

UMC



2022

UMC Sustainability Report

2022

UMC Sustainability Report

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Company Website

<https://www.umc.com/en/Home/Index>



Sustainability Page:

https://www.umc.com/en/CSR/sustainability_overview



Subscribe to the UMC ESG Newsletter for more information

https://www.umc.com/en/CSR/sustainability_overview/Newsletter

Message from the ESG Steering Committee Chairmen

To those who are concerned about sustainability at UMC:

In recent years, the macro environment has been roiled by the pandemic, geopolitical tensions, and extreme weather events. Maintaining resilience and growth momentum amid turbulences has become the biggest business challenge of our times. Despite fluctuations in the semiconductor market, our management team and employees focused on value creation for stakeholders, resulting in strong operating results in 2022. For the full year, UMC's revenue reached a record high of NT\$278.7 billion and operating profits exceeded NT\$100 billion.

The shifting landscape has also prompted us to strive for higher environmental, social, and governance (ESG) standards. Facing a volatile environment, UMC remains committed to prioritizing resources for ESG initiatives and working closely with our value chain partners to fulfill our responsibilities as a corporate citizen. With sustainability an integral part of our business strategy, we actively respond to our stakeholders' expectations through concrete actions. We are honored that our efforts have been recognized by S&P Global, which ranked UMC first among semiconductor foundry peers globally in the Dow Jones Sustainability Indices.

We have made significant strides towards our ESG goals under the company's 2030 Sustainability Strategy and Blueprint. Last year, UMC became one of the few listed companies in Taiwan to be ranked in the top 5% in the annual corporate governance evaluation conducted by the Taiwan Stock Exchange. To strengthen employee engagement for ESG goals and to retain key talents, the Company added MSCI ESG rating as a performance indicator for restricted stock awards. In pursuit of our net zero emissions by 2050 goal, UMC obtained verification of our greenhouse gas emissions reduction targets by the Science Based Targets Initiative, confirming our decarbonization roadmap is in line with what the latest climate science says is needed to prevent the worst impacts of climate change. Last but not least, to provide a positive workplace and to cultivate talent, UMC issued a Diversity and Inclusion Statement and established the UMC Equipment Academy to train equipment engineers. Through the UMC Science and Culture Foundation and volunteer programs, UMC continued to invest in our communities and improve the lives of disadvantaged groups.

In 2022, we further deepened awareness and understanding of UMC's corporate culture, which is anchored in ESG principles. As part of our culture, the company's mission is to provide reliable and innovative semiconductor foundry services while working with value chain partners to minimize our environmental footprint. At the same time, we encourage employees to put our core values (integrity, pragmatism, agility, ingenuity) into action to help shape UMC as a company that acts responsibly towards all its stakeholders, and to guide us towards our vision of unleashing the power of technology for a better world.

Thank you for your interest in UMC's sustainable development, and we are pleased to share with you the progress of our sustainability efforts in this report.



Jason Wang and Shan-Chieh Chien
Co-presidents and ESG Steering Committee Chairmen

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OUR VISION TO UNLEASH THE POWER OF TECHNOLOGY FOR A BETTER WORLD

We strive for corporate sustainability by providing reliable and innovative semiconductor foundry services, creating value for our customers and shareholders, and contributing to global economic development.

We are committed to minimizing our environmental footprint by leading value chain partners in adopting green manufacturing technologies and practices.

We aim to create a workplace in which employees feel respected and valued, have opportunities to grow and thrive, and can share in the company's successes.

VALUE AND BEHAVIOR

INTEGRITY

- Follow government regulations and company policies at all times
- Deliver on your commitments
- Speak up, have constructive discussions, and respect differing opinions

PRAGMATISM

- Clearly define problems and facilitate fact-based discussions
- Begin with the end in mind, take ownership, and do the right thing
- Aim high, be a team player, and have determination to reach your goals

AGILITY

- Think ahead and plan ahead
- Accurately assess and respond to changes in market dynamics
- Act swiftly to seek effective solutions when issues arise

INGENUITY

- Stay hungry, stay foolish: Let curiosity lead you to explore new possibilities
- Continuously innovate to enhance our competitiveness
- Be relentless about process improvement and embrace digital tools to boost performance

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About This Report

United Microelectronics Corporation has reported in accordance with the GRI Standards for the period 2022.1.1-2022.12.31.

This report is the 18th report that discloses the status of United Microelectronics Corporation (hereinafter referred to as UMC or the Company) regarding corporate sustainable development and the 23th consecutive public non-financial annual report. Based on principles of integrity, transparency, and sustainable development, UMC discloses the progress of the Company's economic, governance, environmental, and social performance in 2022 through this report to all stakeholders.

- ▶ Reporting Period: The information presented is for the period January 1 to December 31, 2022, and major events up until March 31, 2023 are also disclosed in this report.
- ▶ Publication Frequency: Annually
 - 2021 Sustainability Report: Issued in June 2022.
 - 2022 Sustainability Report: Issued in June 2023.
 - 2023 Sustainability Report: Scheduled to be issued in June 2024.

In support of environmental protection and a paperless policy, an electronic version of this report is posted on the Company website.

Reporting Scope and Boundary

This report is based on the performance of UMC Taiwan and Singapore. The scope of partial information, considering the accessibility of data collection, covers subsidiaries Hejian Technology (Suzhou) Co., Ltd. (hereinafter referred to as HJ), United Semiconductor (Xiamen) Co., Ltd. (hereinafter referred to as USCKXM), Wavetek Microelectronics Corporation (hereinafter referred to as Wavetek), and United Semiconductor Japan Co., Ltd. (hereinafter referred to as USJC)^{Note} and remark the reporting scope in notes.

In response to the commencement of Fab 12A P6 operations, the scope of the report's contents and data was different from that in 2021. There was no re-editing in other contents of the report. For chapters in which the boundary scope information was affected on account of differing issues, special notes will be given in corresponding texts. In addition, in response to the revised ISO 14064:2018 standards for organizational GHG inventory, the data used for each year's calculation, including the base year, has been updated accordingly.

Note: Considering the materiality, main entities disclosed in this report are wafer fabrication divisions accounting for the majority (more than 99%) of total sales of the UMC Group. For the economic performance and financial information of other related joint ventures and subsidiaries, please refer to the Company's 2022 Annual Report on page 139 for the organization information of the related parties.

Reporting Guidelines and External Assurance

The Company follows the regulation "Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies" to prepare this Sustainability Report. The framework and content of this report is based on the Global Reporting Initiative (GRI) Sustainability Reporting Standards.

International Standards and Guidelines	Third Party Certification
▶ GRI Standards, Global Reporting Initiative (GRI)	Pass
▶ Task Force on Climate-related Financial Disclosures (TCFD)	Pass
▶ Semiconductors Sustainability Accounting Standard 2018, Sustainability Accounting Standards Board (SASB)	Pass

Internal Process and Issuance of the Report

This report was verified by DNV in accordance with the GRI Standards and AA1000 Assurance Standard (2008) TYPE II, High level assurance. The assurance statement is attached in the appendix of this Report.

Data from the annual financial report prepared by certified accountants (Ernst & Young Accounting) are used in this report, and data on greenhouse gas emissions and reduction are based on ISO 14064-1:2018 standards and verified by third parties. For further details, please refer to Chapter 3.

Internal Process and Issuance of the Report

After obtaining approval from top managers of relevant departments, the Corporate Sustainability Committee Office submits the finalized report to the ESG Steering Committee supervisor for approval. Relevant procedures for preparation and verification of the sustainability report are included in the Company's internal control system to ensure reliability, timeliness, transparency and compliance of the reporting.

Draft

- ▶ Approved by the top managers of relevant departments

Compilation

- ▶ Overall inspection and review by the Corporate Sustainability Committee Office

Publish

- ▶ Reviewed and approved by the supervisor of the ESG Steering Committee

Contact Information

Thank you for reading this report. For any questions or comment about content in the report, please contact us at:

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- ▶ Phone: + 886-3-5782258 / Fax: + 886-3-5782375
- ▶ UMC CSR mailbox: csr@umc.com
- ▶ Official Website: <https://www.umc.com/en/Home/Index>
- ▶ Sustainability Page:
https://www.umc.com/en/CSR/sustainability_overview
- ▶ For more real-time information, you are welcome to subscribe to UMC's quarterly ESG newsletters:
https://www.umc.com/en/CSR/sustainability_overview/Newsletter

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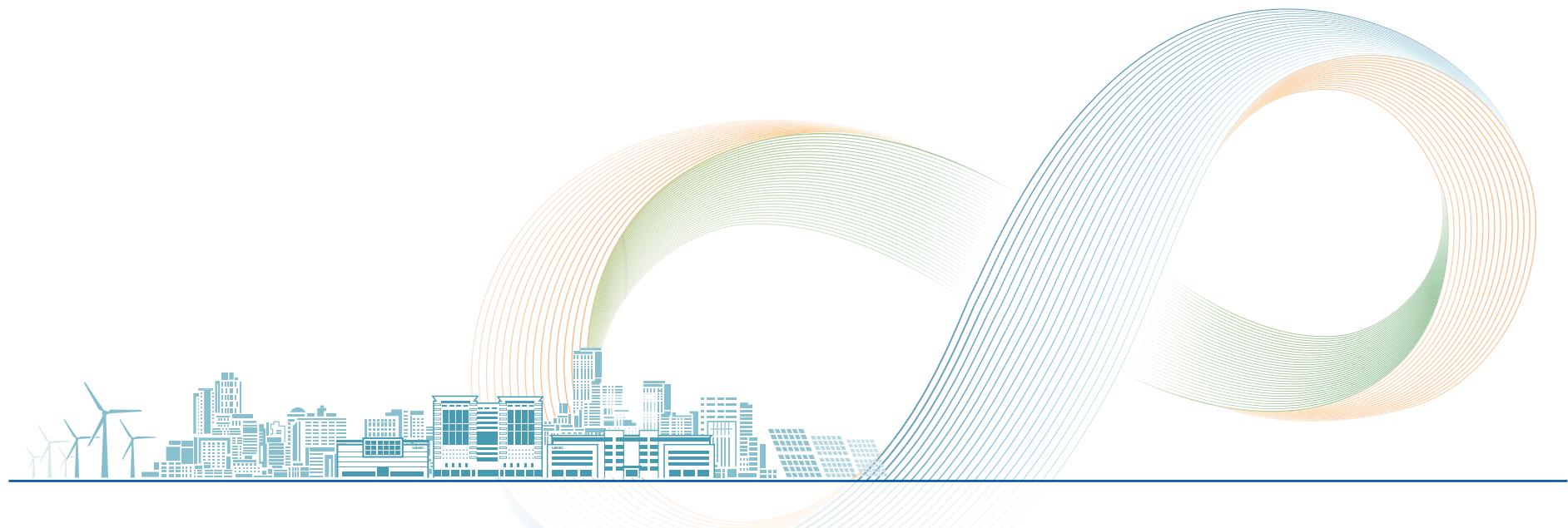
United Microelectronics (UMC) is a leading global semiconductor foundry company. The Company provides high quality IC fabrication services, focusing on logic and various specialty technologies to serve all major sectors of the electronics industry. UMC offers comprehensive solutions that give IC design companies a competitive edge through advanced processes and a wide range of specialty technologies, helping customers differentiate their products in the competitive IC market.

Firm Taiwan Roots, Global Presence

UMC plays an important role in Taiwan's semiconductor industry. In addition to being Taiwan's first wafer foundry company, it was also Taiwan's first listed semiconductor corporation. To meet the needs of customers worldwide, UMC has four 12-inch fabs, seven 8-inch fabs and one 6-inch fab in production, with combined capacity approximately 850,000 wafers per month (8-inch equivalent). Most of UMC's wafer fabs with its core R&D are located in Hsinchu Science Park and Southern Taiwan Science Park in Taiwan, with additional ones throughout Asia. Fab 12A in Tainan, Taiwan is currently manufacturing products down to 14nm. UMC also has established service locations in Taiwan, Japan, China, Singapore, South Korea, Europe, and the United States.

UMC will continue to strive to provide its customers with world leading process technologies and a full range of professional foundry solutions so that they may continue to enhance their competitive advantage in today's rapidly changing industry.

Company Name	United Microelectronics Corp.
Date Founded	May, 1980
Company Headquarter	No. 3, Li-Hsin Road 2, Hsinchu Science Park
Number of Employees	Approximately 20,000 employees, including those in worldwide affiliated companies
Total Capital Amount	Total capital of NT\$260 billion Paid-in capital amounted to NT\$125.05 billion
Main Operation	Professional integrated foundry services
Product Services	UMC's comprehensive IC processing technologies and manufacturing solutions include Logic/Mixed-Signal, embedded High-Voltage, embedded Non-Volatile-Memory, RFSOI and BCD.
Affiliated Businesses	Affiliated business operations including wafer manufacturing, electronics, optoelectronics, investment, insurance and trading
Consolidated Operating Revenues and Operating Costs	Annual revenue was NT\$278.71 billion; annual operating costs was NT\$152.94 billion in 2022.



2022

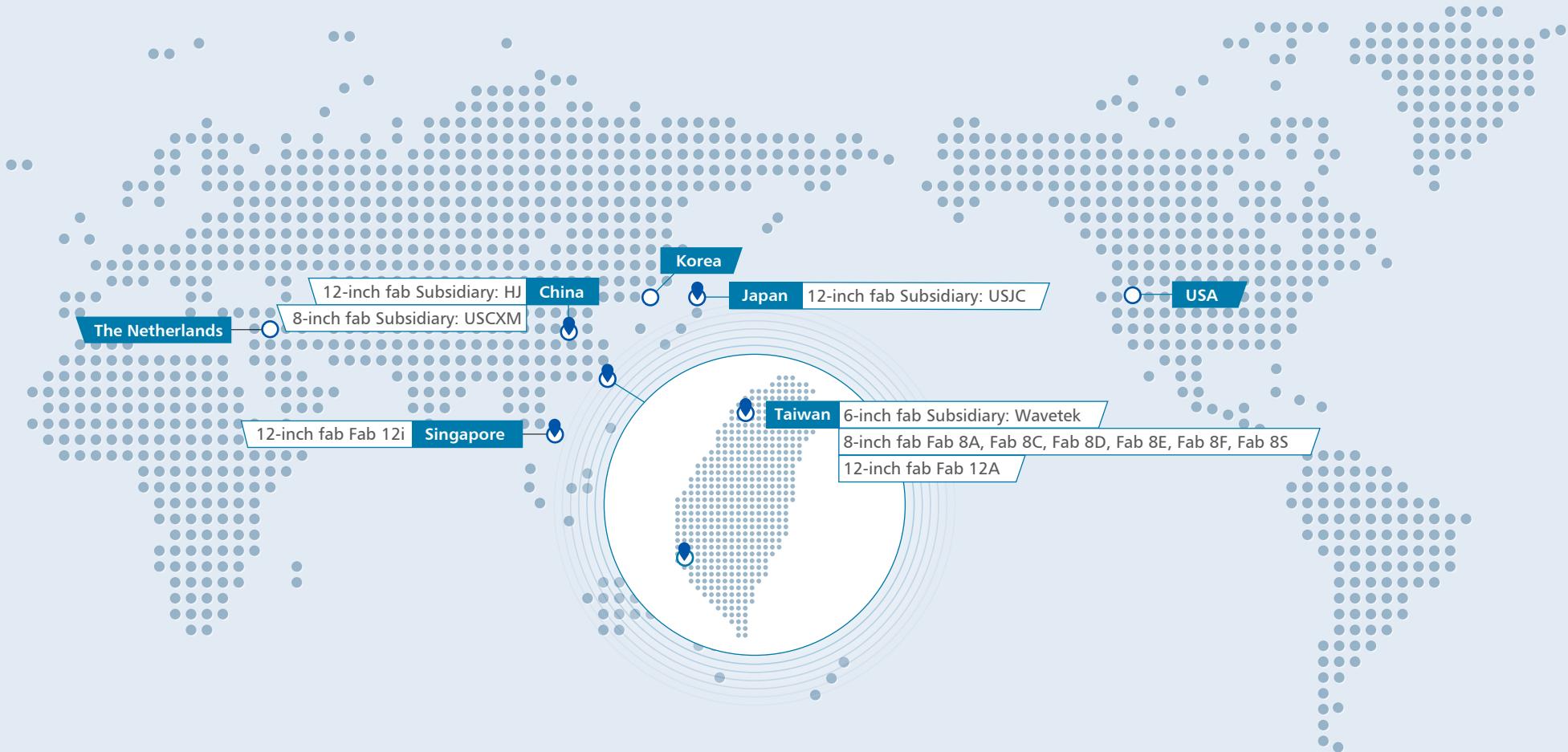
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Global Presence



○ 7 Regional Offices

● 12 Wafer Fabs

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Business Performance

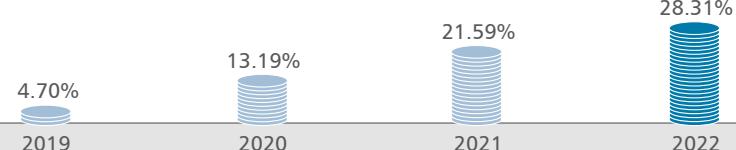
Sound operating performance is the foundation of corporate sustainability. In recent years, UMC has adjusted its business strategy and transformed into a leader focusing on specialty technologies, by strengthening its financial structure, expanding the capacity of cost-competitive production and optimizing its product portfolio. As a result, UMC has achieved outstanding performance in strategic positioning, technology, production capacity, yield, profitability and sustainable operation.

Profitability

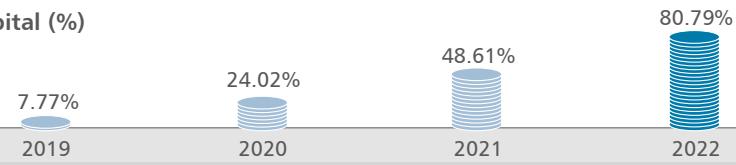
► Return on assets (%)



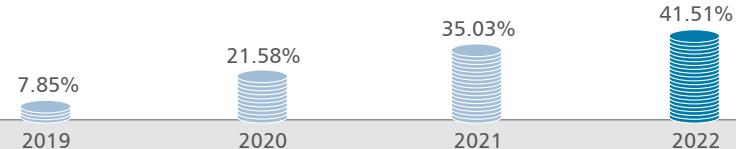
► Return on equity (%)



► Pre-tax income to paid-in capital (%)



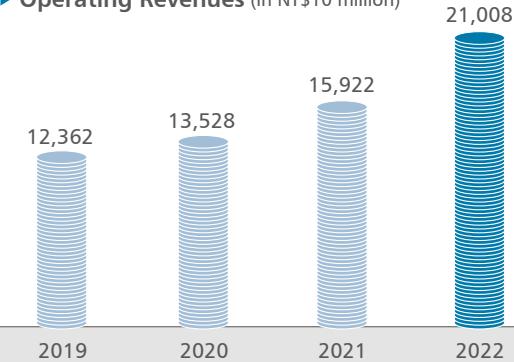
► Net profit margin (%)



► Earnings per share (EPS) (NT\$)



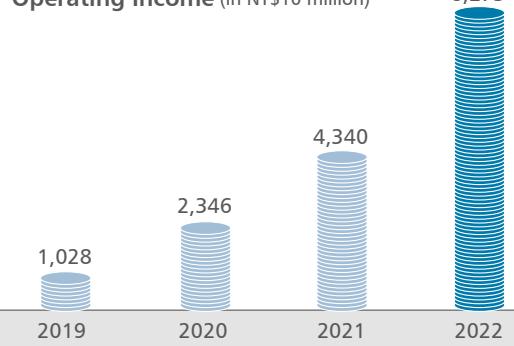
► Operating Revenues (in NT\$10 million)



► Total Assets (in NT\$10 million)



► Operating Income (in NT\$10 million)



Note: The above entity financial information is based on the Executive Yuan Financial Supervisory Commission approved international financial reporting guidelines. For consolidated information, please refer to Page 157 of the Company's 2022 Annual Report

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Participation in Associations

UMC plays an important role in the global semiconductor industry. By working together with other enterprises, the Company strives to leverage its resources in response to changes and challenges in the industry and in the broader environment. UMC participates in a number of industry associations and non-profit organizations to facilitate exchanges of experiences and development. Topics of concern include corporate sustainability, technological innovation, and supply chain management. UMC maintains politically neutrality and does not engage in political activities such as elections or political contributions.

Association Involvement

Unit: NT\$

Name of Association	2019	2020	2021	2022
Allied Association for Science Parks Industries (ASIP)	1,008,000	954,000	1,008,000	1,008,000
Taiwan Semiconductor Industry Association (TSIA)	900,000	900,000	900,000	900,000
Semiconductor Equipment and Materials International (SEMI)	526,118	668,709	633,490	761,997
Association of Taiwan Net Zero Emissions (ATNZE)	-	-	-	241,667
Responsible Minerals Initiative	228,900	270,806	260,457	232,013
RE100	-	-	151,679	177,910
Taiwan Climate Partnership (TCP)	-	-	-	150,000
Taiwan IC Industry & Academia Research Alliance (TIARA)	100,000	-	100,000	100,000
Business Council for Sustainable Development of Taiwan (BCSD-Taiwan)	60,000	60,000	60,000	60,000
Taiwan Electrical and Electronic Manufacturers' Association (TEEMA)	42,000	42,000	42,000	42,000
Chinese Professional Management Association (CPMA)	20,000	20,000	20,000	20,000
Taiwan Carbon Capture Storage and Utilization Association	-	55,030	5,015	5,000
CommonWealth Sustainability League	-	-	95,238	-
Total Amount	2,885,018	2,970,545	3,275,879	3,698,587

Costs of Association Participation

Unit: NT\$

Category	2019	2020	2021	2022
Trade association	2,885,018	2,970,545	3,275,879	3,698,587
Lobbying, interest representatives, or similar	0	0	0	0
Local, regional, or national political campaigns/ candidates	0	0	0	0
Others (e.g., spending related to ballot measures or referendums)	0	0	0	0
Total Amount	2,885,018	2,970,545	3,275,879	3,698,587

Note: the statistic covers UMC Taiwan and Singapore.

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Sustainable Performance Highlights

Sustainability Recognition

Member of
**Dow Jones
Sustainability Indices**
Powered by the S&P Global CSA

Dow Jones Sustainability Indices

Selected for the Dow Jones Sustainability Indices (DJSI)'s World Index, **top ranking** among semiconductor foundry peers, marking the Company's 15th consecutive year of inclusion and was also named a constituent of the Emerging Markets Index.



Gold Class in S&P Global Sustainability Yearbook

Once again rated as **Top 1%** in the Semiconductors & Semiconductor Equipment industry among over 7,800 companies across 61 industries globally considered for the Yearbook.



MSCI ESG Rating

Rated "A level" in MSCI ESG Rating, while also selected as a component in the MSCI ACWI ESG Leaders Index, Emerging Markets ESG Leaders Index, MSCI ESG Universal Indexes and MSCI ESG Focus Indexes.



CDP Evaluation

Included in A List (Leadership Level) in both "Climate Change" and "Water Security" disclosure projects, the **only semiconductor** firm globally to achieve a **double "A"** score.



FTSE4Good Index

Again selected as a component of FTSE4Good All-World Index, FTSE4Good Emerging Index and FTSE4Good TIP Taiwan ESG Index.



ISS ESG Corporate Rating

Rated "Prime" by ISS (Institutional Shareholder Services) ESG Corporate Rating for **6th** consecutive year.



Taiwan Corporate Sustainability Awards

Awarded **"Top 10"** Taiwanese Companies Sustainability Model Award" and the "Corporate Sustainability Report Awards. UMC has won the "Corporate Sustainability Report Awards" for **15 consecutive year**, and was awarded the highest Platinum award for the fifth time.



Corporate Governance Accreditation

Ranked in the **top 5%** of companies for the 8th consecutive year in the Corporate Governance Evaluation conducted by the Taiwan Stock Exchange and Taipei Exchange.



Excellence in Corporate Social Responsibility

Ranked **top 10** in the large enterprise category by CommonWealth Magazine, a prominent media publication in Taiwan. UMC scored in the top 1 for "Environmental Sustainability".



National Enterprise Environmental Protection Award

UMC has been awarded a total of **29 honors over the last 20 years**^{Note}. In 2022, Fab 8A won the highest honor in the manufacturing industry "Titan Award" and Fab 8S won the "Honorary Environmental Protection Enterprise Award" for three consecutive years.



Social Education Contribution Awards

The UMC Science and Culture Foundation was recognized under the group category in the Ministry of Education 2022 Social Education Contribution Awards.

Note: National Enterprise Environmental Protection Award, formerly known as the Republic of China Enterprise Environmental Protection Award, has held a total of 31 editions. It was renamed the National Enterprise Environmental Protection Award in 2019.

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Sustainability Strategy and Blueprint

UMC is committed to integrating sustainable development with our business strategy. Based on the Company's core business of wafer manufacturing, UMC has formulated its Sustainability Strategy and Blueprint in order to ensure stable operations and growth for the Company, and to positively contribute to all ESG aspects, striving to minimize any adverse impact on the society and the environment, and to produce products with sustainable benefits. UMC aims to create ESG value together with our stakeholders for a better world.

In 2021, the ESG Steering Committee formulated four sustainable strategic directions:



unleash the power of technology



integrate UMC's core capabilities



minimize environmental footprint



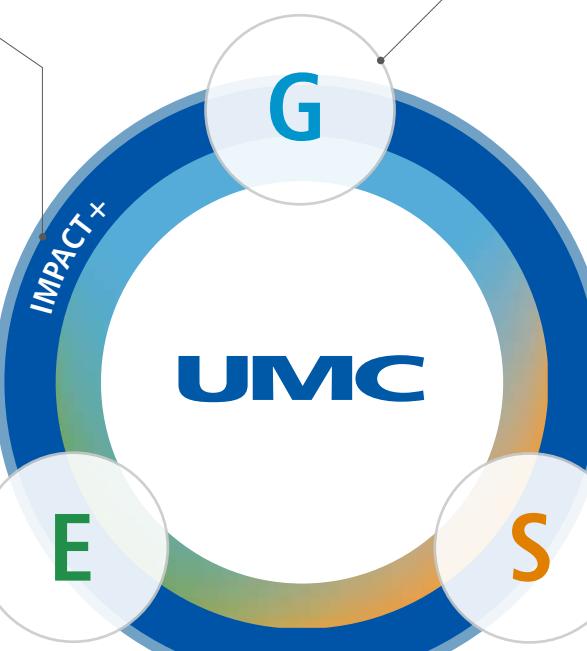
create social value

The Company also set corresponding governance, environmental, and social goals that are aligned with ten UN Sustainable Development Goals (UN SDGs), and launch action plans to achieve those goals.

IMPACT+

Unleash the power of technology

Contribute to a better world by expanding the application of high-performance/low consumption semiconductor products in healthrelated and eco-friendly fields



Governance

Integrate UMC's core capabilities

Implement sustainable governance, exert UMC's core strengths, and work together with supply chain partners to strive for ESG vision



Environment

Minimize environmental footprint

Practice low-carbon sustainability, promote renewable energy and net zero carbon emissions, and reduce the environmental impact of operations and products



Social

Create social value

Provide opportunities for employees, promote semiconductor education and public welfare



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Strategy	Direction	Goals	Short-Term (2022)	Mid-Term (2025)	Long-Term (2030)	Location
 Unleash the power of technology	Increasing Revenue Proportion and Market Share of Sustainable Products	▶ Revenue from sustainable products as % of total revenue	▶ ≥69% ★ Achieved	▶ ≥79%	▶ ≥81%	2.1.1 Robust Wafer Manufacturing Services
	Process R&D and Patent Deployment	▶ Number of innovative energy-saving specialty process platforms (base year 2020)	▶ ≥2 ★ Achieved	▶ ≥5	▶ ≥10	
		▶ Cumulative patents granted worldwide	▶ >14,650 ★ Achieved ▶ >250 (for the year)	▶ >15,400	▶ >16,650	
 Integrate UMC's core capabilities	Improving Customer Satisfaction	▶ Ratio of satisfied customers	▶ ≥88% ★ Achieved	▶ ≥90%	▶ ≥90%	2.2.1 Strengthen Customer Communication 1.3 Building Sustainable Supply Chain 2.1.3 Smart Manufacturing
	Expanding Supplier Assessment	▶ Percentage of Tier 2 key suppliers complying with the "Employment Ethics Terms and Conditions Agreement"	▶ 30% ★ Achieved	▶ 80%	▶ 80%	
	Enhancing Collaboration with Suppliers on Carbon Emissions Reduction	▶ Percentage of carbon emissions reduction by suppliers with high power consumption	▶ 5% ★ Achieved	▶ 10%	▶ 20%	
	Smart Factory *	▶ Ratio of products produced by Industry 4.0 Smart Manufacturing Systems	▶ 30% ★ Achieved	▶ 60%	▶ 80%	
 Minimize environmental footprint	Reducing the Negative Environmental Impact of Products * (base year 2015)	▶ Reduction of electricity consumption per unit product ▶ Cumulative energy savings	▶ 12% ★ Achieved ▶ 450 GWh	▶ 25% ▶ 660 GWh	▶ 30% ▶ 1,000 GWh	3.2 Energy Management 3.3 Water Resources Management
		▶ Reduction of water withdrawal per unit product ▶ Cumulative water savings	▶ 12% ★ Achieved ▶ 4.6 million tonnes	▶ 25% ▶ 6.1 million tonnes	▶ 30% ▶ 8.6 million tonnes	
	Waste Reduction * (base year 2015)	▶ Reduction of waste generated per unit product ▶ Cumulative waste reduction	▶ 22% ★ Achieved ▶ 13,000 tonnes	▶ 35% ▶ 22,000 tonnes	▶ 50% ▶ 33,000 tonnes	3.4 Waste Management 3.5 Air Pollution Control
	Reducing Wastewater, Waste Gas, and Pollution Discharge	▶ VOC reduction ▶ Key water pollution indicators better than regulated standards **	▶ >93% ★ Achieved ▶ 50% ★ Achieved	▶ >95% ▶ 60%	▶ >97% (new fabs) ▶ >95% (existing fabs) ▶ 70%	
	Greenhouse Gas Reduction *	▶ GHG emissions per unit product (base year 2010)	▶ Build a carbon management platform ★ Achieved	▶ 55% reduction	▶ 60% reduction	3.1 Climate Action 3.2 Energy Management 3.3 Water Resources Management
		▶ GHG emissions (base year 2020)	-	-	▶ 25% reduction (Scope 1+2) ▶ 12.3% reduction (Scope3)	
	Increasing Renewable Energy Usage *	▶ Ratio of renewable energy in total energy mix	▶ 5% ★ Achieved	▶ 25%	▶ 50%	
	Improving Water-use Efficiency	▶ Reclaimed water usage rate	▶ 20% ★ Achieved	▶ 25%	▶ 40%	3.3 Water Resources Management

(continued on next page)

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Strategy	Direction	Goals	Short-Term (2022)	Mid-Term (2025)	Long-Term (2030)	Location
 Minimize environmental footprint	Building Circular Business Model	► Develop circular economy solutions/products	► 2 items ★ Achieved	► 4 items in total	► 6 items in total	3.4 Waste Management
	Waste Reclamation and Regeneration	► Ratio of in-fab resource conversion ^{Note 1}	► 10% ★ Achieved	► 22%	► 35%	
	Investing in Clean Technology	► Assessment of low-carbon technology applications ^{Note 2}	► Complete assessment of low-carbon technology and potential partners ★ Achieved	► Complete 1 project assessment	► Complete 2 projects assessment	
 Create social value	Improving Employee Retention/Promotion Metrics	► Mid-high performance retention rate	► ≥ 90% ★ Achieved	► ≥ 93.5%	► ≥ 94%	4.2 Diversity, Equity and Inclusion in the Workplace
	Improving Employee/Supervisor Diversity Indicators ^{**}	► Proportion of women among managerial personnel	► Two experience-sharing lectures related to exemplary female leadership and management were held to enhance female employees' willingness to take on managerial positions. Total talent pool and employee attendance was 258. ★ Achieved	► 23%	► 24%	
	Promoting Human Rights Equality and Labor-Management Communications ^{***}	► Questionnaire survey coverage rate ► Work engagement score	► 82% ► 79 points ★ Achieved	► 83% ► 80 points	► 85% ► 81 points	
	Enhancing Workplace Safety	► Disabling Injury Frequency Rate (FR) and Disabling Injury Severity Rate (SR) ^{Note 3}	► Better than the 3-year average for the semiconductor manufacturing industry ^{****} ★ Achieved	► Reduce to less than 1/2 of the 2023 three-year semiconductor manufacturing industry average*	► Reduce to less than 1/3 of the 2028 three-year semiconductor manufacturing industry average*	
	Enhance the Impact of Semiconductor Education Programs, Increase Investments, and Expand Partnerships ^{**}	► Number of partner institutions ► Number of semiconductor promotion events ► Annual number of participants ► Cumulative investment in semiconductor education (base year 2020)	► 10 ► 20 ► 2,000 ► NT\$8 million ★ Achieved	► 28 ► 32 ► 2,600 ► NT\$30 million	► 30 ► 35 ► 3,300 ► NT\$50 million	
 5. Enhancing Society Mutual-Prosperity	Enhancing the Social Benefits of Technology Applications ^{**}	► Number of bevents ► Number of beneficiaries	► ≥ 14 ► 4,000 ★ Achieved	► ≥ 16 ► 4,500	► ≥ 18 ► 5,000	5.1 Promote Common-Prosperity Society
	Increase Volunteer Service Hours and Number of Beneficiaries ^{**}	► Number of beneficiaries ► Employee volunteer hours	► 32,000 ► 6,500 ★ Achieved	► 36,000 ► 7,000	► 37,000 ► 8,000	
	Appendix					

Scope: *UMC Group (UMC, subsidiaries HJ, USCXM, Wavetek and USJC); **UMC (Taiwan); ***UMC, subsidiaries HJ and USCXM; ****UMC, subsidiaries HJ, USCXM and Wavetek; without any * remark is UMC.

Note: 1. Ratio of in-fab resources conversion = (volume of in-fab resource conversion ÷ volume of total waste generated)

2. Low-carbon technologies include new energy-saving and carbon-reducing application technologies, clean energy technologies (such as bioenergy/hydrogen energy) and negative carbon emission technologies (such as CCUS)

3. Based on OSHA statistical model.

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Value Creation: Major Capital Investments and Outputs

UMC refers to the "Integrated Reporting Framework" of the Value Reporting Foundation (VRF) and describes the Company's operational investments and outputs based on the six capitals.

Operational Resources	Capital Investments in 2022			Corresponding Sustainable Outputs in 2022
	Category	The Meaning of Each Capital to UMC	Key Investment Projects	
Hardware Resources				
	Financial Capital	Through operations and investments, the Company's daily operations, production and services are maintained.	Financial structure strengthening, cost-competitive capacity expansion, and product portfolio adjustment.	<ul style="list-style-type: none"> ▶ Total revenue (UMC) of NT\$87.2 billion ▶ Earnings per share of NT\$7.09
	Manufactured Capital	Including the investment and maintenance of the facilities used in wafer fabrication and integration fabs, as well as in production and R&D, in order to produce products that meet customers' needs.	Capital expenditures of approximately US\$2.7 billion were mainly invested in capacity expansion of Fab 12A and Fab 12i as well as product portfolio optimization for each fab.	<ul style="list-style-type: none"> ▶ Annual wafer shipments reached 9,945 million pieces of 8-inch equivalent wafers ▶ Capacity utilization rate of 100%
	Human Capital	By providing a good and positive workplace environment along with proper training, employees' knowledge, experience, expertise, productivity and loyalty can be enhanced.	Promoted Holistic Health Management Program and health promotion activities. <ul style="list-style-type: none"> ▶ Education and training costs amounted to NT\$57.45 million. ▶ Salary and welfare expenses amounted to NT\$38.77 billion. 	<ul style="list-style-type: none"> ▶ Score of Employee engagement: 79.4 ▶ Employee turnover rate of 9.4% ▶ Average NT\$3,743 training expense per employee
Software Resources				
	Intellectual Capital	Including patents, research and development capabilities, and cooperation agreements that can enhance the Company's competitive advantage or generate intangible assets that exceed the Company's book value.	The overall number of patents granted has been growing steadily, with emphasis on patent portfolio to protect intellectual property rights of its technologies. <ul style="list-style-type: none"> ▶ Invested NT\$10.2 billion in R&D. 	<ul style="list-style-type: none"> ▶ Obtained 348 domestic and foreign patents, with a total of 14,771 patents granted over the years ▶ Ratio of satisfied customers: 91%
	Natural Capital	Natural resource base, including minerals, water and various raw materials.	Promoted Green 2025 Action Plan to save water and electricity, and reduce waste and F-GHGs emissions. <ul style="list-style-type: none"> ▶ Environmental protection-related capital expenditures totaled over NT\$2.92 billion. ▶ Green procurement amounted to NT\$144 million. 	<ul style="list-style-type: none"> ▶ Water consumption reduced by 350 thousand tonnes ▶ Electricity consumption reduced by 75,483 MWh ▶ The volume of waste outsourcing reuse volume reached to 42,739 tonnes, the re-use rate was over 90% ▶ F-GHG emissions reduced by 1.14 million tonnes of CO₂e
	Social Relationship Capital	The sum of resources or capabilities connected through social networks, including the maintenance of long-term partnerships with value chain partners and other stakeholders.	<ul style="list-style-type: none"> ▶ Dedicated a total of NT\$104 million to social charity activities ▶ Promoted volunteer services and Sowing Seeds of Hope Program, with a total of 6,588 hours spent in providing public services. 	<ul style="list-style-type: none"> ▶ UMC Eco Echo Award Initiative awarded 4 NGO ecological conservation projects, 10 youth environmental initiatives, and 2 green innovation projects. A total of 55 projects have been supported by the Eco Echo Award. ▶ UMC Energy Saving Service Team reduced about 2,719 tonnes of CO₂e emissions. ▶ The recycling benefits of the Circular Economy Waste-to-Gold Project reached NT\$151 million. ▶ More than 33,089 beneficiaries of public services.

Determination of Material Topics

Materiality Analysis | Process to Determine Material Topics

1 Understand UMC's Organizational Context

Understand links between UMC's activities, business relationships and the sustainability context in which these occur. Identify its important stakeholders through the overview aforementioned.

Identify Stakeholders

UMC referenced the nature of its businesses as well as the 5 key principles of AA1000 SES (Stakeholder Engagement Standard): Dependency, Responsibility, Tension, Influence and Diverse perspective to identify a total of 7 types of stakeholders. Important stakeholders of UMC includes: customers, employees, investors, suppliers, community/NGO, governmental agencies, and media

7 types of important stakeholders

Collect Sustainability Issues

GRI Sustainability Reporting Standards, ISO 26000 Guidance on Social Responsibility, UN Global Compact, industry-related special issues, and concerned items in domestic/international sustainability evaluation, including DJSI or MSCI, SASB Index, RBA Code of Conduct, and etc., are used as the basis for collecting sustainability issues.

7 sources of sustainability issues

Compile Sustainability Issues

Collect and summarize various issues based on opinions provided by Corporate Sustainability Committee's Sustainability Report Team members and external experts/advisors.

- In consideration of the global attention on the issue of "Biodiversity", this topic became the new issue of this year.

20 sustainability issues

The Sustainability Report is one of UMC's major channels to communicate with stakeholders about different ESG issues. As a result, the Company has not only engaged in regular communication but also has conducted the process of "Materiality Analysis" to engage with relevant stakeholders and identify material topics through positive/negative impact assessment. Through the information disclosed in the Sustainability Report, UMC aims to share its management and performance regarding material topics effectively.

2 Identify Actual and Potential Impacts

Inventory of Positive/Negative Impacts

In this step, UMC takes inventory of the actual and potential positive/negative impacts on the economy, environment, and people, including impacts on their human rights, across the UMC's activities and business relationships. Through impacts description, the Company is able to define the possible impact patterns, and where they occur in the value chain.

- Sources for the inventory of positive/negative impacts include: various management systems, government agencies' laws and regulations, or risk-management-related documents, and channels for collecting stakeholders' opinions, such as questionnaires, grievance mechanisms, etc.
- Inventories were taken based on 20 sustainability issues. After discussing with external experts/advisors, 14 positive impacts and 18 negative impacts have been identified.
- Take inventory of the positive/negative impacts' corresponding management policies and implementation measures to prevent the acts that will trigger the impacts, or to formulate remedial procedures to mitigate the extent of the impacts.

In addition, incorporate the concept of double materiality into the risk and opportunity assessments of some environmental issues such as "Climate strategy and action", "Waste, and resource utilization efficiency" through the discussion of sustainability impacts and the quantification of financial impact.

14 positive impacts | **18 negative impacts**

3 Assess the Significance of the Impacts

Conduct questionnaire surveys to quantity the impact assessment of materiality:

- Survey of stakeholders' concerns (a total of 347 responses)
 - External stakeholders: 187 responses which include governmental agency, investor, customers, and suppliers.
 - Employees: 160 responses
- Survey of internal impact (a total of 47 responses)
 - Management representatives: 22 responses
 - Team members of Sustainability Report Preparation: 25 responses

Industry major issues concerned by the international rating were also considered as weighting weights while external expert consultants reviewed the results of the surveys in order to keep in line with international trends. Each sustainability issue has a pair of score, the degree of severity and the likelihood of occurrence, respectively as the value of X-axis and Y-axis. Finally, a materiality matrix is created with the degree of severity as the X-axis and likelihood of occurrence as the Y-axis to analyze the significant of sustainability impacts.

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4 Prioritize Significant Impacts

- In order to prioritize the significant impacts, each sustainability issue's X value will multiply with Y value. Issue with a product greater than 28 points shall be deemed as a significant impact and identified as a material topic.
- There were 12 material topics identified in 2022, representing sustainability issues for which UMC's activities or business relationship have a significant impact on the economy, environment, and society at present or in the future. The material analysis result was confirmed after being submitted to and approved by the CSO.
- The results of materiality analysis will serve as a reference for the Company to determine short-, medium- and long-term sustainability strategy blueprints and goals, to ensure that relevant strategies and goals encompass the expectations of stakeholders, and have responded to the identification and management of sustainability impacts.
- In addition to disclosing management guidelines and currently measures for GRI specific topics in this Report, UMC also discloses the mid-/long-term management goals for each material topic, based on which effectiveness shall be tracked and reviewed. Moreover, the Company continues to develop and assess relevant procedures to incorporate sustainability issues, which might have significant impacts to operation, into the Company's enterprise risk management system and framework, which shall be regularly reviewed.

Positive Impacts



Sustainability issues with significant positive impacts

Governance & Economic Dimension: Procurement and Supplier Management, Innovation Management, Intellectual Property Rights Protection and Customer Service Quality

Environmental Dimension: Waste and Resource Utilization Efficiency, Climate Strategy and Action, Energy Management, Water and Wastewater Management, Product Responsibility and Lifecycle Assessment

Social Dimension: Employee Safety and Health, Talent Attraction and Retention, Employee Diversity and Inclusiveness

Secondary Topics: Biodiversity, Contribution, Participation in Society and Human Capital Development

Negative Impacts



Sustainability issues with significant negative impacts

Governance & Economic Dimension: Procurement and Supplier Management, Innovation Management and Intellectual Property Rights Protection, Customer Service Quality

Environmental Dimension: Waste and Resource Utilization Efficiency, Climate Strategy and Action, Energy Management, Product Responsibility and Lifecycle Assessment, Water and Wastewater Management

Social Dimension: Human Rights, Talent Attraction and Retention, Employee Safety and Health

Secondary Topics: Information Security and Privacy Protection, Employee Diversity and Inclusiveness, Biodiversity, Air Pollution Control, Legal Compliance, Risk Management, Ethical Corporate Management

Note: In principle, UMC conducts materiality analysis every two years, and carries out flexible discussions about and reviews of material topics on a yearly basis depending on actual needs or external stakeholder engagement results, to ensure that the Company's operations are in line with actual trends and meeting stakeholders' expectations.

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Material Topics

+ Positive - Negative ● Direct Impact ○ Indirect Impact

Material Topics	Operational Significance to UMC	Significant Impacts	Economic, Environmental, Social and Operation Impacts					GRI Specific Topic	SASB Topic	Location	
			UMC Group ²	Suppliers	Investor	Costumers	Society ³				
Governance & Economic Dimension											
Procurement and Supplier Management	UMC has numerous upstream and downstream suppliers. Cooperation with global partners can improve sustainability performance in the overall value chain.	+ Building a sustainable supply chain - Insufficient supplier management	●	●				204 Procurement Practices 308 Supplier Environmental Assessment 414 Supplier Social Assessment	Materials Sourcing	1.3 Building Sustainable Supply Chain	
Innovation Management and Intellectual Property Rights Protection	Strengthening UMC core competencies to provide wafer fabrication solutions that meet market trends and customer demands, thereby increasing revenue and enhancing corporate image.	+ Technology and product innovation - Intellectual property infringement	●	●	○	●	○	UMC Specific Topic	Intellectual Property Protection & Competitive Behavior	2.1 Excelling Innovative Development 1.1.4 Legal Compliance	
Customer Service Quality	Customer validation can enhance the competitiveness of UMC, and is the key foundation for UMC's long-term operation	+ Enhance customer relationship management - Customer rights impacted	●	○	○	●	○	UMC Specific Topic	-	2.2 Meeting Customer Demands 1.1.4 Legal Compliance	
Environmental Dimension											
Climate Strategy and Action	Decent mitigation and adaptation strategies can reduce the direct and indirect impacts of climate change.	+ Climate-change-related opportunities - Climate actions failure	●	●	●	●	○	305 Emissions	Greenhouse Gas Emissions	3.1 Climate Action	
Energy Management	Good energy management practices can improve operational performance and also reduce the environmental burdens and carbon footprint.	+ Renewable energy deployment - Energy/resource consumption	●		○	○	○	302 Energy	Energy management in Manufacturing	3.2 Energy Management	
Water and Wastewater Management	Water is basic to semiconductor production. Effective water resources management can enhance competitiveness.	+ Water resource management and reuse - Water resource consumption and pollution	●	○			○	303 Water and Effluents	Water Management	3.3 Water Resources Management	
Waste and Resource Utilization Efficiency	Reducing environmental load at all stages of a product life cycle is one of the important goals in UMC's environmental protection efforts.	+ Circular economy - Waste not being used properly	●	●			○	306 Waste	Waste Management	3.4 Waste Management	
Product Responsibility and Lifecycle Assessment	UMC's fundamental aim is to provide specialty wafer solutions that meet our customer's needs. For this reason, it is necessary to ensure that products are free of harmful substances, and to control any possible impact that operations or products may have on the environment	+ Green sustainable products - Product Responsibility mismanagement	●	●		●		UMC Specific Topic	Product Lifecycle Management	2.3 Product Responsibility	

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Material Topics	Operational Significance to UMC	Significant Impacts	Economic, Environmental, Social and Operation Impacts					GRI Specific Topic	SASB Topic	Location	
			UMC Group ²	Suppliers	Investor	Costumers	Society ³				
Social Dimension											
Employee Diversity and Inclusiveness	In terms of personnel selection, employment, education, and retention, there is no differential treatment based on gender, race, religion, political position, marital status, etc., so as to create harmony in the workplace and greater operational performance.	+ Workplace diversity and equality	●			●		405 Diversity and Equal Opportunity		4.2 Diversity, Equity and Inclusion in the Workplace	
Talent Attraction and Retention	Attracting and retaining talent can improve UMC's operational performance.	+ Enhance corporate competitiveness and provide quality job opportunities - Losing talented personnel	●	○	○	○		401 Employment	Recruiting & Managing a Global & Skilled Workforce	4.2 Diversify and Inclusive Workplace	
Employee Safety and Health	Maintaining employee safety and health and providing a good workplace environment for employees are UMC's basic responsibilities.	+ Healthy and safe workplace - Occupational accident	●	●				403 Occupational Health and Safety	Employee Health & Safety	4.3 Protecting the Employees and the Work Environment	
Human Rights	"Zero Tolerance" for various illegal violations in the workplace, prohibits any tangible or intangible discrimination and harassment in the workplace, and expects subsidiaries, joint ventures, suppliers, and partners to abide by the same policies.	- Human rights violations	●	●				406 Non-discrimination 407 Freedom of Association and Collective Bargaining 408 Child Labor 409 Forced or Compulsory Labor		4.1 Enforce Human Rights Management	

Note: 1. The reporting boundaries for this year's material topics were the same as those disclosed in 2021. In response to the requirements of GRI Standards (2021), UMC re-surveyed and re-analyzed material topics, and added "Employee Diversity and Inclusion" and "Human Rights" to the category of material topics in comparison with what disclosed in 2021, and moved "Ethical Corporate Management" to the category of secondary topics.

2. UMC Group includes the subsidiaries HJ, USCXM, Wavetek and USJC.

3. Society is considered among media, governmental agency, and community/NGO.

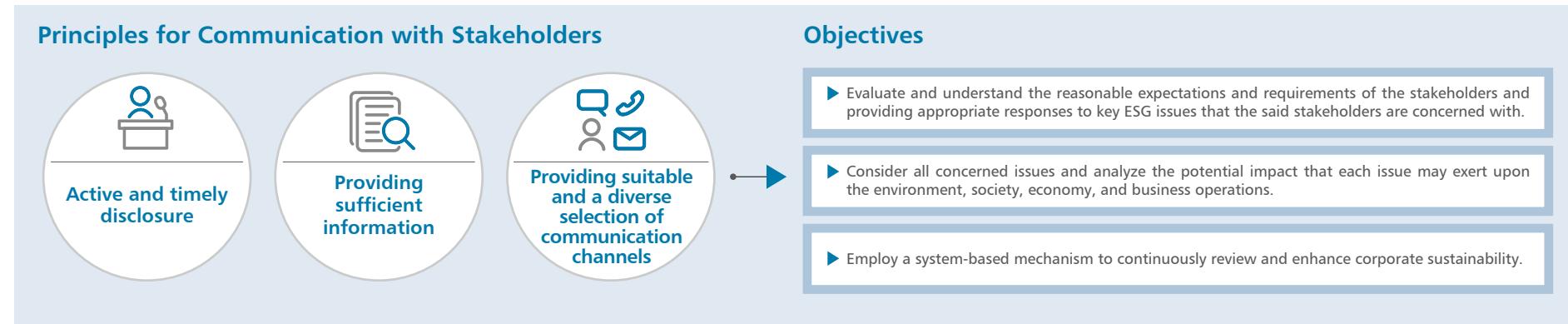
Secondary and Other Issues

A total of 8 secondary issues will be disclosed in this report with reference to the GRI specific topics.

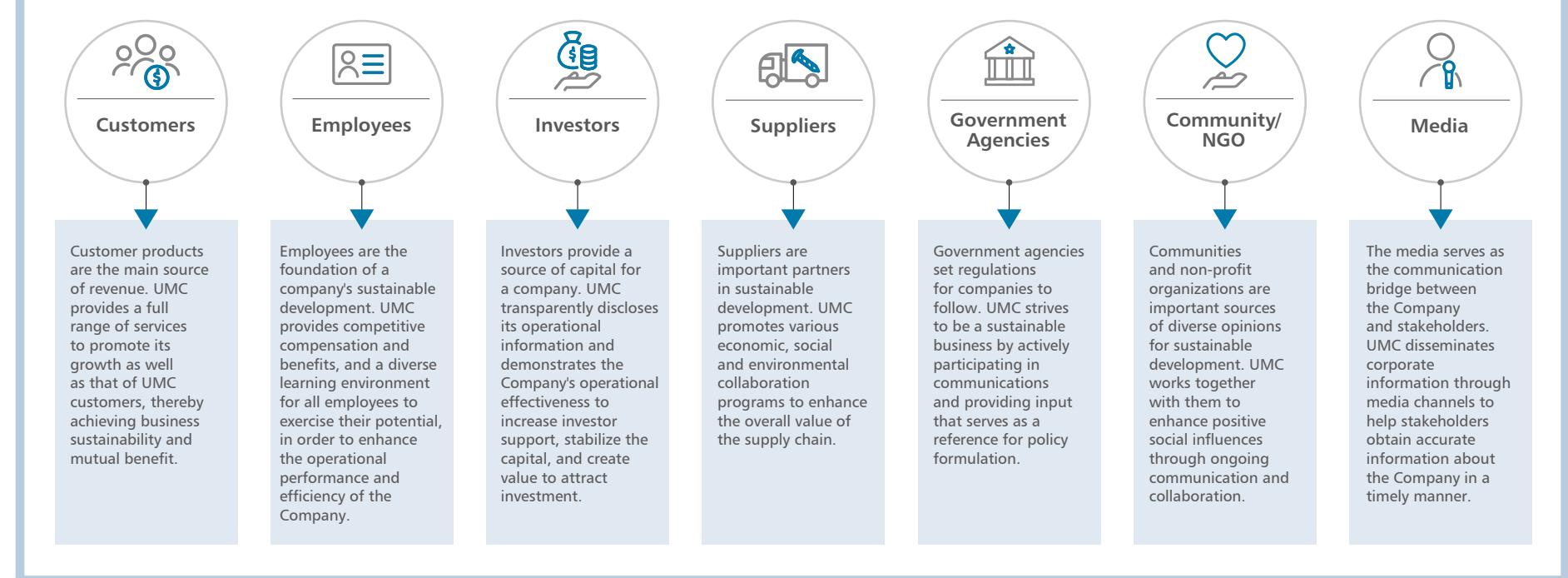
Secondary Issues	Direction of Response and Management	Corresponding Section
Risk Management	Carry out systematic management for major enterprise-level risks, strengthen the identification of/response to major risks in business continuity, and perform the required drills and adjustments for major risks.	1.2.1 Risk Management System 1.2.2 Risk Management and Countermeasures 1.2.3 Improving Operational Risk Management
Legal Compliance	Set up a legal service platform to provide legal consultation and assistance to various departments, and organize related training courses to raise the awareness of employees in legal compliance.	1.1.4 Legal Compliance
Ethical Corporate Management	Establish good business conduct and ethics can ensure the sustainable operation of UMC and avoid operational risks caused by illegal or improper transfer of interests.	1.1.3 Integrity Management
Information Security and Privacy Protection	Strengthen information security awareness for all employees, and establish an information security framework that complies with regulations and customer needs to provide a safe production environment.	1.2.4 Committed to Information Security Risk Management 1.1.4 Legal Compliance
Human Capital Development	► Develop performance improvement plans for underperformers and providing coaching for improvements. ► Improve employee performance through regular education and training.	4.2.3 Strengthening Talent Cultivation
Air Pollution Control	Introduce and develop environment-friendly technologies to strengthen emission source reduction and pollutant prevention.	3.5 Air Pollution Control
Biodiversity Maintenance	Ensure that the impact of company operations on biodiversity ranges from No Net Loss (NNL) to Net Positive Impact (NPI).	3.6 Supporting Biodiversity
Contribution and Participation in Society	Serve the community with core professional skills.	Chapter 5 Enhancing Society Mutual-Prosperity

Stakeholder Engagement

To maintain effective stakeholder communication, UMC formulated an engagement mechanism for the identification of and communication with important stakeholders via various engagement channels and regular information disclosure.



Major Stakeholders Significance to UMC



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Mechanisms for Stakeholder Communication

Item	Content	Frequency
Stakeholders communication plan and implementation	<ul style="list-style-type: none"> ▶ Consultation and communication channels with stakeholders are established by respective group under the CS Committee. ▶ Designated personnel to receive, record and reply to messages from stakeholders and to come up with appropriate responding measures. 	Quarterly
Assessment of stakeholder communication outcome	<ul style="list-style-type: none"> ▶ Stakeholder communication outcome reported, and key issues reviewed and responded to the CS Committee. 	According to plan
Report major stakeholder concerns	<ul style="list-style-type: none"> ▶ Regularly report major communication issues to the Board of Directors. ▶ Report specific events to the Board of Directors through extraordinary (irregular) meetings. 	Annually
Public disclosure	<ul style="list-style-type: none"> ▶ Annual financial reports, sustainability report, etc. ▶ Press Releases ▶ UMC official website: The Stakeholder Area was established for stakeholder inquiry 	Annually Quarterly

Stakeholder communication method, frequency, key concerns and major outcome for 2022 are compiled as follows:

Stakeholder	Communication Channel/Frequency	Main Focus of Material Topics	Key Communication Outcome in 2022
 Employees	[Periodic] <ul style="list-style-type: none"> ▶ Quarterly: Town Hall meetings, Secretary forums, Welfare committee meetings, Employer-employee meetings, Communication platforms, UMC ESG Newsletter ▶ Once every 6 months: Factory & Division meetings ▶ Annually: Employee satisfaction survey on benefits measures, service satisfaction survey, HR satisfaction surveys, employee work engagement survey [Aperiodic] <ul style="list-style-type: none"> ▶ eUMC information website for employees, BBS message boards, sexual harassment complaint hotline, mailbox for reporting fraud or professional ethics violation, e-suggestion and feedback platform, confidential complaint system, extension 12885 - ER help hotline, and MyUMC website 	<ul style="list-style-type: none"> ▶ Employee Safety and Health ▶ Customer Service Quality ▶ Information Security and Privacy Protection ▶ Ethical Corporate Management ▶ Legal Compliance 	<ul style="list-style-type: none"> ▶ Continue to promote a comprehensive personnel health management program, which will be focusing on the three aspects of safe working environment, employee health protection and work-life balance. ▶ Completed employee work engagement surveys in 2022 to better understand the real needs of employees and their willingness to remain in their employment. ▶ Continue to implement industrial salary surveys and provide competitive performance-based and differentiated remuneration and welfare systems (including bonuses, salary, and stock shares). ▶ Continue to enhance the UMC welfare information platform to improve accessibility to employee benefits and discounts. ▶ Strengthen communication of business strategies and directives and to continue the provision of up-to-date information of corporate performance. A total of 163 communication meetings were held in 2022. ▶ The e-suggestion opinion feedback platform received 287 opinions from various employees in 2022; all cases (100%) have been closed. ▶ Strengthen the RBA Committee; continue to promote and respect international code and standards of laborers as well as human rights. ▶ Conducted sharing activities on sustainability themes to strengthen employee awareness.
 Customers	[Periodic] <ul style="list-style-type: none"> ▶ Communication and discussion meetings [Aperiodic] <ul style="list-style-type: none"> ▶ Online Service Platform MyUMC ▶ Questionnaire response ▶ On-site audit and discussion ▶ Voice of Customer (VOC) instant customer online complaint system ▶ Customer satisfaction monitoring 	<ul style="list-style-type: none"> ▶ Ethical Corporate Management ▶ Customer Service Quality ▶ Information Security and Privacy Protection ▶ Legal Compliance 	<ul style="list-style-type: none"> ▶ Held 47 quarterly business reviews with 18 customers. ▶ The Enterprise Risk Management Committee coordinates the key departments of risk management and control to jointly review the internal and external risks of UMC, and consolidates the risk response action plans, providing customers with a safe production environment, and reducing the Company's operational risks. ▶ Continually leveraged an international professional security company's resources to help on inspecting the robustness of overall security as a trusted third-party certification, and the results are used as the basis for further improvement. ▶ Continuous customer services: Provided a total of 75 BCM / BCP pieces of risk management information.

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Stakeholder	Communication Channel/Frequency	Main Focus of Material Topics	Key Communication Outcome in 2022
 Investors	<p>[Periodic] General Shareholders:</p> <ul style="list-style-type: none"> ▶ Annually: General shareholder meeting, Financial reports ▶ Quarterly: Investor conferences <p>Corporate shareholders</p> <ul style="list-style-type: none"> ▶ Quarterly: Domestic and overseas investor conferences <p>[Aperiodic] Corporate shareholders</p> <ul style="list-style-type: none"> ▶ Domestic and overseas seminars for investing institutions ▶ Written or face-to-face communication 	<ul style="list-style-type: none"> ▶ Innovation Management and Intellectual Property Rights Protection ▶ Legal Compliance ▶ Air Pollution Control ▶ Waste and Resource Utilization Efficiency ▶ Customer Service Quality ▶ Product Responsibility and Lifecycle Assessment 	<ul style="list-style-type: none"> ▶ Continued to invest in various semiconductor process R&D. Obtained 348 domestic and international patents in 2022. Currently, UMC has a total of 14,771 granted patents. ▶ Continue to hold shareholders meetings and investor conferences in accordance with the annual plan, and communicate with shareholders about the list of director candidates. ▶ Upload multimedia information of the financial and business report in the shareholders' section of the UMC official website. http://www.umc.com/English/investors/e.asp. ▶ Worked with the Financial Supervisory Commission (FSC) to complete corporate governance accreditation.
 Suppliers	<p>[Periodic]</p> <ul style="list-style-type: none"> ▶ Annually: Questionnaires and audit visits. Jointly implement ESH and corporate social responsibility program with suppliers <p>[Aperiodic]</p> <ul style="list-style-type: none"> ▶ Review reports or meetings ▶ Environmental health and safety, and corporate sustainability related management briefings 	<ul style="list-style-type: none"> ▶ Information Security and Privacy Protection ▶ Ethical Corporate Management ▶ Waste and Resource Utilization Efficiency ▶ Legal Compliance ▶ Energy Management 	<ul style="list-style-type: none"> ▶ Implemented anti-corruption measures and promoted the signing of "Employment Ethics Terms and Conditions Agreement". ▶ Completed conflict mineral surveys for 2022. 38 suppliers passed the conflict mineral audit which were all qualified the UMC's requirement to conflict mineral management. ▶ Hold the ceremony to reward suppliers and called for the Company's suppliers to join the 2030 carbon 20% reduction initiative.
 Community/ NGO	<p>[Periodic]</p> <ul style="list-style-type: none"> ▶ Annually: Invite community residents to participate in the Company's Family Day activities ▶ Monthly: Participate in the operations of outside associations <p>[Aperiodic]</p> <ul style="list-style-type: none"> ▶ Participate in community activities or seminars ▶ The assigned department for community communication 	<ul style="list-style-type: none"> ▶ Contribution and Participation in Society ▶ Information Security and Privacy Protection ▶ Human Rights ▶ Water and Wastewater Management ▶ Legal Compliance 	<ul style="list-style-type: none"> ▶ Volunteer work culture was promoted to provide volunteer work opportunities for the underprivileged, serving a total of 33,089 beneficiaries. ▶ Worked with the Society of Wilderness (SOW), an ecological conservation organization, to promote the Sauter's Frog (Rana sauteri) Habitat Conservation Project. ▶ Organized the UMC Eco Echo Award program to offer grants to 4 NGO ecological conservation projects, 10 youth environmental initiatives, and 2 green innovation projects. ▶ UMC Energy Saving Service Team assisted 13 organizations in energy saving, water saving and environmental safety improvement.
 Governmental Agencies	<p>[Periodic]</p> <ul style="list-style-type: none"> ▶ Monthly: Participate in parks and Science Park Administration functional organizations for operations <p>[Aperiodic]</p> <ul style="list-style-type: none"> ▶ Participate in public hearings and business seminars organized by governmental authorities 	<ul style="list-style-type: none"> ▶ Employee Safety and Health ▶ Contribution and Participation in Society ▶ Human Rights ▶ Innovation Management and Intellectual Property Rights Protection ▶ Legal Compliance 	<ul style="list-style-type: none"> ▶ Played the role of coordinator for The Allied Association for Science Park Industries to discuss regularly related governing laws and regulations and to provide operation experiences and suggestions for policy draft. ▶ Participate in the Industrial GHG Voluntary Reduction Information Platform organized by the Industrial Development Bureau, Ministry of Economic Affairs to strengthen exchange on energy conservation and carbon reduction issues. ▶ Invited by the Hsinchu Science Park Administration of the National Science and Technology Commission to serve as a member of the "Safety and Hygiene Expert Platform" to provide professional assistance, consultation, and factory visits to public institutions in the park, hoping to improve the park's safety management and execution capabilities; The Administration Bureau organizes the "2022 Hsinchu Science Park Industrial Safety and Environmental Protection Month Equipment Exhibition"
 Media	<p>[Periodic]</p> <ul style="list-style-type: none"> ▶ Company website (monthly) <p>[Aperiodic]</p> <ul style="list-style-type: none"> ▶ Press releases, press conferences 	<ul style="list-style-type: none"> ▶ Energy Management ▶ Waste and Resource Utilization Efficiency ▶ Water and Wastewater Management ▶ Human Capital Development ▶ Innovation Management and Intellectual Property Rights Protection 	<ul style="list-style-type: none"> ▶ Issued 36 press releases on corporate governance and sustainability management https://www.umc.com/en/News/press_release/Index/all/2022

Note: For channels of our stakeholder's engagement and contact information, please refer to UMC website: https://www.umc.com/en/Html/general_inquiries

Science-Based Climate Targets and Blueprint for Net Zero Emissions

Extreme climate events such as droughts, floods, heat waves and wildfires are occurring frequently around the world, sending a strong message that climate action is urgently needed. UMC is a pioneer in carbon reduction among companies in Taiwan, initiating a program back in 1999 to decrease the use of fluorinated greenhouse gases (F-GHGs). Following that, the Company formulated the "UMC Low-Carbon Commitment" to guide its subsequent carbon reduction plans. In 2021, UMC took its climate commitment to the next level by pledging to achieve net zero emissions by 2050.

Science-Based Targets

In 2022, UMC again demonstrated its determination to address climate change by becoming the first semiconductor foundry globally to obtain SBTi validation of its climate goals. This affirms that UMC's carbon reduction roadmap is consistent with what the latest climate science says is needed to prevent the worst impacts of climate change, and sets the foundation for achieving net zero emissions by 2050.

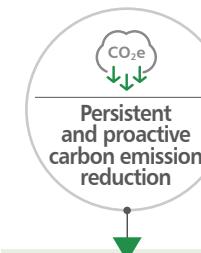
With 2020 as the base year, UMC Group targets 25% reduction in direct greenhouse gas (GHG) emissions (Scope 1) and indirect GHG emissions from purchased electricity (Scope 2) by 2030. It also aims to reduce value chain GHG emissions (Scope 3) by 12.3%.

Three Resolutions to Achieve Net Zero

Over the past two decades, UMC has carried out several programs for carbon reduction. For the next 30 years, UMC will continue to strive for its SBTs by enhancing its process technologies, increasing the percentage of renewable energy usage, and investing in emerging carbon reduction measures.

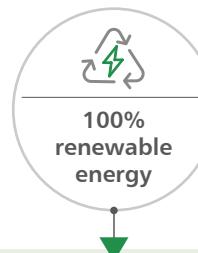
In addition, UMC also participates in organizations such as Taiwan Climate Partnership, Taiwan Net Zero Emissions Association, Taiwan Carbon Capture Storage and Utilization Association, in hope that through the collaboration and exchange with academia-industry-government agencies, solutions can be found to reinforce the resources and actions required to cope with climate change and facilitate the implementation of net zero transition.

- ▶ Led semiconductor foundry peers globally in committing to net-zero emissions by 2050.
- ▶ Became the second semiconductor foundry to join RE100, pledging to use 100% renewable energy by 2050.
- ▶ The first semiconductor foundry, and the 11th company in the global semiconductor industry, to receive climate target validation from the Science Based Targets initiative (SBTi).



Persistent and proactive carbon emission reduction

Through continually developing advanced foundry process technologies, enhancing productivity and improving energy efficiency, UMC can minimize carbon emissions in both the manufacturing stage of wafers and usage of IC end products.



100% renewable energy

Support the low-carbon energy transition with actual actions through joining international renewable energy initiative RE100 as a member and setting mid-/long-term goals to boost the usage of renewable energy.



Investment in net-zero technologies

To offset carbon emissions that cannot be avoided, UMC will invest in net zero emissions technologies and participate in carbon offset projects.

Setting Science-Based Targets

Despite the gradual carbon reduction efforts made by governments and companies around the world, according to the Sixth Assessment Report of the United Nations Intergovernmental Panel on Climate Change, global temperature will still rise by 5.7°C by the end of this century in the worst scenario. The Science-Based Targets (SBT) have been set based on the goal that the total carbon emissions shall be controlled to limit global warming to within 2°C. Through scientific methods and weighting calculation, the reasonable emission quotas for specific industries and specific companies are calculated under a global carbon budget.

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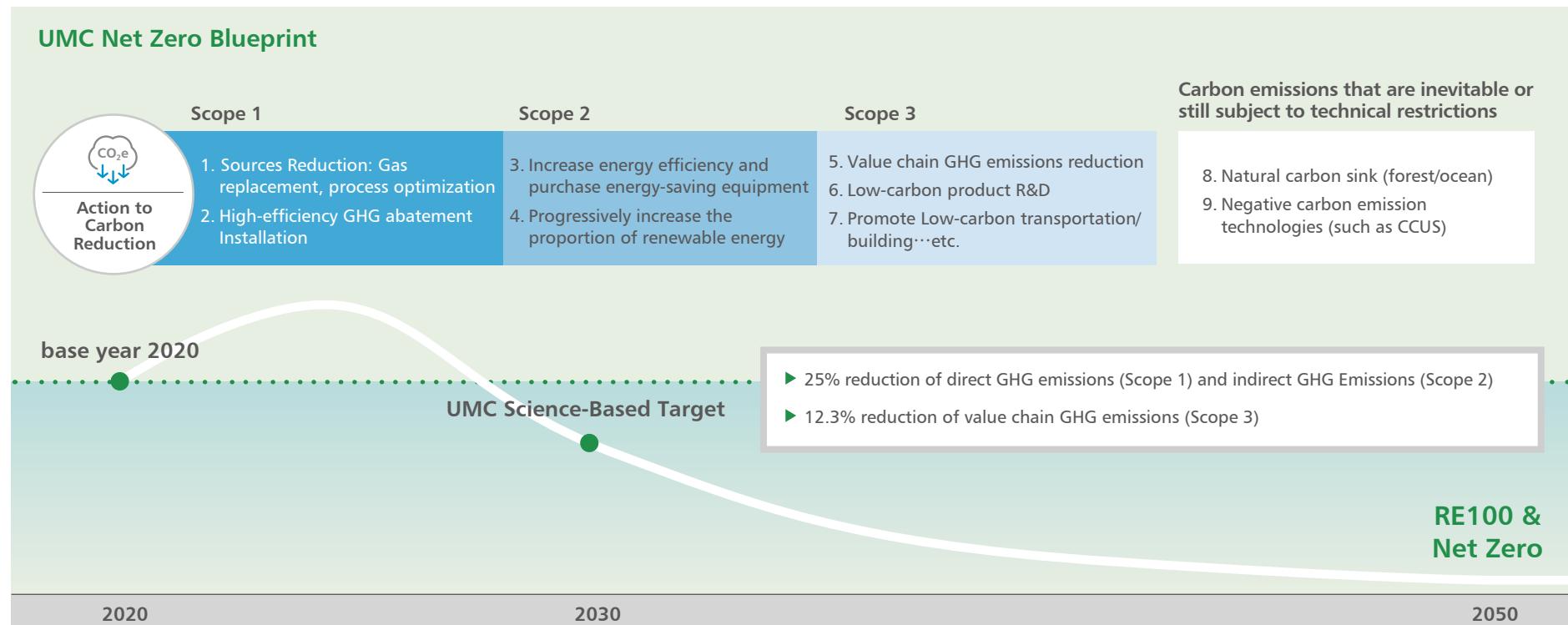
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Low-Carbon Supply Chain

In addition to voluntary carbon reduction, UMC also aims to leverage the collective strength of its value chain to tackle the climate challenges. As a trusted foundry partner, UMC continues to invest in the R&D of low-power components and various high-efficiency chips applied in low-carbon end products such as electric vehicles. To drive collaboration with suppliers, UMC proposed the "Triple R League" initiative in 2017 to encourage partners to implement environmental protection and energy saving & carbon reduction related programs, which resulted in a total of 409 thousand tonnes of CO₂e carbon reduction over three years. In 2021, UMC invited suppliers to join its low-carbon supply chain efforts, aiming for a 20% emissions reduction in the supply chain by 2030 and increase renewable energy use to 20% in the same time period.

In 2022, UMC continued the spirit of Triple R and introduced the "Low-Carbon Supply Chain" project to further expand the scope and strength to support supply chain partners in carbon reduction. With an investment of about NT\$100 million, UMC is providing free consultation resources and cloud platform tools for 500 suppliers to complete the inventory and management of greenhouse gases by 2030. The project has gained support from partners including GlobalWafers, PDMC, Merck, Applied Material, and KLA.



It's been more than 20 years since UMC initiated its climate actions in 1999. However, there are no signs of climate change slowing down. Various challenges and crises such as extreme natural disasters are occurring with little warning, which makes it even more difficult to make decisions in corporate operations. Answering the urgent call for climate action, UMC is determined to do its part and fulfill its pledges for a more sustainable future.

Climate-related Response Measures of UMC

UMC attaches great importance to the risks and opportunities that climate change poses to the Company. The response measures taken by the Company are described as follows:

Item	Implementation Status	Location
Describe the supervision and governance of the Board and the management team regarding climate-related risks and opportunities.	UMC's Board of Directors and Functional Committees oversees climate change risks, opportunities, coping strategies, and related promotion plans. ESG Steering Committee: Responsible for ESG governance, strategy, objective decision, systems or management guidelines and concrete promotional plans (including climate change), and report to the Board of Directors on a periodic basis. Corporate Sustainability Committee: In charge of setting sustainability direction and objective, enforcing systems or related management guidelines (including climate change). If the results of climate change risk assessment influence corporate major decision, they will be escalated to ESG Steering committee for approval. Enterprise Risk Management Committee coordinates related departments within the Company to jointly review the Company's internal and external risks (including climate change risks), regularly trace the changes for listed as major company-wide risks, and report the overall improvement actions to ESG Steering Committee.	1.1.1 Board of Directors Operation 1.2.5 Managing Climate Risks and Opportunities
Describe how the identified climate risks and opportunities affect the business, strategy, and finances of the company (in the short, medium, and long term).	According to UMC Climate Change Risk and Opportunity Assessment Methodology, short-term is defined as within the next 3 years; medium-term is defined as within the next 10 years; and long-term is defined as more than 10 years in the future. UMC formulates response plans for the identified major risks and opportunities. Taking carbon tax/fee as an example, it is expected that operating costs will gradually increase due to rising rates, resulting in a decline in profits. Therefore, the Company has set a net zero emission target in 2050, and actively promotes greenhouse gas reduction plans to reduce potential financial impacts.	1.2.5 Managing Climate Risks and Opportunities
Describe the impact of extreme climate events and transitional actions on Company finances.	For the identified climate risks and opportunities, UMC has taken into account the potential financial impact on revenue, costs, assets, and other aspects.	1.2.5 Managing Climate Risks and Opportunities
Describe how climate risk identification, assessment and management processes are integrated into the overall risk management system.	Under the guidance of the enterprise risk management policy, the Enterprise Risk Management Committee is responsible for coordinating relevant divisions to identify internal and external risks for the Company. The Committee reviews the risk items related to but not limited to strategy, operations, finance, hazards, assesses the likelihood of occurrence and severity, defines the priority and risk level of risk items, and initiates response plans for major risk items. Periodic reviews of risk items are conducted to identify changes in risk level and to ensure the effectiveness of risk management plans and related control operations, and to grasp the business opportunities associated with risks to formulate company development strategies. In addition, the Climate Change Risk and Opportunity Assessment Working Team conducts assessment every year, and develops adaptation and mitigation countermeasures. The assessment results are submitted to the Corporate Sustainability Committee for approval. If the assessment results are listed as major company-wide risks, ERM committee will simultaneously manage it and trace the implementation progress of countermeasures on a regular basis, and report the overall improvement actions to ESG Steering Committee.	1.2.1 Risk Management System 1.2.3 Improving Operational Risk Management 1.2.5 Managing Climate Risks and Opportunities
If a scenario analysis is adopted for the assessment of resilience to climate change risks, then the scenarios, parameters, assumptions, and analysis factors used, as well as the major financial impacts should be explained.	UMC conducts climate-related scenario analysis, including transition scenarios based on International Energy Agency 2 Degrees Scenario (IEA 2DS), Announced Pledges Scenario (IEA APS), Stated Policies Scenario (IEA STEPS), such as NDCs (Nationally Determined Contributions) and SBT (Science Based Target), and physical scenarios according to RCP8.5 in fifth assessment report (AR5), SSP1-2.6 and SSP5-8.5 in sixth assessment report (AR6) of Intergovernmental Panel on Climate Change (IPCC). UMC also conducts risk and opportunity analysis for policies, regulations, markets and technologies transitions, business reputation and physical risks. For relevant parameters, assumptions, analysis factors and major financial impact information, please refer to Chapter 1.2.5 "Managing Climate Risks and Opportunities" of this report.	1.2.5 Managing Climate Risks and Opportunities

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Item	Implementation Status	Location
If there is a transition plan for managing climate-related risks, please describe the content of the plan, as well as the indicators and goals used to identify and manage physical risks and transition risks.	In order to achieve net zero emissions by 2050, UMC has drawn up a low-carbon transition plan to cover direct emissions from fab operations (Scope 1), indirect emissions from energy consumption (Scope 2), and indirect emissions from value chain (Scope 3). The three resolutions are: (1) Persistent and proactive carbon emissions reduction: Through continually developing advanced foundry process technologies, enhancing productivity and improving energy efficiency, UMC is able to minimize carbon emissions in both manufacturing stage of wafers and using stage of IC end products; (2) 100% renewable energy: A 3-stage objective of 25% by 2025, 50% by 2030, and 100% by 2050 is set to substantially increase the proportion of consuming renewable energy, UMC will also invite its value chain to support the low-carbon energy transition; (3) Investment in net-zero technologies: UMC commits to invest in net zero emissions technologies and participate in Carbon Offset Projects to remove and offset carbon emissions that are inevitable or still subject to technical restrictions.	1.1.2 Sustainable Governance 1.2.5 Managing Climate Risks and Opportunities 2.1 Innovation & Technology Development 2.1.1 Robust Wafer Manufacturing Services 3.1 Climate Action 3.1.2 GHG Emissions Reduction 3.2 Energy Management 3.2.1 Energy Mix 3.3 Water Resources Management 3.3.1 Water Structure
If internal carbon pricing is used as a planning tool, the basis for setting the price should be stated.	UMC has considered the international carbon market prices, the carbon prices of GHG relevant regulations and the costs of reducing greenhouse gas emissions of the Company to set an internal carbon price. We use it as a reference for carbon reduction management and planning.	3.1.1 GHG Emissions Management
If climate-related goals are set, information such as the activities involved, the scope of greenhouse gas emissions, planning schedule, and annual progress should be disclosed. If carbon offsets or renewable energy certificates (RECs) are used to achieve the relevant goals, the source and quantity of carbon reductions for carbon offsets or the quantity of renewable energy certificates (RECs) should be explained.	UMC has announced to achieve RE100 and net zero emissions by 2050. We also established climate-related targets such as water consumption, energy use, greenhouse gas, and the technology development of low energy consume products. For target setting of greenhouse gas reduction, UMC's Science-Based Target was approved by SBTi (Science-Based Targets Initiative) in 2022. The target is to reduce 25% of total greenhouse emissions including direct (scope 1) and indirect electricity emissions (scope2) before 2030, and reduce 12.3% value chain emissions (scope 3), simultaneously.	2.1 Innovation & Technology Development 3.1 Climate Action 3.2 Energy Management 3.3 Water Resources Management
Greenhouse gas inventory and assurance results.	UMC established its GHG inventory standard mechanism in accordance with inventory guidelines defined by domestic and international organizations such as the ISO14064, World Resources Institute's Greenhouse Gas Protocol and GHG Inventory Guidance in Taiwan. The Company inventories the GHG emissions of all fabs annually to fully determine the status of GHG emissions and verify the effectiveness of reduction measures. Furthermore, UMC's subsidiaries (including HJ, USCXM, Wavetek, and USJC) all introduced the GHG inventory mechanism and conduct third-party verification.	3.1.1 GHG Emissions Management

Note: The information listed in this table contains the climate-related indicators that should be disclosed as required by Appendix 2 under Article 4 of TWSE's "Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies".
Appendix 2 1-1 For greenhouse gas inventory and relevant data verification, please refer to this report's appendix.

Collaborating with Global Business Partners for a Sustainable Future

Developing Green Technology Platforms to Satisfy Customers' Needs

Semiconductors are the brains and hearts of modern technological applications. To promote global sustainable development and to fulfill our ESG responsibilities, UMC strives to develop new logic and specialty manufacturing processes that are energy efficient and consumes less power. By closely working with strategic customers, UMC can analyze and forecast market demand on a rolling basis, fully support R&D capacity, and allocate resources to develop energy-efficient, low-power products. Additionally, UMC is converging its operational and sustainable development strategies in its sustainability blueprint. For example, the Company has set short-, medium-, and long-term goals for increasing the revenue share of sustainable products and developing innovative, energy-saving specialty technology platforms.

UMC is focused on developing ultra-low power consumption (ULP) and ultra-low leakage (ULL) technologies, as well as enhancing power management integrated circuit (PMIC) technologies to increase their applications in green and energy-saving products, thus reducing the environmental burden of end devices. In 2022, UMC completed two green technology platforms: 22 nm High Density Magnetoresistive Memory (HDMRAM) and 28nm High Performance Computing (28HPC+) Image Signal Processor (ISP) technology. UMC's new generation of embedded magnetoresistive memory is the same size as traditional charge-trap memory, but with a more streamlined process, faster computing speed, better thermal stability, and more durable read/write cycles, which helps reduce energy consumption and carbon emissions during usage. Additionally, following the launch of a premium 108 mega-pixel ISP product fabricated using UMC's 28nm HPC+ technology, the Company again led with the production of the industry's highest end 200 mega-pixel and smallest pixel size ISP, which is currently in mass production for a customer. The new product uses a lower voltage (0.9V), reducing energy consumption and carbon emissions during usage.

Unleash the Power of Technology with Sustainable IC Products

UMC collaborates with its business partners to amplify impact. In 2022, Cadence Design Systems, Inc., a global leader in electronic design innovation, and UMC collaborated to

As electronic products become more and more ingrained in our daily lives, UMC is committed to working with global business partners to deliver energy-efficient and sustainable products that contribute to people's livelihood and global sustainable development.

certify Cadence's analog/mixed signal (AMS) chip design flow for UMC's 22nm ultra-low power (22ULP) and 22nm ultra-low leakage (22ULL) manufacturing processes. This will increase the accuracy and precision of AMS chip designs and produce products with low power consumption and carbon emissions. In 2022, DENSO and UMC also announced that the two companies will collaborate on the production of insulated gate bipolar transistor (IGBT), a key component for electric vehicles. In this partnership, DENSO provides its IGBT process technology while USJC, UMC's Japan subsidiary, becomes the first foundry in Japan to produce this power semiconductor on 12-inch wafers. This project, which will contribute to carbon reduction, is supported by a decarbonization program for semiconductors of Japan's Ministry of Economy, Trade and Industry, and mass production has begun.

The large-scale electrification of vehicles is taking place rapidly as consumers become more environmentally conscious and as governments roll out policies in line with their net zero carbon emissions goals. As cars become smarter, safer, and greener, automakers will need more semiconductor technologies to power their innovations. In March 2023, UMC signed a 40nm embedded non-volatile memories (eNVM) microcontroller manufacturing contract with Infineon to expand Infineon's microcontroller production capacity to serve the rapidly expanding automotive market. This relationship is based on more than 20 years of cooperation between the two companies. In fact, in 2021, UMC performed well in Infineon's supplier greenhouse gas management performance evaluation, and in 2022, UMC was named "Best Silicon Foundry" by Infineon.

In 2022, sustainability products accounted for 74.9% of UMC's revenue. Looking ahead, UMC will continue to develop low power consumption, green, and energy-saving process technologies; work with customers to meet future demand for 5G, Internet of Things, wearable products, cloud applications, and automotive electronics applications; and effectively utilize the Company's innovative green and energy-saving platforms to build a sustainable future together.

Note: Sustainable products include products that reduce energy consumption, such as low power consumption, low leakage, and power management products; automotive chips for advanced driver assistance systems (ADAS) and power systems; and products related to epidemic prevention and medical care.

Greener Chemicals to Minimize Environmental Impact of Semiconductor Fabrication

To facilitate replacement of hazardous substances, UMC is committed to developing and promoting environmentally friendly and recyclable chemicals for use in semiconductor processes, and has already achieved fruitful results.

UMC is the first semiconductor manufacturer worldwide to achieve IECQ QC 080000 HSPM certification for all fabs and is also the first to replace perfluorooctanoic acid (PFOA) related hazardous substances in the Company's manufacturing process in Taiwan, demonstrating compliance with internationally recognized standards for management of hazardous substances. Moreover, all UMC fabs in Taiwan have been awarded the Certificate of Cleaner Production Assessment by the Industrial Development Bureau of MOEA, Taiwan.

Reduction at the Source Instead of End-of-pipe Treatment

To mitigate the environmental impact of our semiconductor manufacturing activities, UMC adopts a strategy of reduction at the source instead of end-of-pipe treatment. In the early days of the semiconductor industry, cleaning solvents were mixed with fluorinated compounds to improve cleaning efficiency, but fluorinated compounds have been found to be harmful for both humans and the environment. However, to reduce, recycle, or replace these solvents is not an easy task as their formulations are owned by large international suppliers. Therefore, rather than treating the chemical waste at the end of the process, UMC has taken the initiative to reduce the volume of harmful chemicals at the beginning of the process.

One method of source reduction is to optimize cleaning efficiency. UMC employs nano-surface analysis (SEM/TEM/EDX) to inspect residue created by etching from the previous step in the manufacturing process, then adjusts the parameters of the etching equipment to reduce residue or destabilizing their structure to make it easier to remove. In the subsequent cleaning step, the composition, concentration, and temperature setting of the cleaning solvent are optimized to enhance its capability to remove residue thoroughly. For example, in the backend-of-the-line (BEOL) stage of forming copper interconnects, the wafer is soaked in a cleaning solvent. Through the method introduced above, the replacement cycle of the solvent can be extended, reducing the amount used by over 70%.

Another method is to customize cleaning solvents. In order to reduce dependence on foreign suppliers, UMC has collaborated with domestic chemical companies to jointly develop proprietary green solvent chemicals based on the characteristics of etching residues. Using these replacements, UMC successfully phased out PFOS (perfluorooctanesulfonic acid) in 2015, and in 2017, it led the industry in phasing out PFOA (perfluorooctanoic acid).

Developing Green Chemicals

Since 2018, UMC has completed the development of one green chemical every year. In 2018, UMC independently developed a new green chemical using biodegradable and environmentally friendly materials. This chemical was officially launched at our Fab 12i in Singapore, where it was applied to the 40nm process, reducing costs by up to NT\$40 million. In 2019, UMC replaced traditional alkaline and fluorine-containing cleaning agents with biologically derived

acids from the tricarboxylic acid (TCA) cycle. This recyclable chemical was introduced to our Fab 12A in Tainan, and applied to the 14nm process, reducing the use of fluorine-containing solvents by 10 metric tons per year.

In 2020, UMC utilized a redox reaction process to recycle its cleaning solution while maintaining its halogen-free characteristics. This process, which is applicable to the BEOL of the 14nm and 22nm processes, reduces cleaning costs by 50% and prevents the generation of environmentally harmful fluorine-containing substances. In 2021, UMC developed a special green chemical using the tricarboxylic acid cycle, thus reducing the use of fluoride in the original cleaning solution by 98%. In 2022, UMC completed development of a critical BEOL metal cleaning process that complies with the EU environmental regulations, replacing traditional cleaning solvents with NMP-free (n-methylpyrrolidone-free) hydrophilic solvents. This green chemical was successfully tested and applied at Fab 12A, reducing the use of chemical solvents containing NMP by approximately 13 metric tons in 2022 in comparison to 2021 under the same production capacity. UMC will gradually apply the NMP-free cleaning solvents to various processes at Fab 12A, and will continue to promote the NMP-free cleaning process at all fabs.

Implementing UMC's Environmental Sustainability Commitment

UMC has been widely recognized for our achievements in green chemistry education, green safety substitution, chemical management, disaster prevention, and rescue readiness. UMC is the only company in Taiwan to win the Environmental Protection Administration's "Green Chemistry Application and Innovation Award" in both the group and individual categories consecutively since the award was started in 2019.

Not to be content with our previous achievements, UMC's push for a revolution in greenhouse gas replacement continues. We aim to remain at the forefront of the industry in 2023 by developing a frontend-of-line (FEOL) process that reduces the use of nitrous oxide (N_2O). The process is expected to reduce N_2O usage by 9.63 metric tons annually, which is equivalent to a reduction of 2,551 metric tons of CO_2 . After development is complete, the process will be applied to various 22nm processes and other mature processes. This will enhance the UMC's competitiveness and will also be more environmentally friendly, reducing semiconductor manufacturing's impact on the planet and achieving our goal of minimizing our environmental footprint.

UMC Equipment Academy Provides In-Depth Training for Incoming Talent

In the era of labor shortage, it is difficult to find and retain talent. Especially in the semiconductor industry, where the technology, professional division of labor, and process equipment are constantly upgraded, training is the key to helping new recruits acclimate and ensure they are equipped for their roles. The UMC Equipment Academy, established in October 2022, is designed to shorten the onboarding time for newcomers. Through practical skill application and enhancing judgment abilities, the program can enhance the sense of accomplishment and confidence of incoming engineers.

The UMC Equipment Academy, located at Fab 12A in the Southern Taiwan Science Park, offers both theoretical and practical courses in the areas of electronic instrumentation, electronic components, piping components, transmission components, vacuum components, filtration components, temperature control systems, and sensors, so that new equipment engineers can develop basic skills and shorten their learning curves.

Systematic Program Curriculum to Build a Strong Foundation

Today's equipment engineers have diversified backgrounds; they are no longer only graduates of traditional electronic, electrical, or mechanical related disciplines, so there is inevitably a gap between their studies and work applications. Even if a newcomer has studied a related subject or has experience in the industry, semiconductor manufacturing processes advance rapidly, and education or past experience may not be able to keep up with the latest generation's specifications. Additionally, in the past, each unit trained new engineers on its own, using OJT (On the Job Training) and opportunity education, which taught basic concepts and related skills in a rather one-sided and fragmented manner. Therefore, new hires may easily feel frustrated when they lack certain application knowledge or find that they do not have a good grasp of the functions and mechanisms of the equipment.

In order to prevent situations where newcomers have to run before they can walk, the academy's curriculum is more in-depth and detailed, so that new recruits can learn all of the basic skills first and build a good foundation to confidently face the various challenges of the production line. In addition to integrating training materials from all UMC fabs to produce standardized teaching materials and tools, the Equipment Academy also has professional instructors with an average of 15 years of experience, including five full-

time instructors, seven part-time module instructors, and one professional instructor, who design diversified courses based on the principles of systematization, standardization, and professionalism. Through the process of hands-on practice and learning assessment, the program ensures that newcomers can assimilate and apply their professional skills to meet job requirements.



In order to expand the depth and breadth of the courses and to be more relevant to field applications, the overall training is divided by application areas and trainee qualifications. For application areas, there are four different stages: FAB Basic Course, ERI Professional Course, FOC Basic Course, and FAB Advanced Course. Trainees are also grouped according to their qualifications: Equipment engineers with up to 1 year of experience (including interns), PM assistant engineers, engineers with up to 3 years' experience, and engineers with up to 6 years' experience. These courses are designed to meet the needs of the trainees in terms of their enhanced professional skills. Basically, new equipment engineers within 1 year of enrollment are required to attend the foundation course, and as of the end of April 2023, 12 sessions have been held and about 150 people have completed the training. Advanced courses, such as autonomous maintenance techniques and the requirements of each module, will be launched in 2023, helping equipment engineers to learn with deeper machine operation principles and maintenance skills.

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Strengthen Operational Stability By Developing Talent for Equipment Maintenance

Taiwan plays an important role in the global semiconductor industry, and as UMC continues to expand its production, the cultivation and retention of quality equipment engineers has become particularly important.

Through the establishment of the Equipment Academy, UMC can enhance new engineers' initial understanding of the principles and functions of semiconductor equipment components, shorten the gap between learning and application, and allow newcomers to seamlessly transition into their roles. Additionally, machine equipment is the cornerstone of semiconductor production and is a vital part of the Company's operations. Therefore, cultivating equipment engineers can enhance equipment self-maintenance ability and strengthen the resilience of the Company's operations. For Fab 12A, where the Equipment Academy is located, the scale of in-house parts maintenance in 2022 was expected to grow by approximately 35% compared to 2021. With the help of the Equipment Academy to train engineers, UMC has also set a goal to continue to increase the percentage of equipment self-maintenance at an annual growth rate of 20%.

In the future, the UMC Equipment Academy is expected to train 600 equipment engineers annually, and the program will be extended to other UMC facilities starting in 2023. Through the courses and the experience shared during the process, the Company is enabling career development of its engineers while enhancing corporate competitiveness. At the same time, this program can also contribute to the development of Taiwan's semiconductor industry.

The UMC Equipment Academy is expected to train 600 equipment engineers annually, and the program will be extended to other UMC facilities starting in 2023.



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UMC continues to refine its corporate governance practices by establishing a rigorous corporate governance structure, strengthening the functions of the Board of Directors, and building a supply chain that emphasizes human rights, social responsibility, labor rights, safety, health, and sustainable development. In order to implement its business strategy, UMC continues to improve its corporate risk management mechanism and strengthen the supervision of all operational levels of the Company. Additionally, UMC is committed to establishing good business practices and ethical standards, living up to its core values of integrity and honesty, and focusing on protecting shareholders' rights and interests to realize UMC's vision.

Important Stakeholders:
Shareholders, Suppliers, Government

SDGs :



Performance Highlights 2022



Consistently ranked in the top 5% of the Corporate Governance Evaluation conducted by the TWSE and TPEx



of which 2 members are female board directors



2022 restricted stock award includes Morgan Stanley Capital International (MSCI) ESG ratings as performance indicators



Implement "Taiwan Intellectual Property Management System (TIPS)"



Established "SOAR mechanism" to improve the efficiency of escalation and processing of information security incidents



94% of Taiwan sites' suppliers are local, accounting for 82% of total procurement dollar amount



Completed due diligence on conflict minerals in the supply chain, 100% of products with material traceability to place of origin

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1.1 Enhancing Corporate Governance

1.1.1 Operation of the Board of Directors

1.1.2 Sustainable Governance

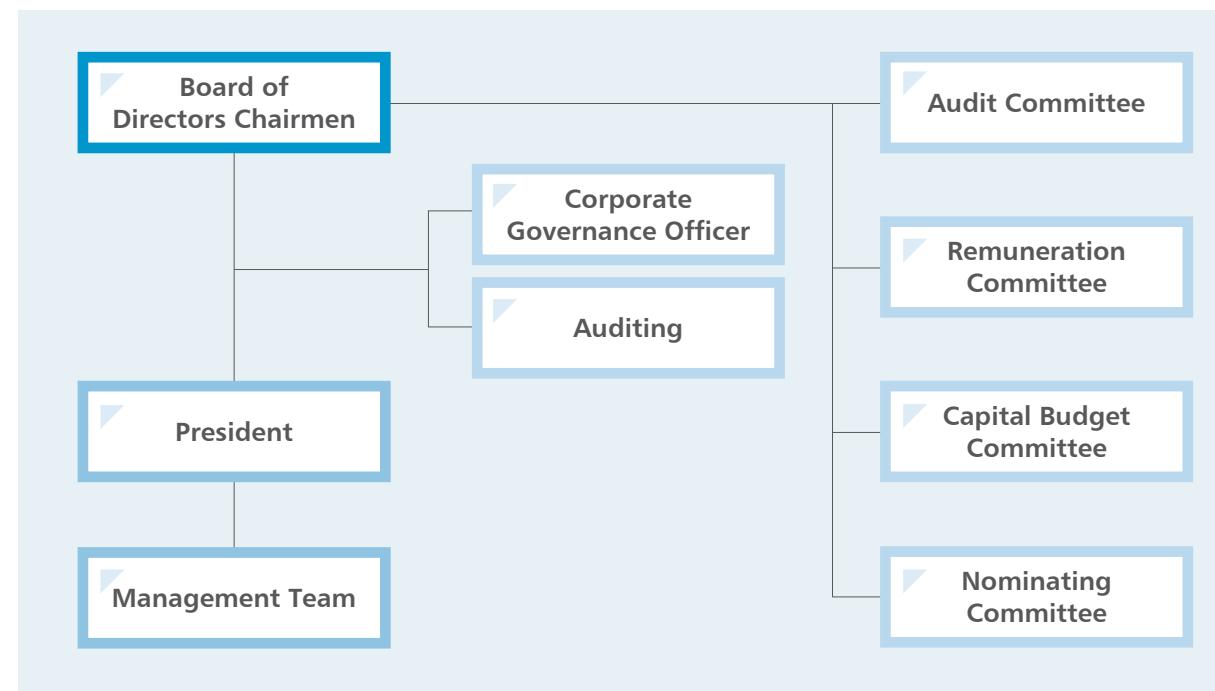
1.1.3 Integrity Management

1.1.4 Legal Compliance

1.1.1 Operation of the Board of Directors

The UMC Board of Directors comprises nine members from different professional backgrounds, and is responsible for the Company's operations and supervision. The diverse academic and industry experiences of the board members are an asset to corporate decision-making and long-term strategy planning. Board type of the Company is one-tier system complied with the regulations, and the audit committee composed of all independent directors is in lieu of a supervisor. There are five independent directors and one non-executive director in the Board. Currently, two third of the director seats are filled by non-executive directors, including five seats for independent directors and one for outside director. Current board members were elected on July 7, 2021 for a three-year term. There are two female directors in the Board. Each independent director does not serve as an independent director concurrently for more than three listed companies. As of the end of 2022, the average tenure of all directors was 6.9 years.

In 2022, a total of six board meetings were held, and the average attendance rate was 100%, meeting the 80% requirement for board performance assessment. The ratio of total remuneration for board directors to the Company's after-tax net income was 1.04% in 2022.



Policy for the Nomination and Election of Directors

The composition of the Board should take into consideration the organizational culture, business model, and long-term development of the Company. The criteria established to ensure the diversity of the Board members shall include but not limited to the following three dimensions:



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Board of Directors

Board members are elected by shareholders according to director election regulations for during shareholder meetings, and in compliance with the Board of Directors regulations and company constitution. The committees under the Board of Directors are nominated and approved by the Board according to company policy. All five independent directors qualified with professional qualification, work experience, limits of other mandate and independence of Regulations Governing Appointment of Independent Directors and Compliance Matters for Public Companies.

Title / Name	Gender	Member of Functional Committee	Professional and Background	Attendance Rate	Age
Chair of Board, Chief Strategy Officer					
Stan Hung	Male	None	<ul style="list-style-type: none"> Financial accounting and strategic management Electronics-related industry experience 	100%	63
Director, President					
Jason S. Wang	Male	None	<ul style="list-style-type: none"> Financial accounting and organizational leadership Electronics-related industry experience 	100%	60
Director					
S C Chien	Male	None	<ul style="list-style-type: none"> Engineering technology and organizational leadership Electronics-related industry experience 	100%	65
Ting-Yu Lin	Male	None	<ul style="list-style-type: none"> Financial accounting and strategic management Electronics-related industry experience 	100%	61
Independent Director					
Wenyi Chu	Female	<ul style="list-style-type: none"> Audit Committee member and financial expert Convener for Remuneration Committee Capital Budget Committee member Nominating Committee member 	<ul style="list-style-type: none"> Financial accounting and strategic management Electronics-related industry experience 	100%	56
Lih J. Chen	Male	<ul style="list-style-type: none"> Convener for Audit Committee Remuneration Committee member Capital Budget Committee member Nominating Committee member 	<ul style="list-style-type: none"> Engineering technology and organizational leadership Electronics-related industry experience 	100%	77
Jyuo-Min Shyu	Male	<ul style="list-style-type: none"> Audit Committee member Remuneration Committee member Capital Budget Committee member Convener for Nominating Committee 	<ul style="list-style-type: none"> Engineering technology and organizational leadership Electronics-related industry experience 	100%	69
Kuang Si Shiu	Male	<ul style="list-style-type: none"> Audit Committee member and financial expert Remuneration Committee member Convener for Capital Budget Committee Nominating Committee member 	<ul style="list-style-type: none"> Financial accounting and organizational leadership Banking and business decision making 	100%	72
Wen-Hsin Hsu	Female	<ul style="list-style-type: none"> Audit Committee member and financial expert Remuneration Committee member Capital Budget Committee member Nominating Committee member 	<ul style="list-style-type: none"> Financial accounting and corporate sustainability Electronics-related industry experience 	100%	46

Note: 1. There are three seats occupied by members who also serve as administrative directors, namely the President and Chief Strategy Officer. The current positions of directors at UMC or at other companies are disclosed on Page 16-19 of the Company's annual report.
 2. The board of directors have a diverse range of professional experience. Please refer to UMC's Annual Report page 21 and website (https://www.umc.com/en/IR_Director/directors_information) for more details.
 3. Training programs on corporate governance, risk management, ESG, and corporate sustainability are arranged for directors and officers annually. Please refer to page 46-47 of UMC's 2022 Annual Report for more details

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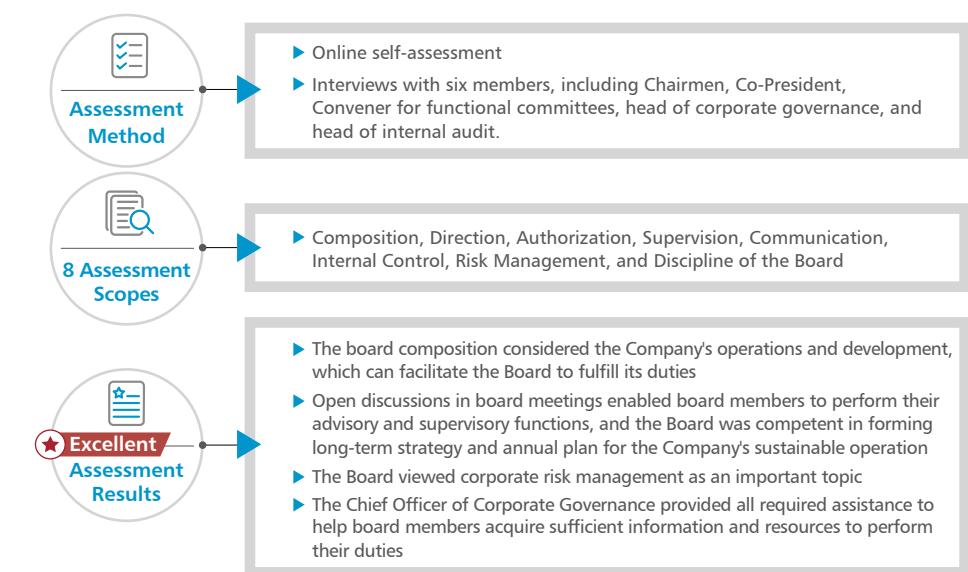
Functional Committee

Committee	Accountability	Achievement in 2022
Capital Budget Committee	The Capital Budget Committee was established in October 2013, comprises independent directors and outside directors to assist in the Company's long-term development strategy, financial planning and business performance. The Committee discusses plan implementations, modifies and follows up on the Company's capital expenditure budget by auditing its cost-effectiveness and tracking its performance.	In 2022, the Committee met five times, audited and approved capital budget expenses of NT\$ 128,475 million.
Nominating Committee	The Nominating Committee was established in December 2017, comprises independent directors to enhance management mechanism and to improve corporate governance. The Committee reviews the selection and performance assessment of directors and executives, and supervises issues related to environmental, social and corporate governance.	In 2022, the Committee met two times, reviewed the Company's achievements in corporate sustainability, climate change, corporate governance, ethical management, risk management, and IP management, and also approved the Employees' Compensation linked with ESG KPI achievement.
Audit Committee	UMC's Audit Committee assists the Board in its oversight responsibilities, and is responsible for tasks dictated by the Company Act, Securities Exchange Act, and other relevant laws. Since UMC is listed on the New York Stock Exchange (NYSE), the Company is also subject to the US laws for foreign issuers. The UMC Audit Committee comprises independent directors, of which three are financial experts. According to the terms and responsibilities stated in the Company's Audit Committee Charter, members shall convene at least four times per year.	In 2022, a total of five meetings were held and the actual attendance rate was 100%. The Committee maintains good communication and contact channels with the Company's management, Chief Corporate Governance Officer, internal auditors and independent auditors.
Remuneration Committee	According to Regulations Governing the Appointment and Exercise of Powers by the Remuneration Committee of a Company Whose Stock is Listed on the Stock Exchange or Traded Over the Counter Act, UMC established the Remuneration Committee to strengthen corporate and risk management. In addition, to motivate and retain talent, the Committee reviews and supervises the remuneration system of the Company's directors and managers.	In 2022, the Committee convened six meetings in February, April, June, July, October, and December. For the actual attendance status of the Committee members, please refer to page 51 of UMC 2022 Annual Report.

Assessment of Board Performance

To implement corporate governance, enhance capability and review performance of the Board, UMC instituted the Rules for Performance Evaluation of the Board of Directors to assess the performance of the Board annually. The self-evaluation result of the 2022 performance of the Board, functional committees (including the Audit Committee, Remuneration Committee, Capital Budget Committee, and Nominating Committee), and individual board members was "Excellent", and the result was reported to the Nominating Committee and Board of Directors on February 22, 2023.

In addition to self-assessments, the performance of the Board assessed by an external independent professional institution or a panel of external experts and scholars at least once every three years in order to enhance the Board's operation. The Company engaged Taiwan Corporate Governance Association to conduct a board assessment for the second time, and completed the evaluation on November 25, 2020. The assessment report recommended revisions to the Nominating Committee Charter to clarify the duties of the sub-committees and to enhance the effectiveness and efficiency of the Board. The Board approved revisions recommended in the assessment on February 24, 2021, and authorized the Nominating Committee to be accountable for the corporate sustainability strategies.



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Conflict of Interest Management

UMC has established conflict of interest avoidance regulations for the rules of procedures of the Board of Directors, and the organizational charter of the Audit Committee as well as the Nomination Committee. If the matters to be discussed in the Board Meeting are involved with the interests of the directors or the legal person they represented, the directors shall explain the important points of the interests in the Board Meeting. If such interests are in conflict with the interests of UMC, the directors shall not participate in the discussion as well as the voting process, and shall not exercise their voting rights on behalf of other directors. In addition, the names of related directors, contents of important points and circumstances of withdrawal shall all be stated in the meeting minutes.

UMC has established the codes of integrity management, regulations for the management of related party transactions, codes of ethical conduct for directors and managers, and codes of ethics for employees. There are clear provisions on avoidance of conflicts of interests and the implementation of the codes of ethics for employees is reported to the Audit Committee. For the communication with stakeholders, UMC has set up a special section for stakeholders on the website and relevant regulations and information are disclosed in details. There is no shareholder with controlling power in the Company, neither undisclosed conflict of interest between stakeholders, such as directors, suppliers and customers. UMC also has a spokesperson and an e-mail box, and has assigned dedicated personnel to be responsible for handling the questions and suggestions of stakeholders. There is no reported conflict of interest for UMC.

Internal Audit

UMC has established the internal audit function under the direct jurisdiction of the Board for the following purpose and tasks:



Main Purpose

- ▶ Examine and evaluate the effectiveness of the internal control system.
- ▶ Evaluate the efficiency and effectiveness of business operations.
- ▶ Ensure reliability, timeliness, transparency, and legal compliance of reports.
- ▶ Provide timely suggestions for improvement to ensure the sustainability and effective implementation of internal control tasks.



Duties and Responsibilities

- ▶ Conduct an annual audit in accordance to the provisions of the Taiwan authorities and in the event of risks.
- ▶ Issue audit reports and track improvement.
- ▶ Regularly revise the internal control system and audit implementation details as well as annual internal control self-assessments.
- ▶ Communicate with independent directors and report to the Audit Committee and Board of Directors.

As UMC is listed on the New York Stock Exchange (NYSE), the Company is subject to US laws for foreign issuers. Since 2006, UMC has complied with the Sarbanes-Oxley Act Section 404 (SOX Section 404) and has been audited by the independent auditors annually. To date, the independent auditors have issued unqualified audit reports for UMC's internal control design and implementation performance. For more detail, please refer to the Company's website at

https://www.umc.com/upload/media/08_Investors/Corporate_Governance/Major_Internal_Policies/the_Organization_Operation_of_UMCs_Internal_Audit_eng.pdf



Executive Compensation

2022 restricted stock award includes Morgan Stanley Capital International (MSCI) ESG ratings as performance indicators to strengthen the link between executives' compensation and ESG performance.

The performance evaluation and the policies, system, standards, and structure for salary remuneration of directors and executives are determined and reviewed by the Remuneration Committee. The Committee members include independent directors who provide suggestions and guidance from an external perspective. The Committee meets at least twice a year to review and ensure the competitiveness of compensation packages.

The remuneration of the president and vice president, including salaries, bonuses, severance payments, and retirement pensions, is disclosed in the Company's annual reports every year. UMC is committed to the advancement of the three aspects of ESG (environmental, social, governance), and has formulated medium- and long-term goals for sustainable development. Therefore, in addition to the Company's competitiveness in the industry, the executives' overall compensation also takes the environmental sustainability developments and talent cultivation into consideration. Besides, ESG was added to key performance metrics for variable compensation in order to align the interests of executives with that of the Company, making corporate sustainability a common goal.

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Fixed Compensation	Based on job duties and relative importance of the position and other factors
Variable Compensation	<p>According to the execution and achievement status of the operating strategy and objectives that the manager is responsible for.</p> <p>Financial Performance Index: Return on equity (ROE) %, Operating margin (OM) % and Earnings per share (EPS), etc.</p> <p>Other Sustainability Index: Increasing revenue proportion and market share of sustainable products, integrate UMC's core capabilities, minimize environmental footprint, and create social value.</p>

Note: 1. In consideration of different purposes of reward, diversified compensation will be provided, such as performance bonuses, incentive bonuses, sign-on bonuses, employee compensation (profit sharing) share option certificates and restricted stocks, etc.
 2. The calculation is based on the actual cash compensation received in the current fiscal year.

Country	Ratio of maximum remuneration to median annual remuneration	Ratio of % increase in highest total annual remuneration to % increase in median total remuneration
Taiwan	27.87	0.43
Singapore	19.67	2.83

Note: The calculation is based on those who were employed throughout the year of 2022 and received complete remuneration in the local area.

Long-term Incentives

In order to attract and retain key talents for the achievement of its mid- and long-term objectives, UMC issued restricted stock awards for employees with a four-year performance evaluation period. The performance indicators for the restricted stock awards are return on equity % (ROE%), operating margin % (OM%), earnings per shares (EPS), and includes Morgan Stanley Capital International (MSCI) ESG ratings as one of the indicators in 2022 to strengthen the link between executives' compensation with ESG performance, intended to motivate employees to achieve performance goals and to create greater value for the Company and its stakeholders.

Bonus Reclaim for Inappropriate Behavior (Clawback Policy)

As an organization that highly values integrity, UMC believes that every employee is obligated to act in the Company's interests within legal limits and is responsible for preventing damages to or loss of the Company's interests. Violators of the Company's Code of Conduct shall pay back any benefit improperly obtained, and will be penalized according to the severity of the incident, including deduction of performance cash award, year-end bonus and profit-sharing bonus, demotion, removal from post, and, when necessary, legal actions. UMC expects all employees, especially executive level managers, to fulfill their management and supervision responsibilities, and strictly observe the Code of Conduct to ensure UMC's sustainable growth and development.

Executives' Stock Ownership Guidelines (Equity Policy)

In 2022, UMC established its Equity Policy for executives' ownership of the Company's stock, intended to strengthen the link between the interests of executives, company performance, and the interests of stockholders. The Chairmen and presidents are required to hold stock valued at least ten times their annual base salary. The requirement for other executive officers is at least 5 times their annual base salary. We review the goal achievement status every year to ensure the implementation of the policy. As of the end of 2022, 96% of the executives have reached the target which is ahead of schedule, and the rest of the executives are on the track.

Officer	Title	Shareholding Value (Multiple of Base Salary)	Status ^{note1}
Stan Hung	Chairmen & Chief Strategic Officer		
SC Chien	President	10X	Meet
Jason Wang	President		
Ming Hsu	Executive Vice President		
Oliver Chang	Senior Vice President		
Chitung Liu	Senior Vice President & Chief Financial Officer		
Lucas S Chang	Senior Vice President & General Counsel		
TS Wu	Vice President		
C C Hsu	Vice President		
M C Lai	Vice President		
S F Tzou	Vice President		
Osbert Cheng	Vice President		
G C Hung	Vice President		
Steven Hsu	Vice President		
Wenchi Ting	Vice President		
Jerry CJ Hu	Vice President		
Y S Shen	Vice President		
Steven S Liu	Vice President		
SR Sheu	Vice President		
M L Liao	Vice President		
S S Hong	Vice President		
Francia Hsu	Vice President		
Mindy Lin	Vice President		
Eric Chen	Vice President & Chief Human Resources Officer		
Linwu Kuo	Vice President		On Track ^{Note2}

Note 1: Shareholding value is calculated based on the average stock price during the 30 days prior to and including the evaluation date of December 31, 2022.

Note 2: He joined UMC in June 2021, and the deadline for meeting the shareholding requirement is May 16, 2027.

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1.1.2 Sustainable Governance

UMC's sustainable development is built on the vision of "to strive for a better and more sustainable future that is centered on people, in harmony with the environment, and enables communities to thrive." The Company maintains good interaction with stakeholders to jointly pursue sustainable growth.



Vision

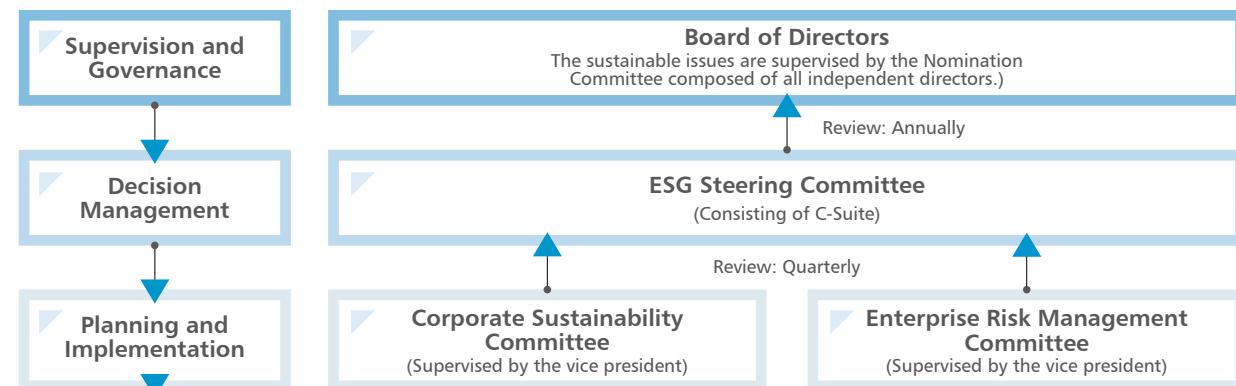
To strive for a better and more sustainable future that is centered on people, in harmony with the environment, and enables communities to thrive.



Mission

To pursue sustainable growth for the Company by embracing innovation and corporate responsibility, and to help customers meet the challenges of sustainable development.

Sustainable Governance Structure



The ESG Steering Committee serves as the unit for the highest level of ESG decision-making, and appointed the Co-Presidents as the Chairmen to lead the senior executives (C-Suite) to meet every quarter, and to be in charge of determining UMC's ESG governance strategy and goals. In addition, UMC appointed the Co-President to be the Chief Sustainability Officer, and the effectiveness of ESG governance is supervised by the Nomination Committee, which is composed of all independent directors. The Chairmen of ESG Steering Committee reports to the Nomination Committee and the Board of Directors annually on the Company's sustainable performance and plans, as well as key issues and countermeasures that stakeholders are concerned about. The Board of Directors also plays a supervisory and guiding role to determine the likelihood of success of the strategy, regularly reviews the progress of the strategy, and guides the management team to make adjustments when necessary.

With the Corporate Sustainability (CS) Committee and the Enterprise Risk Management (ERM) Committee under the ESG Steering Committee's supervision in order to ensure that ESG governance and corresponding policies are implemented from the top down. Sustainability affairs are mainly coordinated by the CS Committee, which is responsible for stipulating the direction and goals of sustainable development. The eight functional groups of the CS Committee appointed the vice presidents as the groups' chairs to review the performance and target achievements quarterly. The ERM Committee is responsible for coordinating risk management and controls in all aspects of the Company, and promoting relevant countermeasures for major risks. It has six risk groups that horizontally link three existing entity organizations and committees. The Company appointed the vice presidents as the chairs of the groups to review risk changes and management status quarterly, and update risk information on a monthly basis starting from the end of 2021.

The representatives of the CS Committee and the ERM Committee report on the evaluation of risks related to corporate governance, environmental, and social issues, as well as plans and their effectiveness to the ESG Steering Committee quarterly. A total of 11 key ESG issues were reported and communicated, include issues related to corporate governance, integrity management, climate change, renewable energy, circular economy, biodiversity, social participation, human capital development, conflict minerals, ESG promotion strategy, and target management of Sustainability Strategy and Blueprint.

The main points of the proposal reported to the Nomination Committee and the Board of Directors by ESG Steering Committee in 2022 include ESG activities and achievements, stakeholder communication, ESG future focus, revision of UMC Sustainable Development Best Practice Implementation Principles, and the timeline and progress of greenhouse gas emissions inventory and assurance, etc. Major issues need to be reported to the Board of Directors for approval. In 2022, the cases related to sustainability approved by the Board of Directors include the achievement of employee's remuneration linked to ESG KPI, donation to UMC Science and Culture Foundation, issuing Restricted Stock Awards (RSA) which set MSCI ESG ratings achieved A or above as one of the performance indicators, and green investment including the addition or replacement facilities for renewable energy, energy saving, waste reduction, and pollution prevention.



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1.1.3 Integrity Management

In 2022, UMC formulates the "UMC Anti-Corruption Statement" to emphasize the importance of anti-corruption, and to provide the report channel for any misconduct.

corruption and anti-bribery laws no matter where business is conducted. The applicable laws include but is not limited to the overseas anti-corruption laws of the United States, the bribery laws of the United Kingdom, and the anti-corruption laws of China.

In order to comply with the above-mentioned global anti-corruption and anti-bribery laws and regulations, UMC has adopted three management methods of integrity management, namely to establish relevant regulations, to expand education and training, and to ensure communication channels for all employees and business partners. By gaining public trust through business integrity and ethics, the Company fulfills its corporate social responsibility and achieves sustainable development. Also, the Company assesses its integrity management through the RBA Validated Assessment Program.

Ways to demonstrate integrity in the workplace



Establish relevant regulations

► UMC formulates "UMC Code of Conduct" to emphasize the importance of integrity, and to explain how to practice this "UMC Code of Conduct" to preserve public trust and ensure the sustainable growth and development of the Company.



► UMC formulates "UMC Anti-Corruption Statement" to emphasize the zero-tolerance policy toward the corrupt activities, and to define the meaning of bribery, interests and conflict of interest. The report channels of any breach of this ethical requirement and the protect statement for those who report the violation in good faith are listed in this "UMC-Anti Corruption Statement".



Expand education and training

► **Board of Directors**
 Directors for every board term receive training on anti-corruption policy and procedure communication. The nine directors of this term have all completed the training on December 15, 2021, with a completion rate of 100%.

Employees

The relevant information and training materials can be found on the internal website, and the regular online courses and tests are implemented, requiring all fabs and divisions IDL employees to complete the training.



Ensure communication channels

► UMC encourages employees and third parties to seek appropriate advice through consultation with the Human Resources Department or the employee care channel when they find any violation of ethics and norms, or encounter unequal treatment in the workplace, and then report such event.

Please refer to 4.1.2 Employer-employee Communication

► Also, employees and third parties can report any misconduct through the whistleblower channel anonymously, and UMC ensures those who report the misconduct in good faith are not subject to any retaliation.



Internal control self-assessment operation

Through the annual internal control self-assessment operation, UMC requires all fabs, departments and subsidiaries to conduct self-inspection on their business, including the awareness and assessment of possible risks in legal compliance and business ethics, and adjust the design and implementation of internal control systems to complete the self-monitoring mechanism. In addition, the Audit Division develops an annual audit plan according to legal regulations and risk considerations to conduct related audits. It regularly reports audit results to the Audit Committee and the Board of Directors and monitors improvements.

UMC has established a risk assessment mechanism covering all fabs, departments, and subsidiaries to cover behavior related to moral integrity, conflicts of interest, gifts and hospitality, and corruption. In view of the high correlation between anti-corruption regulations and conflicts of interest, UMC has identified risk departments based on the businesses and the responsibilities of the departments, and regularly conducts internal investigations on conflicts of interest. Job rotation among employees with different responsibilities are also implemented for such risk departments to prevent the occurrence of related risks. In 2022, UMC did not receive any penalties for violating anti-corruption laws and regulations.

Note: No proof of corruption or bribery was found in 2022.

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1.1.4 Legal Compliance

UMC's customers are located around the world, and the Company's operations span a number of countries. To ensure UMC's compliance with the laws and regulations of each country, thereby avoiding losses due to legal violations or avoiding profit losses due to large fines, the Company closely monitors all policy or regulatory changes that might impact its business or finances.

In 2022, UMC established the Global Compliance Division for the cross-functional compliance. All departments must comply with relevant legal regulations, and a legal service platform has been set up to provide legal consultation and assistance on various legal issues across departments. UMC also arranges training programs and courses on legal compliance, and provides prompt updates of the latest legal trends.

UMC remains in compliance with the laws and regulations by prompt updates, periodical self-assessment, and periodically review and improve internal regulations and confirm the items to be followed.

Training Courses for Legal Compliance

Online Courses	<ul style="list-style-type: none"> ▶ The Company provides relevant information and promotional materials to colleagues through its internal website, and regularly holds training courses and assessments to test and correct their understanding of laws and regulations. ▶ The online courses and tests include: anti-corruption laws, insider trading laws, anti-trust laws, trade secret laws and import and export control regulations.
On-site Courses	<ul style="list-style-type: none"> ▶ The Company holds in-person training sessions for important policies or laws internally based on the progression of global policies or regulations. Additionally, employees from certain units are designated as mandatory trainees to improve their comprehension and application of laws and regulations. ▶ The on-site courses include: anti-trust laws, insider trading laws, import and export control regulations, privacy laws and intellectual property laws.
Seminar Courses	<ul style="list-style-type: none"> ▶ Outside legal professionals and experts are invited to lecture on the latest legal trends and information, and exchange ideas.
External Courses	<ul style="list-style-type: none"> ▶ Arrangements are made for legal staff to attend training provided by other organizations to update their knowledge of amendments and latest news and details to ensure compliance with latest requirements.

Legal Compliance Status

In 2022, UMC did not receive any penalties for violating corporate governance, anti-corruption, or anti-trust related laws and regulations, and no managers violated insider trading laws. Furthermore, UMC did not receive any complaints about violations of privacy from Data Subject. In addition, in the event of major lawsuits, it will be reported to the Audit Committee, which will discuss the necessary response.

Moreover, UMC attaches great importance to the health and safety of employees. Related risks are controlled by various internal standard operating procedures, and regulations are regularly reviewed and improved upon. UMC did not incur any fines related to the health and safety of employees, or financial losses due to related judicial procedures in 2022.

The legal compliance status of UMC is summarized as follows :

► Anti-trust Laws

1. UMC formulates and announces the Anti-Trust Policy, which is the guideline for internal divisions to follow when conducting business. The key points are:
 - a. key provisions of anti-trust laws,
 - b. code of conduct for business operations, and
 - c. countermeasures when related risks occur.
2. The training materials are provided on the internal website, and the training courses and tests are regularly held, which required all the employees to finish the training that related to the laws.

► Insider-trading Laws

1. UMC not only formulates and announces the Policies and Procedures for Refraining from Insider Trading, but also keeps emphasizing the importance of not violating the insider trading laws to first-level executives and above.
2. To ensure compliance with legal regulations, the Company offers relevant legal materials on its internal website and holds periodic training sessions and evaluations. All indirect personnel from both Taiwan and the Singapore fabs are required to complete the training on the related legal content.

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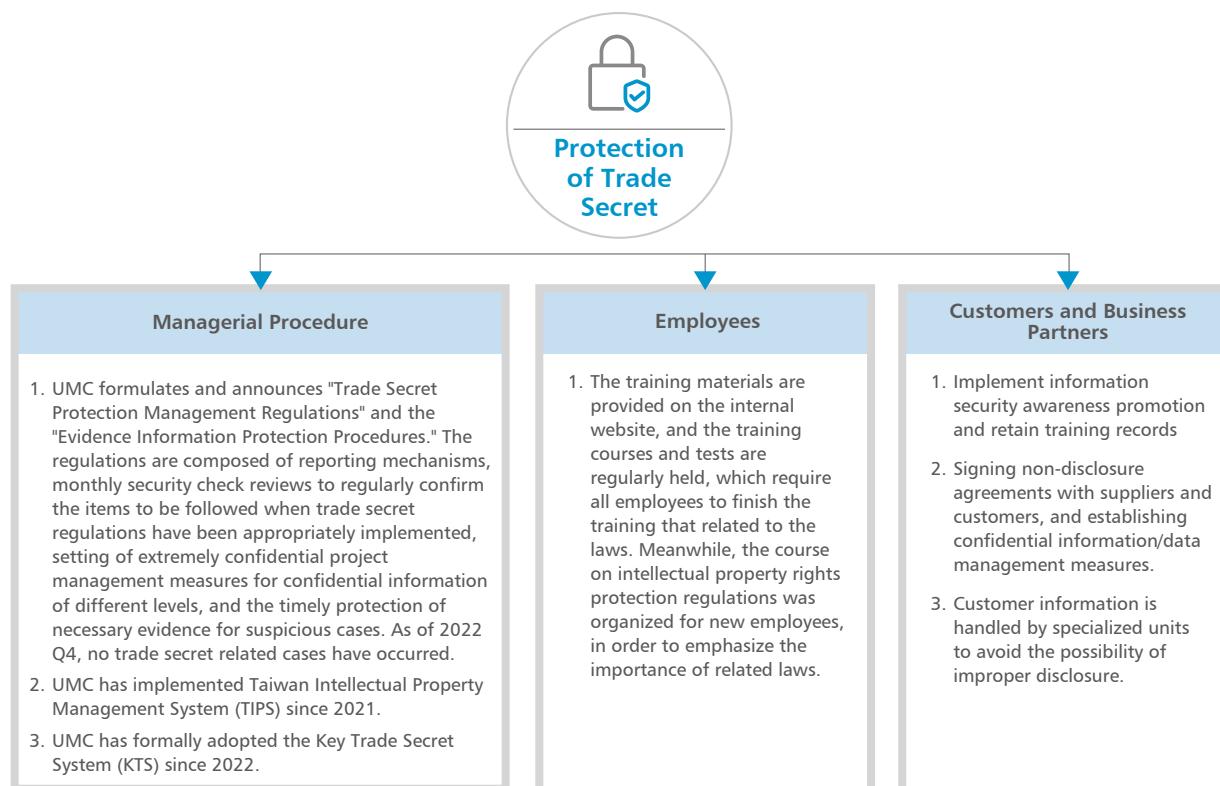
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Trade Secret Laws and Regulations

Reaction and Precaution Measures Taken by UMC

In response to trade secret protection, UMC has formulated several corresponding management methods and policies for the overall management system, employees, customers and business partners. The Company also conducts appropriate education and training to enhance the quality of corporate governance and strengthen the stability of sustainable business operations.

In 2022, UMC establish the "Key Trade Secret System" to maintain the competitiveness of the Company. Meanwhile, UMC has implemented the "Taiwan Intellectual Property Management System (TIPS)", which including the inspection of the trade secret management of the Company, and awarded TIPS certification with AA degree in 2022, highlighting the Company's continuous commitment to strengthening its IP protection and management.



UMC and Micron announced Global Settlement in 2021

In 2017, Micron Technology, Inc. filed a motion against UMC, alleging that UMC infringed on its trade secrets. On November 26, 2021, UMC and Micron announced a settlement agreement between the two companies for all legal proceedings worldwide. Accordingly, Micron submitted a motion to withdraw the case. On January 27, 2022, the Intellectual Property and Commercial Court announced its ruling of this case.

Privacy Laws and Regulations

UMC values the privacy of the users of our products and services, customers, suppliers, employees of contractors, employment applicants, visitors, and visitors to our websites. The Company's Privacy Policy is intended to protect personal data collected from the groups mentioned above (collectively referred to as "Data Subject").

For personal information collected for business needs, UMC clearly defines the collection of personal data, categories of personal data, purposes and legal bases for processing the personal data, internal and external ways of processing the personal data, protection of minors, parties the personal data will be shared with, cross-border transfer of personal data, and the rights of the Data Subject. The Company also has information security management measures in place, as well as information retention and destruction requirements.

Impact and Implications of Privacy Protection Policy

UMC believes that, by providing open and transparent privacy policy information, Data Subject will be able to enjoy the rights to make independent decisions about their personal data. Data subject's trust in UMC will advance the Company's progress in corporate social responsibility, enhance overall awareness of privacy management in the industry, and will ultimately lead to a positive environment that respects and upholds privacy regulations.

Administrative Policy

As a company with a global presence, UMC formulated its Privacy Protection Procedure in accordance with the Personal Data Protection Act of Taiwan, the General Data Protection Regulation (GDPR) of European Union, the California Consumer Privacy Act (CCPA) of United States, and the Personal Information Protection Law of China, in order to avoid leak, abuse, or theft of the personal data collected by the Company. Also, the management of the personal data, privacy breach handling procedure, and the competent authority are clearly defined. UMC will keep following the trends of the global privacy laws and regulations to improve the management procedures of the personal data, and the report channels of the privacy breach.

According to the Privacy Protection Procedure, when a privacy breach is discovered or a complaint is received, the Company will investigate the relevant entities where personal

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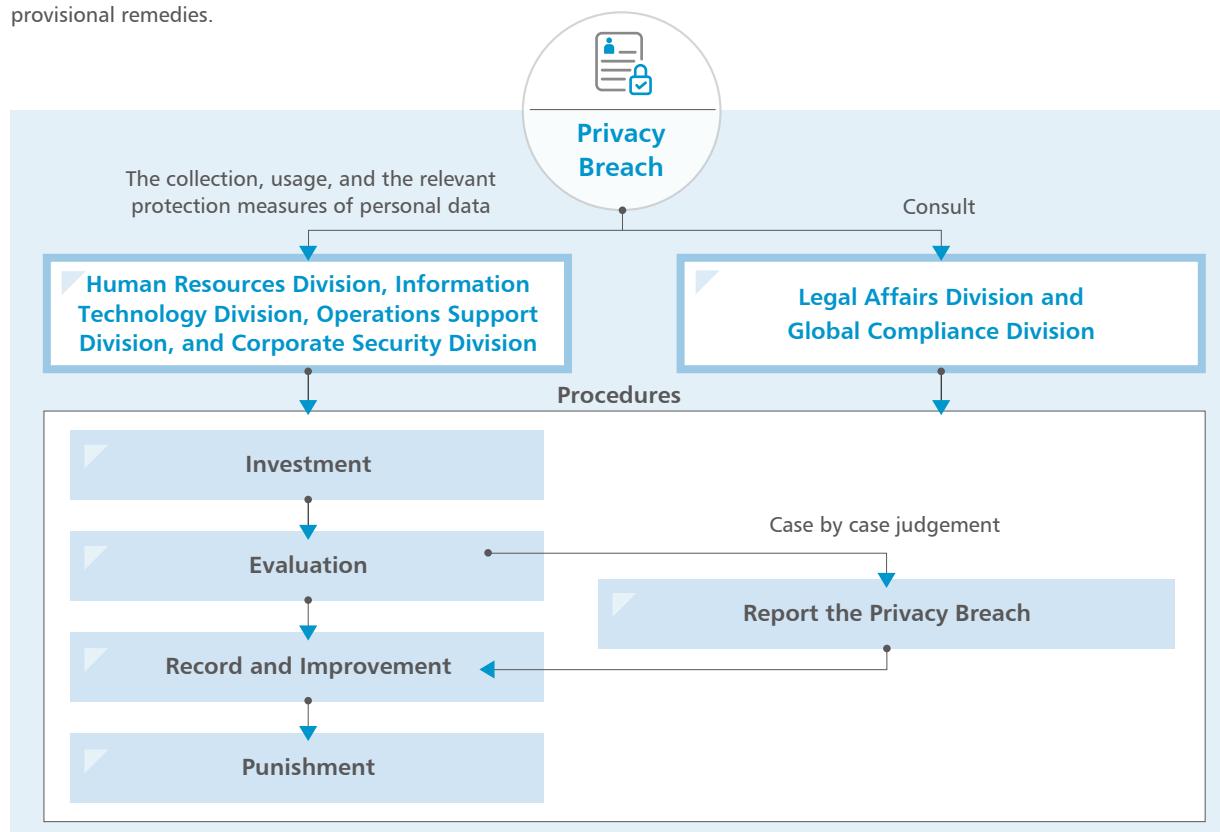
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data has been compromised, such as where the personal data may be stored or used, take stock of the compromised personal data, evaluate the loss caused by such privacy breach, record the investigation results, and review the follow-up improvement plan to reduce the risk of privacy breach occurring.

In addition, UMC has a zero-tolerance policy against any violation of the Privacy Policy and the Privacy Protection Procedure. UMC may impose disciplinary measures, including but not limited to imposing warnings or demerits on those who violate the Privacy Policy and the Privacy Protection Procedure. If an employee abuses others' personal data that is not within the scope of his/her duties and without obtaining approval of his or her supervisor, the Company may terminate the employee's employment without prior notice in accordance with Article 12, paragraph 4 of the Labor Standards Act. UMC may also file civil claims and/or criminal charges against employees who violate the Privacy Policy and the Privacy Protection Procedure, and seek for provisional remedies.



In order to strengthen the basic knowledge of privacy laws and regulations when conducting business, UMC regularly holds training courses for employees on the access to personal data depending on authority level, personal data storage restrictions, as well as warning and notification mechanisms.

By taking stock of the personal data consent letter of the Data Subject and the database of personal data, and establishing appropriate personal data protection security mechanisms, the personal data UMC collected is well protected from being stolen, altered, damaged, lost, or leaked. Also, UMC takes regular audit mechanism and RBA Validated Assessment Program as the assessment to ensure the processing of privacy protection.

Region	Regulation	Countermeasures
European Union	General Data Protection Regulation (GDPR)	▶ UMC updates the Privacy Policy, Privacy Protection Procedure, and relevant documents such as consent letter and contracts in accordance with current laws or regulations.
United States	California Consumer Privacy Act (CCPA)	▶ Ensuring the privacy information of individuals is protected through the Company's regular audit mechanism.
Taiwan	Personal Data Protection Act	▶ Providing relevant legal materials on the internal website and conducting training courses and assessments
China	Personal Information Protection Law	▶ Providing relevant legal materials on the internal website and conducting training courses and assessments

Risk Reporting Mechanism

UMC has obtained the certification of ISO/IEC 27001, the international standards for information security management, and has set up system maintenance and management standard operating procedures. The prevention, notification, and response mechanisms for incidents that may cause personal information leakage are systematically supervised in accordance with the management regulations of the information security management department. In 2022, the Company received no complaints.

Please refer to 1.2.4 Commitment to Information Security Risk Management

Complaint Handling and Resolution

UMC takes actions in accordance with the Privacy Policy and the Privacy Protection Procedure upon receiving notice of privacy breach. In 2022, neither UMC's internal MyUMC platform nor the external legal unit of Hsinchu Science Park Administration Bureau received any complaints about UMC's privacy infringement, demonstrating that UMC's internal privacy management control mechanisms were fully functional and achieved expected results.

Personal Data Collection and Process

UMC may only use the Data Subject's personal data within the necessary scope, and use the personal data for the main purposes listed in the personal data consent letter and Privacy Policy.

If there are any questions about UMC's Privacy Policy, Data Subject may Contact UMC by the ways below:



1.2 Implementing Risk Management

- [1.2.1 Risk Management System](#)
- [1.2.2 Risk Management and Countermeasures](#)
- [1.2.3 Comprehensive Business Risk Management](#)
- [1.2.4 Commitment to Information Security Risk Management](#)
- [1.2.5 Managing Climate Risks and Opportunities](#)

1.2.1 Risk Management System

All critical risks at the corporate level (including emerging risks) are under control. And there have been no instances that resulted in significant losses to the Company's operations.

all levels of the company. According to the company's risk management policy, the committee serves to manage and prioritize countermeasures for major risks. In 2020, UMC completed the standard operating procedures of "Enterprise Risk Management Manual" for employees; in 2021, UMC cooperated with external consultants to identify the completeness of the Company's enterprise risk management; in 2021 and 2022, UMC conducted enterprise risk training to ensure the comprehensiveness of risk management and establish a solid enterprise risk culture.

Enterprise Risk Management Policies

Through risk management methods and organizations, UMC effectively prevents and controls enterprise risks, identifies possible opportunities, comprehensively implements risk management practices in daily operations, shapes and deepens the risk culture, and establishes complete and transparent communication with all stakeholders to maintain long-term stable operations.



Enterprise Risk Management Structure



Guided by the enterprise risk management policy, the Enterprise Risk Management Committee, which is independent from the business lines, coordinates relevant departments to jointly review the internal and external risks that the Company faces, and facilitates risk response measures for major risks. The Enterprise Risk Management Committee is led by Executive Vice President and reports to the ESG Steering Committee to ensure alignment with the Company's sustainability strategy; and, the ESG Steering Committee is overseen by the Nominating Committee of Board-level and reports to the Board of Directors at least once a year to ensure alignment with the risk management policies, and implementation and effectiveness of risk management measures. In addition, UMC enterprise risk management also incorporates internal auditing and control functions, mainly led by the audit division and reports to the Audit Committee to ensure that the risks associated with operations have been effectively controlled.

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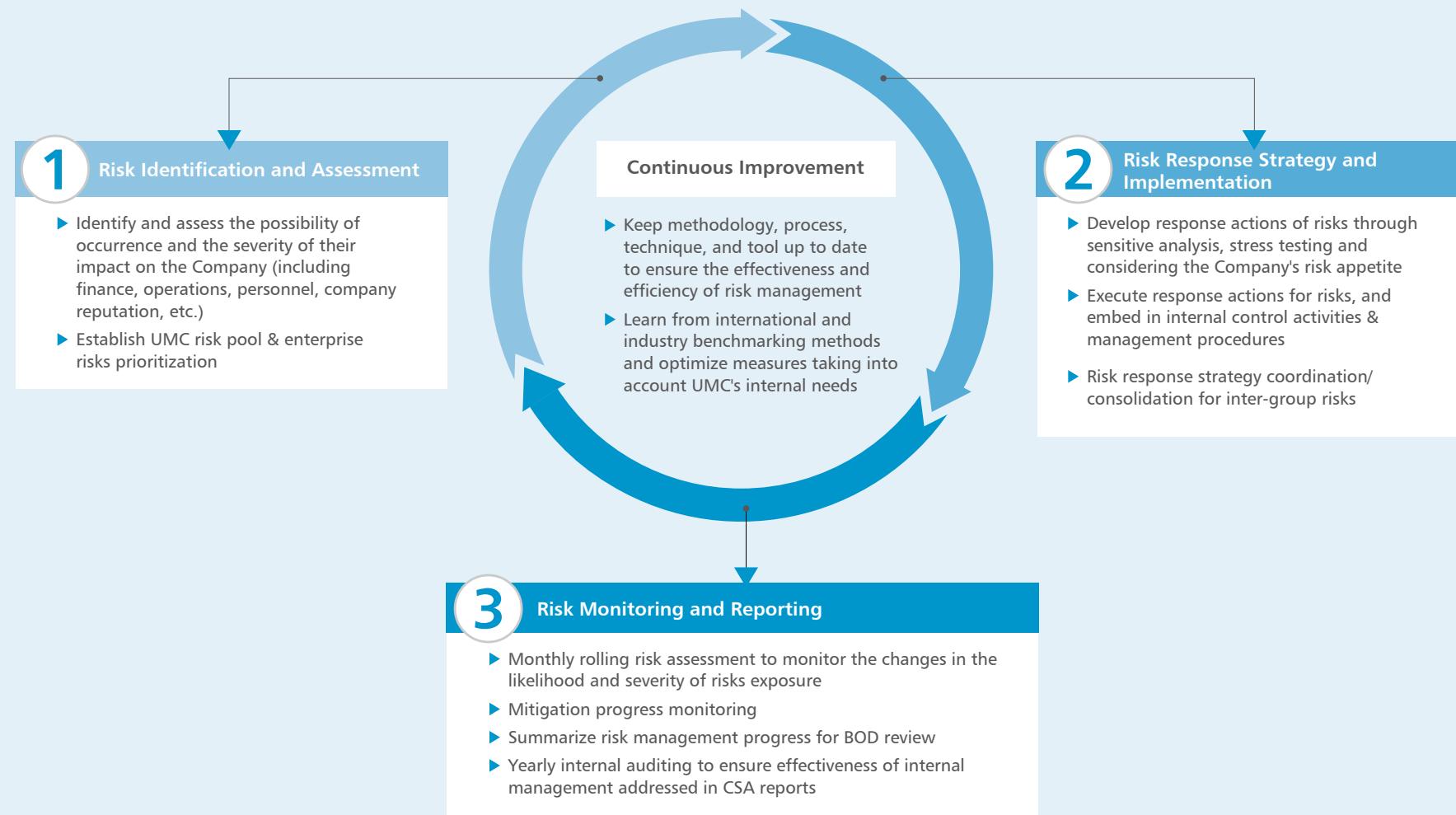
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Enterprise Risk Management Mechanism

The Enterprise Risk Management Committee consolidates and evaluates risks in the areas of strategy, operation, finance, and hazard. According to the risk categories, sets the risk appetite that the Company can accept, evaluates the possibility of occurrence and severity of risk impact, creates a risk map, defines the priority order and risk level of risk items, and executes sensitivity analysis and stress testing of important financial and non-financial risks. Risk management plans are developed based on the level of risk the Company can accept and the costs it can afford. The committee periodically reviews the changes in the likelihood and severity of risks exposure in order to monitor the effectiveness of risk management plans and related control operations. At the same time, the Company also grasps business opportunities associated with risks to formulate business development strategies.



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1.2.2 Risk Management and Countermeasures

UMC identifies key risks and formulates countermeasures in four areas: strategy, operation, finance, and hazard. It also includes important risks related to environmental, social or corporate governance issues in the Company's operations. The growth of Taiwan's semiconductor industry outpaces the global average, and UMC is optimistic that Taiwan will maintain its leading position in the foreseeable future, driven by factors such as continued development of new process technologies and the clustering effect of equipment and material suppliers. However, global supply chain instability caused by the impact of the COVID-19 epidemic in recent years, intensified geopolitical risks due to competition among great powers, competition for production resources caused by higher semiconductor demand, geopolitical conflicts and severe inflation led to rising operational costs, and the urgent need for green energy and carbon reduction caused by climate change may cause adverse effects on the Company's investment and operations, but may also create some opportunities worth noting.

As a link in the supply chain, UMC monitors the global risk situation in addition to the emerging risks in the semiconductor industry. The Company refers to the Global Risk Report published by the World Economic Forum (WEF) every year to understand how risk trends are evolving and to start risk response measures as early as possible.

In response to the risks faced by UMC, appropriate risk-mitigation measures have been developed under the Company's enterprise risk management operations. The Company sets risk appetite according to the risk categories under the risk areas, such as property damage and business interruption risk category (appetite level: medium-low) and investment strategy risk category (appetite level: medium to low). After evaluation, the residual risks of UMC group is expected to fall within the controllable range with the implementation of mitigation countermeasures.

Regarding risks such as information security, natural disaster prevention, and climate change, specific sections will address the content of the response measures. The remaining major risks and emerging risks in 2022 are as follows:

Strategy

Emerging Risk	The Risk of Geopolitical Developments on the Company's Investments and Operations	Risk Level ▶ M-H	Likelihood ▶ M-H	Severity ▶ M-H
Risk Description	Rising political or economic tensions between China and the United States have led to sanction measures and triggered a trade war, which may last for a long time. Measures taken by governments include tariff increases, embargoes, policy interventions, and government subsidies, etc., and enforces enduring and evolving sanction measures and targets. U.S.-China tension has also affected cross-strait relations, and the recent rise in tensions has increased the uncertainty of UMC's future operations and investments.			
Potential Impact	<p>The impacts on UMC includes revenue, delivery time, goodwill, and investment plans. For examples,</p> <ul style="list-style-type: none"> ▶ A sharp increase in tariffs may drive up end-market prices, thereby reducing demand and UMC's customer orders. ▶ The United States Export Control Act regulates exports to certain countries if the content originating from the U.S. exceeds a certain ratio of the product, which may affect UMC's direct or indirect supply to specific customers. ▶ Restrictions on the export of high-tech materials or equipment may affect UMC China factory's production and capacity expansion plans, which may disrupt shipments and damage the Company's goodwill. ▶ Investment restrictions and regulatory changes may affect UMC's strategy, operational performance, and management complexity. ▶ Political tensions across the Taiwan Strait may affect the willingness of UMC customers to place orders; if the situation escalates further, such as cross-strait transportation interruption, material supplies to Taiwan and China factories may be affected and operations may be disrupted. 			
Counter-measures	<ul style="list-style-type: none"> ▶ Diversifying customer base and product portfolio. In addition to existing business in North America and Asia Pacific, UMC is planning to further expand its footprint in Europe, Japan, and other regions. The Company is also actively seeking opportunities in 5G, IoT, and AI applications, on top of its established presence in the automotive and industrial applications. ▶ Strengthening the diversification of production locations and the flexibility of production allocation. In addition to the expansion in Taiwan, UMC continues to expand production capacity in Japan and Singapore to serve global customers with multiple production locations. UMC enhances the flexibility of cross-regional and cross-fab support to adjust production allocation and capacity expansion plans in a timely manner. ▶ Accurately tracking changes in the external environment, including global regulations, politics, and economic conditions, evaluating their impact on the acquisition of production resources, the changes in customer demand and taking necessary risk response measures in a timely manner. Practical measures include establishing a raw material supply chain tracking mechanism to accurately track the origins country's component ratio of raw materials; closely monitoring regulatory changes, and strengthening management adaptability, and legal compliance; paying close attention to the dynamics of relations across the Taiwan Strait, adjusting the possible scenarios for changes on a rolling basis, and planning corresponding measures to reduce operational impacts. 			

Note: The levels of risk/ likelihood/ severity are H (High), M-H (Medium to High), M (Medium), M-L (Medium to Low), and L (Low)

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Strategy

Emerging Risk	Countries Using Policies/Resources to Build Domestic Semiconductor Manufacturing Capabilities, and the Risks Posed to the Company's Future Growth	Risk Level ▶ M	Likelihood ▶ M-H	Severity ▶ M
Risk Description	The trade dispute and technology war between certain countries, the COVID-19 epidemic, and a major shortage of automotive chips have led countries to view semiconductors as an essential component of technology products and an important strategic material, and recognize that a disrupted supply of chips can impact a country's economic growth and even threaten its national security. Therefore, developing domestic semiconductor manufacturing capabilities has become an important issue for major powers.			
Potential Impact	The impacts on UMC includes revenue, investment plans, and competitiveness. For examples,			
	<ul style="list-style-type: none"> ▶ Local government policies and regulations to compel customers to place orders with domestic manufacturers may reduce UMC's orders and affect the Company's revenue. ▶ Policies or subsidies by major powers to expand semiconductor capacity may reduce UMC's production share in the industry and cost competitiveness. ▶ Prohibiting the export of key equipment or materials to specific countries may affect UMC's global production strategy, or prompt urgent revisions to investment plans and result in losing business opportunities. 			
Counter-measures	<ul style="list-style-type: none"> ▶ Monitoring the status of the domestic semiconductor capacities in all countries, analyzing the impact to the Company's addressable market, adjusting sales strategies in a timely manner, and listing it as a necessary evaluation item when considering capacity expansion. ▶ Actively seeking alternative suppliers to diversify risks arising from government policies related to the export of equipment and materials. ▶ Analyzing the relevant laws of various governments and the trends of industry policies, initiating mergers and acquisitions, forming alliances to build new facilities, and collaborating on capacity/technology at the appropriate time in order to capitalize on opportunities for international cooperation. 			

Operations

Emerging Risk	Shortages of Resources Caused by Strong Demand for Semiconductors, and the Potential Impact on UMC's Capacity Expansion	Risk Level ▶ M-L	Likelihood ▶ M-L	Severity ▶ M
Risk Description	The COVID-19 pandemic accelerated digital transformation, leading to a surge in global semiconductor demand. At the same time, the pandemic's impact on related industries resulted in reduced and unstable supply and insufficient shipping capacity, creating a severe undersupply situation. Furthermore, semiconductor companies fearing insufficient supplies are competing for production resources, which has exacerbated the shortage situation and prolonged delivery, and pushed up the prices of raw materials.			
Potential Impact	The impacts on UMC include revenue, delivery time, cost, goodwill, and investment plans. For examples,			
	<ul style="list-style-type: none"> ▶ Suppliers may be unable to deliver on time due to their own material shortages, thereby resulting in production disruptions for UMC and delaying delivery to the company's customers. ▶ Rising transportation and raw material costs may increase UMC's overall operating costs. ▶ The surge in business for equipment suppliers may lead to delivery delays, resulting in delays to UMC expansion plans and subsequently affecting delivery to customers and the Company's goodwill. 			
Counter-measures	<ul style="list-style-type: none"> ▶ Increasing the frequency of surveys to monitor the production capacity of vendors and delivery date of key materials and equipment. ▶ Signing supply agreements or obtaining capacity guarantees with suppliers to ensure the supply quantities and purchase price. ▶ Actively introducing alternative materials, increasing inventory level, and adjusting the order method to diversify purchases and mitigate risks. ▶ Reserving and confirming freight in advance, and paying premium or using charter services. ▶ Optimizing equipment verification process to shorten equipment lead time to mass production. 			

However, as demand for semiconductors is expected to slow down in 2023 due to changing in global economic conditions, the aforementioned potential impacts may be eased.

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Operations

Emerging Risk	Geopolitical Conflicts and Severe Inflation Create Risks of Effective Cost Reduction to Remain Competitiveness	Risk Level ▶ M-L	Likelihood ▶ H	Severity ▶ M-L
Risk Description	Over the recent years, the COVID-19 pandemic has disrupted the stability of the global supply chain and led to an increase in supply costs. To respond to the impact of COVID-19 and revive the economy, countries have promoted monetary easing policies, which have caused inflation and interest rates to soar. The Russian-Ukrainian war has resulted in tight global energy and food supplies, leading to rising prices that are further pushing up inflation to record highs. In the meantime, global economic forecast has been revised downward, and the strong demand for semiconductors is also slowing down. However, supply chain costs remain high without a downturn, which would affect the cost and operation of UMC.			
Potential Impact	<p>The impacts on UMC include cost and operations. For examples,</p> <ul style="list-style-type: none"> ▶ Soaring logistics costs and raw material costs would increase the overall operating costs of UMC ▶ Rising labor costs could increase maintenance contract costs ▶ Long-term supply agreements with suppliers were signed to ensure stable supply in the first place, but these agreements could lead to penalties or compensations when there is a reversal in demand. 			
Counter-measures	<ul style="list-style-type: none"> ▶ Actively adopt alternative materials and machines to increase sourcing flexibility and bargaining power. ▶ Research, analysis and promotion of material usage reduction. ▶ Promote a systematic cross-factory parts management system to exert the effectiveness of integrated management. ▶ Increase the in-house repair rate of machine parts. ▶ Use digital transformation to strengthen the procurement risk assessment process and long-term contract review mechanism to reduce the impacts during economic downturns. 			

The Impact of Infectious Diseases on the Company's Operations

Risk Description	Any outbreak of infectious diseases can affect employee attendance, and even affect company operations. For example, the COVID-19 that started in the end of 2019 adversely affected the global economy and disrupted supply chain.		
Potential Impact	<p>Business and operations are affected, including:</p> <ul style="list-style-type: none"> ▶ Unstable sales activities and customer demand, decline in factory operations and labor, difficulties in international travel, restrictions on cross-border cooperation in research and development, unstable or disruption to supply of materials. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>By the end of 2022, most countries have gradually relaxed epidemic prevention and control measures, and the impact of COVID-19 is expected to slow down in the future.</p> </div>		
Counter-measures	<p>UMC established its coronavirus epidemic control and response center in January 2020 to coordinate relevant information and resources, including:</p> <ul style="list-style-type: none"> ▶ Regularly review and discuss issues including the impact on production, supply chain management, epidemic prevention strategies, and response measures. ▶ Clearly define the various stages of infectious disease crisis management, develop response measures for each stage, and take action according to the epidemic situation. ▶ In order to respond to relevant risks and opportunities, closely monitor the medium- to long-term developments in the industry, such as inventory adjustments, structural changes in market demand, and restructuring of the global supply chain. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>For related information, please refer to 1.2.3 Improving Operational Risk Management.</p> </div>		

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Finance

Currency Exchange and Interest Rate Risk		Risk Level ▶ M-L	Likelihood ▶ M-H	Severity ▶ M-L
Risk Description/ Potential Impact	<ul style="list-style-type: none"> ▶ Fluctuating foreign exchange rates could result in FX losses and unexpected volatility in expenses when revenue or expense generated from operating activities is denominated in a currency different from the functional currency. ▶ Due to large exposure of loans, changes in interest rates could affect future cash flow. 			
Counter-measures	<ul style="list-style-type: none"> ▶ The Company applies natural hedges on the foreign currency risk to balance the assets and liabilities denominated in foreign currencies, and utilizes spot or forward exchange contracts to reduce foreign currency risk. ▶ The Company manages the tenor and borrows at fixed or floating rates to reduce interest rate risk. 			

Hazard

Emerging Risk	The Risk of International Green Energy Trend and National Energy Conservation and Carbon Reduction Policies on Company's Operation and Investment Costs	Risk Level ▶ M-L	Likelihood ▶ H	Severity ▶ M-L
Risk Description	To reduce carbon emissions, governments around the world are taking proactive steps to limit or enhance carbon reduction requirements for enterprises. For example, in 2021, the Taiwan government required companies that have contract capacity of 5,000 kW or more to voluntarily increase renewable energy usage to 10% of total energy consumption by 2025. The Singapore government has imposed carbon tax since 2019 and announced that the carbon emission price per ton will be raised gradually. In Taiwan, "Climate Change Response Act" was also promulgated in February 2023, which includes a requirement for companies to pay carbon fees. Another, in 2021, UMC announced its participation in the RE100 renewable energy initiative and committed to achieving 100% renewable energy usage by 2050 to meet customers' potential requirement for international green energy trend.			
Potential Impact	<p>The impacts on UMC include operation and investment cost increasing, and resulting in the erosion of profits. For examples,</p> <ul style="list-style-type: none"> ▶ In response to Renewable Energy Development Act, it is estimated that an additional expenditure of no more than NT\$100 million per year will be spent on solar photovoltaic system in the next 20 years. ▶ For the increasing carbon tax in Singapore and Taiwan, the additional costs are estimated as follows: including the expense transferred from electricity bill, no more than NT\$25 million in 2024 and NT\$125 million in 2025 in Singapore (calculation based on a five-fold increase carbon tax from 2024); assuming Taiwan begins to impose carbon fee from 2024, the annual amount will not exceed NT\$800 million. (calculation is based on NT\$300/per ton of carbon emissions). ▶ Interim targets are set according to RE100 to meet green energy requirements from customers: achieving 25% and 50% of renewable energy usage in 2025 and 2030 respectively. It is estimated that an additional expenditure of no more than NT\$1 billion per year on purchasing renewable energy before 2025. 		<p>For more detailed information on impacts, please refer to chapters: 1.2.5 Managing Climate-related Risks and Opportunities.</p>	
Counter-measures	<ul style="list-style-type: none"> ▶ Develop energy saving plans, enhance energy usage efficiency, purchase energy-saving equipment and tools, widely-build solar photovoltaic system, and replace old solar photovoltaic modules with highly efficient ones. ▶ Participate in governmental voluntary greenhouse gas reduction plan, promote greenhouse gas emissions reduction plan, apply for carbon offsets projects for carbon credits, join carbon trade market to purchase carbon credits and offsets, and evaluate the adoption of carbon-negative technologies. ▶ Arrange in advance to ensure access to external renewable energy at lower cost in external sites. 		<p>For other response and achievements, please refer to related chapters: 1.2.5 Managing Climate-related Risks and Opportunities, 3.1 Climate Action, and 3.2 Energy Management.</p>	

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1.2.3 Comprehensive Business Risk Management

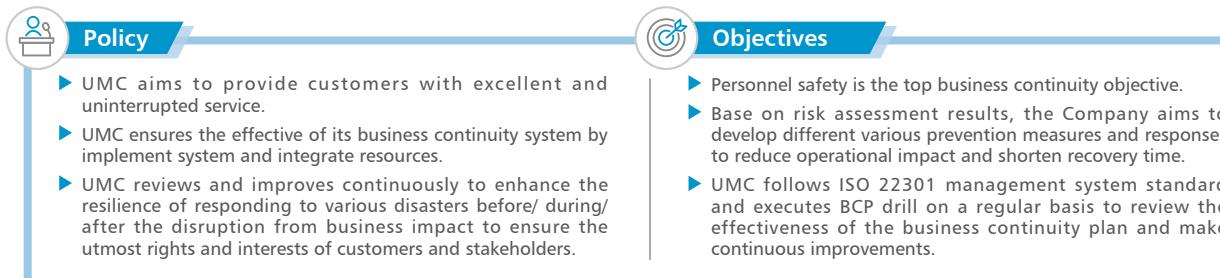
Business Continuity Management

As global risks continue to rise, UMC recognizes the importance of business continuity, which means providing uninterrupted services to strategic customers and key stakeholders. The ability to provide uninterrupted foundry manufacturing as well as diverse offering and excellent quality is the ultimate purpose of UMC's business continuity management.

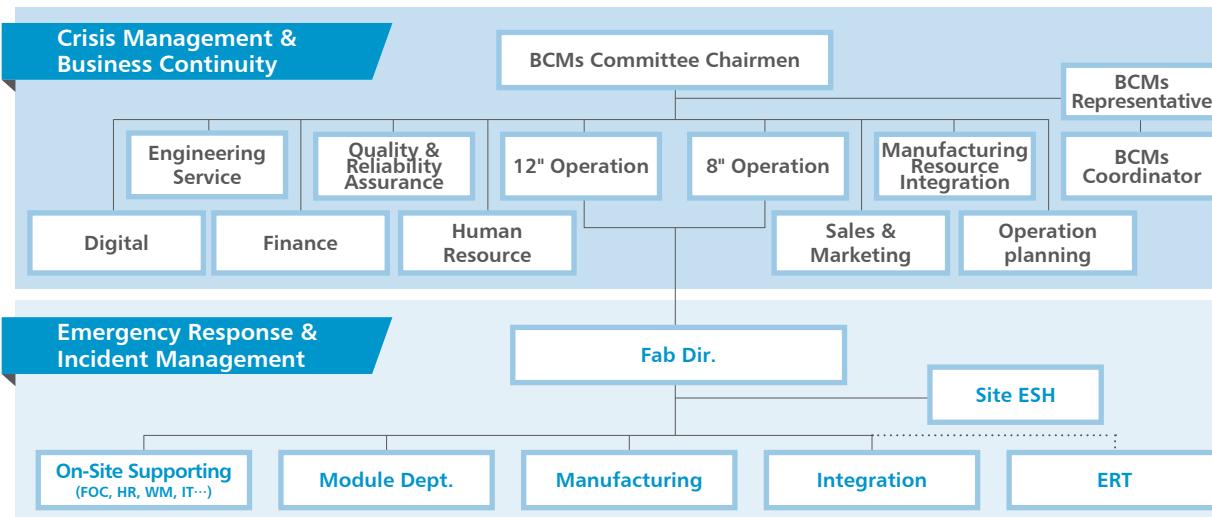
The Business Continuity Management Committee is based on the existing organization and responsibilities. The management team is in charge of resources integration, review of improvement plans, and operational recovery in the case of adverse events in order to protect the rights and interest of customers and stakeholders.

UMC Business Continuity Policy and Objective

UMC strives to provide the competitive wafer foundry services while pursuing business sustainability. The Company aims to provide uninterrupted services to our strategic customers and serve in the interest of our stakeholders through appropriate risk management. Our business continuity policy and objectives are:



BCM (Business Continuity Management) Committee Organization Chart



(1) Business Continuity Management Framework

UMC follows the ISO22301 standard to establish, implement, monitor and maintain the business continuity management system. The system's efficacy is regularly revised to ensure that business operations can continue during incidents or disasters without interruption.

All fabs and functional departments have deployed emergency response and recovery plans for specific events such as earthquake, fire, chemical spill, power disruption, water shortage and material shortage. BCP Exercise are conducted every year in order to continually improve emergency response and recovery procedures.

Furthermore, the Company's Hsinchu headquarters, Fab12A in Taiwan, and Fab12i in Singapore, Xiamen, China and Japan subsidiaries have passed ISO 22301 certification sequentially from 2013 to 2022. It is estimated that the rest of production sites will complete ISO 22301 certification by 2024.

Three steps of emergency response and recovery

- 1 Stage 1**
Emergency response: control and rescue (hours-days)
 - ▶ Stabilize the effect of incidents or disasters per emergency response plan.
- 2 Stage 2**
Incident Management: stabilization & mitigation (days-months)
 - ▶ Achieve minimum operational goals within the recovery time objective, RTO, per business continuity plan.
- 3 Stage 3**
Business recovery: back to normal (months-year)
 - ▶ Recovery at the affected fab to restore its production capability back to normal within maximum acceptable downtime per business recovery plan.

(2) BCM Management Achievements

The BCM management review meeting is held annually to review both internal and external risks and the accuracy and effectiveness of the system. For possible risks such

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as earthquake, fire, chemical leakage, utility outage, drought and raw material shortage etc., UMC conducts risk assessment and improvements in advance. Furthermore, exercises on procedure are held periodically to sharpen response and recovery after incidents.

Achievements of business continuity management

Install fire response equipment and conduct emergency response drills for solar panels on the roof of the production plant

2022 Achievements

- ▶ Completed response equipment set up and exercise.
- ▶ UMC Taiwan and Singapore site, and subsidiaries of USCXM and HJTC are included. ★ Attained

Results

Improve 40% earthquake resistance in non-lithography and non-furnace areas at Hsinchu 8-inch fabs

2022 Achievements

- ▶ Completion rate >40% ★ Attained

Results

Remark: Fab12A in Tainan and lithography and furnace areas in 8"fabs in Hsinchu have completed anti-seismic improvements in succession according to structural technician's advice after Meinong earthquake, 2016.

Maintain strategic inventory of IDM & parts $\geq 99\%$

2022 Achievements

- ▶ Each quarter inventory $\geq 99\%$ ★ Attained

Results

Following the outbreak of the COVID-19 epidemic at the end of 2019, UMC immediately established an epidemic control taskforce to discuss countermeasures and response activities in early stage according to BCM guidelines. Each fab also developed BCP (Business Continuity Plan) for manpower shortage leading to decreasing in production and conduct WFH (work from home) and split teams to mitigate cluster infection risk.

UMC subsidiary, HJTC, temporarily halted its production to conduct a company-wide PCR test according to the local authorities' requirement after an employee was infected with COVID-19 in February 2022. HJTC took response actions immediately and conducted multiple PCR tests, and all the results were negative. The Company resumed production after 10 days with the approval of local authorities. This incident had no impact on the Company's financial operation. Nowadays, global epidemic prevention controls were lifted gradually, UMC epidemic control taskforce still reviews global epidemic status and makes weekly rolling adjustment to its epidemic prevention measures.

Hazard Risk Control

UMC fully recognizes the impact and influence of natural and man-made disasters on production and operation. Hence, the Company has consistently adopted proactive attitude toward preventive disaster risk management, and seeks to achieve the highest standard of semiconductor industrial safety through rigorous risk engineering controls and implementation of safety regulations and standards.

Disaster Risk Management Topics



Fire Safety

1. UMC incorporated the international standards of the US Factory Mutual Insurance Company (FM), Underwriters Laboratories Inc. (UL), the US National Fire Protection Association (NFPA), the Semiconductor Equipment and Materials International (SEMI), and other international standards into its building construction, equipment, engineering controls and risk assessment, and formulated relevant company regulations for supplementary requirements.

2. UMC is the only semiconductor company in the industry equipped with a professional fire brigade. In addition to being equipped with government-grade fire trucks and rescue equipment, UMC volunteer firemen regularly receive external simulated fire training from professionals, which enhances their practical disaster relief capabilities.



Earthquake Protection

UMC collaborates with internationally renowned structural consultants. At the beginning of the construction stage, earthquake-resistant requirements are integrated into the design concept of buildings, facilities, pipelines and production equipment.

UMC continues to introduce new anti-seismic techniques such as seismic isolation platforms for production equipment and Earthquake Early Warning System (EEWS). In addition, for those fabs built before 2000, structural technicians advise on anti-seismic improvements according to regulations and earthquake experience to further ensure personnel safety and reduce the potential loss of process tools and auxiliary equipment.

Actual Achievement: The magnitude 6.6 earthquake in Meinong area that hit Taiwan on 6 February 2016 registered as a 6.0 intensity at UMC's Fab 12A in the Southern Taiwan Science Park. The damage caused, however, was less than nearby companies, proving the effectiveness of the anti-seismic design at UMC.



Equipment Safety

The Environmental Health and Safety Standards (SEMI-S2) for semiconductor manufacturing equipment, NFPA318, and FM7-7 are the major international standards adopted by UMC. Besides, UMC also adopts the Equipment Purchasing ESH Specifications into its procurement procedures, which requires all equipment to be reviewed and need to comply with the requirements before being brought into the fab and will be checked again during ESO stage to achieve effective equipment safety control.

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1.2.4 Commitment to Information Security Risk Management

Information Security Policy Implementation

UMC's information security policy is based on four guiding principles. The major information security objectives are aimed at antivirus, anti-hack, and information leakage prevention by reinforcing multiple internal controls such as firewall, intrusion detection and antivirus systems to enhance the Company's ability to defend against external attacks and to protect internal confidential information.

No business impact or loss caused by major information security/ virus incidents

Four guiding principles

Principle 1

To establish information security management rules in accordance to customer requirements

Principle 2

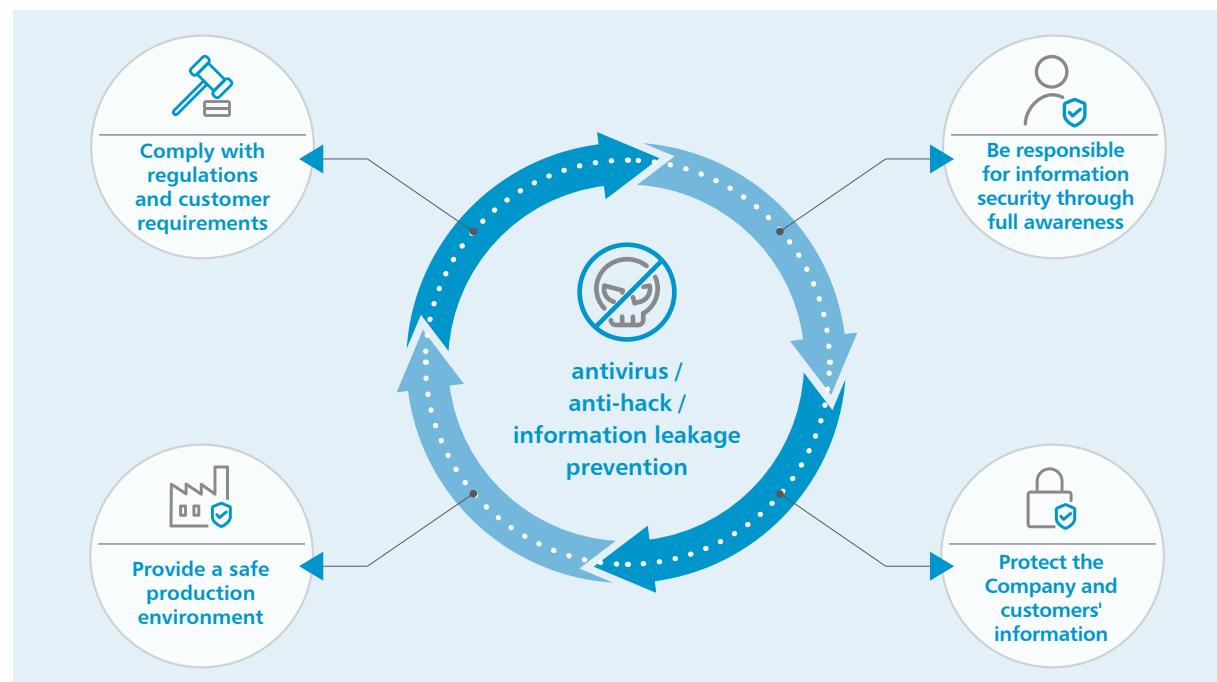
To reach a consensus that information security is everyone's responsibility through full awareness

Principle 3

To protect information confidentiality, integrity, and availability for the Company and customers

Principle 4

To provide a safe production environment to ensure sustainable operation of the Company's business

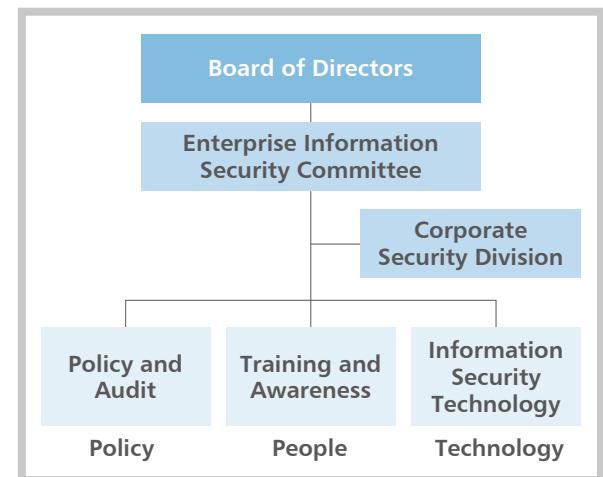


Information Security Committee Organization

The Enterprise Information Security Committee (EISC), established in 2003, is chaired by the Company's president, and the vice president of the Digital Function serves as the supervisor/Chief Information Security Officer (CISO), who is responsible for establishing and maintaining the information security strategy and processes that protect information assets. All division directors (including legal, human resources, research and development, engineering, and manufacturing) are members of the committee. In addition, the Corporate Security Division was formed to be responsible for information security, physical security planning, and related audit matters, and to lead EISC affairs.

EISC is responsible for information security management system planning, establishing and maintaining, information security policy formulation and implementation, risk management and compliance verification. The adequacy and effectiveness of the information security management system is reviewed in bi-annual meetings, during which the analysis results for information security risks and the corresponding protective measures are assessed.

The EISC reports on the effectiveness of the Company's information security strategy to the board of directors annually. Independent Board Director Jyuo-Min Shyu, who has a background in information security, oversees the information security and cybersecurity strategy, and reviews the strategy regularly. For more on the background of Mr. Shyu, please refer to the UMC website



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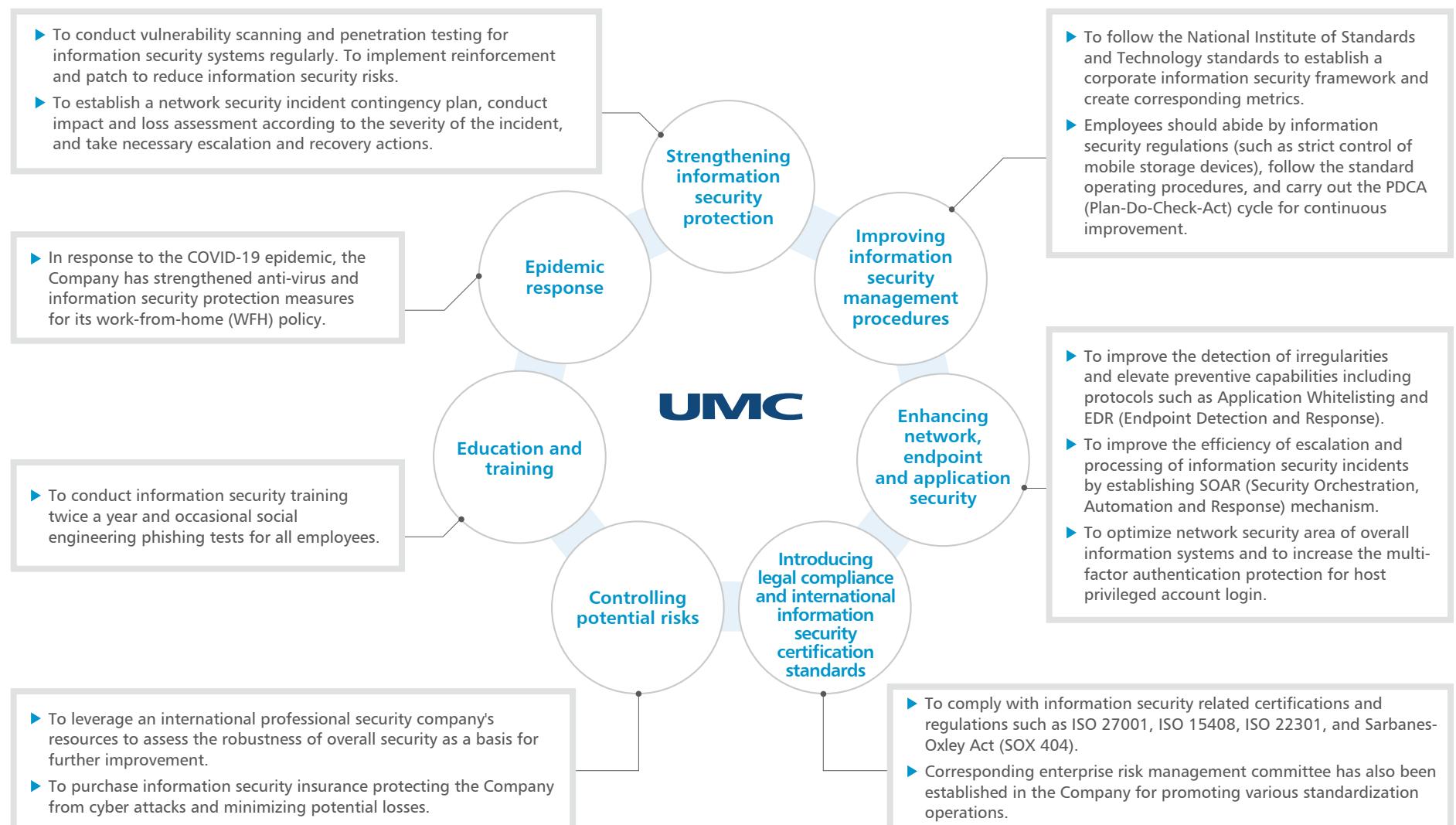
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Information Security Risk and Management Plan

According to the Global Risks Report 2022 issued by the World Economic Forum, cybersecurity failure is among the top risks for years. Insufficient defense against cyber attacks due to cybersecurity failures may not only expose the Company to the risks of data leakage and ransom threats, but may also interrupt the production system, causing serious operating losses and damaging the reputation of the Company. UMC has no major information security incidents in 2022.

Reducing the average incident handling time by **96%** through establishing SOAR (Security Orchestration, Automation and Response) mechanism to improve the efficiency of escalation and processing of information security incidents



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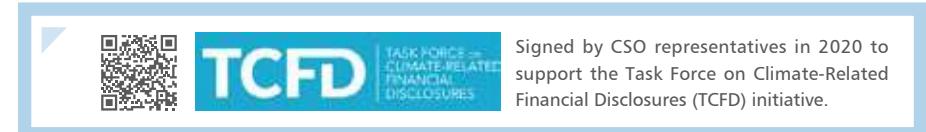
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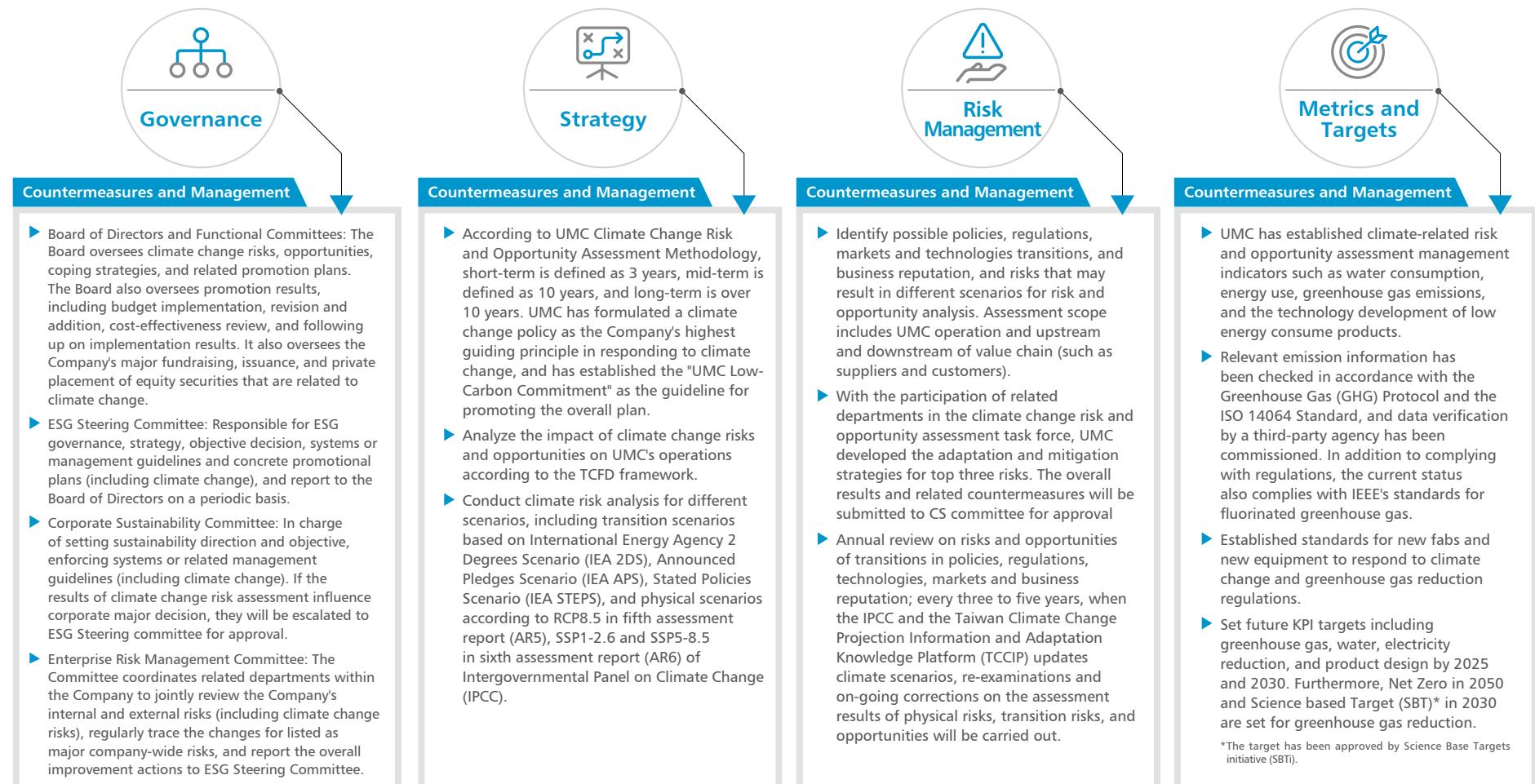
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1.2.5 Managing Climate Risks and Opportunities

Under the global climate change and low-carbon market transformation, UMC actively pays attention to the potential risks and opportunities of climate change. In order to promote the transparency of information disclosure on climate-related risks and opportunities, the Company independently develops an assessment tool by referring to the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations, ISO 14090:2019 Adaptation to Climate Change, and the UK Climate Impacts Programme (UKCIP), and through relevant responsible departments to conduct risk and opportunities analysis base on policies and regulations, market and technology changes, reputation and physical risks to develop adaptation and mitigation strategies. The scope of climate risks and opportunities identification includes the areas where UMC's production plants are located, including Taiwan, Singapore, China and Japan.



TCFD Disclosure Framework and UMC Management



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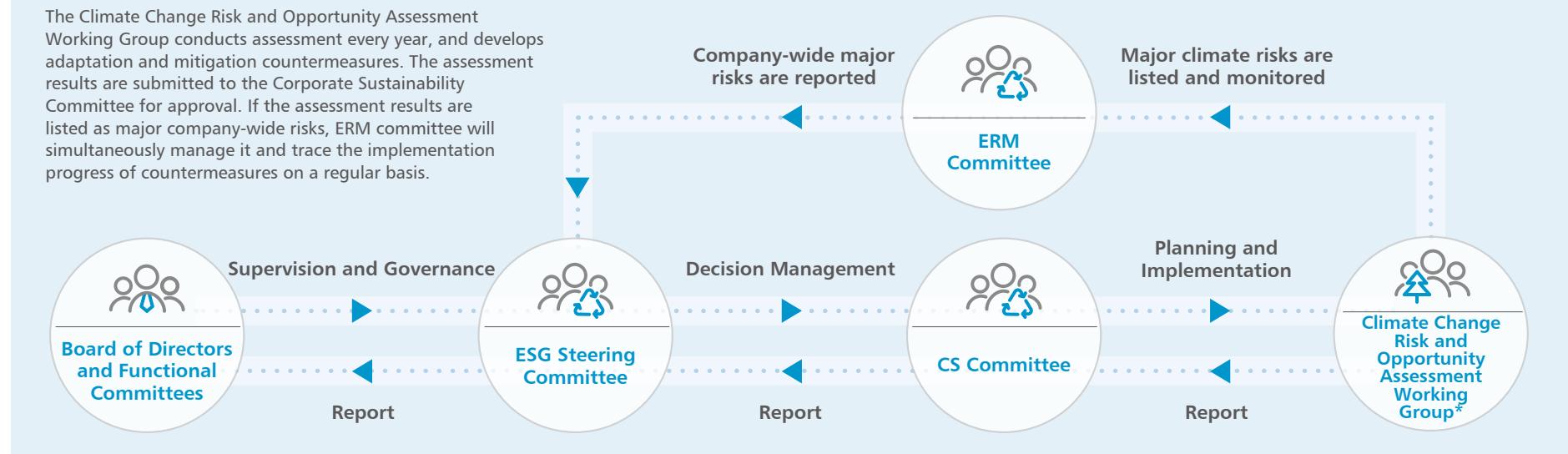
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Important Issues Related to Climate Risk and Opportunity Management in recent years

- 1** The Board of Directors approved the implementation of the capital budget to increase facilities for renewable energy, energy conservation, carbon reduction, and water conservation.
- 2** The Board of Directors approved modification of "UMC Sustainability Development Best Practice Principles" in 2022, including enhancing energy usage efficiency and management of scope 3 greenhouse gas emissions, etc.
- 3** The Board of Directors approved domestic unsecured corporate bond issuance, including green bonds with an amount of NT\$2.1 billion, which will fund the purchase of GHG abatement system, various pollution control equipment, renewable energy facilities, etc.
- 4** The Board of Directors approved the mechanism for linking employee remuneration to ESG KPI in 2021; 2021 indicators include KPIs related to climate change, and the KPIs were all attained in 2022 review.
- 5** Formulated a number of short-, mid- and long-term goals and action plans that addresses climate change. ESG steering committee review the achievement by quarterly, and the goals in 2022 were all attained.
- 6** In 2021, formally pledged to achieve net-zero emissions by 2050.
- 7** Gained admission into RE100, an international renewable energy initiative, and the Company set progressive goals to achieve 15% and 30% renewable energy in 2025 and 2030, and achieve 100% in 2050.
- 8** After reviewing the availability in renewable energy market in Feb. 2023, the Company proactively increases the goals to 25% and 50% in 2025 and 2030, respectively.
- 9** Participated in the Science-Based Targets initiative (SBTi) in 2021, and the Company was approved in 2022, which makes UMC as the 1st semiconductor wafer foundry passing SBTi in global.

Reporting Mechanism of Climate Change Risk and Opportunity Assessment Results

The Climate Change Risk and Opportunity Assessment Working Group conducts assessment every year, and develops adaptation and mitigation countermeasures. The assessment results are submitted to the Corporate Sustainability Committee for approval. If the assessment results are listed as major company-wide risks, ERM committee will simultaneously manage it and trace the implementation progress of countermeasures on a regular basis.



* Climate Change Risk and Opportunity Assessment Working Group members include: procurement, Material Planning & Warehouse Management, Finance, Marketing, Technology Development, Human Resource, Facility Operation, Group Risk Management & Environmental Safety and Health, etc.

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Climate Change Risk and Opportunity Assessment Procedure

5 Continuous monitoring

Reviewing the implementation results of risk mitigation and adaptation action through the TCFD assessment process regularly to meet management objectives.

1 Collection of climate scenario data

Collection and updating of weather simulation data of transition scenarios based on 2DS, APS, STEPS in IEA, and physical scenarios based on IPCC AR5, AR6, and local government down scale simulation report.

2 Development of UMC climate change risk assessment tool

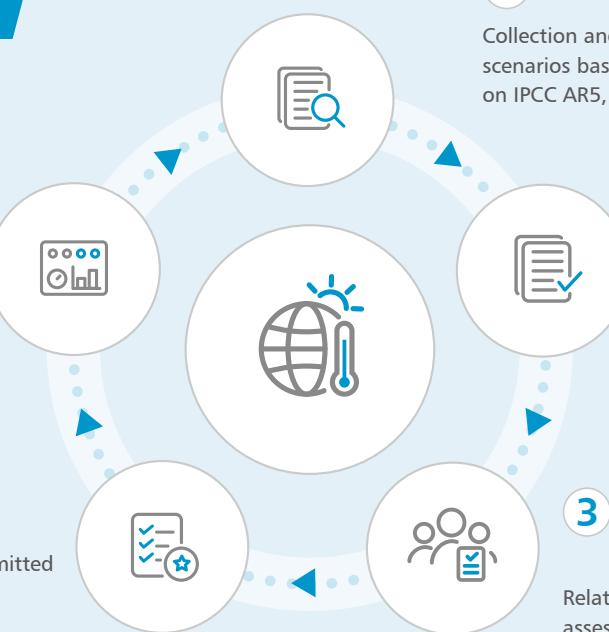
UMC developed the UMC Climate Change Risk Assessment methodology based on the ISO 14090 Adaptation to Climate Change, the assessment procedure in the UK Climate Impacts Programme (UKCIP), and Task Force on Climate-related Financial Disclosures (TCFD).

3 Climate change risk and opportunity assessment

Related departments are invited to participate in the assessment of climate change risks and opportunities. Countermeasures of adaptation and mitigation strategies are developed according to identified risks.

4 Assessment Review

The assessment results are submitted to CS Committee for approval.



2023 Climate Change Risk and Opportunity Matrix



Transition Risks

- ① Imposing of carbon fee/tax due to greenhouse gas emissions control
- ② Customers require low-carbon strategies to keep pace with trends
- ③ Impact on corporate reputation
- ④ Green energy policies lead to increased investment and operating costs
- ⑤ Uncertainty about infrastructure supply resilience
- ⑥ Water surcharges during drought season
- ⑦ R & D focus adjustment, towards low energy consumption and low carbon emissions products

Note: The words in red indicate the top three risks.

Physical Risks

- ⑧ Increasing in electricity consumption due to global warming
- ⑨ Severe typhoon/extreme rainfall increasing the frequency of work suspension and voltage drop
- ⑩ Extreme weather Increasing allocation cost from supply chain
- ⑪ Drought getting worse leads to production impact

Opportunities

- ⑫ Increased market demand for environmentally friendly products
- ⑬ Carbon trading and carbon offset projects opportunities
- ⑭ Strengthening hardware protection to improve climate resilience
- ⑮ Enhance the energy efficiency of facilities

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Top 3 Climate Risks and Response Actions:

Risk Type	Category	Risk	Risk Description	Region	UMC's Response
Transition	Policy and Regulation	Imposing of carbon fee/tax due to greenhouse gas emissions control	▶ Impose carbon tax/fee and rate increase leads to increase in operation cost	▶ Taiwan, Singapore, China, and Japan	▶ Promote GHG reduction plans, such as F-GHGs reduction and energy saving plan ▶ Participate in government plans for voluntary GHG reduction ▶ Apply for carbon offset projects for carbon credits ▶ Build UMC's own solar power generation facilities ▶ Purchase green energy/ green energy certificates ▶ Evaluate to introduce carbon negative technology and promote net zero ▶ Participate in carbon trade market and purchase carbon credits
		Green energy policies lead to increased investment and operating costs	▶ Regulations require expanded installation of renewable energy in Taiwan, or monetary substitution payment ▶ Electricity price rising	▶ Taiwan ▶ Taiwan, Singapore	▶ Promote energy saving programs ▶ Expand the Company's own renewable energy installations and energy storage facilities ▶ Purchase renewable energy certificates
Physical	Acute	Extreme weather Increasing allocation cost from supply chain	▶ Extreme weather affects transportation and increases the cost of raw material allocation and scheduling fee.	▶ Taiwan, Singapore, China, and Japan	▶ Establish risk detection mechanism, and prevent in advance and manage afterwards. ▶ Predominate production areas of suppliers and major transportation location ▶ Manage production information from suppliers to stay on top of supply and demand information in advance ▶ Conduct supplier risk assessment to avoid or reduce placing order in high-risk production areas ▶ Establish multiple transport routes and avoid risky routes ▶ Establish a second supplier to provide additional backup energy ▶ Increase the storage capacity of local manufacturers and internal storage capacity

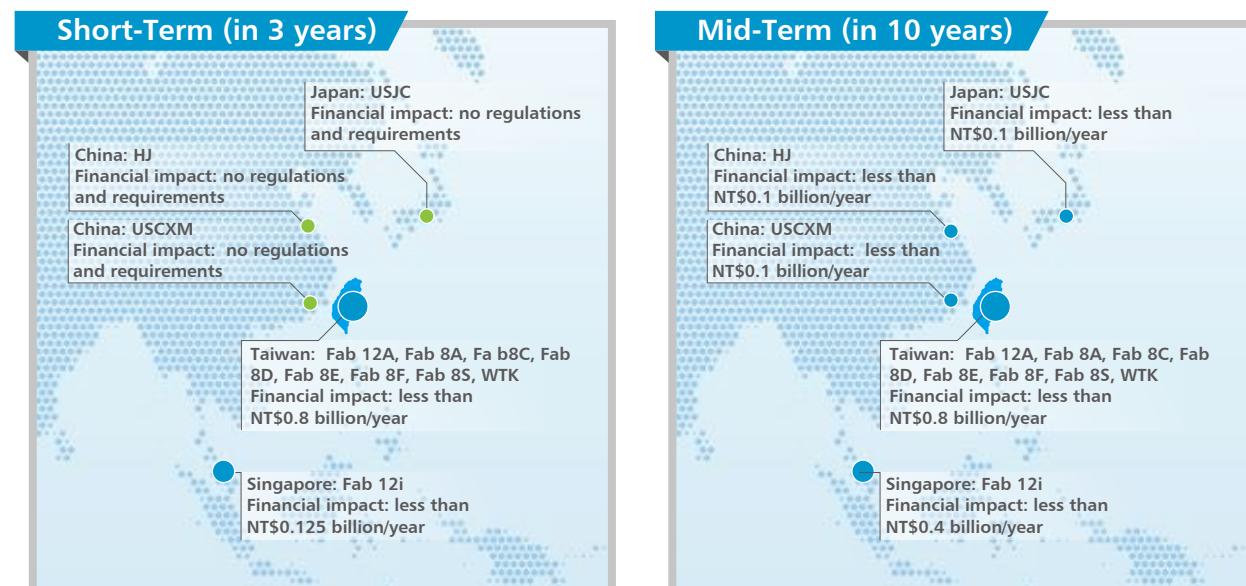
* For comprehensive risk and opportunity identification results and responses, please refer to CH1.2. Climate Risk and Opportunity Identification in 2022 Climate Action Report.

Except for climate change risk identification, regional financial analysis was also conducted, take the risk of "Imposing of carbon fee/tax due to greenhouse gas emission control" for example as below:

Imposing of carbon fee/tax due to greenhouse gas emission control:

- ▶ Singapore increases carbon fee rate, assuming the rate is increased from SGD 5/tonne to SGD 80/tonne
- ▶ Taiwan imposes carbon fee, assuming a rate of NT\$300/tonne
- ▶ Japan and China impose carbon fee, assuming a rate of NT\$300/tonne after mid-term, while there's no regulations and requirements in short-term.

Low Risk ● ≤ 0.1 billion ● ≤ 0.4 billion ● ≤ 0.8 billion



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1.3 Building Sustainable Supply Chain

1.3.1 Localization of Supply Chain and Procurement

1.3.2 Supply Chain Management

Material Topic: Procurement and Supplier Management

Related Policy: UMC's Supplier Code of Conduct



In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ▶ Building sustainable supply chain	Negative ▶ Insufficient supplier management
Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Promote "Low-Carbon Supply Chain" Project, inventorying greenhouse gas emissions of suppliers and strengthening supply chain resilience. ▶ Conduct third-party risk assessment to lower potential risks of supply chain. ▶ Formulate a "Code of Conduct" for suppliers to comply in accordance with the requirements of the Responsible Business Alliance (RBA). 	<ul style="list-style-type: none"> ▶ Hold annual sessions with suppliers to share sustainability-related information. ▶ Conduct supply chain ESG projects and communicate with suppliers. ▶ Introduce Sustainability Suppliers Assessment. ▶ Conduct a third-party verification for on-site audit. ▶ Report the progress of performance by the "Responsible Supply Chain team" to the Corporate Sustainability Committee for review quarterly. ▶ Due diligence on conflict minerals through questionnaires and on-site audits every year.

Key Performance Indexes

Sustainability Strategy and Blueprint	Achievements in 2022
Carbon Supply Chain" Project - 5% of carbon emissions reduction by suppliers with high power consumption ^{Note 2} ▶ ★ Achieved / Average 8.6% of carbon emissions reduction by participating suppliers.	30% of Tier 2 significant suppliers complied with the "Employment Ethics Terms and Conditions Agreement" ▶ ★ Achieved / 44% in total

Supplier Management

100% completion rate of ESG & RBA self-assessment questionnaire and on-site audit for Tier 1 suppliers ▶ ★ Achieved	100% of new suppliers complied with UMC's Supplier Code of Conduct. ▶ ★ Achieved	100% completion rate among Tier 1 suppliers for the audit conducted every three years. ▶ ★ Achieved
100% of products passing third-party mineral source verification, and 100% of conflict-mineral suppliers passing third-party independent audits, to maintain conflict-free mineral sourcing in the supply chain. ▶ ★ Achieved		

Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)
"Low Carbon Supply Chain" Project - Percentage of carbon emissions reduction by suppliers with high power consumption ^{Note 2} .	6%	10%	20%
Percentage of Tier 2 key suppliers who have complied the "Employment Ethics Terms and Conditions Agreement." ^{Note 3}	45%	80%	80%

Note: 1. The scope covers UMC.

2. Suppliers with high power consumption participating in the project need to meet the following criteria: (1) Has issued a greenhouse gas inventory report; (2) Is a TWSE/TPEx-listed company; (3) Has a production plant in Taiwan.

3. Request significant Tier 1 suppliers to sign the "Employment Ethics Terms and Conditions Agreement" With their significant suppliers (UMC's Tier 2 suppliers).

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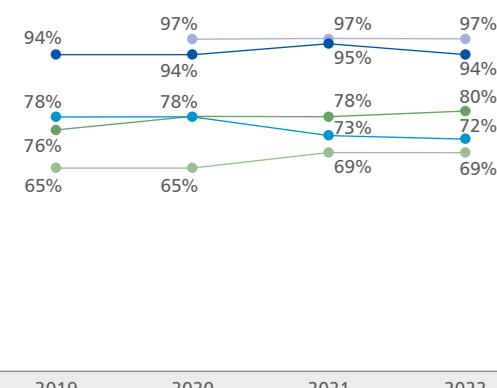
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1.3.1 Localization of Supply Chain and Procurement

In 2022, UMC, including subsidiaries HJ, USCXM, and USJC cooperated with more than 4,000 suppliers worldwide. Procurement localization became a key guideline adopted by UMC when looking for potential partners and suppliers. In addition to enhancing close partnerships with local suppliers, UMC expects suppliers to provide services and products with higher efficiency, shorter delivery time, and lower carbon footprint of raw material required in production. In doing so, UMC also indirectly provides job opportunities and promotes socio-economic development. In 2022, 94% of UMC Taiwan sites' suppliers were local suppliers, accounting for 82% of the total procurement amount.

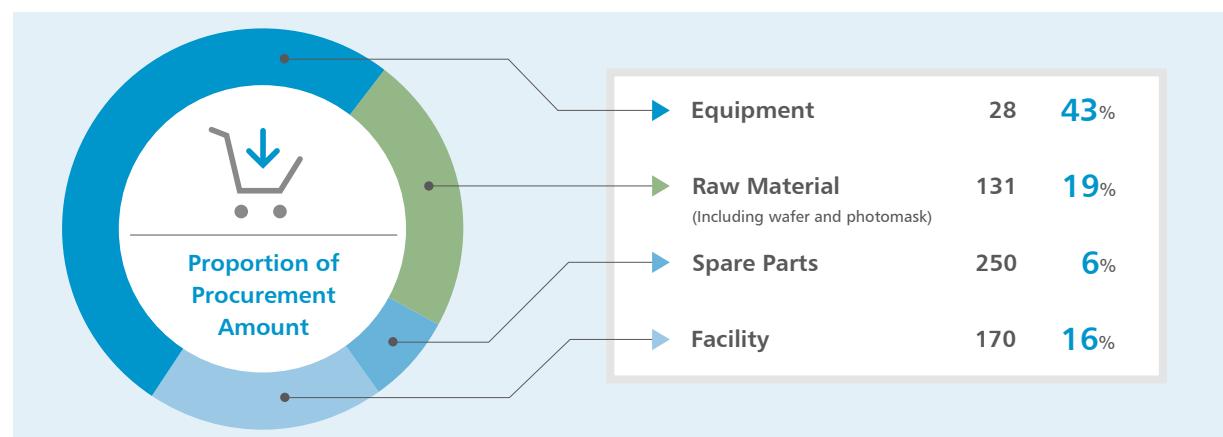
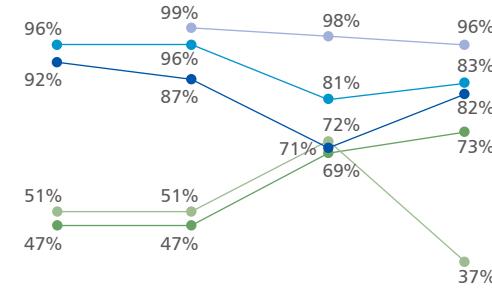
Percentage of Domestic Suppliers

● UMC Taiwan ● UMC Singapore
 ● HJ (Suzhou) ● USCXM (Xiamen) ● USJC



Percentage of Domestic Procurement Amount

● UMC Taiwan ● UMC Singapore
 ● HJ (Suzhou) ● USCXM (Xiamen) ● USJC

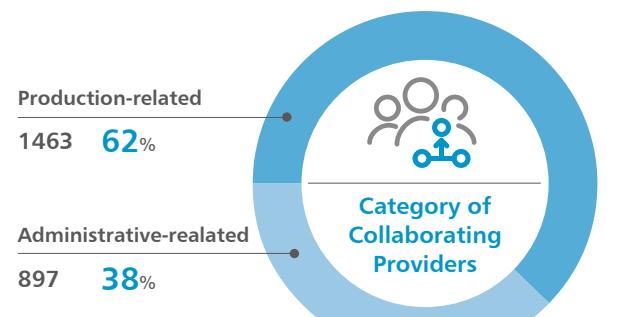


Collaborating Providers

Due to the nature of our industry, and in response to operating plan requirements and to maintain the Company's normal operations, UMC requires a lot of labor. Such labor demands come in two major categories: Production-related and administrative-related, totaling 2,360 people. UMC Group, including our Singapore branch and other subsidiaries, tend to engage third-party providers from nearby regions. This creates long-term, large-scale employment opportunities for nearby regions, while simultaneously building a responsible supply chain.

Collaborating providers engaged in UMC fabs have all passed the Supplier Sustainability Assessment, and met the regulatory requirements stipulated in local laws/regulations and UMC's Supplier Code of Conduct. UMC also conducts sustainability assessments for collaborating providers every year, and grades the providers in accordance with assessment results. Those failing to meet required standards for two consecutive years will, in accordance with the Company's regulations, be subject to lower procurement/sourcing or termination of collaboration.

The 2022 on-site audit results indicated that all suppliers were in human rights compliance with national laws and regulations, as well as the human rights norms required by the Responsible Business Alliance (the RBA). No suppliers had use of child labor, forced labor, or any violations of regulations regarding working conditions.



Note: The production-related category includes collaborating providers in equipment maintenance, service, etc. in production and technical departments; the administrative-related category includes collaborating providers in non-production departments' administrative operations, such as cleaning, staff canteen, security duties, etc.

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e-Supply Chain Management

Implementation Target	Purpose	e-Practice in 2022
 Implementing a Sustainable Supply Chain	Help suppliers improve economic, social and environmental performance; support suppliers in developing sustainable operations.	<ul style="list-style-type: none"> ▶ Supply Chain Online Survey System: Surveys carried out during 2022 included: RBA Questionnaire, CSR Issues Survey, DJSI Questionnaire, GHG Reduction Planning Survey
 Supplier Risk Assessment Mechanism	Implement supply chain risk management; monitor the Business Continuity Plan (BCP)	<ul style="list-style-type: none"> ▶ Raw Material Information Survey System: Mapping/positioning of 1,879 important raw material production plants was completed ▶ Supply Chain Risk Management Platform: In 2022, 7 major events (pandemic, earthquakes, travel advisories, and typhoons) triggered the management system. 100% of suppliers reported on their affected status
 Conflict Metal Management	Establish a mechanism for UMC and subsidiaries to conduct surveys with suppliers	<ul style="list-style-type: none"> ▶ Conflict Metal Management System: Systematic certification for applicable gold, tin, tantalum, tungsten, and cobalt mine sites
 Paperless operations	Carry out energy saving and carbon reduction measures to support environmental protection initiatives	<ul style="list-style-type: none"> ▶ e-Orders: Achievement rate for e-order promotion reached 90% ▶ e-Invoices: Achievement rate in 2022 reached 89.7%; it is expected to reach the goal of 100% by 2023 ▶ Online statement checks: 100% of consignment account statement checks and outsourced test statement checks have been carried out online
 Contractor Environmental Safety Management	Online registration for contractors' regulated work safety related certification and educational training	<ul style="list-style-type: none"> ▶ Contractors' factory-entry applications: 100% ICP checked ▶ Contractors' educational training applications: 100% online applications ▶ Materials Safety Data Sheet applications: 100% online applications.

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1.3.2 Supply Chain Management

Supplier Management Policy

1. Drive suppliers to improve economic, social and environmental performance.
2. Continue to guide suppliers to achieve diversified and localized supply capabilities.
3. Promote suppliers' moving from energy savings and carbon reduction toward the circular economy.

Integrate UMC group resources to achieve the most competitive supply chain value through strategic cooperation.

Improve cost leadership

Establish sustainable supply chain capabilities

Commit to green procurement

Focus on environmental issues

No compromise on conflict minerals

Implement sustainable risk management

Strengthen recycling of waste resources and strive to reduce the impact of environmental pollution.

Proactively implement green procurement while pursuing economic benefits.

Ensure that products and supply chain are free from conflict mineral.

Focus on suppliers' energy resource use and water resources management to respond to the impact of extreme climate change on the supply chain.

Please visit UMC website to review our commitment to suppliers



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Supplier Sustainability Management Capability Evaluation

UMC's supplier management approach is based on its policy of "treating suppliers as partners and guiding suppliers for long-term collaboration". The Company strives to establish a sustainable supply chain management system through (1) new supplier sustainability assessments as well as (2) the four major sustainability assessment guidelines to manage and support the existing suppliers.

(1) New Suppliers Sustainability Assessment



- ▶ Suppliers with estimated transaction amount greater than NT\$1 million

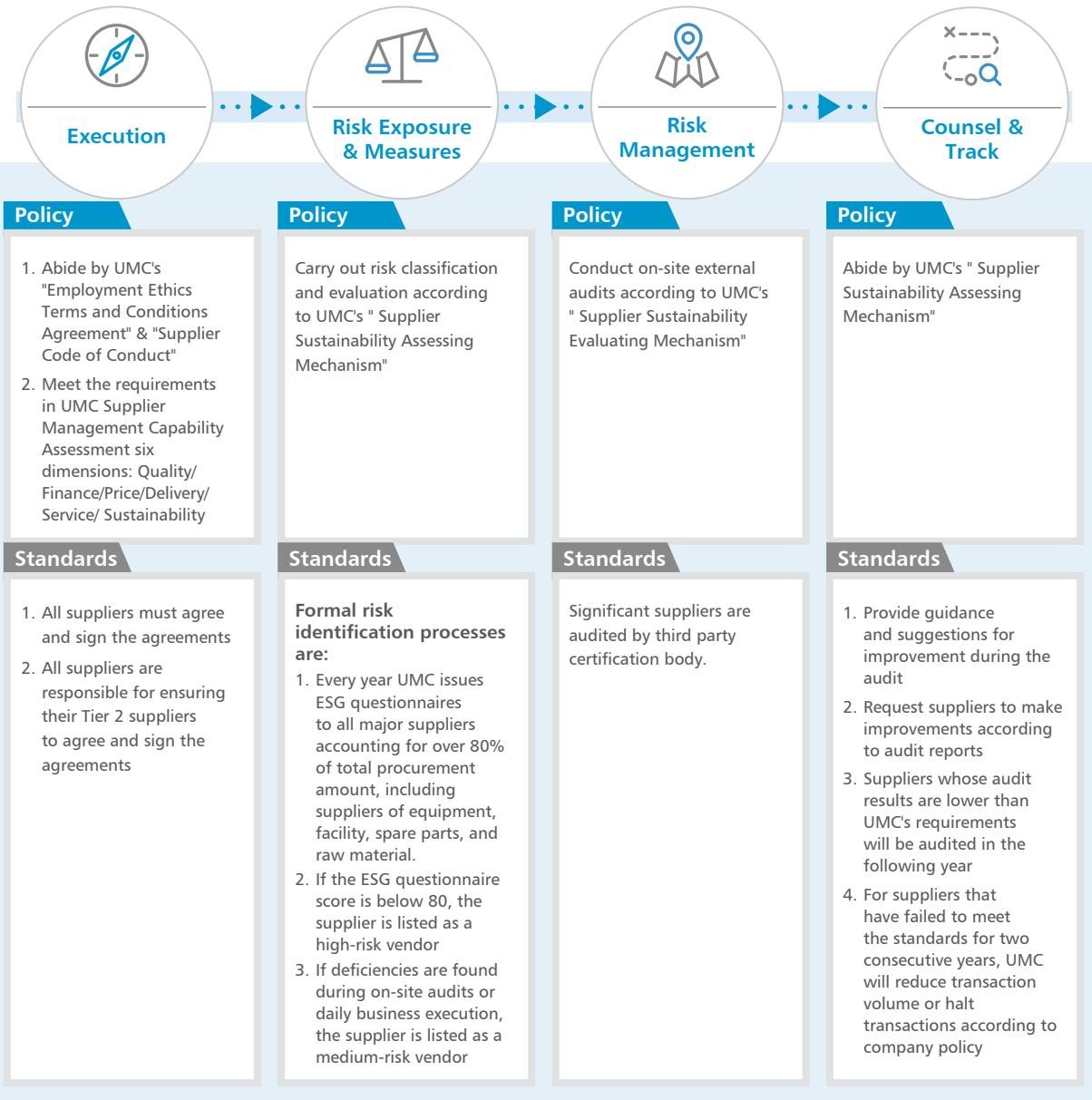


- ▶ Send sustainability assessment questionnaires through the Global Vendor Data System



- ▶ To become a supplier of UMC, vendors must meet the questionnaire score requirement, as well as sign the Supplier Code of Conduct and Code of Ethics

(2) Four Guidelines of Sustainability Suppliers Assessment



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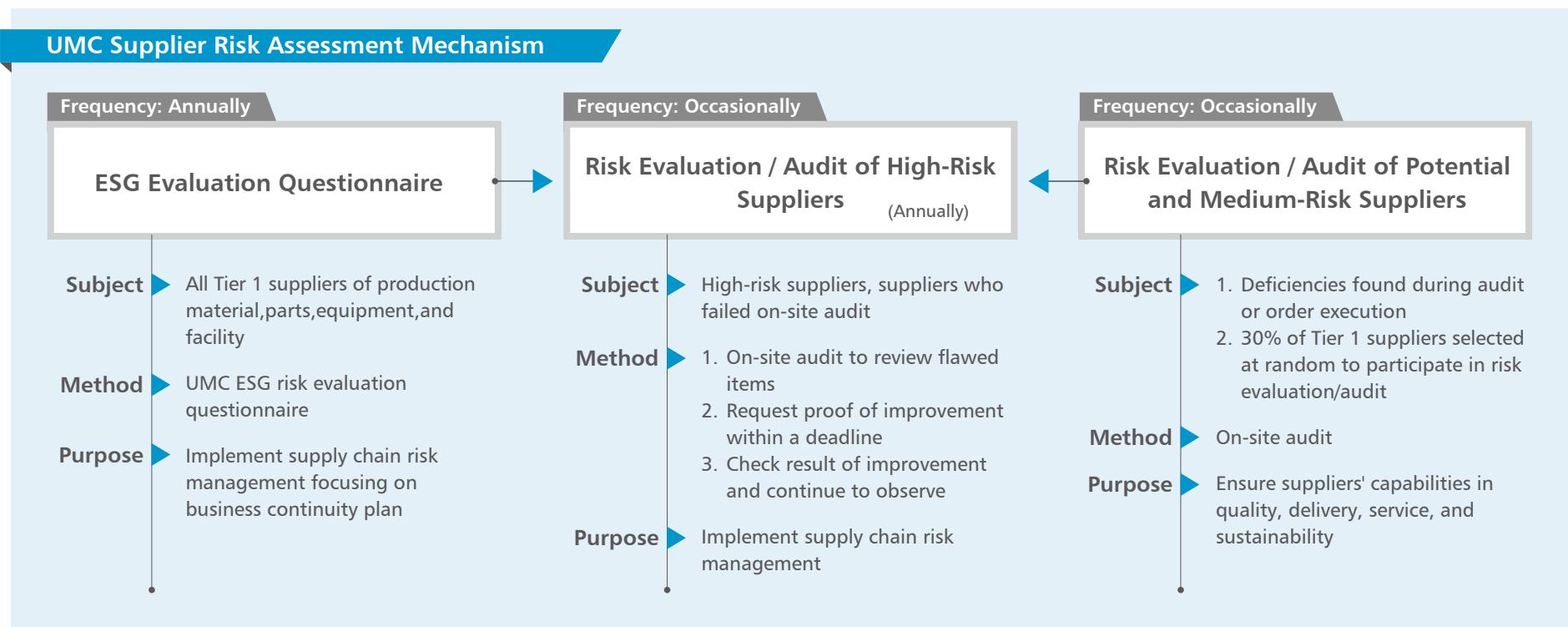
(3) Supplier Evaluation - New Suppliers Selection Criteria

UMC formulated its Supplier Code of Conduct based on the Responsible Business Alliance (RBA)'s Code of Conduct. Both existing and new suppliers are required to sign this code in order to become a supplier of UMC. In addition, subsequent risk assessments and onsite audits are conducted on a regular basis to facilitate continuous improvement. Through this Code of Conduct, UMC is also encouraging Tier 1 partners to urge their suppliers to adopt the same code and practice. In the meantime, the Dow Jones Sustainability Indices (DJSI) Evaluation Status, Business Code of Ethics for UMC's Suppliers/Employees, and Supplier Code of Conduct Compliance have also been incorporated into UMC's assessment and evaluation of new and existing suppliers.

(4) Supplier Evaluation- Supplier Risk Management Evaluation

The management of suppliers' sustainability practices is important to UMC. To manage the environmental, social and corporate governance requirements of suppliers, the Company established the "Supply Chain Management Committee" and formulated the "Supplier Evaluation Mechanism" (or the Dow Jones Sustainability Index Selection Mechanism) to regularly manage, evaluate, coach, and track the efforts that key vendors are making towards sustainability.

Through the Supplier Evaluation Mechanism and the introduction of third-party audits, UMC can keep track of compliance with its Supplier Code of Conduct. In light of the global semiconductor industry's growth, UMC has set supply chain management as a major sustainable development objective. In addition to our commitment to improving supply chain management performance, the Company also promotes implementation of continuous improvement. In accordance with the Supplier Code of Conduct, UMC requires suppliers to improve performance in five areas: Labor rights and ethics, environment and climate change, occupational safety and health, supplier management, business continuity planning and information security control. A number of action plans based on requirements for these five areas are under development, with the aim of building a sustainable supply chain



Note: Tier 1 suppliers are those who directly or indirectly relate to production. Suppliers can be divided by functionality into raw materials, equipment, facility service, and spare parts. Tier 1 suppliers are also classified by importance such as procurement volume, critical material, and critical/non-substitutable suppliers. In 2022, 579 suppliers met the criteria.

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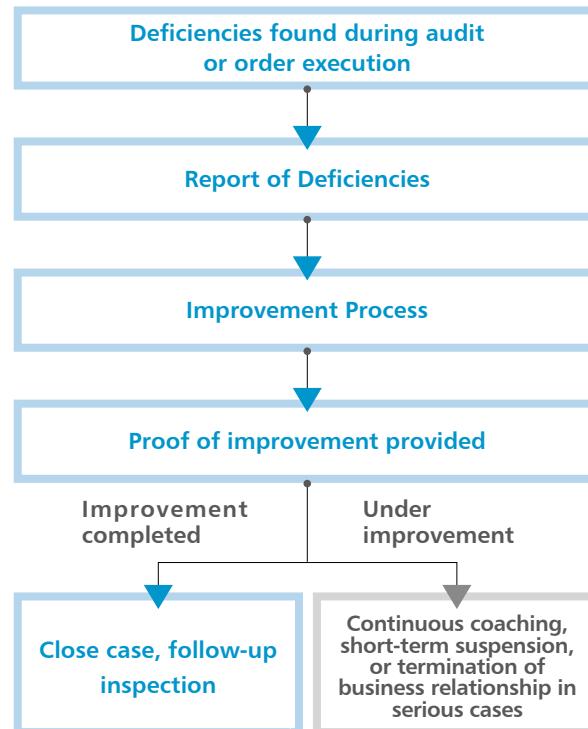
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(5) Supplier Sustainability Evaluation - On-Site Audit/Improvement Guidance and Follow-Up

UMC has a mechanism in place to monitor suppliers' sustainability progress and identify areas that need improvement. For suppliers who are not in compliance with UMC's Supplier Code of Conduct or who were found to have deficiencies during order execution, on-site audits will be conducted followed by guidance to help suppliers meet the required standards. If improvements are not made, UMC may continue to provide guidance or consider temporary suspension or termination of business relationship with the supplier. Suppliers that are still unable to make improvements within two years, according to Suppliers Failure Improvement Management mechanism, the Company will reduce procurement amount, suspend purchase orders, or cancel the vendor's status as a qualified supplier.

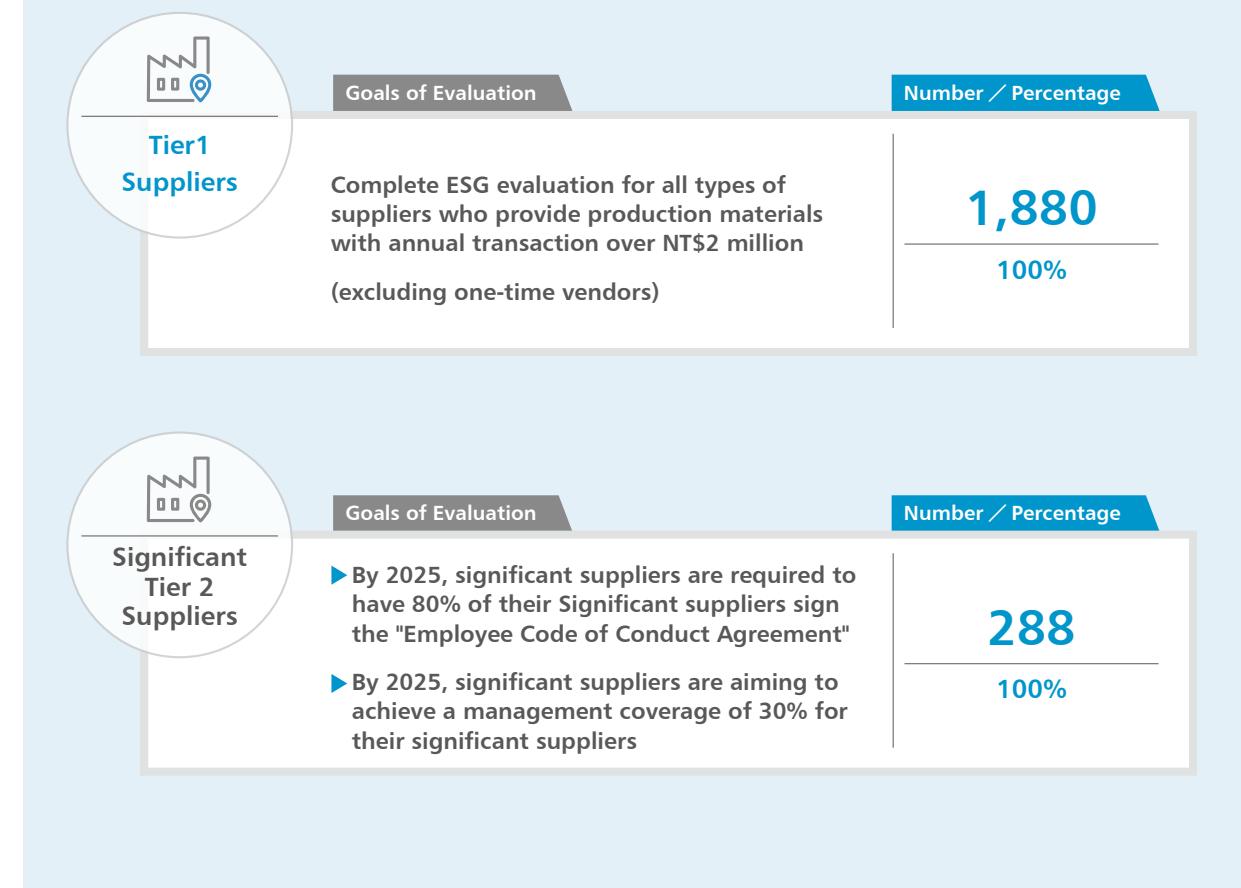
Process of Suppliers Failure Improvement Management



(6) Evaluation Result

In 2022, UMC conducted a survey of all Taiwan-area suppliers that support the supply of materials for UMC's production, excluding suppliers engaged in only a single transaction. The survey covered significant suppliers for raw materials, equipment/machines, facilities, parts/components, etc. There were 579 Tier 1 suppliers included in the UMC Sustainability Assessment Questionnaire; of these, 191 suppliers were further inspected through onsite audits. 18 of the audited suppliers were identified as high-risk, 15 suppliers carried potential environmental risks, and 15 suppliers carried potential social risks. After further assessment, no major environmental or social risks were identified. However, the 18 suppliers will be key subjects for observation in the next year. Other suppliers identified as low-risk were required to meet UMC's improvement requirements within three months of the audits, to enhance ESG performance.

Number of Suppliers Evaluated in the Past 3 Years



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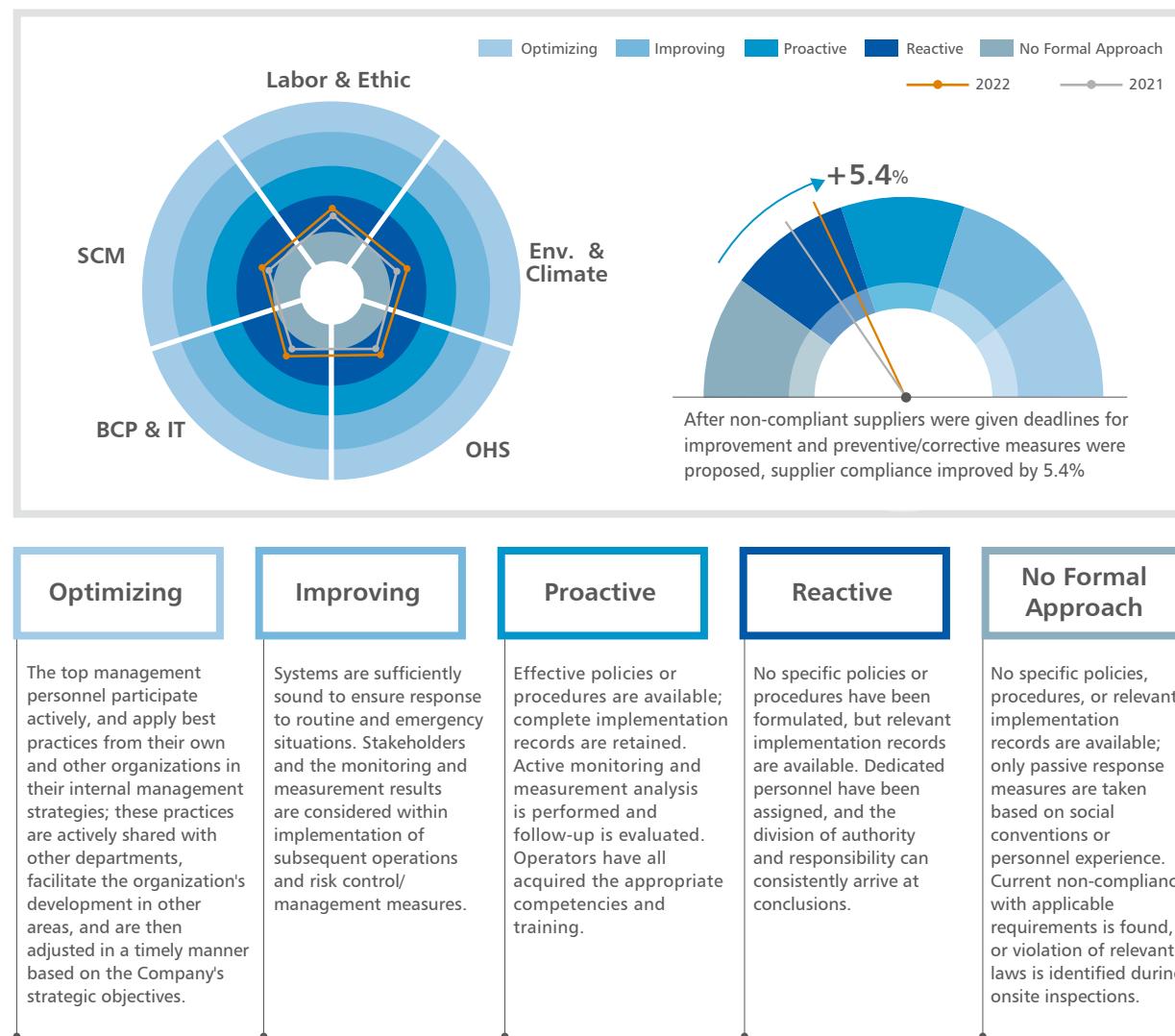
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Through the 2022 sustainability assessment mechanism and by introduction of third-party certification organization audits, the degree of supply chain compliance with the UMC Supplier Code of Conduct can be summarized. In view of the continual growth in the global semiconductor industry, UMC regards supply chain management as an important sustainability goal. UMC is committed to improving supply chain management performance and promoting continuous improvement, and requires suppliers to follow the UMC Supplier Code of Conduct to improve performance in five areas: Labor rights and ethics, the environment and climate change, occupational safety and health, supplier management, business continuity planning and information security control. Based on the requirements in these five areas, UMC is continuously implementing multiple action plans hoping to work hand in hand with suppliers to drive the gears of the sustainable supply chain.



Establishing Sustainable Supply Chain

In 2022, UMC further enhanced its supply chain management, implementing sustainability initiatives and strengthening the guidance for local suppliers to establish sustainable supply chain capability. UMC continued to guide suppliers in establishing diversified and localized capabilities. To enhance the awareness of procurement personnel on sustainability initiatives and sustainable supply chain management, UMC held a number of educational training courses in 2022 to accelerate the development of sustainable supply chain management.

Project ▶ Sustainable supply chain sharing session

Strategy

Hold sharing sessions with the theme of "Sustainability & Co-prosperity" to promote the concept of sustainable development to suppliers

Activity

- ▶ Promote UMC's human-oriented sustainable conduct and co-prosperity in society
- ▶ Continue to require ESG alignment in supply chain
- ▶ Continue promoting supply chain's response to RBA requirements
- ▶ Continue promoting supply chain's response to risk management requirements
- ▶ Experience sharing on new challenges to sustainable supply chain

Result

- ▶ In 2022, USJC held a sustainability sharing session to promote UMC's sustainability policy to suppliers in China



2022 USJC sustainability sharing session

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Building Green Supply Chain and Promoting Circular Economy

UMC believes that green supply chain is a critical part of the implementation of the corporate sustainability blueprint. As an industry leader, the Company actively promotes and urges suppliers to participate in the circular economy.

Circular Economy Projects

Project ▶ Precious material waste recycling

Purpose

Sell scraps and waste material to decrease waste and promote effective reuse of resources

Action

Evaluate waste contractors with legal licenses, and sell waste material in bulk through systematic control and recycling management in fabs

Outcome

- ▶ Annual sales revenue of NT\$100 million since 2013
- ▶ In 2022, revenue from the project reached a new high of NT\$151 million due to rising wafer unit price and strong Taiwan dollar appreciation
- ▶ It is estimated that, by 2025, the cumulative sales will exceed NT\$500 million

Project ▶ Reclaimed wafer reuse

Purpose

The more that UMC uses and recycles reclaimed wafers, the less UMC spends on dummy wafer purchases

Action

Authorize suppliers to process reclaimed wafers to ensure that dummy wafers are in the best condition and ready to be reused in fabs

Outcome

- ▶ In 2022, 56% of dummy wafers used were reclaimed wafers

Environmental Protection Projects

Project ▶ UMC 2030 low-carbon supply chain

Purpose

In order to achieve the goal of net zero emissions by 2050, in order to build up a low-carbon sustainable supply chain, and in response to the RE100 international renewable energy initiative, the goal has been set as "20% carbon reduction and 20% renewable energy adoption by 2030"

Action

Conduct carbon emission surveys for intensive carbon emission suppliers; conduct greenhouse gas inventories via certified third-party organizations. Also required all key suppliers to implement carbon reduction plans.

Outcome

- ▶ In 2022, the carbon emissions of suppliers with high carbon emissions will be reduced by 8.6%

Project ▶ Green procurement

Purpose

UMC views the development of green products as its responsibility and promotes green procurement starting from upstream manufacturing to conserve resources and protect the environment

Action

Green procurement indicators:

- ▶ Domestic: Category no. 1 to no. 3 green-labeled products, including Energy Label, Water Label, Green Building Material, Carbon Footprint Label, Carbon Label
- ▶ Overseas: green-labeled products originated from countries that have agreements with Taiwan, Energy Star, FSC, PEFC

Outcome

- ▶ An accumulated amount targeting NT\$130 million in 2022
- ▶ Green procurement amount in 2022 reached NT\$144 million
- ▶ Received the 2022 Green Procurement Award from the Environmental Protection Administration, Executive Yuan
- ▶ Received the 2022 Green Procurement Award from the Hsinchu City government
- ▶ Recognized by Tainan City government as an Excellent Green Procurement Enterprise in 2022



UMC drives low-carbon supply chain with GHG inventory initiative

Social Impact Projects

Project ▶ Tier 2 significant supplier management

Purpose

To ensure that UMC's suppliers are diligent about their supply chain management, and are taking actions to manage their suppliers and ensure their suppliers are abiding by the Company's ethics agreement

Activity

Announced on e-Procurement platform (platform for suppliers):

- ▶ significant non Tier 1 suppliers (UMC's Tier 2 suppliers) are required to sign the Supplier Code of Conduct and to be subject to supply chain management
- ▶ Implement supply chain management measures such as assessment and on-site inspections for key suppliers

Outcome

- By 2025:
 - ▶ 80% of significant non Tier 1 suppliers (UMC's Tier 2 suppliers) are required to sign the Supplier Code of Conduct
 - ▶ 44% of significant non Tier 1 suppliers (UMC's Tier 2 supplier) are signed the Supplier Code of Conduct
 - ▶ 20% of significant non Tier 1 suppliers (UMC's Tier 2 supplier) are under supply chain management

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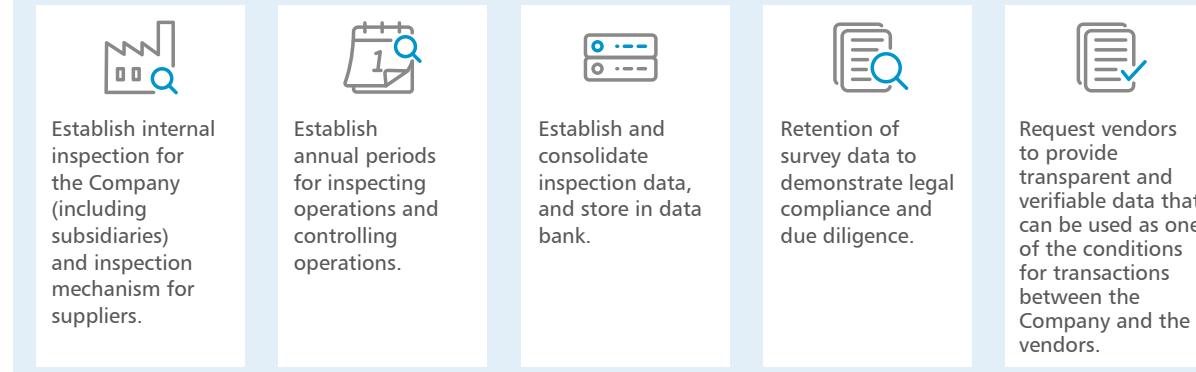
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Conflict Minerals Management

UMC Conflict Minerals Management Measures



Identification of Key Raw Materials

The Company completed its supply chain risk database and the management system of earthquake spare parts (quartz, fragile parts) for over 2,000 key raw materials supplied by approximately 100 vendors. In addition, 95% of UMC's 8-inch fabs and 99% of 12-inch fabs have completed earthquake spare parts preparation. 261 major suppliers of raw materials completed risk assessment surveys, all of which met UMC's requirements.

Minerals such as tantalum, tungsten, tin, gold (3T1G) and cobalt, that are essential in the manufacturing process of the electronics, are often regarded as conflict minerals. Despite their importance in the electronics industry, UMC strives to minimize the use of these aforementioned minerals in product manufacturing process, and has conducted conflict mineral due diligence in the supply chain to ensure that none of UMC's products use minerals from the conflict areas. In 2022, 100% of UMC's products did not use minerals from conflict areas and all products' materials are traceable.

Results of Recent Surveys

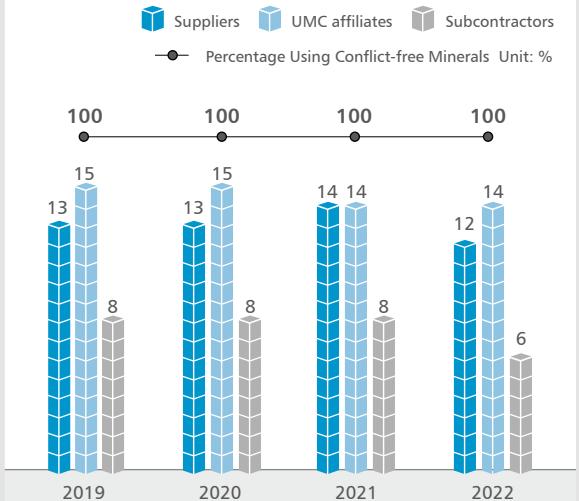
Since 2009, UMC has been conducting supply chain inspections, collaborating with all suppliers and obtaining conflict-free mineral supply guarantee from suppliers to ensure that products provided by the suppliers are not in violation of conflict minerals guidelines. Additionally, UMC actively participates in international initiatives and has joined the Responsible Minerals Initiative (RMI) of Responsible Business Alliance (RBA), to obtain information from suppliers that meet conflict mineral requirements through the Responsible Minerals Assurance Process (RMAP) as a basis for managing supply chain sources. UMC requires suppliers to respond the conflict mineral information based on the latest Conflict Minerals Reporting Template (CMRT) of the RBA and compares the information with RBA-approved and qualified smelters to ensure that conflict minerals from conflict-affected areas are not used. UMC also requires suppliers whose products contain tantalum, tin, gold, or tungsten to comply with the Responsible Minerals Policy for minerals sourcing, and to sign a Responsible Minerals Declaration.

In order to comply with the US Dodd-Frank Act and to implement corporate social responsibility, UMC Taiwan fabs attach "conflict-free mineral" labels on its product packaging to declare that its products are free of conflict minerals, effective from April 1, 2018. Other overseas sites (USCXM/HJ/Fab 12i in Singapore) will follow and announce at the appropriate time. UMC issued an official statement on the MyUMC website on March 1, 2018.

For more details, please visit

In 2022, UMC conducted the RMI Conflict Minerals Due Diligence Survey of suppliers whose products contain 3T1G, cobalt, or mica. There were 32 suppliers covered in this conflict minerals survey, including 12 suppliers, 6 outsourcers (suppliers providing packaging and testing services), and 14 UMC affiliates. The survey results showed that all were in compliance with UMC's conflict mineral management requirements. Four suppliers were randomly selected by a third-party certification agency for domestic onsite audits, and all of them had passed the third-party audits.

The Number of Suppliers Surveyed



Note: "Regulation-compliant minerals" means that smelters producing the 3T1G used in UMC's supply chain have been reviewed and certified in accordance with the Responsible Minerals Assurance Process (RMAP) standards.

To date, all suppliers have responded assurances of non-conflict minerals in all of their products. According to the finalized statutes and provisions in Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act enacted by the US Securities and Exchange Commission on August 22, 2012, Specialized Disclosure Reports must be completed every May.

For more details, please visit

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Innovative Products and Services

2.1 Innovation & Technology Development

2.2 Customer Satisfaction

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2. Innovative Products and Services

The customer-oriented UMC will continue to provide professional wafer solutions that meet market trends and customer needs. Also, constant refinement and introduction of innovative technologies will be undergone to strengthen UMC's core competencies. UMC's long-term operations rely mainly on its own and its customers' competitiveness, and UMC will be able to achieve sustainable impact with its products and services.

Important Stakeholders:
 Shareholders, Suppliers, Customers

SDGs :



Performance Highlights 2022



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2.1 Innovation & Technology Development

2.1.1 Robust Wafer Manufacturing Services 2.1.2 Key Technologies 2.1.3 Smart Manufacturing

Material Topic: Innovation Management and Intellectual Property Rights Protection

In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ▶ Technology and Product Innovation

Management Actions

- Follow annual corporate governance guidelines to initiate key technology R&D projects based on company-wide KPIs, and designate personnel with a rank of vice president or above to be in charge of the projects.
- Develop sustainable technology/product R&D plans, and designate a Sustainable Innovation Taskforce to review implementation performance.
- Set R&D schedule KPIs and progressive targets on a yearly basis, measure points every quarter, and regularly review R&D issues and solutions.
- Customer Engineering Division regularly compiles customers' feedback and discusses solutions to meet customers' needs in PLM (product line management) meetings.

Processes Used to Track the Effectiveness of Actions

- Hold regular PLM meetings to discuss market demand trends, thereby developing response strategies and fixing outdated deficiencies in a timely manner to adhere to the goals of product innovation.
- Hold project working group meetings on a weekly basis to examine problems identified during task implementation, thereby adjusting resource allocation and dealing with difficulties in a timely manner.
- Review the achievement status of the goals set in company-wide KPIs on a quarterly basis, the result of which shall be signed and approved by the responsible vice president and submitted to the President.

Negative ▶ Intellectual Property Infringement

Management Actions

- Oriентate intellectual property development direction toward mutual protection of patents and trade secrets, and promote the steady growth of the number of patents granted and the number of key trade secrets registered.
- In accordance with the annual corporate governance policy, Technology Development division and Intellectual Property division conduct patent map analysis and brainstorming meetings on issues related to important technology research and development projects, and identify opportunities for obtaining intellectual property rights and analyze possible infringement risks during this meeting.
- In the case of intellectual property disputes (including cases where customers seek assistance and intellectual property risk assessments for suppliers), a dedicated person will be responsible for planning, evaluating and responding, and regularly reporting the progress of high-risk cases to the top management on a weekly basis, so as to reduce the impact of intellectual property dispute cases.
- Improve employees' awareness of intellectual property protection, and regularly conduct intellectual property education and training courses on topics such as patents and trade secrets.

Processes Used to Track the Effectiveness of Actions

- Regularly follow up on a monthly basis to confirm the achievement status of intellectual property rights KPI in each divisions.
- Introduced "Taiwan Intellectual Property Management System (TIPS)" from 2021, and in response to certification requirements, carried out internal and external audits every year to confirm the implementation of various management measures and education and training courses.



Key Performance Indexes

Achievements in 2022

Revenue from sustainable products as 69% of total revenue ▶ Achieved Increased to **74.9%**

Cumulative number of energy-saving specialty process platforms developed ≥2 (base year 2020) ▶ Achieved **2** platforms developed

Total patents granted worldwide in 2022 > 250; cumulative total > 14,650 ▶ Achieved **348** granted patents, bringing cumulative total number of patents granted worldwide to **14,771**

Build "Key Trade Secret (KTS) System" ▶ Achieved Completed the establishment and promotion of the system

Obtain "Taiwan Intellectual Property Management System (TIPS)" AA-level patent and trade secret certification ▶ Achieved

Future Goals

Short-Term Goals (2023)

Mid-Term Goals (2025)

Long-Term Goals (2030)

Revenue from sustainable products as % of total revenue

≥77%

≥79%

≥81%

Cumulative number of energy-saving specialty process platforms developed(base year 2020)

≥3

≥5

≥10

Cumulative number of total patents granted worldwide

> **14,900**
> **250** (for the year)

>**15,400**

>**16,650**

Note: The scope covers UMC.

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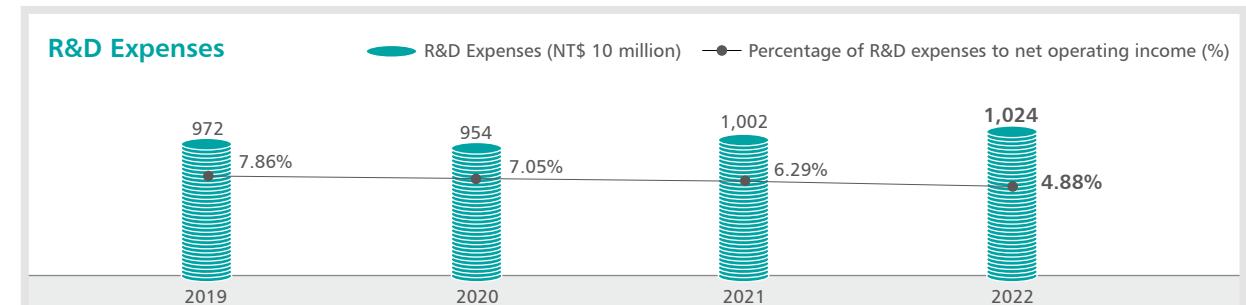
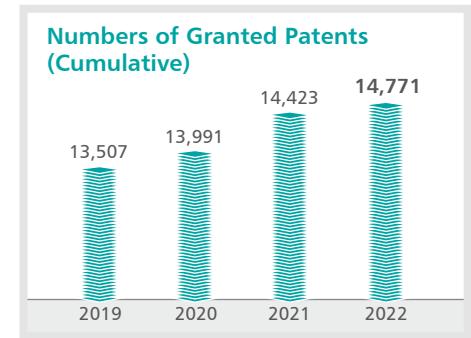
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Electronic end-products are evolving rapidly, as emerging technologies used in smart phones, wearables, virtual reality and augmented reality, autonomous driving, electric vehicles, artificial intelligence and deep learning, voice control, and Internet of Things are adopted and commercialized. The four types of traditional IC products include computers, communication devices, consumer devices, and automotive are becoming more multi-functional, capable of high-end processing, lightweight, energy saving, and greater connectivity, which is driving the future trends of chip design. Developments in artificial intelligence, deep learning, and voice control are also impacting the direction of the industry's development. Therefore, wafer foundries must develop technology processes and obtain silicon intellectual property as soon as possible to stay competitive and be able to meet the wide range of customer demands.



2.1.1 Robust Wafer Manufacturing Services

UMC continues to invest a large amount of R&D resources, with R&D expenses more than NT\$9.5 billion annually, and R&D expenses exceeding NT\$10.2 billion in 2022. With global wafer demand outstripping supply, UMC secured mutually beneficial agreements with a number of world-leading customers on a NT\$100 billion expansion at its 12-inch Fab 12A in the Southern Taiwan Science Park. Through the innovative win-win collaboration model, customers secure long-term chip supply at Fab 12A P6 by making a deposit at pre-determined pricing. For UMC, the expansion enables to the Company's goal of achieving long-term profitability and increasing market share. To expand its overseas footprint, UMC fully acquired Mie Fujitsu Semiconductor (MIFS) in 2019, and was renamed United Semiconductor Japan Co., Ltd. (USJC). The acquisition increased UMC's monthly production capacity by more than 30,000 12-inch wafers, expanded the Company's presence in the Japanese semiconductor market, and enhanced Taiwan's influence in the global semiconductor and foundry industry. Corresponding to China's vast IC market, UMC established its subsidiary United Semi in Xiamen China, as southern China's first 12-inch wafer fab, providing 22 to 90nm process technologies to meet the demand of IC design firms in China and near customers. UMC's investment policy is based on the principle of long-term strategic investment which means investments are in line with the Company's operations and development, and improves operational efficiency through expanding UMC's global presence and diversifying risks. It is worth mentioning that UMC and Micron have established a business partnership to jointly create business cooperation opportunities and secure future supply for Micron's automotive, mobile devices, and other products of key customers. UMC provides logic process capacity support for built-in control chips of Micron's memory modules, such as the registering clock driver (RCD) and the control IC of the NAND Flash modules.



Note: 1. R&D expenses are compiled in accordance with the International Financial Reporting Standards approved by the Financial Supervisory Commission, Executive Yuan.
2. The above information is for UMC the parent company only. For the consolidated information, please refer to page 186 of UMC's 2022 Annual Report.

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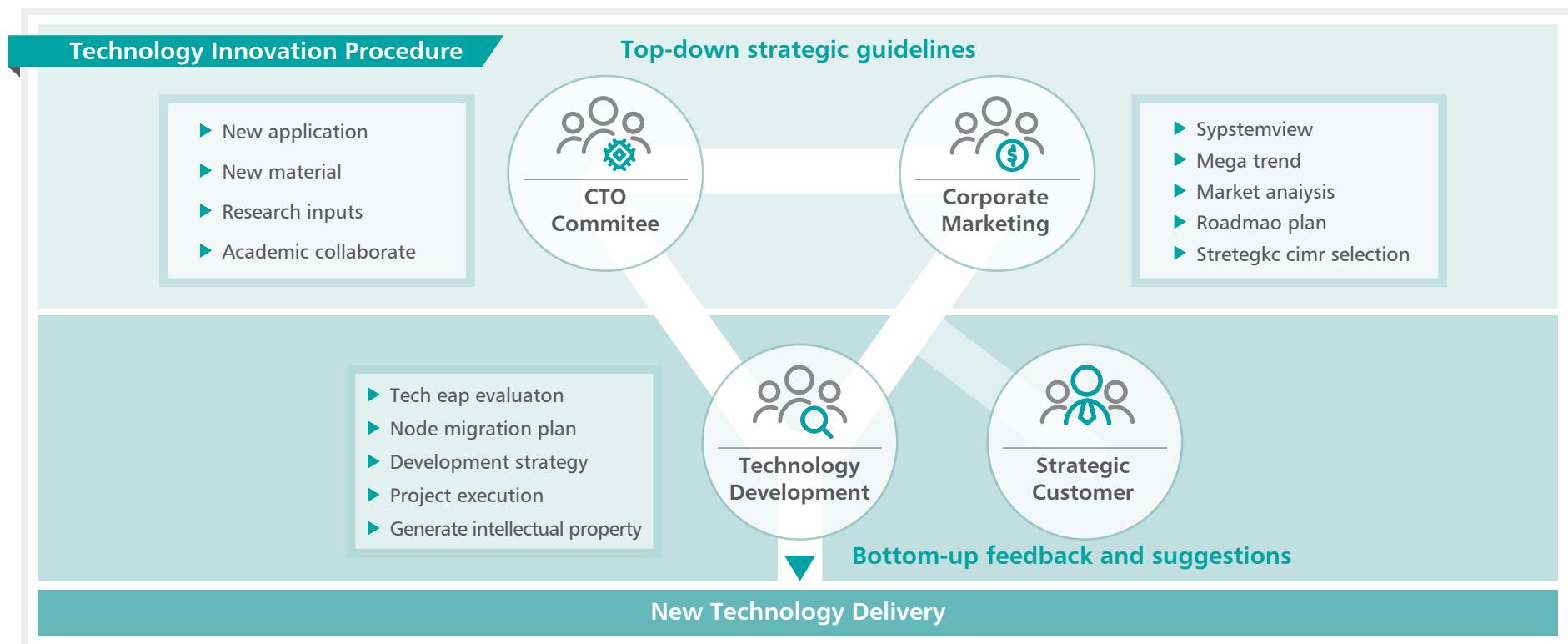
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R&D Strategy

UMC's technology R&D innovation is primarily driven by the Corporate Marketing (CM) department, the Technology Development (TD) team and the CTO committee. The CM department collects and analyzes product market trends and customer needs to develop product portfolio strategies. The TD team analyzes product technology requirements to formulate preliminary technology innovation strategies and R&D goals, which are then reviewed with the CTO committee. Based on in-depth research on industry development trends, the CTO committee issues the guidance and decisions on product portfolio strategies and technology R&D strategies. Moreover, UMC closely collaborates with strategic customers to obtain their feedback and guidance, ensuring that R&D projects remain consistent with market trends and meet customer requirements. These three solid pillars integrate top-down strategy guidelines tightly with bottom-up customer feedback through seamless communication. In addition to full support for R&D capabilities and proper allocation of resources, UMC continuously stimulates technological innovation, expands and strengthens intellectual property generation. These measures enable UMC's technology R&D innovation procedure to operate smoothly and sustainably.



Green Process Development Plan

To reduce its carbon footprint, UMC has gradually phased out old processes over the years, and instead focused on the development of low power (LP), ultra-low power (ULP), and ultra-low leakage (ULL) technologies, while also enhancing its power management (PMIC) technology green and energy-saving products. In order to integrate the eco-friendlier technologies in new products and to increase the proportion of green manufacturing products, UMC has established the goal of developing new LL/LP, PMIC & microcontroller (MCU) platforms, aiming to add more low-energy consumption technology options. For example, the 22nm logic technology reduces power consumption by up to 30%, and the 14nm technology can reduce power consumption by 50%, to provide high-efficiency, low-latency, and low-power solutions. These technologies are applied to traditional logic processes and specialty technology processes, such as embedded resistive random access memory (eRRAM) and embedded magnetoresistive RAM (eMRAM). In the near future, UMC will continue to develop green and energy-saving process technologies with even lower power consumption to meet future demand driven by 5G, smart Internet of Things (AloT), wearable devices, cloud applications, and automotive electronics applications. Through innovative green and energy-saving process platforms, the Company can bring substantial benefits to global greenhouse gas mitigation.

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2.1.2 Key Technologies

In addition to continuous research and development to reduce the power consumption of chips, UMC also develops various power management chips, medical sensor chips, mobile communication chips, image sensing and display driver chips that reduce the environmental impact of end-products as well as advance communication, healthcare, and safety of the society.

The first fab to offer 28nm OLED display driver IC (DDI) process technology for mass production

Ranking first in the OLED small DDI market share worldwide Note

The industry's highest order 200Mp and smallest pixel size with UMC's 28nm 28HPC+ image signal processor (ISP) technology has entered mass production

UMC's RFSOI has entered mass production on 12-inch wafers for some years and has been widely used by leading mobile phone brand manufacturers in their mobile phones

22nm high-density 1Gb HDMRAM products have been successfully verified and entered the trial production stage

Note: the reference is from "Display Driver IC Market Tracker – 2Q22 Analysis , page 39: Taiwanese foundry makers will focus on AMOLED drivers; Chinese foundry makers are becoming major LCD driver resources" published by Omdia

Key Technologies	Product Highlights	Applications
14nm Process Technology (14FFC)	<ul style="list-style-type: none"> 55% improvement in performance, twice the gate density, and 50% less power consumption compared to the 28nm process, to provide high-efficiency, low-latency, and low-power solutions. 	<ul style="list-style-type: none"> Can be applied to analog, mixed-signal, Internet of Things (IoT) with RF technology, mobile devices, CPU or GPU with artificial intelligence, high-end AP, mobile phone baseband, FPGA / CPLA, WLAN / WiFi, 5G Netcom, high-end consumer electronics.
22nm Process Technology	<ul style="list-style-type: none"> The industry-leading 22nm technology can build ultra-low power (ULP) and ultra-low leakage (ULL) on the same platform, while enjoying the advantages of both technologies in SoC design Compared with the current 28nm technology products on the market, the 22nm ULP/ULL platform technology can provide lower core operating voltage and better energy consumption performance. 	<ul style="list-style-type: none"> Can be applied to a variety of semiconductor electronic products, including consumer electronics chips (such as set-top boxes, digital TVs, monitors, power management, IoT, Bluetooth and WiFi) and automotive electronics chips.
28nm Process Technology	<ul style="list-style-type: none"> UMC's 28nm process technology provides 28HLP Poly/SiON and 28HPC/HPC+ HK/MG, two types of high-performance and low-power process options. The high-performance computing (28HPC+) image signal processor (ISP) technology is used for a high-end 108Mp product. It is also in mass production for the industry's highest order 200Mp and smallest pixel size ISP. 	<ul style="list-style-type: none"> Can be applied to products, such as processors, mobile phone basebands, WLAN, tablet PCs, FPGAs, Netcom ICs, image signal processors, millimeter wave (mmWave) system-on-chip (SoC), mobile devices, automotive electronics, IoT, etc. The 28HPC+ mmWave solution has been verified and is ideal for high-speed mmWave devices for circuit applications up to 110GHz.
Embedded non-volatile memory (eNVM)	<ul style="list-style-type: none"> The embedded non-volatile memory process technology improves the computing and storage performance of the chip, and has the advantage of confidentiality. Provides a complete process and supporting IP solutions from 180nm to 22nm nodes. 	<ul style="list-style-type: none"> Can be widely applied in microprocessors using in various electronic products, covering IoT, industrial control, and various 3C products in the automotive field, and also extended to solutions for various bank cards and telecommunication cards.
22nm resistive RAM (RRAM)	<ul style="list-style-type: none"> Resistive RAM (RRAM) is a novel non-volatile memory with simple structure, low operation voltage, low read current, fast program/erase speed and very good reliability. Moreover, it is fully logic compatible with less add-on masks and low extra cost. 	<ul style="list-style-type: none"> RRAM can be applied to wearable components such as hearing aids, watches, etc., as well as edge computing applications.

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Key Technologies	Product Highlights	Applications
22nm magnetoresistive RAM (MRAM)	<ul style="list-style-type: none"> The new generation of embedded magnetoresistive Random Access Memory (eMRAM) has the same size as the traditional charge-trapping memory, but has simpler process conditions and faster operation speed, and exhibits excellent thermal stability, read/write endurance, and data retention. 	<ul style="list-style-type: none"> Can be applied in Artificial Intelligence of Things (AIoT), aerospace/LEO satellite communications.
Embedded high voltage process technology (eHV)	<ul style="list-style-type: none"> UMC ranks first in the global market share of SDDI in the OLED markets, and is also the first foundry to offer the 28nm OLED DDI technology platform for mass production, and provide customized solutions with leading panel display chip DDIC and OLED panel system specifications. 	<ul style="list-style-type: none"> Display Driver ICs (DDICs) can be used in mid-to-high-end smartphones, virtual reality and augmented reality (AR/VR) wearable devices, and automotive electronics.
Power management IC (PMIC)	<ul style="list-style-type: none"> Power management IC (PMIC) with higher voltage applied during voltage conversion benefits to reduce the energy consumption so energy can be conserved. To serve the demands for various PMIC applications, UMC provides super high voltage processes. The Bipolar-CMOS-DMOS (BCD) process can provide various required high-voltage operating capabilities. UMC also provides a process technology platform, compatible with standard logic and a complete silicon intellectual property. 	<ul style="list-style-type: none"> The power management chip (PMIC) is in strong demand and is widely used in consumer electronics, communications, computing, industry, automobiles, such as 5G mobile phones, servers, electric vehicles, etc.
Radio Frequency Silicon-on-Insulator process technology (RFSOI)	<ul style="list-style-type: none"> For the requirements of RF communications such as 4G, 5G, WiFi, RFSOI provides highly competitive component characteristics (low high frequency doubled harmonics and low power loss) for 4G/5G mobile phones with stringent requirements for RF switches and low noise amplifiers. Start to develop a new generation of RFSOI technology to continue the subsequent 5G-mmWave growth momentum 	<ul style="list-style-type: none"> Can be widely used in RF front-end applications, such as antenna switch, antenna tuner, and low noise amplifier (LNA).
CMOS image sensor process technology (CIS)	<ul style="list-style-type: none"> The high-performance CMOS image sensor (CIS) solutions that have been adopted by global leaders in mainstream applications such as portable devices, medical devices, ambient light sensors, surveillance systems, and more. The 55nm back-illuminated image sensor (BSI) CIS process technology have entered mass production 	<ul style="list-style-type: none"> Can be applied to high dynamic range (HDR) related products, such as surveillance, driving record (Dash CAM) and Internet of Things (IoT), etc., to meet the market demand of customers with high sensing resolution and fast focus function (PDAF), as well as product diversity.
Micro electro mechanical device technology (MEMS)	<ul style="list-style-type: none"> UMC has developed advanced sensors with second-generation micro-electromechanical (CMOS-MEMS) technology, including medical-related sensor chips, flow sensor chips for medical respirators, vaccine temperature control chips produced by temperature and humidity sensors, and carbon dioxide sensing elements 	<ul style="list-style-type: none"> Flow sensor chips can be used in medical purpose, such as life-sustaining respirators; temperature and humidity sensors can be used in the storage and transportation of medicine, food and chemicals; the carbon dioxide sensing element can be used to monitor the concentration and trend of carbon dioxide for air quality control
Compound semiconductor	<ul style="list-style-type: none"> GaAs HBT power amplifier integrates SAW filter and RFCMOS Switch, provides mobile phone RF front module (RF-FEM) and WiFi6/7 communication module integration solution. Developing GaAs pHEMT, power GaN and RF GaN products suitable for high power 5G communication 	<ul style="list-style-type: none"> Can be applied to mobile phone RF front-end module, WiFi6/7 communication module, 5G mobile communication mmWave band base station, and Ka/Ku-band low-orbit satellite receiver chips, and high-efficiency power supply components
Wafer-to-wafer (W2W) hybrid bonding	<ul style="list-style-type: none"> Combine with an open supply chain cooperation model to provide customers with reliable and flexible solutions. It can provide performance, power, area, and cost benefits for UMC's existing customer products PPAC (Performance, Power, Area, Cost). Customer has completed the high-end RF component chip design for with UMC's 3D W2W stacking technology, downsizing chip area by 40%Product verification has also been completed. 	<ul style="list-style-type: none"> Can be applied to high-end communications (4G/5G/6G), Artificial Intelligence of Things (AIoT), virtual reality and augmented reality (AR/VR) , virtual currency, edge computing (Edge AI) and other applications.

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Key Technologies	Product Highlights	Applications
22nm ultra-low power/ultra-low leakage process technologies	<ul style="list-style-type: none"> The 22nm automotive product platform has completed reliability and durability verification, and related automotive silicon intelligence is under development. The 22nm image signal processor (ISP) process technology completed component modeling and design specifications, and also completed the construction of special silicon intelligence. 	<ul style="list-style-type: none"> Continue to optimize the process and expand the application scope of 22nm process products, giving customers the option to apply this platform technology to the IoT, consumer electronics, industrial applications and wearable products
Non-volatile memory	<ul style="list-style-type: none"> The 40nm RRAM has entered mass production, while the development of a 22nm RRAM technology platform is progressing as scheduled, and is expected to be applied in intelligent Internet of Things (AIoT) related products. In the 22nm magnetoresistive memory (MRAM) process technology, the high-density 1Gb HDMRAM chip product used in aerospace/LEO Satellite communications has entered the trial production stage. 	<ul style="list-style-type: none"> Continue to develop RRAM that can be applied to wearable components such as hearing aids and watches, as well as edge computing, and MRAM process platforms that can be applied to AIoT and aerospace/communication related products.
High voltage process technologies	<ul style="list-style-type: none"> The LTPO OLED driver chip product of 22nm high-voltage 25V process technology has completed the product verification. In terms of 28nm ultra-low power embedded high-voltage active matrix organic light-emitting diode (AMOLED) display driver chip process technology development, the component model and design specifications have been completed. 	<ul style="list-style-type: none"> Continue to develop 22nm high voltage process technology and new generation smartphone power IC.
Power management IC (PMIC)	<ul style="list-style-type: none"> 0.11μm BCD platform combined with embedded non-volatile memory (eNVM) has completed component modeling and design specifications, and has also developed specialty automotive IPs. 	<ul style="list-style-type: none"> Continue to develop PMIC for the market needs on consumer electronics, communications, computing, industrial, automotive and other applications.
CMOS image sensor and MEMS process technologies	<ul style="list-style-type: none"> The 55nm back-illuminated image sensor (BSI) CIS process technology has entered mass production. MEMS technologies support manufacturing of ICs for epidemic prevention. 	<ul style="list-style-type: none"> Continue to develop CIS technologies to be applied on high dynamic range (HDR) related products, such as surveillance, driving record (Dash CAM) and IoT, etc., to meet the market demand of customers with high sensing resolution and fast focus function (PDAF), as well as product diversity.



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2.1.3 Smart Manufacturing

Since 2016, UMC has outlined the future development direction of smart manufacturing. In 2017, Smart Manufacturing Division was formed to drive digital transformation as part of the Company's internal organizational adjustment. At the same time, UMC introduced the IAI (Industrial AI) concept and related technology developed by Jay Lee, a clark distinguished professor and director of Industrial AI Center located in Univ. of Maryland College Park, and developed various smart manufacturing applications, coordinated related OT (Operation Technology) and IT projects, and integrated internal and external resources.

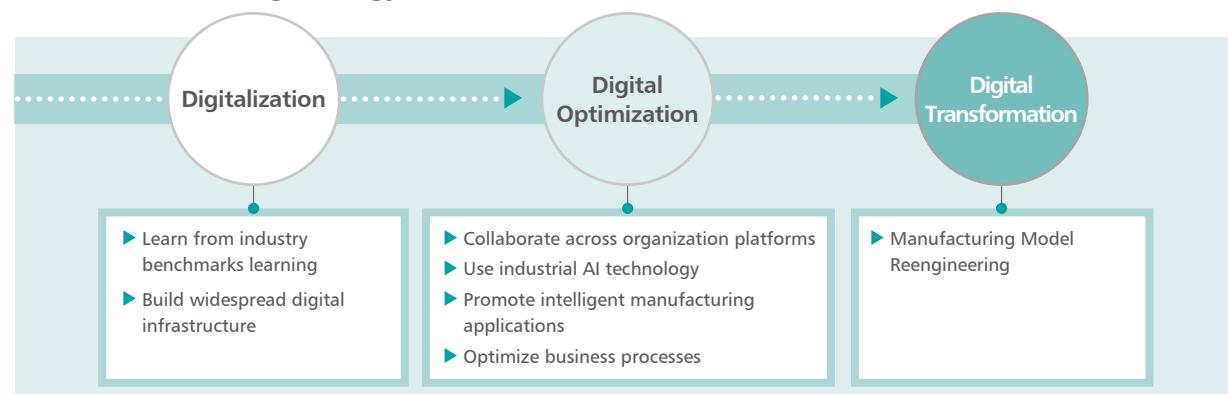
Future Goals	Short-Term Goals 2023	Mid-Term Goals 2025	Long-Term Goals 2030
Ratio of products produced by Industry 4.0 Smart Manufacturing Systems	≥40%	≥60%	≥80%

* The scope covers UMC Group (UMC, subsidiaries, HJ, USCXM, Wavetek, and USJC)

Core Principle of the Smart Manufacturing Project Team

UMC has been implanting the Industry 4.0 DNA into its corporate culture. Facing the increasingly difficult and complex manufacturing challenges, introducing smart manufacturing projects into fabs can achieve the goals of process optimization, flexible production, shortened delivery time, manpower quality, and enhanced efficiency. These include IAI projects, IT infrastructure, smart supply chain, physical and information security protection, and the integration of semiconductor upstream and downstream related industries to jointly create a smart manufacturing ecosystem, achieving the most efficient use of manpower, equipment, material, and methods.

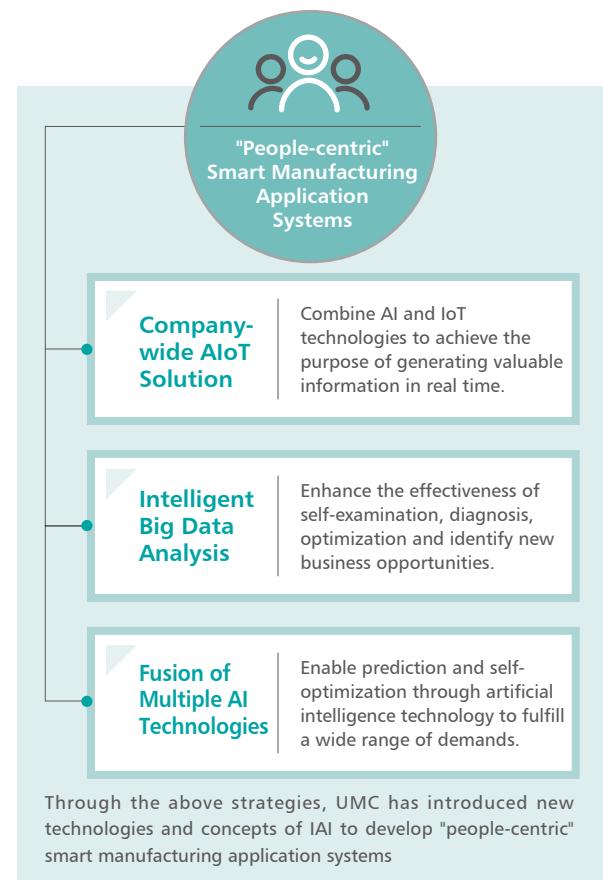
Smart Manufacturing Strategy



UMC refers to the Industry 4.0 methodology as well as international and industry benchmarking practices to draw up a blueprint for the development of smart manufacturing. Secondly, UMC promotes and implements relevant strategies through project teams. In addition to achieving digital optimization goals for work efficiency, product quality, and green manufacturing, smart manufacturing is also expected to drive innovative business models.

Using Industrial AI (Artificial Intelligence) Technology to Promote Smart Manufacturing Applications

UMC has implemented "people-centric" smart manufacturing platforms and systems centered on three major directions: company-wide AIoT solutions, intelligent big data analysis, and the fusion of multiple AI technologies. Achieving an autonomous smart factory will not only make UMC more competitive in terms of quality and efficiency, but also enable us to reduce waste and the environmental impact of our production activities.



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Smart Manufacturing Innovation

UMC has transformed from a general wafer foundry to a specialty technology solution provider as part of its business strategy. To cater to product requirements such as durability, low energy consumption, short life time, and diversification, UMC actively pushes for breakthroughs in digital transformation and digital optimization practices in order to achieve the need for efficient work processes, rapid mass production, short production cycles, flexible capacity allocation, and green manufacturing.

Transformational Thinking ▶ People-Centric

UMC's digital transformation focuses on a "people-centric" mindset. Under the premise of making full use of the operation technology (OT) process transformation of process equipment resources, the Company continues to develop smart manufacturing applications to improve efficiency, process quality, and product yield.

Value Enhancement ▶ Environmental Sustainability

1. Introduce digital technology into energy-saving applications and facility management, and promote comprehensive energy-saving measures in fab equipment, processes, systems and management.
2. Conduct big data analysis using intelligent energy management systems, review energy consumption data on a rolling basis, and explore potential energy saving opportunities.
3. Optimize operation through control systems and process systems, effectively manage energy consumption, and promote smart energy conservation for the industry.

Partnerships ▶ Diversified Cooperation

Introduction of IAI technology ▶ Joined the National Science Foundation (NSF) Intelligent Maintenance System (IMS) Industry-Academia Collaboration Center to introduce related technologies required for industrial artificial intelligence and internalize the UMC Smart Manufacturing Systems.

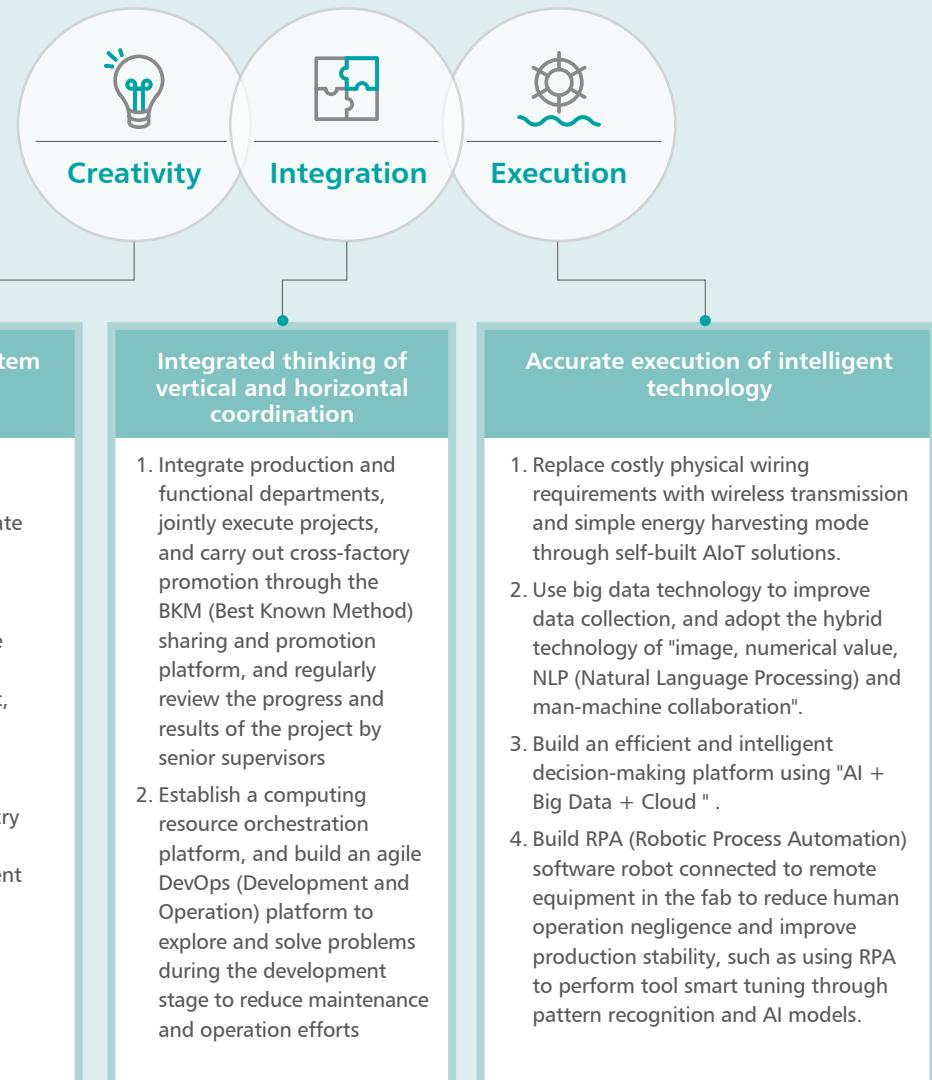
Establish AI research center ▶ In response to the future of new AI technologies, the Company cooperates with the academic community in advanced research, development, and practice, to maintain the momentum of AI research and development.

Alliance Leader ▶ Select the most forward-looking and competitive manufacturers, open source software organizations, to carry out development or product collaborations.

Smart Manufacturing Project

Time: 2018~2021 Location: Tainan Science Park demonstration Plant

UMC proposes to integrate the three digital cores of creativity, integration and execution, and actively implement smart manufacturing projects. Since 2018, with the Company's Tainan Science Park fab as the main smart manufacturing demonstration site, it has continued to introduce various intelligent innovation solutions to shorten the product delivery time, and achieve energy saving and environmental protection.



2.2 Customer Satisfaction

2.2.1 Strengthen Customer Communication

2.2.2 Continuous Quality Improvement and Innovation

Material Topic: Customer Service Quality

In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ▶ Enhance customer relationship management

Negative ▶ Customer rights impacted

Management Actions	Processes Used to Track the Effectiveness of Actions								
<ul style="list-style-type: none"> ▶ Product quality is managed continuously by designated departments based on quality management system regulations ▶ Offer designated sales and customer service contact to communicate and serve customers in a timely manner ▶ Voice of Customer (VOC) instant online feedback system managed by designated personnel to collect customer feedback and to strengthen two-way communication with customers 	<ul style="list-style-type: none"> ▶ Product quality and delivery schedule are the key performance indexes to be reviewed regularly ▶ Understand customers' requirements and satisfaction through scorecards provided by customers in quarterly and other meetings ▶ Collect customer requirements and respond through meetings with customers, while also improving internal procedures accordingly ▶ Conduct annual customer satisfaction surveys with key customers through a third-party agency in order to obtain objective feedback and take action accordingly 								
Key Performance Indexes									
<table border="1"> <thead> <tr> <th>Future Goals</th> <th>Short-Term Goals (2023)</th> <th>Mid-Term Goals (2025)</th> <th>Long-Term Goals (2030)</th> </tr> </thead> <tbody> <tr> <td>Ratio of satisfied customers</td> <td>≥89%</td> <td>≥90%</td> <td>≥90 %</td> </tr> </tbody> </table>		Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)	Ratio of satisfied customers	≥89%	≥90%	≥90 %
Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)						
Ratio of satisfied customers	≥89%	≥90%	≥90 %						

2.2.1 Strengthen Customer Communication

Multiple Communication Channels

UMC is committed to achieving customer satisfaction as its mission and prioritizes customer-oriented products and services. The Company's MyUMC, MyHJTC (reserved for customers of HJ), and MyUSC (reserved for customers of USCXM) online service platforms provide customers with complete and real-time supply chain information, including production status of orders, shipping dates, and product quality data. These service platforms are accessed and utilized over 600,000 times every year.

The Voice of Customer (VOC) instant online feedback system allows customers to make requests, comments, or suggestions for UMC products or services. Designated personnel redirect, process and respond to requests made through the VOC system, and customers can enquire the status of their products online at any time.

UMC also holds quarterly business review meetings with key customers, and asks customers to provide scorecards to enable the Company to better understand customers' requirements and satisfaction. In 2022, UMC held 47 quarterly business reviews with 18 customers.

Digital Service Platforms Providing Real-Time Information



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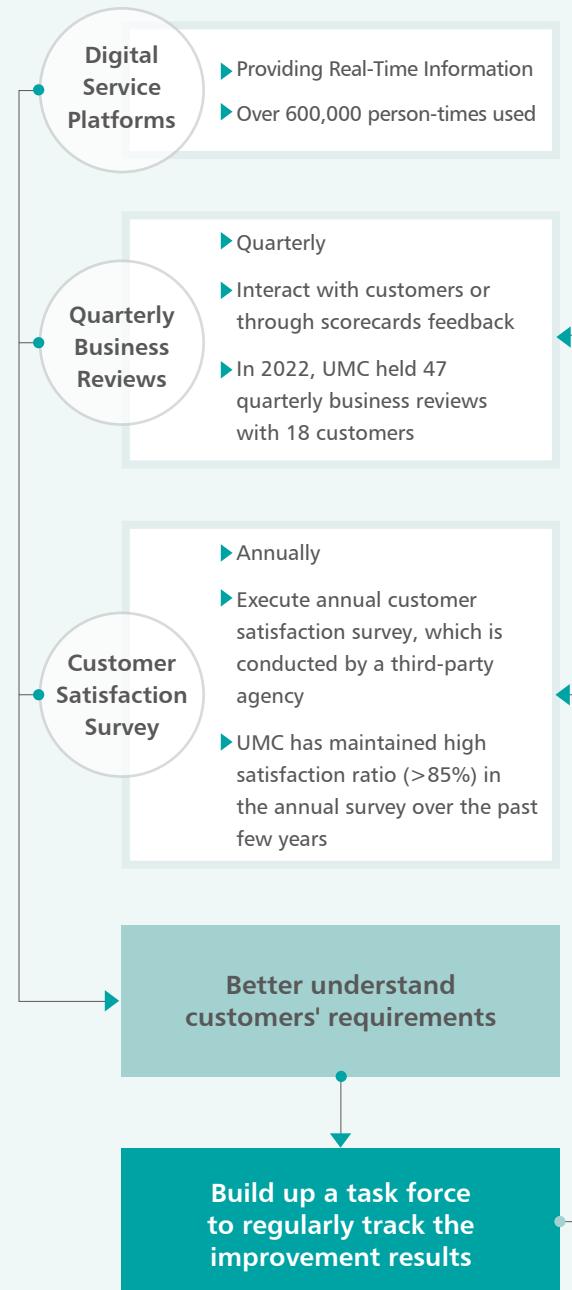
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Customer Satisfaction Improvement

UMC (including its subsidiaries HJ and USCXM) executes annual customer satisfaction survey, which is conducted by a third-party agency and administered to customers contributing more than 70% of UMC's overall revenue. The survey collects customer feedback on six key pillars, including strategy and partnership, technology, quality, manufacturing and yield, sales support and customer service, and design support. UMC has maintained high satisfaction ratio (>85%) in the annual survey over the past few years.

UMC's overall performance has received customer approval and awards, indicating endorsement of UMC's product and service quality. In 2022, UMC was awarded "Best Silicon Foundry (CMOS)" by Infineon Technologies AG, recognizing UMC's dedication to manufacturing excellence and strong commitment to support customers. Meanwhile, in view of UMC's industry-leading position in environmental sustainability issues, Infineon initiated exchange and cooperation with UMC in the area of environmental protection.



UMC Receives "Best Foundry" Honor from Infineon

UMC was named "Best Silicon Foundry (CMOS)" by Infineon Technologies AG during Infineon's 2022 Global Supplier Day, recognizing UMC's dedication to manufacturing excellence and strong commitment to support customers amid recent supply chain disruptions.

"Infineon highly appreciates UMC's commitment and extra capacity support amid unprecedented supply chain disruptions over the past two years. UMC has been a reliable manufacturing partner for Infineon for more than two decades, and I'm pleased to further leverage our synergistic relationship and deepen collaboration across several market segments," said Rutger Wijburg, Chief Operating Officer of Infineon.

"It is a great honor to receive this recognition from Infineon, a technology leader in automotive electronics and a longtime partner of UMC. We strive to earn trust from customers by providing consistent quality, dependable capacity, and relevant technologies that align with their product roadmaps," said Steven Liu, Vice President of Europe and Japan Sales at UMC. "We are excited to grow together with Infineon as we pursue high growth markets benefiting from the ongoing transformation in the automotive industry as well as the rise in 5G and AIoT."



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2.2.2 Continuous Quality Improvement and Innovation

Working with customers to become a leader in specialty processes

Total Quality Management (TQM) is the quality management philosophy of UMC, and continuous improvement is the foundation of TQM. To provide customers with timely and high-quality products and services, employees are encouraged to strive for continuous improvement in quality, flow, process technology, and after-sales engineering services. In recent years, continuous improvement activities have focused on innovative development and rapid mass production of specialty processes as the Company focuses on becoming a specialty process technology leader.

Innovative techniques, improved yield, accelerated production

UMC is persistently pursuing innovative advancements in specialized technology. Fab 12A in the Southern Taiwan Science Park has adopted advanced AI tools and innovative engineering techniques to enhance yield, production efficiency, and capacity in 22nm specialty technology, and has achieved significant results such as shipping the industry's top-performing 22nm products using advanced technology, developing an AI defect image recognition system with higher accuracy than original equipment manufacturers, and innovating measurement spectrum application technology. Fab12i in Singapore has also achieved significant breakthrough in specialty technology by adapting logic process equipment for specialty processes. This innovative approach leverages existing assets while also generating cost savings for the Company.

Apart from its emphasis on specialty technology, UMC has also been committed to digital transformation in recent years. Supporting and service units have actively invested in this effort alongside production units. The GRM&ESH Division and the IT Division have collaborated on the development of a new digital occupational safety management system and established an operational audit mobile application. They pioneered a 3C safety digital service model in the industry, setting an example of combining process reengineering and digital transformation in the environmental health and safety domain. The mask engineering team is enhancing service efficiency by using artificial neural network models to successfully increase mask vendors' production capacity, increasing mask delivery by 1.53 times and moving toward the ultimate goal of eliminating production bottlenecks caused by photomasks.

Customer orientation and creating a win-win situation

UMC's business philosophy is based on enterprise sustainability, providing customers with stable and innovative semiconductor manufacturing and services to contribute to global economic development. In addition to the development of specialty process technology, UMC leverages digital transformation and smart manufacturing to improve efficiency, as well as encourages a culture of continuous improvement. In the future, UMC will continue to instill the spirit of innovation and advancement in the quality culture and mindset of all employees, refine relevant quality management systems and techniques, comprehensively enhance organizational development and innovation capabilities, and improve the overall quality system efficiency of UMC to strengthen its competitive position.

Winning five gold and one silver medal in the Taiwan Continuous Improvement Activity (TCIA) competition

Besides training coworkers on systematic thinking and the utilization of science-based techniques to resolve issues, the ethos of continuous improvement has broadened from individuals to teamwork. All departments have demonstrated a dedication to taking preemptive actions and consistently upgrading their processes in areas such as product innovation, quality enhancement, efficiency, and capacity expansions.

In the 2022 Taiwan Continuous Improvement Awards (TCIA) competition organized by the Corporate Synergy Development Center entrusted by the Ministry of Economic Affairs, UMC won a total of six awards. A total of 240 teams from 118 companies participated in this competition. Six teams from UMC registered for the competition and all of them advanced to the final round. In the final competition, UMC teams achieved a remarkable record of five gold medals and one silver medal, fully demonstrating UMC's efforts in promoting core business and integrating sustainability development. Their outstanding performance has won unanimous recognition from the judges and organizers.



► UMC won 5 Gold and 1 Silver Medal in Taiwan Continuous Improvement Activity (TCIA) .

Div	12A PEI	12A FAB	12A FAB	12i FAB	MES	GRM&ESH
Team	Breakthrough Team	Whirlwind Team	Key Team	Practice Team	Vitality Team	3C Team
Subject	Expansion Pioneer Process Improvement in an All-round Way- Challenge the industry's fastest increase in volume	Improve the quality and quantity of defect analysis	Shorten the production cycle of 22nm products	Increased Dielectric Thin Film Productivity	Breaking through the maximum speed limit of production capacity - challenging the delivery rate of huge quantities of photomasks	Digital Transformation Advance Deployment - Create a 30 Efficient Digital Industrial Safety Management Platform
Award	Gold	Gold	Gold	Gold	Gold	Silver

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Quality Management System

UMC is a leader in the global semiconductor wafer industry. The Company has established a rigorous quality management system based on the global automotive industry quality management system (IATF 16949) and quality management system (ISO 9001) to ensure quality for customers. In response to changes in the market environment and the advancement of various technologies, UMC follows the PDCA (Plan-Do-Check-Act) method for continuous improvement, enabling the Company to provide high-quality wafer manufacturing services, and to develop a customer-oriented quality management system. UMC has passed the third-party ISO 9001:2015 & IATF 16949:2016 verifications every year, and will continue to strive for improvement in product quality.



Quality Policy

UMC has an effective communication and feedback system that facilitates quick response to customer needs and market changes. It encourages and requires all employees to engage and improve product and service processes to achieve the Company's quality requirements and goals according to the principle of continuous improvement.



2.3 Product Responsibility

2.3.1 Hazardous Substance Management

2.3.2 Product Environmental Impact Assessment

Material Topic: Product Responsibility and Lifecycle Assessment

Related Policy:
Hazardous Substances Free Policy



Environmental
Protection Policy



In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ▶ Green sustainable product	Negative ▶ Product responsibility mismanagement	Processes Used to Track the Effectiveness of Actions
Management Actions		
<ul style="list-style-type: none"> ▶ Form an interdepartmental committee and establish a hazardous substance management system and process to ensure zero use of hazardous system throughout the manufacturing process. ▶ Simplify procedures and conserve materials as much as possible when designing processes, and develop green products with high performance and low power consumption. ▶ Develop green chemicals and carry out hazardous substance substitution programs to proactively replace harmful chemicals at the source. ▶ Establish raw material green procurement procedures and new-material assessment systems; incorporate hazardous substance control into Material Receiving Inspection Procedures; no substance shall be released if there is a concern about hazards. ▶ In addition to following all applicable laws and standards, evaluate according to even stricter standards and prioritize replacing hazardous substances. ▶ Conduct regular assessments of "Product Carbon/Water Footprints" and "Product Lifecycle Assessment" to seize potential improvements against environmental impact. 		<ul style="list-style-type: none"> ▶ Conduct third-party verification annually: QC 080000, IATF 16949 ▶ Regularly test the content of hazardous substances in products in independent laboratories to ensure that products meet international regulations and customer requirements for controlling hazardous substances ▶ Establish hazardous material replacement plans and set up corresponding objectives. Review progress of implementation on a quarterly basis. ▶ Regularly conduct the inventory of "Product Carbon/Water Footprints" and "Product Lifecycle Assessment".

Key Performance Indexes

Achievements in 2022

No customer complaints, product scrap and recalls due to violations of hazardous substance management ▶ ★ Achieved

Develop a back-end metal cleaning process that meets the EU green environmental protection regulations ▶ ★ Achieved / Successfully developed one green chemical/green process each year from 2018 to 2022

Future Goals

Short-Term Goals (2023)

Mid-Term Goals (2025)

Long-Term Goals (2030)

No customer complaints, product scrap and recalls due to violations of hazardous substance management.

Maintain

Maintain

Maintain

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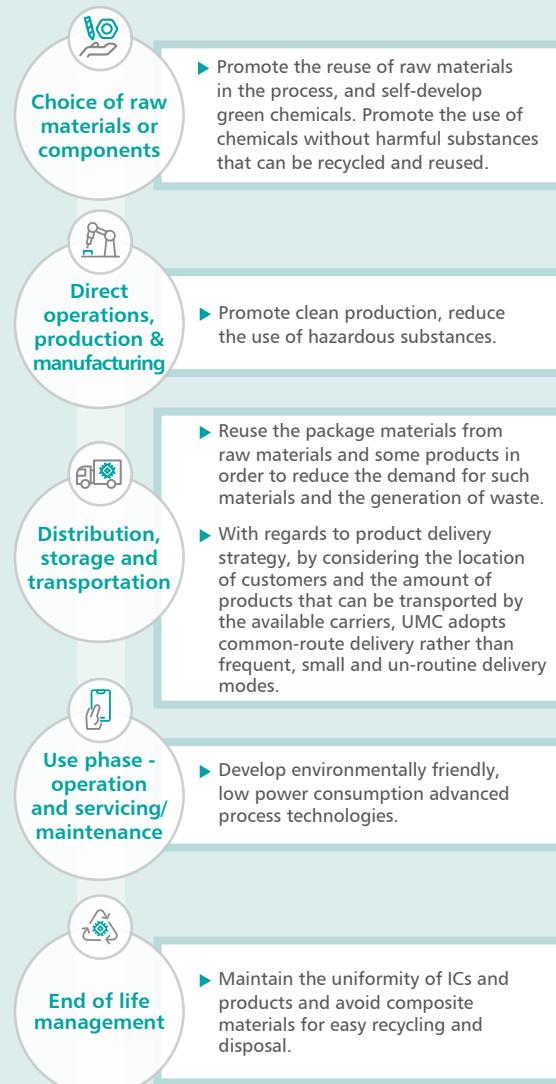
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UMC is committed to providing products that meet customer needs and are competitive in the market. As a member of the global community, the Company values resources and strives to reduce the impact of its products on the environment and resource consumption. By obtaining green factory certification for clean production, developing replacements for hazardous substances, and reducing the environmental impact of products, UMC aims to lead responsible production efforts in the semiconductor industry.



2.3.1 Hazardous Substance Management

UMC implements the hazardous substance management system QC 080000 to ensure that products comply with the European Union's requirements for restricted substances in electronic products (such as EU RoHS) and global chemical control regulations. UMC also provides customers with green products to meet their needs and further expand the market for green products. UMC has also established a cross-department Hazardous Substances Process Management Committee (HSPM Committee) to improve the efficiency of green product management.



Hazardous Substance Free Policy

UMC established the Hazardous Substances Free Policy to avoid product scrapping or customer complaints caused by the violation of hazardous substance-related laws and regulations, as well as the requirements of customers for controlling hazardous substances. On the other hand, by raising the awareness of all employees, UMC provides products that comply with regulations and customer needs through the control and improvement of design and production, fulfilling its corporate social responsibility of protecting the environment as well as public health and safety.

Hazardous Substance Free Policy



Management



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Response to the International Hazardous Substance Management Requirements

Control Items	Implementation in UMC
EU Restriction of the Use of Certain Hazardous substances in Electrical and Electronic Equipment Directives (EU RoHS)	Able to comply with the requirements
Halogen-free Requirement	Able to comply with the requirements
EU Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals. (EU REACH)	Able to comply with the requirements
EU Waste of electrical and electronic equipment (WEEE)	<ul style="list-style-type: none"> ▶ These regulations do not directly apply to UMC as the Company manufactures semiconductor chips which are not end products. ▶ The end product dealer is the one responsible for recycling end products containing semiconductor components which are discarded as waste after use.
Persistent Organic Pollutants, POPs	<ul style="list-style-type: none"> ▶ UMC led the industry to achieve the overall replacement of PFOS, PFOA and PFOA-related chemicals. ▶ Since 2018, UMC began to pay attention to PFBS to keep up with international environmental protection regulations, and to collect data on PFBS-related raw materials and alternative chemicals.
IEC 62474 Declarable Substance List	Based on the calculation of the total sales amount of products, the percentage of non-compliance with IEC62474 is 0%. UMC fully complies with the requirements of the IEC 62474 Declarable Substance List.

Hazardous Substance Replacement Plan

UMC closely observes the development trend of international environmental protection regulations. UMC prepares a hazardous substance assessment plan in the drafting stage of relevant regulations, and as soon as the regulations are confirmed and publicized, UMC will immediately implement the replacement plan in all fabs.



- ▶ Phase I: Replacement of PFOS completed in 2015.
- ▶ Phase II: Replacement of PFOA completed in 2016.
- ▶ Phase III: In 2017, UMC is leading the industry to achieve overall PFOA-related replacement.
- ▶ Phase IV: from 2020, UMC began to pay attention to PFHxA, GHG and initiated assessment plan evaluation. A little bit of NMP is replaced, full replacement is under evaluation.

Management of Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a class of chemically stable synthetic substances that possesses properties such as water and oil resistance, and low friction. They are widely used in the manufacturing processes of many products. However, due to the difficulty of PFAS degradation in the environment and their potential harm to human health, an increasing number of countries and regions are starting to regulate their use.

The environmental and human health risks associated with PFAS has been an area of concern for UMC. From 2015, UMC voluntarily initiated a PFAS replacement project, and has gradually completed the substitution of long-chain PFAS such as PFOS, PFOA, and PFOA-related substances. Additionally, UMC implemented strict controls of source materials to minimize the potential use of banned PFAS. A comprehensive "New Materials Assessment System" has been established to evaluate new materials, and if the materials contain banned or regulated substances, they are returned to the suppliers for review. Furthermore, for existing materials, suppliers are surveyed to ensure that their raw materials do not contain PFAS.

Currently, UMC's manufacturing processes do not involve the use of chemicals containing PFOS, PFOA, PFOA-related substances, PFHxA, or PFHxS. As the scope of international regulations on PFAS expands, UMC will continue to monitor the development of international regulations, participate in discussions within domestic and international organizations, and proactively address potential regulatory impact to ensure stable operations. At the same time, UMC will continue to implement sustainable strategies aimed at minimizing its environmental footprint.

Per/Polyfluoroalkyl substances, PFAS

PFOA, PFOA related, PFHxA/PFOS, PFBS, PFHxS:

- ▶ **Wide range of applications:** the extremely stable nature of perfluorocarbon bond (C-F) makes such substances more chemically and thermally stable as well as highly active on surfaces, so that they are widely used in manufacturing productions and consumer products.
- ▶ **Material characteristics:** environmental durability (persistence), bioaccumulation in the human body (bioaccumulation), high mobility in water and soil, long-distance transmission.
- ▶ **Toxicity to human body and environment:** reproductive toxicity, carcinogenic toxicity, immune system toxicity, fetal developmental toxicity.

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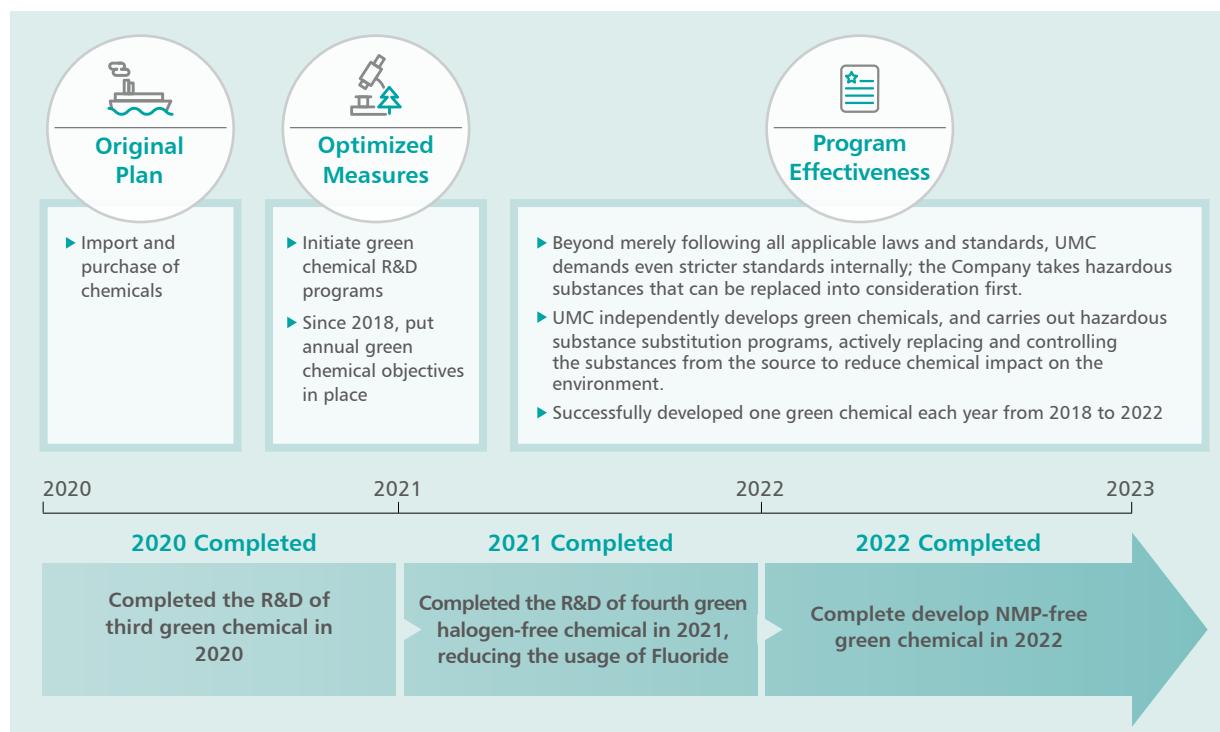
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UMC upholds the spirit of environmental protection continuously to develop recyclable and environmentally friendly chemicals in various semiconductor manufacturing processes. The Company has achieved considerable results, and plans to promote newly developed environmentally friendly chemicals to mature processes to replace the chemicals used in existing cleaning processes and reduce the impact of semiconductor manufacturing to the environment.

In 2022, UMC developed a back-end metal cleaning process that meets the EU green environmental protection regulations, and changed the traditional solvent cleaning to a NMP-free (N-methylpyrrolidinone) hydrophilic solvent. This special chemical has been successfully tested and applied to the 22/28nm back-end process at Fab 12A, and the use of NMP-containing chemical solvents in 2022 was effectively reduced by about 13 metric tons compared to 2021, with the same production capacity as the previous year. It is expected to be widely used in the back-end key cleaning process at other UMC fabs.

Starting from 2023, with the demand for green environmental protection, energy conservation and carbon reduction processes in full swing, UMC will continue to be ahead of the industry, taking the lead in planning development of a front-end process to eliminate usage of greenhouse gas N₂O (nitrous oxide). It is expected to reduce N₂O usage by 9.63 metric tons per year, and is expected to be applied to various 22nm process platforms and expanded to mature processes after successful development.

Looking forward to the future, UMC will continue to develop environmentally friendly processes while also reducing waste and emissions through usage reduction and replacements. Prohibition of environmental hazards, the organic chemicals and improving the efficiency of waste gas combustion, etc., achieve the goal of environmental friendliness.



Developing Green Chemicals

2018 First green chemical

Biodegradable and recyclable chemical
► Used biodegradable and environmentally friendly substances to successfully develop a new type of green chemical

2019 Second green chemical

Replaced traditional alkaline fluorine-containing cleaning agents with biologically derived acids from the tricarboxylic acid (TCA) cycle
► Can be reused and decomposes naturally in the environment

2020 Third green halogen-free chemical

Green halogen-free chemical
► Reduced the production cost of the cleaning process by 50% and prevented the generation of environmentally harmful fluorine-containing substances

2021 Fourth green halogen-free chemical

Developed a specialized green chemical based on biologically derived acids from the tricarboxylic acid (TCA) cycle
► Reduced the use of fluoride in the original cleaning solution by 98%

2022 Development of NMP-free chemical

Developed a hydrophilic NMP-free solvent to replace traditional solvents
► Enabled Fab 12A in Tainan to reduce the use of NMP-containing solvents by approximately 13 metric tons annually

2023 Developing process to reduce the use of nitrous oxide (N₂O)

Reduce the use of nitrous oxide (N₂O) in the front-end manufacturing process
► Expected to reduce N₂O usage by 9.63 metric tons per year in the future, equivalent to a reduction of 2,551 tCO₂e

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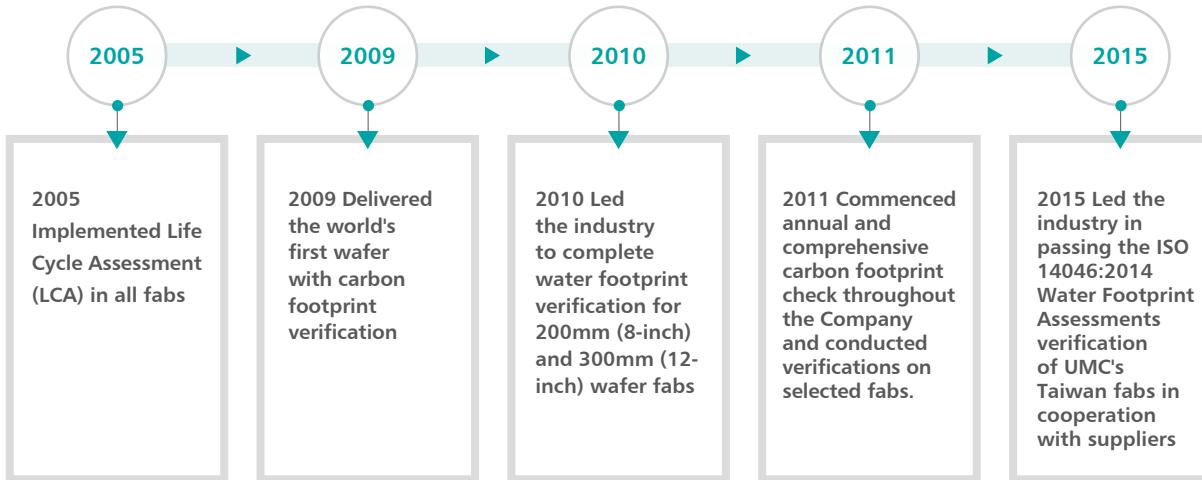
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2.3.2 Product Environmental Impact Assessment

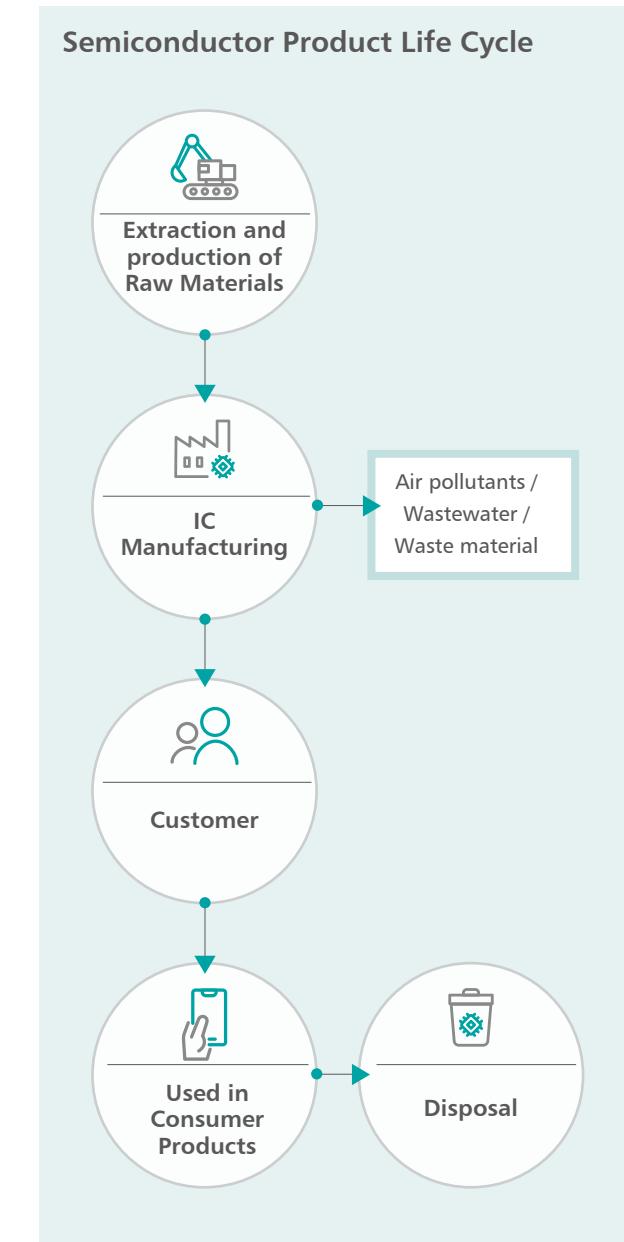
UMC is dedicated to maximizing production efficiency while also minimizing environmental impact. Therefore, the Company employs various environmental assessment tools to assist with formulating strategies and implementing measures.



Product Life Cycle Assessment

Since 2005, UMC has fully implemented life cycle assessment in all its fabs, which covers from "cradle to gate" (UMC shipment) and assesses items including energy, raw materials, and emissions. The Company systematically and constantly monitors the environmental impact of related products through the inventory results of the entire supply chain and production process, as well as uses the Simapro software to map the environmental impact assessment.

The results of the 2022 UMC Environmental Impact Assessment revealed that the environmental impact of "Climate Change" and "Respiratory Organics" is greater in the production stage than that in the raw material stage. This will serve as references for continuous improvement of the environmental management system operation.



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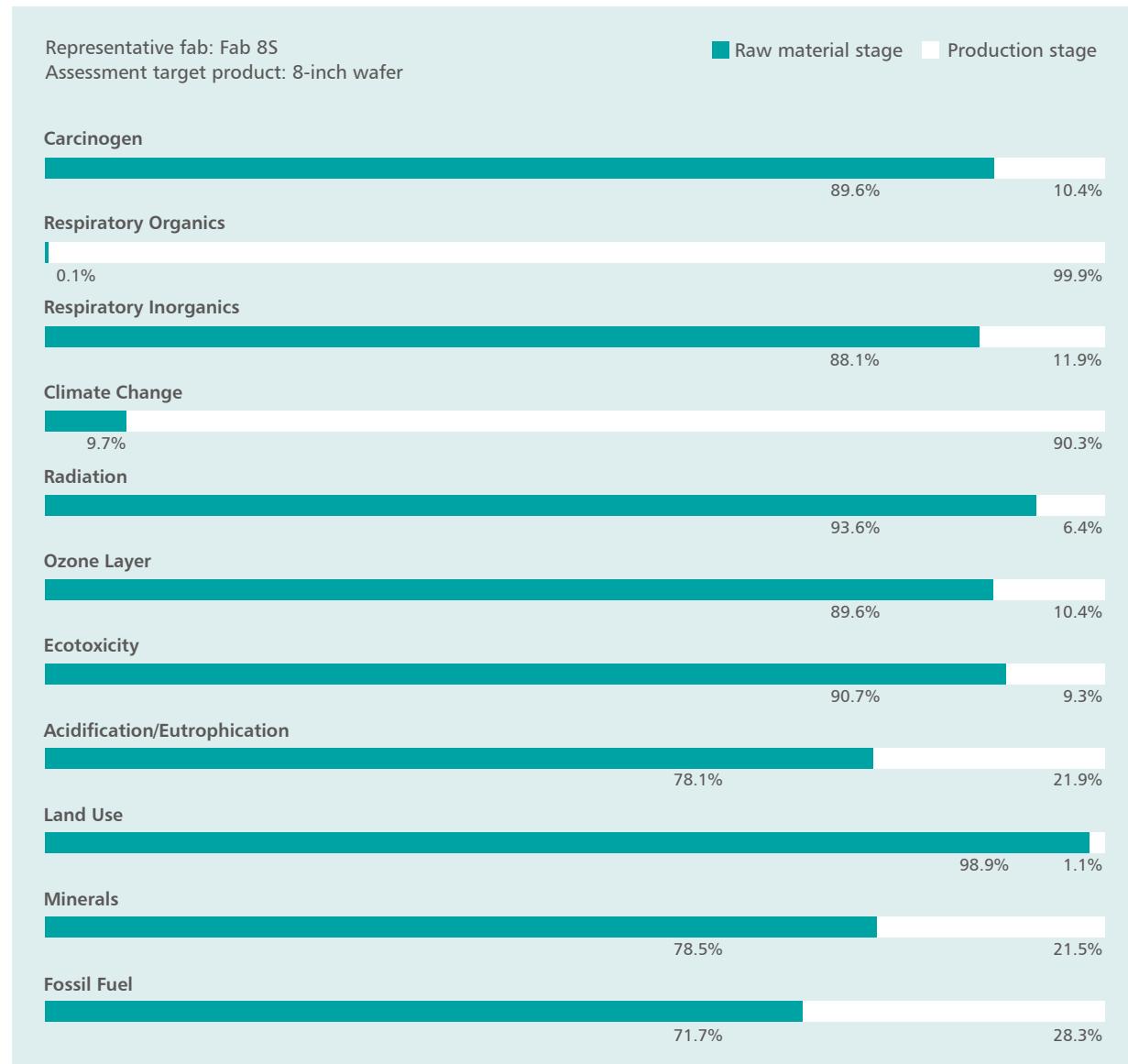
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Results of 2022 Environmental Impact Assessment



Product Carbon Footprint

As an upstream manufacturer of the semiconductor industry chain, providing customers with high-quality and environmentally friendly products that comply with environmental protection regulations has always been one of UMC's most regarded business values. Therefore, in addition to conducting inventory and verification of greenhouse gas emissions in operating activities, and implementing a comprehensive carbon management plan, UMC also proactively promotes the carbon footprint inventory program to identify the carbon reduction possibilities at the crucial product life cycle stage.

In 2022, UMC completed carbon footprint verification of 12-inch and 8-inch wafers produced by all fabs of UMC Group in accordance with ISO 14067-2018.

Product Water Footprint

Affected by climate change and extreme weather, global water resources have become one of the most discussed topics, and often referred to as the fossil fuel of the next generation. Water resources are critical and essential in semiconductor manufacturing processes. Following the Business Water Footprint Accounting standards developed by international non-profit organization Water Footprint Network, UMC lead the industry in completing the water footprint verification of its 8-inch and 12-inch fabs in 2010. The assessment revealed that the direct water usage in UMC's production exceeds that of the indirect supply chain. In response, the Company has developed and implemented water conservation plans for its manufacturing processes. For more information, please see Chapter 3.3 Water Resources Management.

In 2022, third-party verification of water footprint (ISO 14046:2014) was completed using 8-inch wafers from Fab 8D and Fab 8E as the representative sample.

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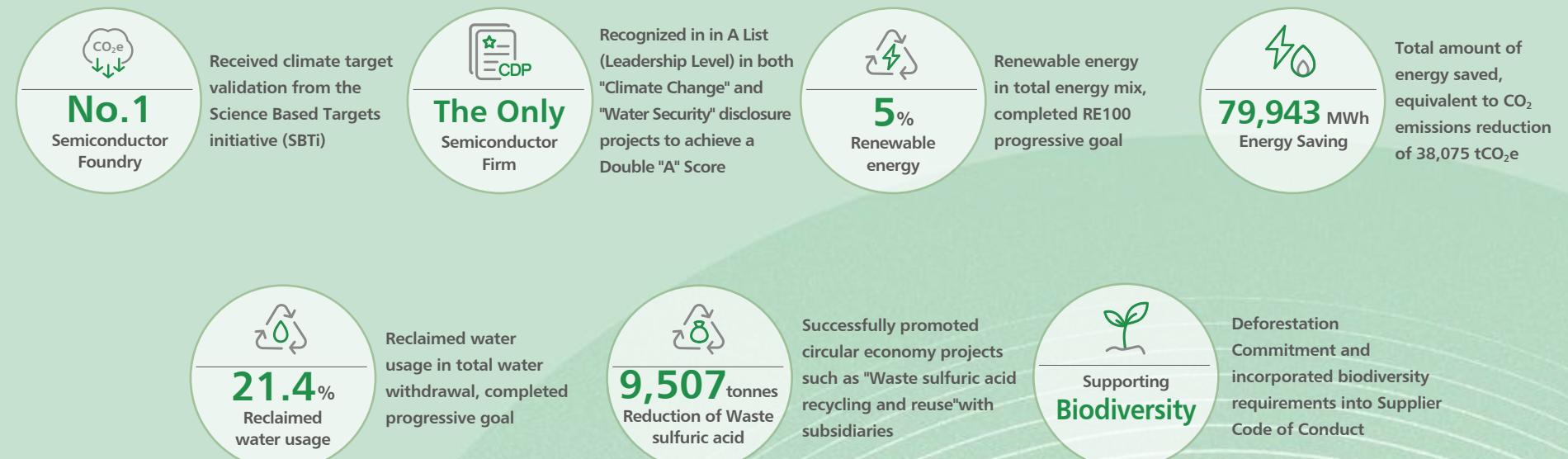
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Actions are urgently needed to address climate change. UMC is committed to minimizing the environmental impact of its operations, and has set environmental goals/indicators for carbon emissions, water, and waste as part of the Company's climate change strategy. Over the years, UMC has optimized energy/resources utilization efficiency, as well as introduced environmentally friendly designs to make the Company's operations more sustainable, prospering together with the environment.

Important Stakeholders:
Government, Suppliers, Community



Performance Highlights 2022



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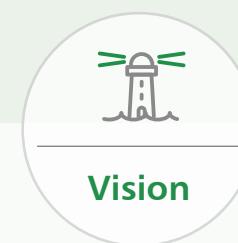
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UMC has long been committed to environmental protection, striving to balance both economic and environmental goals through the green operation model of maximizing production efficiency while minimizing environmental impact. In 2010, the Company launched the three-phase Green Action Plan, which has improved energy saving, water conservation, waste reduction, and greenhouse gas reduction indicators through source reduction and enhanced utilization. At the end of 2020, the Company's president revealed the fourth phase of the Plan, Green 2025, which aims to achieve 15% energy saving, 15% water saving, 25% waste reduction, and 65% reduction in fluorinated greenhouse gas (F-GHG) emissions intensity. In 2021, based on the latest sustainability trends and in combination with the Company's development direction, aforementioned goals are upgraded to 25% energy saving, 25% water saving, and 35% waste reduction. Meanwhile, these goals are also involved in UMC's Sustainability Strategy and Blueprint to track the progress and are quarterly monitored by the highest unit of the Company's ESG decision-making – the ESG Steering Committee.

For details of UMC's Sustainability Strategy and Blueprint, please refer to page 11.

[Environmental Protection Policy](#)



Vision

Improve the utilization efficiency of energy and resources, while minimize the impact of using energy and resources on the environment

Project of Each Stage

► Phase 1: Project 333 Reduction (2010~2012)

Goal Achieved

► Phase 2: Project 369⁺ Reduction (2013~2015)

Goal Achieved

► Phase 3: Green 2020 (2016~2020)

Goal Achieved

► Phase 4: Green 2025 (2021~2025)

Ongoing

Progress of Green 2025



► Base Year

2015

-24.2%

Goal Achieved



► 2022 Result

2015

-23.2%

Goal Achieved



► Goal Status

2015

-30.6%

Goal Achieved



► Base Year

2010

-63%

Goal Achieved

Note: The unit for intensity calculation is 1 square meter of wafer (wafer-m²). Except goal of F-GHG emissions only covers UMC, the scope of other goals covers UMC Group (UMC and subsidiaries including HJ, USCXM, Wavetek, and USJC.)

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UMC Group Implementation and Performance in 2022

	Main Reduction Measure	Economic Benefits	Environmental Benefits
Electricity Saving	<ul style="list-style-type: none"> ► Improvement on energy efficiency ► Improvement on air conditioning system ► Improvement on lighting system 	<ul style="list-style-type: none"> ► Savings of NT\$260 million 	<ul style="list-style-type: none"> ► Additional electricity savings: 97,528 MWh ► Around 48 thousand tonnes of CO₂e reduction
Water Conservation	<ul style="list-style-type: none"> ► Water saving from production machine ► Increase in wastewater recovery ► Improvement in pure water production 	<ul style="list-style-type: none"> ► Savings of NT\$9.25 million 	<ul style="list-style-type: none"> ► Additional water savings: about 448 thousand tonnes
Waste Reduction	<ul style="list-style-type: none"> ► Reduction of waste sulfuric acid and waste solvent ► Reducing the water content of waste IPA and extend the lifetime of solvent ► Waste recycle and reuse 	<ul style="list-style-type: none"> ► Savings of NT\$4.36 million ► NT\$120 million generated from turning waste into resources 	<ul style="list-style-type: none"> ► Additional waste reduction: 1,137 tonnes ► Waste output reduced by 6,098 tonnes through in-fab resources reuse ► Outsourcing recycling reached 40,277 tonnes
F-GHG Emissions Reduction	<ul style="list-style-type: none"> ► Installing high efficiency F-GHG abatement systems ► GHG raw material source reduction 	<ul style="list-style-type: none"> ► Savings of NT\$20 million by lowering raw material costs 	<ul style="list-style-type: none"> ► 1.14 million tonnes CO₂e of F-GHG reduction

Note: 1. Except benefits of F-GHG emissions only covers UMC, the scope of other benefits covers UMC Group (UMC and subsidiaries including HJ, USCXM, Wavetek, and USJC.)

2. The amount of water saving is accumulated performance in 2022 of water saving measures implemented from 2015 to the current year. And the calculation method adopts estimation.

UMC is committed to sustainability and demonstrates determination to minimize environmental impact through alliances with green financing partners.

Green Bond

UMC issued green bonds for the first time in 2021. The funds raised are designated for expenditures related to environmental protection, such as the development of renewable energy systems, the improvement of equipment efficiency, and emissions control of manufacturing processes. These projects will effectively reduce carbon emissions and waste generation, and lessening the environmental burden of the Company's operations. The interests from the green bonds will go to the "Special Fund for Environmental Protection" established by the Company in 2013. The fund supports initiatives by UMC related to environmental protection and social welfare, enabling the Company to give back to the society and the planet through meaningful actions.

Sustainability Linked Loans

UMC signed sustainability linked loan agreements with CTBC. The loan structure has been reviewed by financial institutions and followed the "Sustainability-Linked Loan Principles" formulated by the International Capital Market Association (ICMA), which is in line with several indicative key performance targets of UMC for sustainability. Through collaboration with financial institutions, the Company strives to minimize its environmental impact and strives towards its sustainability vision

Item	2022 Goal	Actual Result
GHG Management	35% reduction for GHG emissions per unit product compared to the base year 2010	-40%

Note: 1. The scope of GHG management goal includes direct emissions (scope 1) and indirect emissions from purchased energy (scope 2).

2. These goals cover UMC fabs in Taiwan and Singapore.

3.1 Climate Action

3.1.1 GHG Emissions Management

3.1.2 GHG Emissions Reduction

Material Topic: Climate Strategy and Action

Related Policy
UMC Climate Change Policy



In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ▶ Climate-change-related opportunities

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Promote the "3 Resolutions to Achieve Net Zero": Voluntary carbon emission reductions in manufacturing processes; increase use of renewable energy; investment in net zero emissions technologies. ▶ Join organizations such as the RE100 initiative, Association of Taiwan Net Zero Emissions, and Climate Partnership to stay on top of global climate issue development trends. ▶ Promote a sustainable supply chain, and reinforce supply chain resilience through joint carbon-reduction action (refer to Chapter 1.3 Building Sustainable Supply Chain). 	<ul style="list-style-type: none"> ▶ Report the progress of performance by "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review quarterly. ▶ Regularly participate in association meetings; engage in exchange with industrial/governmental/academia/research organizations.

Negative ▶ Climate actions failure

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Sign and support the Task Force on Climate-Related Financial Disclosures (TCFD) initiative; conduct annual TCFD project on risks and opportunities arising from climate change, and from this adopt further management and response measures. ▶ Set science-based targets, and practically plan and implement carbon reduction pathways via official approval. In addition, set GHG reduction and renewable energy utilization indicators, and conduct quarterly reviews. ▶ Conduct annual ISO 14064-1 GHG inventories and promote ISO 14067 product carbon footprint inventories in all fabs in order to identify emissions hotspots and areas with reduction potential. ▶ Through annual Sustainability Reports, externally disclose response measures and progress toward objectives to stakeholders. 	<ul style="list-style-type: none"> ▶ Annual third-party certifications: ISO 14064, ISO 14067, and TCFD. ▶ Response to stakeholders: Respond to customers/investors' questionnaire surveys on climate issues. ▶ Participate in international CDP Climate Project for transparency.

Key Performance Indexes

Achievements in 2022

Build a carbon management platform ▶ ★Achieved	Complete assessment of low-carbon technology and potential partners ▶ ★Achieved
63% reduction of fluorinated greenhouse gas (F-GHG) emissions per unit product (base year 2010) ▶ ★Achieved	Recognized in CDP's "A List" for environmental transparency and action on Climate Change Project.

Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)
Assessment of low-carbon technology applications ^{Note 1}	Establish a model of collaboration	Complete 1 project assessment	Complete 2 projects assessment
Reduction of GHG emissions per unit product (base year 2010)*	50%	55%	60%
Absolute reduction goal (base year 2020) approved by Science Based Targets initiative (SBTi)			▶ Reduction of Scope 1 and 2 GHG emissions by 25%, Scope 3 GHG emissions by 12.3%

Note: 1. Low-carbon technologies include new energy-saving and carbon-reducing application technologies, clean energy technologies (such as bioenergy/hydrogen energy) and negative carbon emission technologies (such as CCUS).

2. Scope: * UMC Group (UMC, subsidiaries, HJ, USCXM, Wavetek, and USJC); Without any * remark is UMC.

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3.1.1 GHG Emissions Management

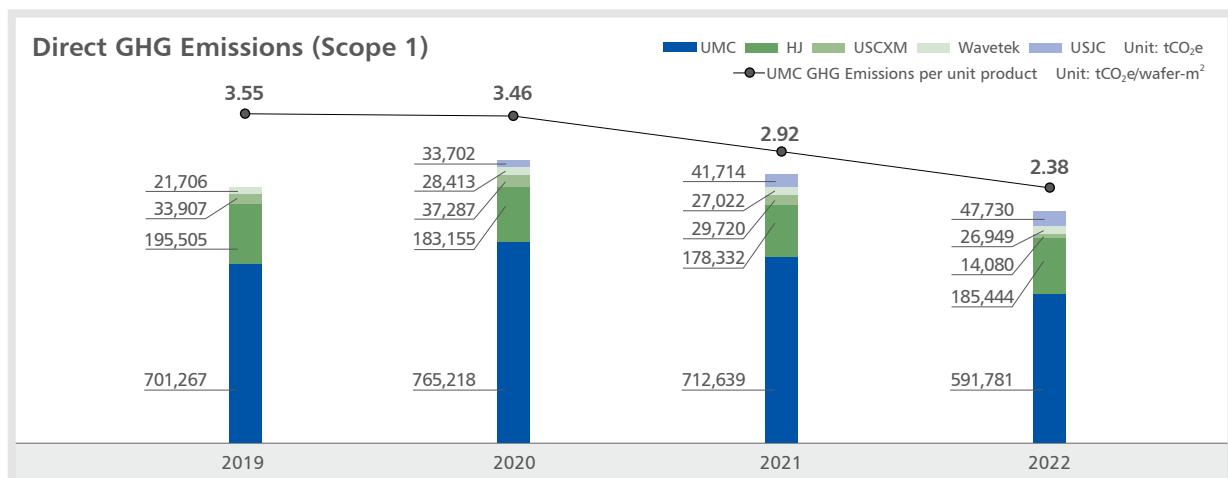
All UMC Group fabs have carried out GHG inventories for many years. We will continue to expand the scope of GHG management by initiating carbon emission inventories in UMC Group's subsidiaries. Through this, carbon emission hotspots can be controlled, and analysis can be carried out to develop carbon reduction countermeasures. In addition, through the introduction of internal carbon pricing mechanisms and establishing a carbon management platform, links between daily operations and carbon reduction actions can be strengthened, and GHG emissions can be continuously reduced.

- ▶ For details on the risks and opportunities of climate change, please refer to Chapter 1.2.5 Managing Climate-related Risks and Opportunities.
- ▶ For details on the related information of energy efficiency improvement and renewable energy utilization, please refer to Chapter 3.2 Energy Management.

Greenhouse Gas Inventory

UMC established its GHG inventory standard mechanism in accordance with inventory guidelines defined by domestic and international organizations such as the ISO14064-1:2018, World Resources Institute's Greenhouse Gas Protocol and GHG Inventory Guidance in Taiwan. Since 2006, the Company has inventoried the GHG emissions of all fabs annually to fully determine the status of GHG emissions and verify the effectiveness of reduction measures. Furthermore, UMC's subsidiaries (including HJ, USCXM, Wavetek, and USJC) all introduced the GHG inventory mechanism and conduct third-party verification. In response to the revised ISO 14064:2018 standards for organizational GHG inventories, the data used for each year's calculation, including the base year has been synchronously updated. In 2022, UMC's Scope 1 direct GHG emissions totaled 591,781 tCO₂e, and Scope 2 indirect GHG emissions amounted to 1,373,914 tCO₂e. The emissions per unit product defined by the UMC Green 2025 indicator was 2.38 tCO₂e/wafer-m² and 5.53 tCO₂e/wafer-m², respectively for Scope 1 and Scope 2. The past four years have shown an ongoing reduction trend in UMC's per-unit product Scope 1 emissions. For per-unit product Scope 2 emissions, there was a slight increase in 2022 as compared with 2021, as a result of electricity consumption increase arising from production capacity expansion. Per-unit emissions were still less than those in 2019 and 2020, however.

Note: GHG emissions in the base year 2010 were recorded at 1,995,517 tCO₂e

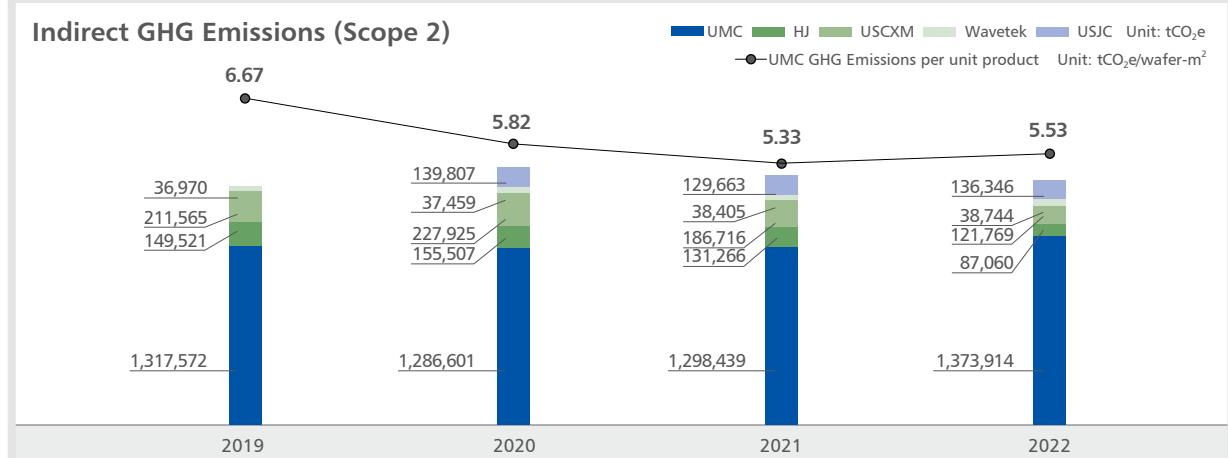


Note: 1. In 2022, the overall direct GHG emissions per unit product for UMC Group was 2.54 tCO₂e/wafer-m².

2. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

3. The approach for consolidating our GHG inventory is operational control. Global warming potentials (GWP) used in the calculation is according to the definitions in the IPCC Fifth Assessment (IPCC AR5) (2014), and the GHG emissions is based on version 6.0.4 of the EPA Greenhouse Gas Emissions Factor Management Table.

4. The statistics above is calculated in accordance with ISO 14064-1: 2018 and the results had been verified by a third party.



Note: 1. In 2022, the overall direct GHG emissions per unit product for UMC Group was 5.16 tCO₂e/wafer-m².

2. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

3. The approach for consolidating our GHG inventory is operational control.

4. CO₂ emissions are estimated based on the latest local power factor available in the year.

(1) Taiwan: 0.509 KgCO₂e/KWh (2021 data); (2) Singapore: 0.406 KgCO₂e/KWh;

(3) China: Suzhou (HJ) 0.570 KgCO₂e/KWh, Xiamen (USCXM) 0.570 KgCO₂e/KWh; (4) Japan: 0.388 KgCO₂e/KWh.

5. The statistics above is calculated in accordance with ISO 14064-1: 2018 and the results had been verified by a third party.

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To account for other indirect GHG emissions (Scope 3), UMC referred to carbon footprint calculation methods (ISO 14067: 2018 and PAS 2050) and technical documents provided by WRI and WBCSD to estimate the amount of Scope 3 GHG emissions from UMC's fabs in Taiwan and Singapore, which has passed DNV verification. In 2022, UMC reduced unnecessary potential carbon emissions in items such as purchase of raw materials, transportation and distribution of upstream raw materials and waste generated in operations. The Scope 3 GHG emissions in 2022 was 37% lower compared to emissions in 2021.

Other Indirect GHG Emissions (Scope 3)

Category	Boundary	GHG Emissions (tCO ₂ e)
Purchased goods and services	Upstream (cradle-to-gate) emissions of 85% (by weight) of purchased goods	487,811
Fuel-and-energy-related activities	Upstream emissions of purchased fuels (diesel and NG) and electricity	312,516
Upstream transportation and distribution	Transportation of 85% (by weight) of purchased goods	173,634
Waste generated in operations	Transportation and disposal or treatment of waste.	10,613
Business travel	Transportation of employees for business-related activities	989
Employee commuting	Transportation of employees (in vehicles operated by the Company and employees)	11,046
Downstream transportation and distribution	Transportation of products sold by the Company	3,562
Downstream leased assets	Emissions from downstream assets leased	8,133
Investments of subsidiaries	Including HJ, USCXM, Wavetek, and USJC	658,122
Capital assets	Facilities and assets purchased by capital expense	397,858
Total Amount		2,064,284

Note: 1.The statistics covers UMC Taiwan and Singapore. The data was verified by a third party and obtained the certification of ISO 14064-1: 2018.

2.Global warming potentials (GWPs) used in the calculation is according to the definitions in the IPCC Fifth Assessment (IPCC AR5) (2014), and the GHG emissions is based on version 6.0.4 of the EPA Greenhouse Gas Emissions Factor Management Table, Taiwan EPA Carbon Footprint Calculation Platform, Simapro 7.2.3 and ITRI DoITPro.

3.Beginning in 2022 onwards, capital asset emissions are calculated based on the GHG emissions applicable to the specific capital asset type.

Carbon Management Mechanism

UMC has integrated carbon management into our operational strategies. This includes introducing internal carbon pricing mechanisms, a carbon management platform, mechanisms to link ESG performance with employee remuneration, and more. Through these measures, we seek breakthroughs in carbon reduction.

In response to global carbon pricing trends, UMC has determined our internal carbon prices by considering prices prevailing in global carbon markets, carbon prices stipulated in GHG regulations, and UMC's internal carbon reduction costs. These also serve as a reference for our carbon reduction management and planning. Through the carbon pricing mechanism, UMC takes advance response measures for internal/external carbon reduction pressures and risks arising from factors such as Singapore's carbon tax (UMC's Fab 12i is located in Singapore); Taiwan's future carbon fee levied on emission sources in accordance with the Climate Change Response Act; carbon emission supervision mechanisms being adopted by countries around the world; and requirements to increase the share of renewable energy utilization, as regulated by the Renewable Energy Development Act. UMC is also able, on a rolling basis, to assess the opportunities brought by the low-carbon transition, and adjust policies and programs through these mechanisms. By doing so, we develop forward-looking carbon reduction technologies and low-carbon investments such as substitutes for fluorinated gases in manufacturing processes, carbon capture/storage, etc.

In addition, information about the whole Group's emissions is systematically integrated through the carbon management platform, allowing us to keep tabs on carbon management information in real time. The platform also allows us to comprehensively supervise all the GHG reduction plans, including measures such as improving energy efficiency, purchasing energy-saving equipment, installing solar power generation systems, GHG reductions at raw material sources, installing high-efficiency GHG destruction devices, assessing low-carbon fuels/energy utilization, developing negative carbon emission technologies, etc. These actions ensure that reductions are in line with scheduled plans, and that we are reducing carbon emission impacts while enhancing operational competitiveness and advantages.

In order to encourage management, executive teams, and employees as a whole to achieve GHG reduction goals and improve energy and resource efficiency, major program objectives have been included within UMC's operating performance indicators. These serve as a basis for employee performance appraisals and bonuses, helping realize the spirit of accountability management. In addition, the Green Innovation Award is held every year, encouraging employees to develop innovative projects for energy conservation and environmental protection. From these, incentive bonuses are awarded to units and individuals with excellent carbon-reduction performance. Since 2021, we have also established a new mechanism that links ESG performance with employee remuneration. Based on this, employees receive a certain proportion of additional bonuses if overall company target performance is achieved.

With stimuli from the aforementioned internal carbon pricing and other mechanisms, as well as planting sustainability deeply within UMC's culture, employees are encouraged to work together to step by step realize UMC Group's net zero emission pathways and targets.

3.1.2 GHG Emissions Reduction

Through carbon footprint and GHG inventories, the Company learned that the main GHG sources are the fluorinated greenhouse gases (F-GHGs) used in the manufacturing process in Scope 1, and from purchased electricity in Scope 2. These emissions account for about 95% of UMC overall GHG emissions. Therefore, GHG reduction of both F-GHGs and purchased electricity have become the priority for UMC.

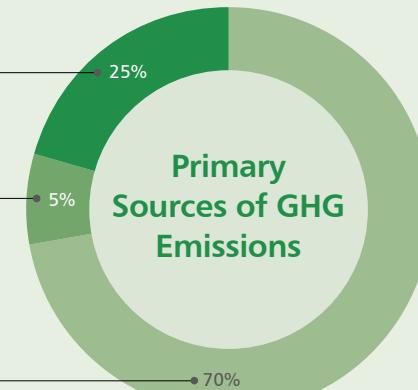
Note: For details on the related information of indirect GHG emissions from purchased electricity (Scope 2), please refer to Chapter 3.2 Energy Management.

- **Scope 1 Direct GHG emissions**

- ▶ The use of F-GHGs during manufacturing process

CF₄, C₂F₆, C₃F₈, C₄F₈, C₅F₈, SF₆, NF₃, CHF₃, CH₃F, etc.

- ▶ Other



- **Scope 2 Indirect GHG emissions from purchased energy**

- ▶ The use of non-renewable energy CO₂

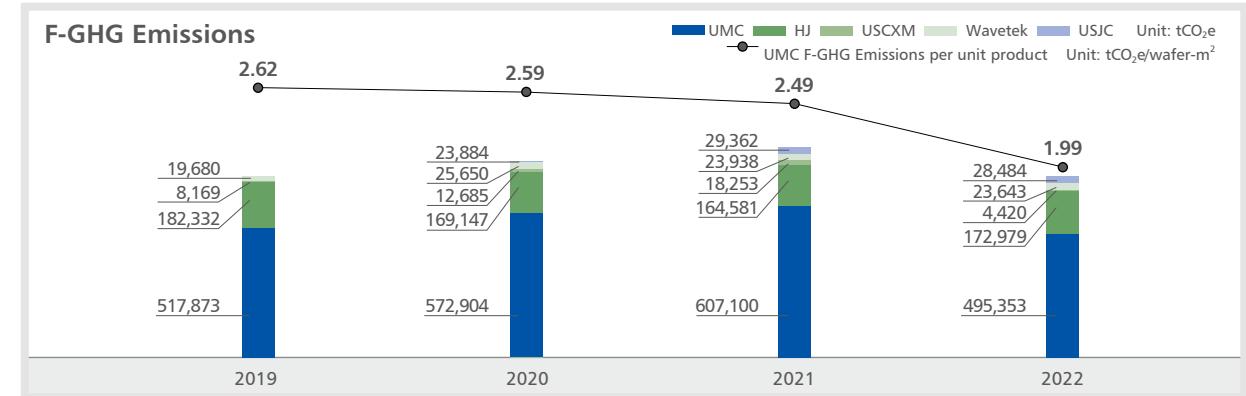
■ Scope 1 Direct GHG emissions (F-GHGs)

■ Scope 1 Direct GHG emissions (Other)

■ Scope 2 Indirect GHG emissions from purchased energy

F-GHGs Reduction

In 2022, UMC's F-GHG emissions amounted to 495,353 tCO₂e, which was lower than the emissions in 2021. UMC has continually conducted reduction measures such as installing high performance local scrubbers for N₂O and F-GHGs in all new equipment, and utilizing NF₃ gases in new CVD equipment to keep emission intensity in a downward trend.



Note: 1. In 2022, the overall F-GHG emissions per unit product for UMC Group was 1.79 tCO₂e/wafer-m².

2. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation since 2020.

3. F-GHG emissions was calculated by the methodology of IPCC tier2c and was verified by a third party.

As a pioneer in carbon reduction among companies in Taiwan, UMC established the Fluorinated Greenhouse Gas Reduction Taskforce in 1999, and continued to implement several phased green initiatives – including the 333 Reduction Plan (2010–2012), the 369+ Reduction Plan (2013–2020), the Green 2025 Reduction Plan (2021–2025), etc. – to reduce fluorinated greenhouse gases (F-GHGs) generated in semiconductor manufacturing processes.

Through these measures, emission of F-GHGs has been de-linked from production capacity. For example, although production capacity increased by 1.64 times in 2022 from the base year 2010, F-GHG emissions did not increase in a linear manner. In fact, the emissions in 2022 decreased by 40% compared to those in 2010. Moreover, UMC's F-GHGs substitution strategies are widely emulated by peer companies in the industry; together with the industry, we are making breakthroughs in carbon reductions.

To ensure UMC is in line with government policies and international trend, the Company has set goals for 2025 including 65% reduction of F-GHG emissions per unit product. F-GHG reduction in 2022 reached 1.14 million tonnes CO₂e, which represents a 63% decline in F-GHG emissions per unit product.

Plans and Targets for F-GHGs Reduction Plans at Each Phase

Phase 1 ★ Goal Achieved	Phase 2 ★ Goal Achieved	Phase 3 ★ Goal Achieved	Phase 4 ○ Ongoing
1998	2010	2012	2020
Comply with TSIA initiatives	333 Voluntary Reduction Plan	369+ Voluntary Reduction Plan	Green 2025 Action Plan
▶ Decrease total annual F-GHG emissions in Taiwan fabs by 0.216 MMTCE	▶ Compared to 2009, reduce F-GHG emissions per unit product by 33% in 2012	▶ Compared to 2010, reduce F-GHG emissions per unit product by 36% in 2020	▶ Compared to 2010, reduce F-GHG emissions per unit product by 65% in 2025.

Note: The timeline for voluntary F-GHG reductions in the 369+ Reduction Plan was 2013–2020, so the Phase 4 reduction actions and goals were specified in the Green 2025 Plan.

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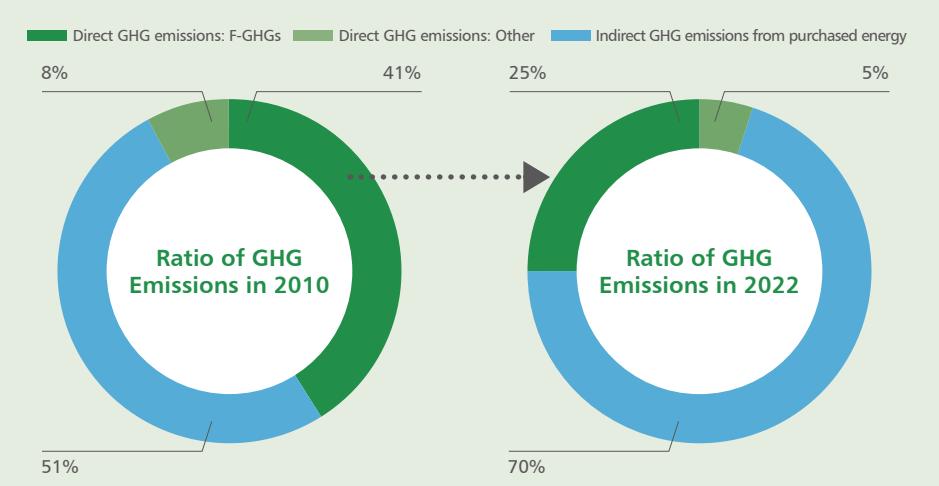
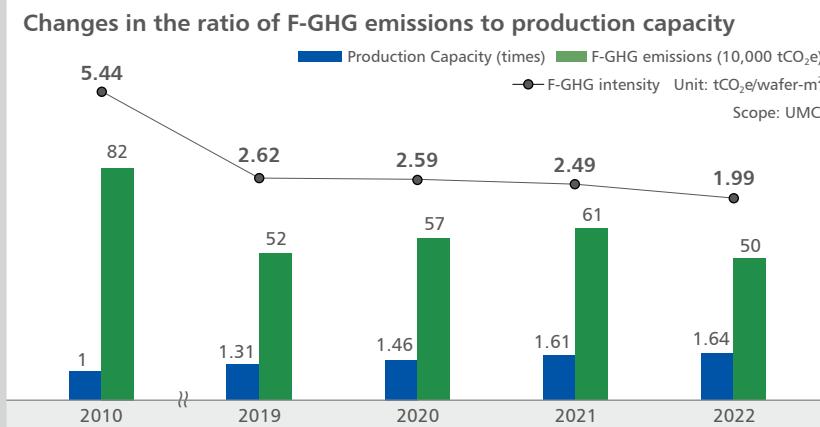
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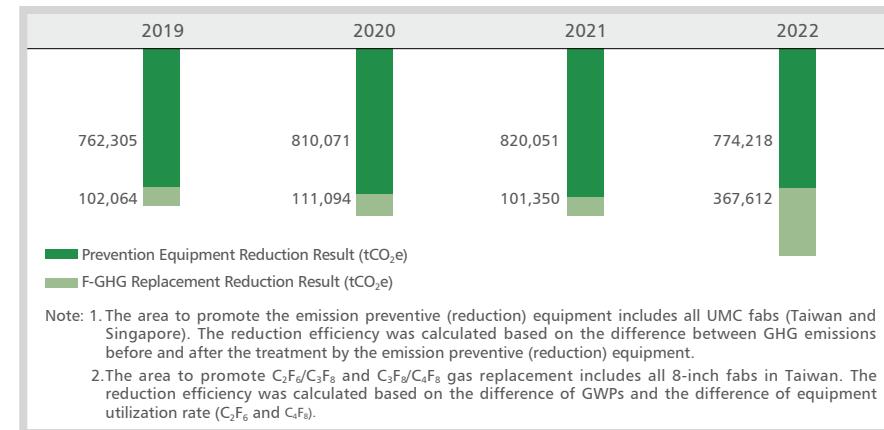
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Appendix

Reverse the Past, Change the Future



F-GHGs Reduction Results



F-GHGs Reduction Current Status

Goals for 2025



Reduce the F-GHG emissions per unit product by **65%** in 2025

Status in 2022



63% reduction

Carbon Assets and Carbon Trading

From 2013 to 2014, UMC supported the Taiwan Environmental Protection Administration (EPA) "Early Reduction Project" and acquired a carbon reduction allowance of 3.02 million tonnes. In 2014, a 2 million-tonne carbon trading deal was signed with Dragon Steel Corporation. This was the first carbon trading transaction recognized by the EPA and marked an important milestone for the carbon trading market in Taiwan. Revenue obtained from this carbon trading transaction was used to establish the UMC Eco-Echo Ecological Conservation Hope Project that was exclusively dedicated to environmental protection. In 2018, UMC's application for "Emission Reduction Methodology for Semiconductor Industry Fluorinated Greenhouse Gases and N₂O Abatement Technology" was reviewed and approved by the EPA and published on Taiwan's Greenhouse Gas Registry (platform). The GHG Offset Project proposed by UMC was approved by the Taiwan EPA in 2020. Through this project, the GHG reduction in UMC's fabs in Taiwan can be used to establish a 10-year carbon asset.

Moreover, UMC is also paying constant attention to different countries' carbon credit markets and trading platforms, to stay on top of market trends and make early deployments. By doing this, we proactively prepare for future carbon fees, tax offsets, and even carbon credit investments to address the risks and opportunities arising from climate change.

3.2 Energy Management

3.2.1 Energy Mix

3.2.2 Energy Efficiency Improvement

Material Topic: Energy Management

In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ► Renewable energy deployment

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Install solar energy systems and replace some old models of solar photovoltaic modules with high efficiency ones. ▶ Purchase renewable energy and attend to needs of customers. 	<ul style="list-style-type: none"> ▶ Monthly update related KPIs and quarterly report the progress of performance by "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review.

Negative ► Energy/resource consumption

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Replace old and inefficient equipment ▶ Implement energy saving measures through internal assessment. ▶ Introduce ISO 50001 Energy Management System 	<ul style="list-style-type: none"> ▶ Monthly update related KPIs and quarterly report the progress of performance by "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review. ▶ Promote energy saving projects and experience sharing by Energy Saving Committee. ▶ ISO 50001 Energy Management System verified by a third party.

Key Performance Indexes

Achievements in 2022

12%* reduction of electricity consumption per unit product (base year 2015) ► ★ Achieved Reduction of **24.2%**

5%* of renewable energy in total energy mix ► ★ Achieved Complete RE100 progressive goal

Completed the installation of over **9,570** kWp of solar energy systems as of 2022, which is expected to generate up to 10,000 MWh of electricity each year*.

Total electricity and natural gas saved was **79,943** MWh, which is equivalent to a reduction of **38,075** tonnes of CO₂ emissions.

Future Goals

Short-Term Goals (2023)

Mid-Term Goals (2025)

Long-Term Goals (2030)

Cumulative energy savings (base year 2015)	550 GWh	660 GWh	1,000 GWh
Reduction of electricity consumption per unit product (base year 2015)	13%	25%	30%
Ratio of renewable energy in total energy mix	10%	25%	50%

Note: Scope: * UMC Group (UMC, subsidiaries, HJ, USCXM, Wavetek, and USJC); Without any * remark is UMC.

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In order to lessen environmental impact of greenhouse effect and minimize energy consumption, UMC set company-wide carbon reduction goals and development plans through the Corporate Sustainability Committee, which coordinates and integrates energy saving and carbon reduction strategies and initiatives of various departments. Regular committee meetings are held to review progress. The Company continually introduces energy saving technologies and implements energy efficiency improvement programs in all facilities. In addition to its strategy of energy conservation, increasing energy efficiency, and expanding installation of renewables, UMC also promotes the implementation of energy management in its offices and common areas through activities, education, and training to cultivate a mindset and habit of energy conservation and GHG emission reduction among employees.

3.2.1 Energy Mix

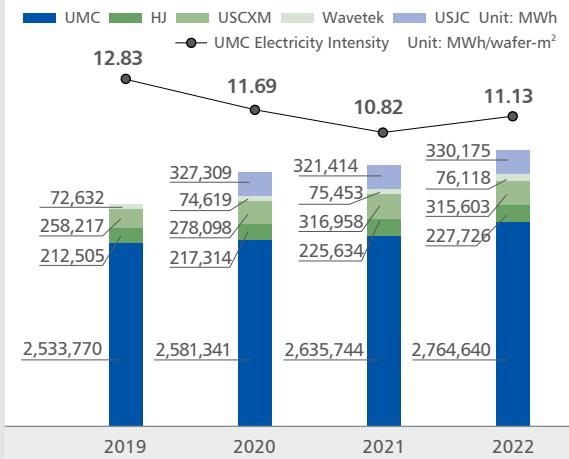
Bulk purchases of electricity dominate UMC's energy usage, accounting for about 93.4% of the total consumption, followed by natural gas (including LPG) and diesel, which account for about 6.4% and 0.2% of the total, respectively. Therefore, energy saving is mainly aimed at reducing the use of bulk electricity and natural gas. Due to the expansion of production capacity, UMC's total energy consumption in 2022 reached 2,961,341 MWh, showing a slight increase from 2021. Of the total, electricity consumption was 2,764,640 MWh, while natural gas consumption was 188,257 MWh. The electricity consumption per unit product was 11.13 MWh/wafer-m², while the natural gas consumption per unit product was 0.76 MWh/wafer-m². Energy consumption has been on a downward trend over the past four years, reflecting UMC's continuous improvement in energy management.

Total Energy Consumption

Unit: MWh		2019	2020	2021	2022
Non-renewable Energy	Purchased Electricity	2,533,770	2,581,341	2,635,744	2,764,640
	Nature Gas, Diesel	191,181	200,764	197,273	192,526
	Steam, Heating, Cooling and Other Purchased Energy	0	0	0	0
	Non-renewable Energy Sold	0	0	0	0
Total Non-renewable Energy Consumption (a)		2,724,951	2,782,105	2,833,017	2,957,166
Renewable Energy	Total Renewable Energy (b)	2,747	2,912	4,321	6,264
	Renewable Energy Sold (c)	2,054	2,263	2,175	2,089
Total Energy Consumption (a+b-c)		2,725,644	2,782,754	2,835,163	2,961,341

Note: 1. The base of calculation includes UMC fabs in Taiwan and Singapore, excluding the United Tower office building and the Nitrogen Field in Taiwan.
2. Renewable energy generated from solar energy installations.
3. The total energy consumption in 2022 was about 1.0660827×10^7 GJ; the percentage of grid electricity is >90%; the percentage of renewable energy is <1%.
4. The amount of diesel is based on the purchased quantity, and the energy consumption is calculated according to the energy product calorific value data provided by the Energy Bureau.

Purchased Electricity Consumption

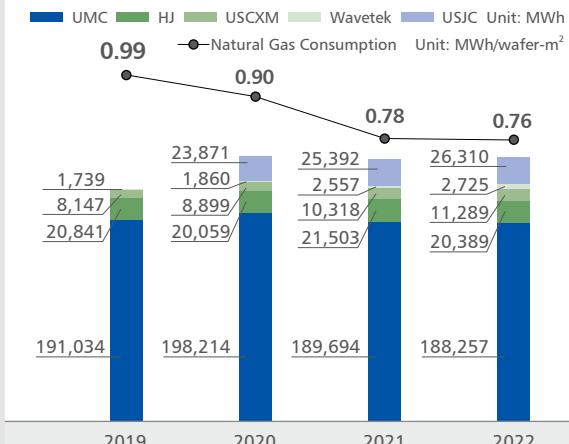


Note: 1. UMC includes fabs in Taiwan and in Singapore, while the United Tower office building and the Nitrogen Field are not included.

2. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

3. In 2022, the overall electricity intensity for UMC Group was 10.86 MWh/wafer-m².

Natural Gas Consumption



Note: 1. UMC includes fabs in Taiwan and in Singapore and the United Tower office building, while dormitories are not included. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

2. The unit gas calorific conversion coefficient is calculated according to the calorific value provided by the local gas suppliers of each fab, which are 8,900 kcal/m³ in Hsinchu and 9,700 kcal/m³ in Tainan respectively.

3. In 2022, the overall natural gas intensity for UMC Group was 0.75 MWh/wafer-m².

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Promotion of Renewable Energy

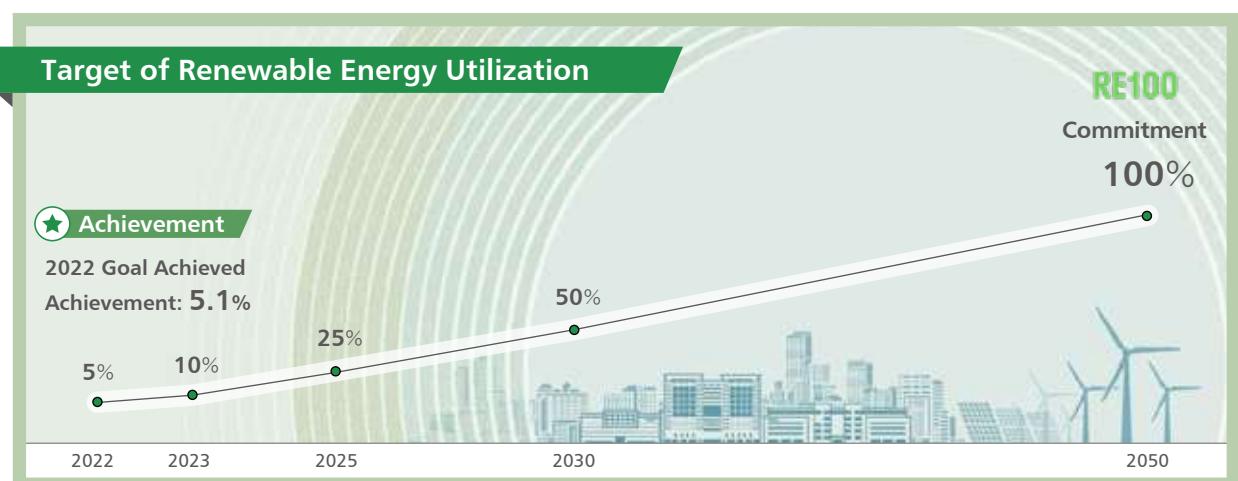
To diversify energy sources, UMC is actively installing renewable energy facilities in fabs. Solar energy system is a standard item that will be included in the design and construction of all new fabs. In 2022, a total of 2,554 kWp of solar PV system was installed as planned. As of the end of 2022, UMC and its subsidiaries have completed the installation of over 9,570 kWp of solar energy, which is expected to generate up to 10,000 MWh of electricity each year.

In addition, UMC plans to add a total of roughly 800 kWp of solar photovoltaic systems in 2023, demonstrating the Company's commitment to green energy. In 2022, UMC's solar photovoltaic system generated a total of 6,264 MWh (on-site), highest in the semiconductor foundry industry in Taiwan.

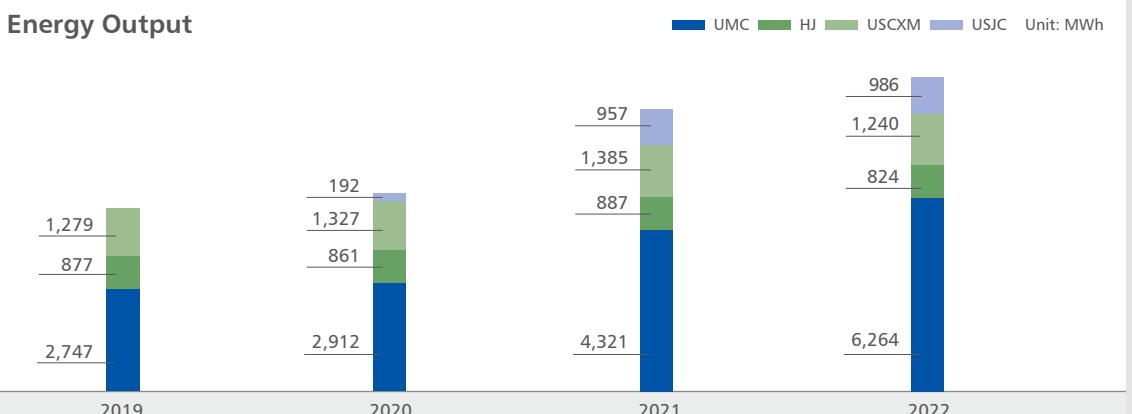
In order to promote the low-carbon transition proactively, UMC Group joined RE100 as a member, becoming the second semiconductor wafer foundry in this international renewable energy initiative. The Company is committed to using 100% renewable energy by 2050. In 2022, renewable energy utilization at UMC and our subsidiaries HJ, USCXM, Wavetek, and USJC reached our phased goal of 5%. After re-reviewing and adjusting our short-term goals, the target for 2025 is enhanced to 25%, and 2030 to 50%, to accelerate UMC's low-carbon transition. In the future, UMC will continue to achieve our phased renewable energy targets through diverse measures such as expanded installation of solar-power equipment in fabs, signing power purchase agreement (PPA) with a generator for the supply of renewable electricity, purchasing renewable energy certificates, etc.

RE100

RE100 is a global initiative bringing together the world's most influential businesses committed to 100% renewable power. Led by international non-profit Organization Climate Group in partnership with CDP, the group has a total revenue of over US\$6.6 trillion and operate in a diverse range of sectors. Together, they send a powerful signal to policymakers and investors to accelerate the transition to a clean economy.



Solar Energy Output



Note: Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

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3.2.2 Energy Efficiency Improvement

UMC continues to improve the energy utilization efficiency of all fabs through various energy-saving measures. In 2022, the total electricity and natural gas saved was 79,943 MWh, which is equivalent to a reduction of 38,075 tonnes of CO₂ emissions.

Major Energy Conservation Measures in 2022



- ▶ Energy saving measures for production machine and water treatment systems
- ▶ Energy saving measures for cold water and AC systems
- ▶ Compressed gas reduction to conserve energy
- ▶ Replace online UPS with offline UPS
- ▶ AC units clean-up for energy conservation
- ▶ Energy saving measures for production process cooling water
- ▶ Energy saving measures for illumination



- ▶ L/S Zenith Modify to CT type
- ▶ NG Flow Adjustment
- ▶ VOC burning gas operation adjustment for optimal efficiency
- ▶ Boiler operation adjustment for optimal efficiency

Total Energy Conservation in 2022

Electricity	Amount of Savings (MWh) 75,483	Carbon Reduction (tCO ₂ e) 37,175
Natural Gas	Amount of Savings (MWh) 4,460	Carbon Reduction (tCO ₂ e) 900

Note: 1. The statistics of calculation is based on electricity consumption per unit product by 2015 and the scope includes UMC fabs in Taiwan and Singapore.
 2. CO₂ emissions are calculated using the latest local electricity coefficient. Taiwan: 0.509 Kg CO₂e/kWh; Singapore: 0.406 Kg CO₂e/kWh
 3. The gas conservation amount estimated by the energy conservation measure is a theoretical amount. The CO₂, CH₄, N₂O emission coefficient of the 2006 IPCC fixed and mobile resource (gas) and gas calorific value from the various local fabs are also incorporated into the carbon emission calculation.
 4. The newly added improvement item was calculated based only on the 12-month performance. For the cross-year project, only the performance generated in 2022 was counted

Energy Conservation Plans

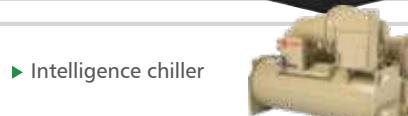
UMC's energy saving plan covers approximately 400 energy saving measures, including the complete introduction of equipment energy saving features, provision of inverters, replacing online uninterruptible power supplies (UPS) with offline UPS systems, and ice water systems. The Company's reduction goal for 2023 is 60,000 MWh, equivalent to CO₂ emissions reduction of about 29,000 tCO₂e. UMC will continue its program to replace VOC (volatile organic compound) rotors and L/R, which is expected to reduce natural gas consumption by 600 MWh, equivalent to CO₂ emissions reduction of about 121 tCO₂e



- ▶ Inverter air compressor control



- ▶ Cooling tower replacement

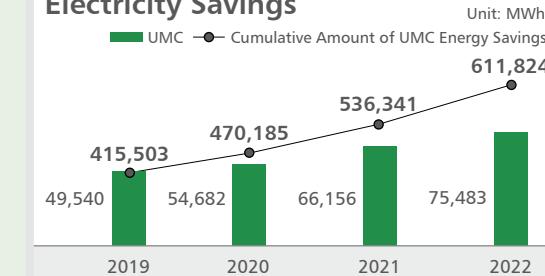


- ▶ Intelligence chiller

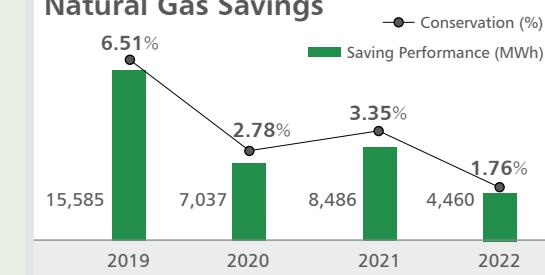


- ▶ Energy saving motor

Electricity Savings



Natural Gas Savings



Note: The statistics of calculation includes UMC fabs in Taiwan and Singapore.

ISO 50001 Certification

UMC plans to fully introduce ISO 50001 Energy Management System Certification to all fabs in Taiwan. Fab 12A P1/2 has obtained the certificate in October 2022. It is expected that all UMC's fabs in Taiwan will be verified by third-party for ISO 50001 by 2026.

	2022	2023	2024	2025	2026
Completed Rate %	25.0%	37.5%	75.0%	87.5%	100%
Fab	Fab 12A P1/2	Fab 12A P3/4	Fab 8CD	Fab 8E	Fab 8F
			Fab 12A P5/6	Fab 12A P5/6	Fab 8S
					Fab 8A

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3.3 Water Resources Management

3.3.1 Water Structure

3.3.2 Water Conservation

3.3.3 Water Pollution Control

Material Topic: Water and Wastewater Management

Related Policy
Water Management Policy
and Commitment



In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ▶ Water resource management and reuse

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Develop and adopt diverse sources, such as reclaimed water and desalinated seawater. ▶ Adopt multipronged approaches such as increasing the recycling of in-plant used water and investing in recycling technologies. ▶ Participate in public affairs, and cooperate with government and industry to facilitate water-resource-related communication, interaction and guiding assistance. 	<ul style="list-style-type: none"> ▶ Quarterly report the progress of performance by the "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review. ▶ Compile monthly statistics on water consumption, water-saving achievements, and recovery rates. ▶ Regularly participate in meetings held by the industry's professional associations and the Water Resources Agency.

Negative ▶ Water resource consumption and pollution

Management Actions	Processes Used to Track the Effectiveness of Actions
<p>Water Consumption</p> <ul style="list-style-type: none"> ▶ Continue the reinforcement of in-plant water conservation measures, and increase appropriate water-saving measures. ▶ Install U water generation equipment in response to sudden droughts. ▶ Introduce water risk early warning and decision-making systems to be alerted in advance about water restriction situations. <p>Wastewater Pollution</p> <ul style="list-style-type: none"> ▶ Invest in the R&D of wastewater-related treatment technologies. ▶ Monitor and optimize wastewater discharge. ▶ Monitor the environmental development trends in the world, and assess relevant opportunities and risks. 	<p>Water Resource Management</p> <ul style="list-style-type: none"> ▶ Quarterly report the progress of performance by the "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review. ▶ Check the establishment progress of U water equipment. ▶ Report water risk status monitoring results on a monthly basis. ▶ Participate in international CDP Water Security Project for transparency. <p>Wastewater Treatment</p> <ul style="list-style-type: none"> ▶ Conduct wastewater/discharge testing and acquire relevant data on a monthly basis. ▶ Participate in external regulations-related seminars, and environmental protection meetings held by the Allied Association for Science Park Industries. ▶ The Environmental Team reports and shares the results of regulatory compliance checks in monthly meetings. ▶ Implement ISO 14001:2015 Environmental Management System.

Key Performance Indexes

Achievements in 2022

Overall water conservation volume was **35.13** million tonnes, which is **1.12** times the storage capacity of the Baoshan II Reservoir in Hsinchu County.

Water recovery rate in the manufacturing process across all UMC's fabs reached **83.1%**, higher than the locally regulated standards.

Reclaimed water usage rate reached **21.4%**

Recognized in CDP's "A List" for environmental transparency and action on Water Security Project.

12% reduction in water withdrawal per unit product (base year 2015)* ▶ ★ Achieved Reduction of **23.2%**

Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)
Reclaimed water usage rate	21.5%	25%	40%
Reduction of water withdrawal per unit product (base year 2015) *	13%	25%	30%
Cumulative water savings (base year 2015) *	5.1 million tonnes	6.1 million tonnes	8.6 million tonnes
Key water pollution indicators better than regulated standards **	53%	60%	70%

Note: 1. Scope: * UMC Group (UMC, subsidiaries, HJ, USCXM, Wavetek, and USJC); ** UMC Taiwan; Without any * remark is UMC.

2. The water-saving statistics refer to the current year's conservation performance achieved through the water-saving measures implemented since 2015. The statistics were calculated based on estimated values.

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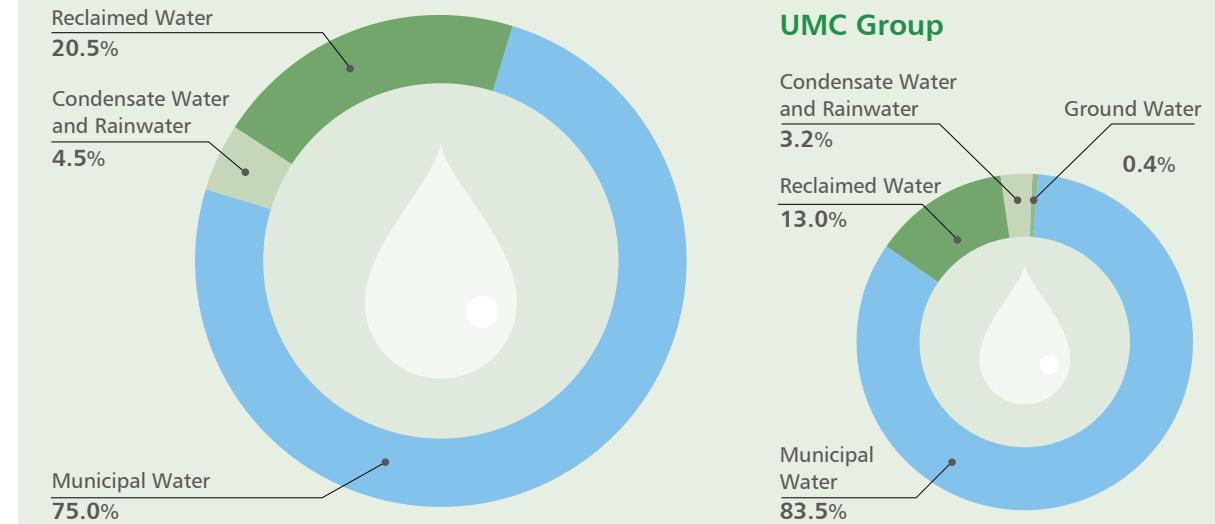
In recent years, climate change has impacted the world's water resources considerably, increasing the frequency of floods and droughts. For this reason, stakeholders have become increasingly concerned about water-related issues. Water is an essential resource in the semiconductor manufacturing process. UMC completed the identification of water risk factors and response, and announced its "UMC Water Resources Management Policy and Commitment" in 2015, which serves as the guiding principles for navigating the complexity of water resources and coordinating an integrated approach including prevention, conservation, and emergency response. The Company actively takes steps to improve water conservation, including measures to boost water utilization efficiency and value, reduce the impact of water resources on the environment, and reduce the amount of supplementary water resources used.

3.3.1 Water Structure

UMC uses municipal water as the primary source, which is approximately 75.0% of total water withdrawal. Renewable/reclaimed water account for 20.5 % of total water withdrawal, and the rest is from condensate water and rainwater sources, which account for about 4.5%.

Even with the increase in production capacity in 2022, the total water withdrawal did not increase significantly. The total amount of water withdrawal by UMC was 17.41 million tonnes, and the total amount of Group's water withdrawal was 27.52 million tonnes, an increase of 1.39 million tonnes over the previous year.

2022 UMC Water Withdrawal by Source



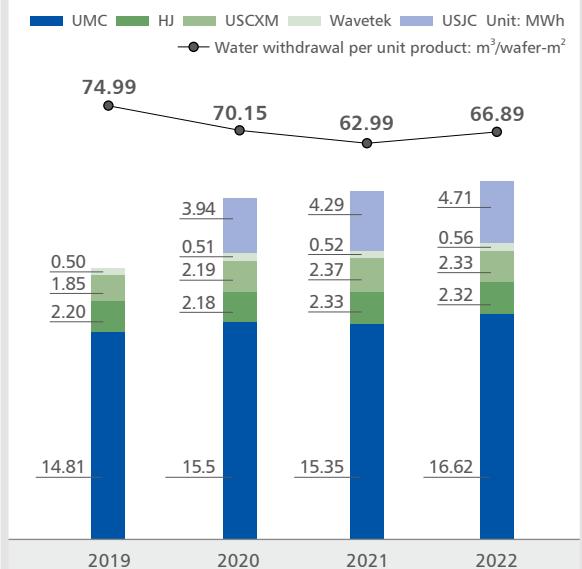
Note: 1. The scope of UMC Group includes UMC and its subsidiaries HJ, USCXM, Wavetek, and USJC.

2. Reclaimed water amount is used by UMC's fabs in Taiwan and Singapore. The groundwater withdrawal amount is used by subsidiary USJC.

Third-Party Water Sources

Municipal water and reclaimed water are all provided by third-party sources. In 2022, UMC's total water withdrawal from third-party sources was 16.62 million tonnes, or water intensity of 66.89 m³/wafer-m². The amount was slightly increased compared to 2021 due to higher capacity and new equipment installation at Fab 12A P6.

Third-party Water Withdrawal



Note: 1.Third party includes municipal water and reclaimed water.

2.USJC was included in the calculation starting from 2020.

3.Water meter readings are recorded daily. Annual water amount is calculated based on average monthly water usage.

4.In 2022, the overall third-party water withdrawal per unit product for UMC Group was 77.95 m³/wafer-m².

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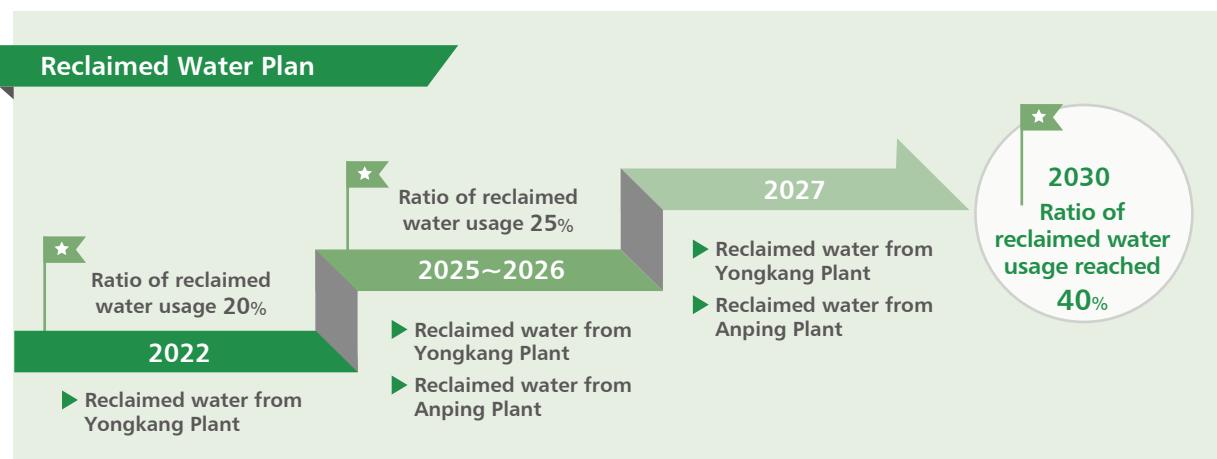
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Reclaimed Water

To reduce dependency on municipal water, UMC has diversified its water sources, include reclaimed water as alternative water sources. UMC's reclaimed water consumption is mainly at Fab 12i in Singapore. When Fab 12i was built, reclaimed water (NEWaterNote) was introduced in the production of 300mm wafers. In 2022, Fab 12i's reclaimed water reached 3.45 million tonnes, accounting for 99% of the fab's total water withdrawal. UMC's fabs in Taiwan are also actively assessing reclaimed water utilization. Fab 12A in Taiwan introduced the use of reclaimed water in December 2022. The reclaimed water used in Fab 12A and Fab 12i totaled 3.57 million tonnes, an increase of 8% compared to 2021. In the future, UMC's sites in the Southern Taiwan Science Park will cooperate with the government's reclaimed water system establishment, and conduct step-by-step withdrawal tests to increase the use of reclaimed water, lower the dependence on natural water resources, and mitigate impact on regional water resources.

Note: NEWater is reclaimed water supplied by the Singapore Utilities Board after the wastewater has been treated to a high level of quality.



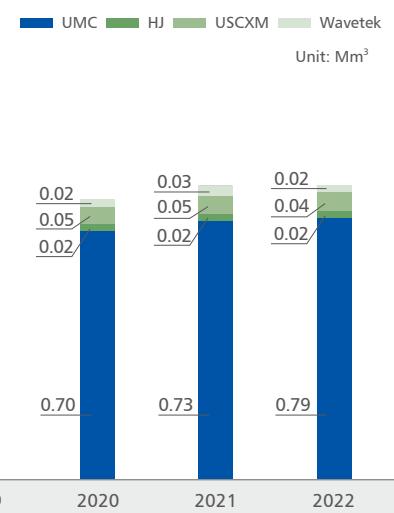
Water Quality Risk Control

Effective monitoring and control of water quality can decrease the amount of resources consumed during the manufacturing process, optimize product yield, and increase the efficiency of water usage. Before entering fabs, water is first tested with pH devices and continuously monitored with a conductivity meter to ensure stable quality. During the pure water production process, each unit of the water production facility is equipped with inspection instruments, which are connected to the statistical process control (SPC) system to ensure the water quality and reliability. In Singapore, Fab 12i increased its hydrofluoric acid (HF) treatment systems to improve the quality of the discharged water (fluoride ion < 15ppm), and strengthened source classification management to control sulfates to <1,000ppm in order to increase the stability of reclaimed water quality.

Condensate Water and Rainwater

Condensate water and rainwater are precious natural water sources and are easily subjected to seasonal climate changes. While accounting for a small proportion of UMC's total water withdrawal, making good use of condensate water and rainwater can reduce the impact on water resources and the environment. Condensate water and rainwater are mainly used in secondary manufacturing processes and watering of green spaces at UMC, and the total consumption amount in 2022 was 0.79 million tonnes.

Condensate Water and Rainwater



Note: 1. USCXM was included in the calculation starting from 2020.
2. Annual water amount is calculated using flow meters and estimates.

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Water Stress Area Assessment

To further understand the water stress and water use risks of each fab, UMC used the water risk assessment tool developed by the World Resource Institute (WRI) and combined it with indicators of local water resources, including water source stability and regional supply-demand ratio, to identify the percentage of UMC Group fabs that are located in water-deficient areas, serving as reference for formulating water risk management strategies.

According to the WRI Aqueduct Tool, only the subsidiary HJ's location in Suzhou, China is identified as an area with high level of water deficiency. HJ accounts for about 8.5% and 3.9% respectively of the Group's water intake and water consumption. Further evaluation based on indicators including water source stability and regional supply-demand ratio showed that HJ's water risks are low. In addition to abundant water resources due to its location near the Taihu Lake with a water storage capacity of 4.5 billion tonnes and the newly added water supply (50 tonnes/day) from the Jiuyang Lake, HJ also implements water-saving measures to improve water use efficiency and reduce the impact of water risks on operations. In 2022, there were no incidents affecting the operation of the UMC Group due to water-related issues.

In addition, UMC and its subsidiaries have no significant impact on the use of water sources in the region, and the percentage of water consumption in the region (the impact of regional water use) is less than 5%.

UMC Indicators of Water Related Risks Assessment

► The WRI (Water Resource Institute) Aqueduct Tool is used to assess water risk.



► **Water Source Stability:** Considering the stability of water supply, cross-regional dispatching flexibility, rainfall variability, etc.; high level means relatively stable water resources.

► **Regional Supply-demand Ratio:** Calculated based on the water supply of the region and the water demand of the fab. The bigger the ratio the lower competence between region's peers.

Impact of Regional Water Withdrawal

Company	Region	Regional Water Withdrawal (10,000 tonnes/day) ^{Note 1}	UMC Water Withdrawal (10,000 tonnes/day) ^{Note 2}	Impact (%) ^{Note 3}
UMC	Hsinchu Sci ce Park	59	1.64	2.78%
	Tainan Science Park	104	1.96	1.88%
	Singapore	23	0.96	4.17%
Subsidiary	HJ	65	0.64	0.98%
	USCXM	27	0.64	2.37%
	Wavetek	59	0.15	0.26%
	USJC	89	1.29	1.45%

Note: 1. Regional water consumption data source: official data announced by the local government.

2. Source of water withdrawal data: measured by each fab's on-site flowmeter.

3. Impact (%) = UMC Water Withdrawal ÷ Regional Water Withdrawal × 100%

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3.3.2 Water Conservation

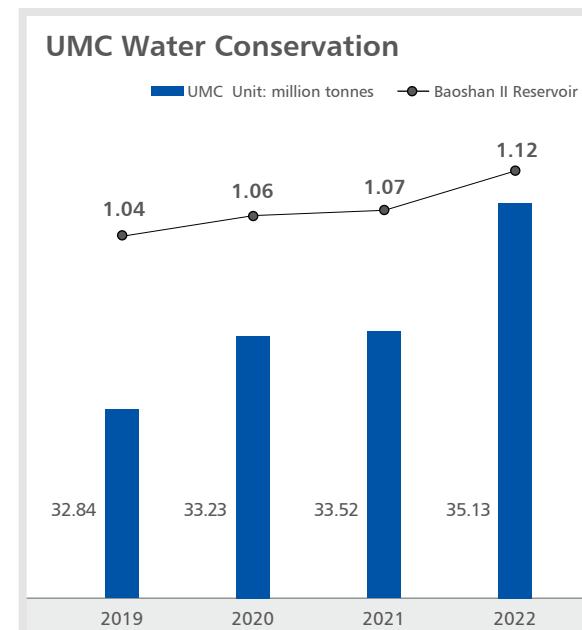
UMC is aware that water is a precious resource and attaches great importance to water resources management. The Company's principle of water utilization is first to incorporate water-saving design in manufacturing processes, then focus on boosting water recycling and reuse. Combined with efficient water management, consumption can be effectively reduced. UMC continues to implement improvement measures for water recycling and reuse, and actively sets progressive water conservation goals to guide policies and performance.

Water Recycling and Reuse

With the water-saving, consumption-reduction and recovery measures continuously promoted over the years, UMC's overall water conservation volume in 2022 was 35.13 million tonnes, which was 1.12 times as much as the storage capacity of the Baoshan II Reservoir in Hsinchu County. In addition, the water recycling rates achieved in UMC fabs' manufacturing processes were all higher than the locally regulated standards, with an overall manufacturing-process water recovery rate reaching 82.8%. Through strategies such as water saving, water recovery and reuse, reduction of ultrapure water consumption in manufacturing processes, UMC Group has successfully reached its interim goal of reducing the water withdrawal of per unit product.

Moreover, in response to climate change and the extreme weather events, UMC has prepared response measures for water-related disasters, such as floods and droughts, to minimize possible impact on the operation.

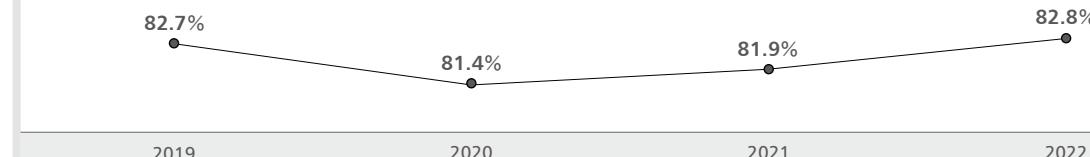
Note: For climate change related water risks, please refer to Chapter 1.2.5 Managing Climate-related Risks and Opportunities.



Note: 1. Baoshan II Reservoir is the main water source for the Hsinchu Science Park. Its full water storage capacity is 31.47 million tonnes, according to the Water Storage Report (2023.01) by Water Resources Agency, Ministry of Economic Affairs.

2. The water-saving statistics refer to the current year's conservation performance achieved through the water-saving measures implemented since 2015. The statistics were calculated based on estimated values.

Water Recycling Rate in Manufacturing Process



Note: Manufacturing-process water recycling rate of UMC (company-wide) = (All fabs' manufacturing-process water withdrawal ÷ UMC's total manufacturing process water withdrawal) x Sum of all fabs' manufacturing-process water recycling rate.

Manufacturing-process Recycling Rate

	Site	Standard	Actual
Taiwan	Fab 8A	≥ 70%	81.5%
	Fab 8D	≥ 70%	86.9%
	Fab 8E	≥ 85%	86.0%
	Fab 8F	≥ 85%	85.6%
	Fab 8S	≥ 85%	86.8%
	Fab 12A	≥ 85%	87.4%
	Fab 12A II	≥ 85%	85.6%
Singapore	Fab 12i	NA	70.7%

Note: NA means there is no local standard available. All fabs are installed with basic recycling equipment.

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Decrease Intake

Additional measures were adopted in 2022, such as water conservation from production equipment, increase in wastewater recovery, improvement in pure water production, and reduction of supplementary tap water usage. As a result, reduction of the current year's water withdrawal reached 635,000 metric tons. It is expected that through relevant measures, the withdrawal from natural water resources will continue to decline in 2023.

UMC Group New Improvement Measures and Results in 2022

Category	Water Conservation Measure	Conservation (10,000 m ³)
Water saving from production machine	Reduce water consumption and wastewater recovery	22.4
	(New) Recover low-concentration hydrofluoric acid wastewater	2.0
Wastewater recovery increasing	(New) Recover acidic wastewater	1.9
	Water recovery from analytical instruments	5.5
Pure Water Production Improving	Recover recycled water from pure water systems	1.9
	Purify and recover cooling tower drain water	3.4
Reduce supplement from municipal water	Water recovery upgrade	26.4
	Total Amount	63.5

Note: The newly added improvement items were calculated based only on 12-month performance. For multiyear projects, only the performance generated in 2022 was counted.

Water Conservation Improvement for 2023

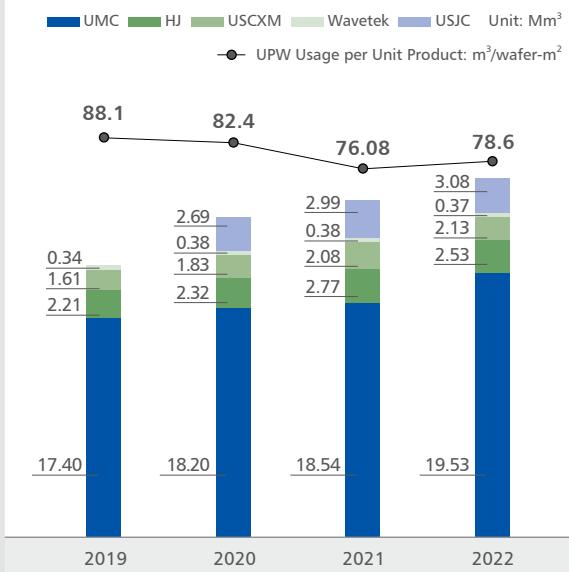
Category	Water Conservation Measure	Conservation (10,000 m ³)
Water saving from production machine	Reduce water consumption and wastewater recovery	7.2
Water saving from production machine	(New) Recover acidic wastewater	7.4
Pure Water Production Improving	Water recovery from analytical instruments	3.1
	Recover recycled water from pure water systems	4.2
Reduce supplement from municipal water	Purify and recover cooling tower drain water	1.7
	Water recovery upgrade	42.6

Ultra-Pure Water Reduction

UMC has gradually decreased its per unit product's ultra-pure water (UPW) consumption over the years by pursuing continuous improvement, increasing internal awareness, as well as enhancing production controls and technology. Water consumption for the manufacturing process is mainly used by Wet Bench equipment, including Single-Wafer and Batch-Type Wet Bench. The commonly used reduction methods are to optimize the manufacturing process water flow and standby water flow, or to increase the time interval between each flush during standby. The team responsible for green manufacturing has consolidated the reduction plans of fabs, and applied them to other sites where UPW reduction measures have not yet been implemented.

UMC's UPW usage in 2022 was 19.53 million tonnes. Despite capacity expansions, UMC was able to continue increasing the utilization efficiency of UPW during the production process. The UPW usage per unit product in 2022 was 78.6 m³/wafer-m².

Ultra-Pure Water Usage

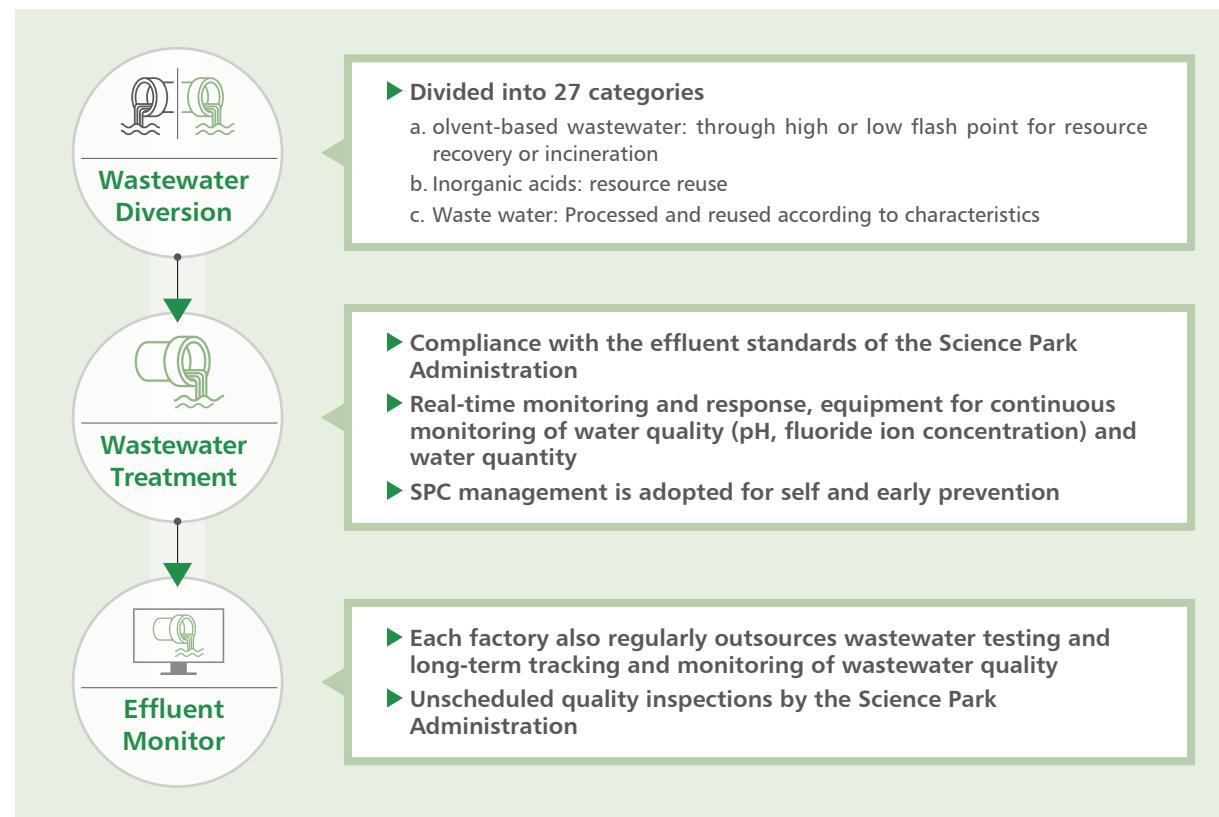


Note: 1. USJC was included in the calculation starting from 2020.

2. In 2022, the UPW usage per unit product for UMC Group was 81.18 m³/wafer-m².

3.3.3 Water Pollution Control

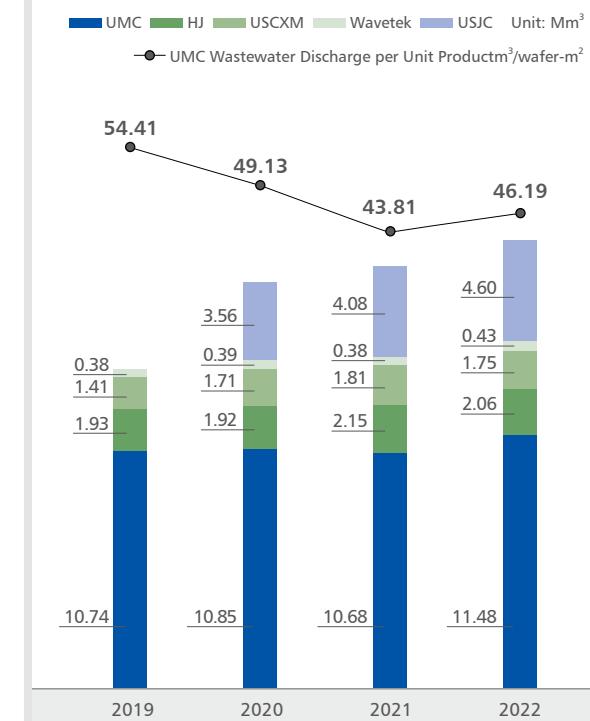
UMC's water pollution control include process source reduction and waste liquid diversion, followed treatment by classification. New fab areas have up to 27 categories of wastewater diversion, which are divided into solvent-based (reused or incinerated depending on flash points), inorganic acids (reused), and wastewater (multiple reuse according to classification). The process simplifies the composition of wastewater before it is treated in the fab's wastewater treatment facilities to the control standards of the Science Park Administration and discharged into the science park sewage systems. For real-time monitoring and response, equipment for continuous monitoring of water quality (pH, fluoride ion concentration) and water quantity are installed, and SPC management is adopted for self and early prevention to ensure that the quality of water discharged into the sewage complies with control regulations. In addition, the Science Park Administration conducts monthly unscheduled and random quality inspection of water discharged by different companies to reaffirm the quality of discharged water.



Wastewater Treatment

To reduce environmental impact, UMC continually invests in the R&D of wastewater treatment technologies. In recent years, the Company introduced advanced ammonia nitrogen wastewater treatment techniques to reduce water pollution from operations. In 2022, the wastewater discharge of UMC was 11.48 million tonnes, which was higher than the previous year's due to increased production. Wastewater discharge per unit product in 2022 was 46.19 m³/wafer-m².

Wastewater Discharge



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UMC Group Wastewater Discharge

UMC Group				Combined Waste Water Treatment			
Location	Site	Discharge Amount (10,000 m³/day) ^{Note 1}	Impact (%)	Treatment Department	Current Treatment Amount (10,000 m³/day) ^{Note 2}	Re-use	Discharged into Drainage Area
Hsinchu Science Park	Fab 8A, Fab 8D, Fab 8E, Fab 8F, Fab 8S	1.17	9.8%	Hsinchu Science Park Administration sewage treatment plant		12	- Ke-Ya River
Tainan Science Park	Fab 12A	1.26	7.8%	Tainan Science Park Administration sewage treatment plant		16	- Yanshuei River
Singapore	Fab 12i	0.72	0.90%	Public Utilities Board (PUB)		80	Industrial reuse South China Sea
Hsinchu Science Park	Subsidiary Wavetek	0.12	1.0%	Hsinchu Science Park Administration sewage treatment plant		12	- Ke-Ya River
China Suzhou	Subsidiary HJ	0.56	1.12%	Suzhou Industrial Park, Hua Yan Water Ltd.		50	- Wusong River-
China Xiamen	Subsidiary USCXM	0.48	4.8%	Xiamen City, Xiang-an (Ma Xin) sewage treatment plant		10	- Dongkeng Bay
Japan Mie-ken	Subsidiary USJC	1.26	-	USJC's wastewater treatment facilities can convert wastewater to a quality in compliance with local regulations and standards (Water Pollution Prevention Act). A real-time monitoring system is installed in the facilities, through which the discharge shall be immediately stopped if any anomalies are detected.		1.26	- Osugidani River

Note: 1. Sources of data:

- (1) fabs in Hsinchu and Tainan, subsidiaries Wavetek, HJ, and USCXM: Water meter readings are recorded daily, and annual water consumption is calculated based on monthly amount.
- (2) fab in Singapore: Based on daily record and accumulation.

2. Sources of data:

- (1) fabs in Hsinchu and Tainan Science Park, subsidiary Wavetek: Ministry of Science and Technology Statistics and Data Bank.
- (2) fab in Singapore: Based on PUB website information.
- (3) HJ: Suzhou Industrial Park, Hua Yan Water Ltd. sewage treatment plant; USCXM: Xiamen City, Xiang-an (Ma Xin) sewage treatment plant.

Nitrogen Wastewater Treatment Techniques' Setup Status

2006	2016	2017	2018	2022
Subsidiary HJ Technologies: Air stripping and sulfuric acid scrubber Final product: Ammonium sulfate	Fab 12A Technologies: Thin film separation and sulfate scrubber Final product: Ammonium sulfate Fab 12A II, Subsidiary USCXM Technologies: Catalyst dissociation Final product: Nitrogen gas	Fab 8F, Fab 8S Technologies: Electrolysis Final product: Nitrogen gas and hydrogen gas	Fab 8A, Fab 8D Technologies: Air stripping and sulfuric acid scrubber Final product: Ammonium sulfate	Fab 8E Technologies: Thermal cracking Final product: Nitrogen gas

Wastewater from UMC's fabs in Taiwan and Singapore are treated to meet regulated standards prior to sending to third-party facilities for further treatment. The wastewater in the third-party treatment facility is then treated by a secondary treatment method before discharge. Among the fabs, the discharged water from Singapore's Fab 12i is treated and used again by other organizations as industrial water to increase the water utilization rate. UMC will continue to monitor wastewater discharge related data and develop wastewater treatment technologies to reduce the possible impact of wastewater discharge on regional watersheds.

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Volume of UMC Water Discharge by Source

Unit: megaliters

Level of Treatment	Site	Wastewater Discharge
No treatment	NA	0
Secondary treatment in accordance with Hsinchu Science Park administration standards	Fab 8A, Fab 8D, Fab 8E, Fab 8S	4,268
Secondary treatment in accordance with Tainan Science Park administration standards	Fab 12A, Fab 12A II	4,589
Secondary treatment in accordance with Singapore government administration standards	Fab 12i	2,626

Note 1. 1 Mm³ = 1,000 megaliters

2. The scope of calculation is UMC's fabs in Taiwan and Singapore.

3. Wastewater from each UMC fab is pre-treated before being discharged into local wastewater treatment plants. No wastewater is directly discharged into receiving water bodies.

4. Singapore's NEWater uses wastewater from UMC Fab 12i as source water and then provides the treated water to other organization for industrial water usage.

UMC Group's Water Withdrawal, Discharge, and Consumption in 2022

Unit: megaliters

		UMC	Subsidiary			
			HJ	USCXM	Wavetek	USJC
Total Water Withdrawal (a)		17,410	2,341	2,370	581	4,818
Source	Municipal Water	13,053	2,323	2,326	562	4,708
	Reclaimed Water	3,566	0	0	0	0
	Condensate Water and Rainwater	791	18	44	19	0
	Others (Groundwater, Surface Water, etc.)	0	0	0	0	110
Total Water Discharge (b)		11,475	2,057	1,754	429	4,601
Destination	Surface water, Groundwater, Seawater	0	0	0	0	4,601
	Third-party Water	8,848	2,057	1,754	429	0
	Third-party water sent for use to other organizations	2,627	0	0	0	0
Water Consumption (a-b)		5,935	284	616	152	217

Note 1. 1 Mm³ = 1,000 megaliters

2. The wastewater discharged is not fresh water ($\leq 1,000 \text{ mg/L}$ Total Dissolved Solids).

3. Wastewater from all fabs is pre-treated before being discharged: USJC treats wastewater to remove heavy metals, nitrogen, phosphorus, etc. to comply with local discharge standards. Wastewater from other fabs discharges into local wastewater treatment plants after in-fab primary treatment. No wastewater is directly discharged into receiving water bodies.

4. Singapore's NEWater uses wastewater from UMC Fab 12i as source water and then provides the treated water to other organization for industrial water usage.

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Communication and Public Participation

In addition to internal water resource management and active promotion of water conservation, UMC also serves as a representative in the industry's professional associations. The Company works closely with the government and industry peers in communicating and advising on water management. UMC also contribute to initiatives by the Taiwan Water Corporation, including emergency responses to water shortage and improvement in reservoir water quality, to jointly stabilize the supply and quality of regional water bodies and ensure the continuity of municipal water supply.

► Participation with Public Policy

1. Attended water resources communication meetings convened by the Water Resources Agency and manufacturers' associations.
2. Supported coordination of water resources by the Water Resources Agency (WRA) during dry season.
3. Assessed the utilization of reclaimed water to align with the Water Resources Agency's reclaimed water facilities.
4. Established a communication platform with the WRA to meet future water supply and demand.

Results:

- The Taoyuan-Hsinchu pipeline will be extended to the Hsinchu Science Park. It is expected to supply 90 thousand tonnes of water per day from 2024. From 2026, water from reservoirs in the Taoyuan and Hsinchu regions will be connected, and the reservoir flow will reach 300 thousand tonnes per day, further increasing supply stability.
- In January 2023, the WRA accepted UMC's suggestion to carry out assessments of Fengshan River's water resource potential, and the possibilities to lower burdens of Shimen Reservoir and Toucian River.

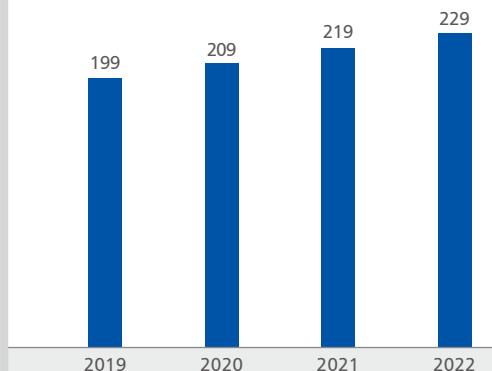
► Exchange and Counseling with Industry Peers

UMC has participated annually in water conservation coaching sessions in the Science Park since 2002. As of 2022, the program has conducted a total of 229 sessions and coached more than 100 companies. Water conservation by companies coached by UMC has reached an accumulated amount of 1.22 million tonnes over 4 years (2019–2021). Companies counseled by UMC in 2022 are estimated to have potential water conservation of 329 thousand tonnes per year. Tracking the 10 companies which were coached by UMC in 2021, the actual water-saving volume during year 2022 was 324 thousand tonnes of water.

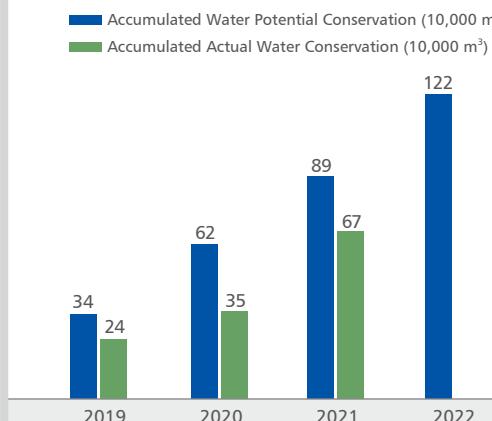
By sharing the Company's valuable experience with peers, it can not only reduce the overall industry's dependence on natural water resources, but also promote regional exchanges and cooperation.



Accumulated Water-saving Counseling Cases



Accumulated Water Conservation from Counseling Cases



Note: The water potential conservation in 2022 will be tracked by 2023.

3.4 Waste Management | 3.4.1 Waste Output Structure 3.4.2 Source Reduction 3.4.3 Circular Economy Promotion 3.4.4 Contractor Management

Material Topic: Waste and Resource Utilization Efficiency

In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Related Policy
Environmental Protection Policy



Positive ► Circular economy

Management Actions

- Collaborate with global operating partners to achieve waste recycling and reuse.
- Pay attention to the development of international trends, evaluate opportunities and risks, handle waste properly, and make good use of energy resources to promote a circular economy.
- Establish a low-carbon circular business model.

Processes Used to Track the Effectiveness of Actions

- Quarterly report the progress of performance by "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review.
- Plan the establishment of the "Circular Economy & Recycling Innovation Center" to increase the percentage of recycled products and convert waste into usable resources.
- Participate in external regulatory seminars and conferences.

Negative ► Waste not being used properly

Management Actions

- Promote process technology improvement and source management measures to reduce raw material consumption and waste production.
- Reduce raw material consumption through process design and technology improvement.
- Review environmental protection and international environmental trends/government regulations.
- Select priority targets for waste reduction based on the raw materials that contribute the most to major waste production, adopt cost-reduction policies, learn from benchmarking cases in the industry to evaluate technically feasible plan, and conduct small-scale experiment to confirm its feasibility. If feasibility of the plan is confirmed, implement it in the fabs.

Processes Used to Track the Effectiveness of Actions

- Quarterly report the progress of performance by "The Environmental Management and Planning Team" to the Corporate Sustainability Committee for review.
- Regularly audit waste handling operators.
- Perform monthly regulatory compliance checks.
- Review environmental protection cases every quarter and inform colleagues at the Safety Committee meeting to avoid violating regulations.

Key Performance Indexes

Achievements in 2022

Successfully promoted circular economy projects such as "Waste sulfuric acid recycling and reuse," "Waste photomasks Utilization" and "Waste copper sulfate liquid reuse through electrolysis".

22% reduction of waste generated per unit product (base year 2015)

► **Achieved** Reduction of **30.6%**

Future Goals

Short-Term Goals (2023)

Mid-Term Goals (2025)

Long-Term Goals (2030)

Ratio of in-fab resource conversion ^{Note 1}	13%	22%	35%
Develop circular economy solutions/products (in total)	2 items	4 items	6 items
Reduction of waste generated per unit product *	23%	35%	50%
Cumulative waste reduction (base year 2015) *	15,500 tonnes	22,000 tonnes	33,000 tonnes

Note: 1. Ratio of in-fab resources conversion = (volume of in-fab resource conversion/volume of total waste generated);

2. Scope: * UMC Group (UMC, subsidiaries, HJ, USCXM, Wavetek, and USJC); Without any * remark is UMC.

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3.4.1 Waste Output Structure

UMC's total waste output in 2022 was 51,930 tonnes^{Note}. Of the total, 46,375 tonnes of waste was recycled or reuse, accounting for 89.3%. The Company treated a total of 5,555 tonnes of waste during the year.

Note: excluding routine office waste

Through process design and technology improvement, UMC reduces the consumption of raw materials, which not only decreases the emission of pollutants from the source, but also lowers operating costs and minimize resource consumption and the corresponding environmental impact. Considering chemicals that are concerns for environmental protection and government regulations, the Company prioritizes the reduction of raw materials that are significant waste generators. Referencing benchmark players in the industry, the Company then designs technically feasible plans and conducts small-scale tests. The plans will be extended to fabs for implementation after their feasibility is verified.

Status in 2022

Waste Generation

Hazardous Waste	Output	Recycled	Treatment	Unit: tonnes
Waste acid	22,456	22,456	0	
Waste solvent	5,466	3,731	1,736	
Waste copper sulfate	2,260	1,724	598	
Container	748	723	25	
Others	250	22	228	
Subtotal	31,242	28,656	2,586	

General Waste	Output	Recycled	Treatment	Unit: tonnes
Waste solvent	1,385	297	1,088	
Waste ammonium sulfate	6,856	6,856	0	
Sludge	6,267	5,194	1,073	
Container	680	680	0	
Waste mixed hardware	385	385	0	
Others	5,115	4,307	808	
Subtotal	20,688	17,719	2,969	
Total Amount	51,930	46,375	5,555	

Note: 1. The above data is for UMC.

2. The category of general waste and hazardous waste is in accordance with Taiwan "Waste Disposal Act", which also used by Fab 12i in Singapore.
3. Waste acid includes waste sulfuric acid, waste phosphoric acid, and BOE waste liquid
4. Direct disposal methods include incineration, landfill, solidification and chemical treatment
5. The percentage of hazardous waste recycled or reuse is 91.7%.

Waste Recycling

Hazardous Waste	Inside the Fab	Outside the Fab	Total	Unit: tonnes
Reuse for original purpose	0	0	0	
Regeneration	6,096	22,560	28,656	
Others	0	0	0	
Subtotal	6,096	22,560	28,656	

General Waste	Inside the Fab	Outside the Fab	Total	Unit: tonnes
Reuse for original purpose	0	0	0	
Regeneration	2	17,717	17,719	
Others	0	0	0	
Subtotal	2	17,717	17,719	
Total Amount	6,098	40,277	46,375	

Note: The above data is for UMC.

Waste Treatment

Hazardous Waste	Inside the Fab	Outside the Fab	Total	Unit: tonnes
Incineration, serving as fuel	0	1,620	1,620	
Incineration only	0	328	328	
Landfill	0	0	0	
Others	0	638	638	
Subtotal	0	2,586	2,586	

General Waste	Inside the Fab	Outside the Fab	Total	Unit: tonnes
Incineration, serving as fuel	0	844	844	
Incineration only	0	946	946	
Landfill	0	1,179	1,179	
Others	0	0	0	
Subtotal	0	2,969	2,969	
Total Amount	0	5,555	5,555	

- Note: 1. The above data is for UMC
2. For treatment performed outside the fabs by outsourced operators, the calculation was based on the actual weight measured. For treatment performed inside the fabs, the calculation was based on the weight estimated by flow meter.
 3. Part of the waste that has been incinerated can be used as auxiliary fuel or regenerated as derived fuel, which is regarded as recovered energy.
 4. Other methods of disposal include solidification, chemical, and overseas treatment. UMC only delivered 0.566 tons of nickel-cadmium batteries to South Korea for recycling in 2022, which is regarded as overseas treatment and was disposed of in accordance with the governing regulations of the Basel Convention.

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3.4.2 Source Reduction

Zero waste is UMC's ultimate waste management goal. By improving process technologies, raw material source reduction, and other source management measures, the Company can effectively reduce waste generation from its operations.

In 2022, UMC's total waste outsourced for treatment was 45,832 tonnes^{Note}, and waste output per unit of wafer area was 184.5 kg/wafer-m², which represents a increase of 2% compared to 2021. In 2022, hazardous waste outsourced for treatment amounted to 25,146 tonnes, and the per unit of wafer area of hazardous waste output was 101 kg/wafer-m², which represents a reduction of 2% compared to 2021. Through various reduction plans and measures, the total waste reduction in 2022 reached 667 tonnes.

Note: excluding routine office waste

2022 Waste Reduction Measures and Performances

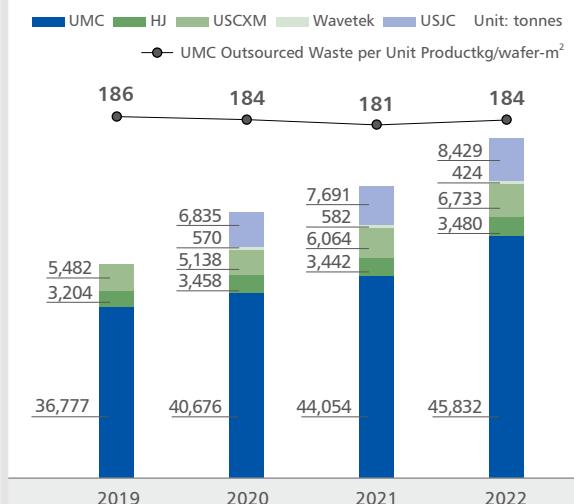
Plan	Measures	Reduction (tonnes)
Reduction of waste sulfuric acid	Optimize usage for manufacturing process	339
Reduction of waste solvent	Lower backside rinse flow, extending the lifetime of chemicals	183
Sludge reduction	Source reduction for fluorine-containing chemicals	4
Reduction of ammonium fluoride waste liquid	Optimize usage for manufacturing process	83
Reduction of waste cupric sulfate	Reduce the ratio of acid excretion to acid supplementation	6
Others	Extending the lifetime of chemicals, empty barrels, spare parts, filter, etc.	53
Total Amount		667

Note: The above data is from UMC Group (UMC and its subsidiaries HJ, USCXM, Wavetek and USJC.)



- ▶ Continue to extend the lifetime of solvents to reduce the output of waste solvents
- ▶ Replace the acid-base neutralizing agent in wastewater treatment plants with waste sulfuric acid to reduce the amount of waste sulfuric acid generated
- ▶ Extend the usage of waste sulfuric acid to reduce the amount of waste sulfuric acid generated
- ▶ Extending the service life of equipment parts to reduce waste from scrapped items
- ▶ Optimize ammonia nitrogen treatment system to reduce ammonium sulfate production.
- ▶ Introduce copper sulfate electrolysis equipment to reduce waste volume handled by contractor.

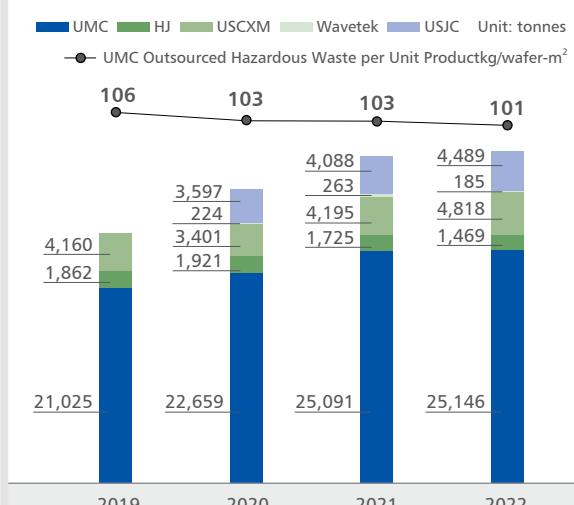
Outsourced Waste



Note: 1. Wavetek and USJC was included in the calculation starting from 2020.

2. In 2022, the overall outsourced waste per unit of wafer area for UMC Group was 191 kg/wafer-m².

Outsourced Hazardous Waste



Note: 1. Wavetek and USJC was included in the calculation starting from 2020.

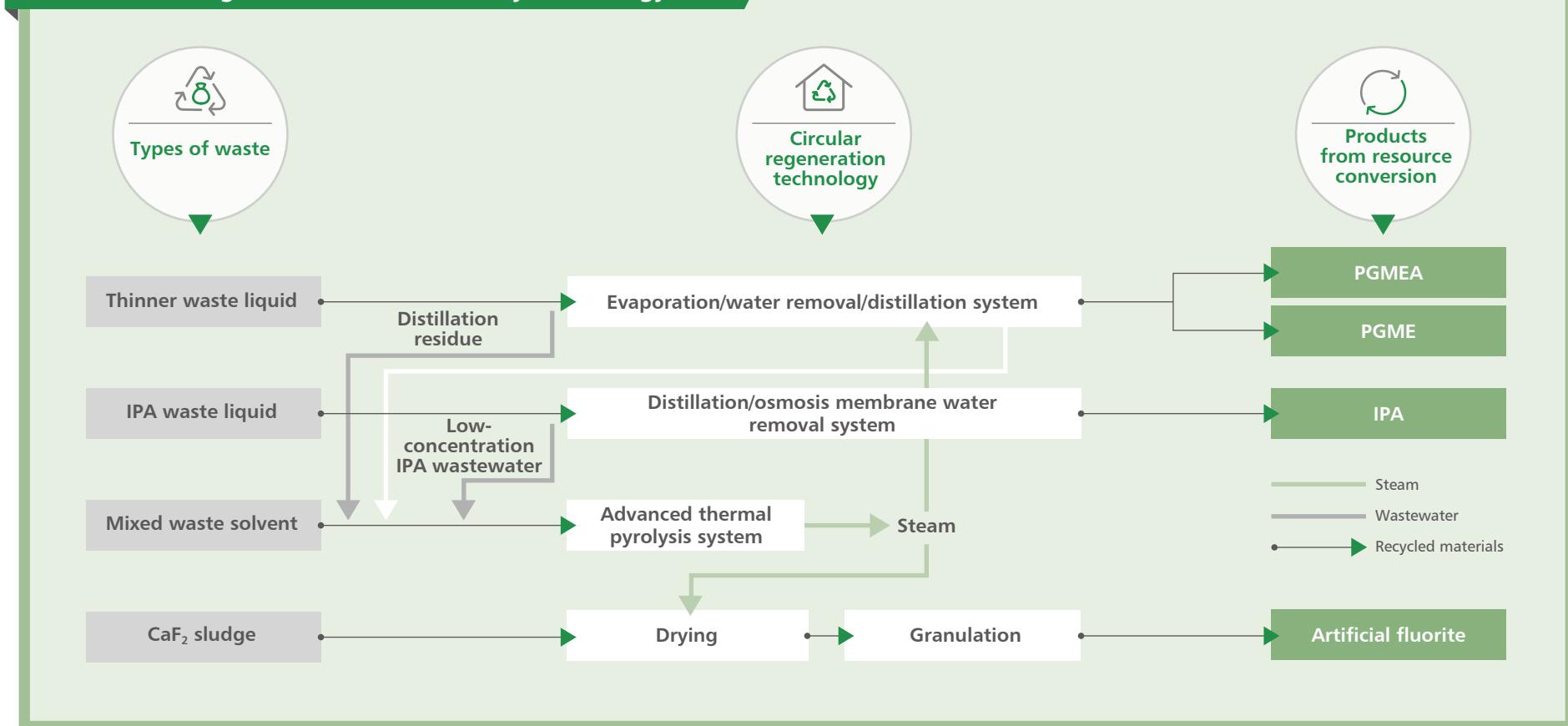
2. In 2022, the overall outsourced hazardous waste per unit of wafer area for UMC Group was 106 kg/wafer-m².

3.4.3 Circular Economy Promotion

In addition to reducing waste from the manufacturing source, UMC continues to promote recycling and reuse in place of existing end-of-pipe treatment. Converting waste into resources can create three advantages: waste reduction, lower consumption and costs associated with waste disposal, and economic benefits from reusing resources. UMC also requires its suppliers to set waste reduction and reuse goals. Furthermore, the Company will invest NT\$1.8 billion to establish the Circular Economy & Recycling Innovation Center at its Fab 12A. The center will not only be the first R&D center for waste recycling in the Southern Taiwan Science Park, it will also serve as an important benchmark for circular economy and sustainable operations for Taiwan's industries. It is expected to reduce 15 thousand tonnes of semiconductor manufacturing waste annually after its official launch in 2025. This investment demonstrates UMC's determination to move towards a circular economy and a zero waste future.

It is estimated the Circular Economy & Recycling Innovation Center will process about 15 thousand tonnes of waste into useful resources annually, or one-third of waste from UMC's Taiwan sites. The center will produce around NT\$100 million worth of value-added products every year. In the future, UMC will continue to develop thermal cracking technology for treating waste solvents and waste plastics to generate energy supply, which will reduce energy costs and achieve both economic and environmental benefits.

Schematic Diagram of Circular-economy Technology



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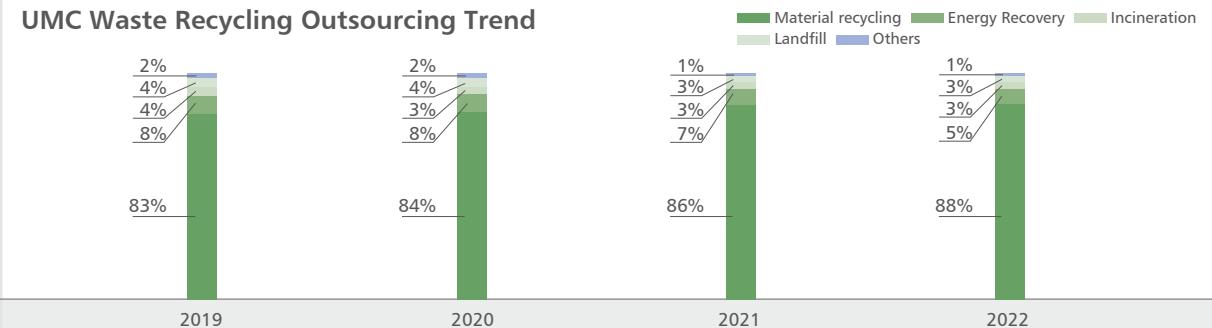
Conversion of In-fab Resources

UMC also promotes waste recycling to its subsidiaries. In 2022, UMC and its subsidiaries, HJ and USCXM, removed hydrogen peroxide from waste dilute sulfuric acid in the fab, which is then used for ammonia nitrogen wastewater treatment or as a chemical for air pollution control equipment. Together, waste sulfuric acid was reduced by 9,507 tonnes, and the purchase of industrial grade sulfuric acid was reduced by 9.976 tonnes, resulting in total economic benefit of NT\$65.93 million for the Company. In 2022, UMC launched a waste photomask recycling project. By removing patterns from used photomasks with cleaning equipment, they are converted into quartz substrates that can be resold. This project has reduced waste photomask generation by 2.3 tonnes, and the economic benefit from selling the recycled products reached about NT\$4.69 million. In the same year, UMC also launched a circular economy project for converting waste copper sulfate liquid through electrolysis into copper rods with resale value. This has reduced the copper sulfate generation by 61.6 tonnes, and has generated about NT\$598,000 in revenue for the Company.

Conversion of Off-site Resources

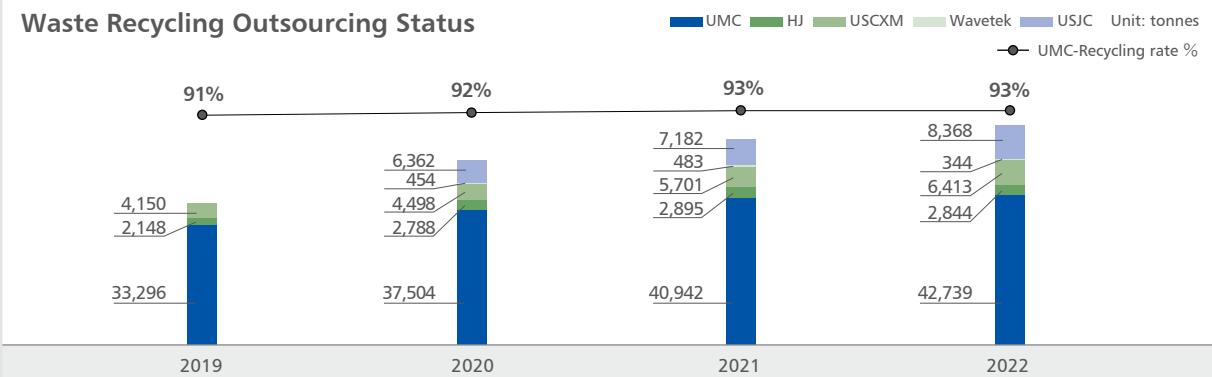
The amount of off-site waste recycled by UMC in 2022 was 42,739 tonnes, and ratio of waste reused, which includes usage in energy recovery, for the year reached 93.3%. Hazardous waste reused amounted to 24,180 tonnes, or 96% reuse rate including usage in energy recovery. Revenue from the recycling of renewable resources in 2022 (fabs in Taiwan) was approximately NT\$44 million.

UMC Waste Recycling Outsourcing Trend



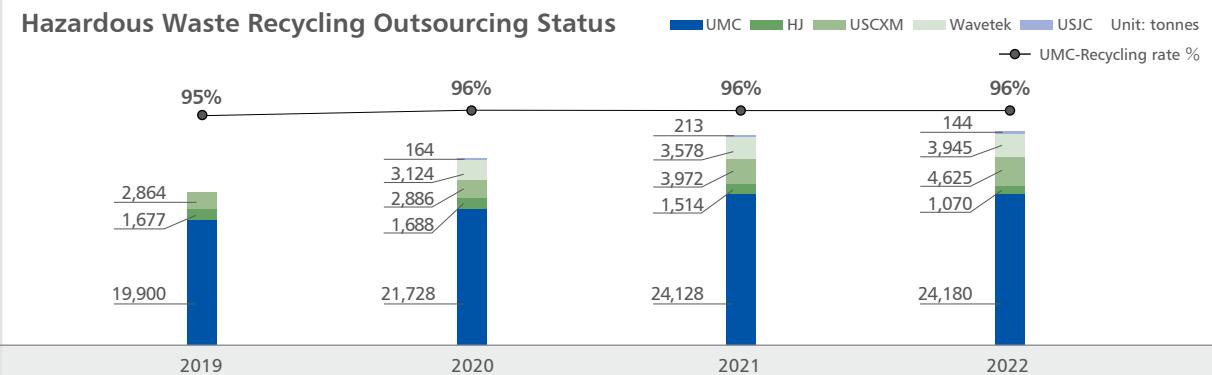
Note: 1. Other waste recycling methods include solidification, overseas treatment and chemical treatment.
 2. Energy Recovery means that waste solvent or waste wood were recycled as an auxiliary fuel.

Waste Recycling Outsourcing Status



Note: 1. Wavetek and USJC was included in the calculation starting from 2020.
 2. In 2022, the overall recycling rate of UMC Group was 94%.

Hazardous Waste Recycling Outsourcing Status



Note: 1. Wavetek and USJC was included in the calculation starting from 2020.
 2. In 2022, the overall hazardous waste recycling rate of UMC Group was 94%.

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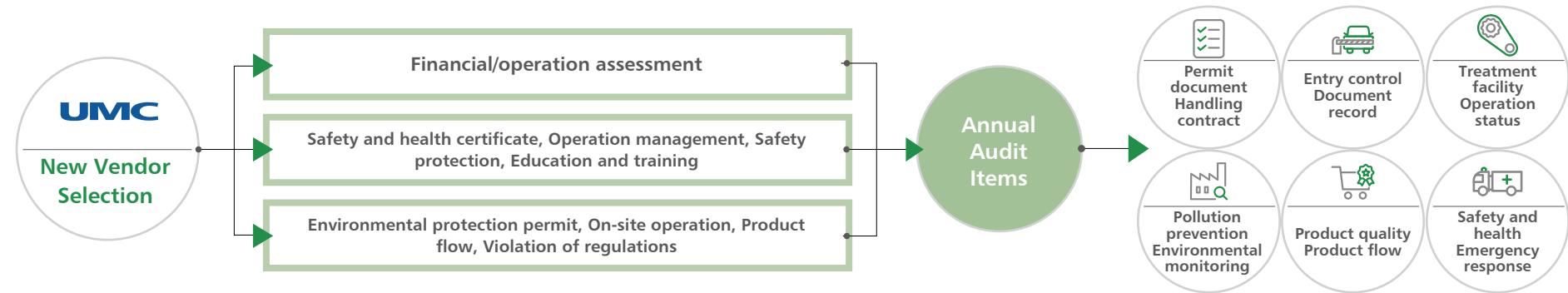
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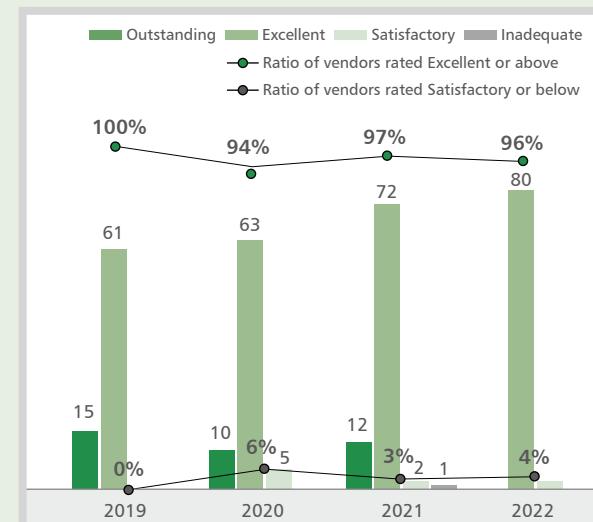
Appendix

3.4.4 Contractor Management

UMC conducts on-site audits of its waste clearance/disposal/reuse vendors to inspect their management, storage areas, treatment facilities management and pollution control, site safety management, and operating conditions (including sales flow of recycled products). Based on the audit results, the Company determines whether to maintain cooperation or increase the frequency of audits. For the selection of new waste treatment vendors, the assessment must include the vendor's financial stability, environmental protection permits, safety and health certificates, and previous records of regulation violations. In addition, operation management, safety protection, education and training of the new vendors must be included in the assessment criteria.



In 2022, UMC completed audits of 92 waste treatment vendors. Audit results show that 96% vendors were rated excellent or higher, and only four vendors received satisfactory rating and zero vendor received inadequate rating. The Company will continue to conduct related audits to ensure all vendors follow UMC's requirements and regulations.



Audit Results of Waste Treatment Vendors and Subsequent Follow-up

Evaluation	Subsequent Follow-up
Outstanding: 90 points or more	Maintain cooperation ► Audit once every 2 years
Excellent: 80-89 points	Maintain cooperation ► Audit once every year
Satisfactory: 70-79 points	Maintain cooperation (list as a substitute vendor) ► Audit once every year
Inadequate: 60-69 points	Put on a watch list. Increase audit frequency. Require improvement before the deadline. If no improvement made before the deadline, contract will be terminated. ► Audit once every 6 months.
Unsatisfactory: 60 points or less	Replace immediately

The disposal of UMC's waste by contractors is carried out in accordance with the regulations of the Environmental Protection Administration. Before disposal, the Company is required to visit the "Industrial Waste Report and Management System (IWR&MS)" on the Environmental Protection Administration's website to make declaration in advance, confirm and revise the content on the declaration form within two days of waste transportation, and track the progress of the disposal operation within 30 days after the waste leaves the fab. UMC has reinforced the management and control of commissioned waste disposal procedures to ensure that waste is properly delivered to the designated disposal or reuse organizations. UMC cooperated with a GPS system manufacturer to develop the "UMC GPS Virtual Vehicle Fleet System". Since 2017, transportation vehicles for waste solvents, waste sulfuric acid, waste effluent sludge, waste phosphoric acid, copper sulfate, ammonium sulfate, waste containers, and other hazardous waste are monitored through the system. No major abnormal incidents were observed in 2022.

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3.5 Air Pollution Control

Future Goals Short-Term Goals (2023) Mid-Term Goals (2025) Long-Term Goals (2030)

Removal efficiency of VOC control equipment

>93%

>95%

Existing fabs - 95%
New fabs - 97%

* Scope covers UMC

UMC's air pollution control strategies involve using high-performance equipment to treat air pollutants that have already been reasonably reduced to a level that complies with, or is less than, the government's environmental stipulations. Test results over the years showed that UMC air pollutant emissions is less than the emission standard set by the Environmental Protection Administration (EPA). UMC categorizes waste gas from manufacturing processes into acidic exhaust, alkaline exhaust, volatile organic compound (VOC), and general exhaust. The primary management policy is to adopt and develop environment-friendly technologies, and to strengthen source reduction and pollutant prevention.

Acidic and alkaline exhaust

- ▶ **Stage 1:** Installed abatement equipment on tools to treat toxic, flammable, and fluorinated greenhouse gases.
- ▶ **Stage 2:** After end treatment by a central exhaust treatment system, gas is released into the atmosphere via a stack.



Acid and alkaline waste gas treatment facilities

Volatile organic compounds

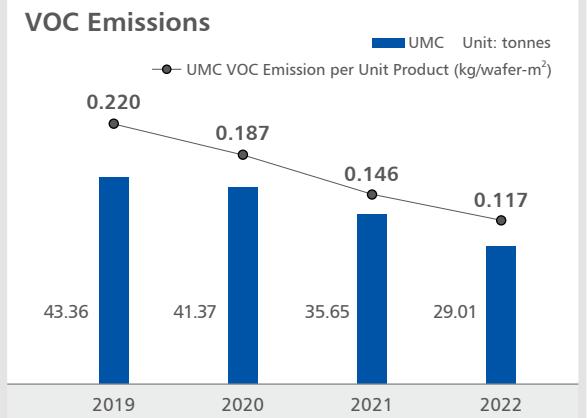
- ▶ Volatile organic compounds exhaust (Solvent Exhaust) is treated using VOC Zeolite carousel wheels, which treat and release gases using low temperature adsorption and high temperature desorption.



Volatile organic compounds waste gas treatment facilities

In 2022, the volatile organic compound (VOC) control equipment of Fab8E and Fab8F had new rotors installed to improve removal efficiency. As a result, UMC's VOC emissions amount in 2022 decreased from the previous year. The efficiency of the Company's VOC treatment was maintained at an average of 97.06% in 2022, which exceeded not only the legal standard of 90%, but also the internal target of 92%. The total VOC emission of UMC was 29.01 tonnes in 2022, bringing total VOC reduction to 738.05 tonnes per year. The VOC emissions per unit of wafer area in 2022 decreased from the previous year to 0.117 kg/wafer-m², continuing the downward trend of VOC emissions.

Other air pollutant emissions include nitrogen oxide (NOx) and sulphur oxide (SOx). UMC uses natural gas and only a small amount of low sulfur diesel fuel. Based on regular stack inspection and air pollution expense calculation, the estimated NOx and SOx emissions amount in 2022 were not significant.



Note: 1. The scope of statistic is UMC

2. Measurement of VOC emission: For fabs in Taiwan, emission is the daily volume monitored by continuous emission monitoring system multiplied by the number of days in year 2022. For 12i in Singapore, is the emissions monitored in December 2021 multiplied with the number of days in the year 2021.

Improve Air Quality by Reducing Straw Burning

To help improve the air quality in the areas surrounding its fabs, UMC has donated 4,000 bottles of rice straw decomposition solution to farmers in Hsinchu City, Hsinchu County, Tainan City, as well as Changhua County (the main rice production region in Taiwan). The bacterial solution was provided free of charge, with the aim of reducing the open burning of rice straw and encouraging environmentally friendly farming practices to reduce the local air pollutions.

The donated straw decomposition solution is expected to treat approximately 400 hectares of rice fields, reducing emissions of total suspended particulates (TSP) by 17 metric tons, PM2.5 by 15.4 metric tons, and CO₂ by 3,600 metric tons. This will reduce the impact of open burning on air quality, prevent traffic accidents caused by poor visibility, and eliminate the risk of fire spreading to surrounding residential areas. Additionally, the experimental results of the Miaoli District Agricultural Research and Extension Station show that application of straw-decomposing bacteria can also increase the value of rice production, reduce damage to land caused by burning, and improve soil quality, thus benefiting both the environment and society.

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Appendix

3.6 Supporting Biodiversity

Performance Highlights of the Year

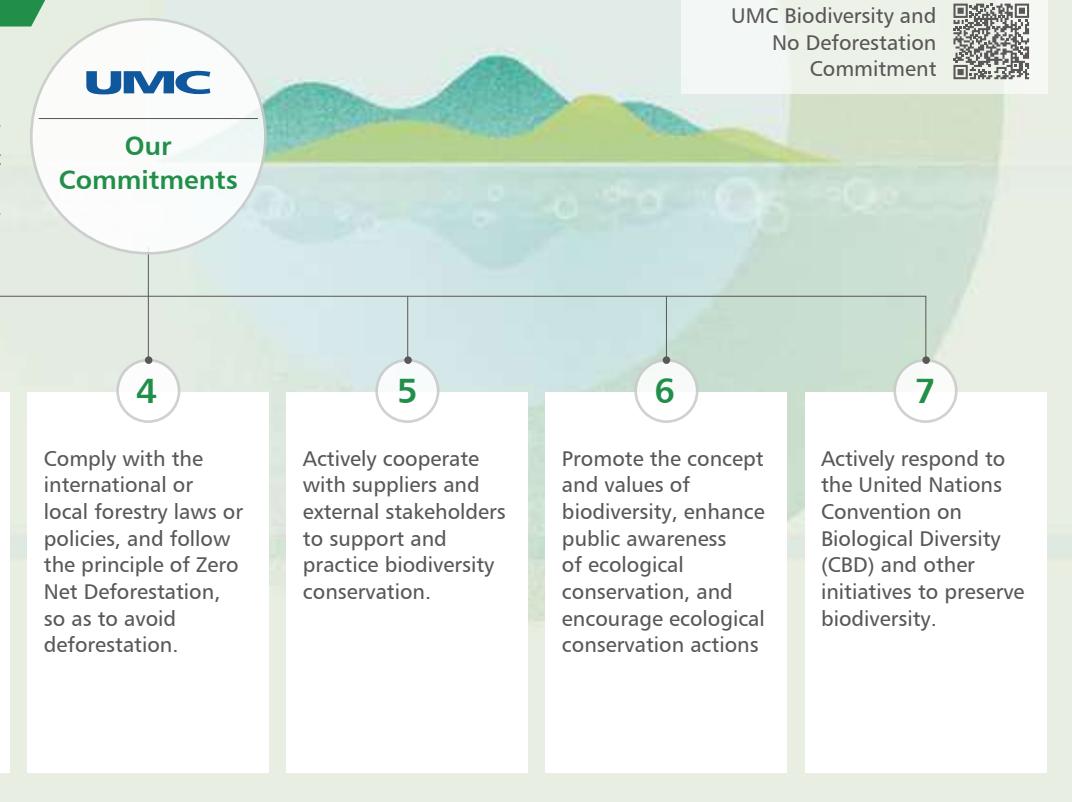
► Announcing UMC Biodiversity and No Deforestation Commitment

► Incorporating biodiversity requirements into Supplier Code of Conduct

All UMC fabs are located in industrial zones, and none of its operating bases are located in globally or nationally agreed "Key Biodiversity Areas (KBA)". With the aim of contributing to the United Nations's Sustainable Development Goals (SDG) "Life below water" (conserving marine ecosystems) and "Life on Land" (protecting terrestrial ecosystems), UMC's President approved the "Biodiversity and No Deforestation Commitment" in 2022 to demonstrate the Company's commitment to ecosystem conservation under the supervision of its sustainability governance body. In addition, biodiversity and zero deforestation requirements have also been incorporated into UMC's Supplier Code of Conduct, based on which suppliers are required to comply with relevant rules and standards, thereby promoting the value chain's joint effort to support biodiversity.

UMC Biodiversity and No Deforestation Commitment

Human economic activities lead to the deterioration of natural environment, loss of biological resources, and endanger the balance of ecosystems. UMC is committed to start from its own operations and call upon supply chain partners to jointly support the biodiversity maintenance and forest conservation, as well as to promote the well-being of human beings and the earth, to respond to the challenges posed by climate change to our environment and ecology.



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Our Actions

► Introducing Biodiversity Assessment

In 2022, UMC voluntarily introduced the biodiversity assessment system. By consulting international guidelines such as the Taskforce on Nature-related Financial Disclosures beta framework and the Science-based Targets for Nature Initial Guidance for Business, UMC identifies the materiality of the impact arising from its operating activities on biodiversity, and inventories the measures being taken for avoidance, minimization, restoration, and offset to reduce the impact of operating activities on biodiversity. Moreover, management measures have been formulated accordingly to help the Company's operating activities focus on the aim of No Net Loss (NNL), and to achieve the ultimate goal of Net Positive Impact (NPI).

► Supporting Nature and Ecosystem Conservation

UMC has long supported Taiwan's environment and ecosystem conservation through efforts to promote ecological biodiversity and raise awareness of environmental protection among the general public. Since 1999, UMC has implemented voluntary greenhouse gas (GHG) reduction plans and measures. The reduction achievements had passed the review of the Environmental Protection Administration, and enabled UMC to obtain carbon credits. In 2014, UMC signed Taiwan's first EPA-approved carbon credits transaction with Dragon Steel Corporation, and used all the proceeds from the carbon credits transaction to launch the Eco-Echo Ecological Conservation Hope Project. Under the project, the Sauter's Frog Habitat Conservation Project and the Eco Echo Award were established, demonstrating that UMC can contribute positively to our society and ecological environment.

► Introducing Green Fab

UMC introduced the green fab concept in 2007. The planning and construction of green buildings are carried out by following standards specified in U.S. LEED system and Taiwan's EEWH system through approaches such as appointing external green building experts and ecologists, implementing Technology Development Program (TDP) for Academia, etc. The design features of UMC green buildings that aim to promote biodiversity are as follows:

Ecological (Green) Network: Retain continuous green belts around fabs to increase opportunities for creatures to migrate, forage, or live.

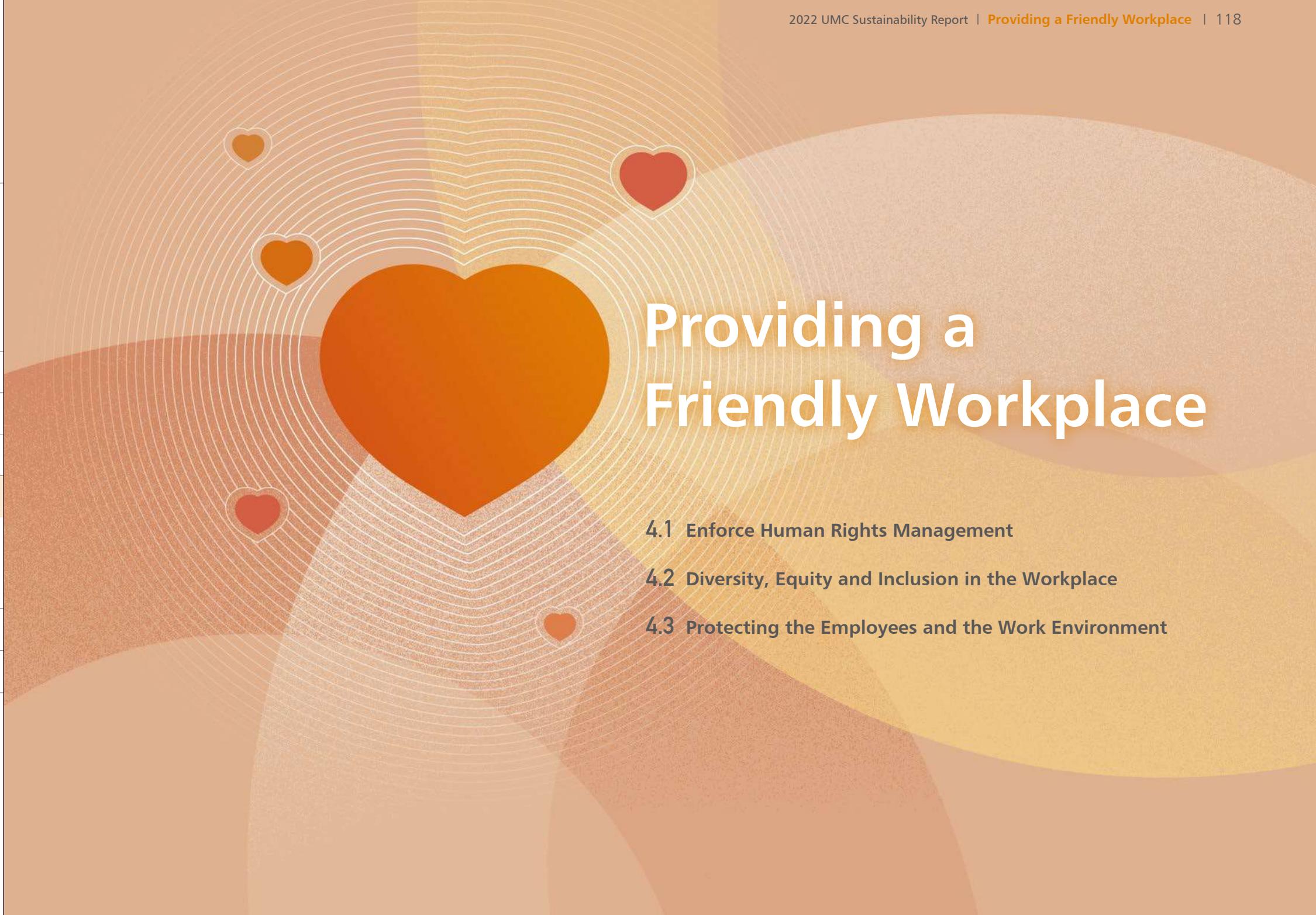
Habitat for little creatures: Create green floodwater detention ponds, design highly porous revetments, maintain a mixed forest, and preserve a meadow/shrub area to meet the needs of different creatures.

Plant diversity: In principle, choose native and diverse plants which can attract butterflies or birds to create diversified habitat conditions for creatures.

Not only UMC's new fabs are designed based on the principles of green buildings, green factories and smart buildings, existing fabs are also assessed based on the principles of green buildings and green factories, for which relevant green design and construction are gradually introduced.

Status of Each Fab in 2022

U.S. LEED	Gold Level: Fab 12A P3&4, Fab 12A P5&6, Subsidiary USCXM
Industrial Development Bureau, MOEA - Intelligent Building	Diamond Level: Fab 12A P5&6, Fab 12A P5&P6 Offices
Industrial Development Bureau, MOEA - EEWH Green Building	Certified Level: Fab 8A, Fab 8F, Fab 8S
Industrial Development Bureau, MOEA - Green Factory	Gold Level: Fab 12A P3&4
Industrial Development Bureau, MOEA - Cleaner Production Assessment System Certification	Diamond Level: Fab 12A P5&6
	Fab 8A, Fab 8F, Fab 8S, Fab 12A, Fab 12A P2
	All 8-inch fabs in Taiwan, Fab 12A and Fab 12A P2



Providing a Friendly Workplace

4.1 Enforce Human Rights Management

4.2 Diversity, Equity and Inclusion in the Workplace

4.3 Protecting the Employees and the Work Environment

4. Providing a Friendly Workplace

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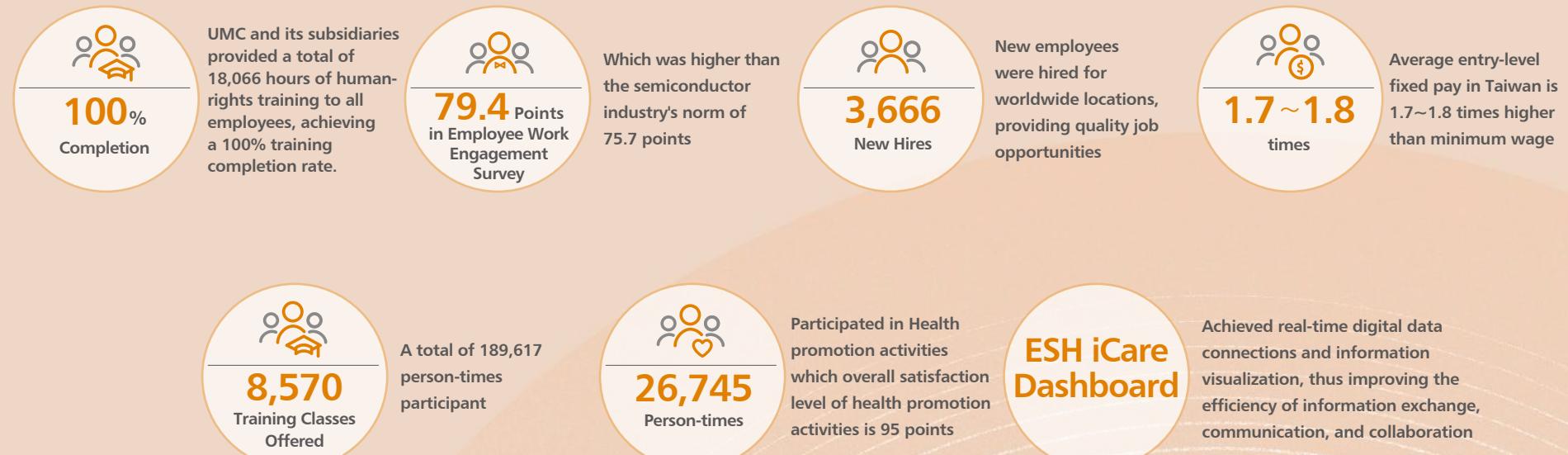
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Talent is the most important asset at UMC, thus UMC is committed to creating a workplace environment where employees can work in roles that suit their abilities and feel secure. UMC offers a competitive compensation and benefits system, cares about the physical and mental health of each employee, and creates a comprehensive talent development system, thereby enabling employees to give full play to their potentials in the workplace. Other than that, maintaining industrial safety is also considered a basic requirement at UMC. The UMC's corporate culture that takes industrial safety as the first priority is built with the aim to identify potential workplace safety risks in advance and create a safe workplace environment, along with a transparent and smooth worker management communication mechanism to protect employees' rights and workplace safety.

Important Stakeholders:
Employees, Suppliers and Government

SDGs :   

Performance Highlights 2022



4.1 Enforce Human Rights Management | 4.1.1 Enforce Human Rights Management 4.1.2 Employer-employee Communication

Material Topic: Human Rights

Related Policy
Human Rights Policy



Anti-Discrimination and
Anti-Harassment Policy



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In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Negative ► Human rights violations

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ► Formulate anti-discrimination and anti-harassment policies. ► Establish channels for submitting wrongful harm appeals. ► Conduct regular human rights risk assessments, and complete the RBA Self-Assessment Questionnaire (SAQ) on a regular basis. ► Participate in the RBA "Validated Assessment Program" (VAP) implemented by a third-party agency. 	<ul style="list-style-type: none"> ► Designate June of each year as the month for wrongful harm prevention; track and confirm whether employees understand relevant rights and interests. ► Conduct educational training sessions on human rights. ► Complete the RBA SAQ on a yearly basis, and assess the risk levels. ► Participate in the RBA VAP implemented by a third-party agency.

Key Performance Indexes

Achievements in 2022

Complete the RBA SAQ on a regular basis. ► **Achieved** All fabs' scores were above **90**, indicating a low risk level.

Pass the RBA VAP certification ► **Achieved** Fab 12A, Fab 8E and Fab 12i have all completed the VAP evaluation; the audit reports have been provided to customers through the RBA-Online platform.

All employees complete the training session of human rights.* ► **Achieved** **100%** of completion rate for training session.

All employees complete the training session of illegal violation/workplace violence.** ► **Achieved** **100%** of completion rate for training session.

Future Goals

Short-Term Goals (2023)

Mid-Term Goals (2025)

Long-Term Goals (2030)

Promoting human rights equality and employer-employee communication: Continue the promotion of Work Engagement Questionnaire survey***

Coverage rate: **82.5%**
Score: **79.6**

Coverage rate: **83%**
Score: **80**

Coverage rate: **85%**
Score: **81**

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4.1.1 Enforce Human Rights Management

Human Rights Policy

UMC supports and values governing international labor and human rights stipulations, and formulated the "UMC Code of Conduct" as well as the "UMC Human Rights Policy Declaration" in accordance with the spirit of the "UN Guiding Principles on Business and Human Rights" and the "Responsible Business Alliance Code of Conduct", hoping that all employees can comply with applicable regulations while engaging in their daily work and performing the required businesses, so as to ensure the sustainable growth and development of the Company.



More details for UMC Human Rights Policy

To ensure that the human rights policy is well implemented, UMC complies with four major principles:

1. Protection

Abide by the local laws and regulations of the operating base, UMC promises to safeguard and protect the human rights of workers, and provide a safe and healthy workplace environment.

2. Respect

UMC prohibits forced labor and child labor, provides equal working opportunities, allows freedom of association, respects privacy, and opposes all kinds of discrimination, bullying, and harassment.

3. Improvement

UMC provides clear grievance procedure, formulates and continuously improves mitigation and remedial measures to reduce the impact of human rights risk.

4. Management

UMC conducts regular human rights risk assessments, reviews potential risks in business activities, and discloses the governance of human rights issues to ensure information transparency.

Human Rights Promotion Practices

UMC's human rights policy applies to UMC and its reinvested businesses, subsidiaries, joint ventures, suppliers, customers, and other business partners to ensure that daily operations and all business activities meet the requirements. UMC incorporates human rights considerations in all aspects of operations, including employees, customers, suppliers, business partners, and the social environment where UMC's operating bases are located.

UMC and its subsidiaries, HJ and USCXM, and Wavetek, attach great importance to the promotion of labor and business ethics policies in the "Responsible Business Alliance Code of Conduct" (hereinafter referred to as the RBA Code of Conduct), and regularly review the disciplinary code of employees, highlighting the importance of labor, ethics, child labor avoidance, labor relation, freely chosen employment, working hours and anti-discrimination.

In 2022, UMC and its subsidiaries, HJ and USCXM, and Wavetek provided a total of 18,066.35 hours of human-rights-related training sessions to all employees, with a training completion rate reaching 100%. The total number of training hours on human rights in 2022 is 18,066.35 hours, and the completion rate of the training is 100%. In addition, to protect the basic rights and interests of workers, when major changes in operations occur, UMC will follow the relevant provisions of the Labor Standards Act in Taiwan, the Employment Act in Singapore, and the Labor Contract Law in China.

To protect the human rights of workers, UMC has formulated the "Workplace Sexual Harassment Prevention Measures, Complaints and Disciplinary Regulations" and provides clear grievance procedure to protect the rights and interests of employees.

Human Rights Risk Identification Process

Every year, risk identification is conducted in accordance with the "Human Rights Risk Identification Process", and surveys on corporate social responsibility related issues are sent to stakeholders including employees, communities, and government agencies through online and paper questionnaires. By collecting and analyzing the results of the surveys, issues that are concerned by the stakeholders can be better understood, which will benefit the identification of key indicators, serving as the reference for subsequent risk management.



Establish a list of human rights risk issues

According to the human rights issues stated in the international human rights conventions and policies, and the status of the industrial chain, a list of human rights risk issues is listed.



Engage with stakeholder

Use stakeholder surveys to evaluate the potential risk issues.



Identify major human rights risks

Once a year, according to the probability and severity of the occurrence, committee members and officers are selected from each functional groups of the CS Committee to help complete the risk assessment.



Define the response targets of human rights risk

Set response targets for human rights risk issues, and offer an action plan or measure (include mitigation plan and remedies)

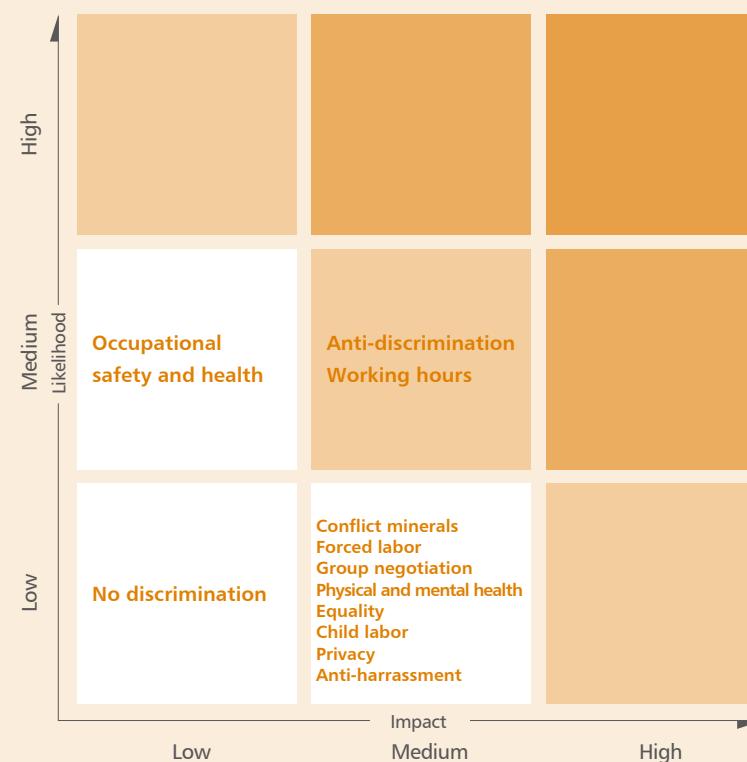


Check implementation effectiveness

Review the annual goal and follow-up improvement measures in the Corporate Sustainability Committee every quarter.

Human Rights Risk Matrix

Human rights risk assessments are conducted by the execution members and officers of the Corporate Sustainability Committee according to the probability and severity of the risks. The results of the assessments are then used to prepare the "Human Rights Risk Matrix," and the "Major Human Rights Risk Issues" are identified according to the ranking.



Human Rights Issue Management

UMC established the "EICC Committee (renamed RBA Committee in 2018)" in 2013 to manage human rights related issues, including labor, health and safety, environment, ethics, etc., and formulate relevant policies as well as performance targets, and regularly track and review the results of the implementation plan.

The RBA Committee annually reviews whether the internal system of UMC complies with the latest RBA standards in order to fully implement the RBA Code of Conduct. The risks of each fab are assessed through the RBA-Online platform to prevent potential risks from occurring. In 2022, the RBA SAQ scores of all fabs are higher than 90 points, indicating that the risk is low.

In addition to the internal self-inspection mechanism, UMC also invites third-party agencies entrusted by customers to perform the "Validated Audit Process" (VAP) of RBA. Through the checking of external audit, the overall management system can be further strengthened. In 2022, the Fab 12A, Fab 8E in Taiwan and the Fab 12i in Singapore completed the VAP assessment and the corresponding audit reports were provided to the customers through the RBA-Online platform.

SAQ and VAP Risk Assessment Performance

12-inch wafer fab

	Fab 12A	Fab 12i	Fab 8A	Fab 8C	Fab 8D	Fab 8E	Fab 8F	Fab 8S
SAQ	92.2	90.9	91.5	91.8	91.8	92.1	92.3	92.1
VAP	200	200	N/A	N/A	N/A	193.1	N/A	N/A

Note: 1. The scope of statistics includes UMC's plants in Taiwan and Singapore.

2. SAQ assessment: full score is 100 points, ≥85 points is low risk, ≥65 points and <85 points is moderate risk, and <65 points is high risk.

3. VAP assessment: The perfect score is 200 points and the fab evaluated for current year is according to customer requirements. In 2022, no customer required Fab 8A, Fab 8C, Fab 8D, Fab 8F and Fab 8S to conduct VAP assessment, so only SAQ assessment was conducted in these fabs.

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Management of Human Rights Issues

According to the results of human rights risk assessment, UMC establishes mitigation and remedial measures, identifies the human rights issues related to each department, notes management and improvement measures, and tracks the results of implementation. Human rights mitigation measures and remediation measures are implemented in 12 fab sites in Taiwan, China, Japan and Singapore. There were no high-risk risks nor human rights violations identified in 2022; thus, no remedial measures were implemented. The results of such assessments enable UMC to maintain frequent and regular dialogues with stakeholders, and their feedback can serve as the basis for review and adjustment of the Human Rights commitments and policies to ensure that they meet the stakeholders' expectations and requirements.

There were no high-risk risks nor human rights violations identified in 2022; Thus, no remedial measures were implemented.

2022 Human Right Risk Assessment Result (Human rights mitigation measures and remediation measures are implemented in 12 fab sites ^{Note} in Taiwan, China, Japan and Singapore.)

Party of Concern	Core Issues	Impact Assessment and Mitigation Measures	Remediation Action	2022 Management Goals	Achievements in 2022	Targets for 2023
 Migrant employees and female employees	Equality Anti-discrimination Forced labor	<ul style="list-style-type: none"> The RBA Committee was established in the Human Rights Committee to regularly review human rights-related issues. The inspection and evaluation of the "Prohibition of Forced Labor" management procedures and various grievance procedures are carried out through internal audits. 	<ul style="list-style-type: none"> Issue handled in accordance with wrongful harm handling procedures. Corresponding punitive measures taken for perpetrators; compensatory measures organized after negotiation based on complaint-filing employees' preference. Overtime compensation given in accordance with internal regulations; involuntary overtime ceased immediately to restore employees' rights. 	<ul style="list-style-type: none"> The annual online completion rate of new recruits for the "Labor/Ethics" education and training in the RBA Code of Conduct to reach 100% All fabs to complete the RBA SAQ assessment and score higher than 90 points. 		<ul style="list-style-type: none"> The annual online completion rate of new recruits for the "Labor/Ethics" education and training in the RBA Code of Conduct to reach 100% All fabs to complete the RBA SAQ assessment and score higher than 90 points.
 Suppliers	Conflict minerals Child labor Forced labor Working hours Safety and health	<ul style="list-style-type: none"> Conduct questionnaire surveys and on-site audits on suppliers' compliance with the RBA Code of Conduct. 	<ul style="list-style-type: none"> Ensure that the suppliers have a medium-to-high risk compensation policy in place and promise to provide immediate and reciprocal compensation in the event of such a situation. 	<ul style="list-style-type: none"> Ensure all new suppliers to sign the UMC Supplier Code of Ethics and Supplier Code of Conduct Third-party agencies conduct questionnaire surveys and on-site audits on key suppliers' compliance with sustainability (ESG) and RBA requirements 		<ul style="list-style-type: none"> Ensure all new suppliers to sign the UMC Supplier Code of Ethics and Supplier Code of Conduct Third-party agencies conduct questionnaire surveys and on-site audits on key suppliers' compliance with sustainability (ESG) and RBA requirements (may be conducted through video conferencing due to pandemic). Audit coverage rate reached 100%.
 Customers	Privacy	<ul style="list-style-type: none"> Regularly receive satisfaction ratings from customers 	<ul style="list-style-type: none"> In case of leakage of private information, UMC will make improvement and compensation according to the terms of the confidentiality agreement. 	<ul style="list-style-type: none"> All employees, business partners, and customers must sign confidentiality contracts, requiring mutual protection of confidential information. Internally formulate the "Confidential Information/Data Management Regulations", and all customer information is handled by dedicated units. 		<ul style="list-style-type: none"> All employees, business partners, and customers must sign confidentiality contracts, requiring mutual protection of confidential information. Internally formulate the "Confidential Information/Data Management Regulations", and all customer information is handled by dedicated units.
 All employees	Labor relation Working hours	<ul style="list-style-type: none"> The inspection and evaluation of labor relation are carried out through the labor-management meetings, quarterly company-wide town hall meetings, and various grievance procedures. 	<ul style="list-style-type: none"> Review meetings will be held to compensate employees for their losses in accordance with the resolution of labor disputes or grievance records. If there is violation, it will be corrected immediately. 	<ul style="list-style-type: none"> "Labor-management meetings" and "company-wide town hall meetings" are held on a quarterly basis. 100% of appeal cases are handled and settled. Continue to implement the "company-wide engagement survey" and strengthen organizational identification. 	 A total of 36 labor-management meetings and 4 company-wide town hall meetings were held. 	<ul style="list-style-type: none"> Hold regular "Labor-management meetings" and quarterly "company-wide town hall meetings" Settlement of appeal cases: 100% Continue to implement the "company-wide engagement survey" and strengthen organizational identification.
				<ul style="list-style-type: none"> Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees. 		<ul style="list-style-type: none"> Overtime management was promoted in corporate secretary forum and labor-management meetings. The overtime management system is strengthened to promote the communication and planning of overtime needs. Send monthly reminders to supervisors to show care for employees in vacation planning.
						<ul style="list-style-type: none"> Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees.

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Party of Concern	Core Issues	Impact Assessment and Mitigation Measures	Remediation Action	2022 Management Goals	Achievements in 2022	Targets for 2023
 Community residents	Physical and mental health	<ul style="list-style-type: none"> ▶ Carry out regular surrounding noise measurement and air pollution monitoring to properly manage these intrusions and reduce local residents' health risks. 	<ul style="list-style-type: none"> ▶ If any equipment is found to be abnormal, it will be instantly repaired and replaced with spare equipment. 	<ul style="list-style-type: none"> ▶ Noise: Contract special agency to perform surrounding noise measurement every year, and the results shall meet the governing standards. 	 Achieved	<ul style="list-style-type: none"> ▶ Noise: Contract special agency to perform surrounding noise measurement every year, and the results shall meet the governing standards.
				<ul style="list-style-type: none"> ▶ Air pollution: Monitor the operating parameters of the air pollution control equipment, and the operating range meets the requirements of the licensing regulations. 	 Achieved	<ul style="list-style-type: none"> ▶ Air pollution: Monitor the operating parameters of the air pollution control equipment, and the operating range shall meet the requirements of the licensing regulations.
 Indigenous people and the physically challenged	No discrimination	<ul style="list-style-type: none"> ▶ Pay attention to equal employment rights during recruitment and provide fair employment opportunities. 	<ul style="list-style-type: none"> ▶ Hold open recruitment activities, and review monthly on the People with Disabilities Rights Protection Act to ensure the adequate quota of employment. 	<ul style="list-style-type: none"> ▶ Jobs are offered through open recruitment. Ethnicity will not affect the recruitment or cause differential treatment in terms of compensation, benefits, promotion, salary adjustment and employment rights. 	 Achieved	<ul style="list-style-type: none"> ▶ Meet the recruitment requirements specified in the People with Disabilities Rights Protection Act.
				<ul style="list-style-type: none"> ▶ In 2022, a total of 142 employees with disabilities were recruited, complying with and exceeding the governing regulations. 	<ul style="list-style-type: none"> ▶ Providing 8 hours of ritual leave to indigenous people each year to show respects to the unique culture of different ethnic groups. In 2022, 67 indigenous people were recruited. 	<ul style="list-style-type: none"> ▶ Job are offered through open recruitment. Recruitment channels fully explain the compensation and benefits.
 Subsidiary company-USCXM and HJ	Working hours	<ul style="list-style-type: none"> ▶ Take the initiative to construct a sound working hour management mechanism and system. 	<ul style="list-style-type: none"> ▶ Pay overtime according to local laws ▶ If the extended working hours of an employee exceeds the legal limit, the system will alert the supervisor to pay attention. ▶ If the overtime is due to an unforeseen circumstance, the supervisor must specify the reason and propose countermeasures to prevent reoccurrence. 	<ul style="list-style-type: none"> ▶ Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees. 	<ul style="list-style-type: none"> ▶ Overtime management was promoted in meetings every month. ▶ Strengthen system management: If work hours exceed statutory limits, department supervisors are reminded to review anomalous situations. ▶ Proactively remind supervisors on a monthly/quarterly basis to remind and encourage employees to plan holidays. 	<ul style="list-style-type: none"> ▶ Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees.
				<ul style="list-style-type: none"> ▶ Hold labor-management meetings on a quarterly basis 	 Achieved	<ul style="list-style-type: none"> ▶ Hold labor-management meetings on a quarterly basis
				<ul style="list-style-type: none"> ▶ 100% of complaint cases have been resolved and closed 	<ul style="list-style-type: none"> ▶ No complaint filed in 2022 	<ul style="list-style-type: none"> ▶ 100% of complaint cases have been resolved and closed
 Subsidiary company-Wavetek	Labor relation	<ul style="list-style-type: none"> ▶ Review and evaluate through quarterly labor-management meetings and different complaint channels 	<ul style="list-style-type: none"> ▶ Hold discussion meetings based on labor-management disputes or complaint resolution records; provide compensation for employees' losses. 	<ul style="list-style-type: none"> ▶ Continue open recruitment for job vacancies; hiring decisions shall not consider ethnicity, nor shall employees be discriminated against in terms of salary, benefits, promotion, salary adjustment or other working conditions and employment rights 	<ul style="list-style-type: none"> ▶ Open recruitment is conducted; salary and benefit information is clearly disclosed through recruitment channels 	<ul style="list-style-type: none"> ▶ Conduct open recruitment for job vacancies; hiring decisions shall not consider ethnicity, nor shall employees be discriminated against in terms of salary, benefits, promotion, salary adjustment or other working conditions and employment rights
				<ul style="list-style-type: none"> ▶ Maintain the practice of open recruitment, and check recruitment requirements stipulated in disability-related regulations. 		
 Subsidiary company-USJC	No discrimination	<ul style="list-style-type: none"> ▶ Promote and facilitate correct understanding through educational training, and build up complaint channels 	<ul style="list-style-type: none"> ▶ Take punitive measures for perpetrators in accordance with company regulations, and assist victimized employees in receiving compensation. 	<ul style="list-style-type: none"> ▶ Conduct online educational training ▶ Educational training for employees at supervisor level or higher. 	<ul style="list-style-type: none"> ▶ Completion rate: 87% 	<ul style="list-style-type: none"> ▶ Continue anti-harassment educational training, and provide educational training for employees at supervisor level or higher to build up correct awareness for the handling of relevant cases.

Note: The "13 fab sites" indicated in 2021 was calculated based on the fab sites where labor-management meetings had been held. The number of fab sites has been revised to 12 to maintain consistency in the Company's external communications.

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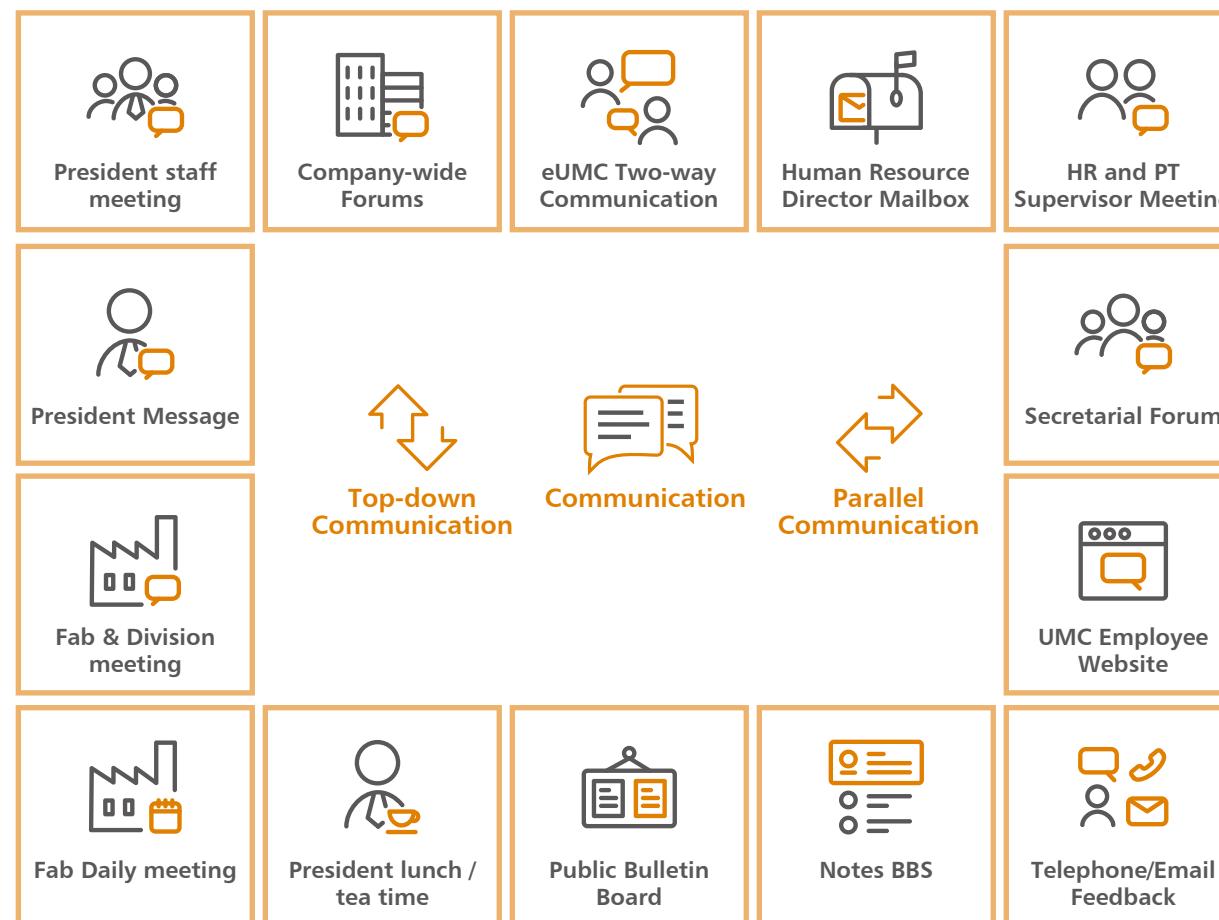
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4.1.2 Employer-employee Communication

Channels of Communication

Employee compensation and welfare have always been a top priority of UMC. UMC takes an active role in the training of skilled professionals, fulfilling labor laws, protecting the rights and interests of UMC employees, and building a transparent and enjoyable work environment. Communication channels such as employer-employee meetings, departmental meetings, conferences (management conferences and colleague conferences) as well as mail boxes were employed to achieve the goals of providing extensive communication channels to effectively solve any problem that may arise.

Important UMC Communication and Complaint Channels:



To optimize and expand the advantages of real-time communication, UMC integrated and established the Communication Area - a platform dedicated to employee communication. The site content includes the Human Resource Director Mailbox, fraud and sexual harassment complaints, e-Suggestions for feedback, company-wide information forum, and UMC's website so that the various communication channels in the all operation sites can be integrated into one single platform for effective communication and promoting harmonious employer-employee relations.

Based on the standpoint of safeguarding the human rights of employees, the Company also has a confidentiality mechanism for colleagues in complaints or incidents to ensure that employees can file complaints freely and confidentially. Among UMC's communication channels, the "e-Suggestion" platform has the highest utilization rate. In 2022, it received 287 opinions and suggestions from colleagues, and the settle and closing rate was 100%.



Website "UMCWe" is an external website (internet) platform freely accessible to employees. Through this interactive communication platform, families, prospective employees, integrated benefits, employee social clubs, and specially selected stores are linked to strengthen the interaction between the organization and employees.

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Freedom of Association

According to the rights granted to workers by the law, the employees of UMC shall have the right to form associations freely, and UMC shall not interfere or intervene with the employees' freedom of association. UMC provides a diversified and sound communication mechanism to effectively understand the employees' needs and deal with their problems. In the employer-employee meeting, each department can nominate their representatives to participate in the "Online Voting of Employee Representatives for the Employer-Employee Meeting." Based on the percentage of male and female representatives required by law, the voting will be opened to the employees through UMC's voting system, allowing the elected employee representatives to express employees' concerns and opinions for discussion in the quarterly employer-employee meeting. The employer-employee meeting is the formal channel for communication and the coverage of UMC employee is 100%. In addition, the China subsidiary HJ also established a labor union to communicate with employees through conferences, departmental meetings and suggestion boxes.

Item	2019	2020	2021	2022	Details	Notes
UMC						
Company-wide Conferences	4	4	4	4	Interactive videoconference for 7 sites spanning multiple countries and regions hosted by the president himself, allowing UMC colleagues and external parties to review the latest company policies, directives, and performance.	Held Town Hall Meeting quarterly after the investor conference.
Fab and Departmental Communication Meetings	58	84	96	88	Share overall operational performance as well as developmental highlights of the fabs and departments with all employees.	Held semi-annually by each fab and department.
Secretary Conference	8	8	8	8	The Human Resource (HR) department shall collect key topics and discuss them with all secretaries. And secretaries shall convey key issues of the meeting to colleagues to achieve two-way communication.	Held quarterly at fabs in Hsinchu Science Park / Southern Taiwan Science Park
Employer-employee Meeting	36	36	36	36	The HR department shall delegate colleagues and employees familiar with relevant regulations to organize and assemble cross-unit and cross-functional consulting team. The team shall follow up on specific meeting topics and facilitate subsequent improvement plans to effectively promote harmonious employer-employee relationships.	Held quarterly at 9 fabs.
Welfare Committee Meeting	4	4	4	4	The employee welfare activities as well as the usage of welfare funds shall be reported to the welfare committee member delegated by each fab in the quarterly meeting.	Quarterly
HJ						
Employer-employee Meeting	12	12	12	19	Any questions that colleagues have, such as difficulties and problems at work, can be raised at the meeting, and the supervisor and the person in charge will answer them.	Aperiodic
USCXM						
Employer-employee Meeting	2	3	4	4	<ul style="list-style-type: none"> ► Manufacturing department direct labor conferences: Two conference sessions attended by HR and manufacturing departments direct labor to discuss issues mainly related to compensation and benefits, food/housing/transportation, appraisal/attendance, promotion, etc. ► Two meeting sessions related to benefits matters 	Aperiodic

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Employee Work Engagement Survey

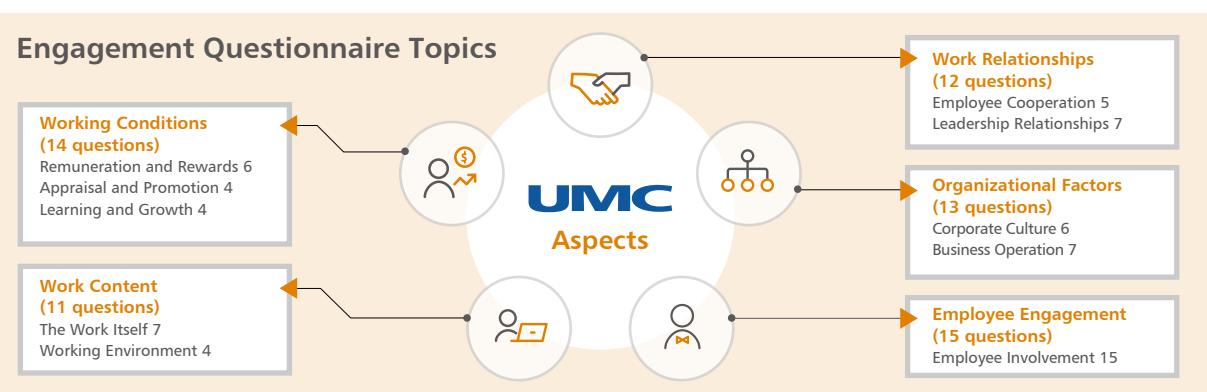
UMC has always adhered to a people-oriented spirit by regarding UMC employees as the Company's most important asset. Therefore, caring about employees, listening to their feedback and making corresponding improvements are important to the Company. In the past, UMC used the "employee satisfaction survey" for analysis. At the end of 2018, the "employee engagement survey" was introduced in line with international trends. The Company extended the survey subjects from UMC Taiwan and Singapore fabs to all employees include those in Mainland China in 2022, and obtained an overall outcome of 79.4 points, which was higher than the semiconductor industry's norm of 75.7 points. It is hoped that the organization's key issues can be identified through the survey report, based on which improvement countermeasures can be taken to retain key talents.

Achievements of the Year

In 2022, six improvement countermeasures were taken for key units to strengthen the less-than-satisfactory aspects. The results indicated that considerable improvement had been achieved. In addition, the reshaping and promotion of corporate culture has been completed based on the feedback on corporate culture revealed through the Work Engagement Questionnaire. Moreover, three sessions of global and cultural communication activities have been held, achieving a total of 160,000 participants-counts, and helping the Company collect feedback from employees.

Post-survey Improvement Plans and Practices

As for the collected survey results, in addition to confirming the effectiveness through cross-comparison of annual variations, corresponding communication was also carried out based on various department functions for the implementation of quarterly progress tracking. In regards to the less-than-satisfactory items indicated in specific units' 2022 survey results, the extent of corresponding improvements was greater than the Company's average improvement extent, demonstrating the effectiveness of the countermeasures. Moreover, in terms of the projects proposed to improve work efficiency and labor balance for the Company's overall operating environment, work patterns have been adjusted through further review of work hours and diagnosis of reasons for employee turnover in the hope of enhancing retention rates at fabs using advanced process technologies.



The key points we inquire through the questions of the Work Engagement Questionnaire encompass the following concepts:

Scope	Question Design
Satisfaction at work	As far as my job responsibilities are concerned, my salary and benefits are fairly good
Clarity in the workplace	The authority and responsibility of each role in our department are clearly defined, where situations of "having responsibility but no authority" or "having authority but no responsibility" do not exist.
Sense of happiness at work	I like this job, and am always happy at work.
Stress at work	Moderate work stress is acceptable to me.

Survey Target and Outcome

Year	Coverage Rate	Work Engagement Index			
		Target	Overall	Male	Female
2019	92.9%	--	75.1	75.6	74.5
2020	97.7%	76	77.1	77.9	75.9
2021	97.6%	77.1	79.5	80.6	77.9
2022	97.6%	79	79.4	80.2	78.0

Note: 1. Statistics from 2019-2021 include all UMC employees in Taiwan and Singapore.

2. Colleagues of the Company's subsidiaries HJ and USCXM have been included in the survey since 2022. The overall work engagement score after including the said subsidiaries was 79.4 points.

3. In 2022, the employee coverage rate of UMC's Taiwan and Singapore plants will be 97.7%; the engagement score will be 78.8 points

4. In response to the rating standards stated in the official definition of Dow Jones Sustainability Index (DJSI), the calculation method of survey coverage rate has been adjusted to: Total number of collected questionnaires ÷ Supposed number of respondents.

2022 Employee Work Engagement Survey Outcome - by Age

Age	UMC	UMC, subsidiaries HJ and USCXM
Average	78.8	79.4
<30	78.3	79.7
30-39	78.0	78.7
40-49	78.7	79.0
50-59	81.7	81.8
>=60	82.4	83.0

Note: The distribution population is the number of full-time employees within the scope of the survey conducted in 2022.

Comprehensive Appeal and Employee Support Systems and Channels

UMC encourages open communication with employees and stakeholders. When experiencing injustice or doubts, a whistleblower can report in a named or anonymous way. The Company provides access to file complaints 24/7 in both Chinese and English, allowing stakeholders to report issues without any language or time barriers.

The investigation process for appeals is carried out with confidentiality. Dedicated personnel have been designated as contact person for each appeal channel to ensure that relevant information is well kept and can only be made known to related personnel. After an appeal is received, an investigation team shall be formed to handle the case, during which the complainant's privacy shall be protected. With the aim of preventing inappropriate retaliation and treatment, the Company has formulated relevant internal regulations such as "Workplace Sexual Harassment Prevention Measures, Complaints and Disciplinary Regulations", "Prevention for Workplace Wrongful Harm When Performing Job Duties", "Regulations on Whistleblowing", etc. to expressly protect complainants' rights. Moreover, the Company absolutely prohibits any acts of retaliation against the complainants, or personnel who assist in the investigations. Punitive measures shall be taken for any retaliation acts in accordance with the Company's relevant regulations.

	 Appeal channels for all employees and all types of cases
	 Report of sexual harassment and unfair treatment ► extension 31995; Mailbox: 31995@umc.com
	 CHO's e-mail box ► UMC_CHO_Mailbox@umc.com
	 CSR mailbox ► csrc@umc.com
	 Employee Relationship (ER Service) Hotline ► 12885
	 Fraud and Ethics Violation Report Box ► whistleblower@umc.com (This e-mail box will automatically forward messages to ADT Division Director, HR Division Director, GC Director, and Audit Committee.) External reporting hotline: 0800-024-399 (toll free)
	 Whistleblower Hot Lines ► 03-5782258, extension 31425
	 Information Security and Confidentiality Protection Complaint ► Infosec@umc.com
	If any violations of UMC code of conduct regarding different issues occur, the Company has specific ombudsman to handle the issues, including ADT Level 1 Manager, HR Level 1 Manager, and GC Level 1 Manager, and Audit Committee: Audit_committee@umc.com

All case records shall be properly kept in accordance with laws and the Company's regulations, which can only be accessed by personnel related to the handling of the cases to ensure that complainants' privacy is protected. With the aim of comprehensively communicating with employees and effectively solving problems, in addition to the aforementioned communication platforms, UMC has also set up the following appeal mechanisms and channels:

In addition to establishing a comprehensive set of communication channels and platforms, UMC shall continue to improve upon the effectiveness of communication channels and carry out projects to enhance communication of key topics and information throughout the Company, ensure the comprehensiveness and depth of communications, and strengthen global communication capacities for every employee. A total of 163 formal and large-scale conferences were held in 2022 to effectively communicate key topics on UMC businesses.

UMC will investigate and implement follow-up improvements based on the issues related to the complaint cases, and cooperate with education and training (such as e-mail promotion and online testing) to require employees to comply with the code of conducts. In 2022, UMC received no labor affairs related complaint.

In order to clearly declare a position of "zero tolerance" against various illegal violations in the workplace, establish a workplace culture of safety, dignity, non-discrimination, mutual respect and tolerance, and provide equal opportunities to ensure the physical and mental health of employees, UMC designates June of each year as "Illegal Violation Prevention Month." Related education and trainings were conducted during this period, and the supervisors are required to complete a self-check list for illegal violations in the workplace.

Follow-up training sessions were conducted in 2022, and a total of 8,680 indirect labors and 5,035 direct labors participated, with a completion rate of 100%. The total number of participating supervisors (Level-4 and above) was 1,477. Supervisors performed online self-checks to see if they had any inappropriate behavior toward employees. The completion rate was 100%.

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Processing Flow of Illegal Violation/ Workplace Violence

Employee suffers from any one of the following 5 types of workplace violence:

1. Physical violence
2. Psychological violence
3. Verbal violence
4. Sexual harassment
5. Stalking and harassment

Within 24 hours



Fill out "Workplace Infringement Report and Action Form"

No
Case established or not

Yes

Committee is formed
Conduct



confidential investigation

Make penalty or notify decision according to guidelines



Case closed



Record archives for at least 3 years

Numbers of Grievances

Category / Year	Human Rights Issues				Labor Affairs			
	2019	2020	2021	2022	2019	2020	2021	2022
Filed through the mechanism	4	10	9	6	20	17	11	10
Addressed	4	10	9	6	20	17	11	10
Reviewed	4	10	8	4	20	17	11	8
Officially undergoing judiciary proceedings	0	0	1	0	0	0	0	0
Resolved	5	10	9	6	20	17	11	10

Note: 1. The human rights category includes complaints such as sexual harassment, illegal infringement, and forced labor. There was no sexual harassment case filed in 2022.

2. The labor affairs category includes work hours and salary, occupational safety, education and training, and promotion/benefits. Human Rights Issues includes: workplace violence, sexual harassment and discrimination.

3. Please refer to the UMC Code of Conduct https://www.umc.com/en/Html/UMC_code_of_conduct.

4.2 Diversity, Equity and Inclusion in the Workplace

4.2.1 Human Resource Development

4.2.2 Compensation and Benefits

4.2.3 Strengthening Talent Cultivation

Material Topic: Employee Diversity and Inclusiveness

Related Policy

Diversity and Inclusion Statement



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In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ► Workplace diversity and equality

Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ▶ Formulate the Diversity and Inclusion Statement, and regularly review the effectiveness of acts for achieving diversity and inclusion. ▶ Set a target for the percentage of women in senior managerial positions, and organize lectures to promote gender equality. ▶ Develop "Workplace of Happiness" measures: Formulate maternity leave/paternity leave standards that are better than mandatory requirements. 	<ul style="list-style-type: none"> ▶ Set management KPIs. Quarterly report the progress of performance by the "The Human Rights and Employee Development/Welfare Team" to the Corporate Sustainability Committee for review. ▶ Participate in international ESG ratings such as DJSI, MSCI, etc.

Key Performance Indexes

Achievements in 2022

Being attentive to female employees' career development:

Set a target of 10% for the percentage of women in senior managerial positions.

► ★ Achieved Females in senior managerial positions was 11%

Being active in female talent cultivation:

2 experience-sharing lectures related to exemplary female leadership and management were held. *

Protecting minorities' employment rights:

As indicated in 2022 statistics, the total number of employees with disabilities was 142. *

Value ethnic minorities' unique cultures:

An 8-hour ceremonial leave is granted per year for those with an indigenous identity. *

Scope: * UMC Taiwan; Without any * remark is UMC.

Future Goals

Short-Term Goals (2023)

Mid-Term Goals (2025)

Long-Term Goals (2030)

Proportion of women among managerial personnel

22%

23%

24%

Note: The scope covers UMC.

Material Topic: Talent Attraction and Retention

In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ► Enhance corporate competitiveness and provide quality job opportunities		Negative ► Losing talented personnel
Management Actions		Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ► Regularly participate in campus recruiting activities and interact with target groups for recruitment. ► Carry out strategic manpower planning and develop a complete recruitment blueprint based on the Company's business focuses. ► Keep track of market salary information, provide differentiated compensation and introduce diverse and long-term incentive/rewarding tools to ensure that an overall remuneration system with market competitiveness is being offered, and adjust compensation strategies when necessary. ► Work with departments with high turnover rates, and establish employee care mechanisms, through which the department can be alerted in advance about employees' intention to resign. ► Offer diversified career development paths, e.g. internal reassignment. ► Promote key talent development plans. 		<ul style="list-style-type: none"> ► Regularly examine talent development programs' progress and achievements. ► Conduct at least one market competitiveness analysis per year. ► Participate in monthly meetings held by departments with high turnover rates, and give analytical presentations on the turnover rate issue. ► Continue the promotion of Work Engagement Questionnaire survey - Explore key weaknesses in the organizational climate and take countermeasures. Keep focusing on efforts to improve the issues to enhance employee retention. ► Set management KPIs. The "Human Rights and Employee Development/Welfare Team" compiles the progress of achievement on a quarterly basis, and reports to Corporate Sustainability Committee and other relevant committees.

Key Performance Indexes		Achievements in 2022
A total of 3,666 new employees.		Internal transfer rate of 58.6% , which is better than the target of 50% .
1.1% decrease of turnover rate compared to 2021.		Salary levels are in line with organizational compensation strategies.
Provide flexible working shifts and hours.		Provide maternity leave and paternity leave that are better than what is legally required.

Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)
Mid-high performance employee retention rate	≥ 92.1%	≥ 93.5%	≥ 94%

Note: The scope covers UMC.

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UMC encourages a diverse and open workplace culture and respects the uniqueness of each employee. When recruiting employees, prioritize selection based on the professional skills required for each position, regardless of race, color, nationality, ethnic or ethnic origin, gender, marital status, age, disability, family status, sexual orientation, political beliefs and other factors.

In 2022, the Company hired a total of 3,666 new employees, including young generation, indigenous people and people with disabilities.

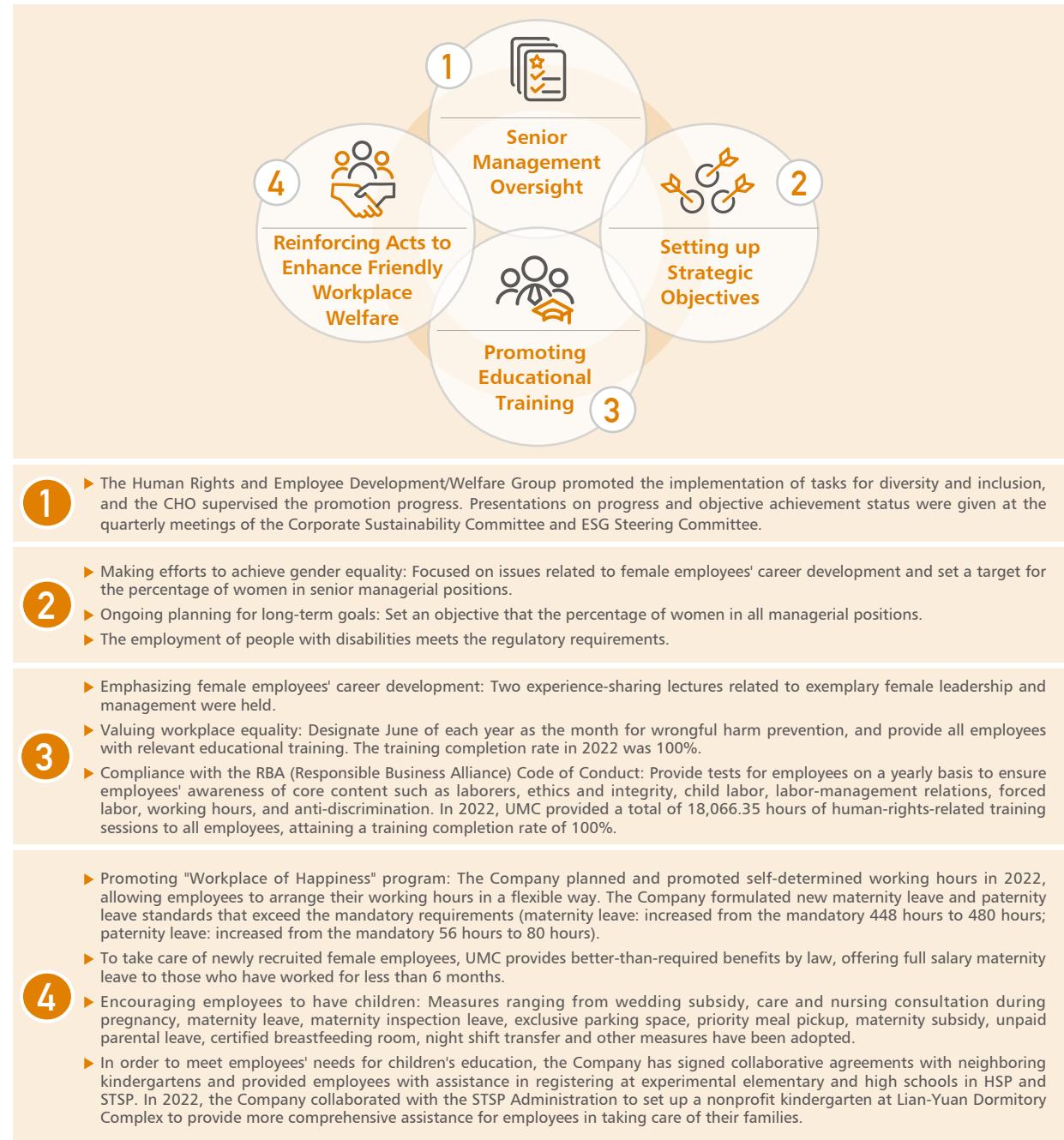
UMC believes that diversified employee composition will bring different perspectives and opportunities for progress. By establishing a diverse and inclusive workplace culture, it will help employees exert their strengths at work and put forward different thinking, which will become the key to corporate growth.

Diversity and Inclusion Statement

The Diversity and Inclusion Statement was signed by the co-president and chairman of the Corporate Sustainability Committee in 2022, and announced on the Company's official website. UMC respects the uniqueness of every employee, and emphasizes equal treatment and the provision of a friendly work environment. Work rights equality is valued when recruiting employees. Recruitment prioritizes the required professional skills for the position, and does not discriminate based on race, color, nationality, ethnicity or ethnic origin, gender, marital status, age, disability status, family status, sexual orientation, political beliefs, or other factors.

In order to create a work environment of diversity and inclusion, the Company has focused on four dimensions: establishing management systems, setting up strategic objectives, promoting educational training, and reinforcing acts to enhance friendly workplace welfare. All groups in the Corporate Sustainability Committee work together to enhance all employees' consensus to achieve diversity, equality and inclusion in the workplace.

Diversity and
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4.2.1 Human Resource Development

Human Resource Distribution

By the end of 2022, the total number of formal employees at UMC Group was 20,527. This figure included 2,144 managers, 10,284 engineers, 635 administrators, 7,461 technicians, and 3 clerks.

The working population within the Company can be divided into 2 categories by type of employment, namely formal employees (98.2%) and non-formal employees (1.8%). Formal employees can be further subdivided according to the type of their contracts, namely non-regular contracts (95.1%) and periodic contracts (4.9%)^{Note}. Non-formal employees include temporary staff (47.3%) and dispatched staff delegated by external vendors to provide services in UMC (52.7%). Temporary staff positions were offered to temporary replacement for employees taking maternity / paternity leaves. These positions will be kept open for the said employees when they return to UMC.

For work area distribution, almost 70.4% of employees work in the primary business locations in Taiwan. For age distribution, 65.5% of the total employee population was between 30 and 50 years of age. The overall average age was 38.2 years old.

Note: Periodic contracts refer to labor contracts for migrant technicians.

UMC Group Manpower Trend

The total employee number increased in 2022 due to sales growth and capacity expansion.



Category	Type	Male	Female	Total
Total Employees Type of employment	Formal employees	11,885 (57.9%)	8,642 (42.1%)	20,527 (98.2%)
	Temporary staff	137 (75.7%)	44 (24.3%)	181 (0.8%)
	Dispatched staff	151 (74.8%)	51 (25.2%)	202 (1.0%)
Formal Employees Job Category	Managers	1,877 (87.5%)	267 (12.5%)	2,144 (10.5%)
	Engineers	8,204 (79.8%)	2,080 (20.2%)	10,284 (50.1%)
	Administrators	123 (19.4%)	512 (80.6%)	635 (3.1%)
	Technicians	1,678 (22.5%)	5,783 (77.5%)	7,461 (36.3%)
	Clerks	3 (100.0%)	0 (0.0%)	3 (0.0%)
Formal Employees Job Site	Taiwan	7,982 (55.2%)	6,473 (44.8%)	14,455 (70.4%)
	Singapore	1,075 (63.8%)	611 (36.2%)	1,686 (8.2%)
	China	1,927 (57.1%)	1,450 (42.9%)	3,377 (16.5%)
	Japan	901 (89.3%)	108 (10.7%)	1,009 (4.9%)
Formal Employees Age	Under 30	2,723 (62.7%)	1,619 (37.3%)	4,342 (21.1%)
	30-50	7,283 (54.2%)	6,159 (45.8%)	13,442 (65.5%)
	Above 50	1,879 (68.5%)	864 (31.5%)	2,743 (13.4%)

Note: 1. UMC Group includes Wavetek, China subsidiaries HJ and USCXM, and Japan subsidiary USJC.

2. The gender ratio of employees is calculated on the same work category, while the total ratio is calculated based on work type.

3. In 2022, 18.2% of UMC's formal employees were under 30 years old, 69.4% were between 30 and 50 years old, and 12.4% were above 50 years old.

4. As for the temporary staff, based on the regional distribution, there are 112 people in Taiwan, 1 person in Singapore, 68 people in Japan.

5. As for the dispatched staff, based on the regional distribution, there are 20 people in Taiwan, 1 person in Singapore, 19 people in China, and 162 people in Japan. Their main job function is production line support.

6. There is no part-time or non-guaranteed-hours employees in UMC Group.

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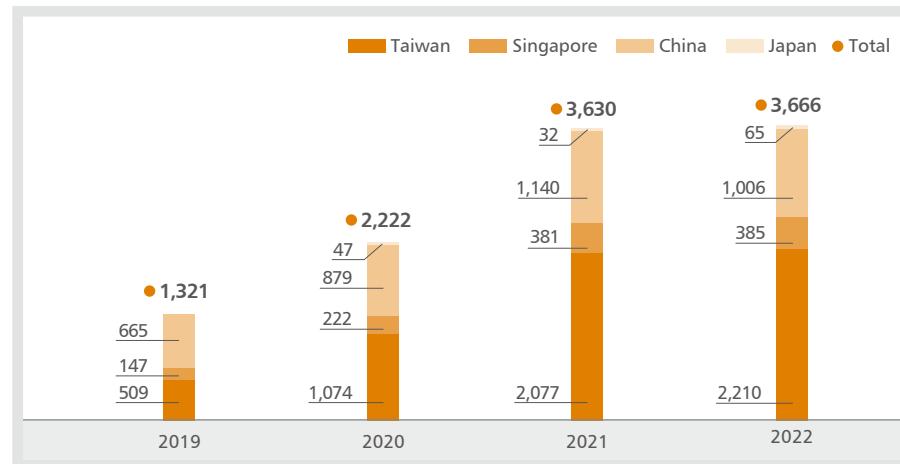
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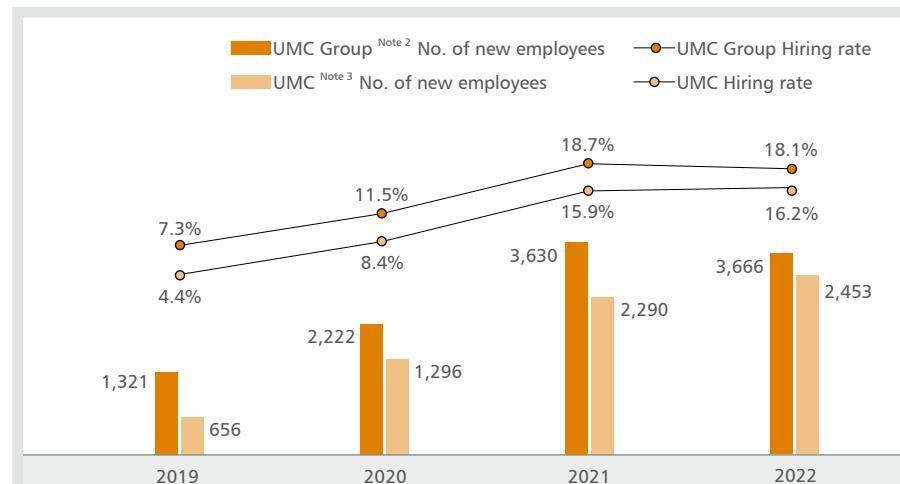
New Employees

In 2022, the Company hired a total of 3,666 new employees. The hiring cost per new employee is about NT\$26,302.

Number of New Employees



Hiring Rate Note 1

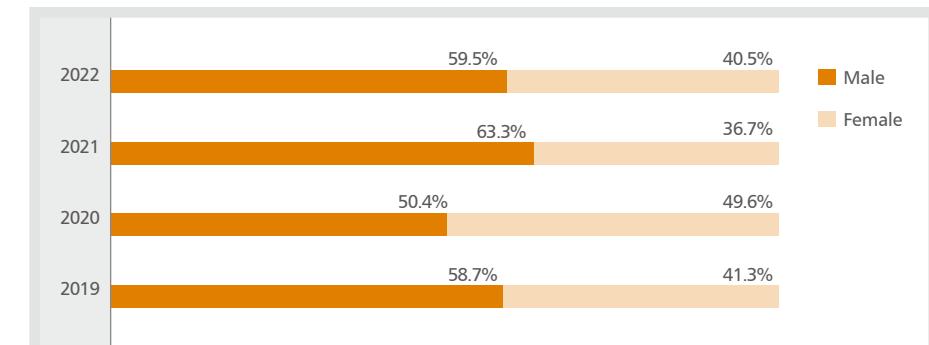


Note: 1. Annual employee hiring rate refers to the total number of newly hired employees/average number of existing employees. Annual average number of employees = (number of employees at the end of December of the previous year + total number of employees at the end of each month of the current year) ÷ 13

2. Including UMC and its subsidiaries Wavetek, China subsidiaries HJ and USCXM and Japan subsidiary USJC.

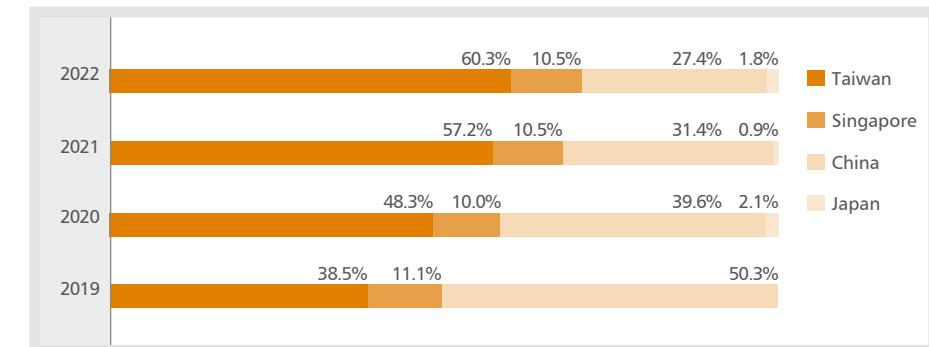
3. Including only UMC fabs in Taiwan and Singapore.

New Employees - by Gender

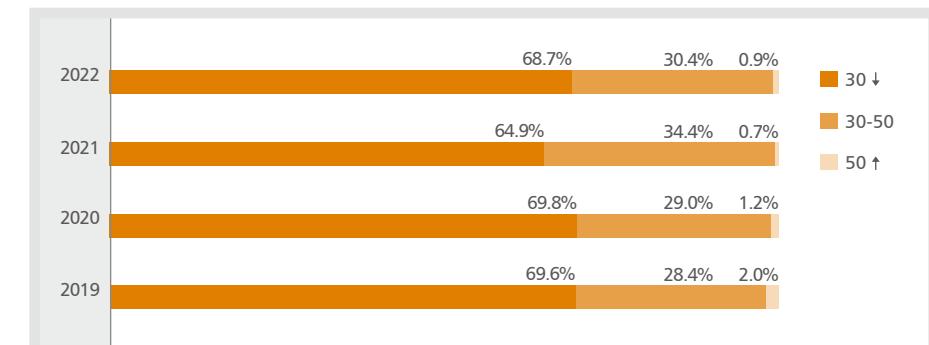


Note: In 2021, 58.9% of UMC's new employees were males and 41.1% were females. In 2022, 58.5% of UMC's new employees were male and 41.5% were female.

New Employees - by Region



New Employees - by Age



Note: In 2021, 60.8% of UMC new employees were under 30 years old; 38.6% were between 30 and 50 years old; and 0.6% were above 50 years old. In 2022, 67.2% of UMC new employees were under 30 years old; 32.5% were between 30 and 50 years old; and 0.3% were above 50 years old.

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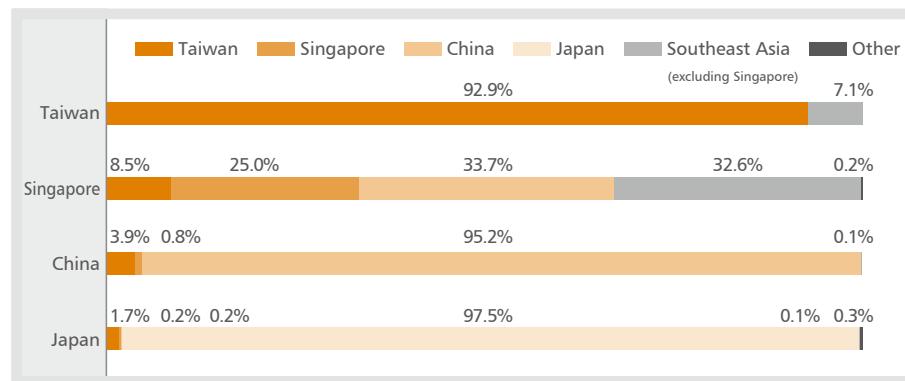
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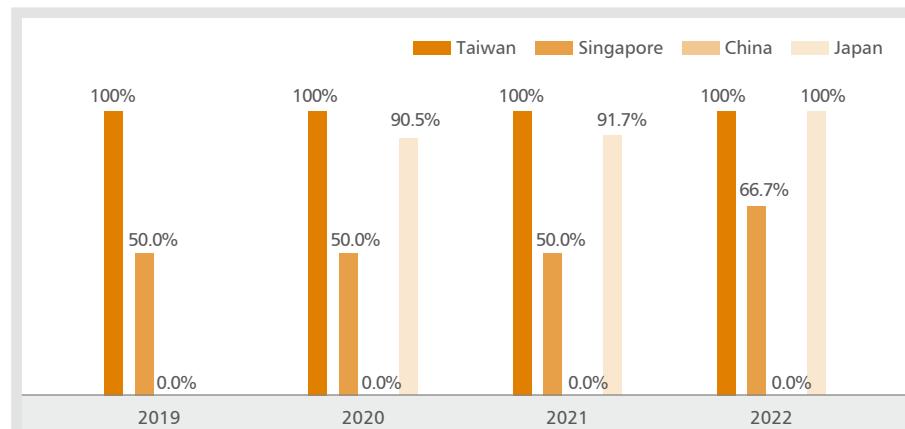
Local Employment

To fulfill social responsibility and create sufficient employment opportunities to local residents, the staff at the UMC headquarters and Wavetek in Taiwan comprised of 92.9% local employees as of 2022. Since Singapore is ethnically diverse, 25.0% of the employees are locally hired. In UMC China fabs, namely HJ and USCXM, 95.2% of the staff are locally hired. The staff at the USJC in Japan, 97.5% of the staff are locally hired. Among the employees employed by UMC, Asians accounted for 90.1% of the total labor force, migrants accounted for 9.5%, and indigenous people accounted for 0.4%.

Formal Employees – by Nationality



Locally Hired Top Management Positions



Note: 1. Top management positions include two levels away from the President. (Senior FAB/Division Director and above).

2. Locally hired refers to employees who are nationals of the main operating location/region.

Female Workers

UMC guarantees gender equality in work rights and attaches importance to the promotion and development of female employees. In view of the characteristics of semiconductor industry, most of the UMC managers and engineers are male. Meanwhile, administrators and technicians are mostly females. UMC held sharing sessions on exemplary female leadership and management to enhance the willingness of female employees to assume management positions. In 2023, the target of female in top management position is 10%. For the proportion of female in management position, the target is 22%, 23% and 24% separately in 2023, 2025 and 2030.

Proportion of Female Workers by Position



Note: 1. Management positions and junior management positions include first line manager and those managers with job title as supervisor or leader. The reported information of 2019~2021 has also been adjusted.

2. Top management positions include two levels away from the President (Senior FAB/Division Director and above).

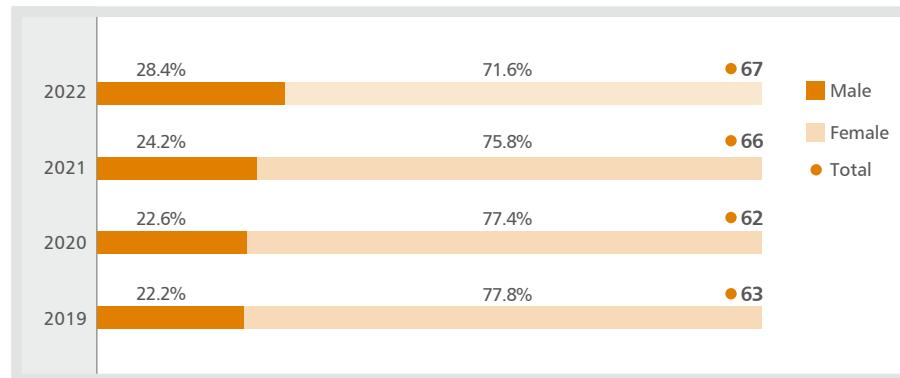
3. Management positions in revenue-generating functions: FAB+S&M managers.

4. STEM-related positions: Engineering related jobs.

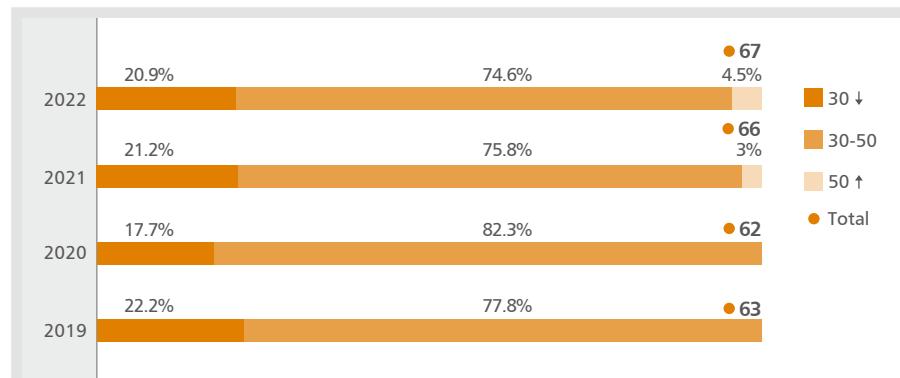
Indigenous Employment

UMC respects the unique cultures of ethnic minorities. Since there is no indigenous people in Singapore, the indigenous employees are mainly employed in Taiwan fabs. Each year, indigenous employees are given 8 hours of ritual leave, which can be flexibly used a holiday on their own. By the end of 2022, UMC Taiwan had a total of 67 indigenous employees. In terms of gender, 28.4% are males and 71.6% are females. In terms of age, 20.9% are under 30 years old and 74.6% are between 30 and 50 years old, and 4.5% were above 50 years old.

Indigenous Employees – by Gender



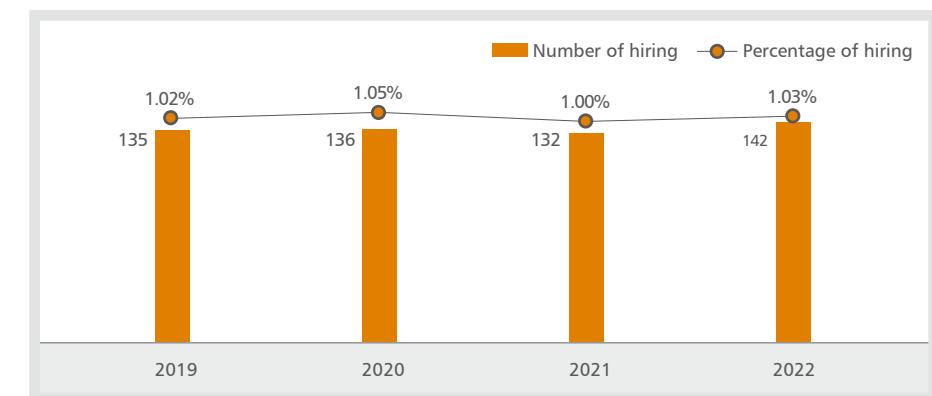
Indigenous Employees – by Age



Employment of People with Disabilities

UMC supports the employment of people with disabilities, and has established channels for hiring people with disabilities. Through the Student Ambassador Project, people with disabilities such as physical handicap, visual impairment, hearing impairment, functional loss in vital organs and chromosomal abnormalities are hired. By the end of 2022, UMC headquarters in Taiwan should hire 138 disabilities in total and the actual number is 142, which exceeds the target ratio 1.0% specified by laws and regulations in Taiwan, demonstrating UMC's care for disadvantaged groups. In the future, UMC will continue to actively carry out job evaluations internally to create more job opportunities for people with disabilities.

Disability Employment at UMC Taiwan Headquarters



Foreign Talent Recruitment

Under trend of globalization and international management policy, UMC evaluates the risks that may arise in the process of hiring foreign talents. Considering Trade Secret Protection, Export Control Restrictions and Sanctions, and relevant international laws and regulations, UMC formulated implementation rules for new hires control as a risk control element when recruiting foreign talents, and applies the rules to all foreign recruits.

Among potential risks from recruiting foreigner, UMC first attach importance to abidance by law, compliance with all regulation such as applying Visa, work permit while recruiting foreigner. Each process or execution has assigned specific person in charge and been controlled by management platform to ensure all process compliance with regulation and avoid potential risk.

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On the other hand, foreign employees may need some time to adapt to a new environment. UMC not only provide dormitory and orientation to foreign employees, but also set translator at factory and dormitory in order to aid on work and environment adaption. Also, dormitory held festival activities annually, inviting supervisors and foreign employees to celebrate Dragon Boat Festival, Mid-Autumn Festival and Christmas together, and enhancing cultural exchange. During Covid-19 pandemic in 2022, all foreign colleagues entering from overseas shall be quarantined in one room per person according to Taiwan Centers for Disease Control. UMC not only fully paying quarantine fee, also provide free PCR tests and related medical assistance before entering the factory, in order to more comprehensive protect the health of foreign employee.

Furthermore, all local employees and foreign employees have to abide Trade Secret Protection, Intellectual Property, Information Security Regulation, and Export Control Restrictions and Sanctions. Not only giving training session on employee orientation but also disseminate irregularly to remind all employees.

UMC will strive to provide diversified and friendly working environment. Also, UMC will pay attention on government policy and related regulation and keep updating to avoid potential risk from recruiting foreigner.

Employee Turnover Rate and Internal Transfer Rate

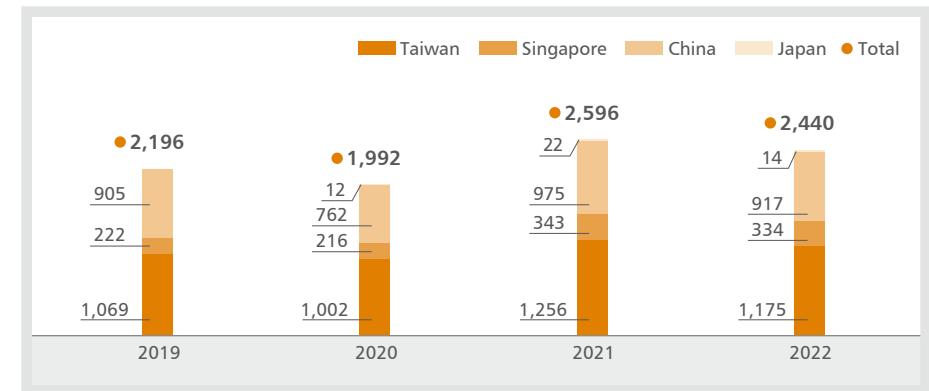
From 2019 to 2022, the annual average turnover rate of is 9.0%. (Note: As for 2022 turnover rate by gender, 9.5% was female and 9.3% was male. And for age group, 20.4% was under 30 years old, 7.8% was 30-50 years old, and 1.4% was above 50 years old in 2022.) The average turnover rate of the UMC Group is 11.9%. Although there was a highly competitive job market for semi-conductor industry in 2022, the turnover rate had decreased for 1.1% in both total and voluntary employee turnover rate which represent employees were identify with the positive synergy of the strategy transforming in recent years of UMC.

When employees apply for resignation, they are individually interviewed by their director and Human Resource Department to understand their reason(s) for resignation. In addition, through assessment of their individual expertise and offers of adjustment in work content, workplace location or internal transfer options, various attempts are made to retain employees. Human Resource Department also keeps regular contacts with employees who have resigned to build the long- term relationship, and opportunities are provided for those who wish to return to UMC.

Besides, through internal job transfer system, UMC also provides employees with job skill enhancement, career development and self-challenge opportunities. Internal transfer rate

in UMC Taiwan and Singapore is 58.6% in 2022, which is better than the set target value of 50%. UMC will continue to provide internal transfer incentives and multiple channels of internal transfer, as well as implementing the one-on-one exit interviews process for all departing employees to offer assistant and care to raise up the employee retention, and to gradually achieve the turnover rate target of 7.0% in 2025.

Resignations in UMC Group



Turnover Rate Note 1

Years	2019	2020	2021	2022
UMC Group <small>Note 2</small>	12.1%	10.3%	13.4%	12.1%
Turnover rate	8.7%	7.8%	10.5%	9.4%
Voluntary turnover rate	8.6%	7.6%	10.4%	9.3%
Internal transfer rate <small>Note 4</small>	83.0%	56.7%	57.9%	58.6%

Note: 1. Annual employee turnover rate refers to the total number of employees who resigned/ average number of existing employees. Annual average number of employees = (number of employees at the end of December of the previous year + total number of employees at the end of each month of the current year) ÷ 13

2. Including UMC and its subsidiaries Wavetek, China subsidiaries HJ and USCXM, and Japan subsidiary USJC.

3. Including only UMC fabs in Taiwan and Singapore.

4. Internal transfer rate= number of internal transfers ÷ number of job vacancies

2022

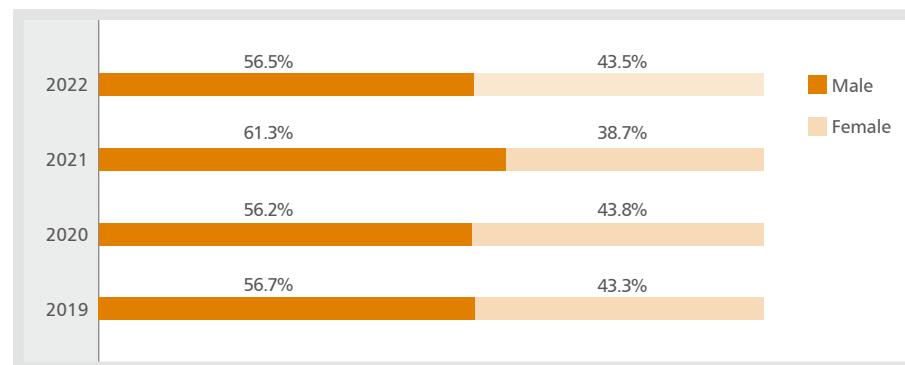
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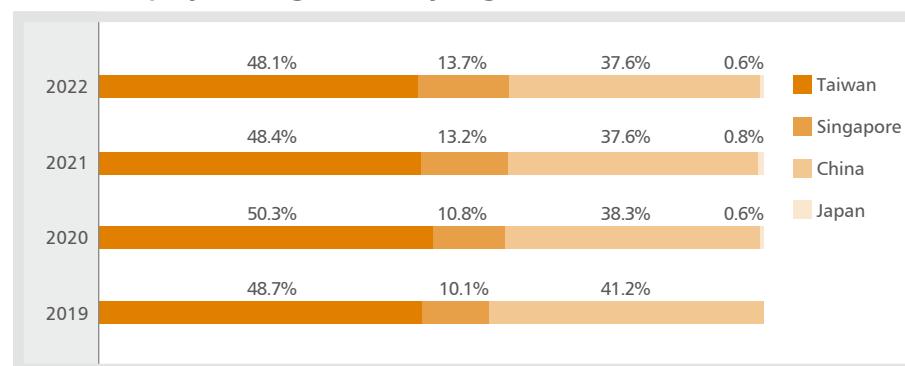
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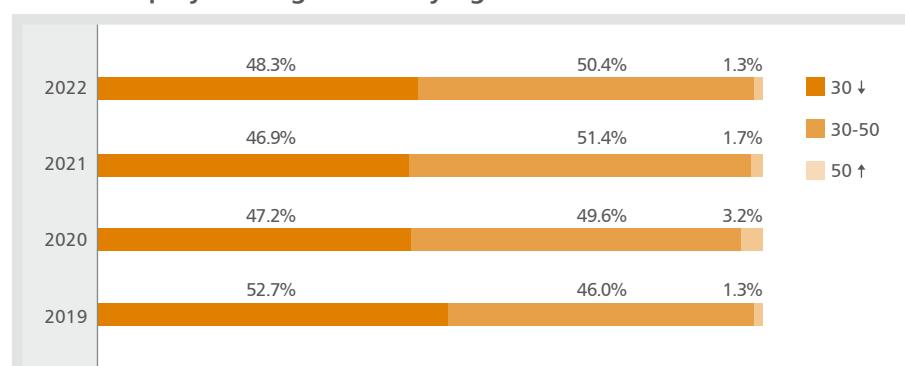
Formal Employee Resignation—by Gender



Formal Employee Resignation—by Region



Formal Employee Resignation—by Age



Parental Leave

According to the Act of Gender Equality in Employment in Taiwan for UMC headquarters and Wavetek and Japanese law in USJC, employees may apply for parenting leave without pay. In 2022, a total of 78 female employees returned to their positions when their parental leave contract expired, indicating a return rate of 74.3%, and 17 male employees returned to their positions, indicating a return rate of 73.9% after parental leave. The work situation of those who returned after parental leave was observed. In 2021, 84.7% of female employees and 91.7% of male employees who took parental leave returned to work and continued to work over 1 year. The colleagues who have not returned after parental leave all voluntarily resigned because their parental leave have expired but the needs of the family remained.

2022 Parental Leave	Female	Male	Total
Total eligible number for parental leave (A)	385	802	1,187
Actual number of parental leave (B)	170	32	202
Application rate for parental leave (B ÷ A)	44.2%	4.0%	17.0%
Total number of end of contract for parental leave (C)	105	23	128
Total number of returning from parental leave (D)	78	17	95
Return rate after parental leave (D ÷ C)	74.3%	73.9%	74.2%
2021 Total number of returning from parental leave (E)	72	12	84
2021 One year retention rate after return from parental leave (F)	61	11	72
2020 Number of returning from parental leave and retention rate (F ÷ E)	84.7%	91.7%	85.7%

Note: According to Taiwan and Japan laws, parental leave is provided to UMC Taiwan and Japan employees. Employees in UMC fabs in Singapore and China are not included in this table.

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4.2.2 Compensation and Benefits

UMC has always regarded its employees the most important asset, and provides a competitive overall compensation and benefit package to attract excellent talent to join the UMC team. UMC's employee compensation is based on educational level, performance, and market value, regardless of gender, race, religion, political position and marital status to ensure reasonable and equal pay. UMC employees worldwide enjoy the compensation and benefits which are in line with or superior to all applicable local laws and regulations in terms of minimum wage, work hours (including overtime), social insurances, retirement pension, and other mandatory benefits. UMC annually reviews and makes sure that entry-level employees' wage is higher than legal minimum wage. In 2022, based on the same positions, job duties, and performances, the average fixed pay of female entry-level employees in Taiwan is 1.8 times of minimum wage and male's is 1.7 times. The salary gap is due to employees' seniority, and not correlated with gender. In Singapore, as a matter of national policy, there is no prescribed minimum wage. UMC fab in Singapore follows local policy and pays employees based on their skills, capabilities and competencies.

Performance-Oriented Compensation System

In order to achieve personal, departmental and company performance goals as well as understand the job performance of employees for management by objectives, UMC conducts annual performance appraisals for all employees regardless of gender and job category twice a year and employee can get the feedback. The information obtained can be used as a reference during employee promotions, training, and compensation adjustment. In 2022, through multidimensional feedback from colleagues or managers of other departments, the multidimensional performance appraisal rate is 14.2%.

The focus of the annual performance appraisal includes reviewing of previous performance and the setting of future goals. For team-based performance appraisal, employees who participate in projects have to include personal objectives and team objectives in the goal setting. Managers and employees work together to agree on the priority of focuses, and devise developmental plans based on current working style, capability, career goals, and project evaluation. Employees with poor performance will be supplemented with key improvement plans to improve work efficiency. In addition to annual performance communication, UMC also encourages the managers to have communication and agile feedback with all employees on regular basis. Through the one-on-one interview system, the managers can conduct performance communication with colleagues at any time to reach mutual consensus for agile conversations.

Performance Management



UMC offers salary adjustment, differentiated bonus, profit distribution as employee's compensation and stock remuneration (employee stock option certificates, treasury shares and restricted stock award) based on individual performance, job responsibilities and future development potential to attract, retain and motivate outstanding employees. UMC also actively joins the remuneration surveys of well-known domestic and international enterprises, annually reviews and analyzes our compensation policy based on compensation survey results and adjusts the policy if necessary to ensure that the overall remuneration offered by UMC is competitive in the market.

Moreover, in order to internalize the concept of ESG into the core of operation and enhance employees' sense of responsibilities for corporate sustainability and risk management, ESG targets are set and linked to employees' variable compensation. By aligning the interests of employees and the Company, corporate sustainability can become a common goal. In 2022, UMC has achieved the ESG targets and the allocation of employee profit sharing percentage would be increased accordingly, so that all employees can enjoy the benefit of ESG achievement.

The number of full-time, non-executive employees in Taiwan, their average and median salary, and the difference over the years



Note: The above information is based on the regulations of Taiwan Stock Exchange, deducting managers (executives) and employees eligible for exemption. Those who have been employed for 6 months but less than 1 year, their compensation is calculated based on their weighted days of employment. Employee compensation is accrued based on an accrual basis, and the unpaid employee compensation is an estimated amount. These numbers have been audited by CPAs and will be disclosed on Taiwan's market observation post system.

Basic Salary and Annual Total Compensation by Gender in 2022

	Male	Female	Base Salary	Total compensation
Taiwan				
Executive level	100.0%	97.7%	100.0%	100.2%
Management level	100.0%	99.9%	100.0%	100.3%
Non-management level	100.0%	101.4%	100.0%	99.7%
Technicians	100.0%	99.6%	100.0%	96.3%
Singapore				
Management level	100.0%	99.0%	100.0%	100.3%
Non-management level	100.0%	97.6%	100.0%	99.0%
Technicians	100.0%	101.5%	100.0%	101.1%

- Note:
1. Management level: From first-line/junior managers up to top/senior managers (Executives excluded); Non-management level: Professional engineers; Technicians: Local technicians.
 2. The calculation is based on the actual cash rewards received in the current year. Female and male salaries are compared based on equivalent positions, job duties and performance rating.
 3. The reason of difference in executive level is due to seniority. The executives' compensation is determined by job duties and relative importance of the position, individual performance, and market value, regardless of gender.
 4. No female executive in Singapore.

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Comprehensive Benefits Superior to Statutory Regulation

UMC is committed to creating a work-life balance workplace and offers various welfare benefits that are superior to statutory regulation including holidays, insurance, financial assistance for emergencies, subsidies for marriage/childbirth/funerals, discounts in designated shops and employee assistance service. To show the care of employees, the Company actively reminds colleagues to take vacations and holds diverse activities to relieve stress. Moreover, UMC provides parenting measures and breastfeeding environment to take care of the day-care needs of employees' children.



Paid Leave that is Superior to Local Regulations

- Taking into account the reduction of national holidays after the revision of the Labor Standards Law, 7 days of supplemental holidays are given and can be used for personal and family care needs. UMC Singapore fab and other overseas subsidiaries also provide paid annual leave that is superior to local Regulations of Paid Annual Leave of Employees.
- Provide maternity leave (up from statutory 448 hours to 480 hours) and paternity leave (up from statutory 56 hours to 80 hours).
- To provide better care to newly hired female employees, UMC provides full-paid maternity leave will be provided even if the employee's period of service is less than 6 months.
- As a way of providing support, if the great-grandparents of an employee's spouse pass away, the employee is entitled to a funeral leave of 24 hours at full pay, which exceeds the requirements of the Labor Standards Act.



Parenting Measures and Breastfeeding Environment

- To encourage employees to have more children, UMC provides measures ranging from wedding subsidy, care and nursing consultation during pregnancy, maternity leave, maternity inspection leave, exclusive parking space, priority meal pickup, maternity subsidy, unpaid parental leave, certified breastfeeding room, night shift transfer and other measures.
- Considering the need for caring young children (under 3 years old), employee are allowed to apply for parental leave based on their actual needs, and the working hours can be reduced by 1 hour per day during the application period.
- To provide comprehensive assistance, UMC signed contracts with neighboring kindergartens to take care of the day-care needs of employees' children, and assists in the registration work of the experimental primary and secondary schools in the park. In 2022, in cooperation with the Southern Taiwan Science Park Bureau, a non-profit kindergarten is set up to give employees more comprehensive support for family care.



Health Care and Emergency Assistance

- Regularly conduct employee health checks, plan health promotion activities, set up a health care system, and actively track and care for employee health.
- Equipped with employee assistance programs (EAP), injury and illness treatment and care, taking care of employees' health comprehensively.
- Provide company group insurance, cancer insurance, medical insurance, accident insurance, hospitalization condolences, emergency relief funds to assist colleagues in emergency situations.



Diverse Activities and Discounts in Designated Shops

- Welfare committee holds diverse activities such as year-end party, Secretary's Day, the Company's anniversary day, Engineering's Day, one-day trip, family day, and art festival, etc.
- Employee social club evaluations and subsidies for club activities.
- Corporate agreements with stores all over Taiwan, provide APP for colleagues so that colleagues can enjoy discounts for food, clothing, housing and travel.



Friendly Working Environment

- Employee cafeteria, free shuttle bus, activity center, telecommunications/banking/insurance on-site services, convenience stores/coffee shops/bakeries, and other stores are available in offices and fabs.
- Provide flexible working shifts and hours.

Note: 1. Employees also have the paid leave hours for public welfare activities.
2. Working from home (WFH) is adopted under applicable condition according to the Company's regulation.

UMC cooperates with Southern Taiwan Science Park Bureau to run a kindergarten



To address the declining birth rate and create a parent-friendly environment while alleviating the burden of childcare, UMC has collaborated with the Southern Science Park Bureau to support the government's policy of establishing non-profit childcare centers for employees' children. UMC has proactively designated the first floor of the diverse and greenery-filled employee dormitories, covering an area of approximately 2,000 square meters, as a kindergarten. This facility can accommodate up to 212 children aged two to pre-elementary school, aiming to provide affordable, high-quality, accessible, and developmentally appropriate childcare services for employees in the park. By utilizing existing resources, the initiative aims to reduce the financial burden on parents and meet their need for peace of mind while working.



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Comprehensive Insurance and Retirement Policy

UMC provides insurance coverage that is consistent with local laws and regulations to ensure the basic rights and interests of employees. In accordance with the law, the company headquarters in Taiwan also provides labor insurance (including Employment Insurance) and national health insurance. In addition, UMC provides employees with additional group insurance, including life insurance, major illness insurance, health insurance, accident insurance, cancer insurance, and travel insurance for overseas business trips to ensure work and life security for its employees. The Company also provides a selection of group insurance for employee families so that employees can work with peace of mind.



Over 50% of UMC employees choose to include their spouse and family members into UMC's group insurance program to provide their family an additional layer of protection. UMC also provides an insurance company service office inside the company buildings, making it very convenient for colleagues to make inquiries on insurance services and apply for claims. Furthermore, the Company regularly posts e-newsletters on insurance benefits, and introduces information on insurance and compensation rights so that employees are clearly aware of their actual insurance content and benefits.

Retirement Benefits Plan

UMC complies with local statutory regulations and systems related to retirement to safeguard the retirement rights of our employees. In Taiwan, the Labor Standards Act was used as the basis to stipulate regulations for the calculations and payment rules of retirement pensions. 100% of the full-time employees in Taiwan participate in the relevant pension plans. Since July 1, 2005, the Labor Pension Act became effective as a defined contribution plan. According to the regulations, the Company has to contribute a certain percentage of salary to an individual labor pension account. Employees may select to keep applying to pension regulations prescribed by the Labor Standards Act or switching to the new pension systems applicable to the Labor Pension Act. They also can retain their seniority on the previous pension system. The pension benefits mandated by the Labor Standards Act are disbursed based on the units of service years and average monthly salary prior to retirement. The Company contributes an amount equivalent to 2% of the employees' total salaries and wages on a monthly basis to the pension fund deposited with the Bank of Taiwan under the name of a pension fund supervisory committee. In 2022, total pension expenses of NT\$33,951,000 were recognized by the Company. In addition, for the pension benefits under the Labor Pension Act, the Company makes monthly contributions of 6% based on each individual employee's salary or wage to employees' pension accounts. Pension benefits for employees of the Singapore branch are provided in accordance with the local regulations. Total pension expenses of NT\$1,099,483,000 were contributed by the Company in 2022.

When employees apply for retirement, the Company not only provides pension application service, but also awards a medal to show appreciation for their long-term effort and contribution. In addition, they are also awarded "UMC Recreation Center Lifetime Membership," which offers a selection of healthful and interesting activities for retirement life. In order to ensure those who retire from or terminate employment with UMC to obtain necessary assistance, UMC also provides severance pay for terminated employees in accordance with relevant local laws and regulations, as well as information on related employment service channel.

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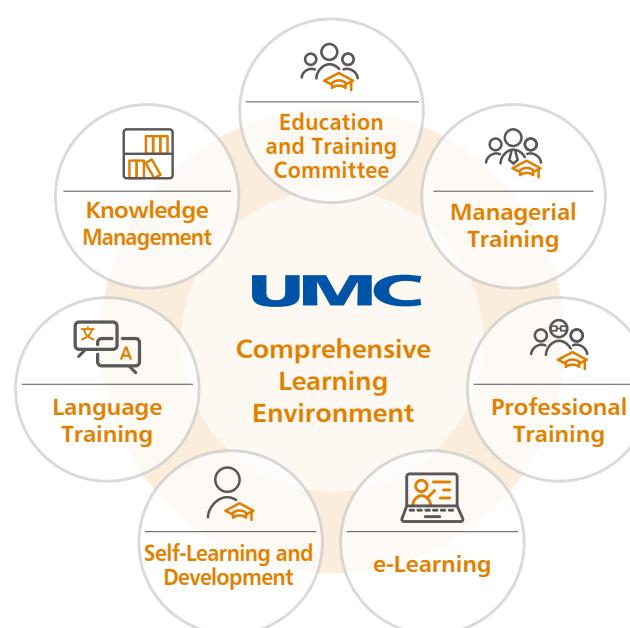
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4.2.3 Strengthening Talent Cultivation

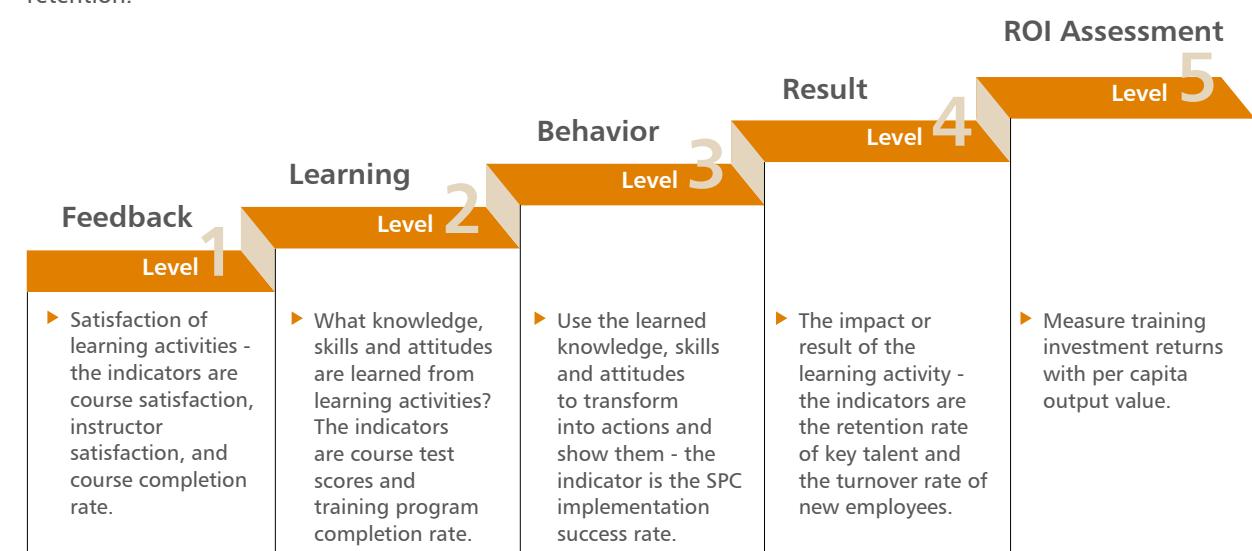
Comprehensive Learning Environment

At UMC, education and training are not limited to classroom teaching and training or promotional sessions, but to provide employees with an all-round learning environment through the integration and use of company resources.



Training Effectiveness

In order to confirm the effectiveness of training, UMC refers to the Kirkpatrick model of learning effectiveness evaluation proposed by Donald L. Kirkpatrick, a professor at the University of Wisconsin, and added the per capita output value as an indicator of the highest level of training effectiveness. It is used as a measure of the effectiveness of all training activities, so that training keeps improving and achieves talent development and retention.



To achieve departmental goals, fulfil Company policies and strengthen daily management, UMC conducted team-based continued improvement activities. These teams included Quality Improvement Team (QIT) and Project Management (PM). By training employees to think systematically and use scientific methods to solve problems, colleagues can actively participate in teamwork and improve work efficiency while helping themselves to learn by themselves to help the organization grow. From 2020 to 2022, the improvement team consists of 309 groups, 278 groups and 281 groups respectively. For related information, please refer to Chapter 2.2.2 Continuous Quality Improvement and Innovation.

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Company-Wide Education and Training Committee

In order to earnestly implement the policies of education and training, UMC has established a company-wide "Education and Training Committee" composed of education and training officers from various departments to improve the quality of training for all employees. In line with corporate policy, the Company conducts a company-wide training needs survey every year and creates an annual training plan for the competency analysis of supervisors and associates. The Education and Training Committee holds quarterly meetings to review training operations. The committee also conducts selection activities of outstanding company-wide instructors each September to encourage colleagues to serve as lecturers.

In terms of professional training, UMC offers complete technical training curriculum. For managerial training, different training programs are designed for different levels of directors. For language, language proficiency tests and courses are offered according to job descriptions and positions. In terms of departmental and inter-departmental On-the-Job Training (OJT), the Education and Training Committee's downward education and training orientation allows department directors and their employees to fully participate in the planning, implementation and learning assessment. Moreover, the diversity of self-learning and development channels, such as e-Learning, creates an atmosphere of mutual peer learning, development and team cooperation, thereby forming a comprehensive environment for learning, sharing and innovation.

In 2022, UMC Group offered a total of 8,570 classes with a total of 189,617 person-times participant. The total training cost is NT\$76,540,000. The overall satisfaction rate is over 94%. In the first half of 2022, due to the impact of the COVID-19, some of the courses were delivered online, which led to an increase in the overall number of classes and participants.

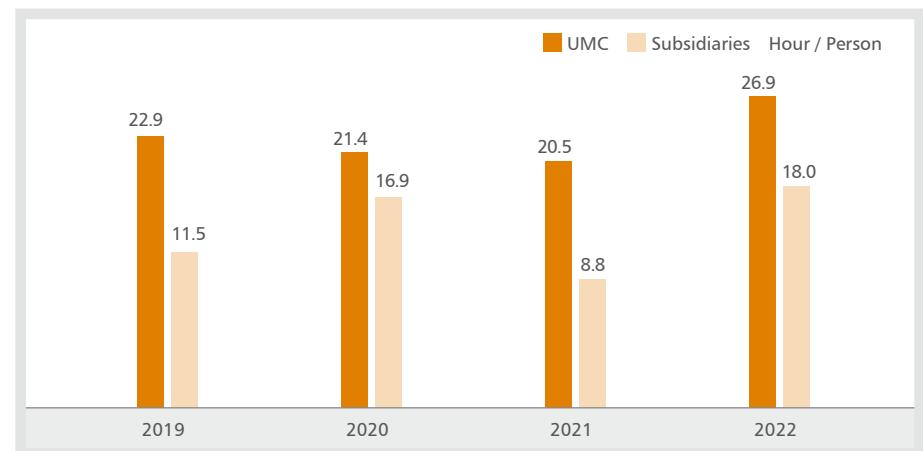
Course Satisfaction

Type/Year	2019	2020	2021	2022
Number of courses	7,723	7,363	8,248	8,570
Total number of participants	176,370	168,006	161,231	189,617
Average Value (%)				
Overall Satisfaction	96.2	94.5	95.2	94.9
Satisfaction with Instructor	96.2	94.5	95.2	94.9
Satisfaction with Teaching Materials	96.2	94.5	95.1	94.8
Beneficial to work	96.2	94.8	95.1	94.9

Note: The scope of statistics for 2019 includes UMC's fabs in Taiwan and Singapore, and UMC mainland China subsidiaries HJ and USCXM. UMC Japan subsidiary USJC and the Taiwan subsidiary Wavetek are included from 2020.

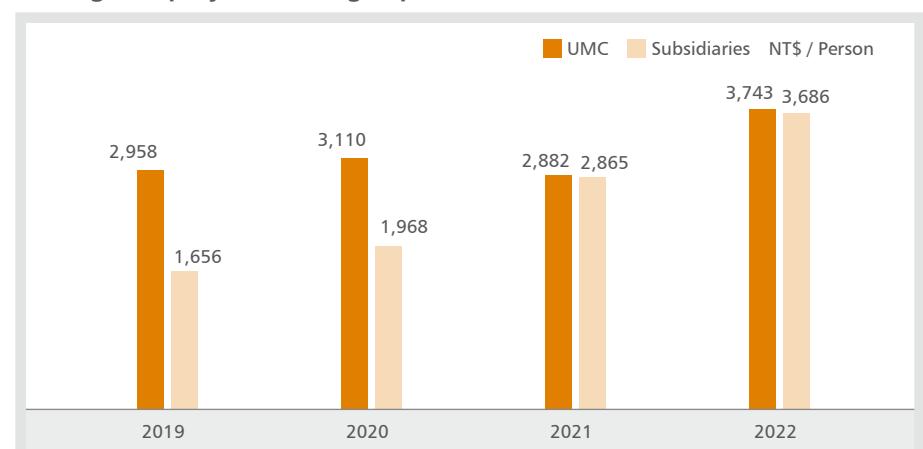
The average training time for all employees of UMC in 2022 has reached 26.9 hours, and it is expected that in 2023, there will be additional training hours collected from various lecture activities, external training, new employee orientation training, certification programs, and other training systems. It is anticipated that the overall average training time for UMC employees will reach 30 hours in 2023.

Average Employee Training Hour



Note: The UMC's scope of statistics includes UMC's fabs in Taiwan and Singapore. From 2019, the scope of statistics for UMC's subsidiaries includes mainland China subsidiaries HJ and USCXM. The UMC Japan subsidiary USJC and the Taiwan subsidiary Wavetek are included from 2020.

Average Employee Training Expense



Note: The UMC's scope of statistics includes UMC's fabs in Taiwan and Singapore. From 2019, the scope of statistics for UMC's subsidiaries includes mainland China subsidiaries HJ and USCXM. The UMC Japan subsidiary USJC and the Taiwan subsidiary Wavetek are included from 2020.

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Average Employee Training Cost

Type/Year	2019	2020	2021	2022
Total Training Cost (NT\$)	43,134,714	44,492,278	42,120,553	57,450,399
Number of Employees (persons)	14,583	14,308	14,613	15,347
Training Cost per Employee (NT\$)	2,958	3,110	2,882	3,743

Note: The scope of statistic included UMC fabs in Taiwan and Singapore.

UMC provides complete education and training for employees of different job categories and levels. In 2022, the total number of training (persons) hours reached 412,632 hours. The average training expense was NT\$3,743 per person and the average training hours was 26.9 hours.

Average Training Hours for Various Job Levels in 2022

Type	Training Time (Hours)	Number of Participants (Persons)	Average Training (Hours)
Director Level	30,698	1,679	18.2
Indirect Labor (non-director level)	316,615	8,234	38.5
Direct Labor	65,319	5,434	12.0

Note: The scope of statistic included UMC fabs in Taiwan and Singapore.

UMC upholds the principles of gender equality and offers equal training opportunities with the purpose of providing professional training for each job grade and function. Most direct employees are female, and the course arrangement focuses on more technical courses such as machine operation, so the average training hours is slightly shorter than that of male.

Average Gender Equality Training Time in 2022

Type	Training Time (Hours)	Number of Participants (Persons)	Average Training Time (Hours)
Male	290,246	8,663	33.5
Female	122,386	6,684	18.3

Note: The scope of statistic included UMC fabs in Taiwan and Singapore.

70-20-10 Learning Framework



► **Training Committee:** Each factory has an education and training committee organization to provide departmental employees with training in their work, mainly to guide the skills required for individual work, supplemented by professional skill evaluation, so as to improve work quality.

► **Internal promotion and rotation:** UMC plans corresponding training blueprints for different job categories and ranks, encourages colleagues to continue to learn and develop personal careers in line with industry development trends, continues to provide transfer incentives, and implements internal transfer systems and promotion channels.



► **Mentor system:** In order to help new employees adapt to the work and environment, appropriate mentors are selected to receive guidance training to assist newcomers to quickly integrate into the UMC team. Mentors assist new employees to complete the drafting and implementation of training plans after they are on board. During the period, direct supervisors and mentors conduct regular interviews and assessments for newcomers, and use questionnaires to understand the learning and adaptation status of newcomers. Supervisors and mentors give appropriate feedback and comments to help solve any problems.

► **Knowledge management system:** In order to promote knowledge management, UMC has set up a knowledge base sharing platform to further promote the re-application mechanism of knowledge files and guide colleagues to use them when needed, thereby improving work efficiency and performance.

► **Supervisor experience inheritance and sharing:** UMC encourages supervisors to continue to share experience and professional skills, and create personal value through experience inheritance and accumulation.



According to the annual training plan of the Company

► **Training for newcomers:** In order to enable newcomers to quickly adapt to the working environment, pre-employment training courses are planned so that inexperienced newcomers have a basic understanding of semiconductor manufacturing processes and get familiar with the common language.

► **Professional courses:** According to the needs of professional talents of each engineering unit and the inventory of professional functions, professional engineer training courses are planned to improve the overall professional level of engineers and the quality of engineering manufacturing.

► **Total quality management:** Relevant training courses are planned to implement UMC's quality policy and quality requirements, such as: knowledge management, proposal improvement, project management, problem analysis methods, statistical process control, experimental design, etc.

► **Management courses:** The development of management skills is an important task for managers at all levels. The Company provides relevant learning resources for the management behaviors, skills, knowledge, and company culture integration that managers should possess, so as to assist managers in maximizing their effectiveness in their job and management roles.

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Multiple Talent Training Program

In terms of personnel training and development, UMC defines the managerial competency required for the various levels of directors. Core and professional competencies are also defined for general employees (including dispatched and temporary staff) so that they clearly understand the required core competencies for each level of job responsibility. In the design of internal training curriculum, UMC conducts a company-wide training needs survey in the fourth quarter of each year, and plans corresponding development courses based on the professional needs of supervisors and employees. In addition to required training to help employees achieve job performance, employees can also prepare for their career planning and development by participating in other training courses based on their personal needs and future development plans. In accordance with the Company's organizational policy and operating plan, various types of courses are constantly planned to cultivate and train talents.



Knowledge Management, KM

To promote knowledge management, UMC has established a knowledge sharing platform. To take into account the protection of knowledge confidentiality, accessing of the knowledge is controlled according to the level of confidentiality, and knowledge documents are divided into 4 levels according to their completeness and contribution. The program further promotes the re-application of knowledge documents to enhance the flexibility of document application, thereby improving work efficiency and performance.

Performance

Item	2019	2020	2021	2022
Read Rate (%)	91.3%	92.3%	93.4%	93.1%
Writing Penetration Rate (%)	72%	73.9%	74.9%	72.1%
Expected Re-application Benefits (NT\$10,000)	90,238	69,924	80,479	25,447

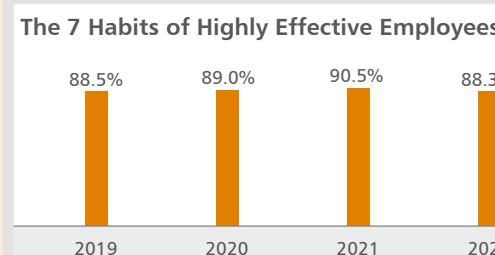
Note: 1. Read rate (%) is the rate of colleagues reading KM files.
 2. Writing Penetration Rate (%) is the rate of colleagues writing KM files.
 3. Expected Re-application Benefit (NT\$10,000) is to encourage colleagues to apply the KM knowledge they read to their work to show benefits.



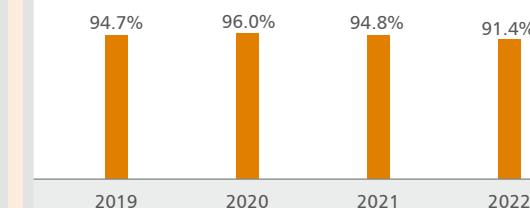
The 7 Habits of Highly Effective People

To implement the core values of the organization and practice the spirit of "accountability", UMC has introduced the "Seven Habits of Efficient Managers" course in 2011, and continues to strengthen its promotion. The course has been extended to the "Seven Habits of Efficient Employees" course to create a common language across departments. From 2019-2022, the overall training completion rate continued to increase and meet the required standards.

Performance



The 7 Habits of Highly Effective Managers



Note: The scope of statistic included UMC Taiwan and Singapore.

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Leadership Development

- ▶ UMC has established leadership training and development, and has developed training plans for new recruits to senior executives.
- ▶ First-line manager formulate training programs such as basic management capabilities and human resource management directions.
- ▶ Middle manager improve their management functions through management case studies.
- ▶ Executives enhance their business operation and management thinking, and improve their sensitivity to industry dynamics and development.

UMC Talent Development Path



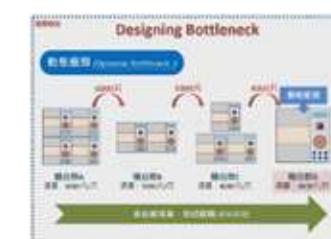
Technical Training for Engineers

Based on functional competency, UMC offered professional engineer training programs to improve the professional standards of engineers and the quality of production. According to the job requirements of each employee, a learning map is prepared to manage the required training courses and hours, and hence get the manpower prepared for organizational development.

Performance

Time	Level	Function Category		
		PE	EQ	PEI
20 months	4	Manufacturing development and new technologies	Improvement	Professional subjects
	3	Learning from case examples	Learning from case examples	Advanced professional skills
	2	Product integrity and abnormality management	Daily maintenance	Basic professional and shift planning skills
	1	Basic theory and manufacturing process summary	Basic theory and manufacturing process summary	Basic skills
1 month	0	Semiconductor manufacturing technology summary		

The internally developed courses were completed in 2022 to provide each employee with more learning resources. 100% of the employees taking the courses felt that the presentation format design of the new e-course is helpful in understanding the course content, and the course content as well as the test design can create good learning outcomes.



from 「Semiconductor Manufacturing Management」

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Assessment System

UMC uses the internal and external evaluation channels including TOEIC English verification, professional skill evaluation system, and statistical process control (SPC) to effectively evaluate the core competencies each colleague should possess in order to improve production quality and meet the needs of customers all over the world. Taking the SPC test as an example, the rule of Three-Six-Nine is established. If one fails the test, s/he will be prohibited from operating the equipment, and will also leave a mark in employee performance review.

Performance ▶ For the SPC course in 2022, the actual completion rate in Taiwan was 99%, and the actual passing rate in Singapore was 99%.

Assessment System

SPC Assessment

- In line with fab demand for manufacturing quality, engineers' understanding of SPC is emphasized

English Assessment

- In line with the Company's international orientation, the strengthening of employee English competency is emphasized

Professional Skills Assessment

- Professional skills assessment system is used for determining the professional competency of engineers

Skills Assessment

1

Category ▶ Categorize according to facility, manufacturing and product

2

Content ▶ Basic/Operations, Advanced/Learning from case examples, Connection with various tasks/Crisis management ability

3

Standard ▶ Quarterly skills assessment 0-2 Continuing learning required 3-4 Independent operation

5-6 Completion of task through telephone instruction 7-10 Instructor

4

Method ▶ Oral and written tests

SPC : 3-6-9 SPC Principle

Within 3 months - Courses (Knowledge)

New employees must complete SPC training courses within 3 months

Within 6 months - Courses (Knowledge)

New employees must complete the SPC written test within 6 months

Within 9 months - Practice (Application)

New employees must complete SPC practice within 9 months



New-employee Experience Camp

In addition to the new-employee orientation that are required for all new employees, the new-employee experience camp is also organized. The program includes the Company's vision, strategy, and advantages that combine with the organizational characteristics - Smart and Fast, taught by senior executives. In addition, UMC's unique workplace anti-stress and positive attitude courses are available to accelerate the newcomers in blending into the corporate culture. Every supervisor is devoted to improving the promotion and development of new employees. Through the complete training plan of UMC's new-employee orientation, supplemented with the mentor system, it helps new employees to quickly learn work-related professional skills and build correct work mind set.

Performance ▶ A total of 9 new-employee orientation camps were held in 2022, and a total of 358 new employees completed the training courses.



Note: 358 new employees were all indirect personnel in Taiwan, including both full-time and temp staff.

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Excellent Leadership e-Newsletter

UMC launches the Excellent Leadership e-newsletter every quarter. Through a themed, easy-to-read and regularly updated information platform, management related knowledge and tools are provided to managers. The information is presented in columns, including hot topics, management essentials, management practice sharing, 7 habits, and extended reading column, conveying the ideas of senior executives.

Performance

A total of 4 issues of e-newsletters were issued in 2022, with themes of [Integrity], [Pragmatism], [Agility], and [Ingenuity]. Following the concept of senior executives and connecting the sharing of practical cases, executives at all levels can more deeply implement the application of corporate culture.



External Training and On-the-job Training

- ▶ External training: UMC provides employees (including dispatched and temporary staff) to participate in external training (including domestic and foreign training), and publishes information on external training courses to encourage employees to participate in external training related to their job functions. The Company subsidizes the training expenses for those who are approved by the supervisors to participate in external training. After the training, colleagues can bring their training experience, achievements and new knowledge back to the Company for exchange and sharing. Through this training mode, colleagues can further expand and broaden their knowledge in the professional field.
- ▶ On-the-job training: UMC provides information on training courses of external colleges and universities, promotes educational resources and on-the-job training channels, encouraging all employees (including dispatched and temporary staff) to develop their professional skills or management abilities required at various stage of their careers.

Performance

In 2022, the number of UMC personnel participating in external training reached **436** person-times, and the total training hours were **5,967** hours.

4.3 Protecting the Employees and the Work Environment

4.3.1 Creating a Reassuring Workplace

4.3.2 Maintain Workplace Safety

Material Topic: Employee Safety and Health

Related Policy
Safety and Health Policy



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In accordance with GRI Standards (2021) for identifying impacts of sustainability issues, management actions in response to these impacts and processes used to track the effectiveness of the actions are listed in the table below:

Positive ► Healthy and safe workplace	Negative ► Occupational accident	Management Actions	Processes Used to Track the Effectiveness of Actions
<ul style="list-style-type: none"> ► Implement occupational safety and health management system, and obtain ISO 450001 and TOSHMS certification. ► Ensure strict compliance with the health and safety requirements of the Responsible Business Alliance Code of Conduct (RBA) ► Review ESH management performance and legal compliance 		<ul style="list-style-type: none"> ► Conduct third-party verification every year: ISO 45001, TOSHMS. ► Comply with external audit requirements, such as RBA audit, safety and health authority audit. ► The Safety and Health Committee is held quarterly, and the ESH management review meeting is held every six months to review the effectiveness of safety and health management. 	

Key Performance Indexes

Achievements in 2022

The Disabling Injury Frequency Rate (FR) and the Disabling Injury Severity Rate (SR) are better than the 3-year average of semiconductor manufacturing industry.

Minor or above incident $\leq 6^*$

There were no occupational diseases or occupational injuries caused by work environment issues.

The "Health Care System" e-platform carried out daily systematical care tracking based on employees' major health problems, and the care achievement rate was 100%.**

All fabs promoted "Healthy Workplace Accreditation" and held a valid Badge of Accredited Healthy Workplace.**

Future Goals	Short-Term Goals (2023)	Mid-Term Goals (2025)	Long-Term Goals (2030)
Reduce Disabling Injury Frequency Rate (FR) and Disabling Injury Severity Rate (SR)***	Better than the 2021 3-year average value for the semiconductor manufacturing industry	Reduce to less than 1/2 of the 2023 3-year average value for the semiconductor manufacturing industry	Reduce to less than 1/3 of the 2028 3-year average value for the semiconductor manufacturing industry

Note: 1. The 3-year average value for the semiconductor manufacturing industry is based on the statistical model calculated by Occupational Safety and Health Administration, Ministry by Ministry of Labor (MOL).

2. Scope: * UMC, subsidiaries, HJ, USCXM, and USJC; ** UMC Taiwan; *** UMC Group (UMC, subsidiaries, HJ, USCXM, Wavetek, and USJC); Without any * remark is UMC.

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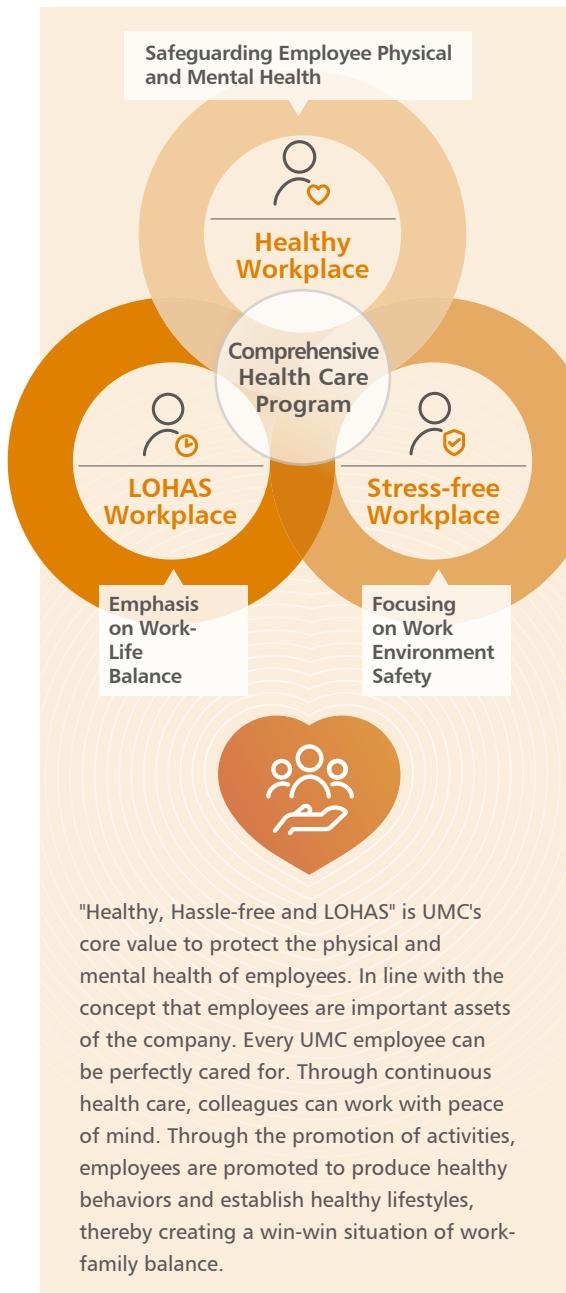
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4.3.1 Creating a Reassuring Workplace

Based on the "Occupational Safety and Health Act" (later referred to as the "OSHA"), UMC has formulated campaigns for maternal health protection, abnormal workload-induced disease prevention, ergonomics hazard prevention, workplace unlawful infringement prevention, and special protection of middle-aged and elderly workers.

In 2022, a series of "Earning Health Together" activities was designed and deployed. The project well increased the employees' knowledge and enhanced a healthy lifestyle under the pandemic of COVID19.



Safe Workplace Measures



The construction of a gender equality culture

Gender equality measures are superior to or in accordance with the Labor Standards Act.



Safety measures for women working at night

Emergency button, various emergency rescue assistance, daytime and nighttime shuttle service, 24-hour staff service line, nighttime emergency response reporting mechanism.



Special assistance for pregnant women and employees in need

Priority meal pickup, reserved parking space, notification of cleaning and disinfection avoidance, night shift transfer, maternity subsidy (both male and female colleagues can apply), dedicated lactation room.



Flexible work and vacation system for work and family balance

Provide employees with flexible work shifts. For employees with kid under 3, the working hours can be adjusted one hour earlier or later. An extra 7-day spare leave is also provided. According to the Gender Equality at Work Act, both women and men can apply for parental leave.



Sexual harassment prevention system

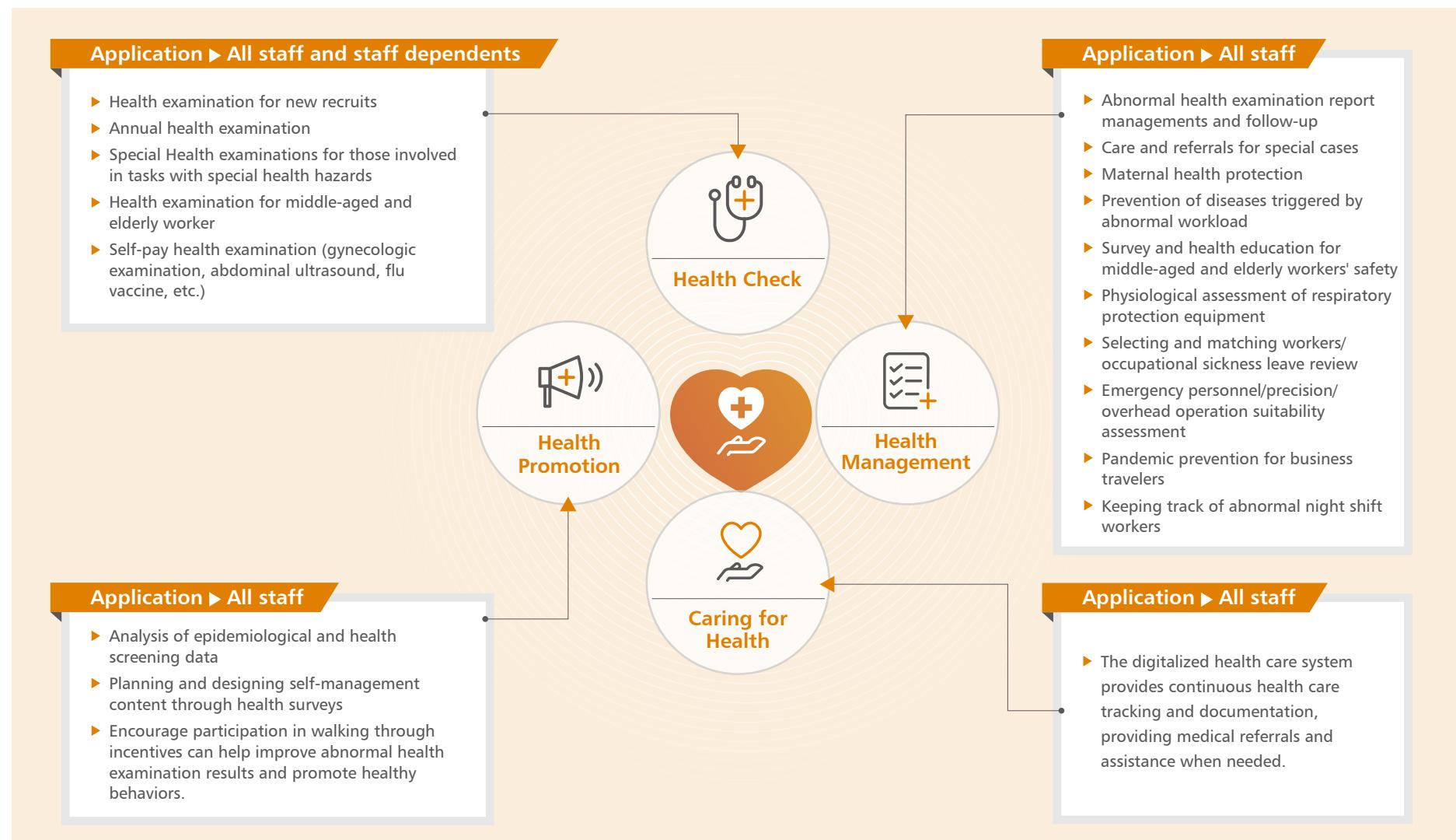
Formulate the "Complaint and Punishment Measures for Sexual Harassment Prevention and Control in the Workplace." Provide case investigation mechanism, membership criteria, dedicated complain channels for privacy protection, education and training, and an internal police security assistance service network.

Note: UMC follows various Taiwan government labor regulations, "Gender Equality Act", "Sexual Harassment Prevention Act" and other relevant norms to formulate regulations in Taiwan and promote various related measures.

Healthy Workplace ▶ Protect the Physical and Mental Health of Employees

Worker Health Promotion

UMC implements a health service management plan every year to maintain the safety, health and well-being of employees and stakeholders. In accordance with the OSHA, we review the results of the 2021 plan, then implement the 2022 health service management plan. After approval by the supervisor, the plan is announced to all employees.



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Health Promotion Activities in 2022

Theme	Event Spine	Key Achievements
Q1 Pandemic prevention and stress reduction	In response to the dynamic change of the pandemic disease, we regularly promote health education information on the Company's home page and bulletin boards to promote new knowledge of pandemic disease prevention and correct hygiene concepts.	<ul style="list-style-type: none"> In 2022, 63 pieces of information regarding pandemic prevention were posted on the internal bulletin boards, and the department secretaries also aided in disseminating relevant publicity and activities to all colleagues.
Q2 Guard together	Digitalized epidemic prevention measures were implemented for individual health management and care tracking to safeguard the health of our colleagues during the pandemic	<ul style="list-style-type: none"> Daily body temperature report Abnormal condition is evaluated and followed until improved. Regular follow-up rate is 100% The digitalized case management system can effectively monitor infected cases, provide remote health education and information after recovery. <p>Covid-19 case investigation system (App)</p>
Q3 Health check together	In response to the Coivid-19 pandemic UMC adjusted our activity plan and annual health examinations. Campaigns like "Be healthy and powerful Step out for a healthy new life together" were held to encourage colleagues to conduct exercise regularly and therefore enhance immunity to fight against the virus.	<ul style="list-style-type: none"> The total number of participants in the annual health examination is 11,969. Employees with abnormal health examination result were regularly followed and cared. 1,556 people participated in the walking campaign, in which 117 people achieved the target goal. The total number of documented steps reached 90.94 million.
Q4 Health improvement	To implement the concept of "early recognition, early treatment", UMC conducts employee health examinations regularly. Besides, in cooperation with medical institutions, abdominal ultrasound, gynecologic examination, and flu vaccination were arranged from the perspective of preventive medicine	<ul style="list-style-type: none"> The total number of people who received abdominal ultrasound examination: 772 The total number of people who received for gynecologic examination: 631 The total number of people who received flu vaccine: 571

Health Promotion Results Description:

- Total number of person-times served by health promotion activities: **26,745**
- Overall satisfaction level of health promotion activities: **95** points

Health autonomy accreditation and Health promotion seal.

Fab	Headquarter	Fab 8D	Fab 8E	Fab 8F	Fab 12A P5	Fab 8AB	Fab 8S	Fab 12A P1
Expiration Date	2021-2023		2023-2025				2022-2024	

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Worry-Free Workplace ► Focus on Work Environment Safety

To improve work efficiency through establishing a healthy and friendly work environment, cooperating with industrial safety staff to provide various safety and health protection measures based on the Occupational Safety and Health Act, implementing comprehensive hazard identification, risk and suitability assessment, prevention and improvement measures, and occupational

Safety Protection Items	Execution Instructions	Key Performance in 2022
 Occupational Disease Prevention	<p>Health protection matters such as illnesses caused by abnormal workload and illegal violations in the performance of duties are managed through the notification system. After the health center receives the requests, it will start the care mechanism: refer to doctors for treatment, arrange interviews with doctor of occupational medicine, on-site visits as necessary.</p>	<ul style="list-style-type: none"> In-depth on-site visits to understand the working conditions of employees and identify the root cause of the disorder. Occupational disease-related case in 2022: 0 person.
 Maternal Health Protection	<p>UMC has set up breastfeeding rooms in each fab. Women after delivery who in need have 60 minutes per day for milk collection. We also build a system for maternal health protection of our company. Employees who need breastfeeding can use the online system to inform the health center to initiate the maternal health protection measures, including risk assessment.</p>	<ul style="list-style-type: none"> Pregnant female employees receive maternal health protection. The medical staff has completed the hazard identification, risk assessment and fitness for work assessment through telephone or interviews, provided relevant health education information during pregnancy and postpartum, and gave mother gifts and informed birth subsidy and other related information. The "Health Care System" automatically arranges care list of the employees according to their major health issues daily. The follow up and care rate was 100%.
 Special Health Protection for Middle and Old Age	<p>Since 2019, before the announcement of "The health and safety guide for middle-aged and elderly workers", the Company already had individualized health protection plans for the middle-aged group workers. Surveys are conducted for workers over 45 years old (including 45). Work fitness survey results were assessed, and employees at risk received physician consultations.</p>	<ul style="list-style-type: none"> By using the work fitness and health questionnaire, the Company can identify employees who have a low work ability. This allows the Company to arrange doctor consultations for them, provide health guidance and advice, and refer them to work safety and employee assistance programs as needed. This helps the employees cope with physical and mental problems they may face at work.
 Employee Assistance Program ,EAP	<p>Each employee can have up to 6 free psychologist consultations per year. The service is announced to every worker during the new employee training. The entire consultation process is kept confidential. Employees can receive consultations on family, work, and interpersonal relationships. In order to achieve work and life balance. Guide colleagues to self-regulate.</p>	<ul style="list-style-type: none"> UMC places a great deal of importance on the well-being and both mental and physical health of its employees. To support this, a wide range of professional counseling services is available 24/7 as part of a comprehensive support system. Interview or telephone consultation satisfaction rate reached 96 points.
 Caring for Health	<p>According to the injury and illness caring protocol, the health center worked together with physicians and nurses, department supervisors, human resources, legal affairs staff to perform fitness for work evaluation. For sick or injured employees, the team would help adjust the content of work in stages according to the recovery situation, and to arrange appropriate or temporary positions without affecting the recovery process.</p>	<ul style="list-style-type: none"> By continuously raising awareness among employees about the importance of health, the Company strengthens their understanding of disease prevention and healthcare in maintaining good health. Injury and illness in 2022 were reduced by 21% compared with 2021, and appropriate health education was provided to the ill with continuous follow-up.

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LOHAS Workplace

► Emphasis on Work-Life Balance

UMC believes that only healthy and happy employees can build a highly productive enterprise. In addition to providing a safe and healthy workplace environment, an employee oriented LOHAS workplace that integrates benefits, vitality and public service is created. Through diversified activity design, creativity and vitality can be nurtured in the work and leisure activities of employees.

Manifesting Resilience

► Taking care of both pandemic control and employee well-being, and promoting employee cohesion through online activities

From 2022 onwards, in response to the effects of the pandemic, with the aim of protecting employees' well-being and health, and avoiding epidemic risks, UMC promptly changed the scheduled Lohas Workplace programs into online activities, and adjusted Art Festival content by providing a selection of online video resources and souvenirs for employees to enjoy with their families as a substitute for physical activities. These contingency measures not only achieved the goal of taking good care of employees and their families, but also demonstrated the organization's resilience and flexible response capabilities.

Exploring Life

► Encouraging employees to participate in club activities, and establishing broadly available sports facilities for employee health

UMC encourages employees to not only exert their professional capabilities at work, but also to explore the joy and fun of life. Through the funds provided by the Welfare Committee, UMC supports employee participation in club activities, and encourages them to share experiences with like-minded friends. Moreover, in order to encourage employees to maintain good exercise habits, UMC has established fitness facilities at all fab sites and some dormitory facilities.

Employee Social Club Activities



UMC Leisure Facilities



Hsinchu Science Park UMC Activity Center



Five-star Fitness Equipment



Southern Taiwan Science Park UMC Activity Center



Multi-purpose Basketball and Badminton Court

Activity List of UMC LOHAS Workplace

Item	Content	2022 Performance
UMC Employee Social Club Events	<ul style="list-style-type: none"> ► There are five categories of UMC social clubs: body beauty, recreation, indoor activity, outdoor exercise, and social service. ► Annual social clubs' evaluations are held, and high-performance clubs receive financial subsidies. Additional subsidies are offered to social clubs when they represent UMC in public competitions. 	<ul style="list-style-type: none"> ► 30 social clubs (Taiwan fabs) ► 2 rounds of selection - a total of 15 excellent social groups received subsidies each round. ► 2,313 club members <small>Note</small>
UMC Recreational Facilities and Services (UMC Recreation Center/UMC Park/UMC Jin-shan)	<ul style="list-style-type: none"> ► Quality Recreation Center in Hsinchu for employees and families. ► Dormitory in Tainan with integrated recreational facilities. ► Each site (Fab 8E, Fab 8F, Fab 8S, Fab 12A, and Fab 12A P5) provides fitness equipment for employees. 	<ul style="list-style-type: none"> ► Recreation Center in Hsinchu: 63,640 person-times visitors
Diversified Employee Activities	<ul style="list-style-type: none"> ► Organized regular One-day Travel, Family Day, and Art Festival. Event formats were adjusted in 2022 in response to impacts from the pandemic, demonstrating UMC's flexibility and response capacity. ► Call for articles on topics combining "Travel Light" activities with sustainability issues for employees to share stories about travels in Taiwan Island. ► Organize online Art Festival by providing online video resources and souvenirs for employees to choose and enjoy with their families. 	<ul style="list-style-type: none"> ► 98 articles on "Travel Light plus Sustainability" were received. ► 13,873 employees participated in Art Festival activities through their "clicking".

Note: Excluding temporary members and one-time participants.

4.3.2 Maintain Workplace Safety

With the goal of zero accidents, UMC is committed to maintaining a stable growth of the Company under the priority of safety, preventing safety and health risks, avoiding major losses due to safety and health related issues, so the Company's competitiveness can be ensured.

The Safety-First Corporate Culture

UMC continues to implement a "Safety First" culture, requiring employees not to overlook safety in their work for the sake of speed. In addition, UMC has established the UMC "Safety Climate Initiative Index" to identify and improve unsafe behaviors and environments. Furthermore, each fab's performance index is compiled quarterly and the overall safety climate performance is presented in the form of light signals to prevent the occurrence of accidents, as well as to continuously reduce the Disabling Injury Frequency Rate (FR) and the Disabling Injury Severity Rate (SR).



Safety and Health Organization

UMC in Taiwan has a company-wide safety and health committee that meets every quarter, chaired by the vice president. The committee board comprises a total of 9 labor representatives elected from respective fabs, who account for 33% of the 27-member committee. Each fab also has its own safety and health committee. In the Singapore fab, the safety and health committee is set up in accordance to local regulations, and, in compliance with the governing law, its number of employee representatives is greater than the number of director representatives. The Company's subsidiaries HJ, USCXM, Wavetek, and USJC have all established safety and health committees that meet every quarter. (The committee of USJC meets monthly.)

Safety and Health Management System

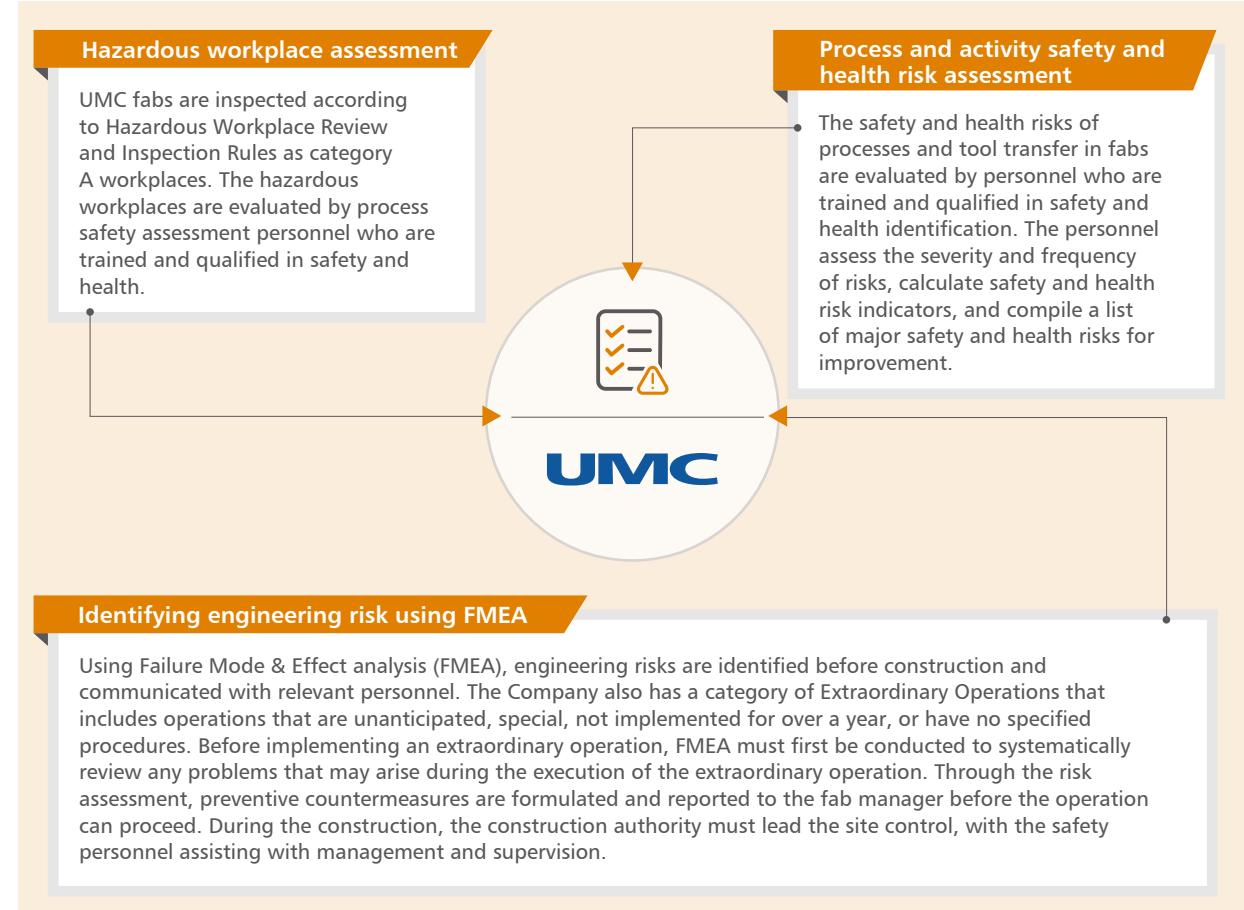
UMC's safety and health management system is based on ISO 45001 (an ISO standard for occupational safety and health management), and is constructed following the principles of "Plan-Do-Check-Action" and applicable to all workers' activities, products and services in UMC Taiwan and Singapore sites. Wavetek, HJ and USCXM have also established the same safety and health management systems.

UMC's ISO 45001 certificate



Hazard Identification and Risk Assessment

UMC conducts hazard identification and risk assessment for routine and non-routine operations, including:



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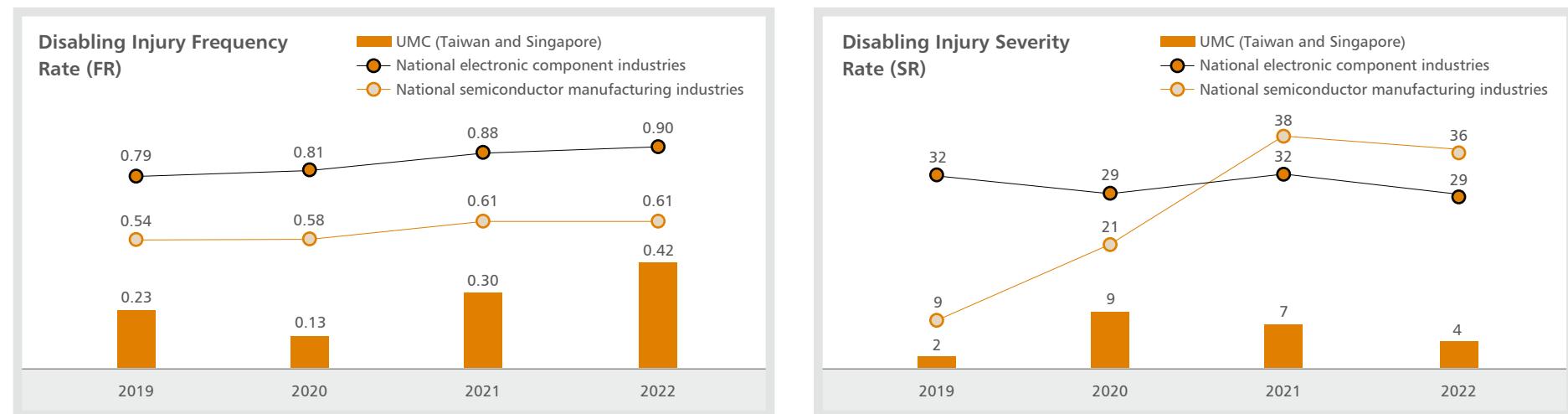
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Occupational Disaster Management

In 2022, UMC's Disabling Injury Frequency Rate (FR) was 0.42 and Disabling Injury Severity Rate (SR) was 4, which are far below the average of the semiconductor industry Note. UMC will continue to promote disaster reduction programs and move towards the goal of zero disasters.

Note: Based on the statistical model calculated by Occupational Safety and Health Administration, Ministry by Ministry of Labor (MOL).



Note: FR = Number of person-times with disabling injuries x1,000,000 / Total number of working hours [per million working hours].

Note: SR = Number of lost day due to disability x1,000,000 / Total number of working hours [per million working hours].

Safety and Health Education and Training

In accordance with the Company's organizational structure, UMC has designed company-wide general education courses, fab self-organized courses, and department-specific courses to provide employees with safety and health education and training necessary for work and accident prevention. In doing so, it allows employees to develop a safety culture, as well as occupational safety awareness and ability, to reduce the occurrence of accidents caused by unsafe behaviors.

In 2022, UMC organized 2,324 classes and trained 111,482 person-times altogether, which included the U-learning online courses that allowed employees to flexibly arrange their ways to participate in the safety and health education training sessions without being constrained by the scheduled time of physical courses.

Consultation and Communication with Employees

UMC values the consultation and participation of employees. In accordance with the election guidelines of safety and health labor representative regulated in the "Occupational Safety and Health Act," Taiwan fabs authorize employees to jointly elect labor representatives to participate in the quarterly Safety Committee with the consent of labor representatives through the labor-management meeting. Additionally, they revise the Safety and Health Work Rules, investigate accidents, implement workplace environmental monitoring, and participate in decision-making on various safety and health related issues. The labor-management meetings also discuss the penalties for employee violations of labor safety discipline and reach consensus on safety and health related issues. In 2022, there was no dispute related to occupational safety and health reported.

Apart from that, UMC also actively communicates with other non-employee workers. In addition to the assessment of qualified contractors and the formulation of the "Environmental Safety and Health Contractor's Guide," all on-site construction personnel are required to receive UMC's "Environmental Safety and Health Education and Training for Contractors," while all on-site construction companies are required to complete the "Workplace Hazard Notice and Agreement Meeting for Contractors." Moreover, UMC has also established a robust electronic system for construction application to effectively control construction applications and manage pre-, during- and post- construction stages.

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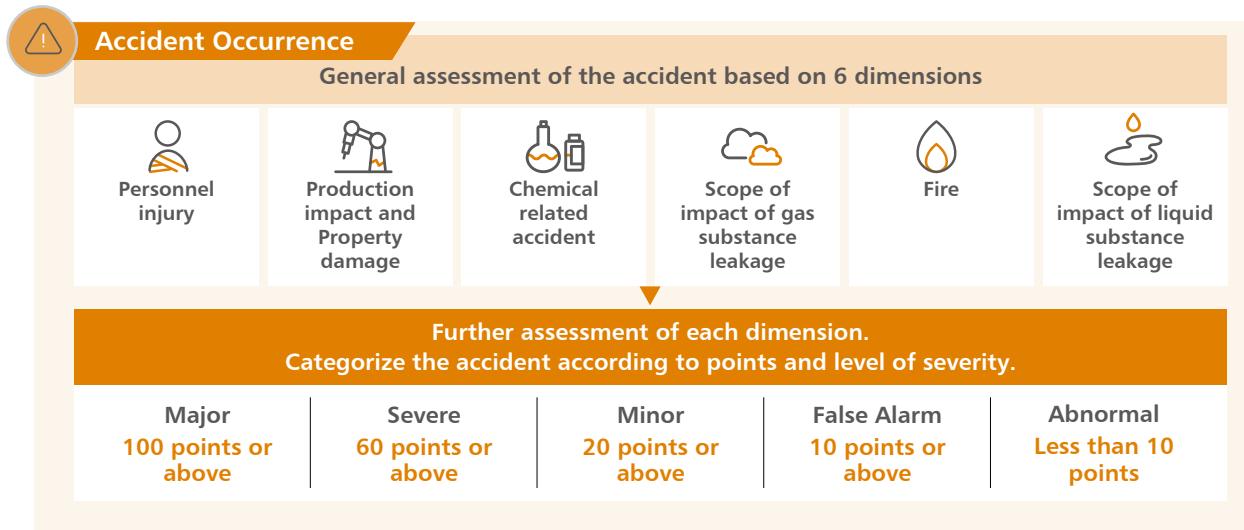
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Accident Analysis and Management

UMC underscores the importance of immediate notification, rigorous investigation and recurrence prevention of each accident. Therefore, the Company has formulated the Accident Notification and Investigation Regulations to govern the procedures for accident notification, investigation and improvement. In addition, for systematic records and efficient control of accident notification, investigation, and improvement, an online system for accident notification and investigation has been installed to achieve instant transmission and storage of accident information.

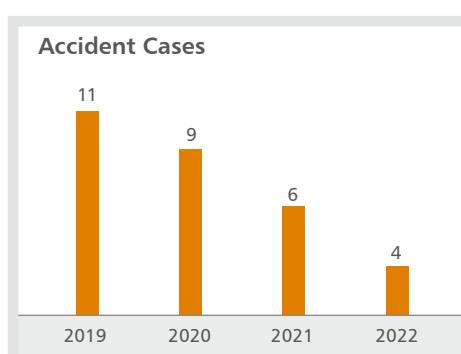
The Company also conducts a comprehensive assessment of the accident according to six dimensions, and quantifies the accident into major, severe, minor, false alarm or abnormal categories for more objective evaluation of the accident management performance.



Accident Management

UMC is committed to reducing the number of industrial safety accidents. In 2022, there were four minor or above accidents reported. As a result, the target was successfully achieved, and no regulatory violation related to safety and health incidents occurred. There have also been no fines for workers' health and safety, or financial losses due to judicial proceedings. In 2022, there were 23 fewer minor or above accidents than in 2011. The average financial loss caused by each minor accident from 2011 to 2021 is about NT\$2.66 million. Compared to 2011, UMC in 2022 has reduced its accident-related expenses by NT\$61.18 million.

The four accidents in 2022 can be categorized: walking injury: 2, heavy object crush injury: 1, chemical exposure injury: 1. UMC will continue to promote "Implement SF (Safety First), reduce SF (SR/FR)" as the accident prevention theme. In addition, the Company has formulated mid- and long-term safety management goals, with a plan to reduce incidents in 2025 by 88% compared with 2011, and continues to work toward the goal of zero accident.



Note: UMC scores and classifies accidents according to injuries caused by people, impact on production, financial loss, involvement of chemical substances, range of impact, fire, or problematic employee behavior. Not all accidents result in human injury.

Occupational Disease and Illness Prevention and Management

The prevention management of high-risk jobs and occupational diseases and illnesses at UMC's fabs are in accordance with local regulations. In order to monitor the actual state of the labor working environment and assess the workers' hazard exposure, Taiwan fabs have established a complete sampling strategy to monitor the operating environment, of which physical and chemical substances are monitored. The monitoring results of all areas (including clean rooms) were far below the concentration values allowed by law, and the results were announced to colleagues through the fab's Safety Committee and posters on public bulletin boards.

In Taiwan, exposure groups are identified according to the hazard exposure status of their operating environment, of which some equipment, and fab operations and workers are identified as high-risk groups, thus they are subject to special health examinations in accordance with the law. The special health examination items include noise, ionizing radiation, dust, organic solvents, specific chemical substances and so on, and the individual health management is conducted according to the health examination grading system. In 2022, there were no work-related cases of level 4 management reported based on the special health examination results. The health examination target definitions were superior to the governing regulations, demonstrating UMC's care for employees' wellbeing. Through a complete environmental monitoring of workplace along with the health risk grading management system, UMC is able to identify the high-risk groups in advance, and by continuing to improve the conditions at the source and providing comprehensive health care, a healthier and more comfortable working environment for employees can be created.

UMC holds a Special Health Hazards Meeting every year, establishes a notification and care mechanism for potential occupational chronic injuries, diseases and illnesses reporting, and sets up an occupational disease and illness investigation team to probe into abnormal cases and re-examine high-risk groups. Furthermore, UMC arranges visits by occupational disease and illness physicians and conducts on-site visits for occupational disease and illness specialists to make recommendations and improvements. Hence engineering control and ventilation were improved, which prioritize the elimination of hazardous exposure factors from the source and make personal protective equipment as the last line of defense.

In order to address the issues related to chronic injuries, diseases, illnesses or discomforts caused by long-term exposure to work hazards, UMC has established a notification and care mechanism for potential occupational chronic injuries, diseases and illnesses reporting, and set up an occupational disease and illness investigation team composed of labor health service physicians, the Health Development Division of the Human Resources Department, and the Risk Management and Safety and Environmental Protection Department, to reduce workplace safety and health risks in cooperation with external experts. From 2014 to 2022, there were 5 care cases reported. (No new cases in 2022.)

Hazard Notification

To prevent accidents, UMC uses routine inspection systems to detect anomalies in advance, prevent potential hazards in the operating environment, and enhance the safety and health of the operating environment. All hazards found during inspections are recorded in the computerized inspection and reporting system, and are classified and managed by occupational safety personnel, who will also track improvement in the computer system. In case of any immediate workplace danger, workers can call the emergency contact person to notify the occupational safety personnel. Workers can stop work and retreat to a safe place on their own without endangering the safety of other workers, and the Company will not impose penalties.

Prevention Measures for Impact of ESH

Through procurement management and management of change, UMC further eliminates hazards and reduces health and safety risks, thereby preventing any safety and health impact on the Company's operations, products or services.

Procurement Management

UMC's procurement safety and health regulations are incorporated into the operational specifications of the Procurement Department. In addition to requiring material vendors to comply with domestic regulations on labeling, production and shipping, the Company also regularly audits suppliers to prevent supply disruption due to safety and health incidents.

Management of Change

To avoid safety and health risks and environmental impact from changes in personnel, machinery, materials, methods and environment, UMC has established measures for management of changes. Measures such as formal application procedure, approval procedure, implementation of necessary safety assessments, relevant personnel notification/training, and necessary technology information are in place to reduce potential risks.

ESH iCARE Dashboard

Background

With the iCare App developed in 2021 and the iCare Dashboard platform established in 2022, we achieved real-time digital data connections and information visualization, thus improving the efficiency of information exchange, communication, and collaboration.

Challenges

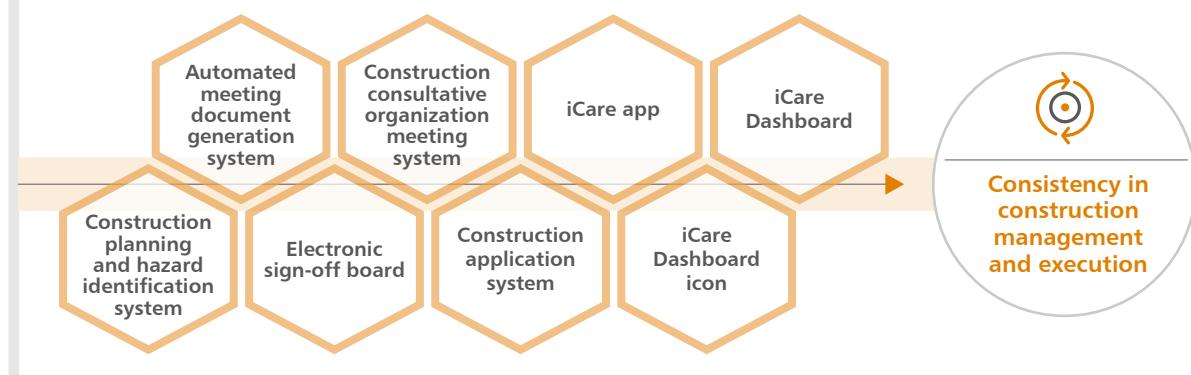
In addition to the transformation from paperwork to digital information, offline to online, and manual operations to systematic operations, we also need to create interactive dashboards to facilitate agile management, through which the business trends or patterns that are not easily detected by manual analysis can be highlighted.

Measures

1. Design representative indices, such as management KPIs and performance KPIs. Management KPIs includes construction progress, risk level, fire system isolation, high construction supervision workloads, and equipment installation. Performance KPIs includes construction order pass rates as obtained from random inspections, safety anomaly rates identified for high-risk critical operations, and proper equipment/construction availability rates from safety inspections.
2. Create charts: Convert numerical KPIs to visualized charts.
3. Build up dashboards for construction safety management and decision-making to track the performance of business operations.
4. Use the iCare App to carry out and complete smart detection, such as trestle ladders used in elevated operations, raised floors lifting operations, and tanker truck operations, to improve the quality of construction safety management, and assist supervisors in conducting onsite construction management and carrying out onsite inspections.

Benefits

1. Manage construction operations through source control, and link up eight major interfaces: Construction planning and hazard identification system; automated meeting document generation system; electronic sign-off boards; construction consultative organization meeting system; construction application system; iCare app; iCare Dashboard icon; and iCare Dashboard webpage. By doing so, achieve consistency in construction management and execution.
2. The iCare Dashboard platform's real-time, predictive analysis enhances managerial personnel's ability to make appropriate safety decisions, while also improving engineers' safety measure implementation capacity.



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UMC	Taiwan		Singapore	
2022 Relevant Index	UMC Employees	Non-employee Workers	UMC Employees	Non-employee Workers
No. of people	13,491	2,353	1,647	1,332
Total No. of working hours	26,944,869	6,869,816	3,597,051	2,771,176
No. of people with disabling injuries	13	2	0	0
No. of lost days due to disability	139	107	0	0
No. of reportable injuries	23	2	0	0
No. of work-related deaths	0	0	0	0
Occupational Disease Rate (ODR)	0	0	0	0
Injury Rate (IR)	0.17	0.05	0	0
Lost Day Rate (LDR)	1.03	3.11	0	0

Note: There were no third-party illnesses, injuries, disabilities or deaths caused by UMC operations.

Subsidiaries	HJ	USCXM	Wavetek	USJC
2022 Relevant Index	Employees	Non-employee Workers	Employees	Non-employee Workers
No. of people	2,125	128	1,215	605
Total No. of working hours	4,056,587	373,760	2,754,070	1,767,376
No. of people with disabling injuries	1	0	0	1
No. of lost days due to disability	8	0	0	5
No. of reportable injuries	1	0	0	1
No. of work-related deaths	0	0	0	0
Occupational Disease Rate (ODR)	0	0	0	0
Injury Rate (IR)	0.04	0	0	0.11
Lost Day Rate (LDR)	0.39	0	0	0.56

Note: There were no third-party illnesses, injuries, disabilities or deaths caused by operations of Hj, USCXM, Wavetek and USJC.

Definition of Terms:

- Non-employee workers: Refers to non-employees whose work and/or workplace is defined by the Company. The daily average number of such workers in the fabs is calculated by dividing the total number of workers in the year by 365.
- Third party: Refers to non-employees or contracted personnel.
- Working hours: Refers to the actual number of working hours put in by current employees or non-employees. The number of hours worked by non-employee workers is calculated at eight hours per person per day.
- Number of people with disabling injuries: Refers to the number of deaths, permanent disability, permanently total or partial disability or temporarily total disability due to occupational injuries.
- Number of lost days due to disability: Refers to the total number of days lost as the result of injury from a single accident. Calculated as the number of days when the injured person is temporarily (or permanently) unable to resume work, but excludes the days of injury or the days when work is resumed. The number of days elapsed (including Sundays, holidays or company rest days) and the number of inability to work days following return to work as a result of the injury are included.
- Number of reportable injuries: Refers to the number of work-related injuries that resulted in death, job loss, impairment or transfer, emergency treatment or more, loss of consciousness, or diagnosed by a doctor as serious injuries.
- ODR = Total number of occupational diseases x 200,000 / Total number of working hours [per 200,000 working hours].
- IR = Number of reportable injuries x 200,000 / Total number of working hours [per 200,000 working hours].
- LDR = Number of lost days due to disabling injuries x 200,000 / Total number of working hours [per 200,000 working hours].

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5. Enhancing Society Mutual-Prosperity

UMC has long focused on the promotion of social welfare. In addition to caring for the disadvantaged and underprivileged in our society, UMC is also committed to nurturing young talents in the semiconductor industry and promoting environmental education issues. UMC not only donates funds and encourages colleagues to participate in volunteering activities, but also serves the communities through employee social club activities, leaving no stone unturned in its commitment to social welfare. Holding the belief that only by working together with society can companies thrive in a friendly environment, UMC continues to extend its positive impact and move forward together with society.

Important Stakeholders:
The Society, Employees and Suppliers

SDGs :



Performance Highlights 2022



UMC Science and Culture Foundation was recognized by the Ministry of Education



1,689 employees participating in volunteering services and 6,588 hours of volunteering time in total



The Prospective Talent Program has cultivated outstanding talents in the semiconductor industry since 2013



14 courses of Semiconductor Science Education were held for kids to demonstrating the process of IC production



3,771 volunteers provided after-school tutoring and care for kids from vulnerable families



Economic benefits for underprivileged communities from improvement made by the Energy Saving Service Team



UMC's Eco Echo awarded and supported 4 NGO ecological conservation projects, 10 youth environmental initiatives, and 2 green innovation projects

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5.1 Promote Common-Prosperity Society

5.1.1 Core Vision and Strategy

5.1.2 Community Services Benefits Assessment

5.1.3 Volunteer Culture Promotion

UMC upholds the corporate sustainability vision of "people first, co-existence with the environment, and common-prosperity society" to integrate various internal/external resources, and actively engage in charity activity. We have diversified ways of promoting charity activities, like as "UMC Science and Culture Foundation", the "UMC LOHAS Education Foundation" and Employee Social Clubs etc., since 1996. In order to have largest social Impact, UMC has established the Social Participation Group of cross-departmental and cross-organizational, for existing organizations and making good use of innovative thinking in the technology industry, empowerment employees, and promotion of volunteer activity. Through industry-university cooperation, rooted in talent cultivation, externally to promote the application of science and technology and deepening charity activities, it is hoped that UMC can use the ubiquitous influence of science and technology to create social benefits.

Diversified Ways of Promoting Charity Activities

Major Promoting Unit	Year of Establishment	Charity Activities Promotion Scope and Dimension	Charity Activities Projects
UMC Social and Culture Foundation	1996	<ul style="list-style-type: none"> ▶ Long-term support for diversified education programs with the goal of "All-Around Education." Engage in the development of education for disadvantaged students, cultivate the future competitiveness of young talents, and collaborate with public interest groups to expand social influence 	<ul style="list-style-type: none"> ▶ Diversified education--"Spreading the Seeds of Hope Project", arts and humanities education, media literacy and popular science education ▶ Reading education--"Storytelling Volunteer", "Promotion of Rural Reading Program" ▶ Life education--"Love Storytelling Club", "Diversified Education Promotion in Correctional Institutions" ▶ Parent-child education--Sponsored the "Whatever Makes Sense", Dr. Hung Lan's radio program, on Voice of IC radio station ▶ Physical education--Supported Taiwanese sports talents and continued to sponsor the "Nantou Karate" Association
UMC LOHAS Education Foundation	1999	<ul style="list-style-type: none"> ▶ Promote sports--Open the UMC Park Activity Center to disadvantaged groups ▶ Provide UMC tours to college students ▶ Education for the disadvantaged--Provide basic literacy skill training for immigrant residents (foreign spouses) and expatriates 	<ul style="list-style-type: none"> ▶ Sponsored the Language Learning Program for Foreigners of the Ministry of Education ▶ Sponsored the activities organized by the Department of Education, Hsinchu City ▶ Sponsored sports events of the Science Park Cup
Factory/Division	2021	<ul style="list-style-type: none"> ▶ By divisions and departments of the Company, UMC initiates public charity activities targeting issues of concern to neighboring non-profit organizations. 	<ul style="list-style-type: none"> ▶ Nature conservation: ecological farmland maintenance in Youluo, Mkmatu Ancient Road cleanup in Neiwan, Jincheng Lake bird watching area cleanup, Hsinchu Nanliao beach cleanup, and nature conservation in ecological park. ▶ Social participation: Catholic Church fundraising, Hua-guang Society blessing for the disabled ▶ Semiconductor Science Education for elementary school student and community.
Employee Social Clubs	2006	<ul style="list-style-type: none"> ▶ Organize charity activities by UMC's employee social clubs, including music clubs (Ukulele Club, UMC HSP Drum Club, Music Lover Club), sports clubs (Tai-Chi Club), and service clubs (Candlelight Club, Energy Saving Service Team). ▶ Provide support for disadvantaged students, care for needy elders, and energy-saving assessment services for social welfare groups. 	<ul style="list-style-type: none"> ▶ Candlelight Club--Rural area services, organized charity sales jointly with NGO ▶ Ukulele Club--Offered Ukulele lessons for students in rural areas ▶ Music Lover Club--Held a charity performance for Saint Joseph Social Welfare Foundation ▶ UMC HSP Drum Club--Held a charity performance for the "Cherish Life, Cherish Love" event and the Charity Fair ▶ Energy Saving Service Team--Provided energy-saving diagnosis and improvement for the Hsinchu Renai Workshop, as well as energy-saving diagnosis, fire safety improvement recommendations and fire drill assistance to Taoyuan Bade Correctional Center
UMC Fire Brigade	1999	<ul style="list-style-type: none"> ▶ Provide disaster rescue assistance for the Science Park and the neighboring communities ▶ Strengthen local and industrial disaster prevention and response capabilities ▶ Offer disaster prevention education to school children 	<ul style="list-style-type: none"> ▶ Provided assistance to companies in the Southern Taiwan Science Park in relocation reaction training at the invitation of the Southern Taiwan Science Park Bureau ▶ Provided guidance on the operation and use of disaster-prevention equipment as well as tips on disaster prevention and evacuation for teachers and students of Annei Elementary School in Tainan City

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5.1.1 Core Vision and Strategy

Based on the belief of "take from society and give back to society," UMC has involved enormously in various charity activity projects for a long time. With the belief of "talents are the foundation of industrial development, the environment is the foundation of human sustainability, and education is the foundation to improve the status of the disadvantaged" as the starting point, UMC promotes charity activity in accordance with three major strategic principles—"Cultivating young talents," "Promoting environmental protection," and "Caring for the disadvantaged in society," which echo with the Sustainable Development Goals (SDGs) of the United Nations. Through the implementation of various charity activity projects, UMC has joined hands with partners such as supply chains, social welfare groups, and educational organizations to bring positive energy to society and the environment.

Constructing the Main Theme of Social Participation

Social Engagement Main Theme	Business Trend	Type	Business Key Performance	Social/Environmental Key Performance	UN SDGs
 Cultivating Young Talents	<p>From a forward-looking perspective to strengthen UMC's global competitiveness, UMC is committed to managing inter-school relationships and cultivating high-tech talents to promote semiconductor research energy and technological progress by securing quality and stable manpower.</p> <p>Customized semiconductor science knowledge content, UMC volunteers to share science knowledge in elementary school student and community.</p>	<ul style="list-style-type: none"> ▶ Prospective Talent Program (PTP) ▶ Semiconductor Science Education for elementary school student project 	<ul style="list-style-type: none"> ▶ Enhance positive corporate image <ul style="list-style-type: none"> ● Through the Prospective Talent Program (PTP), UMC's corporate image has been effectively marketed with its influence expanding among campuses and communities, which has laid a cornerstone for future R&D talents. ▶ Expand talent pool to reduce the cost of recruitment <ul style="list-style-type: none"> ● The PTP program has been recruiting talented individuals since 2013, with a total of 5,483 talents recruited and 485 students participating. ● The average cost of recruiting one single employee is approximately NT\$26,302. ▶ Build high-tech talent network based on good business reputations <ul style="list-style-type: none"> ● In 2022, UMC carried out industry-academia cooperation projects with 15 colleges, including equipment operation internship, nanotechnology program, and career planning assistance. These projects increased the recognition and support of UMC from the academia, effectively marketed UMC's corporate image, and expanded its influence among campuses and the communities, thereby laying a cornerstone for future R&D talents. ▶ Semiconductor Science Education for children <ul style="list-style-type: none"> ● 14 courses were held in 2022, benefiting a total of 4,012 person-times. 	<ul style="list-style-type: none"> ▶ Cultivate high-tech talents and enhance career prospects <ul style="list-style-type: none"> ● Beneficiaries of special program for industry-academia cooperation: A total of 8,456 person-times participated in these programs. ● Campus relationship development and related seminars: In 2022, a series of fifteen brand development and promotional activities, including seminars, career plan sharing sessions, internships, semiconductor product demonstrations and so on, were arranged, attracting more than 791 student participants. ▶ UMC visits: Provide opportunities for students to visit and tour UMC. In 2022, UMC received around 309 person-times from different schools. ▶ UMC custom made a set of semiconductor science knowledge video, promoted them in near-by elementary schools, and played them in UMC Park Activity Center for tours to help popularize science knowledge. 	 
 Promoting Environmental Protection	<p>Strong economic growth leads to excessive consumption of resources. The sustainable growth of an enterprise depends on the sustainability of environmental resources. Therefore, in addition to providing customers with core products that are competitive on the market, enterprises should also bear the responsibility of environmental protection. Through energy-saving, carbon-reduction and ecological conservation initiatives, we look forward to exerting our influence and drive the value chain to jointly mitigate the impact of business operations on the environment.</p>	<ul style="list-style-type: none"> ▶ Eco Echo Award ▶ Energy Saving Service Team 	<ul style="list-style-type: none"> ▶ Eco Echo Award Starts to Make a Difference, Building Good Corporate Image <ul style="list-style-type: none"> ● In 2022, the UMC Eco Echo Award event received more than 60 news coverages. In addition to establishing a good reputation for UMC, it also provided media exposure for the supplier partners involved. ▶ Cost Savings Brought by the Energy Saving Service Team <ul style="list-style-type: none"> ● Assist the client to save on utility bills for operations. In 2022, a total of 2,179 tonnes of CO₂ was reduced, which is equivalent to an overall social/environmental economic value of NT\$21.37 million. 	<ul style="list-style-type: none"> ▶ Number of Projects Supported by Eco Echo Award <ul style="list-style-type: none"> ● In the past 7 years, 55 ecological conservation plans and youth environmental action projects have been realized in Taiwan. ▶ Number of Service Targets of Energy-saving team <ul style="list-style-type: none"> ● In 2022, the Energy Saving Service Team has served 13 disadvantaged groups. ▶ Service hours of Energy-saving team <ul style="list-style-type: none"> ● Accumulating a total of 12,807 beneficiaries. The services provided included energy-saving and safety consultation, energy technology and engineering improvement, allowing disadvantaged groups to enjoy the wonderful energy-saving and carbon-reduction life as well. 	   
 Caring for the Disadvantaged in Society	<p>UMC has long cared for the rural communities and the education of disadvantaged students. In 2005, UMC initiated the "Spreading the Seeds of Hope" project to strengthen the education of children from disadvantaged families and strive to narrow the gap between urban and rural areas. Through the UMC Science and Culture Foundation, employees from various sites are called to participate in volunteer projects, including care service and storytelling activities for rural areas, improving the quality of local community education, and all of these, in return, improve teamwork and cohesiveness in the Company.</p>	<ul style="list-style-type: none"> ▶ Supplementary classes for disadvantaged students ▶ Community participation and support activities for the disadvantaged ▶ Shaping volunteers' mutual aid culture ▶ Promote factory/division having Charity activity 	<ul style="list-style-type: none"> ▶ Build a positive image and maintain good corporate reputation <ul style="list-style-type: none"> ● Total beneficiaries: 33,089 person-times. Recipients of these supports include academic circles, non-profit organizations and environmental groups. ● By actively supporting disadvantaged groups, it not only builds a good image for the Company, but also earns the recognition from the public. ▶ Expand employee participation and enhance the cohesiveness of employees <ul style="list-style-type: none"> ● 6,588 hours of volunteering time in total ● 7 charity activities from factory or division volunteering services ● 1,689 employees participating in volunteering services 	<ul style="list-style-type: none"> ▶ Number of underprivileged school children benefited <ul style="list-style-type: none"> ● UMC continues to promote the Spreading the Seeds of Hope project, offering after school tutoring service for the Hsinchu Church of Sacred Heart of Jesus and National University of Tainan. Thanks to 449 volunteers who cumulatively devoted 1,878 hours of their precious time, the number of beneficiaries in 2022 reached 1,981 person-times. 	 

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5.1.2 Community Services Benefits Assessment

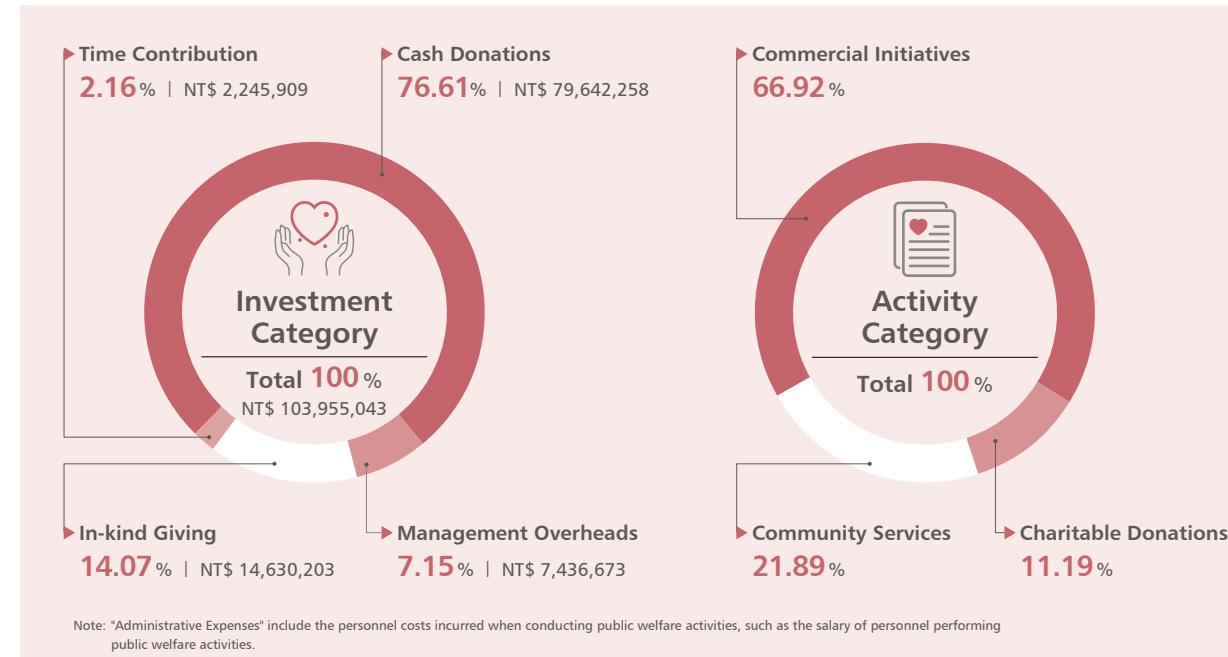
To effectively quantify the benefits brought about by community services, UMC referred to the community investment assessment system established by London Benchmark Group (LBG). Investment time, cost, material donations, and management expenses were precisely recorded to evaluate the positive benefits brought about by these investments. Outputs of community services include reductions in costs, generation of benefits, and intangible influences such as positive corporate image, becoming a benchmark of corporate social responsibility, establishing positive value systems amongst school children, and helping to compensate for the inadequacy of educational resources for school children living in remote areas.

Social Charity activities Investment

To ensure a consistent and stable financial support for the beneficiaries of their care, UMC has dedicated a total of NT\$104 million to social charity activities in 2022. In addition, UMC also continued to support cultural, educational and academic related organizations. The total amount of public welfare funds in 2021 was NT\$240 million.

In addition to the investment in community participation by the UMC Science and Culture Foundation and the UMC LOHAS Education Foundation, UMC also pays more attention to the cultivation of young talents and supports a number of academic key projects through business initiatives to improve the competency of future high-tech talents. These projects including donations to the construction of the UMC-Junshan Concert Hall at National Tsing Hua University, memorial building of former principal Liu, Chung-laung, UMC Management Paper Award Fund, and "Nano Integrated Circuit Engineering" Fund of the National Cheng Kung University. The percentage of investment increased from 62.31% in 2021 to 66.92% in 2022.

Category and Sums of Community Service Investments in 2022



Community Service Participation and Number of Beneficiaries in 2022

Charitable Donations ¹	NT \$104 Million
Number of Beneficiaries	More than 33,089 person-times
Total Employee Volunteer Hours ²	More than 6,588 hours

Note: 1. This table only covers projects carried out by the Science and Culture Foundation, UMC LOHAS Education Foundation, Company donations, and employee social clubs as well as employee donations.
2. Includes volunteer leave and holiday leave hours.

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Supporting Art and Cultural Activities

UMC supports the development of domestic culture by empowering artistic talents, supporting the establishment of cultural venues, and more. In 2022, UMC has allocated over NT\$5 million to support domestic performing arts groups, promote Go culture, and sponsor domestic artists to showcase their artwork in the Company's public spaces, enhancing the artistic aesthetic of employees. UMC also sponsors broadcast music productions and other cultural events. For example, since 2011, UMC has been supporting the What's Young Association to organize the "Fancy Years - National Youth Drama Festival," which leads sustainable development to teenagers through drama education and artistic creation. Through drama education and artistic creation, high school students are guided to understand society, cultivate creativity, teamwork, and empathy, and encouraged to learn through unconventional thinking. Furthermore, UMC has partnered with TECO Technology Foundation to sponsor Taitung County Changbin Junior High School "Changbin Amis Traditional Music and Dance Team" and Hualien County Gang-kou Primary School's "Magu-Daai Amis Ancient Ballad Team." This sponsorship allows the schools to promote traditional tribal songs and dances and assist in the preservation of indigenous cultures for the benefit of the schools and tribes, allowing them to trace their roots and strengthen their sense of identity.

To enhance the domestic Go culture, UMC has been sponsoring the UMC Cup Professional Go Tournament hosted by the Taiwan Go Association since 2020. This tournament is a rare opportunity for professional Go players, Go enthusiasts, and fans alike. It greatly benefits the playing environment and promotion of Go culture, allowing players to have greater room for development and opportunities to improve. This contributes to the



advancement of the Go industry in Taiwan, strengthens the depth and strength of Taiwanese Go players, and provides a more solid backing for Taiwan to enter the world of Go.

UMC's commitment to the establishment of cultural venues is based on its belief in the corporate philosophy of "taking from society, giving back to society." In 2019, UMC announced a donation of NT\$70 million to National Tsing Hua University in memory of its former president,

Dr. Chun-Shan Shen, who passed away the previous year. This donation was made to express gratitude to NTHU for its long-term efforts in nurturing semiconductor industry talent in Taiwan and promoting industrial clusters and economic development in the Hsinchu area. The concert hall is designed to be a professional-level music hall that can accommodate 1,200 spectators and is suitable for large symphony orchestra performances.

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5.1.3 Volunteer Culture Promotion

Over the years, UMC has devoted itself to the establishment of volunteer culture and volunteer training. From the early self-organized organization of colleagues - Candlelight Club to the establishment of UMC Science and Technology Culture and Education Foundation, the thinking of embracing enthusiasm for society and giving back to society has also grown. Deeply rooted in the hearts of UMC people, whether it is service clubs, sports clubs, music clubs, etc., in addition to actively participating in various public welfare activities planned by the Company, elements of public service services can also be incorporated into club activities. In 2022, there will be a total of 48 public service echelons in associations and factories, benefiting a total of 22,447 people. The promotion work has also started from the early contact methods of writing, telephone and letters, and now has an exclusive information platform for public welfare activities. In addition, there is a volunteer area within the Company, so that the information and benefits of volunteer services can be extended infinitely.

In order to demonstrate the action of UMC people and the society to prosper together, encourage departments/factories to initiate volunteer services, and drive more colleagues to participate in public welfare services enthusiastically, in addition to providing 16 hours of paid public welfare activity leave every year, we also provide "In 2022, a total of 7 factories will take the lead in completing public welfare activities.

In addition, in order to deepen the connotation and ability of colleagues in public welfare services, UMC Technology Culture and Education Foundation also organizes multiple volunteer training courses, such as SDGs courses and podcast teaching, to increase colleagues' vision and action methods for public welfare services. Not only has colleagues enthusiastically participated, but it has also been practically applied in future public welfare actions, with a view to promoting the atmosphere of mutual good in society, and extending its influence to more people in need of help, forming a good cycle from the inside out.

UMC Clubs Volunteering Record in 2022

Type of Club	Name	Volunteering Content	Target	Collaboration Unit
 Service Club	Candlelight Club	<ul style="list-style-type: none"> ▶ Services in remote areas ▶ Fund raising ▶ Co-organizing charity sales with the UMC Foundation 	<ul style="list-style-type: none"> ▶ Underprivileged students ▶ Care for underprivileged senior citizens ▶ Environmental protection 	Renai Social Service Center, Delan Social Welfare Foundation, Bo-Young Foundation, St. Joseph Social Welfare Foundation, Youth at risk ministry in catholic Hsinchu diocese, etc.
	Energy Saving Service Team	<ul style="list-style-type: none"> ▶ Providing energy saving and safety diagnosis of the sites ▶ Funding and manpower input 	<ul style="list-style-type: none"> ▶ Underprivileged organizations ▶ Community units 	Renai Children and Youth House, the Good Shepherd Taichung De-You Home, the Hsinchu Support Center, Taiwan Fund for Children and Families, Yanjou Elementary School, and National Cheng Kung University
 Musical Club	Ukulele Club	<ul style="list-style-type: none"> ▶ Servicing rural students ▶ Teaching rural students Ukulele ▶ Charity Performance 	<ul style="list-style-type: none"> ▶ Underprivileged students 	Fu-Sing Elementary School, Nan-He Elementary School...etc.
	Music Lover Club	<ul style="list-style-type: none"> ▶ Active club participation ▶ Supporting UMC Foundation's social welfare activities ▶ Music-related charities 	<ul style="list-style-type: none"> ▶ Underprivileged students ▶ Community involvement 	STSP Late Spring Arts Festival, UMC Science and Culture Foundation-Youth Talent Development Visit, L'arc Hotel Market
	UMC HSP Drum Club	<ul style="list-style-type: none"> ▶ Charity Performance 	<ul style="list-style-type: none"> ▶ Caregiver support groups for the underprivileged 	Children's Day Activity at St. Joseph Social Welfare Foundation - Dawn Development Association, Hsinchu Hexing Station Concert

In 2022, there will be a total of **48** public service echelons in associations and factories, benefiting a total of **22,447** people.

5.2 Youth Talent Cultivation

5.2.1 Industry-education Partnerships

5.2.2 Semiconductor Talent Cultivation

To fulfill the ideal of promoting semiconductor research and technical development, and strengthening UMC's global competitiveness by providing the corporation with sources of outstanding and quality talents, UMC is committed to maintaining forward-looking collegiate relationships and devotes to cultivating youth talent.

5.2.1 Industry-education Partnerships

UMC continued to strengthen industry-education partnerships in 2022. In addition to the on-going hands-on programs for semiconductor technologies in key institutions, a collaboration project was also implemented to sponsor full-time instructors for the MS Degree Program and credit courses on Nano-Integrated Circuit Engineering offered by National Cheng Kung University (NCKU). In 2022, more than 8,456 students participated in industry-academia cooperation program. In addition, a series of brand image development activities such as seminars, career sharing panels, on-site internships, and exhibits of semiconductor products were scheduled, more than 791 students participated.

Semiconductor seed-Taiwan high-tech talent cultivation

Execution	<ul style="list-style-type: none"> ▶ Semiconductor industry-education hands-on programs ▶ Other industry-education projects 	<ul style="list-style-type: none"> ▶ Innovation RD projects ▶ Campus relationship projects
2022 Performance	<ul style="list-style-type: none"> ▶ Semiconductor industry-education hands-on programs jointly offered in 4 colleges (NCKU, NCU, CYCU, NKUST) ▶ Initiated innovation RD projects with multiple colleges and obtained patents ▶ Industry-education hands-on programs had 622 participating students 	
Impact	Cultivate seed talents for semiconductors by providing semiconductor-related knowledge and technologies to young students when they are in schools	

5.2.2 Semiconductor Talent Cultivation

UMC continues to implement the "Prospective Talent Program (PTP)" to provide students with the opportunities, such as internships, to learn about the semiconductor industry during their studies, allowing them to familiarize with UMC's friendly corporate culture and healthy workplace. The implementation of these Programs can effectively promote UMC's corporate image and expand its influence on school campuses and communities, making preparation for UMC's future R&D talents in advance.

In 2022, two UMC Night were organized. The PTP participants and mentors from UMC were invited to exchange and discuss with each other during the events. In addition, various interactive games were designed to let all students from different schools to understand more about UMC and the characteristics and dynamics of the semiconductor industry.

External Feedback

PTP participants

2022 PTP UMC Night Event Satisfaction Survey

A total of **131** students filled out the satisfaction questionnaire, and the average satisfaction rate was as high as **9.2** points (out of 10 points)



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Planning for Outstanding R&D Talents



Summer Internship Program

In 2022, a total of **19** interns were recruited.



The program continues to select high-quality talent to intern at major departments in domestic and overseas UMC facilities. The interns are guided by designated mentors so that through hands-on practice and involvement in on-going projects, interns can experience the workplace culture. In the meantime, this program effectively creates close interactions between prospective collegiate talents and UMC teams, thereby enabling mutual learning and growth through these close exchanges.

Prospective Talent Program

Since 2013, **5,483** candidates have been recruited, of which 485 are still in school.



Exclusively designated for students, this program offers forums, internships and corporate mentoring to help students gain awareness and familiarity toward the semiconductor industry. In addition, participation in UMC benefit events allows students to visit foundry fabs and provides opportunities to advance their understanding of UMC's global operations, corporate culture and healthy workplaces.

Career Coaching Programs

Take National Cheng Kung University as an example, 11 career coaching programs have already been carried out. Each batch had over **310** participants from the university and the program is still on-going to this day.



UMC has conducted career planning seminars and career coaching programs in its recent collaboration with key colleges. Based on professional insights of future trends and career instructors' assessment of student characteristics and knowledge level, career plans are recommended to help students find suitable career paths.

Potential Management Talent Cultivation

In 2022, a sum of NT\$**3.2** million was bestowed to the award.



The UMC Business Management Thesis Award was established in 2010 and started offering monetary rewards to the Award in 2011 to help further training programs for potential management professionals, encourage academia and industry exchange, achieve effective integration of management practice and theory, and contribute towards sustainable corporate management.

Target Schools Visited

In 2022, UMC received around **309** person-times from different schools.



UMC provided on-site visits to target schools every year for students to gain early understanding of the semiconductor industry work environment.

Semiconductor Science Education for elementary school student project

The semiconductor industry chain affects the world's economic structure, living habits and even education models, and is closely related to the lives of modern people. In order to strengthen the public's understanding of the semiconductor industry, understand the application of semiconductor technology in life, and take root in schoolchildren in science in terms of literacy-oriented capabilities, UMC staff formed a volunteer team to link up with the core capabilities of the industry to develop semiconductor science textbooks and popular science education courses. At the same time, volunteer employees visited elementary school campuses to deliver interactive lessons to students, demonstrating the process of IC production, manufacturing, and usage in everyday 3C products.

In 2022, a total of 14 sessions of semiconductor science education courses were held, mainly targeting the neighboring elementary schools and community supplementary classes where UMC fabs are located. The courses are designed in a variety of ways. Cleanroom suits and close observation of wafers allow students to understand how the semiconductor industry changes from silica sand to wafer production process through sensory exploration, and discover the important role played by ICs in daily life. Students can get to know Taiwan's most important industry by getting close to the semiconductor industry and gaining knowledge.



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5.3 Environmental Protection Initiative

5.3.1 Energy Saving Service

To enhance energy efficiency and expand the benefits of our core business functions, UMC has established the "UMC Energy Saving Service Team" with "energy saving and safety" as the core. By stepping out the foundry fabs, the Team allows UMC colleagues to bring their experiences and expertise to bear on diagnosing and improving energy conservation and fire safety for underprivileged social welfare organizations, assisting in building renovation, and enhancing safety and comfort in residential areas, so as to reduce unnecessary energy consumption of these organizations and help them to use their precious resources more effectively.

In addition to calling for the participation of colleagues, UMC also exerts its influence to integrate resources with the parent company as its core platform, in order to promote value chain collaboration, and invite subcontractors and subsidiaries to join the ranks of energy saving services for social welfare organizations, thus creating social value together. This year, the subcontractors such as Xingqiao Engineering, Chengsheng Engineering, Chengtai Piping, Mingyang AC&R, Weichang Safety Engineering, Kaisheng Engineering, Lei Ting Technology, Heyang Engineering have all acknowledged and responded to UMC's initiative by providing not only manpower but also sharing the costs for equipment improvements.

In 2022, the Energy Saving Service Team served 13 organizations, including 10 underprivileged organizations and 3 community units (schools and hospitals), accumulating to a total of 59 units since inception of the Team. A further calculation of the public benefit resulted from the energy saving service in 2022 showed that the relevant staff input and cost brought to underprivileged organizations and community units, such as electricity conservation amounting to NT\$21.37 million, which benefited 12,807 people and reduced CO₂ emissions by 2,719 tonnes.

Looking forward, UMC will continue to evaluate the effectiveness of its social welfare services to enable the participating partners to understand the benefits and actual contributions of energy saving services, and additionally use it as a reference for continuous internal review to help identify more opportunities for social improvement, and make future investment planning and management more efficiently. Apart from that, through the promotion and substantial implementation of energy saving services, UMC aims to promote the exchange of energy saving knowledge and education, introduce green technologies, and enhance the resilience of social welfare organizations to environmental changes, and work together to build.

12,807 beneficiaries from Energy Saving Service

[Video](#)



UMC Turns Packaging Wooden Crates into Reclaimed Furniture – Working with Yu An to Create Exemplar of Charitable Circular Economy

By combining the spirit of circular economy and ESG, UMC donated 28 sets of classroom tables and chairs made with waste timber recycled from its STSP (Southern Taiwan Science Park) plant to Yu An Education and Nursing Home Miaoli. It is hoped that waste can be given new life as demonstrated through this donation in which packaging wooden crates were turned into beautiful and functional reclaimed furniture to create a comfortable and safe learning environment for disadvantaged students. Moreover, this can become an exemplar in combining the practice of circular economy and social charity with enterprise partnership to create a sustainable and mutually beneficial society.

By following the sustainability strategy blueprint formulated by the Company, circular economy strategies have been developed to achieve the goal of "maximization of resource recycling and minimization of waste disposal". In addition to reducing the impact of operations on the environment through source management measures such as process technology improvement, raw material consumption reduction, etc., UMC also makes efforts to extend the life cycle of various resources through waste recycling and reusing to achieve the goals of ecological sustainability and sustainable operations.

The idea of making reclaimed furniture from waste timber was inspired by one of the "Eco Echo Award" partners-Unimicron Technology, which used recycled wooden pallets for another purpose. The waste timber, which originally needed to be disposed of by outsourced contractors, was recycled and reused to make functional and exquisite reclaimed furniture items through the efforts of collaborative manufacturers and skillful carpenters. The packaging wooden crates that offered protection for semiconductor precision equipment have been turned into classroom tables and chairs to protect disadvantaged students' safety during their learning to realize the concepts of circular economy and green sustainability, and to extend the benefits of such practices, thereby achieving a win-win result between economic development and environmental protection.



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UMC Energy Saving Service Team

Hsinchu City

- Hsinchu Church of the Sacred Heart of Jesus
- St. Joseph Social Welfare Foundation
- Renai Children and Youth House
- Jesuit Hsinchu Social Service Center
- Life Line Association
- Ai Heng Social Welfare Foundation
- Intellectual Disability Welfare Association
- Good Shepherd Social Welfare Services
- Saint Joseph Social Welfare Foundation Xi-da Branch
- Miracle Home
- Good Shepherd Faith Home
- St. Joseph Workshop – Sheng-mu Park Area
- Hsinchu Support Center, Taiwan Fund for Children and Families
- National Tsing Hua University
- Chung Hua University
- Children Are Us Foundation - Jianzhong Branch

Hsinchu County

- Shih Guang Educational and Nursing Institution
- Grown-up with Hands Family
- Chengjiheng High School
- Hsih Guang Hospice Care
- St. Joseph Home
- Hsiang Yuan Education and Nursing Institution (Hukou Township/Xinfeng Township)
- Hua Kuang Social Welfare Foundation
- National Hsinchu Special School
- Good Shepherd Dexin Home
- NTUH Hsinchu Branch
- Saint Francis Children-Youth Center

Tainan City

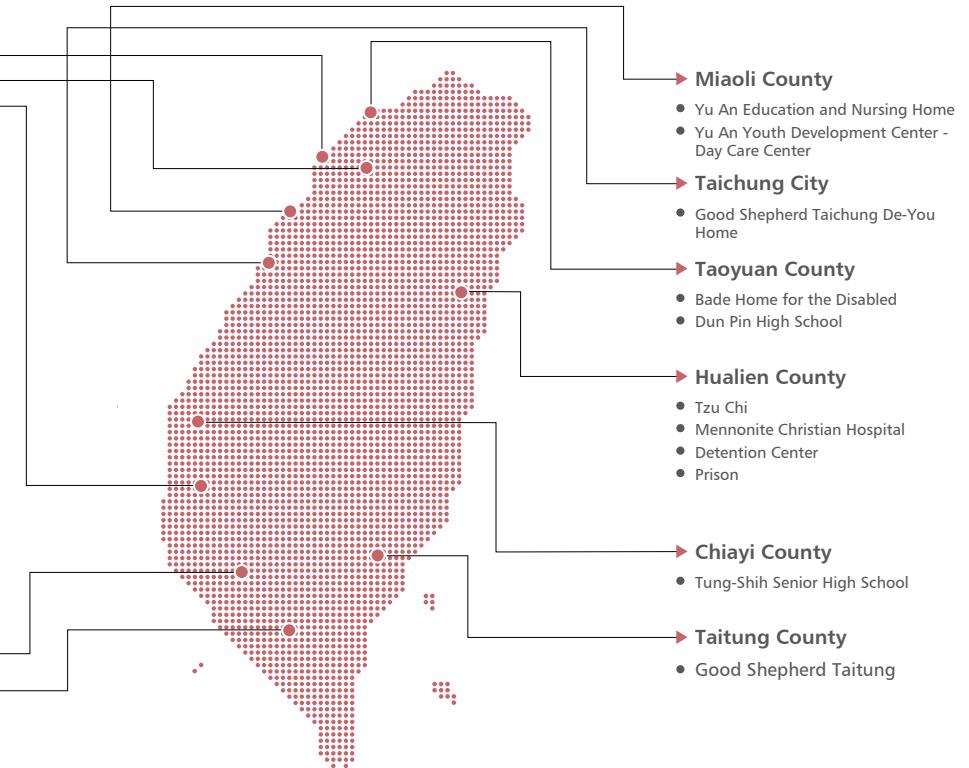
- Nan Jeon University of Science and Technology
- Deuguang Catholic Senior High School
- An-Nan Hospital
- Delan Social Welfare Foundation
- St. Raphael Opportunity Center
- Bethlehem Foundation
- Tainan National University of the Arts
- Kaohsiung Veterans General Hospital Tainan Branch
- Chia Nan University of Pharmacy & Science
- National Cheng Kung University
- Ren-Sing Hospital
- Tainan Babies' Home of Good Shepherd Social Welfare Foundation
- Tainan Municipal Sinhua District Koupi Experimental Elementary School
- Tainan Home of Philanthropy - Herb Garden Nursing Home
- Crowne Plaza Tainan
- A Kernel of Wheat Foundation - Guanmiao Long-term Care Center

Kaohsiung City

- The Southern region office, Prader-Willi Syndrome (PWS) Foundation
- Hope Foundation for Cancer Care - Kaohsiung Branch

Pingtung County

- Yanjou elementary school



2022 Public Benefit Evaluation

Input			Output		
Labor Cost	Construction Cost	Total Cost	Economic Benefits	Environmental and Social Benefits	Total Benefit
Benefit for Underprivileged Organizations					
NT\$ 1,133,750	NT\$ 1,843,517	NT\$ 2,977,267	NT\$ 3,688,918	-467.27 tonnes of CO ₂	NT\$ 3,688,918
Benefit for Community Units					
NT\$ 69,250	NT\$ 0	NT\$ 69,250	NT\$ 17,684,912	-2,252 tonnes of CO ₂	NT\$ 17,684,912

Note: 1. Scope of Statistics: Input and output of all Energy Saving Service Team's service in 2022
2. Labor Cost: Volunteer attendance cost (NT\$500/hour)
3. Construction Cost: Facility and equipment improvement cost invested

4. Economic Benefits: Operating costs that was saved
5. Environmental and Social Benefits: Electricity emission factor of 0.509 kg CO₂/kWh in 2021 was adopted for the calculation of 2021

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► Energy-saving diagnosis and improvement for the Children Are Us Foundation



► Energy-saving diagnosis and improvement for the Tainan Home of Philanthropy - Herb Garden Nursing Home



► Yu An Education and Nursing Home's energy-saving improvement and assistance with fire safety improvement and drills

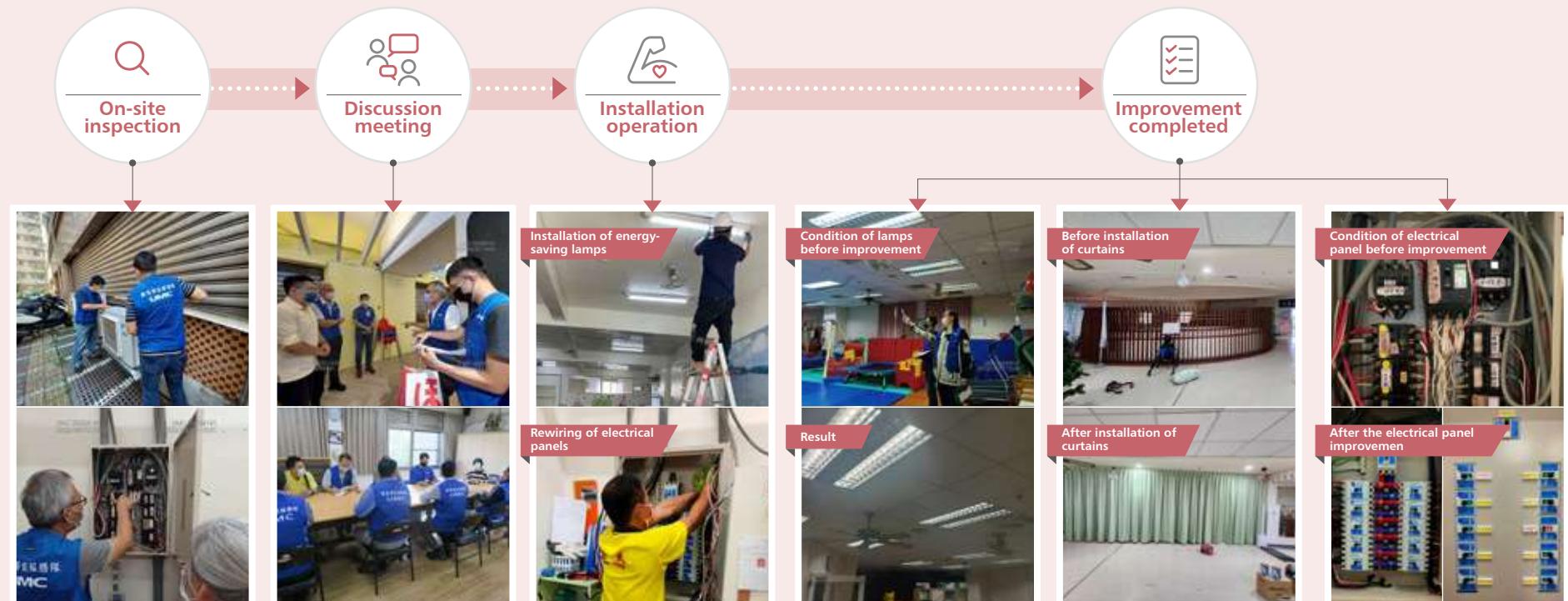


► Energy-saving diagnosis and improvement for the Hope Foundation for Cancer Care - Kaohsiung Branch



► Yu An Youth Development Day Care Center's energy-saving improvement and assistance with fire safety improvement and drills

Energy Saving Service Team Improvement Procedure



► Replacement of all lamps with energy-saving lamps

► Installation of curtains to prevent air conditioning from leaking out through the atrium of the building, reducing unnecessary energy consumption

► After the electrical panel improvement, the wiring is no longer messy. The improvement added clear labels and protective panels to ensure that the wiring is no longer exposed, thus improving safety

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5.3.2 UMC Eco Echo Award Initiative

UMC is well aware of the huge impact it can have on society and the environment before the climate change issue was widely recognized. After completing the first EPA (Environmental Protection Administration)-approved carbon emissions trading in 2014 in Taiwan, UMC donated the trading yield to launch the "Eco echo Ecological Conservation Hope Project" in order to promote environmental and biodiversity conservation, restore species and ecosystems, and enhance the public awareness of environmental protection.

In 2016, the UMC Eco Echo Award was established to solicit high-quality ecological conservation projects. And since the 3rd UMC Eco Echo Award, the total prize money has grown to NT\$3 million per year, making it the highest prize money in the field of ecological conservation initiated by enterprises in Taiwan. Apart from that, in order to stimulate young students' awareness and understanding about protecting the environment and ecology, the "Youth Environmental Action Award" has also been established since the 4th UMC Eco Echo Award, with the aim to encourage young students to turn their enthusiasm and creativity for environmental protection into practical actions and further bring changes to the environment. In response to global attention on climate change and resource shortages, the 7th Eco Echo Awards added the Green Innovation Award. This award encourages start-up teams to propose solutions for net zero/carbon reduction and resource reclamation. Total prizes were raised to NT\$4 million.

In 2022, UMC awarded and supported 4 NGO ecological conservation projects, 10 youth environmental initiatives, and 2 green innovation projects. These ecological conservation actions protect life on land, in the air, and in the water, and reflect the many precious species and rich ecosystems in Taiwan. The winners of the Youth Environmental Initiatives first prize and Yuland Biological Agriculture Co., Ltd. (winner of the Green Innovation Award) both focused on "Reusing Food Waste". The Youth Award winners, students from National Taiwan Ocean University, developed the self-powered Green Future Streetlight. Their design uses electricity obtained from hydrogen generated by food waste, creating green lighting for roads in rural and remote areas. Yuland's project focused on breeding black soldier flies (*Hermetia illucens*) that can convert food waste into animal feed and fertilizers. This project achieves the target of zero waste and helps make sustainable, circular resource management in agriculture and animal husbandry a reality.

In the seven years since the inception of the UMC Eco Echo Awards, 55 ecological conservation and green innovation projects have been implemented across Taiwan. In addition to our own effort, UMC has also linked resources from various parties and combined the power of supply chain partners to realize more outstanding ecological conservation projects. In 2022, UMC joined hands with partners such as 3M Taiwan, Edwards, Tokyo Electron, Hermes-Epitek, Wholotech System, Faraday, Taiyo Nippon Sanso, and Unimicron. UMC expects the UMC Eco Echo Award to achieve the co-prosperity of enterprises and the environment, and to be the powerful guardian of Taiwan's ecological environment.



UMC used carbon trading proceeds to create a special environmental protection fund, and launched the Eco Echo Awards to spur on joint initiatives with business partners.

The Eco Echo Awards encourage ecological conservation groups, start-up teams, and students to commit to environmental protection; benefits are seen all over Taiwan.

Helping ecological conservation groups' efforts get public visibility; stimulating students to pay attention to environmental issues; raising public awareness of environmental protection; creating a better environment in Taiwan.



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The 7th Eco Echo Award Winning Project List



Green Innovation

Circular Island Project: Packaging materials

Implemented by: Package Plus Co., Ltd.
(PackAge+)



Green Innovation

Black soldier flies for food waste disposal

Implemented by: Yuland Biological Agriculture Co., Ltd.



Ecological Conservation / NGO



Revealing the myth of the forgotten secrets of Kinmen's Chinese white dolphins

Implemented by: Taiwan Cetacean Society



Turtle Household Census

Implemented by: TurtleSpot Taiwan



Eliminate invasive ants, protect crabs, and feed pangolins – we're all 'pangolin-it' together!

Implemented by: Formosan Pangolin Conservation Association



A human-bird ark project in response to climate change - Budai Salt Field Wetland Restoration

Implemented by: Kaohsiung Wild Bird Society

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Youth Environmental Action Award



First Prize



Honorable Prize



Honorable Prize



Honorable Prize

HUNGREEN.map Green Food Map



Merit Reward



Merit Reward



Honorable Prize

Taiwan's Tree Lizard Boy



Honorable Prize

**Going 'Tree-Style':
Initiative to protect old trees**



Honorable Prize

**Waste Not? No Waste!
A study of leftover food**

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6th UMC Eco Echo Award-winning Projects Implementation Status

Note: Implemented between January to December, 2022

[UMC Eco Echo Award Official Website](#)



About you and me, guarding the horned owl that hides beside you

Implemented by:
Taipei Outdoors Fun Association



The Association worked with teachers, students, and members of the general public from Qionglin Township who care about ecological conservation to make owl nest boxes. Together, they mounted the hand-crafted boxes in the canopies of trees growing in the Nature Valley Environmental Trust, located in Qionglin Township, Hsinchu County, and trees growing in nearby elementary schools, residential yards, etc. Volunteers will then observe and record the owls' ecological stories.

- ▶ Nest boxes mounted in: 20 locations
- ▶ Nest box observation: About 1,000 to 1,500 video files are recorded per day through surveillance cameras.
- ▶ Volunteer training sessions and lesson plans: Two training sessions for senior high school and college/university student volunteers, and two training sessions for canopy-work volunteers have been held. There are currently six core work-team members and 20 training volunteers working for the project.
- ▶ Sharing workshops: Three survey outcome presentation workshops and one online workshop have been held.

Help marine creatures build a sustainable home

Implemented by:
Taiwan Shanhai Angel Environmental Conservation Association



Doing coral restoration and algae cultivation at Hemei Fishing Port, Gongliao District, New Taipei City. This makes an artificial fishing port into a natural marine ecosystem demonstration site. The project attempts to build up the fundamental habitats of coral and algae, to create homes for benthic creatures that match the characteristics of the restoration area. This will in turn attract higher-level predators, and help create a visible marine micro-ecosystem.

- ▶ Nest boxes mounted in: 20 locations
- ▶ Nest box observation: About 1,000 to 1,500 video files are recorded per day through surveillance cameras.
- ▶ Volunteer training sessions and lesson plans: Two training sessions for senior high school and college/university student volunteers, and two training sessions for canopy-work volunteers have been held. There are currently six core work-team members and 20 training volunteers working for the project.
- ▶ Sharing workshops: Three survey outcome presentation workshops and one online workshop have been held.

Peace of mind to understand the "bee" ~Know the solitary bee ecological education promotion plan

Implemented by:
The Society of Wilderness



This project embraces three dimensions: Observing solitary bees; environmental maintenance; and public promotion. Wild Youluotian, managed by the Society of Wilderness' Hsinchu group, is used as a bee habitat, and volunteers are trained as docents for solitary bee observation. Public exhibitions are also organized to spread knowledge about nature, helping the public to better understand relationships between solitary bees and local ecosystems. This project helps correct people's misconceptions about bees and "bee"-come understanding!

- ▶ Ecological observation of solitary bees and eco-friendly farming: Design and place 'bee hotels' in locations such as vegetable gardens, farms, orchards, etc.
- ▶ "Cultivating Solitary Bee Citizen Scientists" project: 20 people participated.
- ▶ "Bee-coming More Knowledgeable about Bees – Ecological promotion on solitary bees": One exhibition was held.

Raptor poison crisis

Implemented by:
Raptor Research Group of Taiwan



This project monitors raptor poisonings in Taiwan, through injured/sick raptors received by the Raptor Research Group of Taiwan. There are three focuses: Raptor poisoning tests; educational promotion to prevent raptor poisoning; and advocacy to reduce the use of rat poison.

- ▶ Raptor poisoning tests: 81 tests involving heavy metals, pesticides, and rat poison.
- ▶ Raptor pathology examinations: 30 samples were retrieved.
- ▶ Advocacy to prevent raptor poisoning: Includes three popular-science articles, five lectures (with 200 participants), and one special exhibition on the raptor poisoning crisis (with 4 media organizations and 730 visitors).
- ▶ Questionnaire survey to advocate reduced use of rat poisons: 109 questionnaires responded

Hold more umbrellas for Fairy Limbo

Implemented by:
Kaohsiung Wild Bird Society



This project combines culture, education, crafts, and agriculture to promote ecological conservation. It includes summer fun learning for elementary school kids, including indigo dyeing, eco-friendly farming, rope walking, crested floating heart (*Nymphaeoides hydrophylla*) jelly, bonsai, and more. All these experiences enhanced the richness of participants' experiences. During the project year, 19 young birds were saved through conservation. The project also collaborated with farmers to launch the Jacana-friendly Crested Floating Heart product. Sold at a higher-than-wholesale price, this supports both farmers and pheasant-tailed jacanas, creating a win-win outcome.

- ▶ Aquatic plants conservation, seedling-growing, and planting: Protected eight species of aquatic plants.
- ▶ Pheasant-tailed jacana volunteers: 17 newly-recruited volunteers completed training; 9 volunteer empowerment sessions were held; 10 volunteers completed empowerment training.
- ▶ Educational promotion: 43 activities have been held, with 907 participants, including 37 UMC employees.
- ▶ Bird surveys and pheasant-tailed jacana breeding records: 39 records were added to the eBird database.
- ▶ 458 entries related to 164 kinds of animals and plants were added to the iNaturalist system.
- ▶ Working with farmers to do trial sales of the Jacana-friendly Crested Floating Heart product.

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Video



The UMC Science and Culture Foundation was awarded a Team Award in the Ministry of Education 2022 Social Education Contribution Awards.



UMC Love Story Group 2.0 is launching again with a focus on practicing life education through the UN Sustainable Development Goals (SDGs), and incorporating professional performing arts courses. By using drama to convey sustainable concepts, the Group plan to incorporate curatorial volunteers with innovative thinking to maximize their impact.

Seeds of Hope A Diverse Educational Program for Youth Empowerment

Building a Charitable Tutorial Platform

Since 2005, the UMC Science and Culture Foundation (below, the "Foundation") has collaborated with different public welfare organizations in Hsinchu and Tainan to establish tutorial centers. By incorporating local universities' service-learning capacities, students from National Tsing Hua University, National Yang Ming Chiao Tung University, and the National University of Tainan are recruited to work with Company and community volunteers. Together, they serve as tutors and tutorial class assistants to provide services for kids from vulnerable families. The centers provide free tutoring services for students in need, and introduce diverse and life-oriented learning courses. Their efforts are helping to realize the spirit of 12-year Basic Education, and to cultivate students' spontaneous and active learning habits. In addition, we have formed partnerships with university students to provide university students with a space to grow for them to try out different creative ideas and activities.



In recent years, with the deep cultivation of the tutoring center in the local community, it has not only helped students but also become a public charity platform that connects various volunteers to work together. Through the platform, volunteers can share resources and make efficient use of limited resources. In the past two years, the center has collaborated with the Witch's Drama & Magic Story House and the Hsinchu City Women's Theater to lead children in exploring local stories through drama and "Knowing through Walking" activities, developing their humanities and care. The center has also worked with the National Hsinchu Living Arts Center to take students deep into the Jiufen mountain city to learn about the gold-mining history and exchange with local artist, Mr. Ta-Hua Hu, to create a learning experience that combines knowledge and exploration, nourishing children's growth for exploring the world in the future.



Supporting TECO Technology Foundation's "Exclamation Mark" Plan

UMC collaborates with TECO Technology Foundation to support Taitung County Changbin Junior High School's Changbin Amis Traditional Music and Dance Team and Hualien County Gang-kou Primary School's Makotaay Daai Amis Ancient Ballad Team. These groups work to learn and carry on traditional Indigenous songs and dances, and assist schools and Indigenous villages in preserving Indigenous traditional culture. Through these efforts, Indigenous groups can understand their roots and enhance their self-identity.

The 2022 Musical and Dancing Exclamation Mark! – Taiwan Indigenous Music and Dancing Festival was performed at Sun Yat-Sen Memorial Hall, Taitung Art and Culture Center, and Hualien County Cultural Affairs Bureau. There were more than 200 performers from six tradition-inheriting groups. The One Song Orchestra also joined in the performance at Sun Yat-Sen Memorial Hall. Both live performance and livestreaming were provided for audience and online viewers. With the assistance of professional technical teams, 47 pieces of traditional songs, dances, and ritual performance were presented. Through this, Indigenous people's ancient songs gained wider audiences, and can be continued and carried forward.



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Supporting the Nantou Karate Team

Since 2005, the Foundation has been supporting the Nantou Karate Team. The Team is led by instructors Huang Tai-chi and Liao Te-lan; they nurture over 60 children from underprivileged families in Taiwan to practice karate. Students are provided with meals and accommodation to meet their basic needs; students are also encouraged to learn their own strengths through karate. Over the years, former students such as Tseng Li-ju, Teng Shih-yu, Tseng Hui-hsien, and Huang Chen-wei have returned to become the second- and third-generation instructors. These returning former students assist junior team members with routine training and participating in domestic and international competitions. And the Team has had excellent results in these contests! The Team has earned two gold medals in the Asian Games, and one gold medal, two silver medals and one bronze medal in the 2022 Asian Championships. Moreover, nineteen children received the President's Education Award and transformed their lives through karate.



Supporting National Tung-Shih Senior High School Baseball Team

There are about 50 students on the Tung-Shih High School Baseball Team, which is the only youth baseball team in Chiayi County. 2022 was the second year of our five-year cooperation and sponsorship program with Tung-Shih. In addition to supporting the Team with donation of NT\$1 million, the Foundation also organized the "Generation-U" Youth Movement Power Workshop to connect students from Nantou Karate Team and National Tung-Shih Senior High School Baseball Team, cultivating group dynamic strength and self-confidence in students while enhancing their inner and outer qualities.



Supporting the What's Young Association

Since 2011, UMC has been supporting the What's Young Association to organize the "Fancy Years" National Youth Drama Festival. This effort is aimed at conveying concepts of sustainable development through theater; by using drama education and artistic creation, sustainable development may take root in young people's hearts. With years of efforts, six theater groups from different parts of Taiwan have been integrated to collaboratively support high school drama clubs. By guiding high school students to practice self-reflection, and by enhancing their understanding of society through drama creation and theatrical performance, students' creativity, teamwork, and empathy are fostered; and young people are also encouraged to think and learn in different ways.



Promoting Arts Education in Chengjhang High School

It's been more than ten years since the Reading Promotion Club was established at in Chengjhang High School in 2010. Since 2021, UMC has also sponsored the Drama Education Program for At-risk Teens, launched by Studio Q Performance Art Theater and PUMUSIC. Through this, professional education in drama creation, dancing, and performing arts are brought into corrective schools. After the course is finished, there will be a presentation of the results where students will showcase the works they have created based on what they have learned. This will boost the confidence and sense of achievement of young people, and give them the opportunity to explore different aspects of development and stimulation. This will also ignite their interest in different aspects of life and encourage them to re-examine their relationships with themselves, society, family, and peers.

Supporting the Home from Above Association

UMC supports the production plan for the "Listen to Hometown" program initiated by the Home from Above Association. Through the recording of podcasts and YouTube programs, this project promotes ideas of humanities, social care, media literacy, and technology information while also spreading and documenting emotions and identities towards the local land.

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Sponsoring the Taiwan Fund for Children and Families



the "Pushing the Strong to the Front and Supporting the Weak from the Back" Sponsorship Program

For 20 years now, UMC has sponsored a total of 110 foster children. Our aim is, through assistance provided by the association's professional social workers, to alleviate the impact of economic factors on children from underprivileged and vulnerable families. In addition, UMC employees are also engaged to serve as letter-writing volunteers, expressing care for and encouraging foster children through letters and presents. This enables UMC's tech-savvy employees to manifest their kindness and give back to the community. With UMC's "Funding from the Company, Endeavors from the Staff" approach, love and hope can be linked to create very simple, but very real, companionship.

Seeds of Reading



National Reading Culture Promotion

Newspaper Reading Program

UMC sponsors Mandarin Daily News' Newspaper Reading Program to teachers in remote areas who need education resources or promote newspaper-reading education. With the reading resources provided by Mandarin Daily News, students can broaden their perspective, keep up with current events, and develop media literacy from a young age through newspaper reading.

Storytelling Volunteers

UMC encourages employees to serve as Storytelling Volunteers. In 2022, we continued the reading activities at Baoshih Elementary School in Hsinchu County. Baoshih has introduced a new course, "The Collective Memories of the Island", and has introduced the UN Sustainable Development Goals (SDGs) into their campus. By adopting interesting approaches, volunteers lead children to learn about stories of their ancestors, helping them create connections with their families. Children were led to explore their family history in a fun way and build connections with their family. They were also introduced to the SDGs through picture book reading and board games, aiming to raise awareness of sustainability-related issues among children and promote sustainability education.



Seeds of Volunteering



Life Education Promotion

UMC Love story Group

In order to carry on spreading the love of UMC employees after the Eight-Eight Floods (caused by Typhoon Morakot hitting Taiwan) in 2009, the Foundation established the UMC Love Story Group. This Group has already been in existence for 12 years. With a total of 69 performances in 6 counties and cities across Taiwan, it has attracted a cumulative audience of 22,000 people. Through creative storytelling, the Love Story Group connects the love and kindness of UMC employees and conveys the essence of life education to children through innovative dramas. These activities give tech workers an opportunity to stand on stage and express different aspects of themselves. Breaking free of the cold numbers and meter readings in their daily workplace routines, workers can reveal the warmth in their hearts. Our next scripts will convey concepts of sustainability to the public through drama, and for this purpose, workshops will be organized to provide members with a better understanding of the SDGs. In addition, Studio Q Performance Art Theater, led by director Wang Shaudi, will be collaborating to introduce ten performing arts courses, allowing members to express themselves through drama in their off-hours.



Sponsoring IC Radio Broadcasting's Program "All about Rationality"

UMC has long been the exclusive sponsor for the program "All about Rationality", hosted by Prof. Daisy Lan Hung on IC Radio Broadcasting. The program is linked to the Company's platform, enabling UMC employees to acquire new knowledge about education without much effort. Prof. Hung shares her views on parenting education through neuroscience research, and helps the audience build wiser lives. Prof. Hung's program has given full play to the positive influence of media.

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Public Welfare Projects



Item	Method	Content	Achievement
Seeds of Hope A Diverse Educational Program for Youth Empowerment	<ul style="list-style-type: none"> ▶ After-school tutoring and care ▶ Encouraging athletes ▶ Promoting arts, humanities, and cultural education ▶ Supporting popular science education 	<ul style="list-style-type: none"> ▶ Providing after-school tutoring sessions in Hsinchu and Tainan ▶ Sponsoring the Nantou Karate Association ▶ Sponsoring National Tung-Shih Senior High School Baseball Team ▶ Supporting the What's Young Association ▶ Supporting TECO Technology Foundation's "Exclamation Mark!" Plan ▶ Promoting arts education at Chengjihng High School ▶ Supporting the Home from Above Association 	<ul style="list-style-type: none"> ▶ Hsinchu Tutoring Class Volunteer Service: 1,252 person-times; Tainan Tutoring Class Volunteer Service: 2,519 person-times. Total service hours: 18,406 hours. ▶ Sponsorship funding used to provide training and room & board for more than 60 young karate students. ▶ Sponsorship funding used to help train more than 50 baseball players from Tung-Shih Senior High School. ▶ More than 3,000 teenagers inspired since 2011. ▶ Sponsoring two Indigenous schools to learn and carry on traditional Indigenous songs and dances. ▶ Sponsored event: 2022 Musical and Dancing "Exclamation Mark!" – Taiwan Indigenous Music and Dancing Festival. ▶ 40 sessions focusing on motivational dramas, dance creation, etc.; more than 600 participants influenced. ▶ Produced 26 podcast and Youtube video/audio "Listen to Hometown" episodes. ▶ A two-day podcast training session was held, with 30 participants and six different programs produced.
Seeds of Caring "Pushing the Strong to the Front and Supporting the Weak from the Back" Sponsorship Program	<ul style="list-style-type: none"> ▶ Sponsoring public welfare agencies ▶ Volunteering 	<ul style="list-style-type: none"> ▶ Sponsoring the Taiwan Fund for Children and Families and helping foster children ▶ Inviting UMC employees to serve as letter-writing volunteers to provide care and encouragement to foster children. 	<ul style="list-style-type: none"> ▶ Sponsoring the Taiwan Fund for Children and Families – NT\$1.32 million per year for a total of 110 foster children, living in many parts of Taiwan. ▶ 110 families supported with living expenses for 20 years to date. ▶ Correspondence between letter-writing volunteers and school kids in 2022: 244 letters.
Seeds of Reading National Reading Culture Promotion	<ul style="list-style-type: none"> ▶ Promoting a Culture of Reading ▶ Volunteering 	<ul style="list-style-type: none"> ▶ Sponsoring Mandarin Daily News to promote newspaper reading in education ▶ Leading reading activities for Baoshih Elementary School in Hsinchu County 	<ul style="list-style-type: none"> ▶ 2021 academic year: Newspaper reading project implemented in 25 classrooms across 19 elementary schools. ▶ 2022 academic year: Newspaper reading project implemented in 26 classrooms across 18 elementary schools. ▶ No trip was made in the first half of 2022 due to the pandemic, and two trips were made in the second half of the year with 174 person-times students served.
Seeds of Volunteering Life Education Promotion	<ul style="list-style-type: none"> ▶ Script writing for UMC Love Story Group ▶ Organizing volunteer training sessions 	<ul style="list-style-type: none"> ▶ UMC Love Story Group Tour ▶ Story Group performing art training sessions ▶ Deepening group members' understanding of the SDGs ▶ Discussing Story Group scripts ▶ Providing volunteer training sessions for staff and social volunteers ▶ Sponsoring IC Radio Broadcasting's Program "All about Rationality" 	<ul style="list-style-type: none"> ▶ A total of 69 performances have been held since 2010, with total attendance of 22,000. ▶ Inviting Studio Q Performance Art Theater led by director Wang Shaudi to conduct professional performance training sessions to enhance the group members' skills. A total of 10 sessions were held, with 189 person-times participants. ▶ Two workshops totaling six hours, with 36 participants. Deepened group members' understanding of the SDGs. ▶ In 2022, a total of 64 volunteer hours were devoted to new script discussion and writing. ▶ Seven training sessions were held in 2022, with 232 participants, and the total training hours reached 1,583 hours.
Other Charity Sponsorships	<ul style="list-style-type: none"> ▶ Sponsorship of government agencies 	<ul style="list-style-type: none"> ▶ Sponsoring Department of Agriculture, Changhua County Government ▶ Tainan City Government ▶ Hsinchu City Government ▶ Hsinchu County Government 	<ul style="list-style-type: none"> ▶ Donating 4,000 bottles of microbial agents for rice straw decomposition. For more details, please refer to Chapter 3.5 Air Pollution Control.

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2022 Highlights of Foundation Volunteer Activities

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Volunteer Training Course – One-day "I Bow To and Bless You" Cards Workshop

The Foundation offers various types of volunteer training courses every year. This particular workshop was focused on enhancing volunteers' ability to take care of themselves and help others. By learning to use cards to accompany themselves and others, explore their inner selves, and take good care of themselves, volunteers can become powerful guardians and use different media to accompany children. In addition to UMC colleagues, the Foundation also shares resources and invites social workers, junior high school teachers, and other professionals in the children and youth field to participate in the training together, so that after returning to their work or family, participants can use the cards to have conversations with themselves and children. Nearly 50 people participated in the course.



05
MAY
&
07
JUN



Decoding SDGs codes contained in dramas - UMC Love Story Group SDGs Workshops

The UMC Love Storytelling Group's new script incorporates the UN Sustainable Development Goals (SDGs). The Foundation organized two workshops to enable members of the Love Storytelling Group to delve deeper into the 17 SDGs. The program includes the development process of sustainable concepts and discussions on the significance of each SDG to reflect whether the new script aligns with the SDGs, allowing for adjustments and presentation of the script accordingly.



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03
AUG

UMC Sacred Heart Club Tutorial Center's Railway & Train Summer Camp

The UMC Sacred Heart Club Tutorial Center is an important part of UMC's social care service commitment. It also serves as a second home for a group of children after school. Since most of the children come from single-parent, skip-generation, or new immigrant families, and many of them have no experience with mass transit, the Foundation organized a little educational "train trip" in this summer for children to experience the joy of taking a train. Through practical actions, the Foundation educated the children on how to read train schedules and find the right platforms, as well as introduced them to the historical train stations and cultural beliefs of Hsinchu and Miaoli, including Xiangshan railway station, Tanwen railway station, Baishatun Mazu Temple, and more. This helped some members of the "cellphone generation" to realize that there is more to explore in the world beyond their mobile phones.



13
AUG

Volunteer Training Course - "The Collective Memories of the Island" Workshop

The Foundation invited the work team for the "Collective Memories of the Island" workshop to share their series of courses and guide participants to create their own artworks. Instructors began by guiding the participants through the course's philosophy, analyzing the connection and interaction between personal life experiences and society, environment, and culture while listening to the stories behind others' creations. The participants then recalled their experiences with their elders and created unique artworks that belong to them. Although most of the participants expressed that they couldn't draw, their completed works were still full of creativity, stories, and love. This program allowed the participants to enrich their humanistic care while juggling their busy work schedules.



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25
AUG

"Generation-U" Youth Movement Power Workshop

The Foundation has been sponsoring Nantou Karate Association since 2005 and began supporting the National Tung-Shih Senior High School Baseball Team in 2021. In addition to providing financial support, the Foundation hopes to build more connections and care through such sponsorship.

This summer, for the first time, the Foundation has connected athletes through a one-day experiential course led by Mr. Wang Yi-Lang's team to guide self-reflection and assist young athletes from these two organizations to feel the interaction between individuals and teams. The course included various challenges to improve problem-solving skills, enhance social adaptability, and cultivate a spirit of initiative, cooperation, and unity. After the course, participants provided feedback through a feedback form to further reflect on the gains from the course and take action accordingly.



Video



03
SEP



Volunteer Training Course – "The Distance Between Me and Sustainable Development": Integrating SDG issues into daily life

The Foundation worked with the Volunteer Committee of the Allied Association for Science Park Industries (Hsinchu) to run a one-day public charity activity workshop, attracting participants from corporations, universities, and individuals in the community who are interested in this issue to attend the course.. The SDGs-themed workshop helped participants understand the context of the SDGs in depth, through approaches such as dialogue, reading, discussion, etc., and to learn about the efforts different organizations are making to promote sustainability. Participants were encouraged to think about how to practice the SDGs in daily life, so that both adults and children can develop a worldview of sustainability. By doing their part for the Earth's future, they can help the educational SDGs concepts grow in Hsinchu Science Park!

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OCT

Volunteer Training Course – "Self-exploration through Relationships": Gaining heart-nourishing energy from the Satir Growth Model

In October, the Foundation conducted a two-day self-development course led by four professional Satir lecturers. Nearly 30 UMC colleagues, primary/junior high school teachers, university volunteers, and society volunteers participated. Participants were guided to learn about the Satir Growth Model through approaches that included lectures, meditation, exploration, experiencing, practicing, and more. Through the course, the participants learned more about themselves and explored the rich energy and resources each of us holds within ourselves. They also practiced self-affirmation, enhanced their self-worth, and became more flexible and comfortable in interpersonal relationships.



15
SEP

17
DEC



UMC Love Story Group 2.0 Course

To create a new script for UMC's Love Story Group, the Foundation had the honor of collaborating with Studio Q Performance Art Theater led by director Wang Shaudi. They offered ten professional performance art courses to the members of the Group, exploring body awareness, transforming life experiences into performance content, analyzing roles and interpretation, scriptwriting and discussion. The members used their free time after work and weekends to improve their skills and create new scripts together.

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03

DEC

04

DEC

Volunteer Training Course – "Podcast Production Empowerment Workshop"

As information technology and media develop at a rapid pace, public charity activities can also be practiced in more diverse ways! The Foundation collaborated with the Home from Above Association to conduct training sessions for podcast production, from analysis of program genres, to planning, script writing, recording, and editing, as well as running and managing a program. Participants learned how to produce sound media and social media marketing methods. By introducing diverse aspects of social action, participants are able to create their own podcast programs and explore new possibilities in podcasting.



23

DEC



Delivering Christmas Warmth to Yu An

On the day before Christmas, the Foundation and the HSP Drum Team jointly held the "We Invite You to Be Santa" Delivering Christmas Warmth to Yu An activity. Forty presents were purchased according to children's wish lists, and delivered to Yu An Early Intervention Daycare in Miaoli.

On the day of the event, HSP Drum Team gave passionate and energetic Okinawa drum and saxophone performances. This was echoed with folks from Yu An giving a fantastic djembe performance. Children followed the performance and made rhythmic movements with smiles on their faces. It was a warm Christmas full of presents and music.



Find out more
about us:

► The Foundation's
website:



► UMC Sacred Heart Club Tutorial
Center's Facebook page:



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► Blood Donation for Charity

In 2022, a total of 496 colleagues participated and donated 759 bags of blood.

UMC takes practical actions to care for the community and to extend love and life through blood donation activities. Even under the epidemic, UMC still organizes blood donation activities in accordance with the epidemic prevention policy and regulations, and provides employees with the opportunity to participate. 327 employees participated and donated 501 bags of blood in 2022 at the Hsinchu Science Park fabs, and 169 people participated and donated 258 bags of blood at the Southern Taiwan Science Park fabs.



► Experience of Disaster Prevention Sharing for Charity

UMC established a high-tech fire brigade in April 1999, and it is also the only company in the domestic electronics industry that has set up its own "UMC Fire Brigade." In the past 22 years, it has dispatched more than 30 disaster relief activities, supported hundreds of people, and assisted government agencies in carrying out special disaster rescue training for high-tech industries for more than 50 times. By promoting internal and external disaster prevention and rescue education and training, UMC Fire Brigade provides disaster prevention training exchanges between the same industry and different industries, thereby exerting the influence of the upstream and downstream industry chains and enhancing the domestic resilience.



The UMC Fire Brigade is not only responsible for the safety protection of the Company's facilities and emergency rescue tasks, but also continuously strengthens professional disaster relief skills to protect the Company's own safety, and also assists neighboring factories and communities in emergency response. UMC High-Tech Fire Brigade participates in the public safety joint defense mechanism of the Science Parks, and hence established close cooperation with the county and city fire bureaus. Moreover, the Brigade also shares resources with county and city fire bureaus to provide mutual support in local joint defense tasks, through which firefighting and disaster relief capabilities can be enhanced, and more support can be obtained during local disaster rescue to reduce disaster losses.

- ▶ In addition to basic training, UMC Fire Brigade also invites external experts to instruct and provide training on how to deal with solar power and electric vehicle fire accidents to continue upgrading firefighting skills and tactical training.
- ▶ Cooperate with Hsinchu and Southern Taiwan science park administrations, environment protection bureaus and fire bureaus to conduct demonstration and observation training on toxic substance/chemical disasters.
- ▶ Through advocacy by means of delivering speeches in universities, or conducting educational disaster prevention sessions in rural schools and social welfare organizations, etc., correct disaster prevention information and knowledge can be spread, and reminders about unsafe environment on site can be given to raise public consciousness of safety.



For more information,
please refer to



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Appendix 1: GRI Content Index

Statement of Use: United Microelectronics Corporation has reported in accordance with the GRI Standards for the period 2022.1.1-2022.12.31.

► **GRI 1 Used: GRI 1: Foundation 2021** ► **Applicable GRI Sector Standard(s): NA**

GRI 2: General Disclosures 2021	Location	Page	Note/Omission	External Assurance
► 1. The organization and its reporting practices				
2-1 Organizational details	About UMC	6		●
2-2 Entities included in the organization's sustainability reporting	About This Report	5		●
2-3 Reporting period, frequency and contact point	About This Report	5		●
2-4 Restatements of information	About This Report	5		●
2-5 External assurance	About This Report Appendix: External Assurance	5 200		●
► 2. Activities and workers				
2-6 Activities, value chain and other business relationships	About UMC Determination of Material Topics	6 15		●
2-7 Employees	4.2.1 Human Resource Development	133		●
2-8 Workers who are not employees	4.2.1 Human Resource Development 1.3.1 Localization of Supply Chain and Procurement	133 57		●
► 3. Governance				
2-9 Governance structure and composition	1.1.1 Board of Directors Operation 1.1.2 Sustainable Governance	32 37		●
2-10 Nomination and selection of the highest governance body	1.1.1 Board of Directors Operation	32		●
2-11 Chair of the highest governance body	1.1.1 Board of Directors Operation	33		●
2-12 Role of the highest governance body in overseeing the management of impacts	1.1.1 Board of Directors Operation 1.1.2 Sustainable Governance	34 37		●
2-13 Delegation of responsibility for managing impacts	1.1.2 Sustainable Governance	37		●
2-14 Role of the highest governance body in sustainability reporting	About This Report Determination of Material Topics	5 16		●
2-15 Conflicts of interest	1.1.1 Board of Directors Operation	35		●
2-16 Communication of critical concerns	1.1.2 Sustainable Governance	37		●
2-17 Collective knowledge of the highest governance body	1.1.1 Board of Directors Operation	33		●
2-18 Evaluation of the performance of the highest governance body	1.1.1 Board of Directors Operation	34		●
2-19 Remuneration policies	1.1.1 Board of Directors Operation	35-36		●
2-20 Process to determine remuneration	1.1.1 Board of Directors Operation	35-36		●
2-21 Annual total compensation ratio	1.1.1 Board of Directors Operation	36		●

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GRI 2: General Disclosures 2021	Location	Page	Note/Omission	External Assurance
► 4. Strategy, policies and practices				
2-22 Statement on sustainable development strategy	Message from the ESG Steering Committee Chairmen Sustainability Strategy and Blueprint	3 11		●
2-23 Policy commitments	4.1.1 Enforce Human Rights Management	121		●
2-24 Embedding policy commitments	4.1.1 Enforce Human Rights Management	121		●
2-25 Processes to remediate negative impacts	4.1.1 Enforce Human Rights Management	121		●
2-26 Mechanisms for seeking advice and raising concerns	4.1.1 Enforce Human Rights Management	121		●
2-27 Compliance with laws and regulations	1.1.4 Legal Compliance	39	No non-compliance with environmental, economic or social laws and regulations occurred during the reporting period.	●
2-28 Membership associations	About UMC	9		●
► 5. Stakeholder engagement				
2-29 Approach to stakeholder engagement	Determination of Material Topics	15		●
2-30 Collective bargaining agreements	4.1.2 Employer-employee Communication	126	Employees of UMC have the right to form associations freely. However, no employee labor union was formed before the end of the reporting period. As a result, there is no employees signed any collective agreement.	●
GRI 3: Material Topics 2021	Location	Page	Note/Omission	External Assurance
3-1 Process to determine material topics	Determination of Material Topics	15		●
3-2 List of material topics	Determination of Material Topics	17		●
List of Material Topics	Location	Page	Note/Omission	External Assurance
► Procurement and Supplier Management				
GRI 3: Material Topics 2021				
3-3 Management of material topics	1.3 Building Sustainable Supply Chain	56		●
GRI 204: Procurement Practices 2016				
204-1 Proportion of spending on local suppliers	1.3.1 Localization of Supply Chain and Procurement	57		●
GRI 308: Supplier Environmental Assessment 2016				
308-1 New suppliers that were screened using environmental criteria	1.3.2 Sustainable Supply Chain Management	60		●
308-2 Negative environmental impacts in the supply chain and actions taken	1.3.2 Sustainable Supply Chain Management	60		●
GRI 414: Supplier Social Assessment 2016				
414-1 New suppliers that were screened using social criteria	1.3.2 Sustainable Supply Chain Management	60		●
414-2 Negative social impacts in the supply chain and actions taken	1.3.2 Sustainable Supply Chain Management	60		●
GRI 3: Material Topics 2021				
3-3 Management of material topics	2.2 Customer Satisfaction	76		●
UMC Specific Topic: Customer Service Quality				
Ratio of satisfied customers	2.2.1 Strengthen Customer Communication	76		●

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List of Material Topics	Location	Page	Note/Omission	External Assurance
► Innovation Management and Intellectual Property Rights Protection				
GRI 3: Material Topics 2021				
3-3 Management of material topics	2.1 Innovation & Technology Development	68		●
UMC Specific Topic - Innovation Management and Intellectual Property Rights Protection				
R&D and patent deployment for new product, technology, and process optimization; employees must respect the company's patents and intellectual property rights.	2.1 Innovation & Technology Development 1.1.4 Legal Compliance	68 39		●
► Product Liability and Lifecycle Assessment				
GRI 3: Material Topics 2021				
3-3 Management of material topics	2.3 Product Responsibility	80		●
UMC Specific Topic - Product Liability and Lifecycle Assessment				
No customer complaints, product scrap and recalls due to violations of hazardous substance management	2.3 Product Responsibility	80		●
► Climate Strategy and Action				
GRI 3: Material Topics 2021				
3-3 Management of material topics	3.1 Climate Action 1.2.5 Managing Climate Risks and Opportunities	90 52		●
GRI 305: Emissions 2016				
305-1 Direct (Scope 1) GHG emissions	3.1.1 GHG Emissions Management	91	1. Gases included in the calculation: CO ₂ , CH ₄ , N ₂ O, HFCs, SF ₆ , and NF ₃ 2. There are no emissions of CO ₂ from the combustion or biodegradation of biomass in 2022.	●
305-2 Energy indirect (Scope 2) GHG emissions	3.1.1 GHG Emissions Management	91		●
305-3 Other indirect (Scope 3) GHG emissions	3.1.1 GHG Emissions Management	92		●
305-4 GHG emissions intensity	3.1.1 GHG Emissions Management	91		●
305-5 Reduction of GHG emissions	3.1.2 GHG Emissions Reduction	93		●
► Energy Management				
GRI 3: Material Topics 2021				
3-3 Management of material topics	3.2 Energy Management	95		●
GRI 302: Energy 2016				
302-1 Energy consumption within the organization	3.2.1 Energy Mix	96		●
302-3 Energy intensity	3.2.1 Energy Mix	96		●
302-4 Reduction of energy consumption	3.2.2 Energy Efficiency Improvement	98		●

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List of Material Topics	Location	Page	Note/Omission	External Assurance
► Water and Wastewater Management				
GRI 3: Material Topics 2021				
3-3 Management of material topics	3.3 Water Resources Management	99		●
GRI 303: Water and Effluents 2018				
303-1 Interactions with water as a shared resource	3.3.1 Water Structure 3.3.3 Water Pollution Control	102 106		●
303-2 Interactions with water as a shared resource	3.3.3 Water Pollution Control	105		●
303-3 Water withdrawal	3.3.1 Water Structure	107		●
303-4 Water discharge	3.3.1 Water Structure	107		●
303-5 Water consumption	3.3.1 Water Structure	107		●
► Waste and Resource Utilization Efficiency				
GRI 3: Material Topics 2021				
3-3 Management of material topics	3.4 Waste Management	109		●
GRI 306: Waste 2020				
306-1 Waste generation and significant waste-related impacts	3.4 Waste Management	109		●
306-2 Management of significant waste-related impacts	3.4.2 Source Reduction 3.4.3 Circular Economy Promotion 3.4.4 Contractor Management	111 112 114		●
306-3 Waste generated	3.4.1 Waste Output Structure	110		●
306-4 Waste diverted from disposal	3.4.1 Waste Output Structure	110		●
306-5 Waste directed to disposal	3.4.1 Waste Output Structure	110		●
► Talent Attraction and Retention				
GRI 3: Material Topics 2021				
3-3 Management of material topics	4.2 Diversity, Equity and Inclusion in the Workplace	131		●
GRI 401: Employment 2016				
401-1 New employee hires and employee turnover	4.2.1 Human Resource Development	134 & 137		●
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	4.2.2 Compensation and Benefits	139		●
401-3 Parental leave	4.2.1 Human Resource Development	138		●
► Employee Diversity and Inclusiveness				
GRI 3: Material Topics 2021				
3-3 Management of material topics	4.2 Diversity, Equity and Inclusion in the Workplace	130		●
GRI 405: Diversity and Equal Opportunity 2016				
405-2 Ratio of basic salary and remuneration of women to men	4.2.2 Compensation and Benefits	139		●

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List of Material Topics	Location	Page	Note/Omission	External Assurance
► Employee Safety and Health				
GRI 3: Material Topics 2021				
3-3 Management of material topics	4.3 Protecting the Employees and the Work Environment	149		●
GRI 403: Occupational Health and Safety 2018				
403-1 Occupational health and safety management system	4.3.2 Maintain Workplace Safety	155		●
403-2 Hazard identification, risk assessment, and incident investigation	4.3.2 Maintain Workplace Safety	155		●
403-3 Occupational health services	4.3.1 Creating a Reassuring Workplace	151		●
403-4 Worker participation, consultation, and communication on occupational health and safety	4.3.2 Maintain Workplace Safety	156		●
403-5 Worker training on occupational health and safety	4.3.2 Maintain Workplace Safety	156		●
403-6 Promotion of worker health	4.3.1 Creating a Reassuring Workplace	151		●
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	4.3 Protecting the Employees and the Work Environment	149		●
403-8 Workers covered by an occupational health and safety management system	4.3.2 Maintain Workplace Safety	155		●
403-9 Work-related injuries	4.3.2 Maintain Workplace Safety	156		●
403-10 Work-related injuries	4.3 Protecting the Employees and the Work Environment	149	There is no case of legally defined occupational disease during the reporting period. For the number of cases of mental and physical heath related problems in employees, please refer to Chapter 4.3	●
► Human Rights				
GRI 3: Material Topics 2021				
3-3 Management of material topics	4.1 Respect for Human Rights	120		●
GRI 406: Non-discrimination 2016				
406-1 Incidents of discrimination and corrective actions taken	4.1 Respect for Human Rights	129		●
GRI 407: Freedom of Association and Collective Bargaining 2016s				
407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	4.1 Respect for Human Rights	123		●
GRI 408: Child Labor 2016				
408-1 Operations and suppliers at significant risk for incidents of child labor	4.1 Respect for Human Rights 1.3.1 Localization of Supply Chain and Procurement	121 57		●
GRI 409: Forced or Compulsory Labor 2016				
409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	4.1 Respect for Human Rights 1.3.1 Localization of Supply Chain and Procurement	121 57		●

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Appendix 2: SASB Index - Semiconductors Sustainability Accounting Standard 2018

Scope of the following statistic data: UMC

Topic/Code	Accounting Metric	Category	Location	Page	2022 Performance Summary	External Assurance
Greenhouse Gas Emissions TC-SC-110a.1	(1) Gross global Scope 1 emissions (2) Amount of total emissions from perfluorinated compounds ⁶	Quantitative	3.1.1 GHG Emissions Management 3.1.2 GHG Emissions Reduction	91 93	(1) Amount of total Scope 1 direct emissions: 591,781 tonnes CO ₂ e. (2) Amount of total F-GHGs (Fluorinated greenhouse gas) emissions: 495,353 tonnes CO ₂ e.	●
Greenhouse Gas Emissions 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	3.1.2 GHG Emissions Reduction	93	UMC Scope 1 emissions is mainly due to the F-GHGs used in the manufacturing process. Over the years, UMC has promoted reduction measures including source reduction with gas replacement, and the installation of high efficiency local scrubbers. UMC has set goals for 2025 including 65% reduction of F-GHG emissions per unit product (base year 2010) to ensure UMC is in line with Global GHG reduction trend.	●
Energy Management in Manufacturing TC-SC-130a.1	(1) Total energy consumed (2) Percentage grid electricity (3) Percentage renewable energy ⁷	Quantitative	3.2.1 Energy Mix	96	(1) Total energy consumption: 2,961,341 MWh (1.0660827x10 ⁷ GJ) (2) Total electricity consumption: 2,764,640 MWh (9.952704 x10 ⁶ GJ) (3) Total renewable energy consumption: 4,175 MWh (Ratio of renewable energy used <1%)	●
Water Management TC-SC-140a.1	(1) Total water withdrawal (2) Total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	3.3.1 Water Structure	100	(1) Total water withdrawal: 17,410 thousand cubic meters. And the total water withdrawal of UMC Group was 27,520 thousand cubic meters. The subsidiary HJ is located at Suzhou identified as water-stress area by WRI. The water withdrawal of HJ was accounted for 8.5% of the Group. (2) Total water consumption: 5,935 thousand cubic meters. And the total water consumption of UMC Group was 7,204 thousand cubic meters. The water consumption of HJ was accounted for 3.9% of the Group.	●
Waste Management TC-SC-150a.1	Amount of hazardous waste from manufacturing, percentage recycled	Quantitative	3.4.1 Waste Output Structure	110	UMC's total hazardous waste output in 2022 was 31,242 tonnes, accounting for 60.1% of total waste output. The percentage of hazardous waste recycled was 91.7%.	●
Employee Health & Safety TC-SC-320a.1	Description of efforts to assess, monitor, and reduce exposure of employees to human health hazards	Discussion and Analysis	4.3.2 Maintain Workplace Safety	155	UMC performs hazard identification and risk assessment for routine and non-routine operations, including: 1. Workplace Hazard Assessment; 2. Safety and health risk assessment for manufacturing processes and activities; 3. Risk identification for engineering by FMEA.	●
Employee Health & Safety TC-SC-320a.2	Total amount of monetary losses as a result of legal proceedings associated with employee health and safety violations	Quantitative	1.1.4 Legal Compliance	39	There were no incidents of such violations in 2022 and the total related monetary loss was NT\$0.	●

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Topic/Code	Accounting Metric	Category	Location	Page	2022 Performance Summary	External Assurance
Recruiting & Managing a Global & Skilled Workforce TC-SC-330a.1	Percentage of employees that are (1) Foreign nationals (2) Located offshore	Quantitative	4.2.1 Human Resource Development	135	The demographic data is based on the statistics of Taiwan, Singapore, China and Japan. In addition, it also demonstrates the percentage of local employees in each country and region as follows: 92.9% for Taiwan (including its subsidiary Wavetek); 25.0% for Singapore; 95.2% for its Chinese subsidiaries HJ and USCXM; and 97.5% for its Japanese subsidiary USJC.	●
Product Lifecycle Management TC-SC-410a.1	Percentage of products by revenue that contain IEC 62474 declarable substances	Quantitative	2.3.1 Hazardous Substance Management	82	The percentage of materials not complying with IEC62474 is 0%, based on the calculation of total product sales. Thus, UMC fully complies with the requirements of international regulations as stipulated in the IEC62474 Declarable Substance List.	●
Product Lifecycle Management TC-SC-410a.2	Processor energy efficiency at a systemlevel for: (1) servers, (2) desktops, and (3) laptops	Quantitative	—	—	UMC is not an end product manufacturer, and thus there is 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	1.3 Building Sustainable Supply Chain	65	UMC does not use huge amounts of conflict minerals in its products manufacturing, and performs conflict minerals due diligence in its supply chain to ensure that 100% of the products do not use minerals from conflict areas.	●
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	1.1.3 Integrity Management	38	There were no incidents of such violations in 2022 and the total related monetary loss was NT\$0.	●
Activity Metrics TC-SC-000.A	Total production	Quantitative	About UMC	6	In 2022, UMC Group manufactured and integrated approximately 9.945 million pieces of 8-inch equivalent wafers.	●
Activity Metrics TC-SC-000.B	Percentage of production from owned facilities	Quantitative	About UMC	6	In 2022, 100% of UMC's production came from its own fabs.	●

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Appendix 3: TCFD Disclosure Comparison Table

Dimension/Recommended Disclosures	Reference	Page
► Governance		
The board's oversight of climate-related risks and opportunities.	1.1.1 Board of Directors Operation 1.2.5 Managing Climate Risks and Opportunities	34 52
Management's role in assessing and managing climate-related risks and opportunities.	1.1.2 Sustainable Governance 1.2.1 Risk Management System 1.2.5 Managing Climate Risks and Opportunities	37 42 52
► Strategy		
The climate-related risks and opportunities the organization has identified over the short, medium, and long term.	1.2.5 Managing Climate Risks and Opportunities	52
The impact of climate related risks and opportunities on the organization's businesses, strategy, and financial planning.	1.2.5 Managing Climate Risks and Opportunities	52
The resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	1.2.5 Managing Climate Risks and Opportunities	52
► Risk Management		
The organization's processes for identifying and assessing climate-related risks.	1.2.5 Managing Climate Risks and Opportunities	52
The organization's processes for managing climate-related risks.	1.2.1 Risk Management System 1.2.3 Improving Operational Risk Management 1.2.5 Managing Climate Risks and Opportunities	42 48 52
How processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	1.2.1 Risk Management System 1.2.3 Improving Operational Risk Management 1.2.5 Managing Climate Risks and Opportunities	42 48 52
► Metrics and Targets		
Metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process.	1.2.5 Managing Climate Risks and Opportunities 3.1 Climate Action	52 90
Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	1.2.5 Managing Climate Risks and Opportunities 3.1.1 GHG Emissions Management	52 91
Targets used by the organization to manage climate-related risks and opportunities and performance against targets.	1.1.2 Sustainable Governance 1.2.5 Managing Climate Risks and Opportunities 2.1 Innovation & Technology Development 2.1.1 Robust Wafer Manufacturing Services 3.1 Climate Action 3.1.2 GHG Emissions Reduction 3.2 Energy Management 3.2.1 Energy Mix 3.3 Water Resources Management 3.3.1 Water Structure	37 52 68 69 90 93 95 96 99 100

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Appendix 4: United Nation Global Compact Index

10 Principles	Location	Page
► Human Rights		
Businesses should support and respect the protection of internationally proclaimed human rights.	4.1.1 Enforce Human Rights Management	121
Make sure that they are not complicit in human rights abuses.	1.3.2 Sustainable Supply Chain Management 4.1.1 Enforce Human Rights Management	59 121
► Labor		
Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	4.1.2 Employer-employee Communication	125
The elimination of all forms of forced and compulsory labor.	4.1.1 Enforce Human Rights Management	121
The effective abolition of child labor.	4.1.1 Enforce Human Rights Management	121
The elimination of discrimination in respect of employment and occupation.	4.1.1 Enforce Human Rights Management	121
► Environment		
Businesses should support a precautionary approach to environmental challenges.	Chapter 3 Implementing Green Operations	86
Undertake initiatives to promote greater environmental responsibility.	Chapter 3 Implementing Green Operations	86
Encourage the development and diffusion of environmentally friendly technologies.	2.1 Innovation & Technology Development 2.3 Product Responsibility	68 80
► Anti-Corruption		
Businesses should work against corruption in all its forms, including extortion and bribery.	1.1.3 Integrity Management	38

Appendix 5: ISO 26000 Index

Core Subjects and Issues	Location	Page
► Organizational Governance		
Decision-making processes and structures	1.1 Excelling Corporate Governance	32
► Human Rights		
Due diligence	1.3.2 Sustainable Supply Chain Management 4.1.1 Enforce Human Rights Management	59 121
Human rights risk situations	1.3.2 Sustainable Supply Chain Management 4.1.1 Enforce Human Rights Management	59 121
Avoidance of complicity	1.1 Excelling Corporate Governance 4.1.1 Enforce Human Rights Management	32 121
Resolving grievances	4.1.1 Enforce Human Rights Management 4.1.2 Employer-employee Communication	121 125
Discrimination and vulnerable groups	4.1.1 Enforce Human Rights Management 5.4 Commitments to Social Welfare	121 176
Civil and political rights	4.1.1 Enforce Human Rights Management	121
Economic, social and cultural rights	5.1 Promote Common-Prosperity Society	162
Fundamental principles and rights at work	4.1.1 Enforce Human Rights Management	121
► Labor practices		
Employment and employment relationships	4.2 Diversity, Equity and Inclusion in the Workplace 4.1.2 Employer-employee Communication	130 125
Conditions of work and social protection	4.1.1 Enforce Human Rights Management 4.3 Protecting the Employees and the Work Environment	121 149
Social dialogue	Determination of Material Topics 4.1.2 Employer-employee Communication	15 125
Health and safety at work	4.3 Protecting the Employees and the Work Environment	149

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Scope of the following statistic data: UMC

Indicator	Unit	2019	2020	2021	2022	Remarks	
► Governance & Economic							
Total board size	seat	9	8	9	9		
Composition of the board of directors	Independent directors	seat	4	4	5	5	
	Other non-executive directors	seat	2	1	1	1	
Female director	Executive directors	seat	3	3	3	3	
	Seat	seat	1	1	2	2	
Average attendance rate of Board meeting	%	11.1	12.5	22.2	22.2		
	%	100.0	97.2	98.7	100.0		
Ratio of satisfied customers	%	NA	87	89	91	Ratio of satisfied customers is conducted by third-party agencies since 2021.	
Product Recalls	number	0	0	0	0		
R&D Expense	Amount	10 million NT\$	972	954	1,002	1,024	
	Percentage of operation income	%	7.9	7.1	6.3	4.9	
Revenue from sustainable products of total revenue	%	NA	66.9	68.7	74.9	74.9% of total revenue derived from sustainable products in 2022, with 68.5% from low power consumption, low leakage, and power management products, 8.8% from automotive chips which used in advanced driver assistance systems (ADAS) and powertrain, etc., and 7.8% from microcontroller unit (MCU) and epidemic prevention & medical related products.	
Accumulated granted patents worldwide	number	13,507	13,991	14,423	14,771		
► Environment							
GHG	F-GHG emission per unit product (wafer weight)	Kg F-GHGs/tonne	146	143	133	107	Since ISO 14064-1:2018 standards have been adopted for GHG inventory and third-party verification, the data of previous years was different from what was disclosed last year.
	Direct greenhouse gas emissions (Scope 1)	tCO ₂ e	701,267	765,218	712,639	591,781	
	Indirect greenhouse gas emissions (Scope 2)	tCO ₂ e	1,317,572	1,286,601	1,298,439	1,373,914	
	GHG Emissions per unit product (Scope 1 & 2)	tCO ₂ e/wafer-m ²	9.27	8.27	7.38	7.91	
Others indirect greenhouse gas emissions (Scope 3)	tCO ₂ e	2,159,255	2,318,460	2,834,727	2,064,284	Calculated Categories of Scope 3 include Purchased goods and services, Fuel-and-energy-related activities, Upstream transportation and distribution, Waste generated in operations, Business travel, Employee commuting, Downstream transportation and distribution, Downstream leased assets, Investments of subsidiaries, Capital assets. The calculation in accordance with ISO 14064-1: 2018.	

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Indicator		Unit	2019	2020	2021	2022	Remarks
Energy	Total energy consumption (including renewable energy)	MWh	2,725,644	2,782,754	2,835,163	2,961,341	Excluding the United Tower office building and the Nitrogen Field in Taiwan.
	Total non-renewable energy consumption	MWh	2,724,951	2,782,105	2,833,017	2,957,166	
	Total renewable energy consumption	MWh	693	649	2,146	4,175	
Water	Total water withdrawal	1,000 m ³	15,637	16,200	16,213	17,410	
	Total water discharge	1,000 m ³	10,788	10,914	10,676	11,475	
	Total water consumption	1,000 m ³	4,849	5,286	5,537	5,935	
	Third-party water: Municipal Water	1,000 m ³	11,567	12,232	12,024	13,053	
	Third-party water: Reclaimed Water	1,000 m ³	3,242	3,263	3,324	3,566	
	Condensate water and rainwater	1,000 m ³	828	705	733	791	
	Surface freshwater/underground water/ salt water	1,000 m ³	0	0	132	0	The groundwater withdrawal in 2021 indicated the groundwater supply (withdrawn from renewable groundwater formations) by water tankers activated for Hsinchu plant to cope with a severe drought in 2021.
	Total water withdrawal from third party	1,000 m ³	14,809	15,495	15,348	16,619	Including municipal water and reclaimed water
	Percentage of water withdrawal from alternative water sources	%	26%	24%	25%	25%	Including reclaimed water, condensate water and rainwater
	Water withdrawal per unit product	m ³ /wafer-m ²	79.18	73.34	66.54	70.08	
General Waste	Water consumption per unit product	m ³ /wafer-m ²	24.55	23.93	22.72	23.89	
	Manufacturing-process recycling rate	%	82.7	81.4	81.9	82.8	All fabs' manufacturing-process water withdrawal ÷ UMC's total manufacturing process water withdrawal) x Sum of all fabs' manufacturing-process water recycling rate
	Ultra-pure water usage	1,000 m ³	17,400	18,204	18,538	19,529	
	Chemical oxygen demand (COD)	1,000 tonnes	1.50	1.42	1.34	1.60	
	Total waste recycled/ reused	tonne	6,032	7,641	8,557	10,387	
	Total waste disposed	tonne	1,924	1,955	1,887	1,881	
	Waste landfilled	tonne	1,447	1,429	1,280	1,179	
	Waste incinerated with energy recovery	tonne	302	382	376	390	
	Waste incinerated without energy recovery	tonne	175	144	231	312	
	Waste otherwise disposed	tonne	0	0	0	0	Including solidification, and chemical treatment
Hazardous Waste	Total hazardous waste recycled/reused	tonne	18,250	19,813	21,976	22,560	
	Total hazardous waste disposed	tonne	2,775	2,846	3,116	2,586	
	Hazardous waste landfilled	tonne	0	0	0	0	
	Hazardous waste incinerated with energy recovery	tonne	1,652	1,915	2,153	1,620	
	Hazardous waste incinerated without energy recovery	tonne	482	276	298	328	
	Hazardous waste otherwise disposed	tonne	641	654	664	638	Including solidification, and chemical treatment

Note: The calculation of waste related statistic above is based on the definition of Dow Jones Sustainability Index (DJSI). Liquid waste and waste recycled inside the fab are excluded from general waste. And waste recycled inside the fab are also excluded from hazardous waste.

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	Indicator	Unit	2019	2020	2021	2022	Remarks
	Direct VOC emissions	tonne	43.36	41.37	35.65	29.01	Measurement of VOC emission: For fabs in Taiwan, emission is the daily volume monitored by continuous emission monitoring system multiplied by the number of days in year 2022. For 12i in Singapore, is the emissions monitored in December 2021 multiplied with the number of days in the year 2021.
Costs and Benefits	Amount of fines related to environmental violations	million NT\$	0	0	0	0	0 environmental violation and fine in all years.
	Cost saving	million NT\$	449	469	477	226	Cost saving mainly calculates the benefits generated through the implementation of management measures for water, electricity, waste, and GHGs.
	Capital investments	million NT\$	434	554	1,670	2,920	
	Operating expenses	million NT\$	1,225	1,193	1,463	1,688	
► Social							
Human Resource Development	Hiring rate	%	4.4	8.4	15.9	16.2	Total number of employees who resigned ÷ the average number of existing employees
	Total employee turnover rate	%	8.7	7.8	10.5	9.4	Total number of employees who resigned ÷ the average number of existing employees
	Voluntary employee turnover rate	%	8.6	7.6	10.4	9.3	
	Internal transfer rate	%	83.0	56.7	57.9	58.6	Number of internal transfers ÷ number of job vacancies
	Female top management position rate	%	9.6	10.7	9.1	11.0	Including two levels away from the President (Senior FAB/Division Director and above).
	Average amount spent per FTE on training and development	NT\$	2,958	3,110	2,882	3,743	FTE: Full-Time Equivalents
	Average hours per FTE of training and development	hour	22.9	21.4	20.5	26.9	
Employee Health & Safety	No. of people with disabling injuries	person	8	4	11	13	
	People with disabling injuries rate	%	0.05	0.02	0.06	0.09	No. of people with disabling injuries ÷ total employees
	Total amount of charitable donations	million NT\$	146.96	161.94	241.17	103.96	

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Appendix 7: TWSE-required Disclosure of Indicators

According to TWSE's "Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies", relevant tables have been disclosed belows.

1. Disclosure of sustainability indicators as required by Appendix 1-8 under Article 4 of the Rules – Semiconductor Industry

Scope of the following statistic data: UMC

Item	Accounting Metric	Category	2022 Performance Summary	Unit
1	Total energy consumption, percentage of purchased electricity, and percentage of renewable energy usage	Quantitative	1. Total energy consumption: 1.0660827×10^7 GJ 2. Percentage of purchased electricity: 93.36% 3. Percentage of renewable energy usage: 0.14%; while percentage of UMC Group is 5%	Billion joules (GJ), Percentage (%)
2	Total water withdrawal and total water consumption	Quantitative	1. Total water withdrawal: 17,410 thousand cubic meters 2. Total water consumption: 5,935 thousand cubic meters	Thousand cubic meters (m^3)
3	The weight of hazardous waste output, and the percentage of recycling	Quantitative	1. Total hazardous waste output: 31,242 metric tons 2. The hazardous waste recycling rate: 91.7%	Metric ton (t), Percentage (%)
4	Explain the occupational accident categories, number of people with disabling injuries, and relevant percentages	Quantitative	1. In 2022, there were four minor or above accidents reported. The four accidents can be categorized: walking injury: 2, heavy object crush injury: 1, chemical exposure injury: 1. 2. No. of people with disabling injuries: 13 3. People with disabling injuries rate: 0.09%	Percentage (%), Quantity
5	Disclosure of product life cycle management: Including weight of scrap products and electronic waste, and percentage of recycling	Quantitative	1. Weight of scrap products and electronic waste: 48.27 metric tons 2. Percentage of recycling: 100% Note: Including the scraps and scrapped chips reused by outsourced manufacturers	Metric ton (t), Percentage (%)
6	Description of the risk management associated with the use of key materials	Discussion and Analysis	The Company completed its "Supply Chain Risk Database" and the management system of earthquake spare parts (quartz, fragile parts) for over 2,000 key raw materials supplied by approximately 100 vendors. In addition, 95% of UMC's 8-inch fabs and 99% of 12-inch fabs have completed earthquake spare parts preparation. 261 major suppliers of raw materials completed risk assessment surveys, all of which met UMC's requirements.	Not applicable
7	Total amount of monetary losses as a result of legal proceedings associated with anticompetitive behavior regulations	Quantitative	There were no incidents of such violations in 2022 and the total related monetary loss was NT\$0.	Currency
8	Total production	Quantitative	In 2022, UMC Group manufactured and integrated approximately 9.945 million pieces of 8-inch equivalent wafers.	-

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2. Greenhouse Gas Inventory and Assurance Results

Basic company information	The following shall be disclosed in accordance with the Sustainable Development Guidemap for TWSE and TPEx Listed Companies:
<input checked="" type="checkbox"/> Companies with a capital amount of NT\$10 billion or more, steel industry, cement industry	<input checked="" type="checkbox"/> Parent-company-only inventory <input type="checkbox"/> Subsidiary inventory with a consolidated financial report
<input type="checkbox"/> Companies with a capital amount of NT\$5 billion or more, but less than NT\$10 billion	<input type="checkbox"/> Parent-company-only assurance <input type="checkbox"/> Subsidiary assurance with a consolidated financial report
<input type="checkbox"/> Companies with a capital amount of less than NT\$5 billion	

UMC GHG Emissions in 2022

Scope 1	Total Emissions (tonnes CO ² e)	Intensity (tonnes CO ₂ e/million NT\$)	Assurance Body	Assurance Results
Parent company	591,781	2.82	DNV	
Subsidiary	274,203	3.92	SGS / DNV (Note 3)	The Scope 1 emission is free from material discrepancies in accordance with the verification criteria of ISO14064-1:2018.
Total	865,984	3.09	—	

Scope 2	Total Emissions (tonnes CO ² e)	Intensity (tonnes CO ₂ e/million NT\$)	Assurance Body	Assurance Results
Parent company	1,373,914	6.54	DNV	
Subsidiary	383,919	5.49	SGS / DNV (Note 3)	The Scope 2 emission is free from material discrepancies in accordance with the verification criteria of ISO14064-1:2018.
Total	1,757,833	6.28	—	

Scope 3	For details of scope 3 emissions, please refer to Chapter 3.1 Climate Action
---------	--

Note: 1. According to the regulations of Sustainable Development Roadmap for TWSE/TPEx Listed Company, UMC shall at least disclose the parent company's inventory information this year, and UMC discloses the inventory and assurance information of the parent company and four subsidiaries base on the current operating status.

2. The statistics of subsidiaries covers HJ, USCXM, Wavetek and USJC.

3. The assurance body of HJ and USCXM is SGS-CSTC Standards Technical Services Co., Ltd.; Wavetek and USJC are issued by DNV Business Assurance Co., Ltd..

4. For details of the verification statement please refer to the Company's official website: https://www.umc.com/en/Download/awards_and_certificates

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Third Party Assurance Statement



Independent Assurance Statement

Scope and Approach

United Microelectronics Corp. ("UMC" or "the Company") commissioned **DNV Business Assurance Co., Ltd.** ("DNV" or "we") to undertake independent assurance over the 2022 Sustainability Report ("the Report") for the year ended 31 December 2022.

We performed our work using DNV's assurance methodology VeriSustain™, which is based on our professional experience and international assurance best practices, including International Standard on Assurance Engagements 3000 (ISAE 3000) and the Global Reporting Initiative (GRI) Sustainability Reporting Standards.

The Report also incorporated the relevant sustainability reporting guidelines, such as Sustainability Accounting Standards Board (SASB) Sustainability Accounting Standard for the Semiconductors Sustainability Accounting Standard 2018 and Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

We understand that the reported financial data and information are based on the data from UMC's Annual Report and Accounts, which are subject to a separate independent audit process. The review of financial data taken from the Annual Report and Accounts is not within the scope of our work. In addition, the greenhouse gas emissions data from the results of a separate independent verification has been checked during the current assurance engagement.

We planned and performed our work to obtain the evidence we considered necessary to provide a basis for our assurance opinion. We are providing the evaluation of reporting principles with a reasonable level of assurance, according to the DNV VeriSustain™ Protocol and High level, Type II assurance according to AA1000 AS v3.

Responsibilities of the Directors of UMC and of the Assurance Providers

The Directors of UMC have sole responsibility for the preparation of the Report. In performing our assurance work, our responsibility is to the management of UMC; however, our statement represents our independent opinion and is intended to inform all of UMC's stakeholders. DNV was not involved in the preparation of any statements or data included in the Report except for this Assurance Statement.

We have performed assurance work, and we have no other contractual relationship with UMC that constitutes a conflict of interest with the current assurance engagement, neither to providing the assurance of environmental and / social data for the company which has been assured.

DNV's assurance engagements are based on the assumption that the data and information provided by the client to us as part of our review have been provided in good faith. DNV expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Assurance Statement.

Basis of Our Opinion

A multi-disciplinary team of sustainability and assurance specialists performed work at UMC's HQ and the site level. We undertook the following activities:

- Review of the current sustainability issues that could affect UMC and are of interest to stakeholders.
- Review of UMC's approach to stakeholder engagement and recent outputs.
- Review of information provided to us by UMC on its reporting and management processes relating to the Principles.
- Interviews with selected senior managers responsible for the management of sustainability issues and review of selected evidence to support the issues discussed.
- Site visits to the UMC's HQ in Hsinchu City and data checks with UMC's Taiwan Fab in Hsinchu and Tainan, Singapore Fab, China Fab in Suzhou and Xiamen, and Japan Fab in Mei to review processes and systems for preparing site-level sustainability data and the implementation of sustainability strategies.
- Review of supporting evidence for key claims and 2022 data in the Report, as reported information beyond 2022 is not within the scope of the current engagement. Our checking processes were prioritised according to materiality, and we based our prioritisation on the materiality of issues at the consolidated corporate level.
- Review of the processes for gathering and consolidating the specified performance data and, for a sample, checking the data consolidation. Where financial data had been checked by another third party, we tested the transposition from these sources to the Report.

¹ The VeriSustain™ Protocol is available on dnv.com



Opinion

- An independent assessment of UMC's reporting against the Global Reporting Initiative (GRI) Sustainability Reporting Standards.
- The verification was conducted based only on the Chinese version Report.

Observations

Without affecting our assurance opinion, we also provide the following observations.

- The process to determine and organize the Company's sustainability issues and the decision on material topics established; Continue reviewing these issues, developing measurable and longer-term objectives to facilitate continual impact assessment and informed improvement are recommended.

Stakeholder Inclusiveness

The Company has identified the expectations of stakeholders through internal mechanisms in dialogue with different groups of stakeholders. The stakeholder concerns are well identified and documented. The significant sustainability issues identified through this process are reflected in the Report.

Sustainability Context

The Report provides an accurate and fair representation of the level of implementation of related corporate sustainability policies and meets the content requirements of the GRI Standards.

Materiality

The process developed internally has been verified and it was not missed out any significant, known material issues, and these issues are fairly covered in the Report. A methodology has been developed to evaluate the priority of these issues.

Completeness

The Report covers performance data against the GRI Standards core indicators that are material within the Company's reporting boundary. The information in the Report includes the Company's most significant initiatives or events that occurred in the reporting period.

Accuracy and Reliability

The Company has developed the data flow for capturing and reporting its sustainability performance. In accordance with Moderate level assurance requirements, we conclude that no systematic errors were detected which causes us to believe that the specified sustainability data and information presented in the Report are not reliable.

Impact

The Company presents the impacts related to its identified material topics by measuring and monitoring impacts through appropriate performance metrics demonstrating outcomes and outputs of its value creation processes. Nothing has come to our attention to suggest that the Report does not meet the requirements related to the Principle of Impact.

For and on behalf of DNV Taiwan

Date: 16 June, 2023

Nasa Chen

Lead Verifier

Business Assurance

DNV Taiwan

Statement Number: CS91791-2022-AG-TWN-DNV

David Hsieh

District Manager,

Business Assurance

DNV Taiwan



United Microelectronics Corporation

www.umc.com

2022 UMC Sustainability Report

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