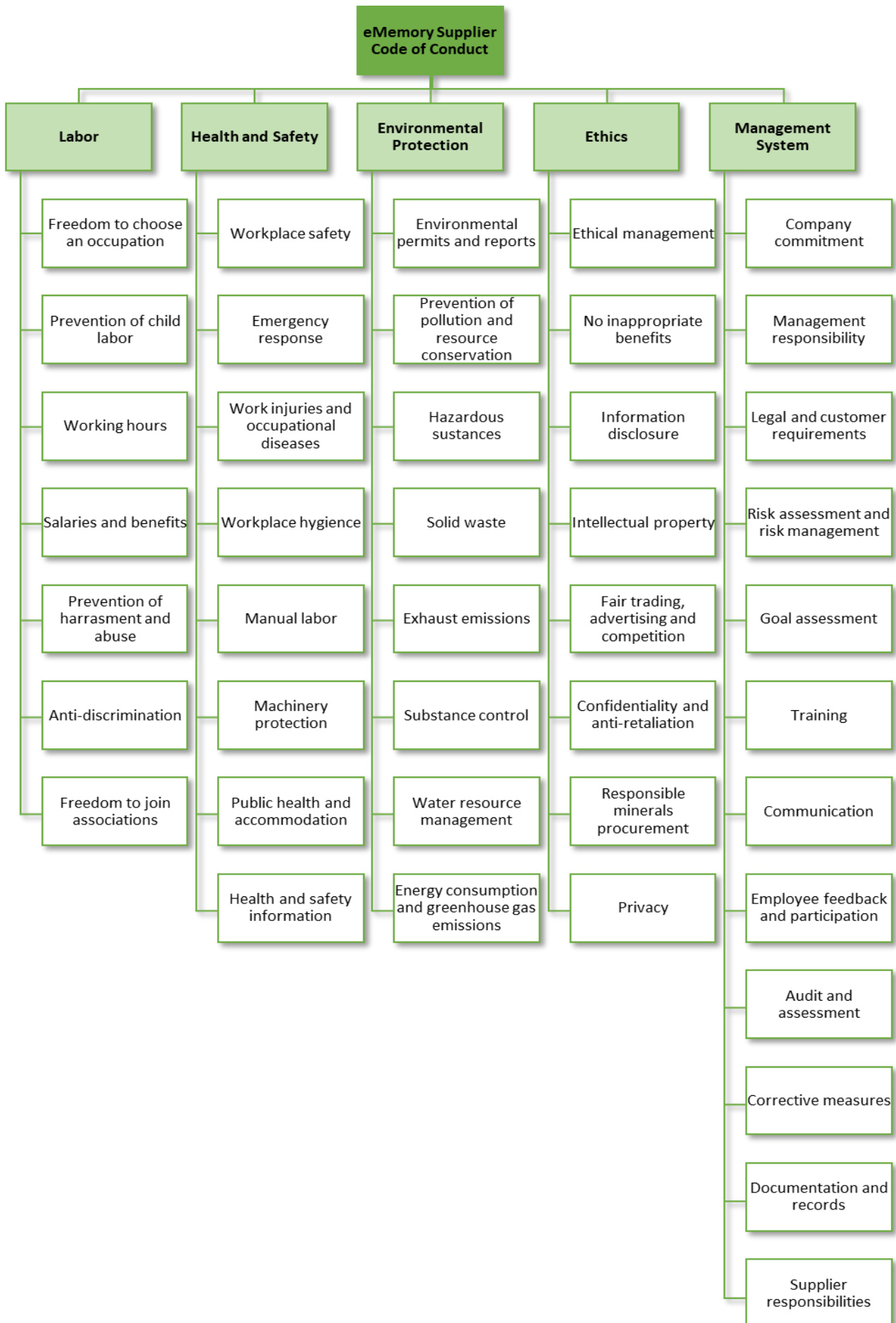# 2022 ESG SUMMARY

ememory

ENVIRONMENTAL

Environmental protection is one of the most important parts of corporate sustainability. eMemory authorizes pollution-free silicon IPs and does not manufacture tangible products. We are committed to not preventing operations or sales in or near biodiversity sites of national importance. We will also integrate environmental protection into our policies and daily operations to maintain sustainable corporate development.

- In 2022, eMemory emitted a total of 1,696.612 tons of CO2e, energy intensity ratio as 0.5274 (tons of CO2e/million turnover).
- eMemory's total water consumption in 2022 is 5,780.4 degrees, and the water intensity will be 1.7970 degrees/million turnover.
- We hope to reduce organization's energy intensity and water intensity by 1% in the next three years.
- In 2022, the total weight of domestic waste for eMemory's Zhubei Office was 11.288 metric tons.

Environmental Issues	Greenhouse Gas Inventory				
Category	Category 1	Category 2	Category 3	Category 4	Category 5
Subtotal (ton co2e/year)	15.6618	1,653.5073	19.8197	1.5041	6.1194
Intensity	Total emissions 1,696.612 ton CO2e/year, energy intensity 0.5274 ton CO2e/million turnover				
Management, strategy and short-term goals	1. Complete the 2022 ISO14064-1 greenhouse gas inventory and obtain third-party verification. 2. Replace LED lighting and improve air conditioning system to reduce energy consumption. 3. Review the progress for the reduction of emissions every year.				

Environmental Issues	Water Resource Management	
Intensity	The total water consumption is 5,780.3610 degrees/year, and the water intensity is 1.7970 degrees/million turnover.	
Management strategies, methods and objectives	Propagate the correct concept of water use, post water-saving slogans near water-using equipment and develop the water-saving habit.	
Environmental Issues	Waste Management	
Category	General Waste	Resource Garbage
Subtotal (Metric tons/year)	4.176	7.112
Management strategies, methods and objectives	The company implements waste reduction measures; internal forms are paperless and double-sided.	

eMemory Supplier Code of Conduct

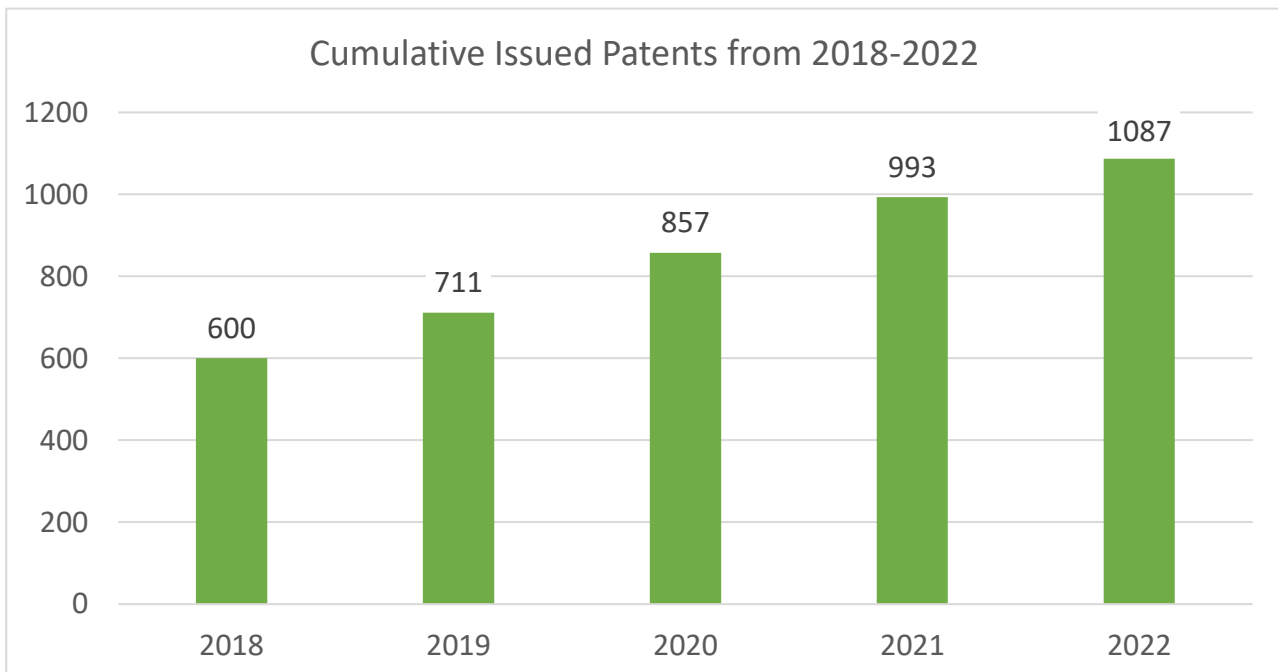| Labor	Health and Safety	Environmental Protection	Ethics	Management System
Freedom to choose an occupation	Workplace safety	Environmental permits and reports	Ethical management	Company commitment
Prevention of child labor	Emergency response	Prevention of pollution and resource conservation	No inappropriate benefits	Management responsibility
Working hours	Work injuries and occupational diseases	Hazardous sustances	Information disclosure	Legal and customer requirements
Salaries and benefits	Workplace hygience	Solid waste	Intellectual property	Risk assessment and risk management
Prevention of harrasment and abuse	Manual labor	Exhaust emissions	Fair trading, advertising and competition	Goal assessment
Anti-discrimination	Machinery protection	Substance control	Confidentiality and anti-retaliation	Training
Freedom to join associations	Public health and accommodation	Water resource management	Responsible minerals procurement	Communication
	Health and safety information	Energy consumption and greenhouse gas emissions	Privacy	Employee feedback and participation
				Audit and assessment
				Corrective measures
				Documentation and records
				Supplier responsibilities

Clean Tech for Green Product Development

eMemory supports sustainability by continuing to develop advanced semiconductor process technologies that support our customers' designs and thereby collaboratively producing the most advanced, energy-saving, and environmentally friendly products possible.

- Around 240 million kilowatt-hours of energy consumption of the end-use products with our IPs embedded was reduced in 2022, equivalent to the carbon absorption capacity of 270 New York Central Park.
- eMemory's IPs help to improve the stability and yield of the wafers, which further reduce the cost of wafer remanufacturing. Based on the wafer shipment, we contributed to saving nearly NT$1.7 billion in manufacturing costs.
- Our PUF-based solutions can help to reduce and recycle electronic waste (e-waste) throughout the product lifecycle.

Patent Innovation

eMemory attaches great importance to innovative research and the quantity and quality of our IPs, to create economic value and strengthen competitive advantage.

- The patent portfolio developed by eMemory and our subsidiary PUFsecurity have spread all over Taiwan, United States, China, Japan, and Europe.
- By 2022, the number of worldwide patent applications has reached above 1,200, and the average number of patent applications per employee is 3.9. There has also been a significant rise in the number of patents issued, with a growth rate of around 81% being achieved between 2018 and 2022.
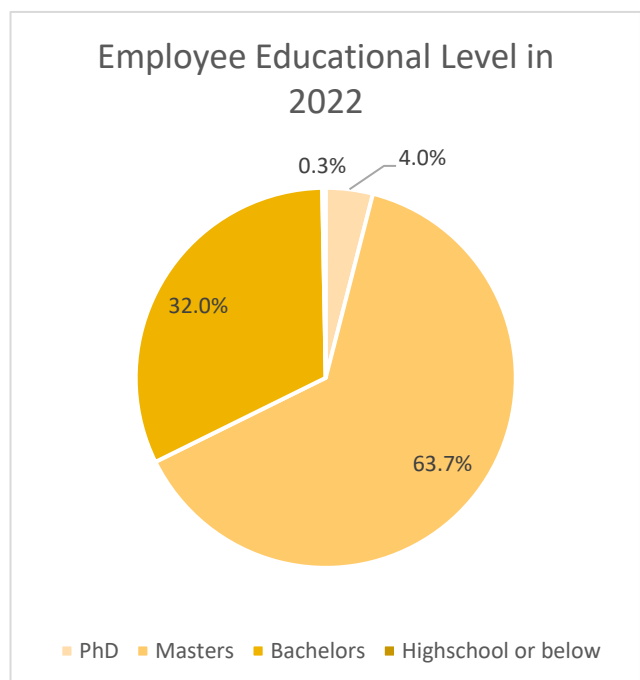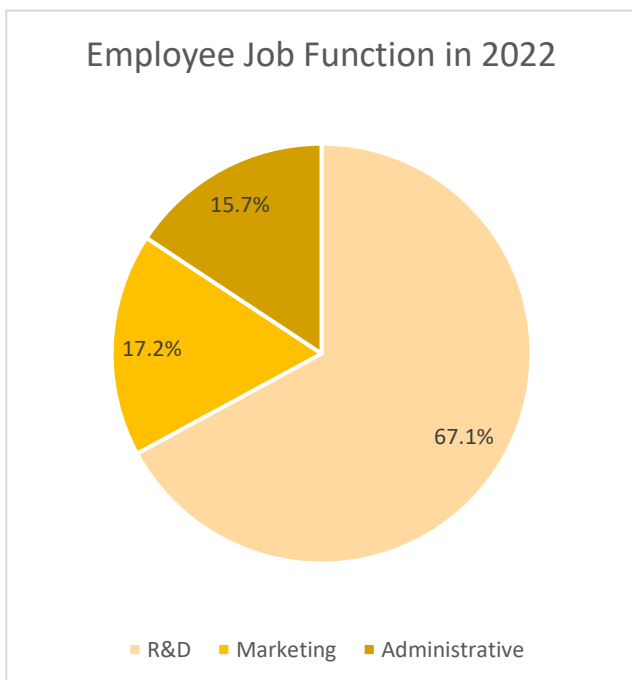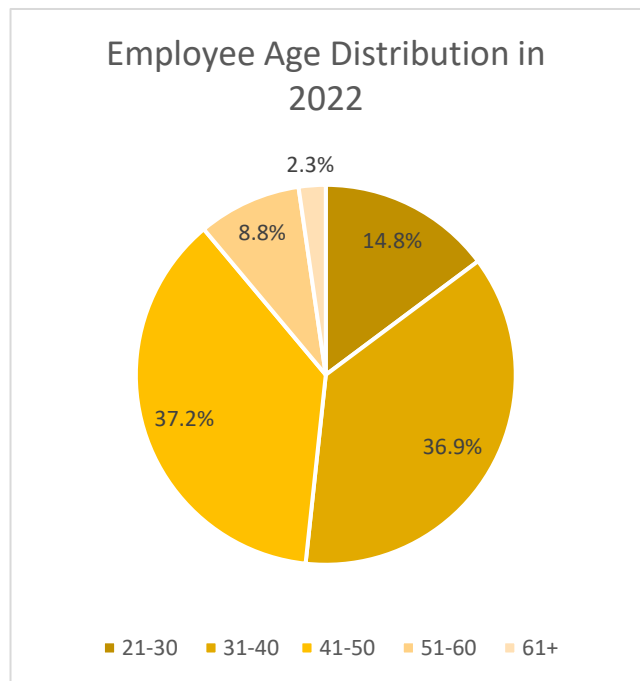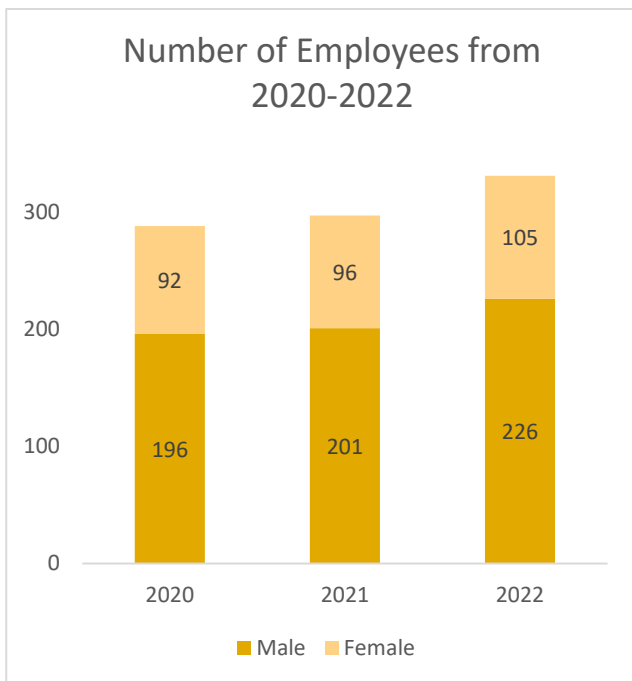

Cumulative Issued Patents from 2018-2022

SOCIAL

As a leading IP technology developer and provider, employees are eMemory's most valued asset. From recruitment to retirement, training to travelling programs, eMemory supports and provides opportunities for our employees to grow, innovate, and maintain a healthy work-life balance from day one.

Basic Demographics

eMemory's total number of employees was 331, with 68.3% males and 31.7% females in 2022. We recruit great talents of all backgrounds to sustain human resources diversity and stability.

Number of Employees from 2020-2022

Employee Age Distribution in 2022

Employee Job Function in 2022

Employee Educational Level in 2022

Training and Development

eMemory provides our employees with continuous and comprehensive training and learning opportunities. Technical and non-technical training are available for employees of all levels and functions to maintain the innovation momentum.

Course Types	Frequency	Attendees	Total Hours
New Employee Training	2	91	431.5
Professional Training	259	1,323	3,405.6
Management Training	6	31	47.4
General Training	38	475	1,028.0
Total	305	1,920	4,912.5

Occupational Safety and Work-Life Balance

Due to the seriousness of the pandemic, eMemory implemented different levels of practices to protect the health or our employees and their family. In February and April, all employees were separated into A group and B group and asked to take turns coming to the office.

For occupational safety, since eMemory does not manufacture tangible products or possess factories, there were no work-related hazards or incidents that occurred in 2022. Furthermore, annual health checks, on-site medical consultations, and various health insurance plans are available to the employees and their family members.

We believe that maintaining a good work-life balance is the key to great innovation and better productivity. Thus, competitive compensation programs, leave programs, team-building events, club events, and various activities are established to promise our employees financial stability and work-life balance.
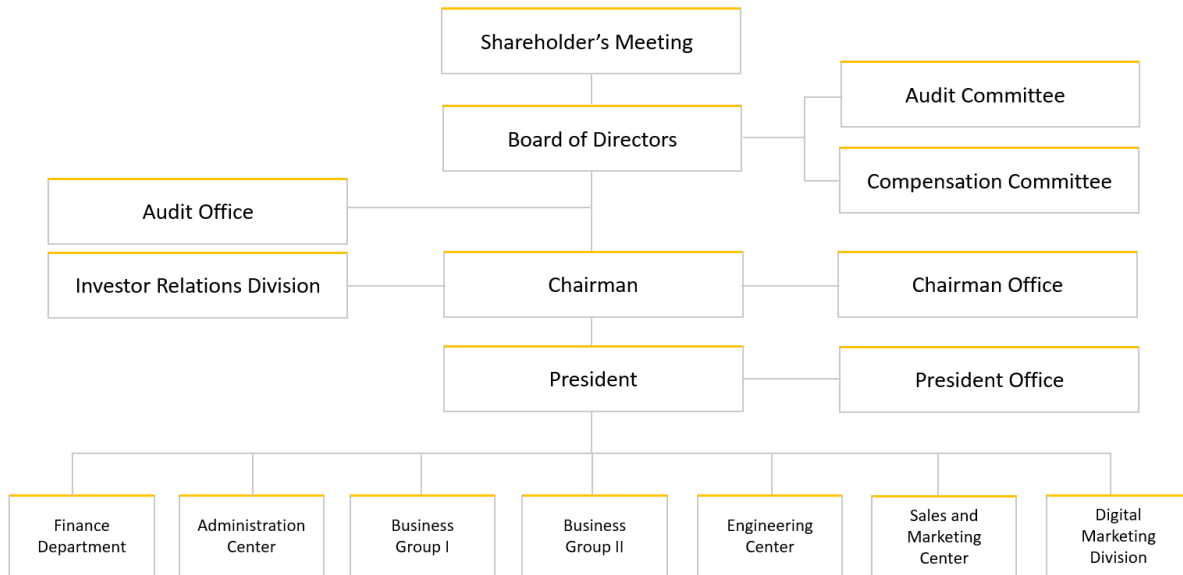
Social Participations

eMemory sees giving back to society as an obligation for our business as well as an opportunity to foster a positive team spirit in our staff through engaging with our community. We are dedicated to educational activities that help us share our knowledge and help participate in a variety of community events to aid those in need. We also encourage employees to volunteer in the community as we believe that social involvement generates positive energy for our employees and the company and improves the world.

- Scholarship for NTHU
- Seminar sponsorship for NTHU
- Sponsorship for Teach For Taiwan
- Stationary donation to the Boyo Social Welfare Foundation
- Laptop donation to the YWCA of Hsinchu City
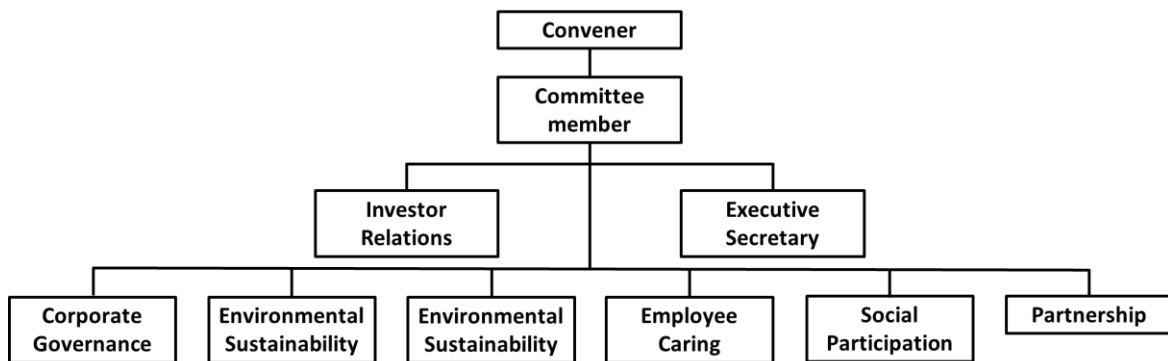- Christmas fundraising for Spinal Cord Injury Rehabilitation Center

GOVERNANCE

eMemory's corporate governance related affairs are handled by different divisions which make up the complete organizational structure.

We have also formed the Sustainable Management Committee in 2022 to further promote sustainable practices in our daily operation and decision-making process.

Board Governance

The Board of Directors is comprised of 9 members. The proportion of Directors with employee status is 22.2%. There are 3 Independent Directors with 7, 8, and 14 years of service respectively on the Board, accounting for 33.3% of the Board. There are two female Directors, accounting for 22.2% of the Board.

- The Board Meetings in 2022 were convened 5 times, with a 97.7% attendance rate among the directors.
- A total of 5 Audit Committee meetings were held in 2022 with a 100% attendance rate of all 3 committee members.

- A total of 3 Remuneration Committee meetings were held in 2022 with a 100% attendance rate of all 3 committee members.

For further details on the Board, Audit Committee, and Remuneration Committee, please refer to the eMemory 2022 Annual Report.
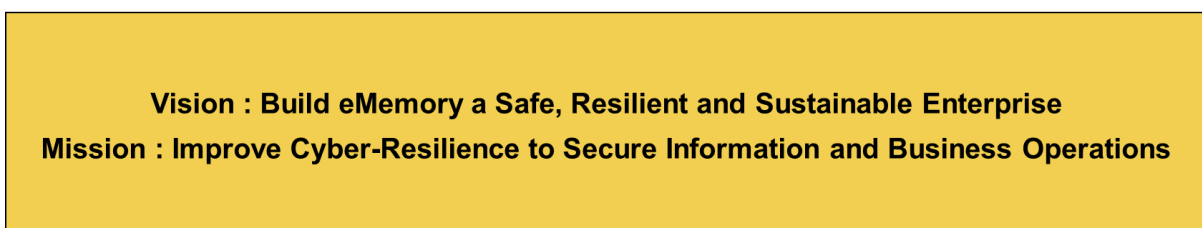
Integrity and Ethics

eMemory's "Ethical Corporate Management Practice Principles" acts as a guideline for a fair, honest, trustworthy, and transparent engagement in business activities, which applies to all employees, including the Directors and Executives. We hold zero-tolerance for bribery, corruption, fraud, intellectual property infringement, insider trading, or any other illegal activities. In addition, a whistle-blowing system has been long established for our stakeholders to report any unethical deeds or violations of the regulations or principles. According to our "2022 Business Integrity and Ethical Management Report", eMemory's corruption risk has been controlled appropriately with no significant risks being found. No record of employees dismissed or punished due to corruption incidents. During the reporting period, we were not involved in any lawsuit related to anticompetitive, anti-trust, and monopolistic behavior.
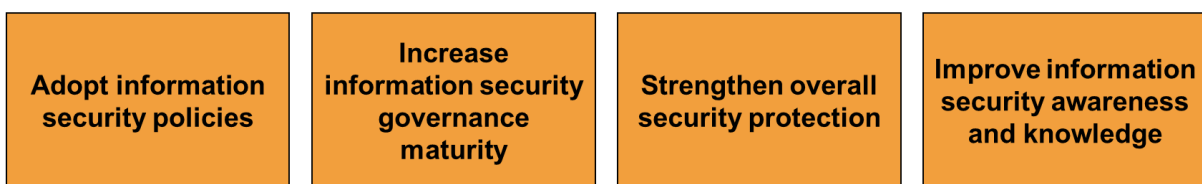
Cyber Security Management

To strengthen information security management, eMemory implemented ISO 27001 Information Security Management System in 2022. Based on the PDCA (Plan-Do-Check-Action) cycle of ISO 27001, we built the management structure in compliance with information security regulations to protect the confidentiality, integrity, and availability of our information assets. It is our responsibility to establish a sustainable business with strong information security resilience and to keep our private data and personal information of our stakeholders safe and secure. eMemory obtained ISO 27001 certification in April 2023.

Information Security Vision and Mission

Vision : Build eMemory a Safe, Resilient and Sustainable Enterprise
Mission : Improve Cyber-Resilience to Secure Information and Business Operations

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Information Security Strategic Goals

Adopt information security policies	Increase information security governance maturity	Strengthen overall security protection	Improve information security awareness and knowledge

Risk Management

eMemory conducts risk assessments on the material issues identified, followed by related risk management strategies and measures.

Material Issues	Related Risks	Our Approach
Product Quality and Safety	Product quality does not meet the requirements	1. Improve product quality to meet customer and industry standards 2. Understand customer needs, improve service quality and cooperation satisfaction
Technology, Research, and Innovation	Research and development do not fit customer needs, market requirements, and innovation standards	Research and develop products and applications that meet the technology, market needs, and applications thorough market research
Customer Relationship Management	Loss of customers	1. Regularly review sales figures and project numbers and increase in-depth understanding of customers and improve service quality and satisfaction by studying their organizational structure, focuses, business styles, etc. 2. Protect customer privacy and operation condition
Information Security Management	Data breaches to cause damages to the company and customers	Practice information security management by following the structure of ISO 27001 and implement related policy to secure information assets of the customers and the company
Talent Attraction and Retention	Unable to attract or retain enough talents	1. Provide compensation package better than the industry's 2. Friendly working environment 3. Pleasant corporate culture
Integrity Management	Management or employees violate company's integrity and have unethical behavior	1. The handling procedures and penalty system for inhibiting the Director, manager, employee, etc. providing or accepting improper benefits are clearly defined in the "Ethical Corporate Management Practice Principles". Unethical behaviors are also strictly prohibited. The principles are applied to all including the subsidiaries 2. The "Work Rules" states that all employees are required to be honest and not accept bribes of any kind. Other than fulfilling requests from customers on aspects of integrity and social responsibilities, we also ask our major suppliers to sign the "eMemory Supplier Social Responsibility Commitment" and to comply with local laws and regulations implemented in the places their businesses are operated. It is also defined in the "eMemory Supplier Code of Conduct" that there is zero tolerance for any type of bribery, corruption, or other improper

Material Issues	Related Risks	Our Approach
		transaction, and suppliers should follow fair-trade practices
Regulatory Compliance	Company does not operate in compliant with legal regulations	Comply with government regulations and establish related policies and measures to prevent impacts on operation and financial performance
Training and Development	Talent cultivation and training do not meet the company's development needs	1. Provide employees with professional technical training and management training to fulfill the organizational needs and talent development plans 2. Establish a healthy promotion system, conduct appraisal meetings semi-annually, and provide the management training program 3. Encourage employees with competence and interest in internal promotions to the management team

eMemory Climate Change Management Structure

To face possible impacts of climate change, eMemory continues to identify climate-related risks and opportunities in the value chain and plans response measures in accordance with the framework of the Task Force on Climate-related Financial Disclosures (TCFD).

Area	Our Approach
Governance	eMemory has established the" Sustainable Development Practice Principles "and appointed the President's Office as the dedicated unit for leading sustainable business development. The President reports on the Company's sustainable development implementation and progress to the Board of Directors annually and on GHG inventory progress quarterly. To ensure thorough implementation of sustainable strategy, the President convenes Management Examination Meeting every six months to review the issues related to the environment, society, and corporate governance which concerned stakeholders. In consideration of the materiality principle, we also establish risk assessments related to the business operation and propose related policies and measures.
Strategy	To face climate-related risks and opportunities, eMemory establishes the "Sustainable Operation Procedure" to internalize corporate social responsibility in our operating strategy and management. It demonstrates our determination on implementing sustainable development in the long run. There are 6 measures as follows: 1. Increase efficiency in energy consumption and plan to adopt renewable energy to decrease GHG emission during operation 2. Achieve Net Zero emission in 2050 3. Strengthen strategies to respond to climate-change-related risks and create corresponding competitive advantages 4. By using our technology and IPs, customers can decrease production costs and shorten development time, which allows them to decrease carbon emissions and achieve sustainability 5. Develop green products for environmental protection and resource reuse 6. Comply with environmental protection regulations and laws
Risk Management	By conducting risk assessment regarding market, policies and legal, technology, reputation, acute and chronic effects, eMemory evaluates risks and opportunities related to climate change and develops corresponding methods to minimize potential impacts.

Area	Our Approach
Metrics and Targets	eMemory operated GHG inventory in 2022 and obtained ISO 14064-1:2018 verification in 2023. We will continue to evaluate and reduce the emissions and establish the Science-Based Targets initiative (SBTi). Our goals are decreasing emissions by 25% in 2030 and 95% in 2050.

Climate Change Risks/ Opportunities and Our Approach

Risk/ Opportunity	Type	Issue	Level	Condition Analysis and Our Approach
Transition Risks	**Market**	• Changing in demand and supply of products and services, and increased concerns in climate-related risks and opportunities	Low	Condition analysis: The market is affected by risks caused by natural disasters. In 2021, the blizzard in Texas, USA, greatly affect IDMs, such as Samsung and Texas Instruments, especially the operation of their factories. eMemory provides reliable SIPs to fabless IC designers and is partnered with foundries around the world. Our IPs help customers to shorten production time, and to save efforts and costs switching between foundries. Our approach: We will continue to work with different foundries around the world, strengthening localized semiconductor supply chain to better comply with requirements of different countries, such as USA, Japan, Korea, India, and European countries.
	Reputation	• Increased requirements in achieving Net Zero emission or decreasing carbon emissions	Low	1. Short-term goal: Conduct GHG inventory and obtain ISO 14064-1:2018 certification 2. Long-term goal: Evaluate and reduce the emissions and establish the Science-Based Targets initiative (SBTi), decrease emissions by 25% in 2030 and 95% in 2050 3. Approach: Use LED lighting, regularly inspect and clean air-conditioners, set stable room temperature

Risk/ Opportunity	Type	Issue	Level	Condition Analysis and Our Approach
	Technology	• Shifts to low carbon, high performance technology and innovation which may affect technology development planning and resource deployment	Low	Condition analysis: Based on the concept of More Moore and More than Moore, eMemory's IPs can assist customers improving their product functions and efficiency. For advanced process of FinFET, NeoFuse provides a user-friendly interface and fully integrated OTP IP that minimizes design effort and circuit complexity. It also provides data-storage functions, greater uniformity of programming operations. For Specialty process node, our OTP/MTP products help the development in HV/BCD process nodes, increasing transistor density and reducing power consumption and use of external memory. Our approach: eMemory will continue to develop technology in SONOS, MRAM, and ReRAM to assist customers cutting costs and improving product efficiency.
	Policy and Legal	• Increased regulations on energy related policies (i.e., Renewable Energy Development Act)	Low	Evaluate possibility to purchase renewable energy
Physical Risks	**Chronic**	• Increased frequency and damage level of strong typhoon • Increased frequency of severe rainfall • Drought • Rising mean temperatures	Low	• Decreased amount of regular typhoon, increased amount of extremely strong typhoons and rain • After 2000, short-time-delayed heavy rainfall increased, there were 16 out of the top 20 after 2000 • Uneven wet seasons and dry seasons According to the report by IPCC in 2021, the global average temperature rises by 1.5 degrees Celsius, and the frequency of extreme weather events will increase.
	Acute	• Decreased GHG, increased cost (ENClimate Change Response Act)	Low	1. Strengthen climate resilience to decrease possibility of interruption of operation and prevent damages 2. Conserve power usage and cut down cost
Opportunities	**Energy Source**	Participation in green energy market	Low	With the rise of the green energy industry, wind power, solar energy, and energy storage equipment are the future business opportunities. It is necessary to pay attention to any opportunities related to semiconductors and NVM.

Risk/ Opportunity	Type	Issue	Level	Condition Analysis and Our Approach
	Markets	Increased needs for low-carbon products	Medium	eMemory will focus on developing products or technologies that are low-power consumption to meet the market needs in power-saving and carbon reduction.
	Resource Efficiency	Shift to Amoeba Organization	Medium	In consideration of the current knowledge inheritance method and BKM design method, each design department should have its designated project type. However, such an approach may lead to idle personnel due to differences in project load, requirements, and expertise required.
	Resource Efficiency	Focus on development of NVM in advanced nodes	Medium	Smart households, smart cars, and smart factories will be the future development goals of society. Implementing NVM IPs in the applications, such as MCU and PMIC allows precise control of the power consumption and minimizes power loss.
	Products and Services	High integration and low power consumption Unified Hard Macro IPs	High	Developing high-integrated IP that could provide different functions not only is innovative but also can open a brand-new market.
	Products and Services	RFID and Electronic Shelf Label (ESL)	Low	Both RFID and ESL technologies help to reduce the use of paper and replace traditional information transmissions methods, such as barcodes, labels, and billboards. Both technologies are still growing rapidly and are expected to reduce the resources and costs needed traditionally once the market penetration rate increases. ESL can further replace the usage of LCD/OLED/LED, providing users with a display solution that consumes no power at all when static. eMemoyr's IPs are widely used in RFID chips and ESL Driver ICs, helping designers to develop smaller, more efficient, and more competitive products. They also shorten the product time-to-market and further proliferate the acceptance of these technologies
	Products and Services	Power Management ICs	Low	PMIC has diverse functions and can be applied to various end-products for various purposes. In some applications, the integrated Multi-Channel PMIC helps to reduce device size. eMemory's eNVM IPs assist PMIC design companies to develop simple and efficient products. Sometimes, the power management solution is composed of multiple chips, and some chips are used to improve the power conversion efficiency and reduce unnecessary power loss. eMemory's eNVM IP can be embedded in these

Risk/ Opportunity	Type	Issue	Level	Condition Analysis and Our Approach
				solutions for parameter storage, helping customers design better products. Special applications, such as USB-Type C, replaced many different charging interfaces, extending the product life of charging equipment. Users do not have to purchase different equipment for different devices which greatly increases convenience and reduces waste. eMemory's IPs are also widely used in USB-related controllers, providing IC suppliers with effective and reliable parameter storage solutions while speeding up product development and penetration. Digital power is the trend for power management. it is necessary to integrate with MCU (Micro-Controller unit) to perform functions independently, such as storing parameters, codes, algorithms, and cryptographies. provide intelligent power management solutions. Power digitalization has further increased the demand for chip development in more advanced process nodes. eMemory has been working closely with foundries around the world which is helpful for PMIC technology development.
	Products and Services	Actuator and sensor	Low	Actuators and sensors are the largest analog chip market other than PMIC. Actuators, such as Motor Driver, are similar to PMIC in design to a certain extent. Thus, the use of eNVM also helps to improve the size, stability, power consumption, reliability, and other aspects of a motor design. Motors also need to be digitalized which requires more advanced algorithms for better performance. Sensors play an indispensable role in automation, data collection, etc. It is even required in biometrics, such as fingerprints, for data security. eMemory's IPs are very helpful for the design of various sensors and store various configurations required for the use of sensors. Sensors generally have extremely high accuracy requirements. eNVM can be used to store circuit trimming information to improve the accuracy of chip output/input of electrical signals which can be used in various automation and intelligent solutions.
	Resilience	Strengthened data redundancy	Low	eMemory does not manufact tangible products and is in a low-carbon

Risk/ Opportunity	Type	Issue	Level	Condition Analysis and Our Approach
				emissions industry. During COVID-19, we established a highly flexible WFH model and the corresponding information security protection system. We already possess great resilience to climate change and will continue to improve data redundancy and sustainable operation in the future.