% Nuvoton Japan · Increase the target value of appropriate lifestyle habits through the Life Clinic Plan[4] to 3.56	**Employee health promotion** Nuvoton Taiwan · Employee cancer screening rate >55% Nuvoton Japan · Increase the target value of appropriate lifestyle habits through the Life Clinic Plan to 3.66	**Employee health promotion** Nuvoton Taiwan · Employee cancer screening rate >75% Nuvoton Japan · Increase the target value of appropriate lifestyle habits through the Life Clinic Plan to 4.0	

1 Baseline refers to the average incident occurrence rate per thousand persons from 2020 to 2022.
2 Severity rate: It indicates the severity of accidents, represented by the total lost workdays per 1,000 actual working hours. The calculation method is the total number of lost workdays divided by the total working hours, multiplied by 1,000.
3 Incident occurrence rate: It is the percentage of the number of occupational accident beneficiaries (including injury, disability, death benefits) to the number of insured employees, calculated per thousand.
4 The calculation also considers the proportion of lifestyle habits, such as diet, walking, sleep, smoking, etc., changing over time. The target value is calculated based on the appropriate quantity of habits.

Nuvoton values talent as the cornerstone of sustainable development. Embracing a "people-oriented" approach, we prioritize talent cultivation and development. Our five core strategies—diverse talent attraction, active talent cultivation and development, superior retention system compared to industry peers, emphasis on and practice of workplace safety, and encouragement of communication—are designed to foster a safe workplace environment, ensuring employees have a secure and healthy atmosphere to work in. Continuously enhancing our human resource management system and streamlining integration systems, we offer various channels and programs for recruitment to attract talent to Nuvoton. We devise diverse training programs and career development paths, building a robust talent pool. Moreover, we provide comprehensive welfare and competitive compensation systems to retain exceptional talent.

We also prioritize occupational safety by promoting a "safety culture" aimed at identifying potential safety risks in advance, thus creating a reassuring workplace environment. Adhering to our "Occupational Safety, Health, and Environmental Protection Policy," we actively invest in and implement occupational safety and health management practices. Furthermore, we prioritize caring for each colleague by maintaining transparent and open labor-management communication channels, ensuring the rights and workplace safety of all employees are safeguarded.

The main parts of a safe workplace strategy

01 Diverse strategies to attract talent

- Actively participating in open house events organized by universities or recruitment service companies.
- Organizing campus roadshow seminars that allow students to learn about the company and attract them to join Nuvoton in the future.
- Developing internship programs to create a strong employer brand and increase visibility among student communities.

02 Active cultivation and development of talent

- Offering courses on ChatGPT, Copilot, GitHub Enterprise, and more to enhance the productivity of colleagues.
- Providing communication courses tailored for frontline supervisors, project leaders, and colleagues responsible for cross-unit communication.
- Launching courses on innovative and creative thinking to promote a culture of active innovation.

03 Superior retention system compared to industry peers

- Setting reasonable fixed salaries based on market salary standards.
- To ensure the overall competitiveness of the company's compensation, allocating no less than one percent of profits as employee compensation when the company is profitable.
- Nuvoton was selected for the "Taiwan High Salary 100 Index" component stock list in 2023.

04 Emphasis on and practice of workplace safety

- Enhancing or replacing safety protection for high-risk process machines and factory equipment, including wastewater plant areas, chemical storage areas in warehouses, and wet etching processes.
- Conducting physical and online courses to strengthen colleagues' knowledge and skills regarding risk awareness, hazard prevention, and emergency response; cultivating employees' emergency response capabilities and safety awareness.

05 Encouragement of communication

- Organizing two Town Hall Meetings in Taipei and Tainan, hosted by the president, to provide channels for colleagues to ask questions.

5.1 Overview of Talent

Nuvoton views talent as the cornerstone of sustainable development, embracing a "people-oriented" ethos and placing a strong emphasis on talent cultivation and development. We are dedicated to fostering a welcoming workplace and ensuring our employees have a safe and healthy work environment. We are continually refining our human resource management system and optimizing integration systems, covering aspects such as recruitment, compensation and benefits, and talent development. Our goal is to instill a people-oriented corporate culture that enhances employee engagement with Nuvoton. We allocate significant resources to talent attraction and retention, and we are committed to fulfilling our corporate social responsibility by leveraging Nuvoton's influence to make sustainable contributions to society. We adhere to the principle of giving back to society, especially in the face of global uncertainties, to maintain our competitiveness.

As of December 31, 2023, Nuvoton employs a total of 1,555 individuals in Taiwan, with female employees comprising 42% and male employees comprising 58%. The higher proportion of male employees can be attributed to the predominance of males among students enrolled in professional engineering programs in Taiwan.Nuvoton is dedicated to global expansion and had a total workforce of 3,658 employees worldwide in 2023, including 2,103 employees stationed overseas, constituting 57% of the total workforce. In Taiwan, there are 51 senior executives, while overseas there are 89, with 98% and 87% respectively being local residents. Additionally, the company engages 1,131 non-employee workers[1] in Taiwan and 313 in Japan, encompassing various contractual roles such as security personnel, janitors, cafeteria staff, and IT contractors.

Talent Structure Composition

Region	Employment Type		2021		2022		2023		
			Female	Male	Female	Male	Female	Male	Total
Nuvoton Taiwan	Full-time Employees		640	814	662	873	646	894	1,555
	Part-time Employees[2]	Temporary Employees	1	5	3	7	2	10	
		Employees with No Guaranteed Hours	0	4	1	4	1	2	
Nuvoton Japan	Full-time Employees		117	1,343	145	1,496	162	1,497	1,659
	Part-time Employees	Temporary Employees	43	79	56	105	0	0	
		Employees with No Guaranteed Hours	0	0	0	0	0	0	
Overseas	Full-time Employees		121	265	128	275	136	304	444
	Part-time Employees	Temporary Employees	2	12	6	11	0	4	
		Employees with No Guaranteed Hours	0	0	0	0	0	0	

1 For Nuvoton Taiwan, the number of non-employee workers is calculated based on the number of individuals with company work permits or construction identification badges, averaged monthly. For Nuvoton Japan, it includes temporary staff and outsourced contractor personnel who are permanently stationed at the operational sites.

2 Temporary employees are colleagues under regular contract with a monthly salary, while employees with no-guaranteed hours are colleagues under regular contract with hourly wages.

Commitment to Human Rights and Related Policies

Nuvoton adheres to relevant labor laws, such as the Labor Standards Act, and upholds and supports the protective spirit and fundamental principles outlined in various international human rights conventions. These include the Universal Declaration of Human Rights, the United Nations Guiding Principles on Business and Human Rights, and the International Labour Organization's Declaration on Fundamental Principles and Rights at Work. In Taiwan, Nuvoton has formulated its "Code of Sustainable Conduct," while in Japan, the company has established its "Code of Conduct." These frameworks ensure the protection of employees' labor rights and outline incident reporting procedures. Nuvoton is committed to being a company that values human rights, diversity, and equal opportunities, and continually strives to uphold these principles.

Promotion of Human Rights Management

To safeguard the human rights of employees, suppliers, and other stakeholders, Nuvoton implements various measures for human rights management. Firstly, the company has formulated the "Code of Sustainable Conduct" and developed internal management policies and procedures based on it. Additionally, Nuvoton follows the Responsible Business Alliance's standards on freedom of employment to safeguard employees' labor rights. This includes ensuring the freedom to choose employment, prohibiting the use of child or forced labor, protecting young workers, adhering to statutory working hours and wages, respecting employees' freedom of association, and avoiding the use of conflict minerals. Discrimination based on various factors, such as race, nationality, color, age, gender, sexual orientation, gender identity and expression, ethnicity, disability, pregnancy, religion, political opinions, military service status, protected genetic information, club membership, or marital status in matters such as employment, wages, rewards, punishments, promotions, or retirement is strictly prohibited. If the use of child labor is discovered after employment, immediate notification is given to the employing unit, work is suspended, and the child is sent to the hospital for examination to ensure their health has not been affected by work. After terminating the employment relationship, the child is returned to their guardian, with all incurred costs, including examination fees, wages owed, and transportation expenses, borne by the company. Furthermore, Nuvoton requires all suppliers in the supply chain to jointly sign the RBA-compliant "Compliance Commitment" and "Confidentiality Commitment" and utilizes its purchasing power to demand adherence to human rights and social standards. Regular sustainability education and training are conducted to raise awareness of human rights protection among employees. Finally, the company has established a complaint mechanism and procedure for handling violations of integrity conduct complaints, as outlined in the "Reporting Violations of Integrity Conduct Regulations." Detailed complaint channels can be found in section 3.3.1 on Regulatory Compliance and Integrity Management.

Moving forward, we are committed to further promoting our human rights management plan to ensure comprehensive implementation. Our future initiatives include formulating and publicly disclosing our human rights policy in 2024, introducing human rights due diligence processes, conducting human rights risk assessments for employees at the Taiwan headquarters, and gradually expanding the scope of risk assessments in the medium to long term to include overseas subsidiaries, suppliers, local communities, and other stakeholders.

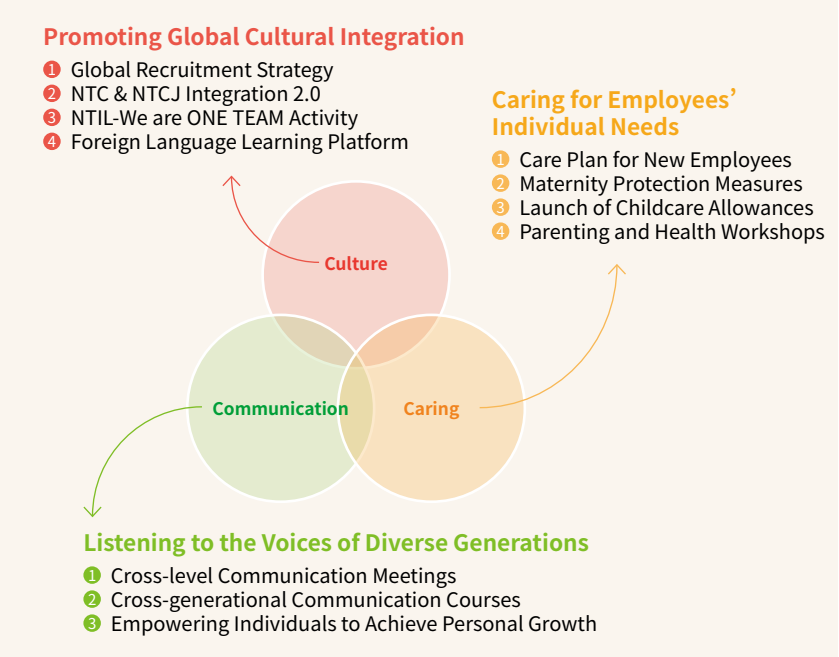
Assessment and Management of Risks to Human Rights

In addition to regular internal self-assessments and policy formulation, Nuvoton responds to customer demands by engaging third-party organizations to conduct RBA guideline Validated Audit Process (VAP) audits. These external audits provide valuable perspectives and help enhance the overall management system. In the 2022 RBA audit results, Nuvoton Taiwan's research and development factory achieved a perfect score of 200 points in the VAP risk assessment. This assessment covered various areas, including labor, health and safety, environment, ethics, and compliance.

In 2023, Nuvoton received one complaint of workplace misconduct in Taiwan, which has since been resolved and closed. No complaints were reported from overseas regions. Moreover, to underscore the company's "zero tolerance" policy towards workplace misconduct, Nuvoton conducts comprehensive annual education and training on the subject for all employees. This training aims to raise awareness of prevention strategies, identify various types of misconduct, provide stress relief techniques, introduce complaint channels, and enhance self-protection awareness among employees to prevent future incidents. Additionally, supervisors receive management education and training specifically focused on addressing "workplace misconduct." We remain committed to providing our employees with a better working environment. In 2023, Nuvoton did not engage in any child labor practices, receive complaints related to discrimination, forced labor, or violations of indigenous rights. Furthermore, there were no reported incidents of violations of employees' freedom of association or collective bargaining rights.

Nuvoton Human Resources Department—A Key Driver of DEI Implementation

Nuvoton's approach to Diversity, Equity, and Inclusion (DEI) starts with the 3Cs: Culture, Communication, and Caring. We are dedicated to fostering an inclusive work environment and cultivating a culture of inclusivity through a range of initiatives. These initiatives begin with individual employees and aim to shape a culture of inclusion, ultimately enhancing the company's overall competitiveness.



Culture - Promoting Global Cultural Integration

As a multinational corporation, we actively recruit employees from diverse cultural backgrounds to promote global cultural integration. We enhance our employer brand through campus lectures and social media, attracting talent from Japan, Korea, mainland China, Singapore, the United States, India, Germany, Israel, and other locations to join our team. To address communication barriers arising from cultural differences, we offer cultural courses from relevant countries and provide cross-cultural communication training for employees. Additionally, we introduce foreign language learning platforms to encourage employees to enhance their language skills, facilitating smoother communication within multinational teams. Furthermore, in light of international incidents from the previous year, we prioritize ensuring the safety of our employees and their families. We demonstrate respect and support for global multiculturalism through various activities.

Communication - Listening to the Voices of Diverse Generations

We regularly host cross-level communication meetings, such as quarterly supervisor meetings, knowledge sharing sessions, and town hall meetings, providing opportunities for employees to openly express their thoughts and opinions. Additionally, we conduct cross-generational communication courses to foster understanding between different age groups and encourage mutual cooperation. Furthermore, through annual interviews aimed at gauging the specific training needs of colleagues in each department, we provide professional courses to empower employees to enhance their skills and achieve growth in their respective fields.

Caring – Caring for Employees' Individual Needs

We prioritize addressing the individual needs of each employee by offering tailored support. From personalized care plans for newcomers to maternity care tracking for expectant mothers, and providing monthly childcare allowances for colleagues with children aged 0-4, we are committed to assisting employees in achieving a healthy work-life balance. Additionally, the company regularly hosts various health seminars and parenting workshops to ensure employees receive adequate support at every stage of their lives. Furthermore, we offer an Employee Assistance Program (EAP) to provide colleagues with assistance when facing challenges in their work or personal lives.

Nuvoton actively integrates the DEI concept into its core operations, spanning global talent recruitment, optimizing human resource allocation, skills enhancement training, and supporting multinational teams. Moving forward, we will continue our ongoing efforts to cultivate a diverse and inclusive workplace environment, consistently embed the DEI culture, and advance Nuvoton's sustainable development goals.

▶ Taiwan-Japan Workplace Cultural Differences Seminar

▼ We are one Team

5.2 Talent Attraction and Growth

5.2.1 Talent Recruitment and Retention

Nuvoton operates in two key areas: wafer fabrication and IC design. Consequently, we seek individuals skilled in both IC industry design and manufacturing. With industry applications evolving rapidly, the need for hybrid talent is growing. To attract talent from diverse backgrounds, we utilize various recruitment channels, promote our employer brand, cultivate a high-quality corporate image, offer competitive compensation and benefits, and prioritize retaining exceptional talent. In 2023, our onboarding rate was 90%, with 113 applications received for each position.

2023 onboarding rate was[1] **90%**, Application rate[2] **113** times.

1 Onboarding Rate: Number of hires / Number of job offers extended

2 Application Rate: Number of applicants / Number of positions available

Diverse Recruitment Channels

In addition to using general recruitment channels such as job banks and recruitment websites, we also recruit suitable talents through the following channels:

Employee Referrals

Employee referrals have consistently been a vital source for attracting talented individuals to our company. To sustain enthusiasm for employee referrals, Nuvoton Taiwan offers attractive referral bonuses and meal vouchers.

Employee Alma Mater Recruitment Events

Nuvoton Japan invites young employees to revisit their alma mater to introduce the company and promote recruitment information to prospective students.

Participation in Campus Recruitment Events

Nuvoton Taiwan participates in open house events hosted by schools in spring and autumn each year, facilitating early engagement with undergraduate and graduate students and expanding talent recruitment channels. Nuvoton Japan engages in job fairs organized by universities and recruitment support service companies.

Scholarship Programs

Nuvoton actively engages in the training and recruitment of key talents from schools. In addition to actively participating in job fairs at major universities, it also initiates scholarship programs to identify and recruit high-potential students in advance.

Campus Lectures

Nuvoton Taiwan organizes campus lecture tours, conducting lectures on campus each spring and autumn, directly engaging with students to exchange semiconductor-related knowledge and applications. Supervisors are also eager to share their experiences at Nuvoton, providing inspiration for students' future careers. In 2023, the event held at National Cheng Kung University attracted 57 participants.

Internship Programs

To strengthen our employer brand, increase visibility among student groups, maintain good relationships with professors, and recruit high-potential students in advance, Nuvoton Taiwan has developed an internship program.

Nuvoton Japan offers short-term internships to students during the summer and winter, providing them with the opportunity to gain practical work experience and learn about the company and its operations.

Academic Conferences/Exhibitions

Nuvoton Japan works with its public relations and technical departments to promote the company at exhibitions and academic conferences for recruitment purposes.

Academic Journals/Information Magazines

Nuvoton Japan publishes information about the company and job vacancies across various media subscribed to by semiconductor engineers and other specialized professionals.

Online Career Events

Nuvoton Japan hosts online events related to the semiconductor industry and engineering careers to establish connections with students.

Internal and External Recruitment Websites

Nuvoton Taiwan utilizes an internal recruitment website that underwent significant optimization in 2022 to offer a more convenient and expedited application process for talents. Nuvoton Japan utilizes not only the company's recruitment website and social media, but also external recruitment websites.

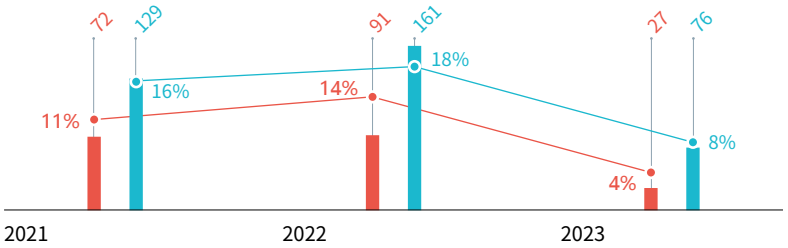
Number: Female Male Proportion:

Newly Hired Employee Statistics※

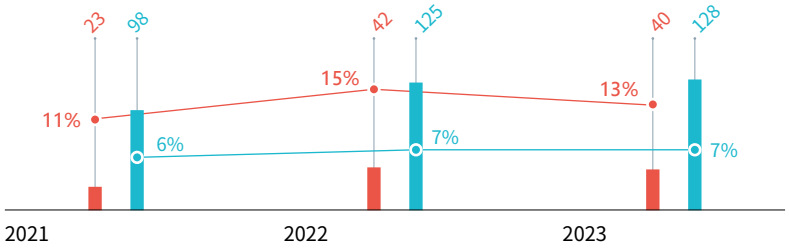
Nuvoton Taiwan new hires age distribution / Overseas new hires age distribution

Categories	Nuvoton Taiwan 2021 Number	Nuvoton Taiwan 2021 Proportion	Nuvoton Taiwan 2022 Number	Nuvoton Taiwan 2022 Proportion	Nuvoton Taiwan 2023 Number	Nuvoton Taiwan 2023 Proportion	Overseas 2021 Number	Overseas 2021 Proportion	Overseas 2022 Number	Overseas 2022 Proportion	Overseas 2023 Number	Overseas 2023 Proportion
Under 30 years old	73	29%	122	41%	43	16%	30	59%	59	46%	78	44%
31-50 years old	118	13%	122	13%	50	5%	78	10%	87	9%	72	7%
51 years old and above	10	3%	8	3%	10	3%	12	1%	21	2%	18	2%

Nuvoton Taiwan new hires gender distribution



Overseas new hires gender distribution

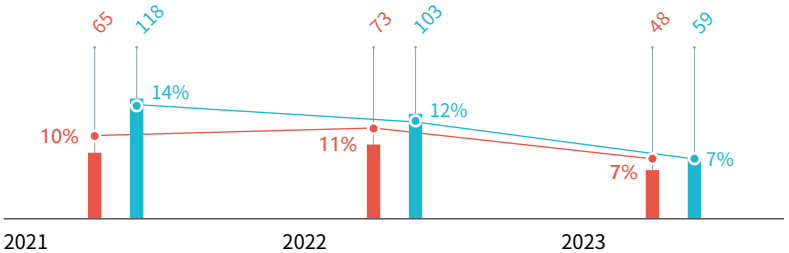


Employee Turnover Statistics

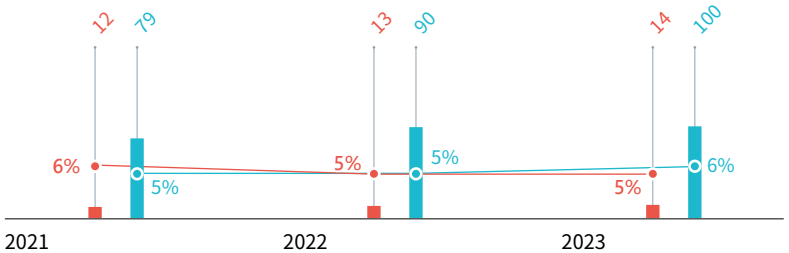
Nuvoton Taiwan employee turnover age distribution / Overseas employee turnover age distribution

Categories	Nuvoton Taiwan 2021 Number	Nuvoton Taiwan 2021 Proportion	Nuvoton Taiwan 2022 Number	Nuvoton Taiwan 2022 Proportion	Nuvoton Taiwan 2023 Number	Nuvoton Taiwan 2023 Proportion	Overseas 2021 Number	Overseas 2021 Proportion	Overseas 2022 Number	Overseas 2022 Proportion	Overseas 2023 Number	Overseas 2023 Proportion
Under 30 years old	43	17%	40	14%	33	13%	7	14%	8	6%	11	6%
31-50 years old	105	11%	107	11%	55	6%	41	5%	57	6%	51	5%
51 years old and above	35	12%	29	9%	19	6%	43	5%	38	4%	49	5%

Nuvoton Taiwan employee turnover gender distribution



Overseas employee turnover gender distribution



※ Using the total number of employees as of December 31, 2023, the ratio of new hires to departing employees is calculated, rounding to the nearest whole number. (Number of new hires or departing employees in that category / Total number of employees in that category)

Competitive Compensation

In 2023, Nuvoton maintained its position on the "Taiwan High Salary 100 Index," emphasizing the importance of sustainable employee compensation practices for global companies. This index evaluates companies based on criteria such as "average employee salary," "net profit," "earnings per share," and "total employee compensation," among other quantitative standards. It underscores our commitment to valuing employee compensation and ensuring sustainable development. In addition to overall compensation, we prioritize structuring salaries for new employees based on job responsibilities, experience, and expertise, as mutually agreed upon by both labor and management. We regularly assess the competitiveness of our compensation levels in the industry and the market. During annual salary adjustments, we consider factors such as market conditions, company performance, and individual job performance. Merit serves as the basis for salary adjustments, and we ensure there is no differential treatment based on gender or location.

Diverse Retention Policies

Company Specific	Retention Policies	Explanation
Nuvoton Taiwan	Linking Company Performance with Employee Compensation	Nuvoton establishes reasonable fixed salaries based on market salary levels and stipulates in the company's articles that a portion of profits, no less than one percent, should be allocated to employee compensation, ensuring overall competitiveness in compensation.
	Career Development Training Programs	Nuvoton conducts regular assessments of employee performance and competence development, providing corresponding compensation based on performance as well as a basis for promotion.
	Dual Career Track System	Nuvoton provides a dual career track system for managerial and professional positions to create a robust career advancement pathway, motivating employees to grow with the company.
Nuvoton Japan	Education Loan Repayment Support Program	For outstanding academic achievers recruited as new graduates, Nuvoton assists in repaying their student loans after they join the company.
	Career Development Plans	Employees conduct annual reviews of their careers and skills, drafting a "Career Development Plan" that outlines future career directions and specific challenges they face in achieving their goals. Supervisors then conduct one-on-one interviews with subordinates based on the content of their career development plans, and develop work and training plans according to each employee's preferences.
	Work/Life Design Workshops	All employees participate in a workshop every five years to review their careers and contemplate their future.

5.2.2 Talent Cultivation

Talent Development Policies and Strategies

Nuvoton’s policy for talent development begins with establishing a learning organization, valuing the learning and development of every employee as dynamic learners within the organization. Each year, the company conducts a training needs analysis to understand the learning needs of each department and employee. It designs and plans rich training courses to provide diverse learning channels and methods, facilitating employee-led learning. The company integrates internal and external learning resources and links training course content with practical applications, encouraging employees to share work knowledge and creating a work environment conducive to mutual teaching and learning.

Planning and Implementation of Training

STEP 1	STEP 2	STEP 3	STEP 4
Training needs analysis	Annual curriculum planning	Diversified curriculum designs	Post-course assessment delivery

Before planning for our annual courses, we conduct a training needs analysis. Firstly, Nuvoton Taiwan conducts training needs surveys and one-on-one interviews with factory-level supervisors at the end of each year to understand the needs for professional courses and the challenges faced by each unit, arranging relevant courses accordingly. Secondly, each department’s training coordinators focus on professional field attributes and supervisor feedback from the previous year’s courses. Finally, feedback from post-course satisfaction questionnaires is collected, including feedback on course interest and demand. This information is integrated into the training needs from these three steps while reviewing regulatory requirements and organizational future directions, formulating Nuvoton Taiwan’s annual course plan. In contrast, Nuvoton Japan’s training plan is formulated by the Human Resources Department based on the needs of trainees, their supervisors, and department heads. After planning, it is reported to senior management for approval.

In 2023, we provided diverse courses aimed at actively cultivating employees’ abilities in productivity enhancement, leadership communication, innovative and creative thinking, and understanding political, economic, and ESG trends. To enhance productivity, we offered courses on subjects, such as ChatGPT, Copilot, and Github Enterprise, coupled with IT resources to provide digital tools to various units, with the goal of promoting digital transformation. In terms of leadership communication, we provided courses tailored for junior-level supervisors, project leaders, and other colleagues responsible for cross-unit communication integration, with the aim of fostering successful team leadership. To cultivate an active culture of innovation, we launched courses on innovative and creative thinking, guiding colleagues through systematic methods to learn about the process of innovative thinking in both work and life. In 2023, the average training hours for Nuvoton Taiwan employees were 26.82 hours, while for Nuvoton Japan, it was 13.55 hours. For detailed data on training, please refer to Appendix II Social Data.

Training Programs at Nuvoton

Nuvoton boasts a diverse and comprehensive educational training system designed to cater to employees at every level, from entry-level to senior executives. Tailored to their respective levels, roles, and developmental needs, we provide suitable learning content through various channels, including e-learning, on-the-job training, in-house training, live streaming courses, physical classes, supervisor quarterly meetings, and knowledge sharing sessions. Additionally, we actively encourage self-directed learning among employees. Moreover, to aid in the personal development of employees, Nuvoton Taiwan promotes the establishment of professional competence in each unit. In 2023, we organized 13 sessions of competence workshops, inviting Nuvoton executives to redefine and refine job content and professional skills. Moving forward, we aim to complement these workshops with various professional skills training programs to empower employees to adapt to market changes and technological advancements.

Course Categories	Nuvoton Taiwan	Nuvoton Japan
New Hires	From the moment new hires join, we offer comprehensive training courses to facilitate their quick integration into the company culture and work environment. Alongside 13 online courses tailored for new hires, we arrange in-person training sessions to acquaint them with the company's vision, culture, organizational structure, rules and regulations, as well as the various business groups and their products. They also acquire foundational knowledge and skills relevant to their roles. Furthermore, through the Buddy system and new hire support mechanisms, we establish connections and provide necessary information and support, thus creating a rapid and effective network and support system for new hires during their initial stages.	For fresh graduates, within one to two months of joining, we offer a training program encompassing business concepts, company overview, basic semiconductor technology knowledge, and other job-related skills. Through mentorship, we aid in developing communication skills essential for the role. Supervisors actively engage with new employees, systematically progressing through a 3-year on-the-job training program. Additionally, new hires participate in 26 online courses. At the end of the year, we conduct a comprehensive review and provide follow-up training for areas needing improvement. For experienced employees, we offer a two-day training program upon joining, covering corporate culture, company overview, and other basic knowledge and skills required for the job. During the first three months, necessary information and support are provided through the Buddy system to help employees adapt to the workplace and form interpersonal networks.
Common	Common courses include topics, such as the company's vision and mission, corporate culture and values, corporate sustainability (including Responsible Business Alliance standards), customer satisfaction, quality management, and environmental health and safety (covering environmental protection and fire drills), among others. These courses are mandatory for all employees, regardless of their level, position, or department. Additionally, the company introduces external online learning platforms for English and Japanese and offers corresponding subsidy programs to boost employees' motivations for self-directed learning and foster diverse language talents within the organization.	Common online courses include business concepts, corporate culture, quality management, environmental safety, health, and information security, among others, which are mandatory for all employees regardless of their level, position, or department.
Professional	At the factory level, we provide a range of professional certification training programs tailored to meet machine requirements. Furthermore, in line with the company's strategic direction, we introduce courses focused on data science tools. These courses are facilitated by both internal and external professional instructors, and we integrate practical software tool applications into the training.	In terms of professional courses, we organize various certification training programs within departments based on need, as well as data science-related tool courses aligned with the company' s strategic direction.
Managerial	In 2022, we arranged regular advanced seminars titled "Topic-oriented Practical Experience Sharing" to keep senior executives updated on the latest trends in domestic and international industries. These seminars, featuring both internal and external experts, facilitated discussions and knowledge exchange, aligning the company's development direction with external trends. Moreover, our management training courses emphasized the Dale Carnegie communication method and intergenerational communication, equipping executives across all levels with practical management tools, from senior to mid-level managers.	Various training programs are available for managers at different levels, encompassing leadership seminars for senior executives, skill enhancement sessions for mid-level managers, and onboarding training for newly appointed managers.

Security Education and Training

Security personnel at all four Nuvoton Japan factories are provided by third-party units, totaling 39 individuals. Nuvoton Japan conducts annual education and training for these security personnel, which includes basic security operation training and seminars on relevant regulations. In addition to practical training in security operations, efforts are made to enhance the security company's awareness of regulations.

Theme	Content	Number of Trainees	Training Hours
Basic Action Training	· Parking Operation/Truncheon Operation · Satellite Phone Relay Training	13	Every Saturday and Sunday, 15 minutes per session 10 minutes per month
	· Discipline Training/Truncheon Operation Training · AED/Cardiopulmonary Resuscitation (CPR) Training · Earthquake Response Training · Fire Department Notification Training · Other	26	12 times a year (1 hour per session)
On-the-job Training for Security Guards	· Compliance Training Seminar on Security Industry Law · Practical Drill (Parking Movement/ Truncheon Operation)	39	10 hours per year (5 hours in the first half of the year, 5 hours in the second half of the year)

Industry-Academia Collaboration

Nuvoton continues to accumulate innovative research and development capabilities through industry-academia collaboration, conducting forward-looking technology research to promote the sustainable development of the semiconductor industry and talent cultivation objectives.

Collaborating Units	Content
National Taiwan University	Nuvoton collaborates with Professor Tai-Cheng Lee from the Department of Electrical Engineering at National Taiwan University (NTU) on the "Low-Power ADC" project. This collaboration involves periodic analog course training and industry-academia cooperation, contributing to energy conservation and reducing carbon emissions.
National Yang-Ming Chiao Tung University	assists in handling the TCAD simulation, verifying its feasibility, and enhancing product performance through understanding theoretical frameworks.
National Cheng Kung University	Additionally, Nuvoton partners with Professor Chia-Hui Yang from National Cheng Kung University (NCKU), appointing him as the Nuvoton Chair Professor. Periodically, seminars on semiconductor technology are conducted in collaboration with NCKU.
	Furthermore, collaboration with Professor Lik-Yee Yau from NCKU focuses on research on the "Inference Calculation Logic Based on IMC-Core" project.
	Nuvoton's project targeting Arm Ethos U55 involves the design of a compiler for machine learning inference algorithms, with TVM serving as a reference for the compilation process. During the implementation, incorrect compilation details are rectified.
	Moreover, efficient peripheral circuit models for cooperation with CIM (Computing-In-Memory) MAC (Multiply-Accumulator Calculator) are developed, serving as reference operational specifications for future CIM integration in circuit design.
Tokyo Institute of Technology, Toyohashi University of Technology, Hiroshima University	A consortium comprising Tokyo Institute of Technology, Toyohashi University of Technology, Hiroshima University, five research institutes, and twenty private companies collaborates to drive the research and development of new integrated circuit technology. This initiative is critical for creating new markets such as electric vehicles and augmented reality.
Kyoto Institute of Technology, Osaka Prefecture University, Osaka University	Nuvoton Japan collaborates with three universities to enhance the semiconductor industry's presence and generate interest in semiconductor industry careers. In 2023, two semiconductor vocational education programs were conducted with a total of 241 participants over four sessions.

5.2.3 Compensation and Benefits

Compensation System

Nuvoton offers a reasonable fixed salary based on market levels and mandates in its company bylaws that a portion of profits, not less than one percent, should be allocated for employee compensation to ensure overall salary competitiveness. In addition to linking company performance with employee salaries, the company provides comprehensive career development training programs. Regular assessments are conducted to evaluate employee performance and skill development, with corresponding salary adjustments based on performance and serving as a basis for promotions. Furthermore, Nuvoton offers a dual-track system for managerial and professional positions to ensure a healthy career advancement path for employees, motivating both employees and the company to grow together.

Comparison of Standard Salary for Junior-Level Employees to Local Minimum Wage

Year	2021		2022		2023	
Company	Female	Male	Female	Male	Female	Male
Nuvoton Taiwan[1]	1.05	1.05	1.06	1.06	1.05	1.05
Nuvoton Japan[2]	1.17	1.17	1.15	1.15	1.14	1.14

1 In Taiwan, the minimum wage in 2023 was NT$26,400, in 2022 it was NT$25,250, and in 2021 it was NT$24,000. Nuvoton Taiwan uses the standard salary of direct employees as the starting salary for junior employees.

2 In Kyoto, where Nuvoton Japan's headquarters is located, the minimum wage in 2023 was 155,000 Japanese yen (approximately NT$32,225), in 2022 it was 148,800 Japanese yen (approximately NT$30,936), and in 2021 it was 144,000 Japanese yen (approximately NT$30,197). Nuvoton Japan uses the starting salary for high school graduates as the starting salary for junior employees.

Gender Pay Gap

Year		2021		2022		2023	
Company		Managerial Positions	Non-managerial Positions	Managerial Positions	Non-managerial Positions	Managerial Positions	Non-managerial Positions
Nuvoton Taiwa	**Female**	1	1	1	1	1	1
	Male	1.13	1.24	1.2	1.27	1.2	1.24
Nuvoton Japan	**Female**	1	1	1	1	1	1
	Male	1.06	1.12	1.07	1.12	1.06	1.10

In 2023, there was a slight disparity in the gender pay ratio at Nuvoton Taiwan, mainly due to the gender distribution among professional staff being approximately 3:1. More male students are still enrolled in relevant engineering programs, and since professional staff earn higher salaries than technical staff, there is a discrepancy in compensation ratios due to different job categories.

Performance Evaluation System

Nuvoton conducts performance evaluations every six months for employees who have passed their probation period to assess their goal execution, behavioral implementation, improvement, and other factors. New employees undergo probationary evaluations, and the results determine their continued employment. Additionally, Nuvoton provides comprehensive career development training programs, regularly assessing employees' performance and development, aligning compensation with performance, and using these assessments as a basis for promotion. In 2023, 100% of full-time employees at Nuvoton Taiwan underwent annual performance evaluations, excluding those on unpaid leave, with less than three months of service, engineering assistants, and fixed-term contract employees※. However, since Nuvoton Japan does not conduct performance evaluations for contract employees, the percentage of employees undergoing evaluations in 2023 did not reach 100%.

※ Contract employees include: (1) Individuals engaged in specialized research, investigation, negotiation, guidance, support, insurance, or similar specialized work utilizing academic expertise and skills. (2) Temporary workers. (3) Employees aged 65 and above who continue to work under contract with the company. According to internal regulations at Nuvoton Japan, contract employees' working conditions (including salary and bonuses) are governed by the terms of the annual contract, hence they are not required to undergo a performance evaluation.

Percentage of Employees Undergoing Regular Performance and Career Development Reviews in 2023

		Nuvoton Taiwan			Nuvoton Japan		
		Managerial Positions	Non-managerial Positions	Total	Managerial Positions	Non-managerial Positions	Total
Number of Employees Required to Undergo Performance Evaluation	Female	23	268	291	6	154	160
	Male	146	662	808	262	1,191	1,453
	Total	169	930	1,099	268	1,345	1,613
Actual Number of Employees That Underwent Performance Evaluation		169	930	1,099	266	1,278	1,544
Percentage of Employees That Underwent Evaluation		100%	100%	100%	99.25%	95.02%	95.72%

Employee Benefits

Category	Benefits
Salary Benefits	· A comprehensive and competitive salary system · Mid-Autumn Festival, Dragon Boat Festival, Year-end Bonuses (depending on company performance) · Bonus dividends (subject to company profits, organizational goal attainment rate, and individual performance) · Birthday vouchers, holiday vouchers, Labor Day vouchers · Travel and recreational subsidies
Employee Care	· Labor and health insurance, group insurance · Annual employee health check-ups · Wedding and funeral subsidies, maternity subsidies · Childcare subsidies for ages 0-4 (Nuvoton Taiwan) · Scholarship and subsidy system for age 0-18 (Nuvoton Japan) · Comprehensive retirement system · Lunch and dinner subsidies · Reserved parking for pregnant employees · Comfortable and clean lactation room
Leave Policies	· New employees enjoy seven days of leisure leave in their first year (Nuvoton Taiwan) · Milestone challenge vacation (30, 40, 50 years old) 10 days (Nuvoton Japan) · Flexible working hours
Enjoyment at Nuvoton	· Club activities, festival gatherings, family days, annual banquets · Occasional afternoon tea, office snacks · Leisure facilities (fitness equipment and aerobics classrooms) · Discounts at thousands of partner merchants

In addition to the basic employee benefits mentioned above, we have a diverse welfare system, including the Employee Welfare Committee, employee club activities, encouragement for childcare programs, and maternity leave.

Nuvoton has an Employee Welfare Committee formed through an election system, selecting representatives from each region to handle welfare operations. Each year, the committee establishes an annual plan and budget allocation, providing subsidies for marriage, childbirth, funerals, accidents, and more. Additionally, it includes holiday and birthday vouchers, organizes group activities and trips, and supports club activities. Nuvoton also collaborates with vendors to provide discounts through a mobile app, enabling employees to conveniently enjoy discounts from about 2,343 partner merchants in 2023. This app digitizes identification cards, facilitates access to contracted stores, and offers group purchase features. This system makes it easier for employees to enjoy benefits and ensures they can access various discounts in daily life while focusing on their work.

Nuvoton places great importance on the issue of Taiwan's declining birthrate and encourages employees to marry and have children. In addition to offering benefits beyond legal requirements such as maternity leave, paternity leave, family care leave, and marriage leave, Nuvoton Taiwan also provides childcare subsidies for children aged 0-4. Each employee can receive up to NT$240,000 in subsidies per child over a total of 4 years. Nuvoton Japan offers a childcare education subsidy, providing JPY 10,000 per month for each child of an employed worker, with the subsidy available until the child turns 18. In 2023, a total of 49 employees at Nuvoton Taiwan applied for childcare subsidies, with a cumulative number of 267 applications. In 2023, Nuvoton Japan had an average of 441 applications per month.

The total amount disbursed by Nuvoton Taiwan in 2023 was NT$8.18 million

with a total of approximately NT$19.53 million disbursed from 2021 to 2023. In 2023, Nuvoton Japan disbursed JPY 18 million.

The amount distributed by Nuvoton Japan in 2023 is 18 million

Note All amounts are in New Taiwan Dollars (NTD).

Nuvoton encourages groups to actively organize various activities through subsidies and evaluation systems. This initiative allows colleagues to enjoy a relaxed and stress-free after-work life, alleviating work pressure, promoting health and vitality, and creating new opportunities for communication among colleagues.

Nuvoton adheres to the Gender Equality in Employment Act, fully supporting employees in need by allowing both male and female workers to apply for parental leave according to the relevant procedures, supporting them during important life stages. In 2023, 11 employees at Nuvoton Taiwan applied for parental leave. Of the 8 employees scheduled to return from leave, 7 chose to return, resulting in an 87.5% return-to-work rate. Additionally, of the 8 employees who returned in 2022, 7 continued to work for at least one year, with a retention rate of 87.5%. At Nuvoton Japan, 7 employees applied for parental leave, with 5 employees scheduled to return, all of whom chose to return, achieving a 100% return-to-work rate. Furthermore, all 4 employees who returned in 2022 continued to work for at least one year, also achieving a 100% retention rate. For detailed parental leave data, please refer to Appendix II - Social Data.

2023 The return-to-work rate after maternity leave was 92.3%, and the retention rate was also 92.3%.

5.3 Occupational Safety and Health

Nuvoton prioritizes the health and safety of its employees as the utmost management focus and the primary consideration in all operational activities. We are dedicated to meeting international safety, health, and environmental standards while promoting the concept of health promotion. We pledge to always provide a legal and compliant working environment, continuously improving and mitigating risks that could lead to illness or injury of personnel. Our aim is to foster a positive working environment and establish a "Safety, Health, and Environmental Protection Policy," committed to achieving zero occupational accidents, minimizing environmental impact, achieving net zero emissions, and promoting employee health responsibilities. Through the active participation of all employees, we strive to continuously enhance our efforts to reduce the rate of personnel disability and injury, optimize resource utilization, minimize the use of chemical materials, and implement the concept of "designed for environmental and safety and health." Our goal is to become a sustainable green enterprise through these practices.

5.3.1 Workplace Safety

ISO 45001 Occupational Health and Safety Management System Statistics

Company	Number of Employees Covered by Management System		Percentage of Employees Covered by Management System		Number of Non-Employees Covered by Management System[2]		Percentage of Non-Employees Covered by Management System	
	Internal Audits	External Organization Audits	Internal Audits	External Organization Audits	Internal Audits	External Organization Audits	Internal Audits	External Organization Audits
Nuvoton Taiwan[1]	1,544	1,544	100%	100%	94	94	100%	100%
Nuvoton Japan	1,691	1,691	100%	100%	313	313	100%	100%

1 For Nuvoton Taiwan, the number of employees covered by the management system is calculated based on the monthly average number of employees reported to the Ministry of Labor for occupational accidents.

2 The number of non-employee workers at Nuvoton Taiwan is calculated based on the number of individuals with company work permits or construction identification badges, averaged monthly. For Nuvoton Japan, it includes temporary staff and subcontractor personnel who are regularly stationed at operational sites.

We prioritize the physical and mental health and safety of our employees as our top management focus. Utilizing the ISO 45001 management standard, we establish occupational safety and health management systems for both Nuvoton Taiwan and Nuvoton Japan. These systems operate on the "Plan-Do-Check-Action" management cycle, ensuring effective management processes. Our commitment lies in adhering to international safety and health standards while promoting health concepts and providing a legal and compliant working environment. We foster a safety culture among all employees, encouraging their active participation. This includes monthly inspections by production units and regular operational safety observations to continuously improve and reduce the rate of personnel disabilities and injuries. Additionally, we conduct regular risk assessment operations to identify and eliminate potential hazards in operational activities, thereby enhancing workplace safety and health. To ensure the smooth operation of our management system, we carry out internal audits every six months, supplemented by annual audits conducted by external international verification companies.

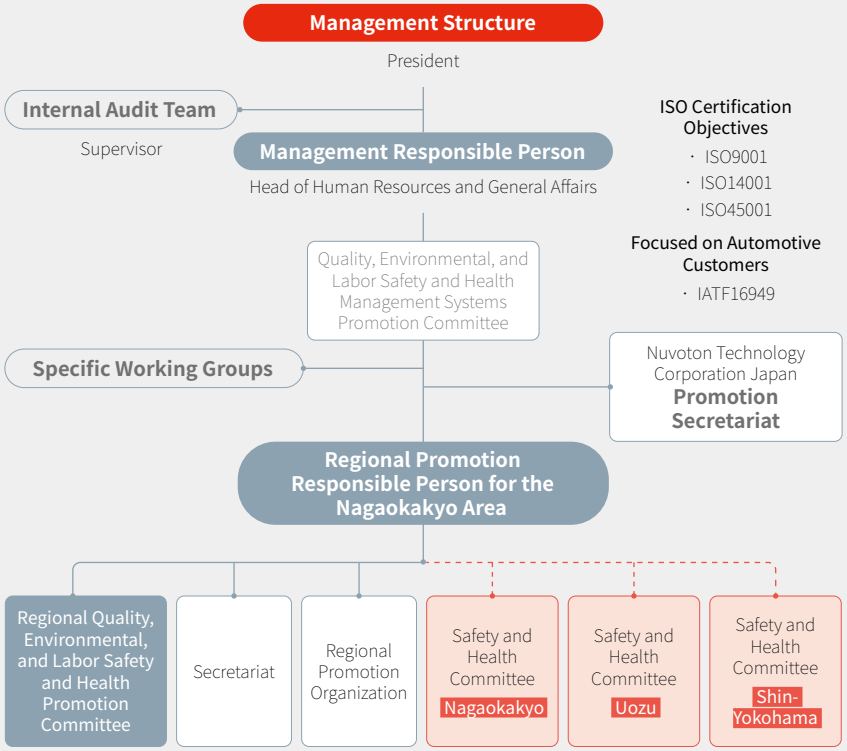
Nuvoton Taiwan complies with the Occupational Safety and Health Administration Regulations of Taiwan by establishing a dedicated first-level occupational safety and health management unit within its manufacturing division. Additionally, it appoints supervisors and managers specifically tasked with overseeing occupational safety and health affairs. This includes two first-class occupational safety and health supervisors, two occupational safety (health) managers, three occupational safety and health managers, and two nurses. Similarly, in compliance with the Japanese Occupational safety and health Law, Nuvoton Japan appoints personnel to fulfill specific roles aimed at promoting safety and health policies. This includes one safety and health manager, one safety manager, five health managers, and one industrial doctor. These individuals are responsible for promoting safety and health policies,

conducting investigations, identifying hazards or risks, and spearheading voluntary safety and health activities to enhance workplace safety.

Both Nuvoton Taiwan and Nuvoton Japan have established Occupational Safety and Health Committees that convene quarterly and monthly meetings respectively to address safety, health, and wellness concerns. In Nuvoton Taiwan, the committee is chaired by the president and comprises 14 members, including occupational safety and health personnel, health management personnel, management representatives, and labor representatives. Notably, 8 out of the 14 members are labor representatives, accounting for 57% of the committee. In Nuvoton Japan, the committee includes a chairman and a vice-chairman, along with company members from various departments and an equal number of union members. This balanced representation ensures comprehensive implementation of safety and health management practices. During these regular meetings, both committees actively promote occupational safety and health, as well as workplace environment improvement activities. They facilitate ample communication and consultation between employees and managers, fostering a collaborative approach to maintaining a safe and healthy work environment.

The Occupational Safety and Health Committee of Nuvoton Taiwan.

The Occupational Safety and Health Committee of Nuvoton Japan.



Major resolutions of the Occupational Safety and Health Committee in 2023

	Major Safety and Health Resolutions	Major Health Resolutions
Nuvoton Taiwan	• Continued promotion of safety culture • Implementation of managerial operational observations • Continued promotion of regional environmental health and safety management platforms to establish a safe working environment • Chemical risk assessment and management, implementation of regular environmental monitoring measures • Implementation of safety and health education and training • Implementation of subcontractor management and operational safety control • Optimization and improvement of fire facilities and equipment to enhance safety Continued replacement of aging hardware to improve safety protection	• Active cancer prevention, increasing screening numbers, reducing severity, and protecting the health of colleagues • Continued management of overloads, prevention of human hazards, maternal protection, and prevention of illegal infringements • Promotion of health management plans for middle-aged and elderly workers • Provision of health checks and personalized assessment consultations for high-risk individuals
Nuvoton Japan	• Emergency measures for buildings, equipment, workplaces, or operations with potential hazards • Regular inspection of safety equipment, protective equipment, and other devices aimed at preventing hazards • Education and training on operational safety • Investigation of causes of accidents and research on countermeasures • Supervision by other safety-related assistants, such as supervisors • Preparation, collection, and handling of safety-related information • Prior research and review when adopting new equipment or production methods • Fire drills and evacuation exercises, as well as related matters derived from or associated with the aforementioned items	• Detection of abnormal health conditions and related measures • Investigation of workplace environmental hygiene • Improvement of working conditions and facility hygiene • Inspection and maintenance of labor hygiene equipment, first aid equipment, etc. • Health education, provision of health information, and other necessary measures to maintain employee health • Implementation of health checks and adoption of measures to maintain employee health based on the results • Immediate adoption of necessary measures to prevent harm to workers' health when operational methods or conditions may be harmful to health

Safety Culture

Nuvoton remains steadfast in its commitment to fostering a safer and healthier working environment. Through personnel training, the implementation of relevant policies and regulations, adherence to standards and norms, risk assessment management, safety inspections, and feedback mechanisms, we actively promote a culture of safety and health. We cultivate awareness among colleagues, emphasizing the importance of prioritizing workplace safety and personnel health in all activities, services, or productions to achieve zero occupational accidents.

Furthermore, an analysis of statistics from recent cases reveals that most accidents stem from inadequate personnel safety awareness and a failure to implement standard procedures. To bolster awareness on safety culture among colleagues, Nuvoton Taiwan's production units have revisited relevant safety regulations, supplemented and corrected insufficient information, and utilized visuals to enhance comprehension of procedures. Supervisors and engineers in production units conduct regular operational observations to assess colleagues' actual working conditions, fostering their ability to identify potential workplace hazards. We promote and acknowledge colleagues' safe behaviors and, when safety concerns arise, establish safe operating methods through consultation, discussion, and correction. We continuously strive to prevent hazards and instill safety culture habits in daily operations. Monthly safety meetings, led by supervisors at all levels alongside workers, are convened to review safety and health management and communication, thereby enhancing operational and environmental safety. Unsafe conditions across various areas are identified through inspections, and relevant units propose improvement measures. Additionally, the company advocates for an ESH scoring mechanism, with one scoring item dedicated to safety and health issues.

Nuvoton Taiwan fully implements the ESH (Environmental, Safety, and Health) scoring mechanism. During the quarterly meetings of each regional Occupational Safety Committee, ESH performance scores are reported, and the top-performing unit is awarded a bonus to encourage all workers to improve workplace safety.

This mechanism enables colleagues to familiarize themselves with the company's safety culture and raise any questions or concerns about occupational safety and health, facilitating further improvement.

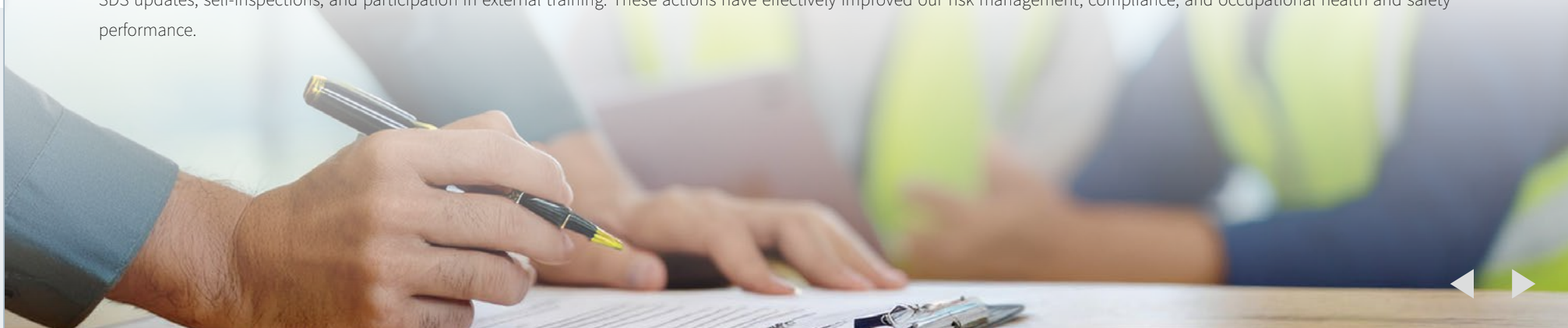
Occupational safety and health risk assessment and management

Nuvoton consistently identifies and evaluates risks and opportunities associated with occupational safety and health across its activities, products, or services, including material or energy resource usage and various operations. To ensure effectiveness, we have established the "Occupational Safety and Health Risk Assessment Procedure." Under this procedure, each unit conducts risk assessments at least once a year. Internal audits are conducted semi-annually and reviewed by the "Occupational Safety and Health Committee" to ensure compliance and effectiveness. Moreover, before implementing temporary or permanent changes, or in the event of accidents, risk assessments are re-performed to prevent new risks resulting from proposed countermeasures. In instances where risks are assessed to be at a high level, risk reduction measures are implemented in the following order: elimination, substitution, engineering controls, signage/warning/management controls, and personal protective equipment. This structured approach ensures comprehensive risk management and enhances workplace safety and health.

01 List the job responsibilities and tasks. › **02** Identify occupational safety and health risks to be assessed. › **03** List possible impacts or consequences. › **04** Classify existing control measures. › **05** Calculate the risk level. › **06** Confirm whether the risk is high, medium, or low. › **07** Confirm compliance with regulations. › **08** Propose improvement measures or maintain control.

Risk assessment plays a crucial role in preemptively managing changes in information, preventing deviations in environmental or operational conditions from the original safety scope and control. At Nuvoton, each unit is required to proactively report changes in information and utilize digitalization to facilitate applications for change risk assessments. By implementing material sample identification procedures, reviewing supplier PCNs (Process/Product Change Notices), conducting Process Change Review Board meetings, and leveraging procurement management systems, units can swiftly grasp change information. If the assessment identifies new or significant risks or impacts, relevant protective measures are promptly implemented. If derived operational controls are necessary, relevant documents are formulated or revised, and personnel training is completed accordingly. In 2023, Nuvoton Taiwan evaluated 26 PCNs from raw material suppliers and received 22 change risk assessment applications, including 7 for chemical changes and 15 for mechanical equipment changes.

Achieving zero accidents in occupational safety is our fundamental goal. Nuvoton Japan analyzes accident causes from multiple angles, conducts risk assessments, and develops improvement measures. In 2023, we completed 94% of the improvement items (1,116 out of 1,193). We achieved 84% completion of prioritized improvement items (75 out of 89) to enhance occupational health and safety performance. We also addressed new chemical substance regulations by implementing 70 improvement measures, including hazard label and SDS updates, self-inspections, and participation in external training. These actions have effectively improved our risk management, compliance, and occupational health and safety performance.

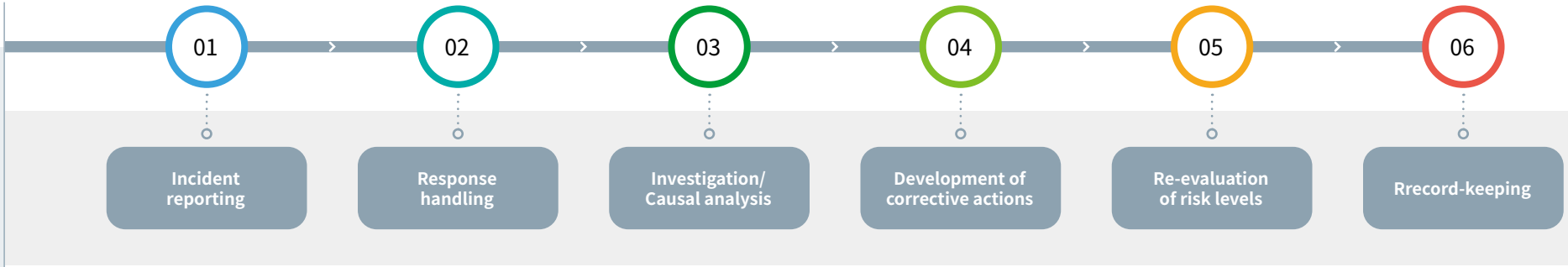


Accident investigation

Adhering to the goal of "zero occupational accidents," Nuvoton prioritizes meticulous handling procedures, thorough investigation, and the prevention of recurrence for every accident. Nuvoton Taiwan has developed the "Environmental, Health, and Safety Incident Reporting and Investigation Procedure," encompassing accident reporting, investigation, and improvement protocols. Similarly, Nuvoton Japan adheres to the Serious Disaster Reporting Rules to notify management and relevant units. Accidents are categorized as major or minor, with major incidents involving personnel injuries, complete plant shutdowns, or regulatory violations, while all others are deemed minor. Following a major accident, an Environmental, Health, and Safety Incident Investigation Team is convened to thoroughly investigate the incident and recommend improvements, while also reassessing operational risks reduction. For minor incidents, improvement measures are proposed by the unit involved in the accident and validated by the safety department to ensure risk reduction and prevent recurrence. We have established a robust system for environmental, health, and safety incident reporting, management, investigation, tracking of improvement measures, and advocacy. The outcomes of incident improvements are regularly monitored and verified by the Occupational Safety and Health Committee quarterly to forestall the recurrence of accidents and ensure the safety of employees, visitors, contractors, and all stakeholders.

Nuvoton Taiwan has instituted the Environmental, Health, and Safety Management System Participation Consultation and Communication Procedure to facilitate the collection of pertinent information through both proactive and passive means. This framework offers appropriate channels for consultation, participation, communication, feedback, and resolution, effectively addressing environmental, health, and safety concerns. Communication channels encompass various avenues such as supervisors, safety management units, business responsibility units, safety and health personnel, labor-management conference representatives, proposal improvement forms, internal websites, and ESG mailboxes. As outlined in the "Environmental, Health, and Safety Management Manual," all employees are encouraged to actively engage and are safeguarded from any form of retaliation when reporting accidents, hazards, risks, or opportunities.

Accident Investigation Process



Hazardous Chemical Management and Workplace Monitoring

To ensure the comprehensive evaluation and control of various chemical raw materials, as well as their procurement and acceptance processes, Nuvoton has implemented the Chemical Material Safety, Health, and Environmental Management Regulations. Prior to assessing new chemical raw materials or initiating purchase orders, user units are required to furnish safety data sheets in both Chinese and English (in Japanese for Nuvoton Japan). Subsequently, a risk assessment application is submitted for review by the safety management unit. Upon confirmation of requisite safety, health, and environmental response measures, acceptance and utilization of the materials can commence.

In 2023, Nuvoton Taiwan to enhance leak safety protection in chemical storage areas, Nuvoton Taiwan replaced existing chemical leak detectors with explosion-proof leak sensors across all areas (acids, alkalis, organics, oxidizers, etc.). Leak signal feedback was integrated into storage areas and the plant control room, with warning lights and buzzers installed on-site for early anomaly detection, thus reducing the severity of potential disasters. Furthermore, plans were initiated in 2022 to integrate the HF supply systems for equipment washing and process supply in production lines. This led to the official unification of the chemical supply management mechanism in 2023, aimed at reducing the risk of supply system anomalies.

To ensure workers' well-being and maintain a healthy work environment, Nuvoton standardize the monitoring process across all operating sites. Every six months, environmental conditions are assessed for potential physical hazards.

Prior to monitoring, Nuvoton Taiwan exposure analysis is conducted to formulate a monitoring plan in compliance with legal requirements. Chemical sampling monitoring is then carried out in areas with chemical exposure. In addition to the 17 items specified in the Regulations on Monitoring Working Environment for Workers, an extra 10 hazardous chemicals are autonomously monitored to ensure workers potentially exposed to high-risk chemicals are included. The results of workplace environmental monitoring are communicated to colleagues by the safety management unit and archived for subsequent special health examinations and supervisors' reference, thus preventing the occurrence of occupational diseases within the factory. In 2023, all monitoring results were below the permissible exposure concentration, indicating a high level of management compliance.

2023 Workplace Environmental Monitoring Risk Assessment and Safeguard Measures

Target	Risk Assessment and Monitoring Methods	Employee Safety and Health Safeguard Measures
Employees at the Research and Development Plant	· Regular monitoring of CO_2, noise, and illumination levels, additional chemical workplace monitoring for wafer plants and laboratories.	· Provision of relevant protective equipment proactively, reducing employee exposure through engineering control measures when necessary.
Employees at Taipei/Tainan Offices	· Regular monitoring of CO_2, noise, and illumination levels.	· Provision of relevant protective equipment proactively, reducing employee exposure through engineering control measures when necessary.
Employees at the Hsinchu Office Building	· Regular monitoring of CO_2, noise, and illumination levels.	· Provision of relevant protective equipment proactively, reducing employee exposure through engineering control measures when necessary. · Special Lighting for Research Personnel In response to the need for brighter working environments for research tasks (illumination levels already compliant with regulations), in 2023, partial lighting was provided for employees with special requirements, totaling 6 desk lamps. A total of 28 desk lamps have been provided since 2020.

Occupational Accidents

The analysis of statistics on occupational accidents includes various factory areas in Taiwan and Nuvoton Japan. Recordable disabling occupational injuries in Nuvoton Taiwan are calculated based on reports submitted to the Ministry of Labor, excluding commuting accidents. In 2023, there were no fatal occupational accidents, serious occupational injuries, or occupational diseases among employees. Nuvoton Taiwan's lost time injury frequency rate is 0.67, and the lost time injury severity rate is 0.67.. In 2023, reported 2 cases of disabling injuries among employed employees (1 non-work-related fall and 1 work-related laceration) involving 2 individuals. Additionally, there were 4 recordable but non-occurring occupational injuries (3 non-work-related falls and 1 work-related fall) among employed employees, and 1 recordable but non-occurring occupational injury (work-related laceration) among non-employed employees. In Nuvoton Japan, there was 1 recordable occupational injury involving a non-employed worker. Each incident underwent accident investigation and root cause analysis, and responsible units were tasked with developing improvement measures to enhance hazard awareness and build the ability to respond promptly to unsafe conditions. This ensures that all workers can work in a safe environment. For detailed information on occupational accidents, please refer to Appendix II - Social Data.

Occupational Safety and Health Education and Injury Prevention

Nuvoton aims to ensure that all employees understand the company's safety and health management system, standardize operational capabilities, and enhance environmental impact reduction and operational safety. To achieve this, we provide comprehensive environmental, safety, and health education and training. New and existing employees receive three hours of general safety and health education before starting or changing jobs. Additionally, those handling or using hazardous chemicals undergo an extra three-hour course. These training sessions cover concepts such as work safety and protection, and include demonstrations of emergency response skills. This approach strengthens employees' understanding of safety and health regulations and their ability to respond effectively in emergencies.

In Taiwan, Nuvoton conducts annual physical and online training courses based on established plans, using digital teaching materials and videos to enhance employees' knowledge and skills in risk awareness, hazard prevention, and emergency response. In 2023, Nuvoton Taiwan held a total of 68 safety and health education training sessions, including 15 mandatory courses for new hires, special operations, and chemical users, achieving a 100% completion rate. A total of 4,566 participants attended these sessions, with an overall training completion rate of 98.6%. The overall satisfaction rating for the training courses was 4.7 out of 5. Nuvoton Japan conducts an annual general training session on environmental Occupational safety and health, with additional specialized training determined by each unit. In 2023, Nuvoton Japan conducted general training on environmental Occupational safety and health with 1,904 participants. Specialized training sessions, including chemical management and protective equipment use, involved 19 individuals. Additionally, 35 participants attended ISO 45001 internal audit retraining, and 72 participated in risk assessment execution training.

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achieving a 100% completion rate: 100%

A total of **4,566** participants attended these sessions

with an overall training completion rate of 98.6%

The overall satisfaction rating for the training courses was ★★★★★ 4.7/5 point

Contractor Safety Management

To enhance operational safety prevention and emergency response procedures, and to integrate routine inspection mechanisms, we implement safety policies through walk-around management. The disabling injury rate for contractors over the past five years is 0.

Nuvoton Taiwan's safety management unit has defined the rights and obligations regarding safety, health, and environmental matters for contractors, forming the basis for contractor management. To prevent occupational accidents, we conduct inspections, coordinate work, and make adjustments at contractor workplaces. Educational training informs construction personnel about occupational safety and health regulations, provisions, general hazards, and protective principles. Contractors must undergo safety and health training to qualify for operations. In 2023, a total of 82 contractor engineering training courses were conducted, with 362 participants overall.

Depending on the nature and scale of the operating area, the engineering contracting unit customizes appropriate hazard notifications. Before commencing work, contractors are informed about the work environment, hazards, and safety and health regulations to which they should adhere.

In 2023, the installation of solar power systems coincided with the summer season, requiring employees and non-employees to work outdoors in hot weather for extended periods. The company established "Preventive Measures for High Temperature Outdoor Operations," which included developing health checklists for relevant personnel and conducting daily on-site inspections. In addition to setting up outdoor sun shades, the company provided relatively comfortable rest areas within the factory premises. Contractor personnel could rest in indoor air-conditioned areas and had access to refrigerators. Nuvoton Japan holds safety and health meetings with contractors on factory premises to coordinate operations and manage comprehensive safety and health efforts.

Emergency Response Measures

Nuvoton has established emergency response procedures for internal abnormal incidents and external natural disasters. These procedures serve as a basis for each internal unit to formulate response processes, organize response personnel, conduct drills, and provide training. The aim is to minimize the impact of various emergency situations, such as personnel injuries, property damage, and production interruptions. All employees are required to undergo practical fire training every three years to enhance their disaster prevention and evacuation awareness through hands-on exercises with fire extinguishers, fire hydrants, and escape routes. Additionally, annual emergency response drills for various potential accidents are planned, with biennial refresher training for emergency response teams.

Nuvoton Taiwan has developed comprehensive disaster emergency response and post-disaster recovery plans, regularly conducting drills to enhance response capabilities. In 2023, a total of 68 emergency response drills were carried out, covering scenarios like fire rescue, chemical and gas leaks, and system abnormalities. These exercises involved 2519 participants. Additionally, the company participates in drills organized by the Hsinchu Science Park Administration Joint Defense Team and joint drills with the Hsinchu City Environmental Protection Bureau, extending cooperation to neighboring factories for toxic disaster response. Various accident notification systems, emergency response procedures, and processing standards have been established, along with adequate emergency response equipment and medical kits across all factory areas. Nuvoton Taiwan's "Emergency Response Procedures" allow employees to stop work and move to a safe location if they encounter immediate danger, with protections against adverse actions, such as dismissal, transfer, or withholding of wages, for exercising this right.

To safeguard the company's operations against potential disruptions caused by disasters and accidents, Nuvoton has crafted a business continuity plan in line with ISO 22301 standards. This plan is comprehensive, encompassing strategies, operations, finances, and more, with the aim of identifying key risks and implementing effective countermeasures. In terms of strategy, we continuously monitor global regulations, political dynamics, economic shifts, and other external factors to evaluate their potential impact on the company. This enables us to promptly adopt necessary risk response measures. Operationally, the company maintains a thorough understanding of the status of critical materials, equipment capacities, and delivery schedules to ensure operational resilience. Financially, we employ appropriate hedging tools to mitigate exchange rate risks and structure debt maturity days, fixed or floating interest rates, and other financial instruments judiciously to minimize interest rate risks.

Occupational Safety and Health Risk Identification and Response Measures

	Risk Category	Risk Identification	Response Measures
Nuvoton Taiwan	**Operational Risks**	· Fires · Gas and Chemical Leaks · Energy Interruption · Air Pollution/Wastewater Discharge Abnormalities	· The fire protection system is designed and constructed in accordance with domestic fire regulations and international standards, such as NFPA and FM. · The factory and associated facilities are established to meet domestic regulations, with mechanical equipment chosen to adhere to these standards. Gas detectors, liquid leak detectors, and continuous monitoring systems are installed for added safety. · Emergency generators and uninterrupted power systems are installed. · The operation of exhaust gas and wastewater treatment equipment is monitored 24 hours a day.
	Natural Disasters	· Earthquakes · Water Shortage	· The factory is designed to withstand earthquakes of magnitude 5. Main equipment and machinery have anti-seismic designs, and the gas supply system activates an automatic shutdown mechanism when an earthquake of magnitude 5 or higher is detected. · Backup water tanks are installed, and contingency plans for water shortages are in place.
	Regulatory Risks	· Occupational Safety and Health Act · Fire Services Act · Environmental Protection Act · Radiation Protection Act · Energy Act	· Identification of regulatory impacts and corresponding measures are undertaken regularly. · Periodic compliance checks are conducted, and newly revised regulations are identified.
Nuvoton Japan	**Natural Disasters**	· Floods · Earthquakes	· Emergency measures include the establishment of an emergency response department, initial actions, and employee safety confirmation through EMC implementation.
	Earthquake	· Seismic Intensity 5 or Above	· Standard procedures for emergency earthquake alerts are established. · When an earthquake occurs, evacuation instructions are broadcast throughout the entire company premises, with guidance provided through automated voice instructions.

5.3.2 Healthy Workplace

Healthy employees are a company's most valuable asset. Therefore, we prioritize employee health management and promotion as a critical business strategy to enhance the company's competitiveness. Nuvoton's health management framework aims for comprehensive health management, built on four main pillars: occupational health, health management, health promotion, and health services. In the area of occupational health, we adhere to the Occupational Safety and Health Act and various guidelines, integrating safety and health management units, human resources, and hiring departments to implement health protection plans and prevent occupational diseases. Health management and promotion are conducted through tiered management based on examination results, providing health promotion measures to maintain employee health. Additionally, we offer various health services such as vaccinations and health assistance for employees on business trips, aiming to create a "healthy workplace and friendly enterprise."

Nuvoton Taiwan has appointed and reported two nursing personnel to manage labor health services in compliance with the Occupational Safety and Health Act. They have fulfilled the labor health services outlined in Articles 9 to 11 of the Labor Health Protection Regulations. In Nuvoton Japan, one full-time industrial nurse, two full-time public health nurses, two full-time nurses, one part-time nurse, and one public health nurse have been hired. These professionals are responsible for health management and promotion among workers, ensuring a safe and healthy work environment, enhancing employee health awareness, and reducing the rates of abnormal health check results and disease incidence.

Health Management Framework

2023 Occupational Health Management Plan

Convenient Health Management System

Nuvoton Taiwan has created the "My Health Management" platform on the company website. By the end of 2023, the platform had been viewed 30,926 times, a 10.8% increase. In 2023, Nuvoton Japan partnered with a health check-up organization to allow employees to log in with their personal accounts and passwords to view their health check-up reports online. Starting in 2024, all employees can use this service on the website.

Development of Standard Operating Procedures for Health Management

Based on health check data, employees with abnormalities are analyzed and categorized for management. General health checks are managed in five levels according to internal regulations, with severe abnormalities arranged for immediate medical follow-up and treatment. In 2023, Nuvoton Taiwan reported 59 cases of special operations, all classified as level one or two, and none were related to work.

On-site Services / Health Clinics

Nuvoton Taiwan arranges for occupational disease specialists and family doctors from a medical center to visit the company monthly. Each year, occupational disease specialists visit the workplace at least twice. In 2023, 37 clinic sessions were scheduled, with a total of 468 visits. To date, over 85% of the company's active employees have completed personal health assessments with the doctors. Nuvoton Japan collaborates with the safety and health management department for regular workplace inspections by industrial physicians, ensuring a safe and healthy working environment.

Establishment of Health Service Units

Nuvoton Taiwan has established the Health Center, a unit dedicated to providing caring health management services. The center is staffed with nurses who are available 24/7 to provide services and emergency medical assistance. Nuvoton Japan has set up Health Management Rooms at three locations nationwide. These rooms are responsible for conducting health check-ups and providing various health consultations.

Regular Health Check-ups

Nuvoton Taiwan conducts both special and general health checks for all employees annually, exceeding legal requirements. In 2023, 1,329 employees participated in health checks, including 169 for special operations, with a total expenditure of approximately NT$1.72 million. Nuvoton Japan conducts annual health check-ups, including stomach X-rays and cancer screenings for employees over 35. From 2023, they also conduct workplace injury exams (for those with obesity, high blood pressure, abnormal blood sugar, or lipid levels).

Emergency / First Aid Response

Sufficient first aid personnel, emergency response equipment, and medical kits are provided, and there is a proactive effort to promote company-wide training in cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) courses to reduce personnel injuries in emergency situations. Nuvoton Taiwan has installed seven advanced AED devices, while Nuvoton Japan has equipped three AEDs in the Nagaokakyo area.

2023 Health Promotion Services and Plans

Cancer Prevention Program

According to statistics from the Ministry of Health and Welfare, cancer has been the leading cause of death in Taiwan for nearly 40 consecutive years. Consequently, Nuvoton Taiwan has actively promoted cancer prevention programs for many years. Nuvoton Taiwan offers free or subsidized screenings for these high-risk groups to achieve early diagnosis and treatment. In 2023, screenings for colorectal, lung, cervical, breast, liver, nasopharyngeal, thyroid, and oral cancers totaled approximately 1,437 visits. Abnormal results were followed up, including a case of asymptomatic stage one thyroid cancer found in one employee, who has since undergone treatment and is recovering well.
Nuvoton Japan, supported by the Health Insurance Association, has been actively promoting early cancer diagnosis and treatment for many years. In 2022, people over 40 could receive free stomach X-rays and fecal occult blood tests for colorectal cancer during their regular health check-ups, which expanded to those over 35 starting in 2023. In 2023, approximately 2,100 screenings for colorectal and stomach cancers and 8 screenings for breast and cervical cancers were conducted.

Breast Cancer Screening for Women
(Three-point comprehensive examination)

In support of Breast Cancer Awareness Month in October, Nuvoton Taiwan encouraged and arranged for employees to complete regular breast ultrasound and mammography screenings. In 2023, 69 employees applied for subsidies totaling NTD 45,800. One employee was found to have benign changes after the screening and is undergoing regular follow-ups.

Health Management Plan for Middle-aged and Elderly Workers

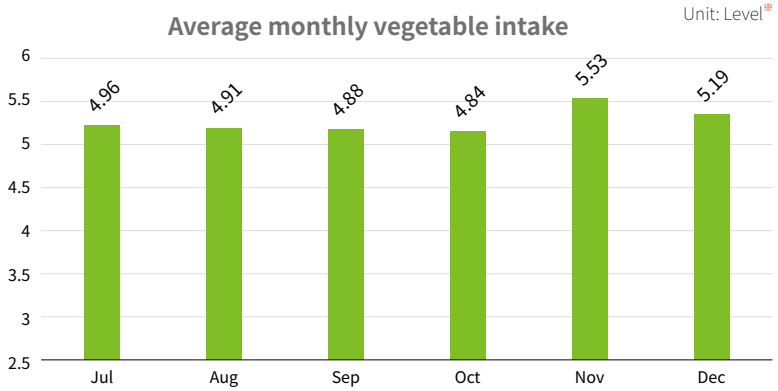
In response to an aging population, the Executive Yuan has promoted the Employment Promotion Act for In 2023, all 635 employees who turned 45 completed the workplace risk and hazard assessment. Among the 42 employees identified as medium to high risk, all completed advanced one-on-one health consultations with on-site physicians. Additionally, the company strives to create a middle-aged and elderly-friendly work environment, enhancing existing facilities, such as increasing the visibility of indoor parking signs for safety. Annually, 20-30 employees are arranged for advanced bone density checks to emphasize the issue of bone loss with age.

Workplace Health Care Activities

Given the predominantly sedentary office work environment, are the major health issues leading to obesity and metabolic syndrome-related diseases. Employees are encouraged to eat less and move more for better health. In 2023, Nuvoton Taiwan organized weight loss classes and walking activities. The weight loss classes included 37 groups with 111 participants, averaging a weight loss of 4.0 kg per person. The walking activity saw 127 participants, averaging 7,242 steps per person per day. Nuvoton Japan hosted a Vegan Marathon and lifestyle interview activities. The Vegan Marathon involved collaboration with external partners to measure carotenoid levels in the skin, encouraging vegetable intake. The lifestyle interview project is a three-year plan, with monthly interviews to provide guidance on various habits (diet, exercise, sleep).

【Nuvoton Japan Vegetable Marathon】

From July to December 2023, after regular health check-ups, vegetable juice was distributed to employees to support behavioral changes and increase interest in vegetable consumption, aiming to promote healthy eating habits. The event reached 3,600 participants, with a cost of JPY 400,000 (approximately NTD 85,000).



※This classification is based on the criteria set by the Kaga Company, which uses daily vegetable intake as the basis for the levels.

Influenza Vaccination

To care for employees and their families' health and increase community immunity coverage, Nuvoton Taiwan continues to offer free flu vaccinations to all employees in 2023. This aims to reduce cross-infection, mitigate severe symptoms, and decrease sick leave. In 2023, 654 employees received vaccinations, with a 43% injection rate. Nuvoton Japan, supported by the Health Insurance Association, recorded 77 vaccination instances (including family members).

Employee Assistance Program (EAP)

For employees experiencing stress from family, work, relationships, finances, or legal issues, the Health Center offers listening, care, and support. If necessary, employees are referred to external EAP experts for comprehensive counseling services. Nuvoton has long partnered with professional mental health institutions, ensuring absolute privacy and offering each employee at least three free consultations per year, encouraging employees to utilize this service actively.

Workplace Protection Plans

Nuvoton continues to develop various protection and management plans for different job groups in accordance with the Occupational Safety and Health Act. These plans include Overload Protection, Human Factor Hazards, Maternity Protection, Middle-aged and Elderly Employees, Respiratory Protection, among others. The aim is to provide all employees with a safe, secure, and healthy working environment.

Plan Name	Brief	2023 Achievements
Human Factor Hazards Prevention Plan	To prevent repetitive tasks or incorrect posture from causing musculoskeletal injuries among employees, we conduct an annual survey during the yearly health check-ups using the Nordic Musculoskeletal Questionnaire (NMQ). Employees scoring ≥ 4 points are scheduled for outpatient consultations or receive on-site assessments by occupational health physicians to identify hazards and provide individualized education and assistance. Additionally, preventive programs for musculoskeletal pain are planned, including daily office stretching exercises, consultations with physical therapists, hiring visually impaired massage therapists to provide massage services, and organizing stretching classes to alleviate symptoms of pain.	· In 2023, during the health check-ups, 51 individuals were identified with more severe pain (scoring ≥ 4 points) in the NMQ survey. They have been scheduled for outpatient consultations, where physicians provide education and may recommend medical treatment. · Additionally, visually impaired massage therapists provided massage services for approximately 4,500 people in 2023 to alleviate pain.
Abnormal Workload-induced Disease Prevention Plan	To ensure the safety and well-being of employees, Nuvoton Taiwan implements management measures for employees working in shifts, night shifts, or long hours to prevent excessive workload and mental stress, which can lead to the accumulation of long-term stress and work-related fatigue, triggering cardiovascular and other related diseases. Similarly, Nuvoton Japan has a similar program. Each year, we conduct stress checks based on recommendations from the Ministry of Health, Labour, and Welfare. The purpose of this check is to maintain psychological well-being. Individual examination results are provided to employees to help them recognize their own conditions and take action. Additionally, we provide organizational analysis reports to the company to facilitate workplace improvement actions aimed at reducing stressors. For those experiencing high levels of stress and willing to seek help, we offer face-to-face meetings with occupational physicians. If necessary, we refer them to counseling organizations or specialists, or take measures in their work environment to address their needs.	· In 2023, Nuvoton Taiwan had a total of 239 individuals under management. Among them, 6 were identified as high-risk individuals. All of them have completed physician interviews and assessments. Among the high-risk individuals, 5 have been diagnosed with three high conditions (high blood pressure, high cholesterol, and high blood sugar) and are receiving regular medication follow-ups along with dietary and exercise guidance. One individual was identified with high levels of fatigue, and our nurses provide regular individual care and offer access to the EAP counseling hotline to encourage their usage. Comparing the abnormal results from the 2023 health check-up with the previous one, there was a 0.3% increase in abnormality for elevated blood lipids, a 6.3% decrease in abnormality for blood pressure, and a 0.3% decrease in abnormality for fasting blood sugar. · In 2023, Nuvoton Japan conducted a 14-day stress check, which involved 1,607 employees (98.2% of all staff) conducting self-assessments using this tool. Subsequently, we arranged face-to-face meetings with occupational physicians for employees who expressed interest in further assistance.
Prevention Plan for Unlawful Acts Against Duties Execution	Following the guidelines set forth by the Ministry of Labor on preventing illegal acts in the workplace, Nuvoton has established prevention strategies and management procedures. Annually, we conduct advocacy and educational training sessions. During onboarding sessions for new employees, we ensure they understand how to protect themselves and know the channels for filing complaints. The company firmly declares a "zero tolerance" policy towards workplace misconduct and strives to cultivate a workplace culture characterized by safety, dignity, non-discrimination, mutual respect, inclusivity, and equal opportunities.	· In 2023, we completed hazard identification and risk assessment in accordance with the guidelines. During orientation training for new hires, we explained the company's internal reporting and handling procedures, encouraging employees to foster a culture of mutual respect and inclusivity in the workplace to prevent any acts of misconduct. Annual educational training sessions were conducted, achieving a completion rate of 100% in 2023.
Maternity Health Protection Plan	In accordance with current regulations concerning workplace maternal health protection, Nuvoton promotes a maternal health protection program. For female employees who are pregnant or within one year postpartum, the company annually collaborates with occupational safety to revise and complete a company-wide assessment of maternal colleagues' work environment and occupational hazard identification and risk assessment forms. This includes arranging consultations with physicians to assess the overall physical and mental well-being during pregnancy and postpartum, as well as evaluating job-related hazards, providing individual health education, work suitability advice, and risk categorization management. We ensure that the working environment for pregnant colleagues and those within one year postpartum is safe, which may involve transferring night shift employees to day shifts, adjusting lighting in laboratories and specific areas of the factory, and relocating employees from areas with ionizing radiation and etching operations. Beyond regulatory compliance, we actively encourage employees to have children. In addition to comprehensive maternity benefits, we offer well-equipped lactation rooms, designated parking for expectant mothers, and practical gifts for expecting colleagues related to childcare.	· In 2023, a total of 12 colleagues reported their pregnancies and completed individual counseling interviews, receiving gifts for expectant mothers. · All pregnant and postpartum colleagues within one year completed individual consultations with physicians, and received regular care and assistance from nurses.

5.4 Employee Care and Communication

Labor-Management Communication

While Nuvoton Japan has established a labor union and signed a collective agreement with it, 75% of the total workforce are members of the union. The remaining employees who are not part of the union have their working conditions and employment terms determined according to the company's personnel system standards. Although Nuvoton Taiwan has not established a labor union or a collective agreement, it regularly holds labor-management meetings and provides diverse and transparent communication channels to allow employees opportunities to voice their opinions, ensuring effective interaction between the company and its employees.

Communication Channels and Effectiveness in 2023

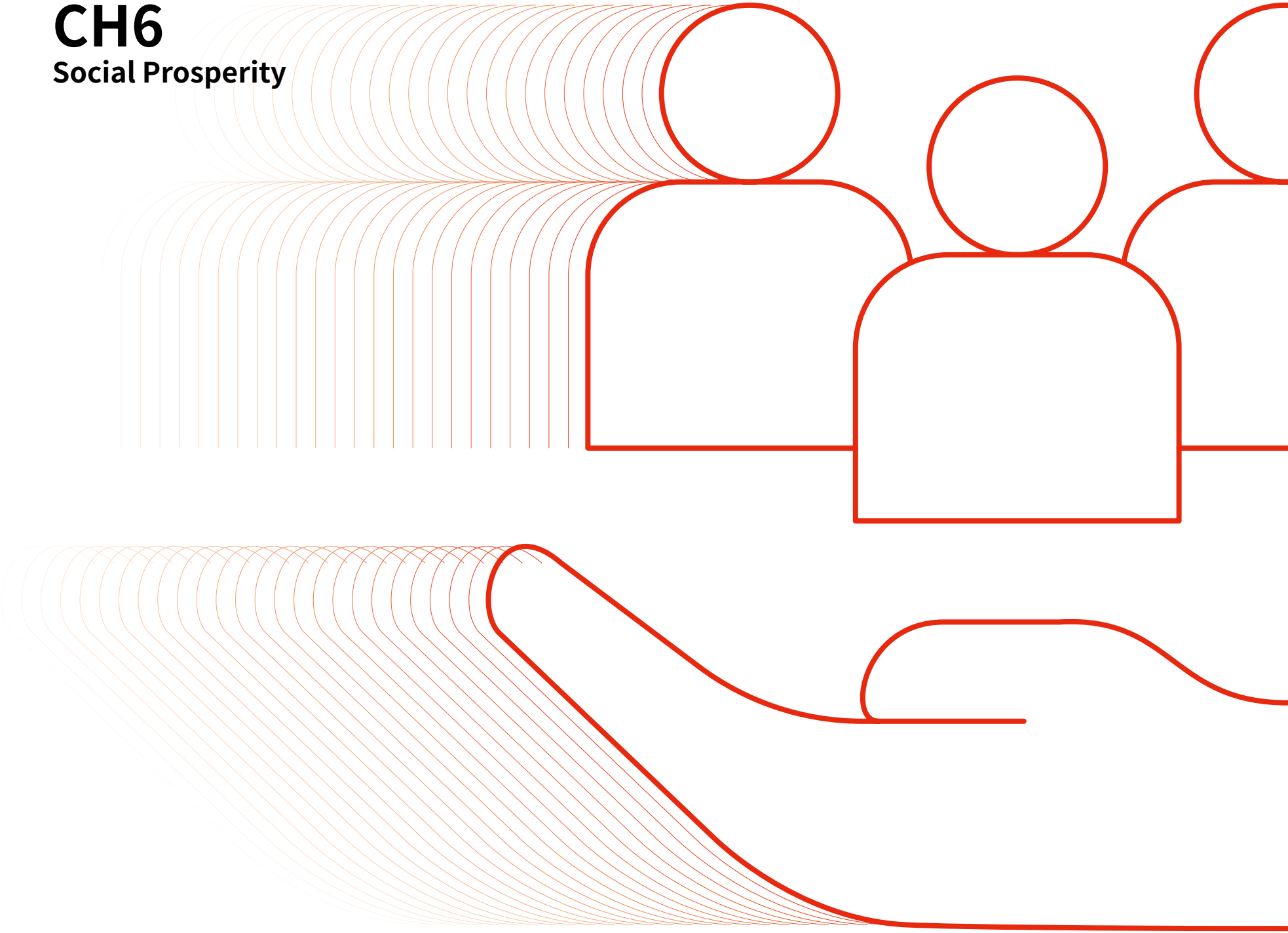
Communication Category	Explanation	Communication Effectiveness
Labor-Management Meetings	· Nuvoton holds regular labor-management meetings to facilitate communication between both parties.	· In 2023, a total of 4 labor-management meetings were convened. During these meetings, updates on quarterly company revenue status and relevant labor-related information were provided to the labor representatives. Discussions were also held on topics such as the annual employee calendar (including holiday schedules) and adjustments to the rotating shift schedules, such as the 2-week shift rotation. Nuvoton ensures that in cases of significant operational changes requiring the termination of employment relationships with certain employees, advance notice will be provided in accordance with legal regulations at each operational location.
Employee Feedback Forms	· Nuvoton values the expression of opinions from its technical staff, providing physical (anonymous) suggestion boxes in each factory area, as well as diverse online channels for feedback. These channels include general feedback, ESG (Environmental, Social, and Governance) integrity reporting, and a dedicated mailbox for reporting harassment cases. These channels are managed directly by Human Resources supervisors and representatives from the Sustainable Development Committee. · To promote friendly communication in the workplace, orientation sessions are organized for new hires, where HR supervisors address their queries firsthand. This demonstrates the company's commitment to valuing employee feedback. Additionally, continuous efforts are made during all-staff training sessions to promote these feedback channels, encouraging employees to voice their suggestions and concerns.	· In 2023, a total of 7 pieces of feedback were received from employees, with a response rate of 100%. · There were no reported cases of harassment in 2023. · To foster camaraderie among new hires and facilitate better working relationships, exchange sessions are organized for each intake of new employees. These sessions include self-introductions, interactive games, and refreshments, creating a relaxed atmosphere for horizontal relationship-building. Moreover, high-level executives participate in discussions, allowing new hires to provide direct feedback and gain a deeper understanding of company policies, thus facilitating their integration into the company culture. In 2023, a total of 5 orientation sessions were held, with 164 participants in attendance.
Managerial Communication Meetings	· Nuvoton holds quarterly management communication meetings, following the Nuvoton "Internal Major Information Handling Procedures" to ensure consistency and accuracy in the company's external information dissemination.	· In 2023, a total of 4 management communication meetings were held, where the chairman and CEO shared updates on company operations, technological advancements, and future prospects with global managers. During these meetings, managers had the opportunity to ask questions, share team management experiences, and learn from the insights provided by senior management firsthand, fostering mutual learning and growth.
Town Hall Meeting	· To ensure that employees in both the Nuvoton Taipei and Tainan offices are synchronized with headquarters and to listen to the voices of local colleagues, Town Hall Meetings are held in both locations every six months. These meetings are presided over by the CEO, who shares recent operational information and opens the floor for questions from employees, fostering effective communication through interaction.	· In 2023, a total of 4 Town Hall Meetings were held, during which 60 questions were collected from employees before and during the meetings. Some of these questions were forwarded to relevant departments for further processing. After the meetings, the satisfaction rating from employees reached 4.8 out of 5, indicating high levels of satisfaction with the communication efforts.
Employee Satisfaction Survey	· Nuvoton Japan conducts an annual employee satisfaction survey using the same set of questions each year to understand changes in employee perceptions. The survey is administered online and includes both multiple-choice and open-ended questions. The survey covers both permanent staff and contract employees.	· In 2023, out of a total of 1,659 participants, 1,533 responded, resulting in a response rate of 92.4%. · Among the 18 projects, 8 have a response rate of over 65%, continuing to maintain strong performance. · While there hasn't been significant change in other areas, the human resources development project shows a clear trend of improvement.

Nuvoton is committed to creating a working environment that promotes the physical, mental, and spiritual well-being of its employees. In addition to caring for employees' physical health, diverse activities are planned to translate the company's heartfelt concern for its employees into action, fostering a friendly and happy workplace environment and promoting a culture of living well.

Employee Care

Category	Description	Achievements in 2023
New Employee Care	Nuvoton Taiwan · In 2023, for newly hired employees, one-on-one care visits were arranged to assess their adjustment to the company. This initiative, combined with the New Employee Buddy System, aimed to support employees in adapting to their new environment by promoting Employee Assistance Programs (EAPs) and various company benefits. Nuvoton Japan · New full-time employees are assigned mentors who are experienced staff members. Those with previous work experience are partnered with colleagues and experienced employees. All new hires receive thorough one-on-one follow-up. Through these measures, they are assisted in the process of integrating into the workplace.	· In 2023, the number of care visits for new hires reached 50% of the total number of new employees (39 individuals), with an average satisfaction rate of 87%. · In 2023, approximately 100 new hires benefited from Nuvoton Japan's initiatives.
Prevention series seminars on workplace misconduct	· To assist supervisors in understanding the characteristics and differences of employees from different generations, and to enhance their sensitivity and communication skills, external professional speakers were invited to share their insights. The goal was to reduce interpersonal conflicts in the workplace, effectively prevent workplace bullying, and promote self-protection and the well-being of others.	· In 2023, Nuvoton Taiwan organized a total of 3 sessions of the Workplace Harassment Prevention Series workshops. These workshops were attended by 149 supervisors, with an average satisfaction rating of 4.5 out of 5. Additionally, 242 employees participated in the workshops, with an average satisfaction rating of 4.8 out of 5. · In Nuvoton Japan, 1,776 employees underwent training with a 100% pass rate.
Recognition for long-serving employees	· Every year, Nuvoton awards service anniversary gifts to senior employees as a token of appreciation for their dedication.	· In 2023, during the company's 15th-anniversary family day event, a recognition ceremony was held to publicly acknowledge and thank both local and foreign employees for their contributions. Additionally, senior executives were invited to record congratulatory videos, showcasing the company's diverse and inclusive workplace culture.
Post-retirement benefits plan	Nuvoton Taiwan · **Plan to Determine Allocation** Nuvoton Taiwan operates under the "Labor Retirement Pension Act," which is a defined contribution retirement plan managed by the government. Employees contribute 6% of their monthly salary towards their individual accounts at the Labor Insurance Bureau for retirement. · **Plan to Determine Benefits** Additionally, Nuvoton Taiwan provides a defined benefit retirement plan in accordance with the Labor Standards Act. Retirement benefits are calculated based on years of service and the average salary for the six months preceding the approved retirement date. In 2022 and 2023, Nuvoton allocated 2% of each employee's total monthly salary to the employee retirement fund. These contributions are supervised by the Labor Pension Fund Supervisory Committee and deposited into an account at the Bank of Taiwan under the committee's name. If the estimated balance in the account is insufficient to cover the retirement benefits for eligible employees within the next year, the shortfall will be fully allocated by the end of March of the following year. · In addition to the above retirement plans, the company offers an early retirement plan for interested employees. Eligible employees can apply for early retirement according to the company's regulations, subject to approval by their responsible supervisors. Nuvoton Japan · A fixed payment retirement plan (DC system) is in operation.	
Employee transition programs	Nuvoton Taiwan · In response to societal trends such as an aging population and declining birth rates, and in alignment with the Ministry of Labor's advocacy, Nuvoton Taiwan has created an age-friendly employment environment. Following the guidelines of the Employment Promotion Act for Middle-aged and Elderly Workers, Nuvoton Taiwan offers a retirement transition program. We engage in discussions with exceptional employees nearing retirement age to gauge their interest in continuing their service. If both parties agree, the employee is rehired, facilitating a gradual transition into retirement while enabling the transfer of valuable experience—a retirement with continuation.	

CH6
Social Prosperity



Nuvoton recognizes that it is society that provides the resources necessary for us to operate our business. Upholding the principle of "taken from the community, giving back to society," we continually invest back into society while caring for the underprivileged, as we strive to spread a positive and sustainable impact. We also collaborate with various external partners to promote social welfare activities that help create a prosperous and equal society. Nuvoton integrates internal and external resources to promote the four development pillars of 4E (Empowered, Engaged, Education, Environment), driven by the core forces of "social welfare, community well-being, cultural education, and environmental protection." This fulfills our corporate vision of being an "invisible champion" that enriches human life through green semiconductor (E) technology. We have set short, medium, and long-term goals for social participation and will continue to plan diverse public welfare action plans, leveraging our core competencies to continue bringing positive impacts to society. **In 2023, we invested a total of NT$1,140,133 as well as received 1,217 volunteer and donation responses that resulted in a total service time of 2,560 hours.**

	2024 Short-term	2025 Medium-term	2030 Long-term
Goals of Social Participation	› Encourage colleagues to participate in spontaneous public welfare projects. › Practice community care.	› Enable internal employees to demonstrate sustainable behaviors in daily life. › Connect enterprises and public welfare organizations to expand mutual benefits and influence.	› Protect the environment and promote sustainable living practices. › Enhance human, living, and social well-being through the application of green technology.

2023 Nuvoton Social Participation Projects

Social Welfare

Donations of Medical Supplies

Donated 2,280 rapid test kits to the Hsinchu Branch of China Medical University Hospital.

Special Case Assistance

Collaborated with a social welfare organization to assist a college student, who was in a coma caused by a stroke, and his Indonesian mother by donating NT$300,000.

Donation to Ren'ai Children's Home

Donated over NT$300,000 to Hsinchu Ren'ai Children's Home, which has long been assisting children who have lost their parents or are experiencing major family issues. The boys' dormitory is old, and the institution hopes to renovate and enhance the color design of the dormitory to ease the emotions of restless children.

Nuvoton Scholarship

To cultivate top talents in the IC design field and reward outstanding students, Nuvoton Taiwan established the Nuvoton Technology Co., Ltd. Scholarship in 2022. Graduate students can receive a monthly scholarship of NT$30,000 (a total of NT$180,000 per semester), allowing them to fully dedicate themselves to learning during their studies and strengthen their various professional skills and abilities to make a critical impact in the semiconductor industry in the future.

Rescue Volunteer

A Nuvoton Taiwan employee, passionate about EMT rescue, studied hard to obtain an EMT2 certification and used his spare time to serve as an ambulance volunteer, providing 330 hours of service in 2023. We highly respect the actions of our colleague to help others voluntarily and supply them with medical resources for their volunteer work.

Blood Donation Drive

Nuvoton Taiwan has been cooperating with the Hsinchu Blood Donation Center for many years, regularly inviting colleagues to roll up their sleeves and donate blood annually. This encourages colleagues to actively participate in social welfare activities and expand a positive impact. In 2023, we held two blood donation drives, collecting a total of 112 bags of blood.

Community Well-Being

Neighborhood Community Assistance

We visited the heads of nearby Gao Feng and Xian Gong communities to understand residents' needs and difficulties, while helping to maintain community and park cleanliness and providing courses on health, safety, and firefighting.

Sustainable Theme Celebrity Lectures

Taiwan invited celebrities to give lectures on sustainability-related topics, leading colleagues to explore and discover emotional connections and beauty in sustainability through the lectures, actively practicing sustainability. In 2023, a total of 164 people participated, and attendees rated the lectures 4.8 out of 5.

Nuvoton Taiwan Family Day

Invited social welfare groups and neighborhood residents to participate in Nuvoton's Family Day event. Through their time together, a greater sense of social integration and harmony was achieved.

Nuvoton Festival

In 2023, Nuvoton Japan organized the Nuvoton Festival, inviting not only employees but also their families and members from the surrounding community as a way to express the company's gratitude to its employees and society.

Donation to Events in Nagaokakyo City, Japan

Nuvoton Japan's head office is located in Nagaokakyo in Kyoto, a city filled with historical sites and rich cultural heritage. With respect for the history and traditions of the local community, the company donated approximately NT$20,790 in 2023 to assist Nagaokakyo City in organizing the Garasha Festival. There, 18 colleagues also served as festival volunteers. Additionally, Nagaokakyo City held a sports festival in 2023, and our company donated approximately NT$2,079 to assist in organizing the sports festival for people with disabilities.

Nuvoton Youth Football Tournament

In response to Nagaokakyo City's Citizen Cup event, Nuvoton Japan organized the Youth Football Tournament in 2023, providing local students with an opportunity to showcase their talents. Adhering to our commitment to promoting sports events and improving the quality of life of community residents, the company donated approximately NT$41,580.

Remote Areas Education

Sustainable Resources and Public Welfare Education | "Reading More Love" Second-hand Book Collection

Encouraged colleagues to donate and exchange books, giving new value to second-hand books while practicing public welfare and promoting the concept of sustainable resources and environmental protection. The collected books were purchased by Shu Bao Second-hand Bookstore and converted into "Love Book Points," which were fully donated to schools that were long-term partners with the bookstore. Teachers at these schools select age-appropriate books for children, ensuring the continuous transmission of love and knowledge. In 2023, a total of 944 second-hand books were collected, converted into 7,005 book points.

Remote Areas Education

Program Logic Education at Zhushan Elementary School

Collaborating with professors from Kaohsiung University of Science and Technology, Nuvoton Taiwan employees voluntarily traveled to Zhushan Elementary School in Pingtung County to conduct weekly program logic design courses for 31 students. Our company places great importance on the education of children in remote areas, aiming to narrow the urban-rural gap. We not only encourage our colleagues to engage in volunteer services but also provide necessary teaching materials and funding for the courses.

Environmental Protection

Nuvoton Taiwan Environmental Education Activities

Nuvoton Taiwan launched two environmental protection plans: the Hsinchu City Autumn Beach Cleanup and the Reappearing Dawn of the Vine Forest at Hengshan Tangerine Garden. Surrounded by the sea, Taiwan's coastal beaches often experience a large accumulation of marine debris. Nuvoton Taiwan mobilized employees to conduct a beach cleanup in Hsinchu City to contribute to Taiwan's environmental protection. In 2023, a total of 65 colleagues responded to the cleanup activity, removing approximately 246 kilograms of marine debris. In addition to coastal environments, we also traveled into the mountains to Hengshan Tangerine Garden to help remove the vine, Mikania micrantha. In 2023, a total of 40 colleagues participated, removing approximately 11 kilograms of Mikania micrantha.

Nuvoton Japan Environmental Protection Actions

Nuvoton Japan initiated two environmental protection plans, including the Sparkling Action and the Obata River Clean-up Action. Sparkling Action focuses on cleaning the company's surrounding neighborhoods, with responsible colleagues conducting 30-minute clean-up sessions every Thursday. In 2023, a total of 15 sessions were held, with 82 employees participating. The Obata River, which flows through Kyoto City, saw Nuvoton Japan's headquarters engage in a community committee-organized volunteer clean-up activity, embodying the principle of giving back to society. A total of 10 colleagues participated in this activity.

Appendix

Appendix I, Environmental Data

Appendix II, Social Data

Appendix III, Index of GRI (Global Reporting Initiative)

Appendix IV, Sustainability Accounting Standards (SASB) Index

Appendix V, Sustainability Disclosure Indicators - Semiconductor Industry

Appendix VI, TWSE/TPEx-Listed Companies Climate-related Information

Appendix VII, Third-Party Verification Statement

Appendix I: Environmental Data

Category	Item	Unit		2021	2022	2023
Greenhouse gases[1]	Scope 1 Total (Nuvoton Taiwan)	t-CO_2e	36,152	37,795	36,326	18,749
	Scope 1 Total (Nuvoton Japan)	t-CO_2e	34,192	31,051	28,713	20,830
	Scope 1 Total	t-CO_2e	70,344	68,846	65,039	39,579
	Scope 2 Total (Nuvoton Taiwan)[2]	t-CO_2e	36,313	37,740	35,786	35,495
	Scope 2 Total (Nuvoton Japan)	t-CO_2e	106,635	83,403	72,076	61,810
	Scope 2 Total	t-CO_2e	142,948	121,143	107,862	97,305
	Scope 3 Total (Nuvoton Taiwan)[3]	t-CO_2e	—	92,268	90,433	98,972
	Scope 3 Total (Nuvoton Japan)[4]	t-CO_2e	—	—	—	625,940
	Scope 3 Total	t-CO_2e	—	92,268	90,433	724,911
	HFCs Emissions (Nuvoton Taiwan)	t-CO_2e	10,950	11,529	11,355	6,485
	PFCs Emissions (Nuvoton Taiwan)	t-CO_2e	10,637	11,430	10,359	6,527
	SF6 Emissions (Nuvoton Taiwan)	t-CO_2e	12,107	12,312	12,141	3,926
	NF3 Emissions (Nuvoton Taiwan)	t-CO_2e	602	602	602	349
	HFCs Emissions (Nuvoton Japan)	t-CO_2e	608	840	616	3
	PFCs Emissions (Nuvoton Japan)	t-CO_2e	6,653	5,987	6,212	1,389
	SF6 Emissions (Nuvoton Japan)	t-CO_2e	18	227	43	667
	NF3 Emissions (Nuvoton Japan)	t-CO_2e	148	74	74	0
	Greenhouse Gas Emissions Intensity (Nuvoton Taiwan)	t-CO_2e/million NT$	6.34	5.17	3.69	2.85
	Greenhouse Gas Emissions Intensity (Nuvoton Japan)	t-CO_2e/million NT$	7.05	5.26	4.38	3.81
	Greenhouse Gas Emissions Intensity (Nuvoton Taiwan)	kg-CO_2e/ cm2 of wafer	0.70	0.68	0.71	0.65
	Greenhouse Gas Emissions Intensity (Nuvoton Taiwan)[5]	kgCO_2e/layer-wafter mask	7.32	7.16	7.09	6.74

1 Greenhouse gas emissions are calculated using the operational control method. The calculation method is activity data * emission factor * GWP value. Nuvoton Taiwan's 2020-2022 data GWP values reference IPCC 2006 AR4 version, and 2023 data GWP values reference IPCC 2006 AR5 version. Nuvoton Japan's 2020-2022 data GWP values reference IPCC 2006 AR4 version, and 2023 data reference IPCC 2006 AR4/AR5 versions. Nuvoton Taiwan and Japan's 2023 Scope 1, 2, and 3 greenhouse gas data have all been certified by ISO 14064.

2 The 2023 Nuvoton Taiwan Scope 2 electricity carbon emission factor is calculated based on the 2023 carbon emission factor (0.494 kg CO_2e/kWh) published by the Energy Administration of the Ministry of Economic Affairs.

3 Based on Nuvoton Taiwan's 2023 data, the sources of Scope 3 emissions include purchased products/services, capital goods, fuel and energy-related activities, upstream transportation and distribution, downstream transportation and distribution, employee business travel, employee commuting, investments, and the disposal and treatment of operational waste.

4 Based on Nuvoton Japan's 2023 data, the sources of Scope 3 emissions include purchased products/services, owned capital or products, fuel and energy-related activities, upstream transportation and distribution, operational waste generation, employee business travel, employee commuting, downstream transportation and distribution, and downstream leased assets.

5 Nuvoton Japan does not have relevant data, as the numerous wafer products make precise calculations currently unfeasible. Future efforts will focus on researching and confirming calculation methods.

Category	Item	Unit	2020 (Baseline Year)	2021	2022	2023
Energy[6]	Purchased Electricity (Nuvoton Taiwan)	kWh	72,336,600	74,146,028	72,294,038	71,852,667
		GJ	260,412	266,926	260,259	258,670
	Purchased Electricity (Nuvoton Japan)	kWh	160,529,000	154,685,000	148,874,000	125,192,000
		GJ	577,904	556,866	535,946	450,691
	Total Purchased Electricity	kWh	232,865,600	228,831,028	221,168,038	197,044,667
		GJ	838,316	823,792	796,205	709,361
	Gasoline (Nuvoton Taiwan)	liters	1,192	1,140	805	1,073
		GJ	39	37	26	35
	Gasoline (Nuvoton Japan)	liters	300	300	300	407
		GJ	10	10	10	14
	Total Gasoline	liters	1,492	1,440	1,105	1,480
		GJ	49	47	36	49
	Heavy Oil (Nuvoton Japan)	liters	137,000	394,000	395,000	663,000
		GJ	4,474	12,867	12,900	21,666
	Diesel (Nuvoton Taiwan)	liters	4,800	N/A	N/A	4,200
		GJ	169	N/A	N/A	148
	LPG (Nuvoton Japan)	thousand cubic meters	2,561	2,211	1,962	1,468
		GJ	130,099	112,319	99,670	74,561
	Petroleum-based Hydrocarbon Gases (Nuvoton Japan)	thousand cubic meters	—	—	12	0
		GJ	—	—	540	0
	Natural Gas (Nuvoton Taiwan)	thousand cubic meters	237	221	222	269
		GJ	8,047	7,485	7,526	9,050
	Natural Gas (Nuvoton Japan)	thousand cubic meters	7,558	7,020	6,511	5,355
		GJ	330,982	307,422	268,164	220,546
	Total Natural Gas	thousand cubic meters	7,795	7,241	6,733	5,624
		GJ	339,029	314,907	275,690	229,596
	Renewable Energy Consumption (including wind, solar, biomass) (Nuvoton Taiwan)	GJ	—	—	—	447

6 According to the Energy Administration website, the energy product unit calorific value is as follows: Electricity: 860 (Kcal/kWh); Gasoline: 7,800 (Kcal/liter); Diesel: 8,400 (Kcal/liter)

Category	Item	Unit	2020 (Baseline Year)	2021	2022	2023
Energy	Total Internal Energy Consumption (Nuvoton Taiwan)	GJ	268,667	274,447	267,811	268,350
	Total Internal Energy Consumption (Nuvoton Japan)	GJ	1,043,479	989,484	916,690	767,478
	Total Internal Energy Consumption	GJ	1,312,146	1,263,931	1,184,501	1,035,828
	Total External Energy Consumption (Nuvoton Japan)[8]	GJ	—	—	—	1,979,474
	Energy Intensity (Nuvoton Taiwan)	GJ/million NT$[9]	23.5	18.8	13.7	14.1
	Energy Intensity (Nuvoton Japan)	GJ/million NT$[9]	52.2	45.5	39.9	35.4
	Energy Intensity (Nuvoton Taiwan)	GJ/square cm of wafer	0.0026	0.0025	0.0026	0.0032
	Energy Intensity (Nuvoton Taiwan)	GJ/layer of photomask	0.027	0.026	0.026	0.033
	Energy Intensity (Nuvoton Japan)[10]	GJ/layer of photomask	—	—	—	—
	Energy Intensity (Nuvoton Taiwan)	kWh/million NT$	6,327	5,078	3,704	3,769
	Energy Intensity (Nuvoton Taiwan)	kWh/square cm of wafer	0.70	0.66	0.71	0.86
	Energy Intensity (Nuvoton Taiwan)	kWh/layer of photomask	7.31	7.02	7.11	8.93
	Energy Intensity (Nuvoton Japan)	kWh/million NT$	8,032	7,113	6,475	5,768
	Energy Intensity (Nuvoton Japan)[11]	kWh/layer of photomask	—	—	—	—
Water resources (Nuvoton Taiwan)	Surface Water Usage	Million Liters	2	2	2	2
	Groundwater Usage	Million Liters	0	0	0	0
	Seawater (Freshwater) Usage	Million Liters	0	0	0	0
	Produced Water Usage	Million Liters	0	0	0	0
	Third-party Water Usage	Million Liters	407	395	412	400
	Total Plant Water Usage (including recycling)	Million Liters	770	786	772	760
	Total Plant Recycled and Reused Water Volume	Million Liters	513	532	518	505
	Total Water Withdrawal	Million Liters	409	397	414	402
	Total Plant Water Recycling Rate	%	66.6%	67.7%	67.1%	66.4%

7 Gigajoule (GJ) = 10^9 Joules (J); 1 Kilocalorie (Kcal) = 4,186.8 Joules (J)

8 Nuvoton Japan's 2023 statistics pertain to the final disposal of sold products in the downstream category.

9 Energy Intensity = Energy Calorific Value/Revenue (Since greenhouse gas emissions are based on emissions from the Taiwan region, revenue is calculated based on Taiwan/Japan regional revenue)

10 Nuvoton Japan does not have relevant data, as the numerous wafer products make precise calculations currently unfeasible. Future efforts will focus on researching and confirming calculation methods.

11 Total Plant Water Recycling Rate (%) = (Total Plant Recycled and Reused Water Volume / Total Plant Water Usage) * 100%

Category	Item	Unit	2020 (Baseline Year)	2021	2022	2023
Water Resources (Nuvoton Japan)	**Surface Water Usage**	Million Liters	—	—	0	0
	Groundwater Usage	Million Liters	3,624	3,602	3,734	3,726
	Seawater (Freshwater) Usage	Million Liters	0	0	0	0
	Produced Water Usage	Million Liters	3,860	3,672	3,184	3,758
	Third-party Water Usage	Million Liters	0	0	0	0
	Total Plant Water Usage (including recycling)	Million Liters	3,922	3,698	3,211	3,788
	Total Plant Recycled and Reused Water Volume	Million Liters	2,318	1,854	1,519	1,521
	Total Water Withdrawal	Million Liters	7,484	7,274	6,919	7,484
	Total Plant Water Recycling Rate[12]	%	59.1%	50.2%	47.3%	40.2%

12 Total Plant Water Recycling Rate (%) = (Total Plant Recycled and Reused Water Volume / Total Plant Water Usage) * 100%

Type of Waste	Item	Unit	Nuvoton Taiwan 2021	Nuvoton Taiwan 2022	Nuvoton Taiwan 2023	Nuvoton Japan 2021	Nuvoton Japan 2022	Nuvoton Japan 2023
General Industrial Waste	Total Recycled	tons	105	93	93	0	1,197.097	1,197.097
	Total Non-Recycled	tons	201	191	227	0	0.047	0.047
Hazardous Industrial Waste	Total Recycled	tons	542	503	387	0	102.017	0
	Total Non-Recycled	tons	23	26	20	0	0.059	0
Overall Waste Recycling Rate[13]		%	74%	73%	66%	0	99.99%	99.996%
Total General Industrial Waste Recycled in 2023		tons	1,290.10					
Total General Industrial Waste Non-Recycled in 2023		tons	227.05					
Total Hazardous Industrial Waste Recycled in 2023		tons	387.00					
Total Hazardous Industrial Waste Non-Recycled in 2023		tons	20.00					

13 Overall Waste Recycling Rate (%) = (Total Recycled General and Hazardous Industrial Waste) / (Total Recycled General and Hazardous Industrial Waste + Total Non-Recycled General and Hazardous Industrial Waste) * 100%

Plant	Chemical Raw Materials	Unit	2020 (Baseline Year)	2021	2022	2023
Nuvoton Taiwan	Nitrogen Usage	Million cubic meters	605	603	601	602
	Reduction Compared to Baseline Year	%	-	0.3%	1%	0.5%
	Nitrogen Usage per Unit Product	m3/layer-wafer mask	0.61	0.57	0.59	0.75
	Reduction Compared to Baseline Year	%	-	7%	3%	-19%
	Sulfuric Acid Usage	tons	645	685	652	480
	Reduction Compared to Baseline Year	%	-	-6%	-1%	34%
	Sulfuric Acid Usage per Unit Product	Grams/layer-wafer mask	65	65	64	60
	Reduction Compared to Baseline Year	%	-	0%	2%	8%
Nuvoton Japan	Nitrogen Usage	Million cubic meters	16,701	15,816	18,527	11,598
	Reduction Compared to Baseline Year	%	-	5%	11%	31%
	Sulfuric Acid Usage	tons	1,061	1,375	437	473
	Reduction Compared to Baseline Year	%	-	30%	59%	55%

Appendix II: Social Data

Category		Item	Nuvoton Taiwan		Nuvoton Japan	
Education and Training	Total Employee Average	Average Hours per Person (hours)※	26.82		13.55	
	Supervisor Average		Supervisors	Non-Supervisors	Supervisors	Non-Supervisors
		Female	35.69	25.75	2	19.78
		Male	34.37	25.91	6.14	14.44
		Average Hours	34.55	25.84	6.05	15.04
	Course Category Statistics		Total Number of Trainees	Total Training Hours	Total Number of Trainees	Total Training Hours
		Online	29,210	23,558.62	802	5,238
		In-person	8,137	18,141.25	847	17,272

※ Average Training Hours per Person: Total Training Hours (Nuvoton Taiwan - 41,699.87 hours; Nuvoton Japan - 22,510 hours) / Total Number of Employees (Nuvoton Taiwan - 1,555 people; Nuvoton Japan - 1,661 people)

Category	Item	Nuvoton Taiwan	Nuvoton Japan
Social Participation	Social Participation Investment (NT$)	1,140,133	64,449
	Number of Participants in Social Participation	1,217	120
	Hours Invested in Social Participation (hours)	2,560	299

Category		Item	Nuvoton Taiwan			Nuvoton Japan		
			2021	2022	2023	2021	2022	2023
Occupational Health and Safety	Employees	Working Hours	2,881,840	3,027,248	2,978,152	3,650,508	3,369,946	3,208,673
		Number of Fatalities Caused by Occupational Injuries	0	0	0	0	0	0
		Occupational Injury Fatality Rate	0	0	0	0	0	0
		Number of Severe Occupational Injuries	0	0	0	0	0	0
		Severe Occupational Injury Rate	0	0	0	0	0	0
		Number of Recordable Occupational Injuries (Disabling Injuries)	5	2	2	0	0	0
		Recordable Occupational Injury Rate (Disabling Injury Frequency)	1.73	0.66	0.67	0	0	0
		Number of Recordable Occupational Injuries (Non-Disabling Injuries)	2	3	4	1	1	0
		Recordable Occupational Injury Rate (Non-Disabling Injury Frequency)	0.69	0.99	1.34	0.27	0.3	0
		Number of Lost Days Due to Recordable Injuries	24	7	2	0	0	0
		Disabling Injury Severity Rate	8.32	2.31	0.67	0	0	0
		Occupational Disease Incidence Rate (ODR)	0	0	0	0	0	0
	Non-Employees	Working Hours	18,280	17,416	17,416	246,048	311,288	304,560
		Number of Fatalities Caused by Occupational Injuries	0	0	0	0	0	0
		Occupational Injury Fatality Rate	0	0	0	0	0	0
		Number of Severe Occupational Injuries	0	0	0	0	0	0
		Severe Occupational Injury Rate	0	0	0	0	0	0
		Number of Recordable Occupational Injuries (Disabling Injuries)	0	0	0	0	0	0
		Recordable Occupational Injury Rate (Disabling Injury Frequency)	0	0	0	0	0	0
		Number of Recordable Occupational Injuries (Non-Disabling Injuries)	0	0	1	0	2	1
		Recordable Occupational Injury Rate (Non-Disabling Injury Frequency)	0	0	5.74	0	6.42	3.28
		Number of Lost Days Due to Recordable Injuries	0	0	0	0	0	0
		Disabling Injury Severity Rate	0	0	0	0	0	0
		Occupational Disease Incidence Rate (ODR)	0	0	0	0	0	0

1 Occupational Injury Fatality Rate = Number of Fatalities Caused by Occupational Injuries / Working Hours ×1,000,000 (rounded down to three decimal places)

2 Severe Occupational Injury Rate = Number of Severe Occupational Injuries / Working Hours ×1,000,000 (rounded down to three decimal places); Nuvoton Taiwan defines "severe" as injuries leading to death or injuries that make it impossible or difficult for workers to return to their pre-injury health state within six months. Nuvoton Japan defines "severe" as incidents resulting in worker fatalities or absenteeism (4 days or more), or incidents causing simultaneous death, injury, or illness to three or more workers, including non-stop accidents.

3 Recordable Occupational Injury Rate (Disabling / Non-Disabling Injury Frequency) = Number of Recordable Occupational Injuries (Disabling / Non-Disabling Injuries) / Working Hours ×1,000,000; Nuvoton Taiwan defines "recordable" as disabling injuries reported to the Ministry of Labor as occupational accidents. Nuvoton Japan's definition of "recordable" includes minor accidents (medication), non-stop accidents (incidents without work stoppage), all of which must be reported annually to the Ministry of Health, Labour, and Welfare.

4 Disabling Injury Severity Rate = Number of Lost Days Due to Disabling Injuries / Working Hours ×1,000,000 (rounded down to three decimal places)

5 Occupational Disease Incidence Rate = Number of Occupational Disease Cases / Working Hours ×1,000,000 (rounded down to three decimal places)

6 Non-Employee Working Hours: Calculated based on full-time workers directly supervised by Nuvoton.

Category		Item	Nuvoton Taiwan		Nuvoton Japan	
			Number of People	Percentage	Number of People	Percentage
Diverse Employment	Age	18-30 years old	262	16.85%	153	9.21%
		31-40 years old	453	29.13%	151	9.09%
		41-50 years old	500	32.15%	558	33.59%
		51 years old and above	340	21.86%	799	48.10%
	Gender	Female	649	41.74%	163	9.81%
		Male	906	58.26%	1,498	90.19%
	Education	PhD	22	1.41%	23	1.38%
		Master's	629	40.45%	609	36.66%
		Bachelor's	551	35.43%	818	49.25%
		Associate Degree	120	7.72%	0	0.00%
		High School (and below)	233	14.98%	211	12.70%
	Role	Supervisory Staff - Female	24	13.7%	6	2.2%
		Supervisory Staff - Male	151	86.3%	269	97.8%
		Professional Staff - Female	288	28.5%	79	21.2%
		Professional Staff - Male	723	71.5%	294	78.8%
		Technical Staff - Female	337	91.3%	78	7.7%
		Technical Staff - Male	32	8.7%	935	92.3%

Parental Leave Status in 2021	Nuvoton Taiwan			Nuvoton Japan		
	Male	Female	Total	Male	Female	Total
A. Number of Employees Eligible for Parental Leave in 2021※	92	69	161	114	13	127
B. Number of Employees Who Applied for Parental Leave in 2021	0	7	7	0	3	3
Application Rate (%) = B/A	0.00%	10.14%	4.35%	0.00%	23.08%	2.36%
C. Number of Employees Expected to Return from Parental Leave in 2021	1	8	9	1	4	5
D. Number of Employees Who Actually Returned from Parental Leave in 2021	0	6	6	1	4	5
Return Rate (%) = D/C	0.00%	75%	66.67%	100.00%	100.00%	100.00%
E. Number of Employees Who Actually Returned from Parental Leave in 2020	0	7	7	2	3	5
F. Number of Employees Who Continued Working for One Year After Returning from Parental Leave in 2020	0	5	5	2	3	5
Retention Rate (%) = F/E	N/A	71.43%	71.43%	100.00%	100.00%	100.00%

※ Eligibility for Parental Leave at Nuvoton Taiwan: The company complies with the regulations of the "Gender Equality in Employment Act." Employees who apply for maternity and paternity leave within three years are eligible for parental leave.
Eligibility for Parental Leave at Nuvoton Japan: According to internal regulations that exceed local labor laws, employees are eligible for parental leave until the April of the year their child starts elementary school.

Parental Leave Status in 2021	Nuvoton Taiwan			Nuvoton Japan		
	Male	Female	Total	Male	Female	Total
A. Number of Employees Eligible for Parental Leave in 2022	94	63	157	124	14	138
B. Number of Employees Who Applied for Parental Leave in 2022	1	7	8	2	2	4
Application Rate (%) = B/A	1.06%	11.11%	5.10%	1.61%	14.29%	2.90%
C. Number of Employees Expected to Return from Parental Leave in 2022	1	9	10	2	2	4
D. Number of Employees Who Actually Returned from Parental Leave in 2022	1	7	8	2	2	4
Return Rate (%) = D/C	100.00%	77.78%	80%	100.00%	100.00%	100.00%
E. Number of Employees Who Actually Returned from Parental Leave in 2021	0	6	6	1	4	5
F. Number of Employees Who Continued Working for One Year After Returning from Parental Leave in 2021	0	5	5	1	4	5
Retention Rate (%) = F/E	N/A	83.33%	83.33%	100.00%	100.00%	100.00%

Parental Leave Status in 2021	Nuvoton Taiwan			Nuvoton Japan		
	Male	Female	Total	Male	Female	Total
A. Number of Employees Eligible for Parental Leave in 2023	97	53	150	136	16	152
B. Number of Employees Who Applied for Parental Leave in 2023	1	10	11	7	0	7
Application Rate (%) = B/A	1.03%	18.87%	7.33%	5.15%	0.00%	4.61%
C. Number of Employees Expected to Return from Parental Leave in 2023	0	8	8	4	1	5
D. Number of Employees Who Actually Returned from Parental Leave in 2023	0	7	7	4	1	5
Return Rate (%) = D/C	0.00%	87.50%	87.50%	100.00%	100.00%	100.00%
E. Number of Employees Who Actually Returned from Parental Leave in 2022	1	7	8	2	2	4
F. Number of Employees Who Continued Working for One Year After Returning from Parental Leave in 2022	1	6	7	2	2	4
Retention Rate (%) = F/E	100.00%	85.71%	87.50%	100.00%	100.00%	100.00%

Appendix III, Index of GRI (Global Reporting Initiative)

Declaration of Use	The Nuvoton Sustainability Report has been prepared in accordance with the GRI Standards. The reporting period for this report is the year 2023 (January 1, 2023, to December 31, 2023).
GRI 1 Used	GRI 1: Foundation 2021
Applicable GRI Sector Standards	There are no applicable GRI Sector Standards yet; disclosure is made with reference to the SASB Industry Sustainability Accounting Standards.

GRI 2: General Disclosures 2021

GRI Standard	Number	GRI Standard Disclosure Content	Corresponding Section	Page Number	Omission/Notes
1. Organization and Reporting Practices					
GRI 2: General Disclosures 2021	2-1	Organizational Details	1.1 Company Profile	11	
	2-2	Entities Included in the Organization's Sustainability Reporting	About This Report	03	
	2-3	Reporting Period, Frequency, and Contact Point	About This Report	03	
	2-4	Restatements of Information	-		No restatements of information
	2-5	External Assurance/Verification	About This Report	03	
2. Activities and Workers					
GRI 2: General Disclosures 2021	2-6	Activities, Value Chain, and Other Business Relationships	1.1 Company Profile 3.4.1 Supply Chain Composition and Overview	11 67	
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	2-8	Workers Who Are Not Employees	5.3.1 Workplace Safety	122	
3. Governance					
GRI 2: General Disclosures 2021	2-9	Governance Structure and Composition	3.1.1 Board of Directors	48	
	2-10	Nomination and Selection of the Highest Governance Body	3.1.1 Board of Directors	48	
	2-11	Chair of the Highest Governance Body	3.1.1 Board of Directors	48	
	2-12	Role of the Highest Governance Body in Overseeing the Management of Impacts	1.4 Material Topic Analysis and Stakeholder Communication 3.1.1 Board of Directors	17 48	
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GRI Standard	Number	GRI Standard Disclosure Content	Corresponding Section	Page Number	Omission/Notes
GRI 2: General Disclosures 2021	2-15	Conflicts of Interest	3.1.1 Board of Directors	48	
	2-16	Communication of Critical Concerns	3.1.1 Board of Directors	48	
	2-17	Collective Knowledge of the Highest Governance Body	3.1.1 Board of Directors	48	
	2-18	Evaluation of the Performance of the Highest Governance Body	3.1.1 Board of Directors	48	
	2-19	Remuneration Policies	3.1.1 Board of Directors	48	
	2-20	Process to Determine Remuneration	3.1.2 Functional Committees	52	
	2-21	Annual Total Compensation Ratio	-	-	2023, the median total compensation of Nuvoton Taiwan employees was approximately 15.3 times lower than the highest paid employee, a decrease of about 1.4 times compared to 2022.
4. Strategy, Policies, and Practices					
GRI 2: General Disclosures 2021	2-22	Statement on Sustainable Development Strategy	Message from the Management	04	
	2-23	Policy Commitments	3.4.2 Sustainable Supply Chain Management 5.1 Talent Overview	70 107	
	2-24	Embedding Policy Commitments	3.4.2 Sustainable Supply Chain Management 5.1 Talent Overview	70 104	
	2-25	Processes to Remediate Negative Impacts	3.3.1 Regulatory Compliance and Integrity Management	56	
	2-26	Mechanisms for Seeking Advice and Raising Concerns	3.3.1 Regulatory Compliance and Integrity Management	56	
	2-27	Compliance with Laws and Regulations	3.3.1 Regulatory Compliance and Integrity Management	56	
	2-28	Membership of Associations	1.1 Company Profile	11	
5. Stakeholder Engagement					
GRI 2: General Disclosures 2021	2-29	Approach to Stakeholder Engagement	1.4 Material Topic Analysis and Stakeholder Communication	17	
	2-30	Collective Agreements	5.4 Employee Care and Communication	137	

GRI 3: Material Topics 2021

GRI Standard	Number	GRI Standard Disclosure Content	Corresponding Section	Page Number	Omission/Notes
GRI 3: Material Topics 2021	3-1	Process to Determine Material Topics	1.4 Material Topic Analysis and Stakeholder Communication	17	
	3-2	List of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication	17	
Material Topic: Information Security and Privacy Protection					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 3 Excellence in Governance	17 44	
Custom Topic	-	-			
Material Topic: Corporate Governance and Integrity Management					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 3 Excellence in Governance	17 44	
GRI 205: Anti-Corruption	205-1	Operations Assessed for Risks Related to Corruption	3.3.1 Regulatory Compliance and Integrity Management	56	
	205-2	Communication and Training About Anti-Corruption Policies and Procedures	3.3.1 Regulatory Compliance and Integrity Management	56	
	205-3	Confirmed Incidents of Corruption and Actions Taken	-	-	No incidents of corruption occurred
GRI 206: Anti-Competitive Behavior	206-1	Legal Actions for Anti-Competitive Behavior, Anti-Trust, and Monopoly Practices	3.3.1 Regulatory Compliance and Integrity Management	56	
Material Topic: Supplier Sustainability Management					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 3 Excellence in Governance	17 44	
GRI 204: Procurement Practices	204-1	Proportion of Spending on Local Suppliers	3.4.1 Supply Chain Composition and Overview	67	
GRI 308: Supplier Environmental Assessment	308-1	New Suppliers That Were Screened Using Environmental Criteria	3.4.2 Sustainable Supply Chain Management	70	
	308-2	Negative Environmental Impacts in the Supply Chain and Actions Taken	3.4.2 Sustainable Supply Chain Management	70	
Supplier Social Assessment	414-1	New Suppliers That Were Screened Using Social Criteria	3.4.2 Sustainable Supply Chain Management	70	
	414-2	Negative Social Impacts in the Supply Chain and Actions Taken	3.4.2 Sustainable Supply Chain Management	70	
Material Topic: Business Strategy and Performance					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 3 Excellence in Governance	17 44	
GRI 201: Economic Performance	201-1	Direct Economic Value Generated and Distributed	3.2.1 Economic Performance	53	
	201-3	Defined Benefit Plan Obligations and Other Retirement Plans	5.4 Employee Care and Communication	137	

GRI Standard	Number	GRI Standard Disclosure Content	Corresponding Section	Page Number	Omission/Notes
Material Topic: Innovation and R&D Management					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 2 Green Products	17 29	
Custom Topic	-	-	-		
Material Topic: Energy Resource Use and Consumption					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 4 Environmental Sustainability	17 76	
GRI 302: Energy	302-1	Energy Consumption Within the Organization	4.3.1 Energy Management Appendix I Environmental Data	93 145	
	302-2	Energy Consumption Outside of the Organization	No related statistics yet; future assessments will consider implementation	-	
	302-3	Energy Intensity	Appendix I Environmental Data	145	
	302-4	Reduction of Energy Consumption	4.3.1 Energy Management Appendix I Environmental Data	93 145	
	302-5	Reductions in Energy Requirements of Products and Services	-	-	In 2023, a target was set for the total reduction of the carbon footprint in green product production. In 2024, statistics on product energy-saving data will be conducted.
Material Topic: Greenhouse Gas Emissions					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 4 Environmental Sustainability	17 76	
GRI 305: Emissions	305-1	Direct (Scope 1) GHG Emissions	Appendix I Environmental Data	145	
	305-2	Energy Indirect (Scope 2) GHG Emissions	Appendix I Environmental Data	145	
	305-3	Other Indirect (Scope 3) GHG Emissions	4.2 GHG Management Appendix I Environmental Data	91 145	
	305-4	GHG Emissions Intensity	Appendix I Environmental Data	145	
	305-5	Reduction of GHG Emissions	4.2 GHG Management	91	
Material Topic: Climate Change					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 4.1 Climate Change	17 81	
Custom Topic	-	-	-		

GRI Standard	Number	GRI Standard Disclosure Content	Corresponding Section	Page Number	Omission/Notes
Material Topic: Occupational Health and Safety					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 5 Safe Workplace	17 103	
Occupational Health and Safety	403-1	Occupational Health and Safety Management System	5.3.1 Workplace Safety	122	
	403-2	Hazard Identification, Risk Assessment, and Incident Investigation	5.3.1 Workplace Safety	122	
	403-3	Occupational Health Services	5.3.2 Workplace Health	132	
	403-4	Worker Participation, Consultation, and Communication on Occupational Health and Safety	5.3.1 Workplace Safety	122	
	403-5	Worker Training on Occupational Health and Safety	5.3.1 Workplace Safety	122	
	403-6	Promotion of Worker Health	5.3.2 Workplace Health	132	
	403-7	Prevention and Mitigation of Occupational Health and Safety Impacts Directly Linked by Business Relationships	5.3.1 Workplace Safety	122	
	403-8	Workers Covered by an Occupational Health and Safety Management System	5.3.1 Workplace Safety	122	
	403-9	Work-Related Injuries	5.3.2 Workplace Health	132	
	403-10	Work-Related Ill Health	5.3.2 Workplace Health	132	
Material Topic: Talent Valuation and Development					
GRI 3: Material Topics 2021	3-3	Management of Material Topics	1.4 Material Topic Analysis and Stakeholder Communication 5 Safe Workplace	17 103	
GRI 401: Employment	401-1	New Employee Hires and Employee Turnover	5.2.1 Talent Recruitment and Retention	111	
	401-2	Benefits Provided to Full-Time Employees That Are Not Provided to Temporary or Part-Time Employees	5.2.3 Compensation and Benefits	132	
	401-3	Parental Leave	5.2.3 Compensation and Benefits	132	
GRI 404: Training and Education	404-1	Average Hours of Training Per Year Per Employee	5.2.2 Talent Development	115	
	404-2	Programs for Upgrading Employee Skills and Transition Assistance Programs	5.2.2 Talent Development 5.4 Employee Care and Communication	115 137	
	404-3	Percentage of Employees Receiving Regular Performance and Career Development Reviews	5.2.3 Compensation and Benefits	118	

Appendix IV, Sustainability Accounting Standards (SASB) Index

Semiconductors Industry

Indicator category	SASB Topic	Code	Metric	Category	Response Chapter	Section
accounting indicators	Greenhouse Gas Emissions	TC-SC-110a.1	Gross global Scope 1 emissions Total emissions from perfluorinated compounds	Quantitative	4.2 Greenhouse Gas Management Appendix I: Environmental Data	91 145
		TC-SC-110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	4.2 Greenhouse Gas Management	91
	Energy Management in Manufacturing	TC-SC-130a.1	Total energy consumed Percentage grid electricity Percentage renewable	Quantitative	4.3.1 Energy Management Appendix I: Environmental Data	93 145
	Water Management	TC-SC-140a.1	Total water withdrawn, total water consumed, and percentage of each in regions with high or extremely high baseline water stress	Quantitative	4.3.2 Water Resource Management Appendix I: Environmental Dat	95 145
	Waste Management	TC-SC-150a.1	Amount of hazardous waste from manufacturing, percentage recycled	Quantitative	4.3.3 Circular Economy	97
	Employee health and safety	TC-SC-320a.1	Description of efforts to assess, monitor and reduce exposure of employees to human health hazards	Discussion and Analysis	5.3.2 Healthy Workplace	132
		TC-SC-320a.2	Total amount of monetary losses as a result of legal proceedings associated with employee health and safety violations	Quantitative	No penalties associated with Occupational Safety and Health violations in 2023.	-
	Recruiting and managing a global and skilled workforce	TC-SC-330a.1	Percentage of employees that are (1) foreign nationals and (2) located offshore	Quantitative	Nuvoton Taiwan Work Visa Holders: 10.3% (160 people) Nuvoton Japan Work Visa Holders: 2.42% (40 people)	-
	Product lifecycle management	TC-SC-410a.1	Percentage of products by revenue that contain IEC 62474-declarable substances	Quantitative	No IEC 62474 declarable products	-
	Product lifecycle management	TC-SC-410a.2	Processor energy efficiency at a system level for: (1) servers, (2) desktops, and (3) laptops	Quantitative	Non-end product manufacturer, no applicable content.	-
	Materials sourcing	TC-SC-440a.1	Description of the management of risks associated with the use of critical materials	Discussion and Analysis	3.4.2 Sustainable Supply Chain Management	70
	Intellectual property protection & competitive behavior	TC-SC-520a.1	Total amount of monetary losses as a result of legal proceedings associated with anticompetitive behavior regulations	Quantitative	No violation of relevant laws in 2023	-

Indicator category	SASB Topic	Code	Metric	Category	Response Chapter	Section
Activity Metrics		TC-SC-000.A	Total production	Quantitative	Please refer to the 2023 Annual Report Note: Production capacity is represented by self-produced 6-inch wafers. Building C at the Uozu site in Japan was closed in March 2023.	
		TC-SC-000. B	Percentage of production from owned facilities	Quantitative	Wafer 0%、Grain 100%	-

Main product categories\ year	2023 year			
	Capacity (Thousands of films)	Yield		output value (NT$ thousand)
		Wafer (Thousands of films)	grain (Thousands)	
General IC	536	-	3,383,711	30,904,624
Wafer Foundry		405	58	1,382,992
other		-	-	16,190
total		405	3,383,769	32,303,806

Appendix V, Sustainability Disclosure Indicators - Semiconductor Industry

Indicator	Indicator Type	Unit	Annual Disclosure
Total energy consumption, percentage of purchased electricity, and rate of renewable energy use	Quantitative	Gigajoule (GJ); percentage (%)	4.3.1 Energy Management、Appendix I: Environmental Data
Total water withdrawal and total water consumption	Quantitative	(m^3) thousand cubic meter (m^3)	4.3.2 Water Resources Management、Appendix I: Environmental Data
Weight of hazardous waste generated and percentage of hazardous waste recycled	Quantitative	Metric ton (t); percentage (%)	4.3.3 Circular Economy
Category, number and rate of individuals subject to occupational accidents	Quantitative	Rate (%); number	5.3.1 Workplace Safety
Disclosure of life cycle management of products: including the weight of end-of-life products and e-waste and the percentage of recycled	Quantitative	Metric ton (t); percentage (%)	Not applicable Nuvoton's IC design and development, as well as wafer foundry production of components, are provided to customers for use in the assembly and sale of electronic products. The sales, repair of faulty electronic products, replacement of parts, or disposal of waste are managed by the customers.
Description of the risk management associated with the use of key materials	Qualitative description	Not applicable	3.4.2 Sustainable Supply Chain Management
Total amount of monetary losses as a result of legal proceedings associated with the act of anti-competitive behaviors	Quantitative	Reporting currency	No incidents of Nuvoton Technology involving ethical management issues such as fraud, insider trading, anti-competitive behavior, antitrust and monopoly practices, or market manipulation and no legal proceedings or penalties arising therefrom in 2023
Production of major products by product line by product category	Quantitative	Varied by product type	Please refer to the 2023 Annual Report

Appendix VI: TWSE/TPEx-Listed Companies Climate-related Information

Implementation of Climate-Related Information

Item	Execution/Corresponding Chapter
Describe the board of directors' and management's oversight and governance of climate-related risks and opportunities.	Please refer to pages 49-54 of the 2023 Nuvoton Technology Annual Report
Describe how the identified climate risks and opportunities affect the business, strategy, and finances of the business (short, medium, and long term).	
Describe the financial impact of extreme weather events and transformative actions.	
Describe how climate risk identification, assessment, and management processes are integrated into the overall risk management system.	
If scenario analysis is used to assess resilience to climate change risks, the scenarios, parameters, assumptions, analysis factors and major financial impacts used should be described.	
If there is a transition plan for managing climate-related risks, describe the content of the plan, and the indicators and targets used to identify and manage physical risks and transition risks.	
If internal carbon pricing is used as a planning tool, the basis for setting the price should be stated.	
If climate-related targets have been set, the activities covered, the scope of greenhouse gas emissions, the planning horizon, and the progress achieved each year should be specified. If carbon credits or renewable energy certificates (RECs) are used to achieve relevant targets, the source and quantity of carbon credits or RECs to be offset should be specified.	
Greenhouse gas inventory and assurance status and reduction targets, strategy, and concrete action plan (separately fill out in points 1-1 and 1-2 below).	CH 4 Environmental Sustainability、the tables below

1-1 Greenhouse Gas Inventory and Assurance Status for the Most Recent 2 Fiscal Years

1-1-1 Greenhouse Gas Inventory Information

Explanation of greenhouse gas emissions in the most recent two years in tons of CO_2e, intensity in tons of CO_2e per million NTD, and data coverage.

1. The parent company entity should start inventorying from 2026 (115 Republic of China calendar).
2. Subsidiaries included in the consolidated financial statements should start inventorying from 2027 (116 Republic of China calendar).

Nuvoton Taiwan, established in 2008, with the Yanshin Plant as part of the wafer manufacturing facility, has conducted annual greenhouse gas inventories for 15 consecutive years to understand its carbon emissions. This helps identify "carbon hotspots" and enables targeted energy-saving and carbon reduction strategy planning for the plant.

The company has established a greenhouse gas inventory mechanism in accordance with the Greenhouse Gas Protocol published by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI), and the ISO 14064-1 greenhouse gas inventory standard published by the International Organization for Standardization (ISO). Since 2020 (109 Republic of China calendar), the company has conducted annual inventories of its own entity, and since 2023 (112 Republic of China calendar), it has included the greenhouse gas emissions of subsidiaries in the consolidated financial statements to fully grasp the usage and emissions of greenhouse gases and verify the effectiveness of reduction actions. Additionally, the recent two-year greenhouse gas inventory data is summarized according to the operational control method, including the emissions of the company and all subsidiaries in the consolidated financial statements, as follows:

		2022		2023	
		Emissions (tons CO_2e)	Intensity (tons CO_2e per million NTD revenue)	Emissions (tons CO_2e)	Intensity (tons CO_2e per million NTD revenue)
Headquarters	Scope 1 Direct Greenhouse Gas Emissions	36,326.2384		18,748.5463	
	Scope 2 Indirect Greenhouse Gas Emissions	35,785.5489		35,495.2174	
	Subtotal	72,111.7873		54,243.764	
All Subsidiaries in Consolidated Financial Statements	Scope 1 Direct Greenhouse Gas Emissions	28,713		21,045.3824	
	Scope 2 Indirect Greenhouse Gas Emissions	73,034.5128		62,855.1426	
	Subtotal	101,747.513		83,900.525	
	Total	173,859.3003	4.15	138,144.289	3.91

1-1-2 Greenhouse Gas Assurance Information

Description of the assurance status for the most recent two years as of the annual report printing date, including the scope of assurance, assurance organizations, assurance standards, and assurance opinions.

1. The parent company entity should begin assurance from 2027 (116 Republic of China calendar).
2. Subsidiaries included in the consolidated financial statements should begin assurance from 2028 (117 Republic of China calendar).

In the disclosure of the total greenhouse gas emissions in 1-1-1, the assurance scope for 2022 and 2023 was for the company's entity; the assurance scope for 2023 was for the subsidiaries in the consolidated financial statements, accounting for 100% of the total emissions of the consolidated financial statement subsidiaries for that year. The assurance was performed by DNV GL and Japan Quality Assurance Organization (JQA)[1] in accordance with ISO 14064-3:2019, and the assurance opinions were all unqualified at a reasonable assurance level.

The assurance status of the greenhouse gas inventory of the company and its consolidated financial statement subsidiaries for the most recent two years is as follows:

Scope of Assurance Execution		2022 Emissions (tons CO_2e)	2023 Emissions (tons CO_2e)
The Company	Scope 1 Direct Greenhouse Gas Emissions	36,326.2384	18,748.5463
	Scope 2 Indirect Greenhouse Gas Emissions	35,785.5489	35,495.2174
	Subtotal	72,211.7873	54,243.764
	Percentage of the inventory data disclosed in 1-1-1	100%	100%
All Subsidiaries in Consolidated Financial Statements	Scope 1 Direct Greenhouse Gas Emissions	-	21,045.2824
	Scope 2 Indirect Greenhouse Gas Emissions	-	62,855.1426
	Subtotal	-	83,900.425
	Percentage of the inventory data disclosed in 1-1-1	0%[2]	100%
Assurance Organizations		DNV GL (DNV Taiwan)	DNV GL (DNV Taiwan) Japan Quality Assurance Organization (JQA)
Assurance Status		ISO 14064-3:2019 published by the International Organization for Standardization (ISO)	ISO 14064-3:2019 published by the International Organization for Standardization (ISO)
Assurance Opinion/Conclusion		Unqualified opinion	Unqualified opinion

[1] Nuvoton Japan's verification organization is the Japan Quality Assurance Organization (JQA), while subsidiaries other than Nuvoton Japan are jointly verified by DNV GL and Nuvoton Taiwan.

[2] In 2022, the greenhouse gas data for all subsidiaries in the consolidated financial statements were only inventoried and not yet assured.

Description of the baseline year for greenhouse gas reduction and its data, reduction targets, strategies, specific action plans, and the achievement of reduction targets.

Baseline Year and Reduction Targets for Greenhouse Gas Reduction (Baseline Year is 2020[1])

Nuvoton continues to plan greenhouse gas reduction strategies, completing the first global inventory and third-party verification for the consolidated company in 2023 based on the boundaries of the consolidated financial statements. Through the following strategies and specific actions for climate change response and greenhouse gas management, Nuvoton aims to further implement its short-term (2024), medium-term (2025), and long-term (2030) greenhouse gas reduction goals:

Short and Medium Term:

Scope 1: Continue to install fluorinated gas treatment equipment in processes to reduce fluorinated gas emissions and direct energy consumption, with the goal of reducing by 70% by 2025 and 75% by 2030.

Scope 2: Through the installation of solar renewable energy equipment, purchase of green electricity, and various energy-saving measures, set a global reduction target for Nuvoton of 35% by 2025 and 40% by 2030.

Scope 3: The total reduction of the above two items is 50% by 2025 and 55% by 2030.

Long Term: Achieve net-zero emissions by 2050.

The estimated total emissions of Nuvoton's Scope 1 and Scope 2 greenhouse gases for 2025 and 2030 are 117,068 t CO_2e and 109,624 t CO_2e, respectively.

Greenhouse Gas Reduction Strategies and Specific Action Plans

Nuvoton integrates carbon management into its operational strategy, including the establishment of a carbon management platform and the implementation of ISO 50001 energy management system to seek breakthroughs in carbon reduction. In response to international carbon pricing trends and the anticipated carbon fees under Taiwan's "Climate Change Response Act", as well as carbon emission regulations worldwide, these mechanisms are used to evaluate opportunities brought by low-carbon transition and to adjust relevant policies and programs on a rolling basis: developing measures to improve energy efficiency, purchasing energy-saving equipment, installing solar power systems, reducing greenhouse gas raw material sources, installing high-efficiency greenhouse gas destruction equipment, and evaluating the adoption of low-carbon fuels/energy to ensure the reduction meets progress, actively reducing the impact of carbon emissions and enhancing operational competitiveness.

In 2023, Nuvoton's energy-saving and carbon reduction projects include investments in solar renewable energy and fluorinated gas reduction equipment in processes. Each production base installs energy-saving equipment as appropriate (including chiller updates, cogeneration equipment updates, and optimized operations). In 2023, Nuvoton Taiwan completed the installation of renewable energy covering 8% of the contract capacity (producing 880,000 kWh annually). In 2023, three fluorinated gas reduction equipment units were installed and operational in the process, with plans to install more equipment (chillers, reduction equipment, energy-saving equipment, etc.) annually to increase reductions.

Nuvoton's products offer services to customers, such as applications in electric vehicles and power management, continuously innovating energy-saving products. During the initial development stages, designs focused on energy efficiency and high performance are incorporated into the products to reduce unnecessary leakage currents and overall power consumption.

In terms of specific actions, they include:

Nuvoton Technology has set the long-term goal of achieving net-zero emissions by 2050, actively responding to the global net-zero emission trend. Nuvoton plans to establish an energy management system (ISO 50001) to systematically and traceably reduce indirect carbon dioxide emissions from fossil fuel combustion during electricity use. Nuvoton Taiwan has already obtained certification, and another operational site, Nuvoton Japan, is in the process of establishment, aiming for certification by 2025. For Scope 1 and 2, Nuvoton Technology has reviewed its operations and manufacturing processes, adding greenhouse gas treatment equipment to reduce emissions, improve operational efficiency, reduce energy consumption, and actively increase its renewable energy installations.

In Scope 3, the company continues to collaborate with suppliers to move towards energy-saving and carbon-reduction pathways. By reducing the carbon footprint of products and improving efficiency, Nuvoton helps customers reduce carbon emissions during the manufacturing process and lower energy consumption during use, achieving the goal of energy saving and carbon reduction through the product's effectiveness.

1 The baseline year 2020 greenhouse gas emissions were back-calculated using the United Nations IPCC 2019 edition and AR5 coefficients.

2 These reductions were all calculated using the United Nations IPCC 2019 edition and AR5 coefficients.

Appendix VII, Third-Party Verification Statement

SGS

ASSURANCE STATEMENT

SGS TAIWAN LTD.'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE NUVOTON TECHNOLOGY CORPORATION'S ESG REPORT FOR 2023

NATURE AND SCOPE OF THE ASSURANCE
SGS Taiwan Ltd. (hereinafter referred to as SGS) was commissioned by Nuvoton Technology Corporation (hereinafter referred to as Nuvoton) to conduct an independent assurance of the ESG Report for 2023 (hereinafter referred to as the ESG Report). The scope of assurance is based on the SGS Sustainability Report Assurance methodology and AA1000 Assurance Standard v3 Type 1 Moderate level to assess whether the text and data in accompanying tables contained in the report presented and complies with the GRI Standards and AA1000 Accountability Principles (2018) during assurance (2024/3/8~2024/4/11) in Nuvoton's headquarter. The assurance process did not include the evaluation of specific performance information outside the scope, such as climate-related financial disclosures (TCFD) and sustainability accounting standards (SASB).

SGS reserves the right to update the assurance statement from time to time depending on the level of report content discrepancy of the published version from the agreed standards requirements.

INTENDED USERS OF THIS ASSURANCE STATEMENT
This Assurance Statement is provided with the intention of informing all Nuvoton's Stakeholders.

RESPONSIBILITIES
The information in the Nuvoton's ESG Report of 2023 and its presentation are the responsibility of the directors or governing body (as applicable) and management of Nuvoton. SGS has not been involved in the preparation of any of the material included in the ESG Report.

Our responsibility is to express an opinion on the report content within the scope of assurance with the intention to inform all Nuvoton's stakeholders.

ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE
The SGS ESG & Sustainability Report Assurance protocols used to conduct assurance are based upon internationally recognized assurance guidance and standards including the principles of reporting process contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) GRI 1: Foundation 2021 for report quality, GRI 2 General Disclosure 2021 for organization's reporting practices and other organizational detail, GRI 3 2021 for organization's process of determining material topics, its list of material topics and how to manages each topic, and the guidance on levels of assurance contained within the AA1000 series of standards.

The assurance of this report has been conducted according to the following Assurance Standards:

Assurance Standard Options	Level of Assurance	
A	SGS ESG & SRA Assurance Protocols (based on GRI Principles and guidance in AA1000)	n/a
B	AA1000ASv3 Type 1 (AA1000AP Evaluation only)	Moderate

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SCOPE OF ASSURANCE AND REPORTING CRITERIA
The scope of the assurance included evaluation of adherence to the following reporting criteria:

Reporting Criteria Options	
1	GRI Standards (in Accordance with)
2	AA1000 Accountability Principles (2018)

- AA1000 Assurance Standard v3 Type 1 evaluation of the report content and supporting management systems against the AA1000 Accountability Principles (2018) is conducted at a moderate level of scrutiny, and therefore the reliability and quality of specified sustainability performance information is excluded.
- The evaluation of the report against the requirements of GRI Standards, includes GRI 1, GRI 2, GRI 3, 200, 300 and 400 series claimed in the GRI content index as material and is conducted in accordance with the standards.

ASSURANCE METHODOLOGY
The assurance comprised a combination of pre-assurance research, interviews with relevant employees, superintendents, ESG committee members and the senior management in Taiwan; documentation and record review and validation with external bodies and/or stakeholders where relevant.

LIMITATIONS AND MITIGATION
Financial data drawn directly from independently audited financial accounts, Total Impact Measurement and Management, and Task Force on Climate-related Financial Disclosures (TCFD) and SASB related disclosures has not been checked back to source as part of this assurance process.

STATEMENT OF INDEPENDENCE AND COMPETENCE
The SGS Group of companies is the world leader in inspection, testing and assurance, operating in more than 140 countries and providing services including management systems and service certification; quality, environmental, social and ethical auditing and training; environmental, social and sustainability report assurance. SGS affirm our independence from Nuvoton, being free from bias and conflicts of interest with the organization, its subsidiaries and stakeholders.

The assurance team was assembled based on their knowledge, experience and qualifications for this assignment, and comprised auditors registered with ISO 26000, ISO 20121, ISO 50001, SA8000, RBA, QMS, EMS, SMS, GPMS, CFP, WFP, GHG Verification and GHG Validation Lead Auditors and experience on the SRA Assurance service provisions.

ASSURANCE / VERIFICATION OPINION
On the basis of the methodology described and the assurance work performed, we are satisfied that the disclosure with inclusivity, materiality, responsiveness, and impact information in the scope of assurance is reliable, has been fairly stated and has been prepared, in all material respects, in accordance with the reporting criteria.
We believe that the organization has chosen an appropriate level of assurance for this stage in their reporting.

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ADHERENCE TO AA1000 ACCOUNTABILITY PRINCIPLES (2018)

INCLUSIVITY
Nuvoton has demonstrated a good commitment to stakeholder inclusivity and stakeholder engagement. A variety of engagement efforts such as survey and communication to employees, customers, investors, suppliers, sustainability experts, and other stakeholders are implemented to underpin the organization's understanding of stakeholder concerns. For future reporting, Nuvoton may proactively consider having more direct two-ways involvement of stakeholders during future engagement.
MATERIALITY
Nuvoton has established effective processes for determining issues that are material to the business. Formal review has identified stakeholders and those issues that are material to each group and the report addresses these at an appropriate level to reflect their importance and priority to these stakeholders.
RESPONSIVENESS
The report includes coverage given to stakeholder engagement and channels for stakeholder feedback.
IMPACT
Nuvoton has demonstrated a process on identify and fairly represented impacts that encompass a range of environmental, social and governance topics from wide range of sources, such as activities, policies, programs, decisions and products and services, as well as any related performance. Measurement and evaluation of its impacts related to material topic were in place at target setting with combination of qualitative and quantitative measurements.

GLOBAL REPORTING INITIATIVE REPORTING STANDARDS CONCLUSIONS, FINDINGS AND RECOMMENDATIONS
The report, Nuvoton's ESG Report of 2023, is adequately in accordance with the GRI Universal Standards 2021 and complies with the requirements set out in section 3 of GRI 1 Foundation 2021, where the significant impacts on the economy, environment, and people, including impacts on their human rights are assessed and disclosed following the guidance defined in GRI 3: Material Topic 2021, and the relevant 200/300/400 series Topic Standard related to Material Topic have been disclosed. The report has properly disclosed information related to Nuvoton's contributions to sustainability development. For future reporting, it is recommended to have more descriptions on how the organization has applied due diligence as a method for the identification and the evaluation of its impacts on the economy, environment, and people, including impacts on their human rights as well as the role of the highest governance body in overseeing these processes. In addition, more systematic processes are encouraged for data collection and performance disclosure.

Signed:
For and on behalf of SGS Taiwan Ltd.

AA1000
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000-8/V3-X20Z1

Stephen Pao
Business Assurance Director
Taipei, Taiwan
11 May, 2024
WWW.SGS.COM

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Joy of innovation

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