

UMC



2021
UMC
Sustainability
Report

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

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

Subscribe to the UMC ESG Newsletter for more information
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Message from the ESG Steering Committee Chairman

To those who are concerned about sustainability at UMC:

People around the world are learning to adapt to a new normal shaped by the COVID-19 pandemic, while geopolitical tensions and extreme weather events have added to the complexity of business operations. Despite the challenges, UMC demonstrated resilience and achieved outstanding results, which was made possible by the dedication of every member of our global team. 2021 revenue reached NT\$213 billion while profit hit a record high of NT\$55.78 billion. Return on shareholders' equity grew to 21.59%. UMC was also ranked no. 1 among semiconductor peers in the 2021 Dow Jones Sustainability Indices (DJSI), recognizing our longstanding commitment to sustainability as a key operating principle.

In the past year, the ESG Steering Committee confirmed our 2030 Sustainability Strategy Blueprint, which will guide us to deepen ESG work in all aspects. In terms of corporate governance, UMC is one of the few listed companies that has been ranked in the top 5% in the Corporate Governance Evaluation conducted by the Taiwan Stock Exchange and Taipei Exchange every year since 2015. Our Board of Directors also recently passed a proposal to link employee rewards and remuneration with ESG performance. On environmental sustainability, we have achieved 100% of the 2021 targets in our "Green 2025" initiative for energy and water conservation, waste reduction, and fluorinated greenhouse gas reduction. Affirming our commitment, UMC gained membership in the global renewable energy initiative RE100, and formally pledged to reach net-zero emissions by 2050. For our employees, we continue to enhance benefits and strive to provide a safe, healthy, and friendly workplace. Last but not least, we contribute to the well-being of our communities and offer assistance for the disadvantaged through the UMC Foundation and volunteer programs. More details can be find in this report.

Semiconductors are indispensable in modern life, and essential in making various applications and products more energy efficient. As a leading foundry player, UMC plays a crucial role in the global economic development and the transformation to a low-carbon future. In the face of a rapidly changing environment, we will continue to prioritize resources on ESG, and demonstrate our commitment to global sustainable development. Together with value chain partners, we strive to fulfil our responsibilities as global corporate citizens, pursue business growth while advancing ESG, and contribute to the positive development of the environment, society, and economy.

We would like to express sincere gratitude to all of you who are concerned about sustainable development, and wish you all peace and good health.



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

About This Report

This report is the 17th report that discloses United Microelectronics Corporation (hereinafter referred to as UMC or the Company)’s status about corporate sustainable development and the 22th consecutive public non-financial annual report. Based on principles of integrity, transparency, and sustainable development, UMC discloses the progress of the Company’s corporate sustainability implementation in 2021 to all stakeholders in this report. UMC consistently upholds the principles of sincerity, pragmatism, transparency and joint sustainable development, sharing its corporate sustainable development among economy, social and environment (ESG) through this report with all stakeholders.

Reporting Scope and Boundary

This report is based on the performance of UMC Taiwan and Singapore. The information presented is for the period January 1 to December 31, 2021, and major events up until March 31, 2022 are also disclosed in this report. In 2021, the wafer fabrication and integration division accounted for the majority (more than 99%) of total sales of the UMC Group. Therefore, in addition to UMC, this report also discloses the information of subsidiaries for material topics. The subsidiaries are Hejian Technology (Suzhou) Co., Ltd. (hereinafter referred to as HJ), United Semiconductor (Xiamen) Co., Ltd. (hereinafter referred to as USCXM), Wavetek Microelectronics Corporation (hereinafter referred to as Wavetek), and United Semiconductor Japan Co., Ltd. (hereinafter referred to as USJC). The reporting content and the scope of data references is as the same as in the 2020 CSR Report. If the coverage of each chapter differs, it will be specifically noted in the text of the report.

For the economic performance and financial information of other related joint ventures and subsidiaries, please refer to the Company’s 2021 Annual Report on page 139 for the organization information of the related party.

Reporting Guidelines and Principles

The framework and content of this report is based on the Global Reporting Initiative (GRI) Sustainability Reporting Standards, disclosing the goals, policies, commitments, and measures of material topics.

This report also referenced the following international standards and guidelines ► Third Party Certification

GRI Standards: 2016, Global Reporting Initiative (GRI)

AA1000 Assurance Standard v3

Semiconductors Sustainability Accounting Standard 2018, Sustainability Accounting Standards Board (SASB)

Task Force on Climate-related Financial Disclosures (TCFD)

Data from the annual financial report prepared by certified accountants (Ernst & Young Accounting) are used in this report, and data on greenhouse gas emission and reduction are based on ISO 14064-1:2006 standards and verified by DNV GL Business Assurance Co. Ltd. Taiwan. For further details, please refer to Chapter 3.

Internal Process and Issuance of the Report

After obtaining approval from top managers of relevant departments, this report is sent to the Corporate Sustainability Committee Office for inspection and review. The report is issued after approval from the chairman of the ESG Steering Committee.



- 2020 Corporate Social Responsibility Report: Issued in July 2021.
- 2021 Sustainability Report: Issued in June 2022.
- 2022 Sustainability Report: Scheduled to be issued in June 2023. In support of environmental protection, a paperless, electronic version of this report is posted on the Company website.

Report Assurance

This report has been prepared in accordance with the GRI Standards: Comprehensive option. This report was also verified by SGS Taiwan Ltd. in April 2022 according to the AA1000 Assurance Standard (2008) TYPE II, High level assurance. The SGS ASSURANCE STATEMENT is attached in the appendix of this Report.

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

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About UMC

United Microelectronics Corporation (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-in fabs, seven 8-in fabs and one 6-in fab, in production with combined capacity over 800,000 wafers per month (8-in equivalent). Most of UMC's wafer fabs with its core R&D are located in Hsinchu Science Park and Southern Science Park in Taiwan, with additional ones throughout Asia. Fab 12 in Tainan is currently manufacturing products down to 14nm. UMC 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 build a competitive advantage in today's rapidly changing industry.

Company Name	United Microelectronics Corporation
Date Founded	May, 1980
Company Headquarter	No. 3, Li Hsin 2nd Road, Hsinchu Science Park
Number of Employees	More than 20,000 employees, including those in worldwide affiliated companies
Total Capital Amount	Total capital of NT\$260 billion Paid-in capital amounted to NT\$124.82 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 etc.
Affiliated Businesses	Affiliated business operations including wafer manufacturing, electronics, optoelectronics, investment, insurance and trading.
Consolidated Operating Revenues and Operating Costs	Annual revenue was NT\$213 billion; annual operating costs was NT\$ 141 billion in 2021.

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Global Presence



○ 7 Regional Offices

● 12 Wafer Fabs

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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 maintain politically neutrality does not engage in political activities such as elections or political contributions.

Association Involvement

Name of Organization	2018	2019	2020	2021	Unit: NT\$
Allied Association for Science Parks Industries (ASIP)	1,026,000	1,008,000	954,000	1,008,000	
Taiwan Semiconductor Industry Association (TSIA)	900,000	900,000	900,000	900,000	
Semiconductor Equipment and Materials International (SEMI)	677,776	526,118	668,709	633,490	
Responsible Minerals Initiative	453,263	228,900	270,806	260,457	
RE100	-	-	-	151,679	
Taiwan IC Industry & Academia Research Alliance(TIARA)	100,000	100,000	-	100,000	
CommonWealth Sustainability League	-	-	-	95,238	
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	
Total Amount	3,279,039	2,885,018	2,970,545	3,275,879	

The Cost of Associations Participation

Category	2018	2019	2020	2021	Unit: NT\$
Trade association	3,279,039	2,885,018	2,970,545	3,275,879	
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	3,279,039	2,885,018	2,970,545	3,275,879	

Note: the statistic cover UMC Taiwan and Singapore

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UMC Sustainable Performance Highlights

Important Achievements and Sustainable Performances in 2021

Operation Management



91.1%
Profit growth year-on-year

Profit attributable to the shareholders of the parent company surged to NT\$55.78 billion and revenue for the year rose 20.5% year-on-year to NT\$213 billion, with a full-year EPS of NT\$4.57.

>50%
Non-executive directors

There are 5 independent directors and 1 independent outside director. The percentage of non-executive directors exceeds 50% of the total seats.

Social Participation



100%
Overall utilization rate exceeded

Shipped a total of 9.86 million 8-inch equivalent wafers, up 10.6% from a year earlier.

100%
of new suppliers have complied
the Supplier Code of Conduct

100% of new suppliers complied the "Employee Business Ethics Clause" and the "Supplier Code of Conduct," bringing the total number of suppliers that have complied the agreements to more than 3,500.

14,423
granted patents

Granted 432 domestic and foreign patents, bringing the total number of patents worldwide to 14,423.

26,661
beneficiaries from volunteer service

UMC employee social clubs held 80 volunteer events, serving a total of 26,661 beneficiaries.

10 groups benefited from
energy saving services

UMC volunteers provided energy saving services to 10 organizations, helping them save NT\$4.61 million in utility bills and reducing 879.3 tons of CO₂ emissions as a result.

Environmental Endeavors



100%
of 2021 goals in the Green
2025 Plan achieved

100% of the energy saving, water conservation, waste reduction, and carbon reduction goals for 2021 were achieved.

66,156
MWh of energy savings

The company-wide energy savings amounted to 66,156 MWh, effectively reducing CO₂ emissions by 31,920 tons.



39 projects supported by the
UMC Eco Echo Award

The UMC Eco Echo Award, which provides NT\$3 million annually to support ecological conservation projects, selected 9 prize winners in 2021, bringing the cumulative number of supported projects in Taiwan to 39.

>90%
waste reuse rate

40,942 metric tons of waste was reused, equal to a reuse rate of over 90%, and the economic benefit from waste recycling of waste was approximately NT\$40 million.

917,000
tons of F-GHGs emissions
reduction

The company-wide reduction of fluorinated greenhouse gas (F-GHGs) emissions reached 917,000 tons, and the emission intensity was reduced by 63% compared with the base year (2010).

330,000
tons of water conserved

The total amount of water saved company-wide is 330,000 tons, effectively reducing costs by NT\$8.04 million.

5,081
participants in the Prospective
Talent Program

The Prospective Talent Program (PTP) continued to cultivate outstanding talents in the semiconductor industry and has recruited cumulative 5,081 members as of end 2021, of which 387 are still completing their studies.

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Sustainability Recognition



Dow Jones Sustainability Indices

Selected for the Dow Jones Sustainability Indices (DJSI)'s World Index, marking the company's 14th consecutive year of inclusion and was also named a constituent of the Emerging Markets Index in 2021.

Gold Class in S&P Global Sustainability Yearbook

Once again selected for the Gold Class Award among over 7,500 companies across 61 industries globally considered for the Yearbook.

MSCI ESG Rating

A level rating in MSCI ESG Rating, while also selected as a component in the MSCI ACWI ESG Leaders Index and Emerging Markets ESG Leaders Index.

FTSE4Good TIP Taiwan ESG Index

Since the launch of the FTSE4Good TIP Taiwan ESG Index in 2017, UMC has been listed as one of the index constituents every year.

ISS ESG Corporate Rating

Rated "Prime" by ISS (Institutional Shareholder Services) ESG Corporate Rating for 5th consecutive years.



International CDP Organization Scoring

Achieved Leadership Level (A List) in the "Water Security Disclosure Project" the Management Level in the "Climate Change Disclosure Project", and the Leadership Level in the "Supplier Engagement Rating".

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 14th consecutive years, and was awarded the highest Platinum award for the 4th time.

Corporate Governance Accreditation

Ranked in the top 5% of companies for the 7th consecutive year in the Corporate Governance Evaluation conducted by the Taiwan Stock Exchange and Taipei Exchange, one of ten listed companies that have received this recognition every year since the evaluation was launched.

Excellence in Corporate Social Responsibility

Ranked top ten in the large enterprise category by CommonWealth Magazine, a prominent media publication in Taiwan. UMC scored in the top five for "Corporate Commitment" "Environmental Sustainability".

National Enterprise Environmental Protection Award

Fab 8F and Fab 8S were awarded the 3rd National Enterprise Environmental Protection Award. UMC has been awarded a total of 27 honors over the last 19th consecutive years.

Note: National Enterprise Environmental Protection Award, formerly known as the Republic of China Enterprise Environmental Protection Award, has held a total of 27 editions. It was renamed the National Enterprise Environmental Protection Award in 2019.

Note: Statistic to March 2022

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Major Capital Investments and Outputs

UMC refers to the disclosure framework of the International Integrated Reporting Council (IIRC) and describes the Company's operational investments and outputs based on the six capitals.

Operational Resources	Capital Investments in 2021			Corresponding Sustainable Outputs in 2021
	Category	The Meaning of Each Capital to UMC	Key Investment Projects	
Hardware Resources				
		<p>▶ Total assets of NT\$377.5 billion</p> <p>▶ Fabs with a production capacity of more than 750,000 pieces of 8-inch equivalent wafers per month (+)</p> <p>▶ Capacity utilization rate: 96.9%</p>	<p>Through operations and investments, the Company's daily operations, production and services are maintained.</p> <p>Financial structure strengthening, cost-competitive capacity expansion, and product portfolio adjustment.</p>	
		<p>▶ 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.</p>	<p>Capital expenditures of approximately US\$1.8 billion were mainly invested in capacity expansion of Southern Taiwan Science Park Fab 12A and its subsidiaries, USCXM as well as product portfolio optimization for each fab.</p>	
		<p>▶ By providing a good and positive workplace environment along with proper training, employees' knowledge, experience, expertise, productivity and loyalty can be enhanced.</p>	<p>Promoted Holistic Health Management Program and health promotion activities.</p> <p>▶ Education and training costs amounted to NT\$42.12 million.</p> <p>▶ Salary and welfare expenses amounted to NT\$30.49 billion.</p>	
Software Resources				
		<p>▶ 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.</p>	<p>The overall number of patents granted has been growing steadily, with emphasis on patent portfolio to protect intellectual property rights of its technologies.</p> <p>▶ Invested NT\$10 billion in R&D.</p>	
		<p>▶ Natural resource base, including minerals, water and various raw materials.</p>	<p>Promoted Green 2025 Action Plan to save water and electricity, and reduce waste and F-GHGs emissions.</p> <p>▶ Environmental protection-related capital expenditures totaled over NT\$3.55 billion.</p> <p>▶ Green procurement amounted to NT\$138 million.</p>	
		<p>▶ The sum of resources or capabilities connected through social networks, including the maintenance of long-term partnerships with value chain partners and other stakeholders.</p>	<p>Cooperated with upstream and downstream supply chain partners to promote Eco Echo Award, UMC Energy Saving Service Team, and Circular Economy Program, with social investment of over NT\$5 million.</p> <p>▶ Promoted volunteer services and Sowing Seeds of Hope Program, with a total of 6,781.8 hours spent in providing public services.</p>	

ESG

Special Feature

Environmental Sustainability

30 Years of Commitment: UMC's Blueprint for Net-Zero Emissions by 2050

Our Commitment ►

- UMC led the global semiconductor foundry industry in committing to **net-zero emissions** by 2050.
- UMC became the second semiconductor foundry to join RE100, the global corporate renewable energy initiative, pledging to transition to **100% renewable energy** by 2050.

Frequent disasters caused by extreme weather events such as floods and droughts in recent years have highlighted climate change's intensifying impact. In fact, "climate action failure" was named the number one risk in the Risks Perception Survey of the 2022 Global Risks Report. These signals have repeatedly reminded governments, businesses, and the private sector that climate action is urgent and must be prioritized. To demonstrate UMC's determination to take concrete climate action, the Company announced in June 2021 its commitment to reach net-zero emissions by 2050.

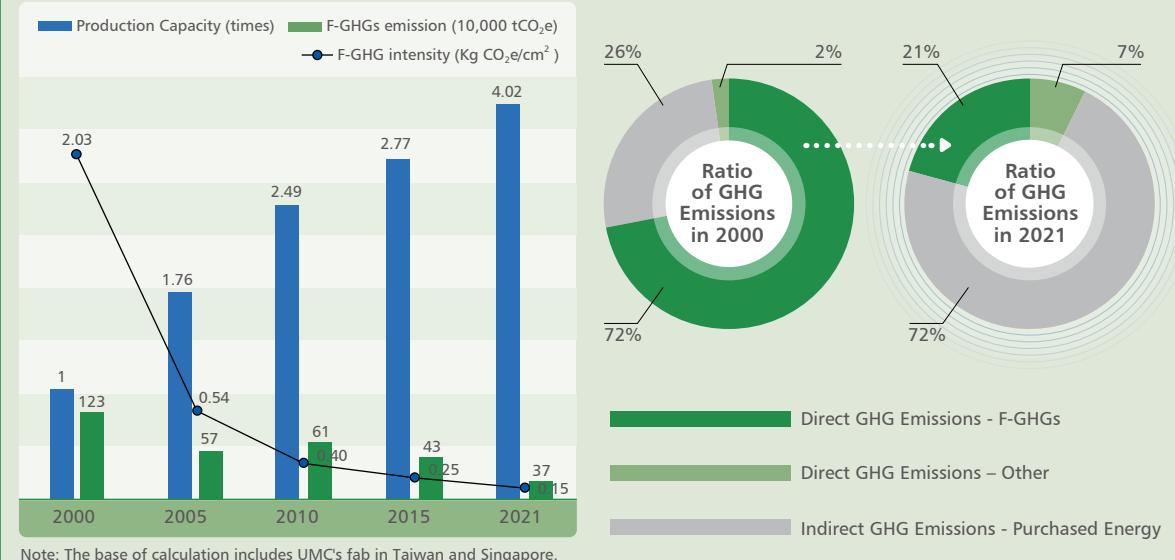
UMC has been actively taking steps to cut emissions since 1999. As a pioneer in carbon reduction among Taiwanese companies, the Company established the Fluorinated Greenhouse Gas Reduction Taskforce to oversee actions to reduce fluorinated greenhouse gases (F-GHGs), the largest source of emissions in semiconductor manufacturing, and has implemented several green initiatives, including the "333 Reduction Plan (2010~2012)", the "369⁺ Reduction Plan (2013~2020)" and the "Green 2025 Reduction Plan (2021~2025)". Tackling emissions at the source through gas replacements, combined with process optimization as well as the installation of high-efficiency F-GHGs abatement system, UMC is able to reduce direct GHG emissions from its processes. By implementing these measures, the emission of F-GHGs is no longer positively correlated with the production capacity: although production capacity has increased by 4 times between 2000 and 2021, F-GHG emissions from UMC's operations in 2021 fell by 69.8% compared to the emissions in 2000. The F-GHGs replacement strategy adopted by UMC was a breakthrough in carbon reduction actions for the industry, and served as a valuable model for peers.

Plans for the reduction of F-GHGs at each stage

Phase 1	Phase 2	Phase 3	Phase 4
1998 Comply with TSIA initiatives	2010 UMC's voluntary reduction plan	2012 Surpass WSC reduction objectives	2020 Green 2025
► Decrease total annual F-GHGs emissions in Taiwan fabs by 0.216 MMTCE	► Compared to 2009, reduce F-GHGs emissions per unit of wafer area by 33% in 2012.	► Compared to 2010, reduce F-GHGs emissions per unit of wafer area by 36% in 2020	► Compared to 2010, reduce F-GHGs emissions per unit of wafer area by 65% in 2025
			► 50% absolute reduction of F-GHG emissions compared to 2010

Reverse the Past, Change the Future

- Changes in the ratio of F-GHG emissions to production capacity
- F-GHG emissions: declined by **69.8%** compared to year 2000.
- F-GHG emission intensity: declined by **92.6%** compared to year 2000.



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Net-Zero Commitment and Actions for a Better Future

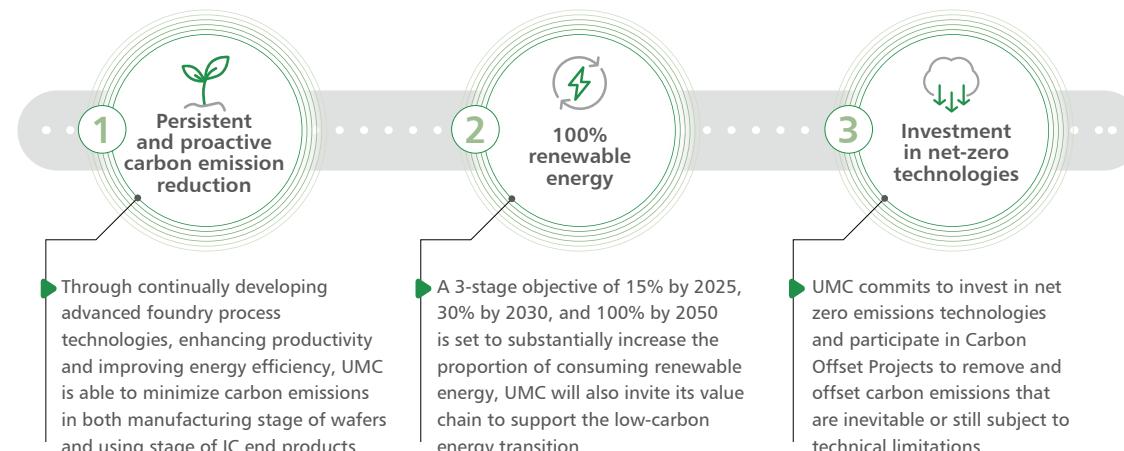
2021 was a year of frequent extreme weather events, and also marked the 20th year of UMC's climate actions. In response to the Paris Agreement goal of limiting global warming to 1.5°C, UMC led semiconductor foundries globally to make a commitment for the next 30 years – to achieve net-zero emissions by 2050.

► "Climate change is the single biggest threat to our planet's sustainability. Despite the COVID-19 pandemic, we still make efforts to fight climate change, which is why we are able to unveil our pledge to achieve net-zero emissions by 2050 just ahead of World Environment Day on June 5. As a global citizen, we are doing our part to build sustainable living for mankind."

SC Chien, UMC Co-president and Chief Sustainability Officer (CSO)

In addition to reduction of direct emissions from operating activities, UMC is also focused on reducing indirect emissions from purchased electricity, which accounts for the highest percentage of the Company's overall emissions. As part of that effort, UMC became a member of RE100, the global renewable energy initiative, demonstrating its commitment to increase usage of renewable energy and reducing the amount of indirect emissions. The Company also participates in the Science Based Targets Initiative (SBTi) to evaluate carbon reduction strategies with a science-based approach.

UMC's 3 Resolutions to Achieve Net Zero



Building a Low-Carbon Value Chain

Climate action is a long battle. Besides voluntary carbon reduction, UMC aims to work together with customers, suppliers, and other partners in the value chain to harness the ubiquitous influence of technology and tackle climate change together.

As a trusted foundry partner, UMC invests in the R&D of low-power components and various energy management chips, as well as the production of automotive chips to meet the needs of the electric vehicle market. The Company's products are used in applications to enable end devices of greater efficiency, which contributes to low-carbon world.

UMC proposed the "Triple R League" initiative in 2017, which attracted 39 suppliers and reduced carbon emissions by 409,000 tons over three years. More than 500 suppliers, including Applied Materials, Tokyo Electron (TEL), and Photronics DNP Semiconductor Mask (PDMC) have expressed support for UMC's commitment to achieving net-zero and building a low-carbon supply chain. The Company aims to reduce carbon emissions by 20% and increase renewables to 20% of total energy consumption in 2030 in its supply chain.

Looking ahead, UMC will prepare to respond to new climate policies around the world, including the European Green Deal, the Carbon Border Adjustment Mechanism (CBAM), and Taiwan's draft Climate Change Adaption Act. At the same time, carbon reduction will remain a priority and the Company will act on its commitment to fulfill its next-zero pledge.

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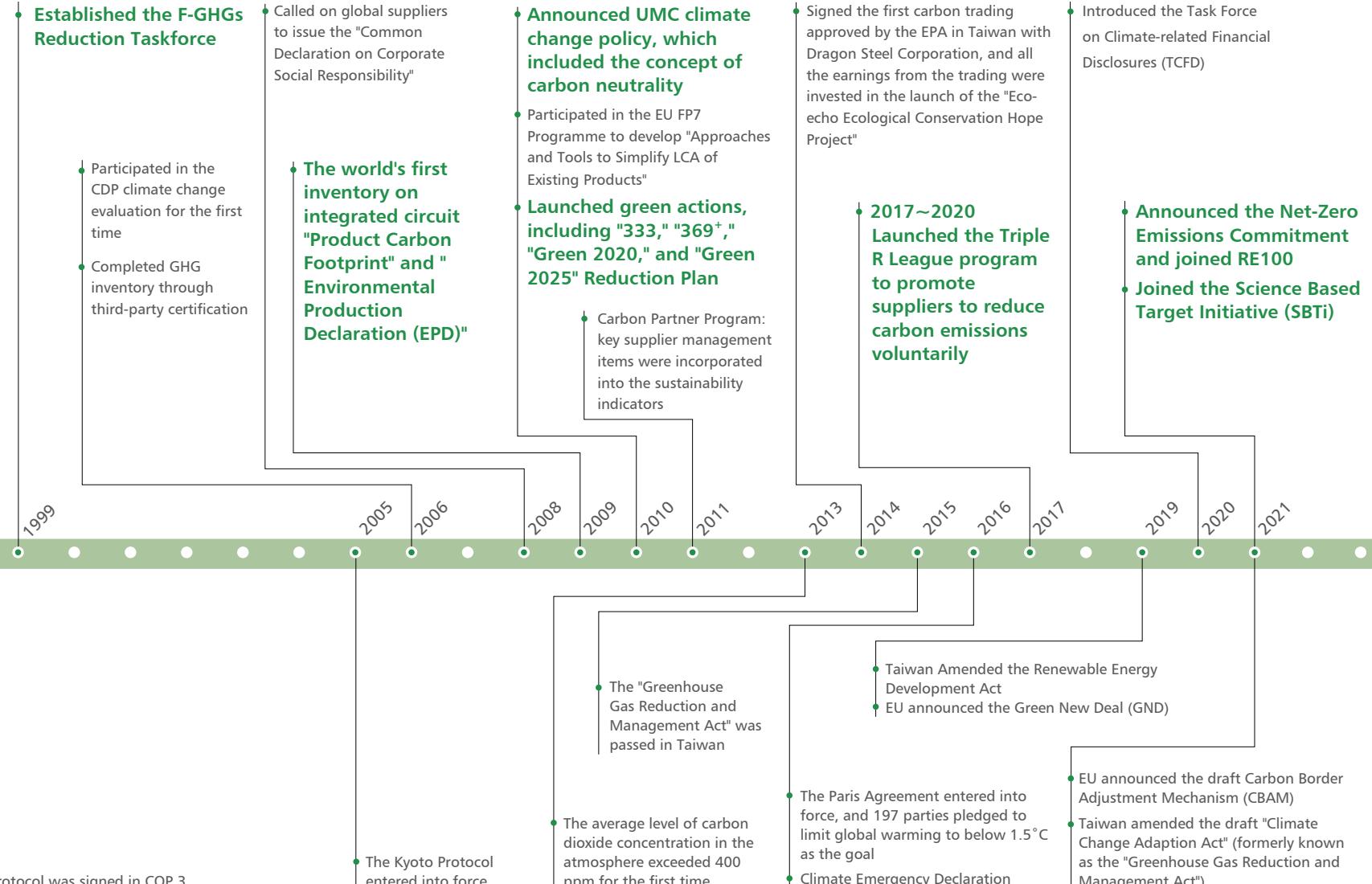
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► UMC Climate Action Milestones



► Major International Climate Change Events

► For more details on UMC's climate action, please refer to

- Chapter 1.2.5 Managing Climate-related Risks and Opportunities
- Chapter 3.1 Climate Action
- Chapter 3.2 Energy Management

ESG

Special Feature

Social Participation

Giving Back to Society Through Partnerships

Youth Education is a Key Focus in UMC's Efforts to Fulfill the "S" in ESG

Established in 1996, the UMC Science and Culture Foundation (the Foundation, for short) aims to promote holistic education and provide long-term support for diversified education programs. The Foundation has set up tutoring classes in Hsinchu and Tainan to assist students through varied learning programs. It also supports a karate team in Nantou and the Tung-Shih Senior High School baseball team, sponsors the Teenager Performing Arts League's national youth drama festival, and promotes the teaching of traditional indigenous songs and dances in two schools in Hualien and Taitung through the TECO Technology Foundation's "Exclamation Mark" project. The Foundation collaborates with Mandarin Daily News on a newspaper reading education program and actively promotes reading clubs and life education in reform schools. Another important initiative is the UMC Love Storyteller Club, the first of its kind in the industry, in which employees volunteer their time to perform in drama plays all over Taiwan.

The above are just some of the projects promoted by the Foundation. From tutoring, sports activities, and art appreciation, to comprehensive life education, the purpose is to contribute to youth education and ensure that no child is left behind.

The initiatives also address five of the UN Sustainable Development Goals (SDGs), including No Poverty (Goal 1), Quality Education (Goal 4), Reduce Inequalities (Goal 10), Sustainable Cities and Communities (Goal 11), and Partnerships for the Goals (Goal 17).

Helping the disadvantaged is a top priority of the Foundation

In 2005, the Foundation launched the Spreading the Seeds of Hope - Education Assistance Project for School Children from Disadvantaged Families. Funded by the Foundation, partners in Hsinchu and Tainan provide the venues and employ college students and teachers as part-time tutors for students in need. The Foundation also joined forces with volunteers from National Tsing Hua University, National Yang Ming Chiao Tung University, and National University of Tainan to help students complete their schoolwork. This project is not merely a tutoring program; it is also a public platform connecting community volunteers and university students' initiatives.

Working with Partners to Create More Possibilities

Joining forces with partners is also a strategy of the Foundation to expand its contribution to society. Since 2010, the Foundation has been supporting the Teenager Performing Arts League, which organizes a national drama festival to help high school students understand society through drama. The program has benefited more



than 20,000 youths, fostering creativity, teamwork, empathy, and a different way of thinking. The Tung-Shih Senior High School baseball team project is another example of leveraging partners for the greater good. In 2021, the Foundation partnered with Unimicron Technology Corporation and national teams from the "Skills for U" non-profit group to carry out improvements in the baseball team's cafeteria in the Tung-Shih Senior High School. The project provides the students with a better environment, while professional players also are fulfilled with more diverse experience.

The Foundation's Greatest Strength is its Volunteers

The UMC Mobile Volunteers was established during the Typhoon Morakot flood in 2009, and nearly 600 volunteers helped clean up the disaster area in Pingtung. Since then, volunteer teams are formed according to different needs, including volunteers for school camps and administrative volunteers for the flood in Chiayi on August 23, 2018. The Foundation also recruits UMC colleagues to serve as one-day volunteers for holidays and events, such as Christmas activities.

The UMC Love Storyteller Club was established by UMC volunteers in 2009, becoming the first theatre troupe in Taiwan's technology industry. The troupe has given a total of 69 drama performances to total audience of 22,000 people, demonstrating the expressive side of workers in tech.

For 26 years, the Foundation has actively participated in the communities and schools. We can achieve good results through cultivating local resources, and connecting the corporate world with non-profit organizations. As a public welfare platform, the Foundation provides the most effective connection to respond to the needs of the society. Promoting holistic education helps UMC realize its vision of prospering together with its community.

► For more details about performances of UMC social participation, please refer to • Chapter 5.4 Commitment to Social Welfare.

ESG

Special Feature

Corporate Governance

Continuing to Strive for Improvement in Corporate Governance Structure

UMC Ranked Top 5% in Corporate Governance Evaluation for 7 Straight Years and Aims for Greater Board Diversity

In 2021, UMC once again ranked in the top 5% in the Corporate Governance Evaluation conducted by the Taiwan Stock Exchange and Taipei Exchange. The Company is among the ten firms that have received this recognition every year since the evaluation was implemented in 2015.

UMC's performance in the annual evaluation is due to thorough implementation of the four major dimensions of corporate governance improvement: Strengthening the operations of the Board of Directors and the functions of directors, protecting shareholders' rights and interests, timely disclosure of information, and implementing corporate social responsibilities. One of the key areas UMC has focused on is the diversification of its Board of Directors.

After successive revisions of the Company Act, the role of boards of directors in the operations of enterprises has come to receive more emphasis, and the domestic corporate legal system has also gradually changed from being "shareholders' meeting-centric" to being "board of directors-centric." In addition to its traditional task of supervising company operations, the Board of Directors now also plays a mediating role in the conflicts of interest of its various stakeholders, and furthermore must also assist management in drafting important strategies with which the Company can use to respond to the complex and uncertain external environment, so as to improve the Company's operational performance. When the status and importance of the Board of Directors has been so greatly elevated, the composition, functions, and operations of the board become some of the important issues in corporate governance.

Diversification of the Board is Key

Diversity is a key pillar of board effectiveness. The main aim of board diversification is to bring objective and diverse perspectives to the Board. The range of backgrounds, professional abilities, and experience among the members of UMC's Board of Directors is very extensive, and this helps to endow the Board with a broader field of vision in the decision-making process, enabling it to perceive problems from different perspectives and propose solutions, and also enabling it to effectively supervise the management team and reduce the costs of agencies.

UMC's implementation of board diversity begins with having a sound system. The Company has devised a policy on the nomination and selection of directors, which takes into account the organizational culture, nature of operations, and long-term development, and we have formulated guidelines which diversify the composition of the Board of Directors. The selection, review and nomination of board members is discussed and resolved by a nomination committee composed of independent directors, and nominations are then made to the Board of Directors and the

Shareholders' General Meeting.

The UMC Board of Directors is composed of nine directors with different professional backgrounds, who are responsible for the Company's operation and supervision. In the Board, five are independent directors, one is an individual non-executive director, and three directors also serve as members of the Company's management team. Independent directors account for more than half of the Board seats, and female directors account for more than one-fifth of Board seats. Going forward, the number of female directors will be progressively increased in accordance with gender equality principles.

Additionally, the tenures and seniority of the Company's independent directors are also evenly distributed. One director has served for six years, two have served for three years, and two directors are newly elected. By ensuring a range of tenures, the Board can combine both accrued experiences and fresh perspectives to enhance its effectiveness.

UMC's board members have diverse academic and industry backgrounds. Their experiences include serving as presidents of national-level universities, fellows of Academia Sinica, and heads of the Ministry of Science and Technology and of other research institutes. Other professional backgrounds of the board include financial expertise in the fields of financial accounting and strategic management, as well as management experience in industries including semiconductor, electronics, and finance. In addition to professional knowledge and technical skills, the experiences and opinions of board members, through the operations of various functional committees, contribute significantly to corporate business decision-making and to medium and long-term strategic planning. Furthermore, directors are also able to advise on ESG issues, which include corporate governance, environmental sustainability, corporate social responsibility, regulatory compliance, and protection of human rights.



► For the composition of UMC's Board of Directors, as well as the implementation of its diversity policy, please refer to the Company's website for relevant information:



ESG

Special Feature

COVID-19 Prevention

Proactive and Agile Approach to the Pandemic

UMC advanced ESG efforts despite the widespread disruption caused by COVID-19

When the COVID-19 outbreak hit and started to spread rapidly in 2020, UMC immediately set up a dedicated interdepartmental Pandemic Response Team, which convened regular meetings attended by participants across six locations, including overseas sites. Through regular communication and the collection of real-time information, the Company was able to take preventive measures early on in the pandemic and make adjustments on a rolling basis to adapt to an evolving situation.

With the aim of protecting the health of employees, the company developed and customized a type of four-layer, anti-dust medical face masks, and launched the UMC Pandemic Prevention Platform to give colleagues access to comprehensive and real-time information. The Welfare Committee also prepared kits for all employees to protect their health and that of their families. In addition to pandemic control measures required by the government, such as body temperature screening and contact history reporting, the Company offers paid leave for pandemic reasons to encourage testing and active reporting among employees. To reduce the risks from group gatherings and to minimize the number of colleagues who may be identified as close contacts, the Health Center adjust health promotion events depending on the current pandemic situation. For example, the Health Center launched an online game that focuses on the theme of self-health management, and awards were provided to encourage employee participation.

The company has set up epidemic classification and corresponding control operating standards. Each plant has also developed a Business Continuity Plan (BCP) to respond to manpower shortages or reduced productivity. Human resource allocation strategies such as working from home (WFH) and staggered working hours were adopted in order to reduce infection risk. Taking actions by the Taiwan Centers for Disease Control and peers as reference, the company continually adjusts and optimizes its prevention measures. In order to maintain business continuity, the company has also increased its inventory of raw materials for production in response to pandemic-related lockdowns around the world, so that all shipments and manufacturing activities remain unaffected.

UMC also made efforts to fulfill its corporate social responsibility amid the pandemic. Despite fully loaded capacity amid surging IC demand, UMC prioritized capacity to

support demand from Sensirion, a Switzerland-based microsensor manufacturer, whose products are instrumental in pandemic prevention around the world. UMC also joined forces with medical equipment manufacturers to donate equipment and ultraviolet (UV) disinfection robots to medical institutions between 2020 and 2021, taking practical actions to support front-line medical personnel. Four other UV disinfection robots were donated to Taoyuan International Airport to strengthen pandemic prevention at the border.

Taiwan's pandemic situation intensified in May 2021, prompting closures of elementary and middle schools. However, the "Spreading the Seeds of Hope" program, which provides education assistance for children from disadvantaged families, was not suspended. In order to prevent disruptions to children's education, the UMC Foundation's Hsinchu Sacred Heart Tutorial Center and Tainan University Tutorial Center transitioned to online courses, and turned this crisis into an opportunity to explore different modes of education.

During the school suspension period, 213 university volunteers were urgently recruited, supporting 107 children for a total of 914 service hours. Apart from helping students with summer-vacation homework and reading, the daily online tutoring sessions also addressed a variety of topics taught by volunteers to help students develop diverse skills.

UMC and all employees have fully demonstrated resilience and overcame all the challenges the pandemic has posed so far. Through proactive prevention measures and agile responses, the Company was able to quickly integrate pandemic control and adapt to a new normal, and also fulfill its corporate social responsibility in helping our community fight the pandemic.



► Video on UMC's Pandemic Control



Materiality Analysis and Stakeholder Engagement

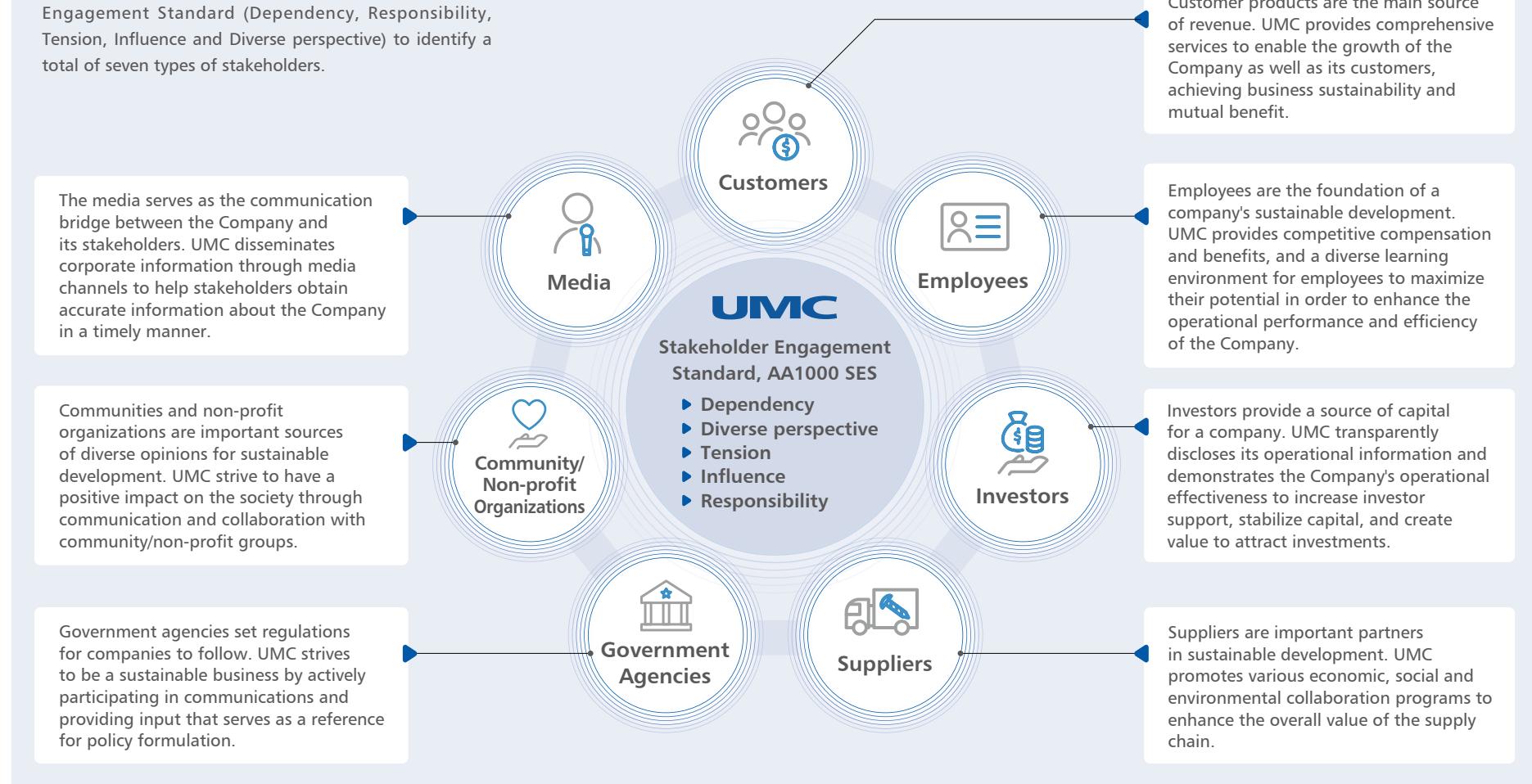
The Sustainability Report is one of UMC's major channels for communications with stakeholders on ESG issues. In compiling this report, a materiality analysis was conducted to identify the reporting scope and content, ensuring UMC's management and performance for material sustainability issues are effectively communicated.

Procedure for Defining Report Content

1. Define Stakeholders

UMC referenced the nature of its businesses as well as the five key principles of AA1000 Stakeholder Engagement Standard (Dependency, Responsibility, Tension, Influence and Diverse perspective) to identify a total of seven types of stakeholders.

Major Stakeholders Significance to UMC



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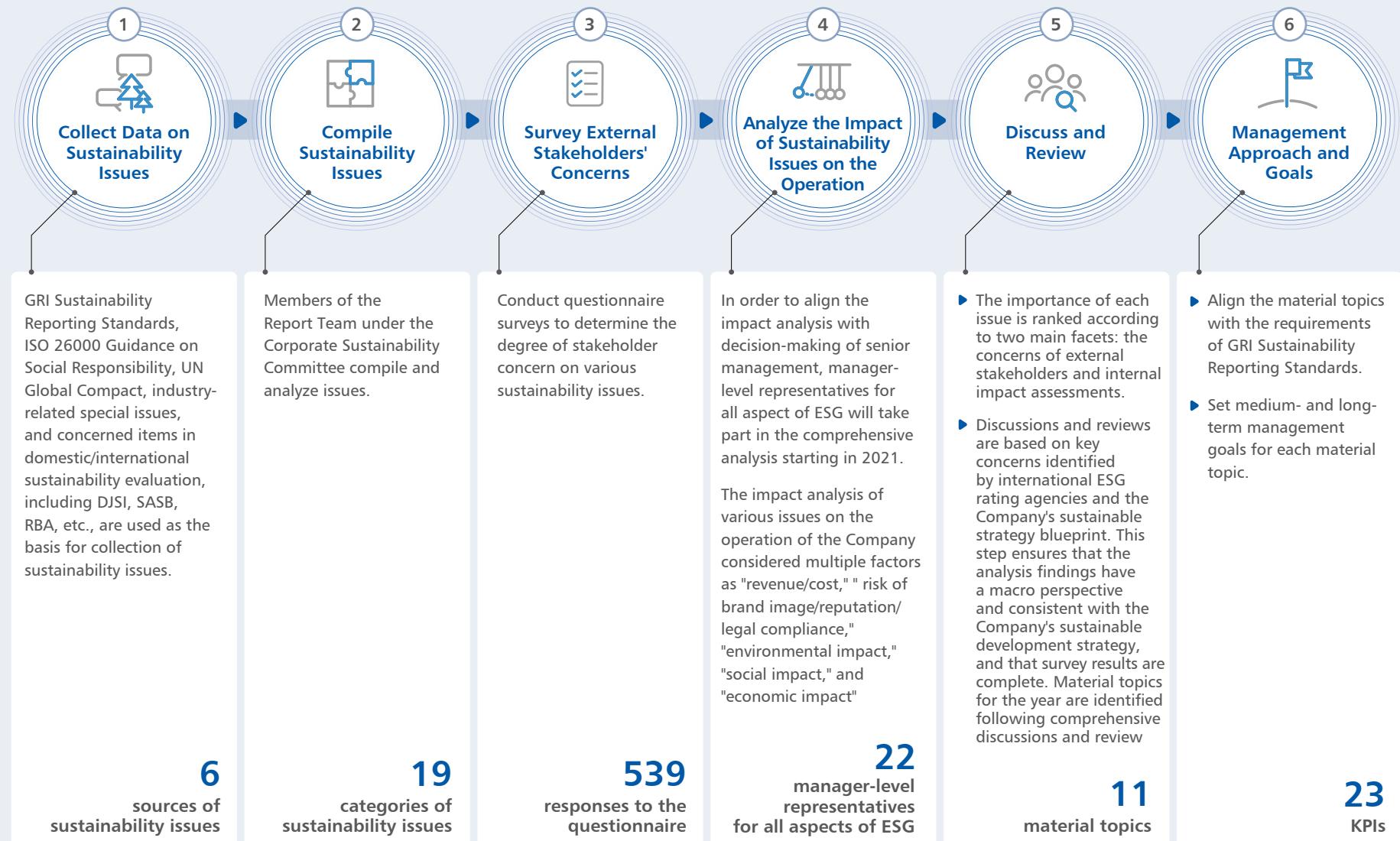
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2. Material Topic Identification

Material sustainability issues important for UMC's current situation and future operations are identified through the process of collection, survey, discussion, and review.



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3. Material Topics Disclosure

In 2021, there were 11 sustainability issues identified as material topics closely related to the operation of UMC. In addition to addressing topics of GRI Standards and disclosing management policies and current practices, the Company also discloses the medium- and long-term management goals for each topic, enabling accountability and tracking of progress.



Material Topics

Governance & Economic Dimension:

- 2 Procurement and Supplier Management
- 6 Ethical Corporate Management

- 3 Innovation Management and Intellectual Property Rights Protection
- 4 Customer Service Quality

Environmental Dimension:

- 9 Climate Strategy and Action
- 13 Waste and Resource Utilization Efficiency

- 10 Energy Management
- 11 Water and Wastewater Management
- 8 Product Liability and Lifecycle Assessment

Social Dimension:

- 15 Talent Attraction and Retention

- 16 Employee Safety and Health

Secondary Topics

- 17 Human Capital Development
- 14 Employee Diversity and Inclusiveness
- 1 Risk Management

- 19 Contribution and Participation in Society
- 12 Air Pollution Control
- 5 Information Security and Privacy Protection
- 18 Human Rights
- 7 Legal Compliance

Explanation of Differences from the Previous Year

This year, the level of the impact assessment survey was raised, and the Corporate Sustainability Committee and the Enterprise Risk Management Committee took responsibility for carrying out the assessment. At the same time, the main points of concern of the international ESG rating agencies regarding the semiconductor industry and the UMC sustainability strategy blueprint were included for discussion and consideration. As such, there are differences between the 2021 survey results and those of the previous year.

The differences include the inclusion of "Attraction and Retention of Talented Personnel" as one of the top three major topics in 2021, and the addition of "Product Responsibility and Life Cycle Assessment" to material environmental topics. The main topics for 2020, namely, "Regulatory Compliance," "Information Security and Privacy Protection," and "Risk Management," were listed as secondary topics for this year, as related issues have been included in the Company's key considerations for long-term management. Although the aforementioned topics are not listed as material topics, they are also highlighted in this report with reference to the GRI specific topics.

Note: I. Stakeholders scored differently in their degree of concern and influence for each issue (10 points=highly concerned, 8 points=concerned, 6 points =somewhat concerned, 4 points=mildly concerned, 2 points=not concerned)

II. UMC ESG representatives score for significance of impact on economy, environment, society and operation (5 points=highly impacted, 4 points=impacted, 3 points=moderately impacted, 2 points=not much impacted, 1 point=not impacted)

III. Impact factors include "revenue/cost," "risk of brand image/reputation/legal compliance," "cost efficiency," "environmental impact," "social impact" and "economic impact."

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Material Topics

Material Topic	Significance to UMC (Importance of Operation)	Potential Impact	Economic, Environmental ,Social and Operation Impacts				GRI Specific Topic	SASB Topic	2021 Performance (related chapters in this report)	
			UMC Group ^{II}	Direction		Indirect				
				Suppliers	Investors	Costumers	Society ^{III}			
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.	Products and services depend on stable support of suppliers, so supplier risks may affect the production.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					204 Procurement Practices 308 Supplier Environmental Assessment 414 Supplier Social Assessment	Materials Sourcing
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.	Continuous innovative breakthroughs can increase revenue.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			UMC Self-defining topic (Innovation Management and Intellectual Property Rights Protection)	Intellectual Property Protection & Competitive Behavior	2.1 Innovation & Technology Development 1.1.5 Legal Compliance
Ethical Corporate Management	Integrity management is the basis for creating a business environment conducive to UMC's sustainable development	Establishing good business conduct and ethics can ensure the sustainable operation of UMC and avoid operational risks caused by illegal or improper transfer of interests	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		205 Anti-corruption	—	1.1.4 Integrity Management
Customer Service Quality	Customer validation can enhance the competitiveness of the company and its customers, and is the key foundation for UMC's long-term operation.	Operating performance directly affects the company's cost and profitability.	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	UMC Self-defining Topic (Customer Service Quality) 201 Economic Performance	—	2.2 Customer Satisfaction 1.1.3 Business Performance
Environmental Dimension										
Climate Strategy and Action	Adequate mitigation and adaptation strategies can reduce the direct and indirect impacts of climate change.	Failure to properly address the physical and transition risks associated with climate change will increase operating costs.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	305 Emissions	Greenhouse Gas Emissions	1.2.5 Managing Climate-related Risks and Opportunities 3.1 Climate Action
Energy Management	Good energy management practices can improve operational performance and also reduce the environmental burdens and carbon footprint.	Low-carbon energy use is a future trend, but power supply restrictions will have a direct impact on production. As a result, if power supply restrictions issue is not properly addressed, it will increase operating costs.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				302 Energy	Energy Management in Manufacturing	3.2 Energy Management

Note: I. the scope of material topics were as the same as last year, 2020. II. UMC Group includes the subsidiaries HJ, USCXM, Wavetek and USJC. III. Society was considered among media

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Material Topic	Significance to UMC (Importance of Operation)	Potential Impact	Economic, Environmental ,Social and Operation Impacts					GRI Specific Topic	SASB Topic	2021 Performance (related chapters in this report)	
			UMC Group ^{II}	Direction		Indirect					
				Suppliers	Investors	Costumers	Society ^{III}				
Environmental Dimension											
Water and Wastewater Management	Water is basic to semiconductor production. Effective water resources management can enhance competitiveness.	The lack of water caused by climate change will increase operating costs, and water supply restrictions will directly affect production and revenue.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					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 promotion.	Proper waste management can reduce waste generation and related costs, create revenue value and reduce the environmental impact of operations.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					306 Waste	Waste Management	3.4 Waste Management
Product Liability and Lifecycle Assessment	UMC's basic 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 impacts that operations or products may have on the environment	Products which are scrapped due to being in violation of relevant regulations or failing to meet customer needs compromise customer trust in the company and affect the Company's market image.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			302 Energy 416 Customer Health Safety	Product Lifecycle Management	1.1.5 Legal Compliance 2.3 Product Responsibility
Social Dimension											
Talent Attraction and Retention	Attracting and retaining talented employees can improve UMC's operational performance.	The outflow of talented employees will directly affect UMC's competitiveness.	<input checked="" type="checkbox"/>						202 Market Presence 401 Employment 405 Diversity and Equal Opportunity	Recruiting & Managing a Global & Skilled Workforce	4.2 Focusing on Recruitment and Cultivation
Employee Safety and Health	Maintaining employee safety and health and providing a good workplace environment for employees are UMC's basic responsibilities.	In addition to impacting employees, any safety and health risk may also lead to significant economic or social loss for the company and hence undermine its competitiveness.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					403 Occupational Health and Safety	Employee Health & Safety	4.3.3 Maintaining Workplace Safety

Note: I. the scope of material topics were as the same as last year, 2020. II. UMC Group includes the subsidiaries HJ, USCXM, Wavetek and USJC. III. Society was considered among media



Secondary and Other Issues

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

Secondary Issues	Direction of Response and Management	GRI Specific Topic	2021 Performance (related chapters in this report)
Human Capital Development	<ul style="list-style-type: none"> ▶ Developing performance improvement plans for low performers and providing coaching for improvements. ▶ Improving employee performance through regular education and training. 	404 Training and Education	4.2.3 Strengthening Talent Cultivation
Contribution and Participation in Society	Serving the community with core professional skills.	413 Local Communities	5. Enhancing Society Mutual-Prosperity
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 harmonious and mutual-prosperous operational benefits.	406 Non-discrimination	4.2 Focusing on Recruitment and Cultivation
Air Pollution Control	Introducing and developing environment-friendly technologies to strengthen emission sources reduction and pollutants prevention.	305 Emissions	3.5 Air Pollution Control
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	418 Customer Privacy	1.2.4 Information Security Risk Management 2.2.3 Customer Privacy Protection
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
Human Rights	Protecting the basic rights and interests of employees and providing a harmonious working atmosphere is UMC's responsibility.	401 Employment 406 Non-discrimination 407 Freedom of Association and Collective Bargaining 408 Child Labor 409 Forced or Compulsory Labor 412 Human Right Assessment	4.1 Enforce Human Rights Management
Legal Compliance	Setting up a legal service platform to provide legal consultation and assistance to various departments, related training courses are organized to raise the awareness of employees in legal compliance.	307 Environmental Compliance 419 Socioeconomic Compliance	1.1.5 Legal Compliance

Stakeholder Engagement

To maintain effective stakeholder communication, UMC formulated an engagement system for the identification of and communication with various stakeholders. This report and the UMC official website are used as a means of disclosing important information.

Principles for Communication with Stakeholders



Objectives

- ▶ Evaluate and understand the reasonable expectations and requirements of the stakeholders and providing appropriate responses to key ESG issues that the said stakeholders are concerned with.
- ▶ Consider all concerned issues and analyze the potential impact that each issue may exert upon the environment, society, economy, and business operations.
- ▶ Employ a system-based mechanism to continuously review and enhance corporate sustainability.

Mechanisms for Stakeholder Communication

Item	Content	Frequency
Identify concerned issues	Integrated and coordinated by the Corporate Sustainability (CS) Committee.	Annually
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. 	According to plan
Assessment of stakeholder communication outcome	Stakeholder communication outcome reported, and key issues reviewed and responded to the CS Committee.	Once every six months
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	<p>Annual financial reports, sustainability report, etc.</p> <ul style="list-style-type: none"> ▶ Press Releases ▶ UMC official website: The Stakeholder Area was established for stakeholder inquiry 	<p>Annually</p> <p>As required</p>

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Stakeholder communication method, frequency, key concerns and major outcome for 2021 are compiled as follows:

Stakeholder ►	Communication Channel/Frequency	Main Focus of Material Topics	Key Communication Outcome in 2021
 Employees	<p>[Periodic]</p> <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 recognition survey <p>[Aperiodic]</p> <p>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 My UMC website.</p>	<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"> ► Continued to promote a comprehensive personnel health management program, which focuses on the three aspects of safe working environment, employee health protection and work-life balance. ► Completed employee work engagement surveys in 2021 to better understand the real needs of employees and their willingness to remain in their employment. ► Continued to implement industry salary surveys and provide competitive performance-based and differentiated remuneration and welfare packages (including bonuses, salary, and stock shares). ► Continued to enhance the UMC welfare information platform to improve accessibility to employee benefits and discounts. ► Strengthened communication of business strategies and directives and to continue the provision of up-to-date information of corporate performance. A total of 184 communication meetings were held in 2021. ► The e-suggestion opinion feedback platform received 372 opinions from various employees in 2021; all cases (100%) have been closed. ► Strengthened 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	<p>[Periodic]</p> <ul style="list-style-type: none"> ► Communication and discussion meetings <p>[Aperiodic]</p> <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"> ► The Enterprise Risk Management Committee coordinates the key departments of risk management and control within the company to jointly review the internal and external risks of the company, and consolidates the company's major risk issues and 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 verifier, and the results are used as the basis for further improvement. ► Continuous customer services - provide a total of 100 BCM / BCP pieces of risk management data.
 Investors	<p>[Periodic]</p> <p>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]</p> <p>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 ► Product Liability and Lifecycle Assessment ► Legal Compliance ► Air Pollution Control ► Waste and Resource Utilization Efficiency 	<ul style="list-style-type: none"> ► Continued to invest in various semiconductor process R&D. Obtained 432 domestic and international patents in 2021. Currently, UMC has a total of 14,423 granted patents. ► Issued green bonds in 2021 to raise funds for green investment projects. ► Continued to hold shareholders meetings and investor conferences in accordance with the annual plan, and communicate with shareholders about the list of director candidates. ► Uploaded 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. 

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Stakeholder ►	Communication Channel/Frequency	Main Focus of Material Topics	Key Communication Outcome in 2021
 Suppliers	<p>[Periodic]</p> <ul style="list-style-type: none"> ▶ Questionnaires and audit visits ▶ Jointly implement ESH and corporate sustainability 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"> ▶ Promoted BCM management amongst suppliers; completed risk assessments for suppliers that constitute 95% of UMC purchases. ▶ Implemented anti-corruption measures and promoted the signing of Agreement on Supplier Code of Ethics and Conduct. ▶ Completed conflict mineral surveys for 2021. 36 suppliers passed the conflict mineral audit which were all qualified the UMC's requirement to conflict mineral management. ▶ Held ceremony to recognize 18 suppliers and called for supply chain partners to join UMC's initiative to reduce carbon emissions in the supply chain by 20% by 2030.
 Community / Non-profit Organization	<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, which benefited more than 26,661 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 5 ecological conservation proposals and 4 youth eco-friendly action plans ▶ UMC Energy Saving Service Team assisted 10 organizations in energy saving, water saving and environmental safety improvement.
 Governmental Agency	<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"> ▶ Acted as 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. ▶ Participated 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 to serve as course lecturer on the Ministry of Labor's Occupational Safety and Health Administration, the Ministry of Science and Technology's Hsinchu Science Park Management Bureau, TOSHMS National General Assembly Taipei and Taichung venues, as well as on the "Chemical Product Management Topic" of the "Park Health & Safety Personnel Improvement Program" ▶ Collaborated with the Southern Taiwan Science Park Bureau to provide relocation response training for Southern Taiwan Science Park members, assisting them to enhance disaster preparedness.
 Media	<p>[Periodic]</p> <ul style="list-style-type: none"> ▶ Company Website (monthly) <p>[Aperiodic]</p> <ul style="list-style-type: none"> ▶ 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/2021 

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



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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



Performance Highlights 2021



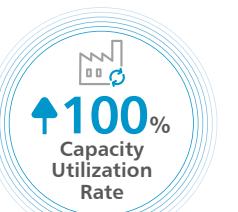
Consistently ranked in the top 5% of Taiwan listed companies in corporate governance.



Including 5 independent directors and 1 outside director.



The female board members are also independent directors.



Shipped a total of 9.86 million 8-inch equivalent wafers.



2021 revenue rose 20.5% year-on-year to NT\$213 billion.



Ensuring a secure manufacturing environment.



95% of Taiwan sites' suppliers are local, accounting for 71% of total procurement dollar amount.

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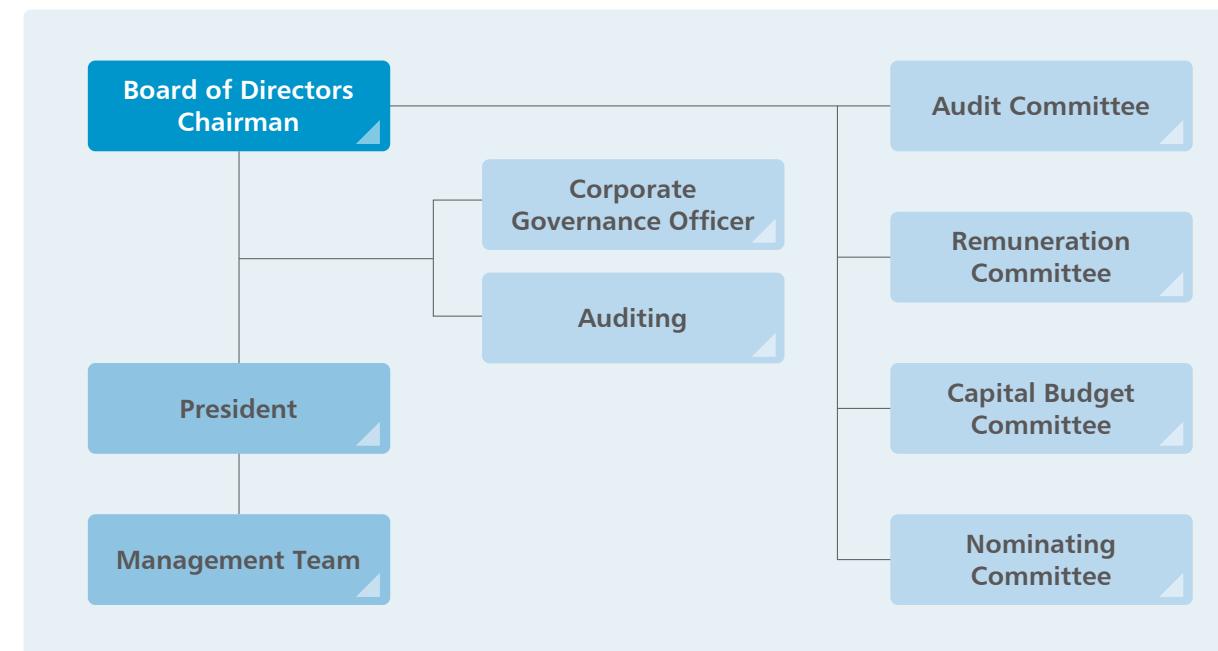
Appendix

1.1 Excelling Corporate Governance

1.1.1 Board of Directors Operation

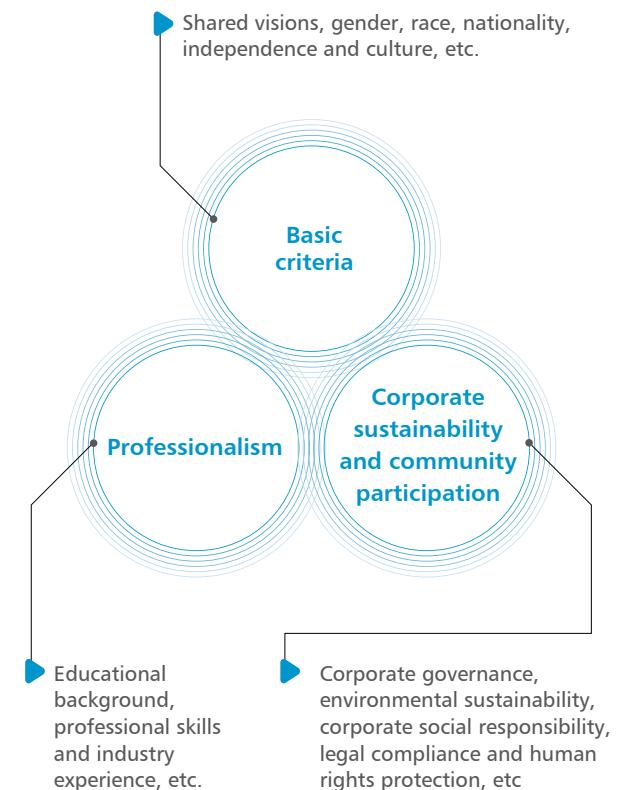
The UMC Board of Directors comprises nine members from different professional backgrounds, and is responsible for the Company's operations and supervision. The diverse academic and industry experiences of the board members are an asset to corporate decision-making and long-term strategy planning. Currently, 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. Each independent director does not serve as an independent director concurrently for more than three listed companies. There are two female directors in the Board. As of 2021, the average tenure of all directors was 5.9 years.

In 2021, a total of eight board meetings were held, and the average attendance rate was 98.72%, 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 0.90% in 2021.



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.

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%	62
Director, President					
Jason S. Wang	Male	None	<ul style="list-style-type: none"> Financial accounting and organizational leadership Electronics-related industry experience 	88.89%	59
S C Chien	Male	None	<ul style="list-style-type: none"> Engineering technology and organizational leadership Electronics-related industry experience 	100%	64
Director					
Ting-Yu Lin	Male	None	<ul style="list-style-type: none"> Financial accounting and strategic management Electronics-related industry experience 	100%	60
Independent Director					
Wenyi Chu	Female	<ul style="list-style-type: none"> Audit Committee member and financial expert Convenor 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%	55
Lih J. Chen	Male	<ul style="list-style-type: none"> Convenor 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%	76
Jyuo-Min Shyu	Male	<ul style="list-style-type: none"> Audit Committee member Remuneration Committee member Capital Budget Committee member Convenor for Nominating Committee 	<ul style="list-style-type: none"> Engineering technology and organizational leadership Electronics-related industry experience 	100%	68
Kuang Si Shiu	Male	<ul style="list-style-type: none"> Audit Committee member and financial expert Remuneration Committee member Convenor for Capital Budget Committee Nominating Committee member Nominating Committee member 	<ul style="list-style-type: none"> Financial accounting and organizational leadership Banking and business decision making 	100%	71
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%	45

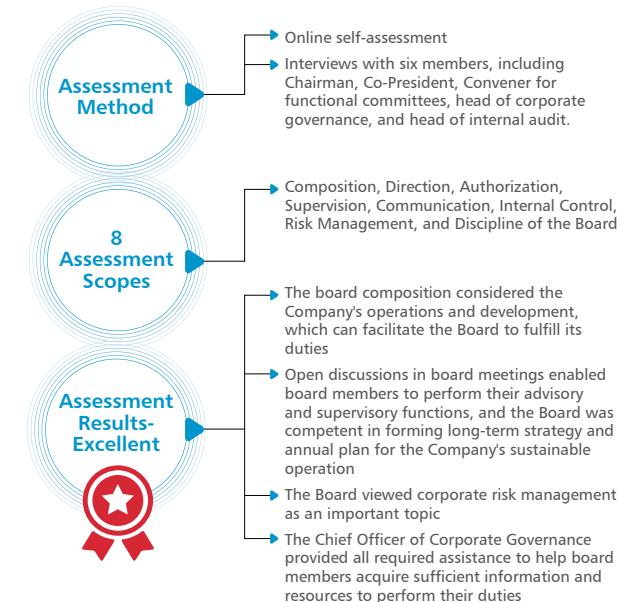
Note: 1. Independent Directors Kuang Si Shiu and Wen-Hsin Hsu were newly elected on July 7, 2021.

- There are three seats occupied by members who also serve as administrative directors, namely the President and Chief Strategy Officer. The directors' current positions at UMC or at other companies are disclosed on Page 16-17 of the Company's annual report.
- The board of directors have a diverse range of professional experience. Please refer to UMC's Annual Reports page 21 for more details.
- Training programs on corporate governance, risk management, ESG, and corporate sustainability are arranged for directors and officers annually. Please refer to page 48-49 of UMC's 2021 Annual Reports for more details.

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 2021 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 24, 2022.

In addition to self-assessments, the performance of the Board is 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 interests 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. 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.

Functional Committees

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 2021, the Committee met five times, audited and approved capital budget expenses of NT\$ 238,733 million.

Capital Budget Committee



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), it 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 2021, a total of seven meetings were held and the actual attendance rate was 100%. Good communication channels with the Company's internal auditors, Chief Corporate Governance Officer, independent auditors, and management were maintained.

Remuneration Committee



Remuneration Committee

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 2021, 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 nominated the 15th term of Board of Directors.



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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

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 compensation of the president and vice president includes salaries, bonuses, severance payments, and retirement pensions, which are disclosed in the Company's annual reports. 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. In 2021, 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.

Taiwan | Singapore

Ratio of maximum remuneration to median annual remuneration

23.07	8.72
-------	------

Ratio of % increase in highest total annual remuneration to % increase in median total remuneration

2.28	5.57
------	------

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) and share option certificates, restricted stocks, etc.
2. The calculation is based on the actual cash compensation received in the current fiscal year.

(1) 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 from 2021 to 2024. The performance indicators for the restricted stock awards are return on equity % (ROE%) and operating margin % (OM%), intended to motivate employees to achieve performance goals and to create greater value for the Company and its stakeholders.

(2) 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.

(3) 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 chairman 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.

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1.1.2 Sustainable Governance

UMC's sustainable development is built on the vision of "creating a friendly global ecology where the new value is people orientation, co-existence with the environment and shared social prosperity." Customers, shareholders, employees, the environment, and the society are the primary focus of the joint pursuit of sustainable growth.



Implementation of Sustainable Development Best Practice Principles

To implement corporate social responsibility, promote economic, environmental and social advancement, and achieve the goal of sustainable development, the UMC Corporate Sustainability Committee has formulated "UMC Sustainable Development Best Practice Principles," which has been approved by the Board of Directors for implementation. UMC stays up to date on the development of domestic and international sustainable development standards and changes in the corporate environment, reviews and improves the Company's sustainable development system, and improves the performance of sustainable development activities.

UMC Sustainable Development Best Practice Principles



Sustainable Governance Structure

The ESG Steering Committee serves as the unit for the highest level of ESG decision-making, and has appointed Chief Sustainability Officer to lead the president and other senior executives (C-Suite) to meet every quarter, and to be in charge of determining UMC's sustainable governance strategy and goals. In addition, the effectiveness of ESG governance is supervised by the Nomination Committee, which is composed of all independent directors. The Chairman 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 review the progress of the strategy, and guide the management team to make adjustments as needed.

The ESG Steering Committee appointed the Co-Presidents as committee chairs to ensure that ESG governance and corresponding policies are implemented from the top down, with the Corporate Sustainability (CS) Committee and the Enterprise Risk Management (ERM) Committee under its supervision. 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 quarterly, and to update risk information monthly starting from end-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.

The main points of the proposal reported to the Nomination Committee and the Board of Directors in 2021 include (1) ESG governance structure reorganization; (2) UMC's sustainable strategy blueprint; (3) ESG achievements and stakeholder communication; and (4) future focus. A total of 16 key ESG issues were reported and communicated, include issues related to climate change, energy and resource efficiency improvement, low-carbon economy, social participation, corporate governance, integrity management, risk management, and information security. Major issues need to be reported to the Board of Directors for approval. In 2021, the cases related to sustainability approved by the Board of Directors include a proposal to link employee's remuneration to ESG KPI, donation to UMC Science and Culture Foundation, and green investment including the addition or replacement facilities for renewable energy, energy saving, waste reduction, and pollution prevention.



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Sustainability Strategy and Blueprint

With ESG issues attracting the attention of global markets, UMC is committed to integrating sustainable development with our business strategy in order to ensure stable operations and growth for the company, and to positively contribute to all ESG aspects. In 2021, the ESG Steering Committee redefined the company's ESG strategy, setting four strategic directions:

- ▶ (1) unleash the power of technology
- ▶ (2) integrate UMC's core capabilities
- ▶ (3) minimize environmental footprint
- ▶ (4) create social value

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

Driven by technological advances, IC content is increasing across a wide range of applications for end-products including connectivity devices, electric vehicles, and high-end medical products. In addition to raising the industry's technology capabilities, such innovations serve to enhance quality of life and to enable a more sustainable future. Based on the Company's core business of wafer manufacturing, UMC has formulated its Sustainability Strategy and Blueprint, which incorporates ESG considerations into all aspects of its operations, striving to minimize any adverse impact on the society and the environment, and to produce products with sustainable benefits. UMC aims to unleash the power of technology through the implementation of the 2030 Sustainability Strategy and Blueprint, and to create ESG value together with our stakeholders for a better world.

IMPACT+

Unleash the power of technology

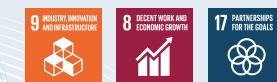
Contribute to a better world by expanding the application of high-performance/low consumption semiconductor products in health-related and eco-friendly fields



Governance

Integrate UMC's core capabilities

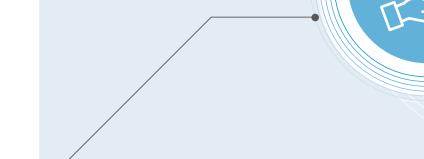
Implement sustainable governance, exert UMC's core strengths, and work together with supply chain partners to strive for ESG vision



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	Action Plan	Short-Term Goals (2022)	Mid-Term Goals (2025)	Long-Term Goals (2030)	Location	
 Unleash the power of technology	Increasing Revenue Proportion and Market Share of Sustainable Products	Increase the proportion of the company's total revenue that comes from sustainable products by continuing to invest in the development of process platforms for low power consumption, low leakage, and power management products, as well as microcontroller unit (MCU), automotive chips, long service life products, and epidemic prevention & medical related products	 Revenue from sustainable products as % of total revenue	≥69%	≥72%	≥75%	2.1.1 Robust Wafer Manufacturing Services
 Integrate UMC's core capabilities	Enhancing Collaboration with Suppliers on Carbon Emissions Reduction	To build a low carbon supply chain	 Percentage of carbon emissions reduction by suppliers with high power consumption	5% 10% 20%			1.3 Building Sustainable Supply Chain
	Smart Factory	Continue to introduce intelligent solutions to improve delivery times and to be a smart manufacturing factory that is energy-saving and environmentally friendly*	 Ratio of products produced by Industry 4.0 Smart Manufacturing Systems	30% 60% 80%			2.1.3 Smart Manufacturing Execution
 Minimize environmental footprint	Reducing the Negative Environmental Impact of Products	Reduce the environmental footprint of products* (base year 2015)	 Reduction of water consumption per unit product	12% 25% 30%			3.2 Energy Management
	Waste Reduction	Reduce waste per unit product* (base year 2015)	 Reduction of electricity consumption per unit product	12% 25% 30%			3.3 Water Resources Management
	Greenhouse Gas Reduction	Reduce greenhouse gas emissions per unit product (base year 2010)	 Build a carbon management platform	Reduction of greenhouse gas emissions per unit product Reduction of greenhouse gas emissions per unit product*	40% 45% 45% 55%		3.1 Climate Action
	Increasing Renewable Energy Usage	Increase the ratio of renewable energy in total energy mix year by year*	 Ratio of renewable energy in total energy mix	5% 15% 30%			3.2 Energy Management
	Building Circular Business Model	Develop products from recycled material	 Develop circular economy solutions/products (in total)	2 items 4 items 6 items			3.4 Waste Management
	Investing in Clean Technology	Investing in the development of net-zero technology	 Complete assessment of low-carbon technology and potential partners	Investing in the R&D of low-carbon technology 1 project 2 projects			3.1 Climate Action
 Create social value	Enhancing the Social Benefits of Technology Applications	UMC volunteers hold educational events to share popular semiconductor knowledge with the communities**	 Number of events Number of beneficiaries	14 4,000	16 4,500	18 5,000	
	Enhance the Impact of Semiconductor Education Programs, Increase Investments, and Expand Partnerships	Cultivate tech talent and relationships with academic institutions through semiconductor promotion programs	 Number of partner institutions Number of semiconductor promotion events	10 20	13 25	15 30	5.1 Promote Common-Prosperity Society
	Increase Volunteer Service Hours and Number of Beneficiaries	Provide a variety of educational programs (life education, educational care, reading promotion); promote environmental protection and energy saving by leveraging on UMC's core competencies**	 Annual number of participants Cumulative investment in semiconductor education (base year 2020)	2,000 NT\$ 8 million	2,600 NT\$ 16 million	3,300 NT\$ 21 million	
			 Number of Beneficiaries Employee Volunteer Hours	32,000 6,500	36,000 7,000	37,000 8,000	

Scope: *UMC Group, ** UMC (Taiwan); others represent UMC Taiwan and Singapore.

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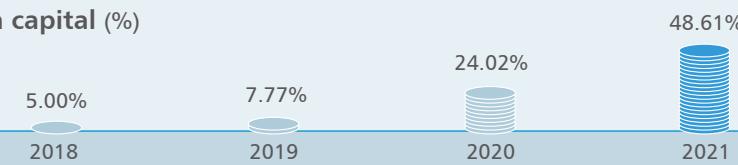
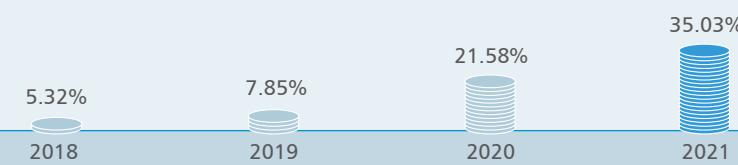
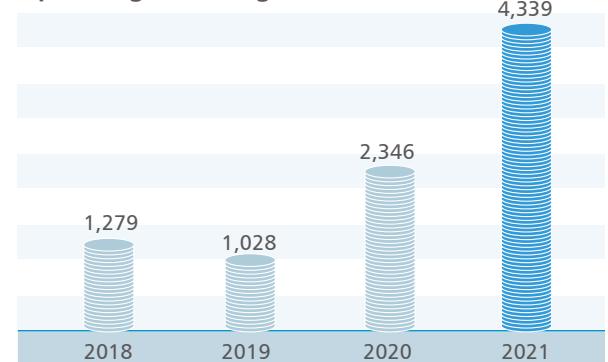
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1.1.3 Business Performance

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, starting from strengthening the financial structure, expanding the capacity of cost-competitive production and adjusting product portfolios. Examining the current results, UMC has achieved outstanding performances in strategic positioning, technology, production capacity, yield, profitability and sustainable operation.

Profitability

In 2021, the performance of all items have improved significantly compared to the previous year

► **Return on assets (%)**► **Return on equity(%)**► **Pre-tax income to paid-in capital (%)**► **Net profit margin (%)**► **Earnings per share (EPS) (NTD)****Operating Revenues (in NT\$10 millions)****Total Assets (in NT\$10 millions)****Operating Incoming (in NT\$10 millions)**

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 187 of the company's 2021 Annual Report.

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1.1.4 Integrity Management Material Topic • • • • •



Establishing good business conduct and ethics can ensure the sustainable operation of UMC and avoid operational risks caused by illegal or improper transfer of interests



► Encourage open communication with employees and third parties. When the employees are in doubt about ethical and legal behavior, they can seek assistance through internal channels to obtain appropriate advice and report misconducts. This mechanism is in place to identify and prevent major misconduct and violations of government laws and regulations.



UMC
Code of Conduct



UMC
Whistleblowing Channel

Grievance Mechanisms

Email: whistleblower@umc.com
TEL: 03-5782258#3142



2021 Goals

The completion rate of annual education and training for anti-corruption: 100%

The completion rate of annual education and training for business ethics: 100%

Note: 1. Direct labor (DL) staff are exempted from this education and training.

2. The possible factors for completion rates under 100% include extended leave and new employees on-boarding after the training deadline.

Achievements

► The completion rate of annual education and training for anti-corruption: Headquarters' indirect labor (IDL) ...

staff – 98%; UMC Singapore's IDL: 90% Note

► The completion rate of annual education and training for business ethics: 100% ...

ON-GOING
 ACHIEVED

UMC values its credibility. The Company is committed to maintaining the highest ethical standards and professional competence, and strictly requires its employees, agents, distributors, and contractors to abide by the applicable anti-corruption and anti-bribery laws no matter where business is conducted. The applicable laws include but are 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 implement the above-mentioned anti-corruption laws and regulations, UMC has adopted three management methods of honest 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.

On the other hand, 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 laws and regulations and risk considerations to conduct related audits, reports audit results to the Audit Committee and the Board of Directors regularly and monitors improvements..

In addition, 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 2021, UMC did not receive any penalties for violating anti-corruption laws and regulations.

Ways to Demonstrate Integrity in the Workplace

► Establish Relevant Regulations

1. Formulate "UMC Code of Conduct". The regulated subjects include: subsidiaries, joint ventures, suppliers, customers and other individuals who have operational and development relationships with UMC.
2. Formulate "Policy and Procedure for Preventing Insider Trading". UMC has dedicated personnel responsible for notifying the company's directors and the management team on a monthly basis, providing the dates in the coming two months when no transactions can be conducted.
3. Formulate Anti-Corruption/Anti-Bribery Policy in 2020.

► 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 October 30, 2019, with a completion rate of 100%.
- Employees**
1. The completion rate of annual education and training for anti-corruption: UMC HQ's IDL – 98%; UMC SG's IDL: 90% Note
 2. Physical courses.
 3. Publish relevant regulation on the Company's internal website.

► 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.

Number of Complaints Received in 2021

Category	The total number of complaints filed through the mechanism	The number of complaints that were addressed (or reviewed)	The number of complaints that were resolved
Anti-corruption	0	0	0
Environmental Issues	0	0	0
Social Issues	0	0	0

Note: No proof of corruption or bribery was found in 2021.

Note: 1. Direct labor (DL) staff are exempted from this education and training.
2. The possible factors for completion rates under 100% include extended leave and new employees on-boarding after the training deadline.

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1.1.5 Legal Compliance

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

All UMC departments must comply with relevant laws and regulations. The Company has a dedicated legal team offering legal advice and assistance to each department. The Company also arranges training programs and courses on legal compliance to help employees familiarize with updated regulations. Prompt updates enable employees to implement any changes necessary to ensure the company remains in compliance with the law.

Training Courses for Legal Compliance

- Online Courses** Employees are allowed to make inquiries at any time, to strengthen their understanding of the latest laws and regulations. In addition, online testing was implemented, requiring employees to repeat the test until a full score had been achieved, thus verifying and correcting employees' knowledge about laws and regulations. Other related online courses or tests include: Fair Trade Law (antitrust law), import and export control. Employees can obtain training course information and promotional information from the company's intranet site.
- On-site Courses** On-site courses include important policy or statutes, including fair trade, insider trading, classified information protection, high-tech export controls, intellectual property protection, and personal data protection are offered.
- Seminar Courses** Outside legal professionals and experts are invited to lecture on the latest legal trends and information, and exchange ideas.
- External Courses** 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 2021, UMC did not receive any penalties for violating corporate governance, anti-corruption, or fair trade related laws and regulations, and no managers violated insider trading laws. Furthermore, UMC did not receive any complaints from customers about violations of customer privacy. Other penalties of less than NT\$100,000 received by UMC and its employees, major deficiencies, and improvements are summarized in the Company's annual report. In addition, in the event of major lawsuits, it will be reported to the audit committee, which will discuss the necessary response.

Special Event to Be Noted

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.

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, and contractors/customers, and implemented appropriate training. In 2021, UMC was awarded Taiwan Intellectual Property Management System (TIPS) certification, highlighting the company's continuous commitment to strengthening its IP management system and corporate governance.

UMC discloses major judicial cases in its annual report every year. As of December 31, 2021, UMC has reached a settlement with the plaintiff for the class action complaint alleging misappropriate trade secrets. UMC paid a settlement amount of US\$3 million, which has no material financial and operational effect on UMC's business. In addition, UMC has complied with relevant competition laws (such as the Fair Trade Act in Taiwan) and has not incurred any major fines or financial losses due to related judicial procedures.

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.

The legal compliance status of UMC is summarized as follows:

- Anti-trust Law**
 1. In 2011, UMC formulated and announced a fair trade compliance policy. Meanwhile, UMC arranged the required education and training courses.
 2. UMC released the "Regulation for Antitrust Procedures" in January 2021, which states:
 - a. the code of conduct, b.the responsible units for anti-trust matters and the countermeasures for related risks, and c. guideline for internal units to follow when conducting business.

- Fair Trade Law**

In April, the course "Prevention of Insider Trading and Insider Equity Transactions: Regulations and Practices" was launched to strengthen UMC's senior executives' understanding of insider trading. This course is aimed at first-level executives and above. The number of participants in the course reached 90.2% of the target audience.

Implementation and/or Legal Compliance		Protection of Trade Secret	
Scope	Managerial Procedure	Employees	Contractors / Customers
Actions			
	<p>1. UMC formulated several trade secret protection regulations in 2020, including the "Trade Secret Protection Management Regulations" and the "Evidence Information Protection Procedures." The regulations are composed of reporting mechanisms, monthly security check reviews to regularly confirm the items to be followed when trade secret regulations have been appropriately implemented, setting of extremely confidential project management measures for confidential information of different levels, and the timely protection of necessary evidence for suspicious cases. As of 2021 Q4, no trade secret related cases have occurred.</p> <p>2. In 2021, UMC implemented TIPS.</p>	<p>1. UMC specifically requires its employees to take the refresher training every year to build their basic knowledge on trade secrets. The company also takes this opportunity to publicize the confidentiality of contract signing process and appropriate review of data sharing. As of the end of 2021, 7,778 employees have received the refresher training</p> <p>2. In addition, for employees in related departments, UMC also implemented the test of "Basic Legal Concepts and Risk Awareness for Foreign Documents" in 2021 to raise the employees' risk management awareness for foreign documents. A total of 1,724 people completed the training course.</p> <p>3. In 2021, the course on intellectual property rights protection regulations was organized for new employees, with a total of 1,724 attendees.</p>	<p>1. Carry out information security awareness promotion and keep training records</p> <p>2. Sign non-disclosure agreements with suppliers and customers, and set confidential information/data management measures</p> <p>3. Customer information is handled by specialized units to avoid the possibility of improper disclosure.</p>

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1.2 Implementing Risk Management

1.2.1 Risk Management System

UMC established an Enterprise Risk Management Committee in the second half of 2018 to strengthen the management and control of major risks at 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 and cooperated with external consultants to evaluate to ensure the comprehensiveness and sophistication of the Company's enterprise risk management in 2021.

Enterprise Risk Management Policies

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

► Effectively Prevent and Control Enterprise Risks

Reduce corporate risk and achieve corporate goals

► Comprehensive Implementation

Comprehensive risk management and implementation of operational procedures

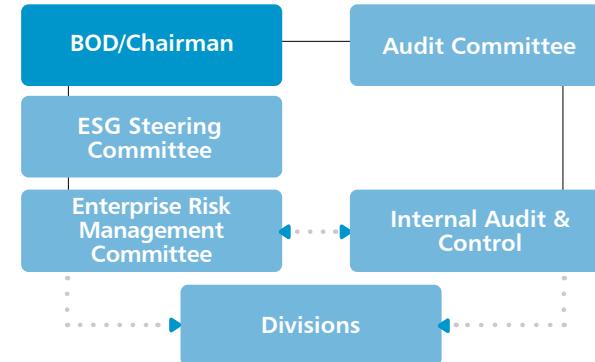
► Shape and Deepen The Risk Culture

Improved risk awareness and perception throughout the company

► Complete Communication

Complete and transparent risk communication, including shareholders, employees and stakeholders

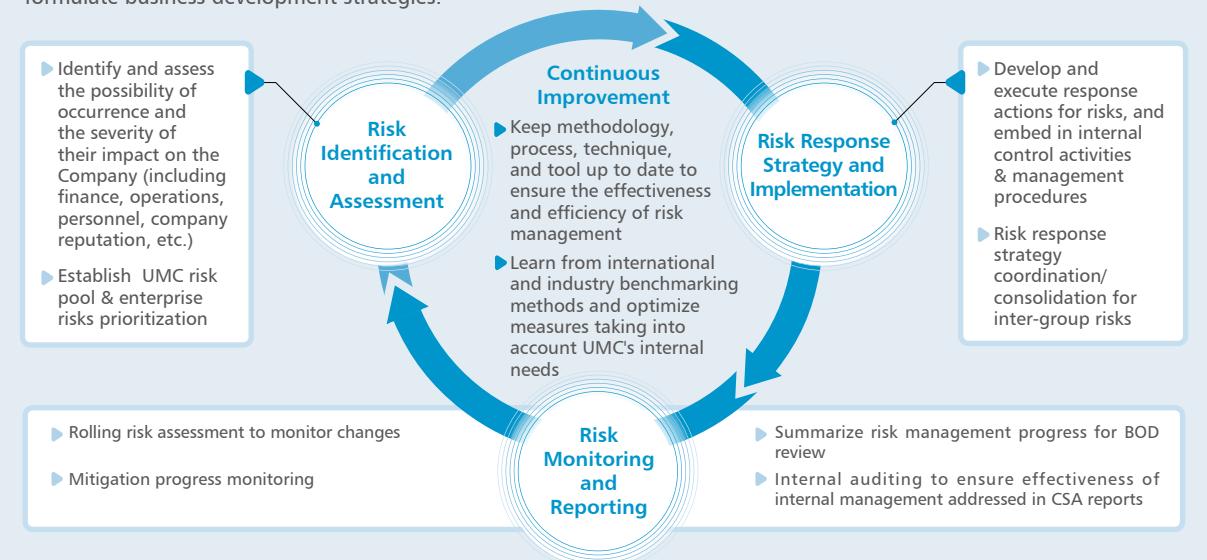
Enterprise Risk Management Structure



Guided by the enterprise risk management policy, the Enterprise Risk Management Committee 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 reports to the ESG Steering Committee on a quarterly basis to ensure alignment with the Company's sustainability strategy, and reports to the Board of Directors at least once a year on the implementation and effectiveness of risk management measures, and to ensure alignment with the risk management policies. In addition, UMC also incorporates internal auditing and control functions to ensure that the risks associated with operations have been effectively controlled.

Risk Management Mechanism

The Enterprise Risk Management Committee consolidates and evaluates risks in the areas of strategy, operation, finance, and hazard, creates a risk map, and defines the priority order and risk level of risk items. Risk management plans are formulated 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 in order to monitor the effectiveness of risk management plans and related control operations. At the same time, the Company also grasps 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, 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.

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 2021 are as follows:

Strategy

The impact of Geopolitical Developments on the Company's Investments and Operations		Emerging Risk
Risk Description		Potential Impact
Rising political or economic tensions between China and the United States have led to sanction measures and triggered a trade war. Measures taken by governments include tariff increases, embargoes, policy interventions, and government subsidies. U.S.-China antagonism has also affected cross-strait relations, and the recent rise in tensions has increased the uncertainty of future operations and investments.	The impact on UMC includes revenue, delivery time, goodwill, and investment plans. For example, <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's production and capacity expansion plans, which may disrupt shipments and damage the Company's goodwill. ▶ Political tensions across the Taiwan Strait may affect shipments from Chinese suppliers and Chinese customer orders. ▶ Investment restrictions and regulatory changes may affect the company's strategy, operational performance, and management complexity. 	
Countermeasures		
<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 server, automotive, and industrial applications. ▶ 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 grasp the origins country's component ratio of raw materials; closely monitoring regulatory changes, and strengthening management adaptability, and legal compliance; increasing the flexibility of cross-region and cross-factory support, and adjusting production allocation and capacity expansion plans in a timely manner. 		

Countries Using Policies/Resources to Build Domestic Semiconductor Manufacturing Capabilities, and the Risks Posed to the Company's Future Growth

Countries Using Policies/Resources to Build Domestic Semiconductor Manufacturing Capabilities, and the Risks Posed to the Company's Future Growth		Emerging Risk
Risk Description		Potential Impact
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 or threaten its national security. Therefore, developing domestic semiconductor manufacturing capabilities has become an important issue for major powers.	The impact on UMC includes revenue, investment plans, and competitiveness. For example, <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. 	
Countermeasures		
<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. 		

Finance

Currency Exchange and Interest Rate Risk	
Risk Description/ Potential Impact	Countermeasures
<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. 	<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.



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Operations

Shortages of Resources Caused by Strong Demand for Semiconductors, and the Potential Impact on UMC's Capacity Expansion | Emerging Risk

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 impact on UMC includes revenue, delivery time, cost, goodwill, and investment plans. For example,

- ▶ 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.

Countermeasures

- ▶ 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 airline seats in advance, or charter flights.

- ▶ Optimizing equipment verification process to shorten equipment lead-in time to mass production.

The Impact of Infectious Diseases on the Company's Operations

Risk Description

The outbreak of COVID-19 at the end of 2019 is still ongoing, which has adversely affected the world economy and disrupted supply chain. The pandemic is not expected to end in the near term.

Potential Impact

Unstable sales activities and customer demand, decline in factory operations and labor, difficulties in international travel and communication, restrictions on cross-border cooperation in research and development, disruption to supply of materials, etc.

Countermeasures

- ▶ UMC established its coronavirus epidemic control and response center in January 2020 to coordinate relevant information and resources, including:
- ▶ 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.

For related information, please refer to 1.2.3 Improving Operational Risk Management and ESG Special Feature "Proactive and Agile Approach to the Pandemic" in this report.

Hazard

The Impact of the Government's Green Energy/ Energy Consumption Policies on the Company's Investments and Operations | Emerging Risk

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, while Taiwan has also drafted a bill on a carbon pricing mechanism. In addition, Chinese authorities have implemented policies to control energy consumption and ration power supplies, and have requested enterprises to reduce their consumption. These policies will increase operation or investment costs, and cause financial impact for UMC.

Potential Impact

- ▶ It is estimated that an additional expenditure of no more than NT\$200 million per year will be spent on renewable energy certificates or buyout payments in the next 20 years to meet the target of 10%. For the increasing the collection of carbon tax fee in Singapore and in Taiwan, the additional costs are estimated as follows: 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); and no more than NT\$ 800 million in Taiwan in 2024, assuming that the Taiwan government will begin carbon tax collection in 2024 (The calculation is based on NT\$300/per ton of carbon emission). These will increase operation costs and cause profit erosion.
- ▶ If the Taipower generators break down and renewable energy supplies are unstable during peak consumption periods, power trips or voltage dips may occur due to insufficient backup capacity. Based on the statistical data of voltage dip loss in the recent five years, it is estimated that the average loss of a single voltage dip is no more than NT\$10 million after removing deviation values.
- ▶ If the energy consumption and intensifying dual control in China government is expanded to semiconductor industry, there will be production impact such as production reduction and shutdown.

Countermeasures

The following are listed according to the importance and contribution to risk mitigation:

- ▶ Widely-built solar photovoltaic system.
- ▶ Develop energy saving plans to reduce electricity consumption.
- ▶ Install diesel oil generators and enhance UPS install percentage.
- ▶ Establish safety level management mechanism of diesel oil for generators.
- ▶ Gradually replace existing lead-acid UPS batteries with lithium-ion UPS batteries to enhance system stability.
- ▶ Continuously pay attention to demand variation and regulation changes, and enhance communication with local governments.

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.

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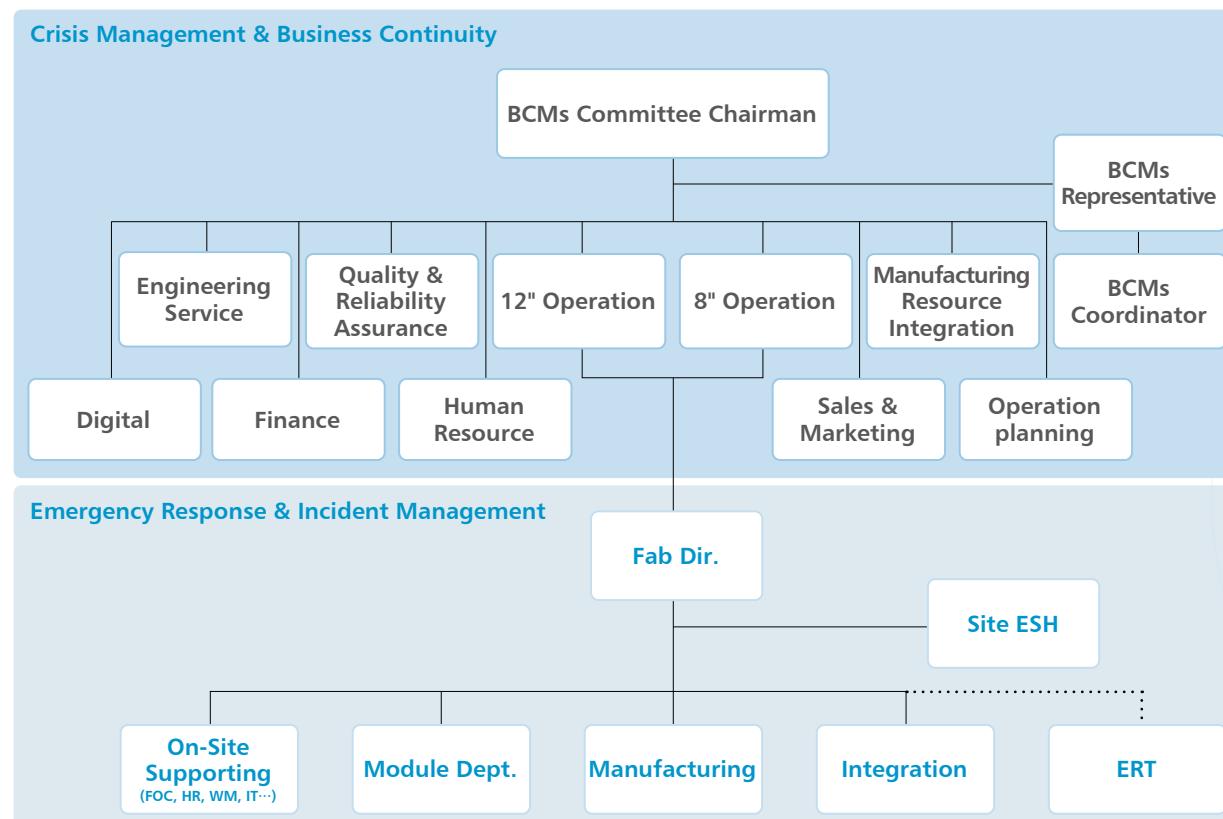
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1.2.3 Improving Operational Risk Management

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 sound quality is the ultimate purpose of UMC's business continuity management. The Company's Hsinchu headquarters, Tainan Fab12A in Taiwan, and Fab12i in Singapore passed ISO 22301:2012 verification sequentially since 2013 and completed the transition to the updated ISO 22301:2019 in 2021. 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.

BCM (Business Continuity Management) Committee Organization Chart

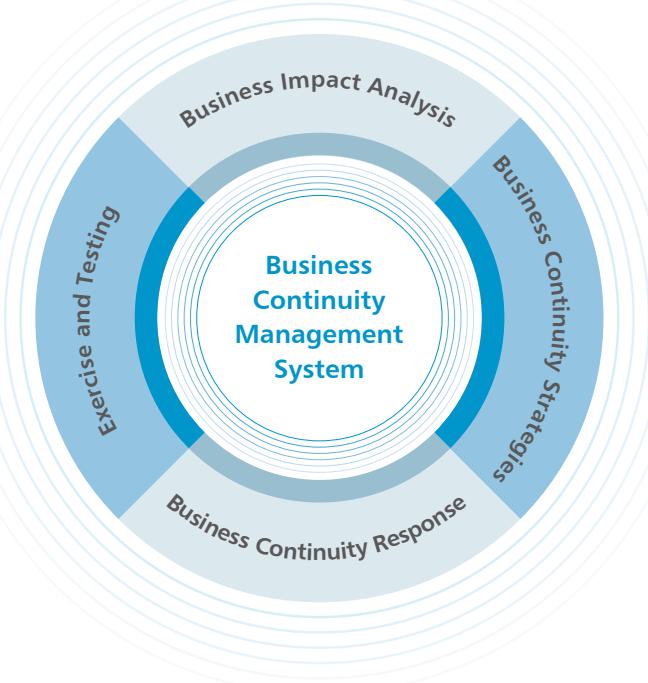


I. Business Continuity Management Framework

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.

Business Continuity Management System Framework



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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:



- ▶ UMC aims to provide customers with excellent and uninterrupted service.
- ▶ UMC ensures the effective of its business continuity system by implement system and integrate resources.
- ▶ UMC reviews and improves continuously to enhance the resilience of responding to various disasters before/ during/ after the disruption from business impact to ensure the utmost rights and interests of customers and stakeholders.



- ▶ Personnel safety is the top business continuity objective.
- ▶ Base on risk assessment results, the company aims to develop different disaster prevention measures and responses to reduce operational impact and shorten recovery time.
- ▶ UMC follows ISO 22301 management system standard and executes BCP drill on a regular basis to review the effectiveness of the business continuity plan and make continuous improvements.

Stage 1

Emergency response: control and rescue (hours-days)

Stabilize the effect of incidents or disasters as per the emergency response plan.

Stage 2

Incident Management: stabilization & mitigation (days-months)

Achieve minimum operational goals within the recovery time objective, RTO, as per the business continuity plan.

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 as per business recovery plan.

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

▶ The MT (management team) crisis communication drill held once three years was conducted with interactive vote in a workshop in 2021. The external consultant shared case studies of major incidents and analyzed the advantages and disadvantages in crisis management to achieve the purpose of lesson learned and continuous improvement.

▶ In response to the strategy of maximizing solar panel usage in fabs, a real emergency response and BCP exercise was conducted based on the scenario of fire outbreak on the solar panels on rooftop in UMC's Fab8E, leading to smoke damage and water damage in the clean room. The drill reinforced the staff's ability for disaster relief, efficiency of rescue, damage mitigation, and recovery after disaster.

▶ 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. The Company proactively provided stakeholders with epidemic control and response updates to alleviate their concerns about business continuity. The taskforce still holds weekly meeting as of today to review the epidemic condition, and control measures are adjusted on a rolling basis. For detailed information about COVID-19 counter measures, please refer to ESG Special Feature "Proactive and Agile Approach to the Pandemic" in this report.

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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.

I. Disaster Risk Management Objectives



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 firefighters regularly receive practical professional training and have actual disaster relief capabilities.



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



The Environmental Health and Safety Standards (SEMI-S2) for semiconductor manufacturing equipment, NFPA318, and FM7-7 are the major international standards adopted by UMC. Beside, UMC also adopt 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.

II. 2021 Hazard Risk Control Achievements

- ▶ Established loss prevention guidelines and developed rescue ability for UMC emerging risk (including but not limited to: solar panels on rooftop, lithium batteries used in mobile robot and NTB (Near Tool Buffer) with high fire loading…, etc.).
- ▶ For sudden power outage incident, safety level management mechanism of diesel oil for generators was established.
- ▶ Continue to secure contracts with water tankers and increase private water supplies in response to drought and water shortage risks.



2021 Management Team crisis communication strategy workshop



2021 exercise of a simulated solar panel fire on Fab 8E's rooftop with fire brigade

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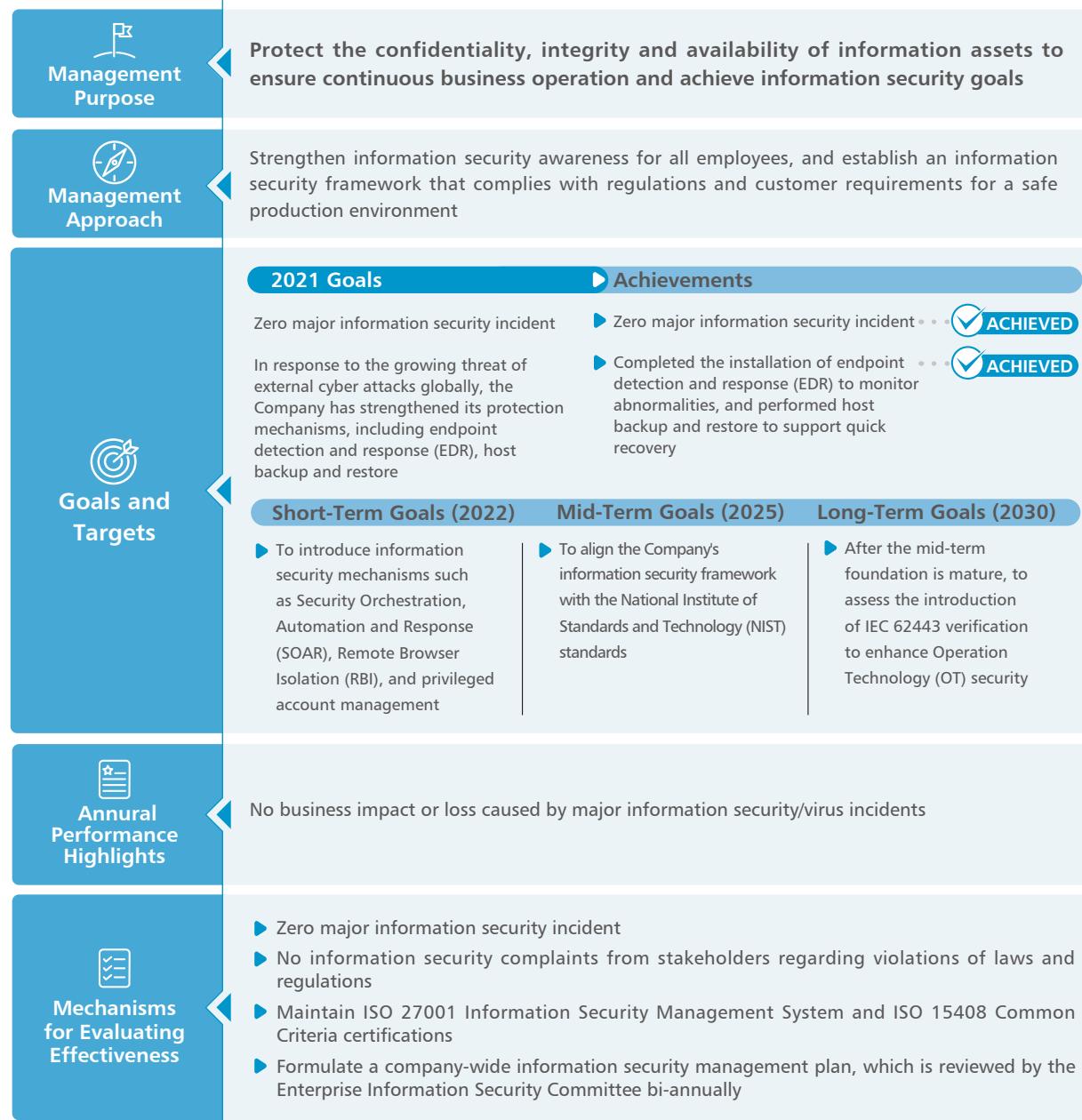
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1.2.4 Information Security Risk Management

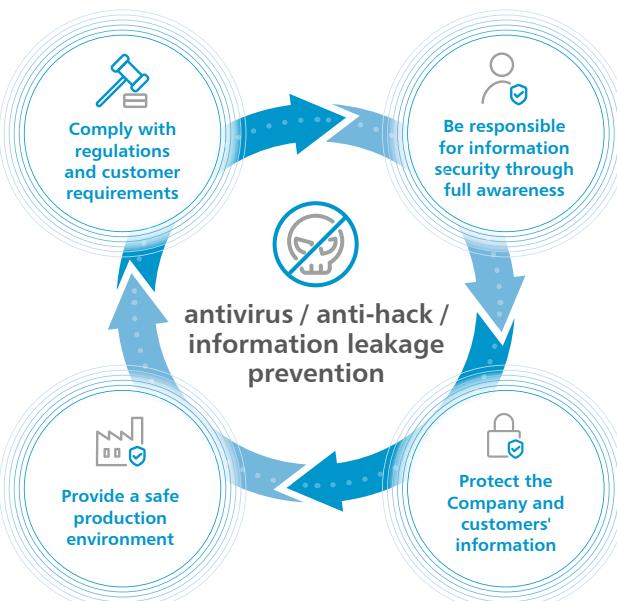


Information Security Policy Implementation

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.

Four guiding principles

- 1 To establish information security management rules in accordance to customer requirements
- 2 To reach a consensus that information security is everyone's responsibility through full awareness
- 3 To protect information confidentiality, integrity, and availability for the Company and customers
- 4 To provide a safe production environment to ensure sustainable operation of the Company's business



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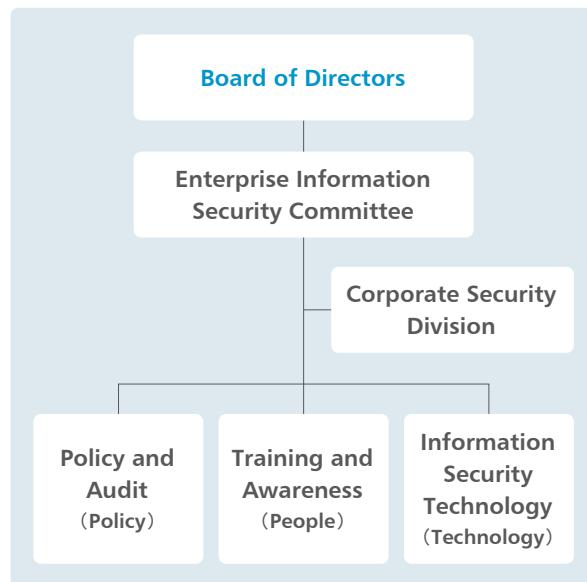
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Information Security Committee Organization

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: https://www.umc.com/en/IR_Director/directors_information



Information Security Risk and Management Plan

According to the Global Risks Report 2021 issued by the World Economic Forum, cybersecurity failure is among the top risks.

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 2021.

Improving information security management procedures

- ▶ To follow the National Institute of Standards and Technology standards to establish a corporate information security framework and create corresponding metrics.
- ▶ Employees should abide by information security regulations (such as strict control of mobile storage devices), follow the standard operating procedures, and carry out the PDCA (Plan-Do-Check-Act) cycle for continuous improvement.

Introducing legal compliance and international information security certification standards

- ▶ To comply with information security related certifications and regulations such as ISO 27001, ISO 15408, ISO 22301, and Sarbanes-Oxley Act (SOX 404).
- ▶ Corresponding enterprise risk management committee has also been established in the Company for promoting various standardization operations.

Education and training

- ▶ To conduct information security training twice a year and occasional social engineering phishing tests for all employees.

Strengthening information security protection

- ▶ To conduct vulnerability scanning and penetration testing for information security systems regularly. To implement reinforcement and patch to reduce information security risks.
- ▶ To establish a network security incident contingency plan, conduct impact and loss assessment according to the severity of the incident, and take necessary escalation and recovery actions.

Enhancing network, endpoint and application security

- ▶ To improve the detection of irregularities and elevate preventive capabilities including protocols such as Application Whitelisting and EDR (Endpoint Detection and Response).
- ▶ To optimize network security area of overall information systems and to increase the multi-factor authentication protection for host privileged account login.

Controlling potential risks

- ▶ To leverage an international professional security company's resources to assess the robustness of overall security as a basis for further improvement.
- ▶ To purchase information security insurance protecting the Company from cyber attacks and minimizing potential losses.

Epidemic response

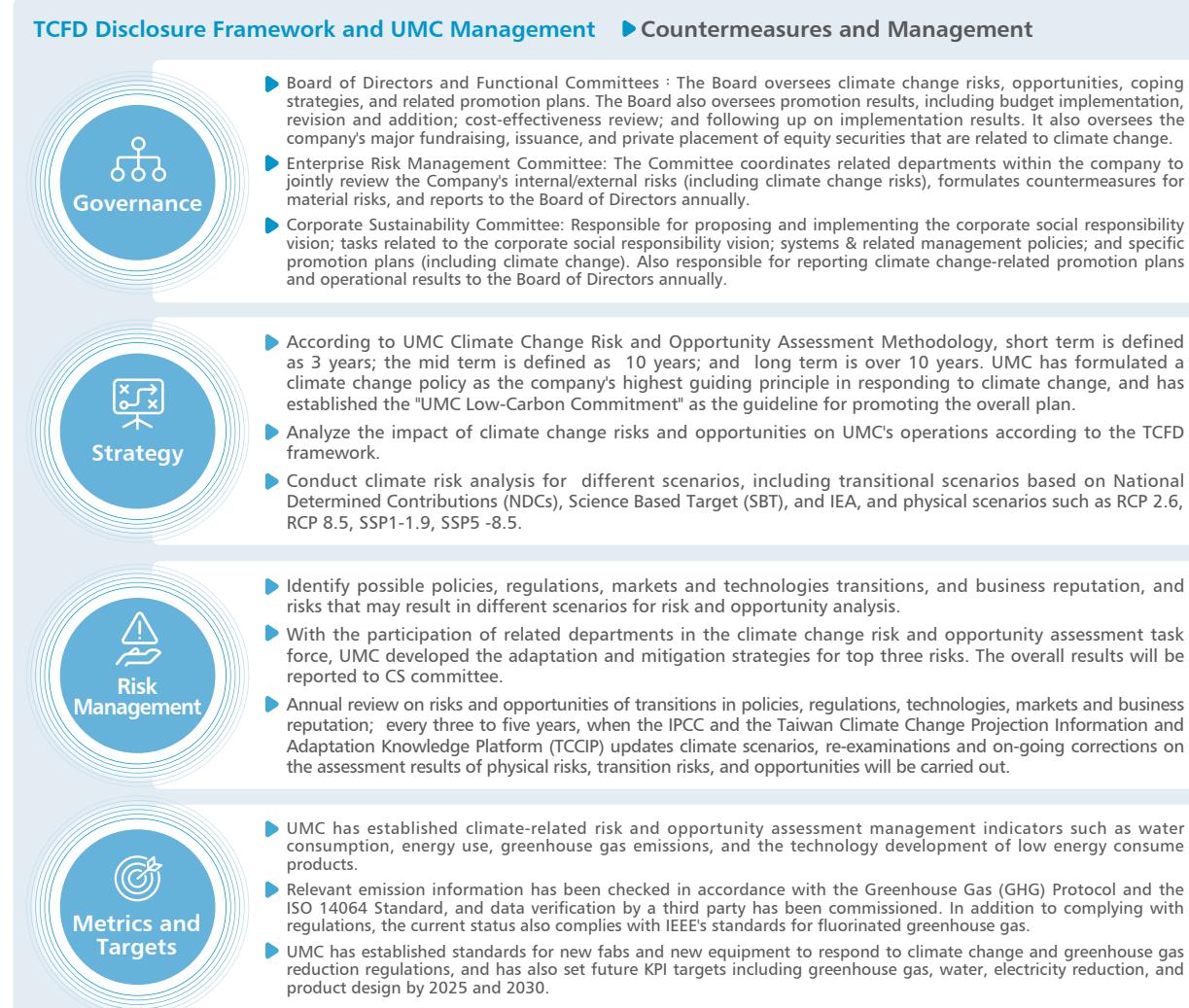
- ▶ In response to the COVID-19 epidemic, the Company has strengthened anti-virus and information security protection measures for its work-from-home (WFH) policy.

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1.2.5 Managing Climate Risks and Opportunities

UMC is closely watching the risks and opportunities that may arise from climate change and the transition to a low carbon economy. In order to promote disclosure of climate-related risks and opportunities, the Company has developed assessment tools by referring to the Task Force on Climate-Related Financial Disclosures (TCFD), ISO 14090:2019 Adaptation to Climate Change, and the UK Climate Impacts Programme (UKCIP). Considering factors such as policies, regulations, market and technology changes, reputation, and physical risks, UMC can development strategies to adapt to changes or to mitigate risks. With the participation of executive management and combined with the Company's green process technology development roadmap, UMC can convert risks and opportunities into results such as reduction in carbon emissions and financial contribution.



For more details, please refer to UMC website



Signed by CSO representatives in 2020 to support the Task Force on Climate-Related Financial Disclosures (TCFD) initiative.

Important Issues Related to Climate Risk and Opportunity Management in 2021

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 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.

3 The Board of Directors approved the mechanism for linking employee remuneration to ESG KPI; 2021 indicators include KPIs related to climate change

4 Formulated a number of short-, mid- and long-term goals and action plans that addresses climate change

5 Formally pledged to achieve net-zero emissions by 2050.

6 Gained admission into RE100, an international renewable energy initiative and the Company set a goal to achieve 100% renewable energy usage by 2050 with progressive goals of 15% in 2025 and 30% in 2030

7 Participated in the Science-Based Targets initiative

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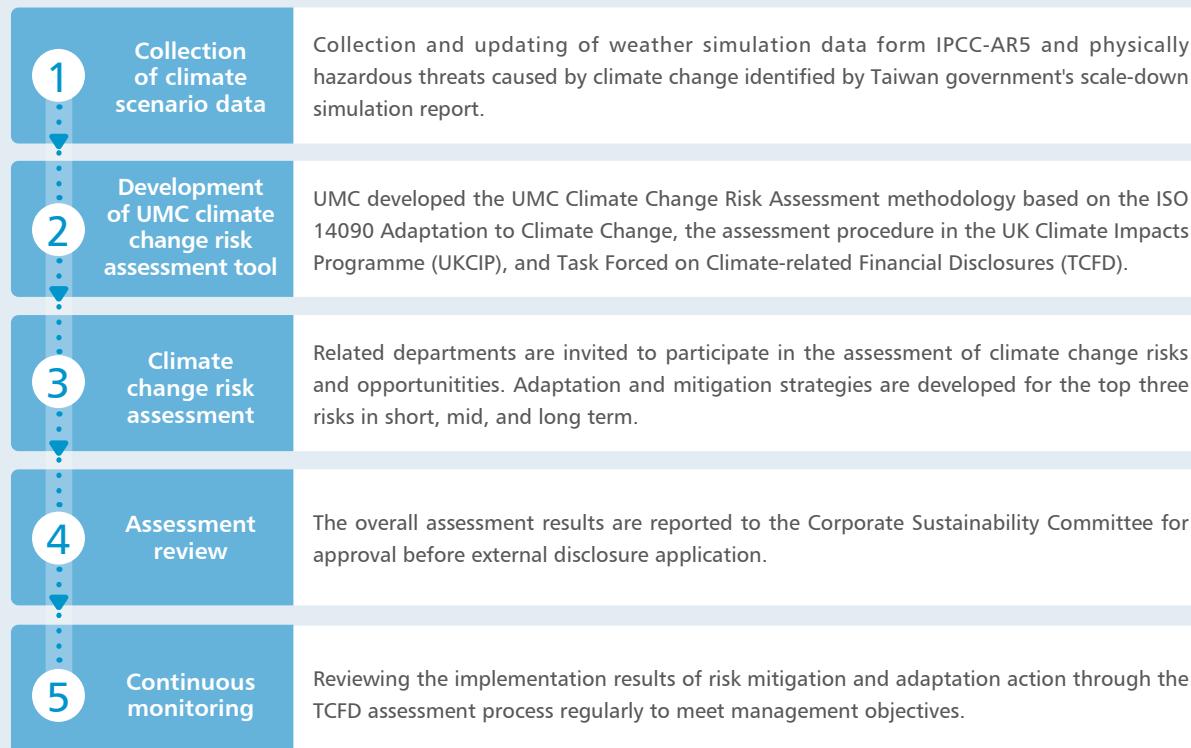


Climate Change Risk and Opportunity Assessment

The Climate Change Risk and Opportunity Assessment Team conducts assessments every year, and develops adaptation and mitigation countermeasures. The assessment results are submitted to the Corporate Sustainability Committee for approval.



UMC Climate Change Risk and Opportunity Assessment Procedure



Note: IPCC AR6: Intergovernmental Panel on Climate Change Sixth Assessment Report

UMC Climate Change Risk and Opportunity Matrix



Transition Risks

- ① Carbon tax/fee (5,15,15)
- ② Customers' green energy requirements (2,4,8)
- ③ Changes in customer preferences/green product demand (1, 4, 6)
- ④ Impact on business reputation due to inability to comply with international climate change action initiative (2, 3, 4)
- ⑤ Increase in investment burden due to green energy policies (15, 20, 25)
- ⑥ Power instability or shortages caused by green energy policies (2, 4, 8)
- ⑦ Water surcharges (3, 4, 5)
- ⑧ Customer's demand of green technology (4,6,8)

Physical Risks

- ⑨ Increase in air conditioning loading and electricity consumption due to global warming (2,6,6)
- ⑩ Operation disruption due to work suspension during typhoons (2,2,3)
- ⑪ Increased cost of raw material distribution and transportation (1,4,6)
- ⑫ Water restriction leading to delivery delay from parts cleaning suppliers (1,2,2)
- ⑬ Water shortage impacting production (3,3,3)
- ⑭ Power outage or voltage drop during typhoon causing impact to production (2,4,6)

Opportunities

- ⑯ Increasing demand for environment-friendly product (16,25,25)
- ⑯ Greenhouse Gas Reduction and Management Act carbon trading opportunities (4,10,10)
- ⑰ Strengthening hardware protection to improve organizational resilience (4,4,8)

Note: 1. The number marked after the risk/opportunity is the ranking for short, medium, or long term.

2. The risk/opportunity marked in the matrix diagram is the time when the evaluation score is most significant.

3. The words in red indicate the top three risks.

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Impact Analysis of Climate Change

Major Climate-Related Risks and Responses Includes top three risks and the risk of water shortage which was a significant concern of stakeholders in 2021

Transition ► Aspect/Risk	Description of Scenario	Potential Financial Impacts	UMC's Response
Policy and Regulation Carbon tax/fee	► Singapore imposes carbon tax and increases fee rates, assuming a rate of SGD 80/ton ► Taiwan imposes carbon fee, assuming a rate of NT\$300/ton	► The annual operating cost of the Singapore fab will increase by no more than NT\$400 million ► The annual operating cost of the Taiwan fabs will increase, and it is estimated that it will not exceed NT\$800 million	● Build UMC's own solar power generation facilities ● Participated in government plans for voluntary GHG reduction ● Promoted GHG reduction plans ● Apply for carbon offset projects for carbon credits
Policy and Regulation Increase in investment burden due to green energy policies Power instability or shortages caused by green energy policies	► Regulations require expanded installation of renewable energy in Taiwan, or monetary substitution payment ► Electricity price rising ► Power trips or voltage dips may occur when Taipower generator break down combines with unstable renewable energy supplying during the peak consumption periods	► The annual operating cost of the Taiwan fabs will increase, and it is estimated that it will not exceed NT\$100 million ► The cost of electricity tariff increasing >15% ► Based on the latest 5 years' statistical data of UMC power events, it is estimated that the average loss of a single power event is no more than NT\$10 million after excluding non-Taipower factors	● Expand Company's own renewable energy installations and energy storage facilities, or purchase renewable energy certificates ● Promoting energy saving programs ● Evaluate installing additional generators ● Invest in voltage drop resistance equipment, equip important manufacturing machinery with uninterrupted power supplies (UPS) to reduce risk of voltage drops
Technology Customer's demand of green technology	► Customer requirements for product characteristics with low energy consumption and low carbon emissions promote the necessary adjustment of UMC's R&D priorities and goals	► R&D expenses increased by 20%	● Develop higher-level, lower-energy process technologies
Market Customers' green energy requirements	► Due to customer requirements, the Company must increase purchase of green electricity, assuming that additional 1% of green electricity is needed	► It is estimated that the increased electricity cost will not exceed NT\$200 million	● Increase the installation of UMC's own renewable energy power generation facilities ● Obtain renewable energy through renewable energy power purchase agreements ● Purchase of renewable energy certificates

Physical ► Aspect/Risk	Description of Scenario	Potential Financial Impacts	UMC's Response
Long-Term Water shortage impacting production	► Decrease in tap water supply increases operating costs	► Annual operating cost is estimated to increase by about NT\$120 million	● Contract water tanker and private water sources to make up for water shortages ● Storage tanks have already been installed in all fabs to improve water storage control flexibility ● Continue to monitor the government's capacity to strengthen cross-regional dispatching of water resources ● Expand water recovery and reuse to reduce water demand ● Assess the introduction of emerging water sources ● Establish a water contingency plan

Secondary Climate-Related Risks and Responses

Transition ► Aspect	Risk	UMC's Response
Market	► Changes in customer preferences and inability to respond to market demands in a timely manner, impacting the company's revenue	● Continue to develop technologies to reduce chip power consumption, and develop various energy management chips ● Research and analyze the latest market trends
Reputation	► Negative ESG news appearance: companies failing to meet policy regulations or targets of international climate change initiatives	● Explain and clarify reports, and take specific actions to comply with policy regulations or international goals related to climate change
Policy and Regulation	► Taiwan imposes water surcharge	● Improve the production efficiency of manufacturing process, reduce water consumption, and increase water recovery rate ● Promote measures to reduce water consumption and surcharges such as clean production certification, water footprint inventory

Physical ► Aspect	Risk	UMC's Response
Short-Term	► Increases in intensity and frequency of typhoons, storms, and natural disasters result in employee inability to work ► Voltage drop caused by typhoon affects production ► Increased cost of raw material distribution and transportation	● Build Industry 5.0 to reduce the impact of manpower ● Invest in voltage drop resistance equipment, equip important manufacturing machinery with uninterrupted power supplies (UPS) to reduce risk of voltage drops ● Establish a second supplier to provide additional backup energy ● Supplier risk assessment to avoid or reduce purchases from high-risk producing areas ● Establish multiple transport routes and avoid risky routes ● Increase the storage capacity of local manufacturers ● Increased internal storage capacity



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Physical	Category	Risk	UMC's Response
Long-Term		► Rising temperatures increase operating costs for air conditioning.	<ul style="list-style-type: none"> ● Introduce green-building design ● Implement energy-saving measures for building enclosures and air-conditioning systems to reduce building temperatures ● Grow plants to increase greenery and reduce urban heat island effects
		► Delivery delays from suppliers due to water/electricity constraints	<ul style="list-style-type: none"> ● Supplier risk assessment ● Investigate the in-plant demand and supplier capacity and the impact of government water/electricity restrictions ● Manufacturers provide water storage plans and cooperation models with private water resource providers ● Monitor the status of suppliers, increase safety stock, and establish relationships with second suppliers

Major and secondary Climate-related Opportunities and Responses

Category Aspect	Opportunity	UMC's Response
Major Opportunity Product/Service	► Increasing demand for eco-friendly product in market	<p>UMC has continued to develop related technologies according to customer and market demands. For example, 22uLP technology has been finished, which can provide the better low power consumption and power management.</p> <ul style="list-style-type: none"> ● Achievements in 2021: <ol style="list-style-type: none"> 1. Completed technology development of 22nm eHV, which can reduce power consumption by about 20% in product applications 2. Completed technology development of 90nm+ RFSOI, which can reduce power consumption by about 30% in product applications 3. The carbon reduction benefit is about 1.22 million tons of CO₂ ● The compound growth rate in 2020-2023 is expected to reach up to triple-digits.
Secondary Opportunity Resource Efficiency	► Carbon trade opportunity provided by GHG reduction and management act	<ul style="list-style-type: none"> ● Respond to government policies to reduce greenhouse gas emissions, improve overall equipment and fab operation efficiency. It is expected that in the future, UMC can perform trading in the carbon market to increase revenue.
Secondary Opportunity Operational resilience	► Strengthening hardware protection to improve organizational resilience	The factory foundation in Southern Taiwan Science Park has been raised and the hardware protection has been improved to reduce the risk of flooding during heavy rainfall.

Note: The definition of UMC green technology: Reduce resource consumption and environmental pollution during the development of process, and all product applications have the characteristics of energy-saving, waste-reduction, durability and environment-friendliness.

Other Climate-Related Opportunities and Responses

UMC also takes into account its core technology and human resources when seeking opportunities to enhance operational competitiveness in terms of resource efficiency, energy sources, water resources, products/services, markets, and reputation.

Aspect	UMC's Response
Resource Efficiency	<ul style="list-style-type: none"> ● Promote voluntary water saving plans every year, reduce water consumption and wastewater discharge, improve water use efficiency, and ensure water resource stability ● UMC's tolerance to extreme rainfall and drought is higher than that of other enterprises due to effective water resources management, monitoring and contingency plans
Energy Source	<ul style="list-style-type: none"> ● In addition to increases in renewable energy investment, UMC has also changed the company's articles of association to include energy technology services and energy/resource conservation technology-related consulting services, etc. ● Install solar power systems and apply for renewable energy certification
Water Resources	<ul style="list-style-type: none"> ● Develop and apply diversified water sources; in addition to increasing water recovery and reuse in each fab, UMC also includes rainwater, condensation water, and reclaimed water as water sources ● Water management plans and diversified water sources will reduce UMC's risk in water-stressed areas
Product/Service/Market/ Business Reputation	<ul style="list-style-type: none"> ● Obtain energy-saving, high-efficiency, low-carbon-related patents ● Provide technical and consulting services, and collaborate with governmental units and partners from the same or other industries to improve community relations. ● UMC provides feedback on water resource management to the government as an industry association representative, and offers consultation services for the industry through water conservation promotion events in the Science Park ● Provide water conservation and water sanitation technical consultation, engineering improvement and other services to community groups such as schools and social welfare organizations through the Energy Saving Service Team to enhance the Company's social image ● Actively work with suppliers to drive carbon reduction initiatives, the Energy Saving Service Team, and the Eco Echo Award initiative; carry out water, energy and resource recovery, reuse and reduction; promote greenhouse gas reduction and ecological conservation work; and participate in external advocacy activities initiated by industry and social associations. All of these are done with the intention that, by providing practical experience and advice, UMC can facilitate the formulation of appropriate and feasible policies and regulations by the government and related organizations



Third-party verification certificate of TCFD assessment:

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Water-Risk Management and Adaptation Plan

In recent years, climate change has caused dramatic changes to the water environment, and led to more frequent floods and droughts. In order to further understand the water stress and water risks faced by each fab, UMC uses the water risk assessment tool developed by the World Resources Institute (WRI). UMC considers water resource distributions in each region and indicators such as water source stability, regional water supply-demand ratios to determine the proportion of UMC fabs located in regions with water scarcity. This serves as a reference for developing water resource risk management strategies.

Strengthening Flood Defense Capacity

When evaluating sites for new plants, in addition to considering the design standards set by local government agencies, UMC also adopts natural disaster risk databases established by international reinsurers such as Munich Re's NATHAN and Swiss Re's CatNet Service for assessment of hazard levels of tropical cyclones, floods, storm surges, etc. When a site is determined as having medium risk or higher, facilities that exceed local government standards are constructed to enhance protection.

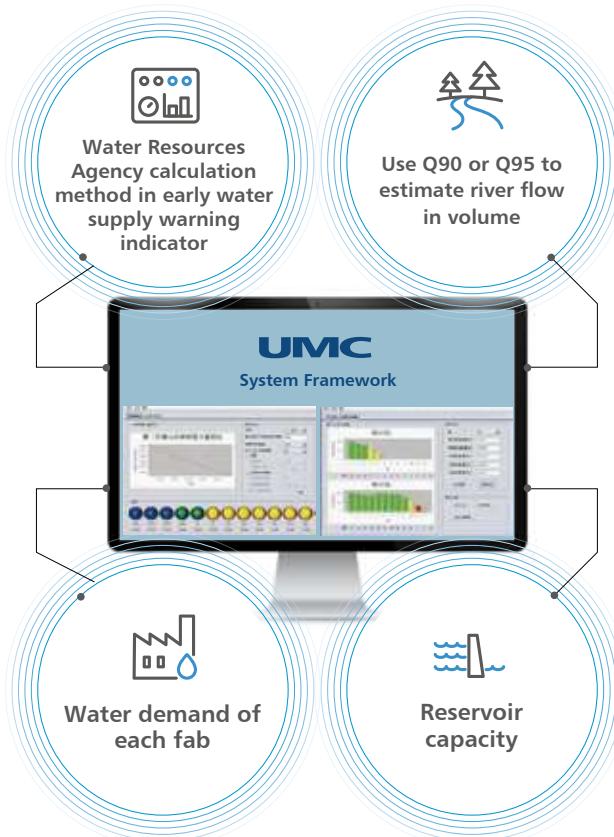
According to the Taiwan Flood Risk Assessment Project implemented in 2014, the Hsinchu plant is located in a hilly area with low flood risk. Fab 12A in Tainan, on the other hand, is located in a potentially flood-prone area. In response to this, flood gates have been put in place at specific entrances/exits, based on a design that meets the 500-year flood -rainfall standards. In addition, for the second 12A new plant that is still under construction, the ground floor has been elevated more than two meters above the surrounding roads to substantively achieve the goal of flood defense.

Reducing Impact of Water Shortages

With regard to the water shortage issue, besides the continuous implementation of water saving measures, UMC has collaborated with the Department of Bioenvironmental Systems Engineering and National Taiwan University to develop the "Water Shortage Warning and Decision Support System for UMC's Fabs in Hsinchu Science Park and Southern Taiwan Science Park." This seasonal (3 months) water shortage warning system allows UMC fabs to obtain early warning of any possible water shortages. Combined with UMC's current water shortage response measures, water-saving measures can be planned or implemented ahead of time to significantly reduce operation risk.

Taiwan is faced its worst drought in 56 years in 2021. Since February 2021, the Hsinchu and Tainan areas have been implementing second-phase water rationing, with water restrictions of 17% and 13%, respectively. In response to even more severe water conditions in the future, UMC has purchased additional water tankers and signed contracts with private water suppliers to make up for water shortages. Therefore, operating costs have increased to secure water sources, but operations and production have not been affected.

Response measures for water shortages



Climate-Change and Water-Security Related Information Disclosure and Communication

UMC participates in the international CDP organization's climate change and water security projects every year, further disclosing the Company's risk and opportunity identification results, and management-related information. In the annual assessment conducted by CDP in 2021, UMC reached the Leadership Level in water security performance, the Management Level in climate change performance, and the Leadership Level in supplier engagement rating. This demonstrates that UMC has been recognized by international investment institutions for our sustainability information disclosure.

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1.3 Building Sustainable Supply Chain Material Topic • • • • •

Management Purpose	Work with suppliers to create a supply chain that protects the environment and values social responsibility, labor rights, safety, health and sustainable development.
Management Approach	<ul style="list-style-type: none"> Through the supplier sustainability evaluation mechanism and UMC's Supplier Code of Conduct, the Company strives to enhance suppliers' compliance of labor rights, workplace safety, environmental protection, business ethics, and management system. By conducting annual assessments, the Company is able to track suppliers' progress and take corresponding measures, reducing the risk of operational interruptions. <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Anti-Corruption Policy</p> </div> <div style="text-align: center;"> <p>Supply Chain Management Policy</p> </div> <div style="text-align: center;"> <p>Grievance Mechanisms</p> </div> </div>
Goals and Targets	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>2021 Goals</p> <ul style="list-style-type: none"> Commitment to maintain zero conflict mineral procurement, 30% of all suppliers to complete on-site audits of conflict minerals 100% completion rate of (ESG) & RBA self-assessment questionnaire and on-site audit for Tier 1 suppliers 100% of new suppliers to comply UMC's Supplier Code of Conduct 100% completion rate among Tier 1 suppliers for the audit conducted every three years. </div> <div style="width: 45%;"> <p>Achievements</p> <ul style="list-style-type: none"> 6 suppliers conducted internal audits ESG & RBA self-assessment questionnaire and completion rate 100% of new suppliers complied the Supplier Code of Conduct Completed 7% of Critical Tier2 Suppliers Risk Survey </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 33%;"> <p>Short-Term Goals 2022</p> <ul style="list-style-type: none"> Survey tier 1 suppliers on greenhouse gas emissions in order to categorize suppliers as critical or non-critical when it comes to emissions </div> <div style="width: 33%;"> <p>Mid-Term Goals 2023~2025</p> <ul style="list-style-type: none"> 80% of key suppliers (UMC's Tier 2 supplier) are required to comply the Supplier Code of Conduct by 2025 Completed 30% of key suppliers (UMC's Tier2 supplier) risk survey by 2025. Assist critical suppliers to complete third-party GHG inventories and non-key suppliers to set a Science based Target (SBT) for GHG emission reduction, and conduct annual surveys </div> <div style="width: 33%;"> <p>Long-Term Goals 2026~2030</p> <ul style="list-style-type: none"> Reduce carbon emissions by 20% and raise renewable energy to 20% of total power consumption by 2030 in UMC's supply chain </div> </div>
Mechanisms for Evaluating Effectiveness	<ul style="list-style-type: none"> Through the supplier evaluation mechanism QCDSS (quality, cost, delivery, service, sustainability), make corresponding purchase response measures for various evaluation rankings.^{Note} Through the supplier's sustainable evaluation mechanism, the supplier is evaluated and tracked for improvement every year. Formulate a company-wide management plan, which is reviewed by the Supplier Committee on a quarterly basis. <p><small>Note: After replying to the CAP, if the supplier does not meet UMC's standards ("No formal approach"), an onsite review will be conducted the next year; if improvements have still not been made, procurement will be reduced or halted based on the supplier evaluation mechanism.</small></p>

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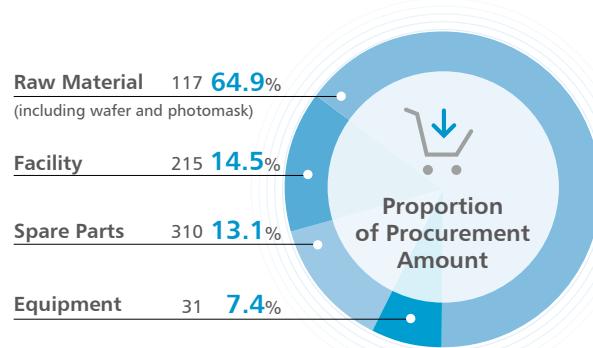
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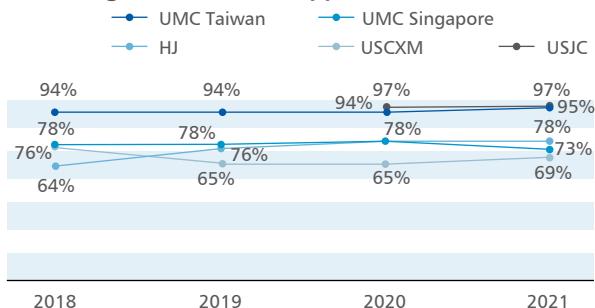
1.3.1 Localization of Supply Chain and Procurement

In 2021, UMC, including subsidiaries HeJian Technology (Suzhou) Co. Ltd., and United Semiconductor (Xiamen) Co. Ltd., cooperated with more than 4,000 suppliers worldwide. The proportion of Tier 1 suppliers in UMC Taiwan is as follows:

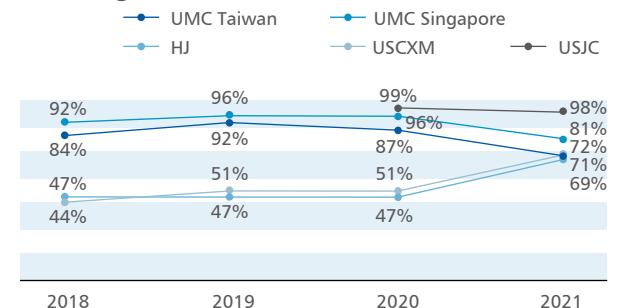


Procurement localization became a key guideline adopted by UMC when looking for potential partners and suppliers. In addition to enhancing close partnerships with local suppliers, UMC expects suppliers to provide services and products with higher efficiency, shorter delivery time, and smaller carbon footprints of raw material required in production. In doing so, UMC also indirectly provides job opportunities and promotes socio-economic development. In 2021, 95% of UMC Taiwan sites' suppliers were local suppliers, accounting for 71% of the total procurement amount.

Percentage of Domestic Suppliers



Percentage of Domestic Procurement Amount

**e-Supply Chain Management**

UMC has had a supply chain management platform (eProcurement) in place since 2001, making the Company an industry pioneer. The platform enables both UMC and suppliers to improve their workflow based on comprehensive operating standards, and enhance efficiency. The platform, which continues to be strengthened every year, conveys the four core values of UMC corporate culture: Integrity, Pragmatism, Agility, and Ingenuity. Collaborating with our suppliers creates a mutual beneficial result for both UMC and our suppliers. UMC will continue to promote supply chain sustainability, green procurement implementation, conflict mineral management, and put risk management/control into practice, as well as optimize Supplier e-Management strategies going forward.

Implementation Target ▶

Implementing a Sustainable Supply Chain

Purpose

- ▶ Supply Chain Online Survey System: Surveys carried out during 2021 included: RBA Questionnaire; CSR Issues Survey; DJSI Questionnaire; GHG Reduction Planning Survey; Survey on the Impact by Mainland China's Energy Consumption and Intensity Dual Control System; and COVID-19 Impact Survey.
- ▶ Supply Chain Online Announcement System: UMC's Code of Conduct; EHS Contracting Instructions; Promotion of E-Invoices; UMC's Latest Factory-entry Rules Against the COVID-19 Pandemic; and the announcement regarding UMC's Complaint Channels for Suppliers

Supplier Risk Assessment Mechanism

Implement supply chain risk management; monitor the Business Continuity Plan (BCP)

- ▶ Raw Material Information Survey System: Mapping/positioning of 2,922 important raw material production plants was completed in 2021
- ▶ Supply Chain Risk Management Platform: In 2021, 9 major events (pandemic, earthquakes, travel warnings, and wind events) triggered the management system. 100% of suppliers reported on their affected status

Conflict Metal Management

Establish UMC (including subsidiary) mechanisms to conduct surveys on suppliers

- ▶ Conflict Metal Management System: Systematic certification for applicable gold, tin, tantalum, tungsten, and cobalt mine sites

Greenhouse Gas Management

Implement GHG reduction measures and initiatives for environmental protection

- ▶ e-Orders: Achievement rate for e-order promotion reached 90%
- ▶ e-Invoices: Achievement rate in 2021 reached 79%; 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

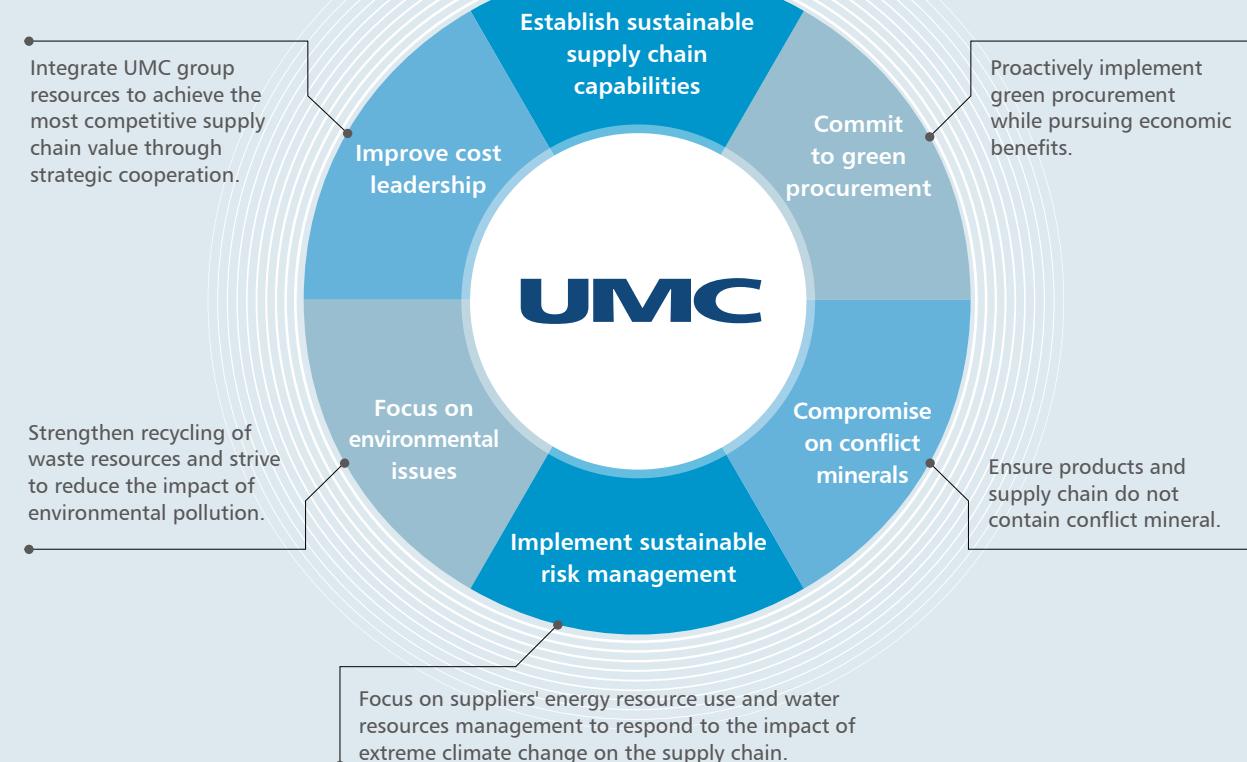
- ▶ Contractors' factory-entry applications: 100% ICP checked
- ▶ Contractors' educational training applications: 100% online applications
- ▶ Materials Safety Data Sheet applications: 100% online applications.

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1.3.2 Sustainable Supply Chain Management**Supplier Management Policy**

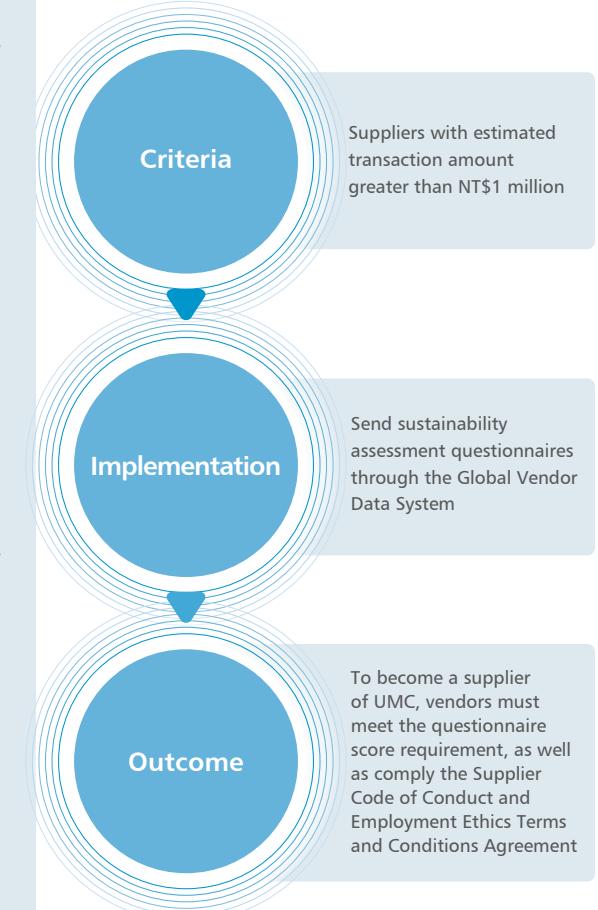
1. Drive suppliers to improve in terms of economic, social and environmental fulfillment.
2. Continuously coach vendors to diversify and localize.
3. Encourage suppliers to upgrade from energy conservation and carbon reduction to a circular economy.



Please visit UMC website to review our commitment to suppliers

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

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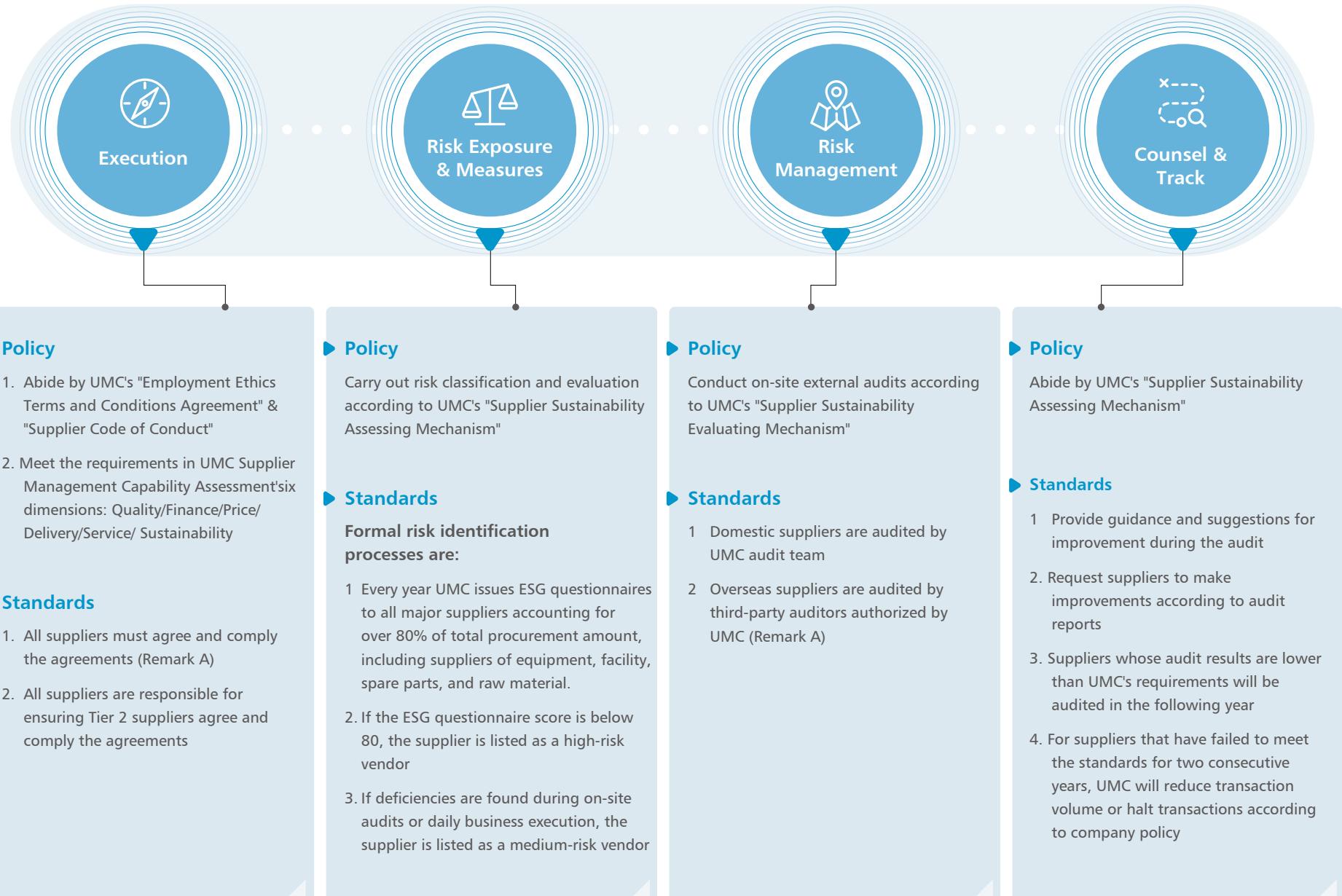
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(2) Four Guidelines of Sustainability Suppliers Assessment



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(3) Supplier Evaluation - New Suppliers Selection Criteria

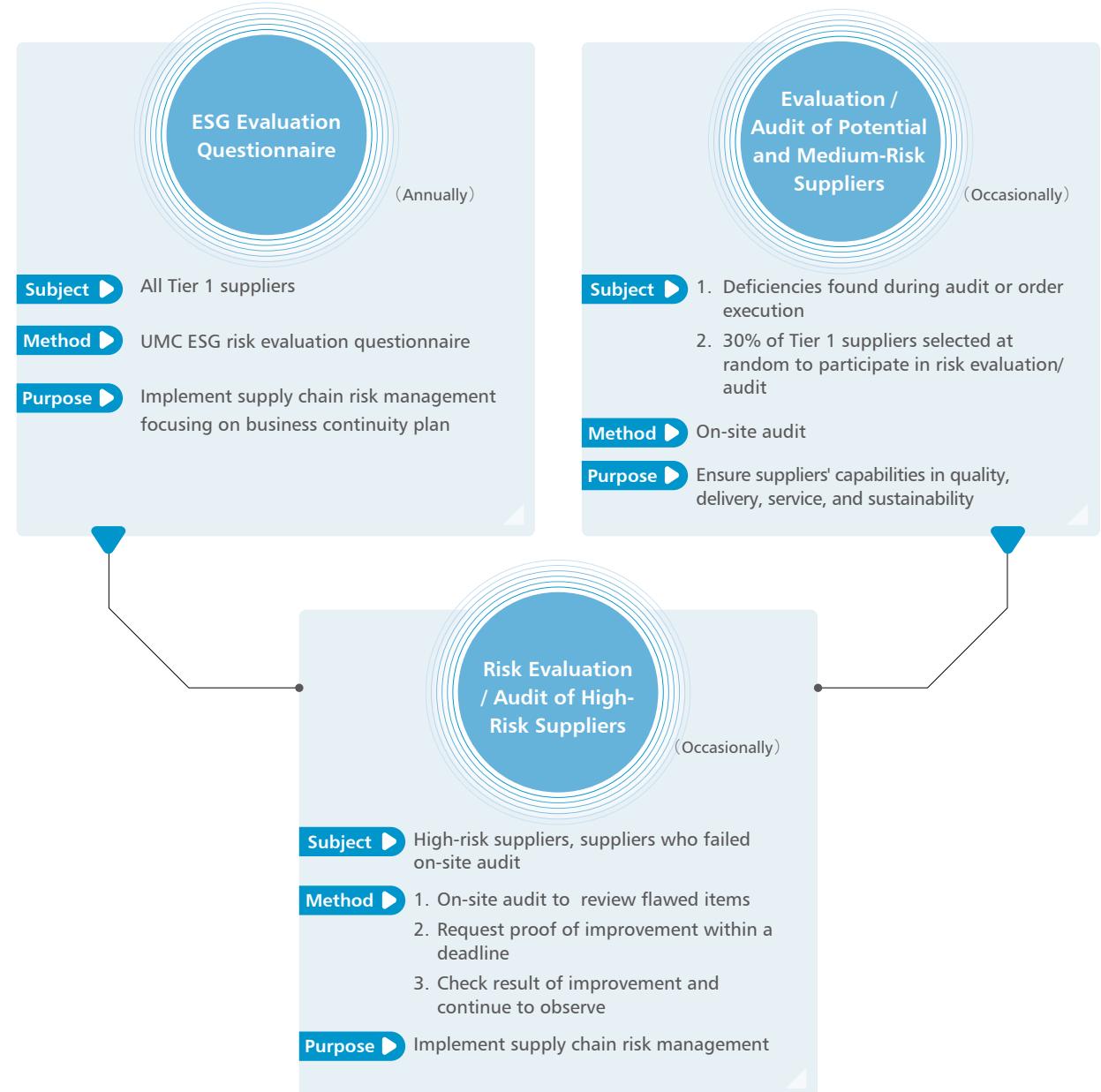
UMC formulated its Supplier Code of Conduct based on the Responsible Business Alliance (RBA)'s Code of Conduct. Both existing and new suppliers are required to comply with this code in order to become a supplier of UMC. In addition, subsequent risk assessments and onsite audits are conducted on a regular 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 addition, 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.

UMC Supplier Risk Assessment Mechanism

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.

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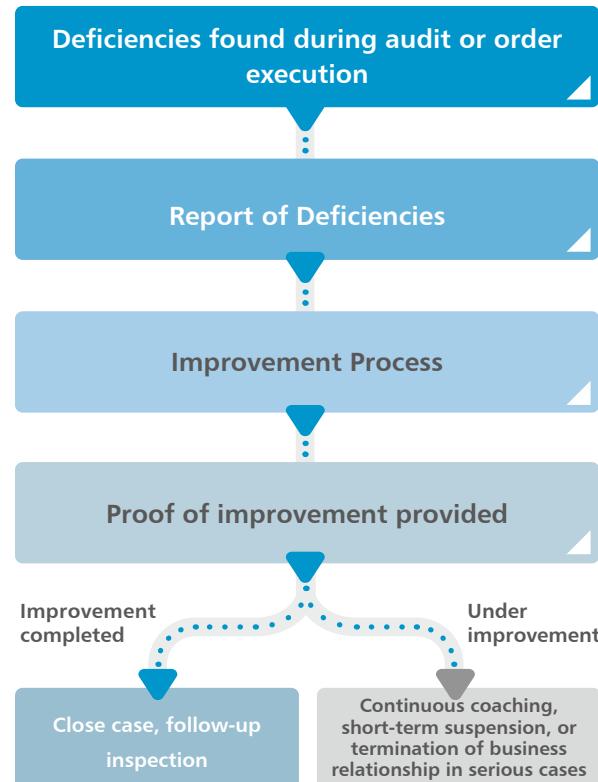
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(5) Supplier Sustainability Evaluation – On-Site Audit/Improvement Guidance and Follow-Up

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.

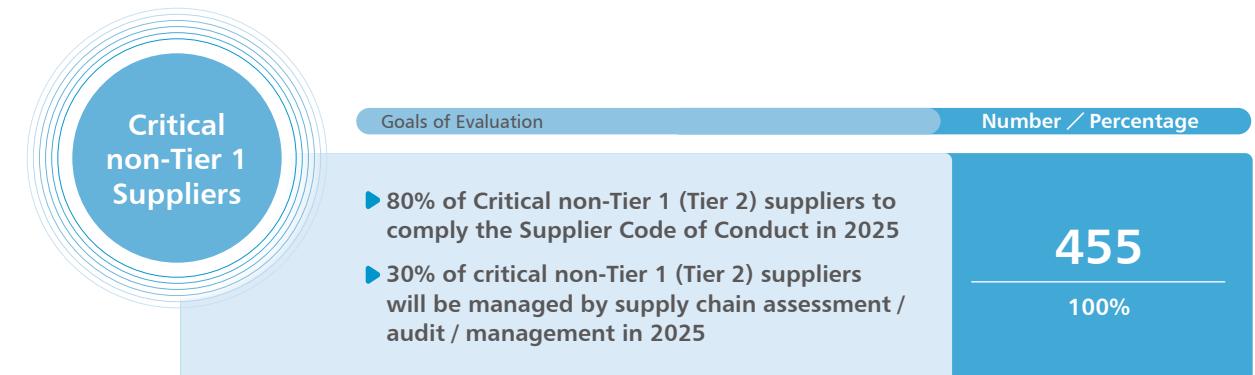
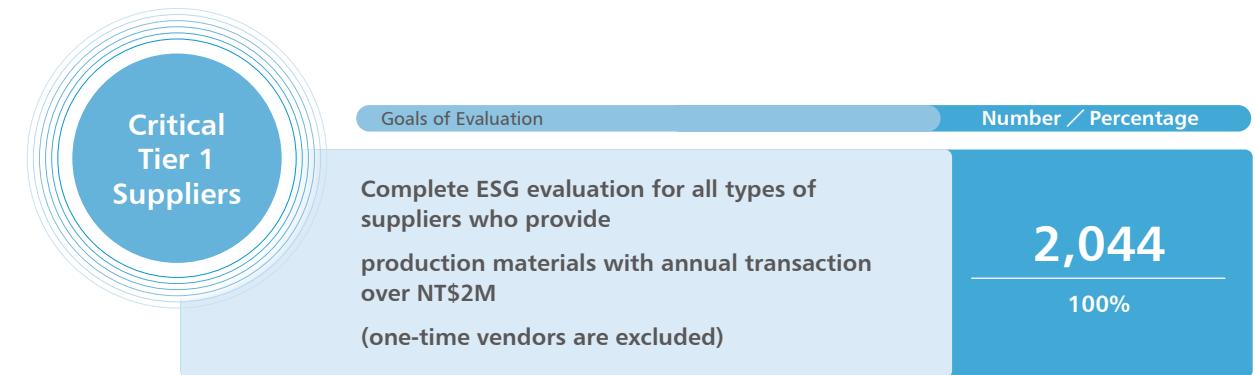
Process of Suppliers Failure Improvement Management



(6) Evaluation Result

In 2021, through UMC's ESG risk assessment questionnaire, UMC Taiwan surveyed a total of 673 major suppliers providing production related materials including raw materials, production equipment, facilities, and components. One-time vendors were excluded. A total of 224 suppliers were audited, of which 17 were identified as high-risk suppliers and listed as subjects of the 2021 on-site audit. The rest of 207 suppliers which were identified as low-risk rating had completed the improvement required by UMC in 90 days after the audit to demonstrate ESG performances.

Number of Suppliers Evaluated in the Past 3 Years



Note: 1. Critical suppliers are those directly or indirectly relate to production. They are divided into raw materials, equipment, facility services, and spare parts based on their functionalities.

2. UMC ESG investigates the types of suppliers, including production raw materials, equipment, factory service engineering, consumables and components, and aims to reach the goal of 33% in annual on-site audit of suppliers.

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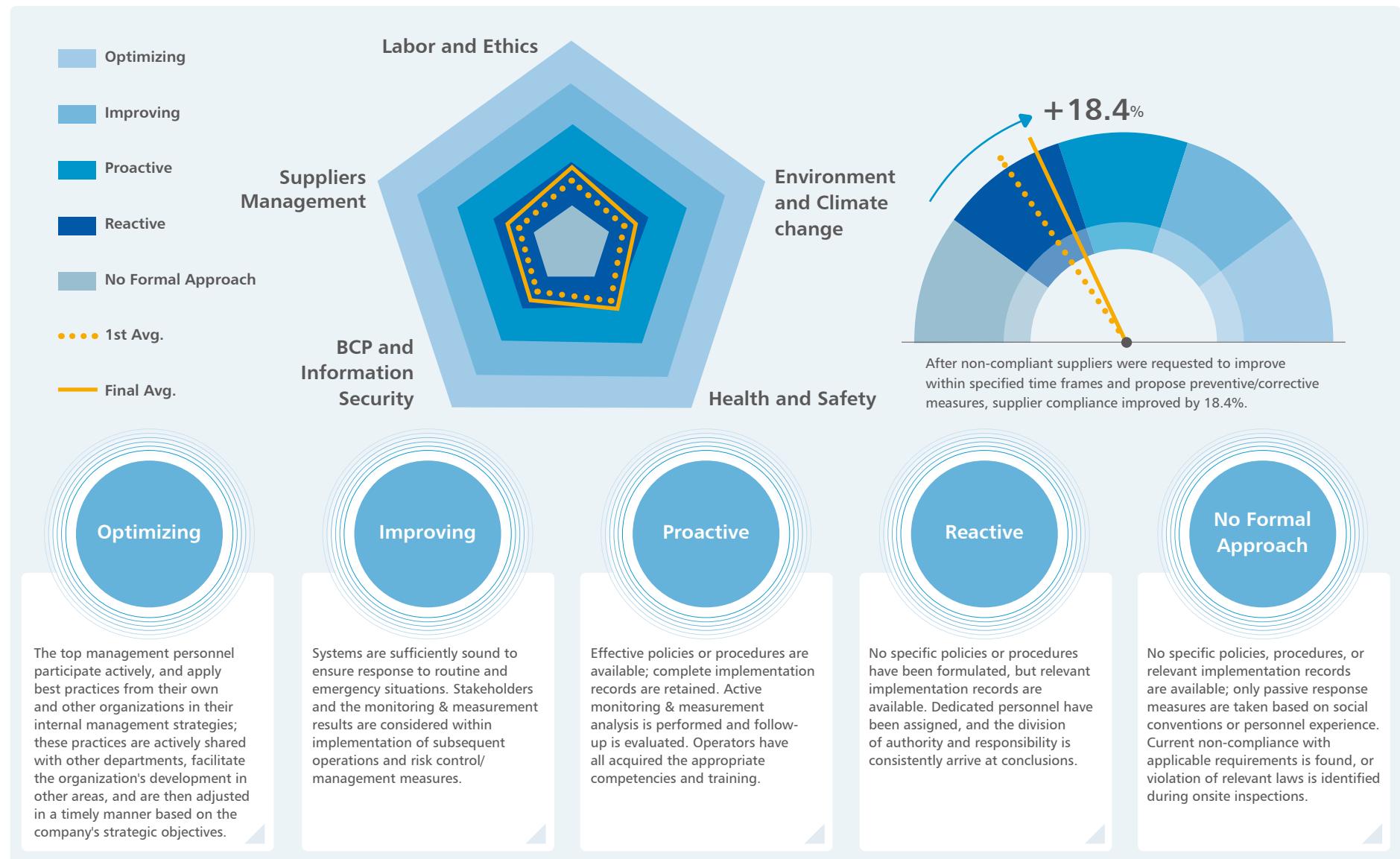
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Via the 2021 sustainability assessment mechanism, and by introducing third-party certification body audits, the degree of supply chain compliance with the UMC Supplier Code of Conduct can be summarized. In view of the continual growth in the global 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 requirements in these five areas, UMC also continues to implement several action plans, in hopes of working with suppliers to drive the gears of the sustainable supply chain.



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Establishing Sustainable Supply Chain

In 2021, 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 2021 to accelerate the development of sustainable supply chain management.

Strategy	Activity	2021 Result
Environment, safety, and health education training plan for suppliers and contractors		
To ensure that the contractor has sufficient awareness of environmental safety	Educate contractors about work safety related regulations	<ul style="list-style-type: none"> ▶ Total of 38 training sessions held ▶ Total of 4,291 attendees ▶ Total of 12,873 hours of training
Contractor-aligned meeting		
To make sure contractors are aware of workplace safety	Regular on-site meetings are held to promote safety management and accident cases to contractors	<ul style="list-style-type: none"> ▶ Total of 11 training sessions ▶ Total of 1,127 attendees ▶ Total of 1,127 hours of training
Sustainable supply chain sharing session		
Session is themed "Sustainability & Co-prosperity," promoting the concept of sustainable development to suppliers	<ul style="list-style-type: none"> ▶ Promote UMC's human-oriented sustainable conduct and co-prosperity in society ▶ Continue promoting ESG initiatives in the supply chain requirements ▶ 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 	<ul style="list-style-type: none"> ▶ In 2021, USCXM held a sustainability sharing session to promote UMC's sustainability policy to suppliers in China  <p>USCXM sustainability sharing session</p>

Consolidating supplier partnerships for progress in sustainability



The COVID-19 outbreak in early 2020, coupled with factors from the broader environment and a surge in wafer demand, created a supply crisis in the global semiconductor industry. This included a shortage of logistics containers and storage units, which in turn hindered logistics operations in many countries and affected material supply, resulting in shortages of parts and components for finished products. Both manufacturers and suppliers faced unprecedented challenges. Under these disruptions to the global value chain,

However, UMC and its suppliers made their best effort to overcome the difficulties, deliver on our customer commitments, and maintain continuous production. UMC held its Suppliers Awards Ceremony in 2021, in which 18 suppliers with excellent performance were recognized among over 1,000 companies. UMC showed appreciation for suppliers, whose outstanding contributions have contributed to UMC's successes.

UMC will continue to work together with suppliers as on the path toward sustainability. In addition to communication and exchange through shared learning platforms, the 2050 net zero emissions target announced by UMC in June 2021 also received appreciation and support from more than 500 suppliers, including Applied Materials, Tokyo Electron Limited (TEL), Photronics DNP Mask Corporation (PDMC). Suppliers have also expressed support for the Company's determination to use to build a low-carbon, sustainable supply chain.

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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 a corporate leader, the Company actively promotes and urges suppliers to participate in the circular economy.

Circular Economy Projects

Project	Purpose	Action	Outcome
Precious material waste recycling	Sell scraps and waste material to decrease waste and promote effective reuse of resources	Evaluate waste contractors with legal licenses, and sell waste material in bulk through systematic control and recycling management in fabs	<ul style="list-style-type: none"> ▶ Annual sales revenue of NT\$100 million since 2013 ▶ In 2021, revenue from the project reached a new high of NT\$119 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
Reclaim wafer reuse	The more that UMC uses and recycles reclaimed wafers, the less UMC will have to spend on dummy wafer purchases	Authorize suppliers to process reclaimed wafers to ensure that dummy wafers are in the best condition and ready to be reused in fabs	<ul style="list-style-type: none"> ▶ Reclaimed wafer purchase was 326,471 pieces in 2021 ▶ In 2021, 57% of dummy wafers used were reclaim wafers
UMC 2030 Low-carbon supply chainReclaim wafer reuse	In order to achieve the goal of net zero emissions by 2050, in order 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"	Conduct carbon emission surveys for intensive carbon emission suppliers; conduct greenhouse gas inventories via certified third-party organizations. Also set science-based reduction targets, requiring all key suppliers to implement carbon reduction plans.	<ul style="list-style-type: none"> ▶ Carbon emission survey on key suppliers to be conducted in 2022; data to be disclosed in 2023.

Environment and Climate change

Eco Echo Award (endorsement from suppliers)	As a driving force for ecological environmental conservation, UMC recognizes excellent conservation projects through its Eco Echo award. UMC calls on suppliers to also join the effort to support conservation initiatives.	<ul style="list-style-type: none"> ▶ Accepts applications from domestic advocacy groups and awards cash prizes to selected conservation projects ▶ UMC calls on suppliers with the same philosophy to support the Eco Echo Award through sponsorships 	<ul style="list-style-type: none"> ▶ Raised NT\$3 million for the award in 2021 ▶ 8 suppliers sponsored in 2021 ▶ 9 winners won the Eco Echo award in 2021. For details please visit: https://ecoechoaward.com/story-article.php?index_id=244
Green procurement	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	<p>Green procurement indicators:</p> <ul style="list-style-type: none"> ▶ 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 	<ul style="list-style-type: none"> ▶ An accumulated amount targeting NT 130 million in 2021 ▶ Green procurement amount in 2021 reached NT\$138 million ▶ Received the 2021 Green Procurement Award from the Environmental Protection Administration, Executive Yuan ▶ Received the 2021 Green Procurement Award from the Hsinchu City government ▶ Recognized by Tainan City government as an Excellent Green Procurement Enterprise in 2021

Social Impact Projects

Tier 2 key supplier management	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	<ul style="list-style-type: none"> ▶ Announced on e-Procurement platform (platform for suppliers): ▶ Key suppliers (UMC's Tier 2 suppliers) are required to comply the Supplier Code of Conduct and to be subject to supply chain management 	<ul style="list-style-type: none"> ▶ By 2025: 80% of key suppliers (UMC's Tier 2 suppliers) are required to comply the Supplier Code of Conduct ▶ 30% of key suppliers (UMC's Tier 2 supplier) to fall under supply chain management ▶ Goals of 2021 30% of key suppliers (UMC's Tier 2 supplier) are complied the Supplier Code of Conduct ▶ 7% of key suppliers (UMC's Tier 2 supplier) are under supply chain management
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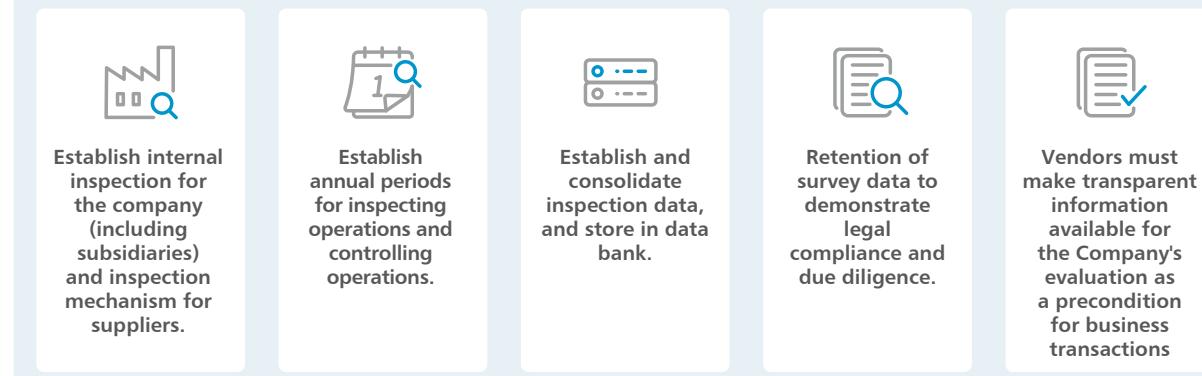
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Conflict Minerals Management

UMC Conflict Minerals Management Measures



(1) 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, 85% of UMC's 8-inch fabs and 99% of 12-inch fabs have completed earthquake spare parts preparation. 225 major suppliers of raw materials completed risk assessment surveys, all of which met UMC's requirements.

Minerals such as tantalum, tungsten, tin and gold (3T1G) that are essential in the manufacturing process of the electronics, but they are often regarded as conflict minerals. Despite their importance in the electronics industry, UMC does not use a large amount of conflict minerals in its 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.

(2) Results of Recent Surveys

Since 2009, UMC has been conducting supply chain inspections 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.

UMC also voluntarily applied to join CFSI (Conflict-Free Sourcing Initiative) in 2016. Meanwhile, UMC also requested suppliers to proactively monitor foundries and mines that are lacking relevant certifications to adopt Conflict-Free Smelter Program (CFSP) or to be inspected by other independent third-party's audit.

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 My UMC website on March 1, 2018.



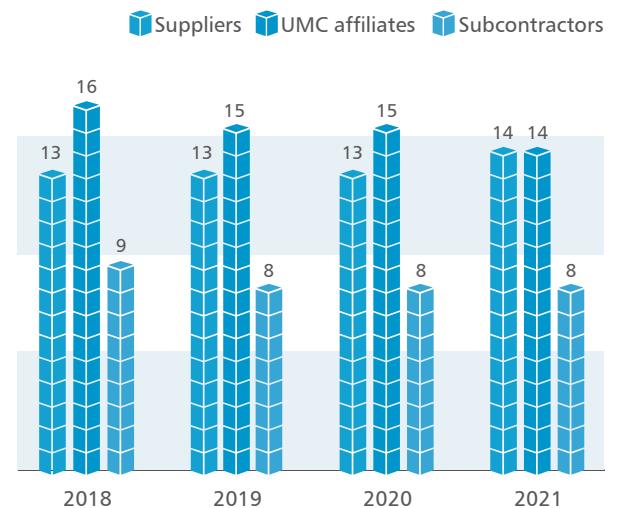
For more details, please visit:

https://www.umc.com/upload/media/07_Sustainability/73_Operation_and_Commitment/4_Supplier_and_Contractor_Management/Supplier_SD.pdf

In 2021, UMC conducted inspections of suppliers whose products contain 3T1G. A total of 36 suppliers, including 14 suppliers, 8 contractors (suppliers providing packaging and testing services), and 14 UMC affiliates were inspected.

6 suppliers conducted domestic audits and passed UMC's requirements.

The Number of Suppliers Surveyed



To date, all suppliers have returned 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:

http://www.umc.com/chinese/CSR/c_3.asp

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Innovative Products and Services

Chapter

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 2021



Served 468 customers
and provided up to
8,208 products in 2021.



Obtained 432 domestic
and foreign patents in
2021, bringing the total
number to 14,423.



No scrapped products
resulting from violation
of regulations/
customers' demand



Maintained a
level of customer
satisfaction.



Passed the Quality
Management System
certification every year.



Reduces the use of
fluoride by 98% compared
with the original cleaning
process solutions.

2.1 Innovation & Technology Development

(✓) Material Topic • • • • •

Management Purpose

Based on the Company's customer-first principle, UMC provides wafer fabrication services that align with market trends and fulfills customer needs. Through persistent innovation, the Company can strengthen its competitiveness, increase revenue, and enhance its corporate image.

Management Approach

- ▶ UMC is committed to promoting the development of advanced process technology, and to protecting the Company's intellectual property rights. Through active R&D efforts and intellectual property rights protection, UMC will increase the proportion of sustainable products in its overall product mix in stages to align with market trends.
- ▶ UMC's sustainable development strategy and goals include the Company's mid- and long-term goals for sustainable technologies and products, and demonstrate UMC's commitment to its ESG policies and sustainable operations.



Goals and Targets

2021 Goals

- To complete three green technology platform developments
- To complete one green chemical development
- To submit more than 200 patent applications

Achievements

- ▶ 3 green technology platform developments completed
- ▶ 1 green chemical development completed
- ▶ 432 granted patents, bringing the cumulative number of patents to 14,423.

Future Goals

Next generation energy-saving compound semiconductor product

≥1

≥3

≥6

Sustainable product^{Note} to revenue ratio

≥69%

≥72%

≥75%

Innovative energy-saving specialty platform accumulation

≥2 in total

≥5 in total

≥10 in total

Cumulative total number of patent granted worldwide

Annually >250

Total number of patents

Total number of patents

Cumulative total >14,650

>15,400

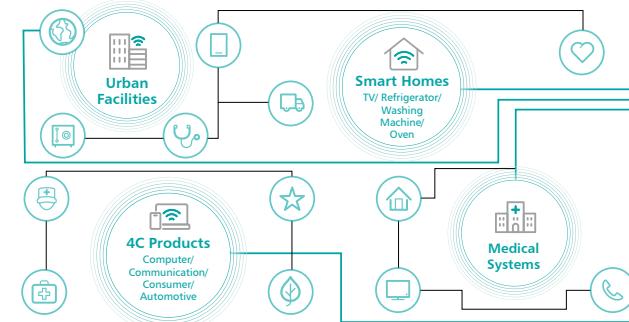
>16,650

Note: Sustainable products include low power consumption, low leakage, and power management products, as well as microcontroller units, automotive chips, long service life products, and epidemic prevention & medical related products.

- ▶ Devise sustainable technology and product R&D plans, and performance is reviewed annually by the Sustainable Innovation Group
- ▶ Set R&D schedule KPI annually, measure points every quarter, and regularly review R&D issues and solutions in weekly and monthly meetings

Mechanisms for Evaluating Effectiveness

Electronic end-products are evolving and diversifying rapidly, as emerging technologies used in smart phones, wearables, virtual reality/augmented reality, self-driving/electric vehicles, artificial intelligence/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 industry's direction. Therefore, wafer foundries must develop technology processes and obtain silicon intellectual property as soon as possible in order to stay competitive and be able to meet the wide range of customer demands.



VIDEO Enabling the IoT Era



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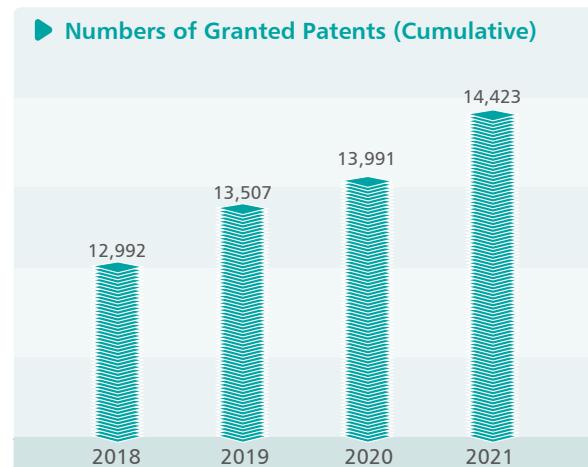
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2.1.1 Robust Wafer Manufacturing Services

UMC's R&D team has always been dedicated to promoting the development of logic process technology. With the adherence to the belief of "Customer's Demand Comes First," the Company has been providing pure-play wafer foundry solutions to meet market trends and customer needs, which include world-class technology, customer support services, and state-of-the-art manufacturing.

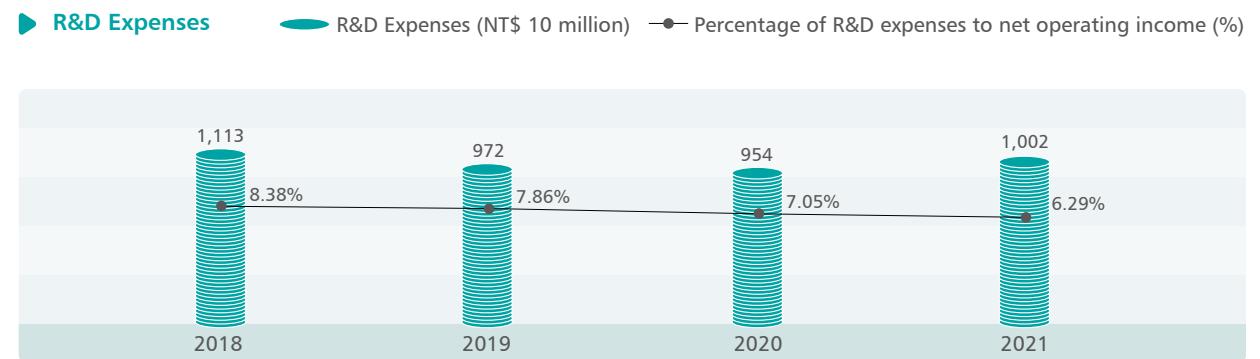
In the face of intense technological competition, besides significantly increasing its key technology capabilities, UMC also focuses on patent distribution to protect its intellectual property rights, and has seen steady growth in its number of patents. In 2021, numerous domestic and foreign patents were granted. To date, UMC has a total of 14,423 granted patents, which offers comprehensive and robust protection of the Company's process technologies. To remain competitive, UMC has also significantly increased the patent quality of its key technologies, and continues to strengthen its customer service and competitive advantage.



In 2021, UMC invested more than NT\$10 billion in R&D. 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. MIFS became a wholly-owned subsidiary of UMC, 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 28 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 111 of UMC's 2021 Annual Report.

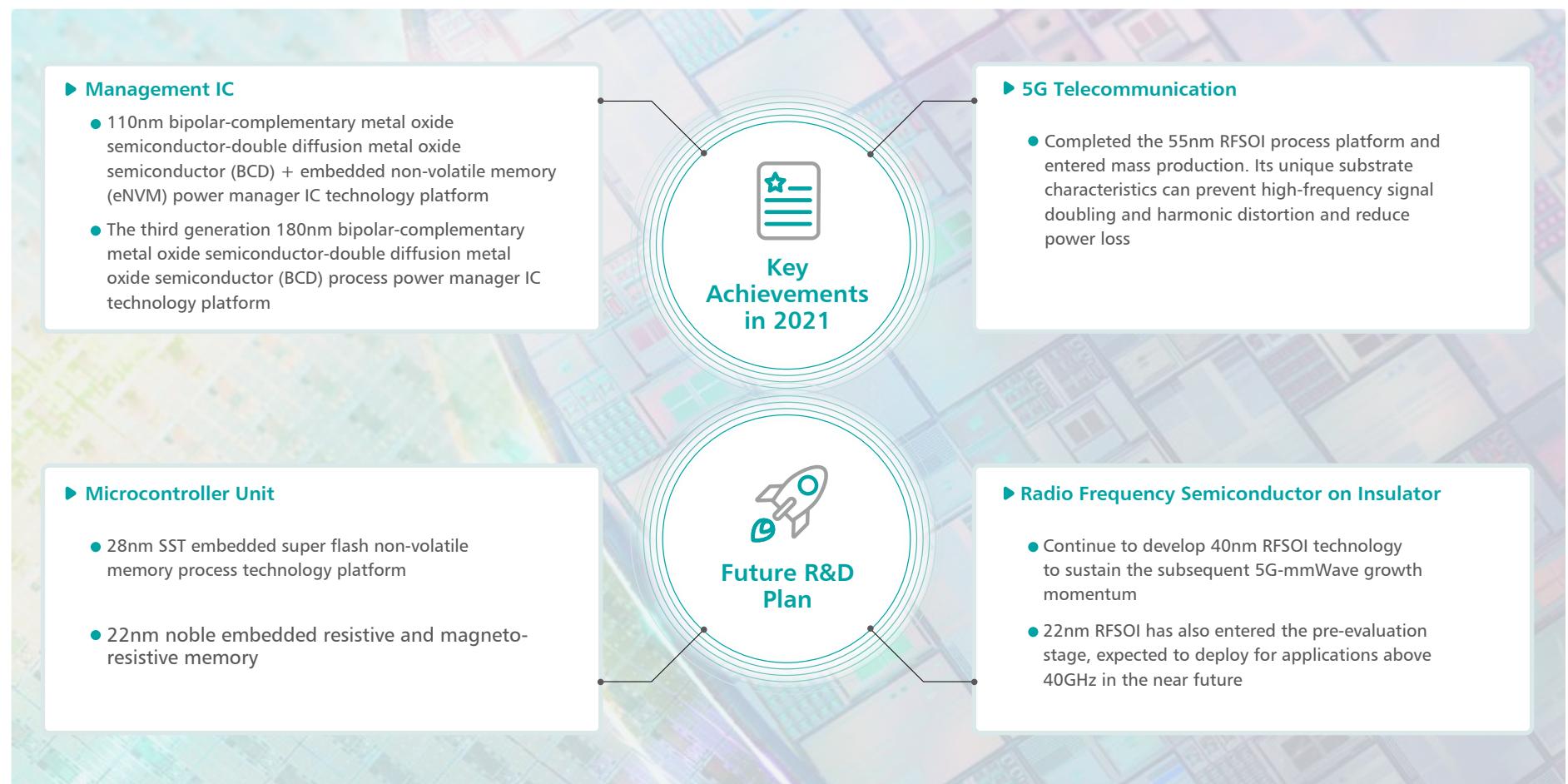
Green Process Development Plan

To reduce its carbon footprint, UMC has gradually phased out old processes over the years, and instead focused on the development of low power, ultra-low power, and ultra-low leakage 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 & MCU platforms, aiming to add more low-energy consumption technology options, such as 22nm Logic technology that reduces power consumption by up to 30%, and

14nm technology that reduces power consumption by 50%. These technologies are applied to traditional logic processes and specialty technology processes, such as embedded Resistive random access memory and embedded Magnetoresistive RAM.

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, Internet of Things (IoT), 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.



2.1.2 Key Technology Mastery

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.

14nm Process Technology

22nm Process Technology

28nm Process Technology

Embedded high Voltage Process Technology

Embedded Non-volatile Memory Process Technology

Radio Frequency Silicon-on-Insulator (RFSOI)

Product Highlights

- Performance improvement by 55%, twice the gate density, and reduces power consumption by 50% compared to 28nm
- 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 28nm, the number of masks required is the same, and the design specifications are compatible, and it can support Vcc voltages from 1.0V to 0.6V, and provide a variety of threshold voltage and I/O voltage options
- UMC's 28nm process technology provides 28HLP PolySiON and 28HPC^U / HPC^U + HK/MG, two types of high-performance and low-power process options.
- High-performance computing (28HPC^U) image signal processor (ISP) technology has launched a high-end 108Mp product and will also soon introduce the 200Mp products.
- UMC's BCD (Bipolar-CMOS-DMOS) products provide various high-voltage operation capabilities (up to hundreds of volts or more) required for power management chips.
- The embedded non-volatile memory process technology improves the computing and storage performance of the chip, and has the advantage of confidentiality.
- Providing a complete process and supporting IP solutions from 180nm to 28nm nodes.
- Providing 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. At the same time, it has started to develop a new generation of RFSOI technology to continue the subsequent 5G-mmWave growth momentum

UMC is the first fab to use 28nm technology for mass production

Ranking first in DDI market share in the global OLED and LCD markets.

Applications

- Can be applied to analog, mixed-signal, Internet of Things 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.
- 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
- 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, Internet of Things (IoT), etc.
- 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.
- 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.
- Can be widely applied in microprocessors using in various electronic products, covering the Internet of Things (IOT), industrial control, and various 3C products in the automotive field, and also extended to solutions for various bank cards and telecommunication cards.
- Can be widely used in RF Front End applications, such as Antenna Switch, Antenna Tuner and Low Noise Amplifier (LNA), to meet the requirements of RF communications such as 4G, 5G, WiFi, etc

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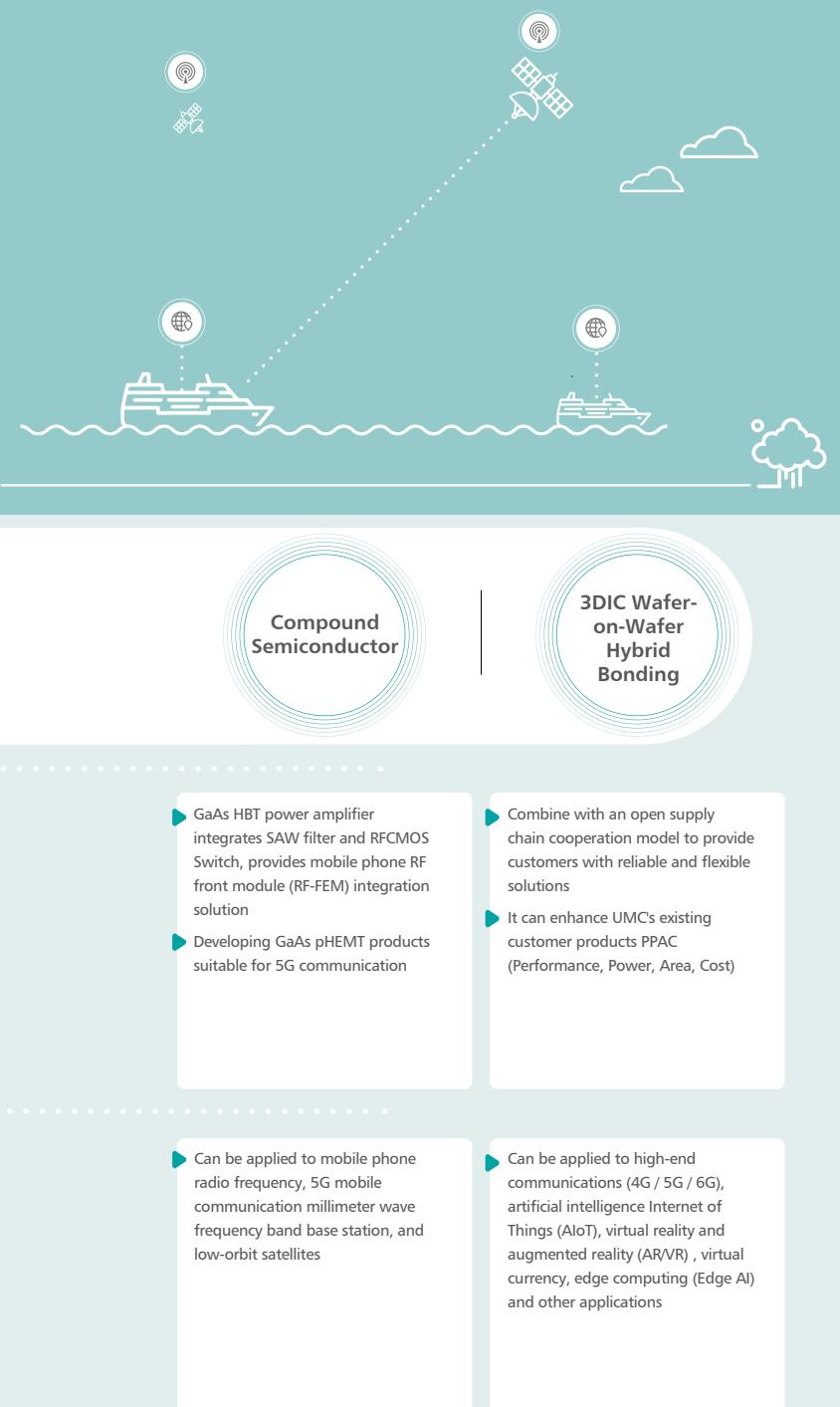
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R&D Item	2021 Achievement	Future Plan
14nm process technology	<ul style="list-style-type: none"> ► 14nm process technology 14FFC was successfully introduced into 5G and Netcom applications, and successfully entered mass production 	<ul style="list-style-type: none"> ► Cooperate with many customers to expand the application of 14FFC products
22nm ultra-low power/ultra-low leakage process technologies	<ul style="list-style-type: none"> ► Diverse 22nm products entered mass production successfully ► 22nm process technology image signal processor (ISP) had established component models and design specifications 	<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 Internet of Things, consumer electronics, industrial applications and wearable products
Non-volatile memory	<ul style="list-style-type: none"> ► The 40nm non-volatile memory process platform has completed automotive verification and entered mass production ► 40nm embedded resistive memory has also entered mass production ► 22nm 1G HDRAM products have been successfully verified 	<ul style="list-style-type: none"> ► Continue to develop 22nm eMRAM process platform, which can be applied in the Intelligent Internet of Things (AIoT) and aerospace/LEO related products in the future.
High voltage process technology	<ul style="list-style-type: none"> ► 28nm high voltage 27V process technology low temperature polycrystalline oxide panel (LTPO OLED) drive chip products successfully entered into mass production ► 0.11 micron BCD technology built in power management chip (PMIC) has completed product verification and successfully entered mass production 	<ul style="list-style-type: none"> ► Continue to develop 22nm high voltage process technology and new generation smartphone power IC
Radio frequency silicon on insulator process technology	<ul style="list-style-type: none"> ► 55nm RFSOI process entered mass production, and met the 5G/sub-6GHz market requirements. 	<ul style="list-style-type: none"> ► Continue to develop RFSOI technology platform
Micro electro mechanical system	<ul style="list-style-type: none"> ► Support manufacturing of ICs for epidemic prevention 	<ul style="list-style-type: none"> ► Continue to develop MEMS technology

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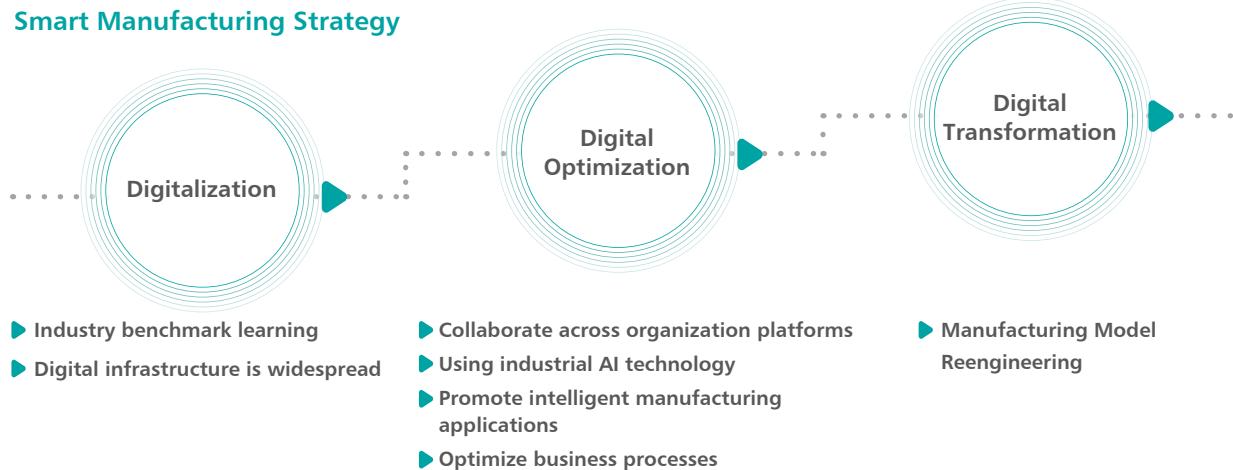
2.1.3 Smart Manufacturing Execution

Since 2016, UMC has been evaluating and taking stock of the key points of Industry 4.0 enhancement, and has outlined the future development direction of smart manufacturing. In 2017, Smart Manufacturing Division was formed to be the unit dedicated to digital transformation as part of the adjustment to the internal organizational structure. At the same time, the Company introduced the IAI (Industrial AI) concept and related technology developed by Li Jie, a chair professor at the University of Cincinnati, and jointly developed various smart manufacturing applications, coordinated related OT (Operation Technology) and IT projects, and integrated internal/external resources.

Core Principle of the Smart Manufacturing Project Team

UMC has been implanting the Industry 4.0 DNA into its corporate culture. In the face of increasingly difficult and complex manufacturing challenges, introducing smart manufacturing projects 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/downstream related industries to jointly create a smart manufacturing ecosystem, achieving the most efficient use of manpower, equipment, material, and methods.

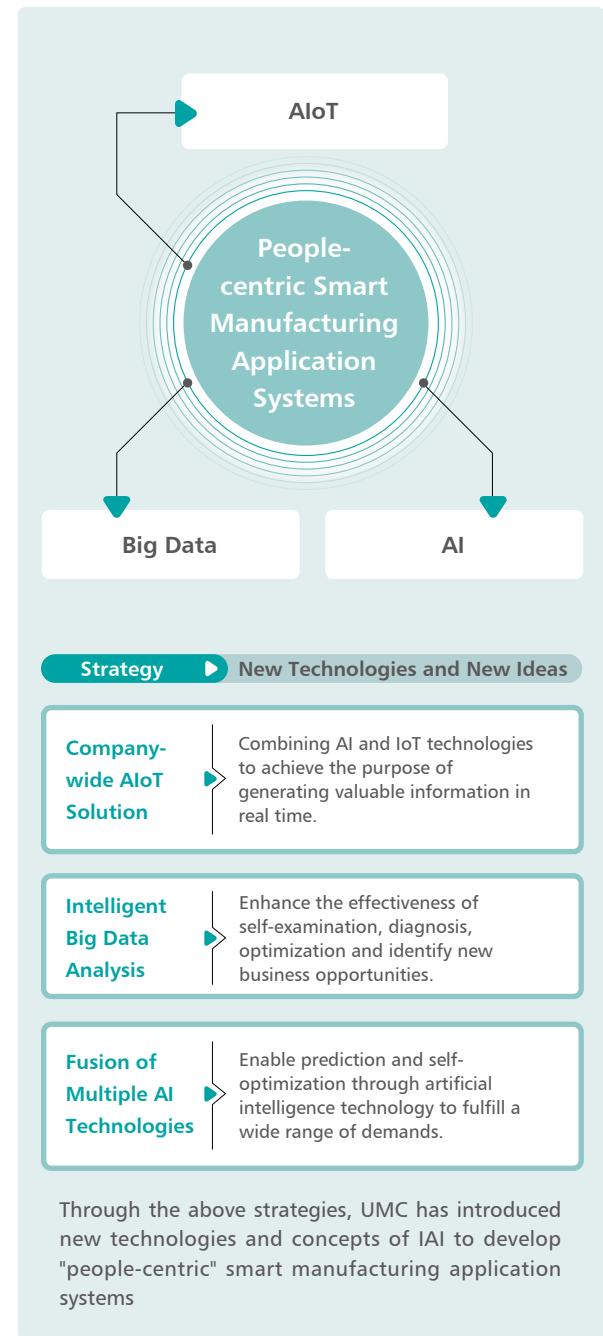
Smart Manufacturing Strategy



UMC refers to the Industry 4.0 methodology, and draws on international and industrial 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, in terms of work efficiency, product quality, and green manufacturing, it is also expected to develop innovative business models.

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

UMC introduced new IAI technologies and concepts, and developed "people-centric" smart manufacturing application systems through three major strategies: company-wide AloT solution, intelligent big data analysis, and fusion of multiple AI technologies. By focusing on quality, efficiency, cost saving, energy saving, and waste reduction, as well as by optimizing enterprise processes through digital technology to strengthen enterprise operational efficiency and green manufacturing, UMC can achieve its vision of smart manufacturing.



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Smart Manufacturing Innovation

UMC has transformed from a general wafer foundry role to a specialty technology solution provider as part of its business strategy. To cater to characteristic requirements of products such as durability, low energy consumption, short life time, and diversification, UMC actively pushes for breakthroughs through innovative digital transformation and digital optimization practices in order to achieve the needs of 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 "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 all-round 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 advance 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.

Project Promotion

Time : 2018~2021

Location: Southern Taiwan Science Park demonstration Plant

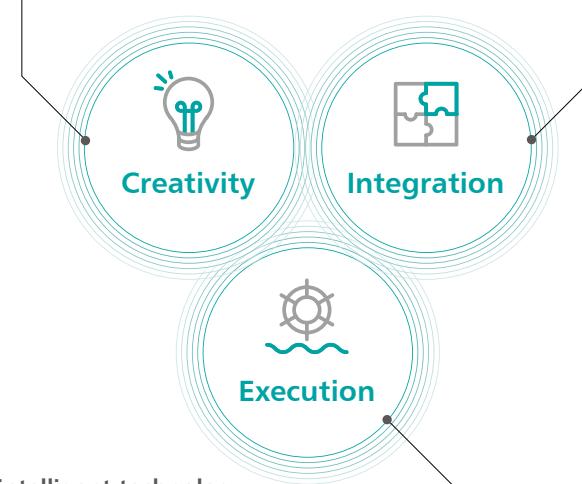
UMC proposes to integrate the three digital cores of creativity, integration and execution, and actively implement smart manufacturing projects. Since 2018, with Southern Taiwan Science Park as the main demonstration plant, it has continued to gradually introduce various intelligent innovation solutions, to shorten the product delivery time, and realize energy saving and environmental protection of smart manufacturing factories.

➔ People-centric system design

Replace the previous practice of function-centric design, integrate digital optimization elements (such as intelligent inspection, AI-CCTV, etc.) into the sustainable vision of the UMC environment, and establish a digital ecosystem of smart manufacturing, and cooperate with industry leaders to promote AI research and implement applications.

➔ Integrated thinking of vertical and horizontal coordination

1. Integrate production and functional departments, jointly execute projects, and carry out cross-factory promotion through the BKM (Best Known Method) sharing and promotion platform, and regularly review the progress and results of promotion by senior supervisors.
2. Establish an computing resource orchestration platform, and build an agile DevOps (Development and Operation) platform to explore and solve problems during the development stage to reduce maintenance and operation efforts.



➔ Accurate execution of intelligent technology

1. Replace costly physical wiring requirements with wireless transmission and simple energy harvesting mode through company-wide IoT solutions.
2. Use big data technology to improve data collection, and adopt the hybrid technology of "image, numerical value, NLP (Natural Language Processing), and man-machine collaboration".
3. Build an efficient and intelligent decision-making platform using "AI + Big Data + Cloud".
4. Build RPA (Robotic Process Automation) software robot connected to remote equipment in the fab to reduce human operation negligence and improve production stability, such as using RPA to perform auto tool tuning by the process of pattern recognition, scanning focus and contrast, then adjustment.

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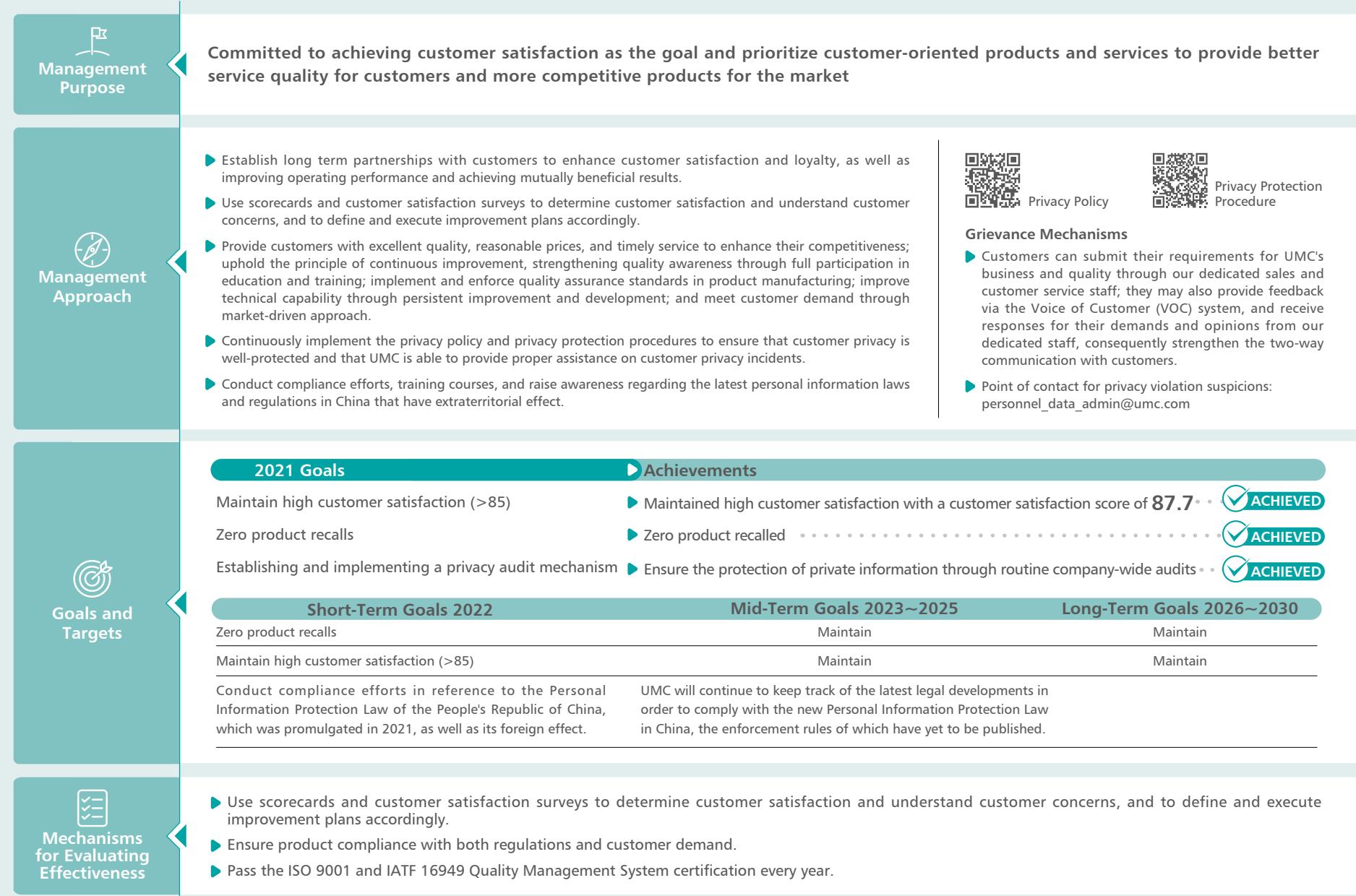
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2.2 Customer Satisfaction



Material Topic ● ● ● ● ● ●



2.2.1 Continuous Quality Improvement and Innovation

Join hands 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 exercise their potential to strive for continuous improvements 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 special processes as the Company focuses on becoming a specialty process technology leader.

Innovative methods to accelerate mass production and improve yield

To strengthen the company's entire quality system, UMC encourages all employees to participate in continuous improvement activities. Supervisors at all levels also give strong support and affirmation to improvement teams and individuals, so that continuous improvement activities are integrated into each colleague's daily work and life. In recent years, continuous improvement activities have particularly focused on "process reengineering" and "smart manufacturing". In the product development stage, the mask engineering team created a innovative "customer source error full interception mechanism" to help customers quickly and successfully achieve trial production, combining expert knowledge with AI technology, and extending the improvement project to the client. In terms of quality, the Integration Office at UMC's 12-inch plant in the Southern Taiwan Science Park (Fab 12A) created the original "Micro-die Stacked Defect Hotspot Analysis Method" and "Dynamic Compensation Bonding Interface" technology, which has rapidly improved key customer product yields and successfully helped customers increase market share significantly. In terms of mass production and manufacturing, the thin film module and manufacturing team also at Fab 12A combined with UMC's smart manufacturing with Industry 4.0 development strategy to develop "virtual measurement of film thickness", applied "AI technology" and "machine deep learning", and other advanced technologies to break through the limit of equipment and transmission efficiency, and achieve new ground in productivity. In addition, the Singapore fab uses innovative methods such as DOE and TRIZ to enable mutual support of specialty and logic processes, increasing the monthly production capacity by 9%, and increasing the flexibility of customer orders. The improvement results of all teams will also be introduced at the Fab 12A Phase 6, a new expansion project, to generate further growth momentum for UMC.

Mutual success through a customer-oriented approach

In 2021, Taiwan experienced the severe challenges of the COVID-19 epidemic. UMC's improvement activities overcame all difficulties, linking with the company's core corporate strategy, and continuously promoting, optimizing, deepening, and applying smart manufacturing and methods in continuous improvement activities. In addition to the important purposes of quality awareness and talent cultivation, the activities also strive to embed the spirit of continuous improvement in the Company's DNA. The pursuit of excellence is an important key to the corporate sustainability, and requires long-term persistence and implementation. Whether in product development, quality improvement, efficiency, or production capacity enhancement, all departments actively and persistently strive to achieve customer satisfaction through focus on focus. In the future, we will continue to work with strategic partners to develop new opportunities and create a win-win solutions.

Five Golden Tower Awards in the "Taiwan Continuous Improvement Activities" in 2021, winning all performances

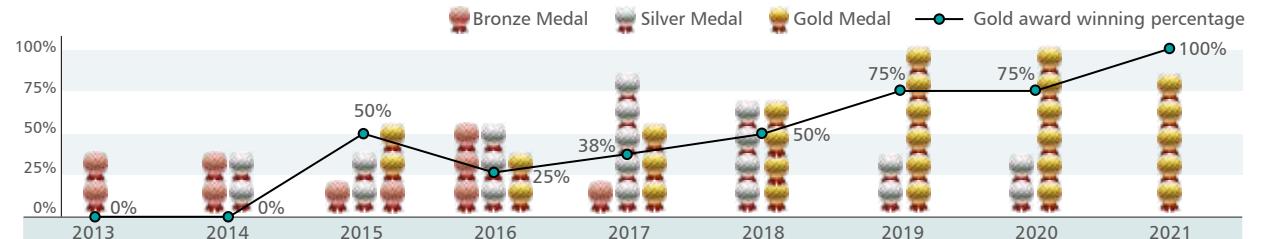
The culture of continuous improvement not only trains colleagues to think systematically and apply scientific methods to solve problems, but also expands their individual learning to teamwork. All departments show active and continuous improvement in product development, quality improvement, efficiency and productivity improvement. In the 2021 Taiwan Continuous Improvement Awards (TCIA) competition organized by the Corporate Synergy Development Center entrusted by the Ministry of Economic Affairs, UMC won in all the entered categories, taking home five awards. A total of 192 teams from 107 companies participated in this competition. Five teams from UMC signed up, and all of them advanced to the finals. The results fully demonstrated the caliber of UMC's continuous improvement efforts.

Winners of the "2021 Taiwan Continuous Improvement Awards"

Team	MES	12A Factory Process Integration	12A FAB	12i FAB	12A FAB
Topic	Challenge source error full interception - create a mask super goalkeeper	Open up a new blue ocean of stacked image logic chips	Increase the production capacity of copper oxide reduction deposition process equipment	Improve the productivity of thin film equipment	Improve the transmission efficiency of advanced process plants - intelligent transmission to achieve peaks in seconds



Taiwan Continuous Improvement Activity Participation: Performance over the years



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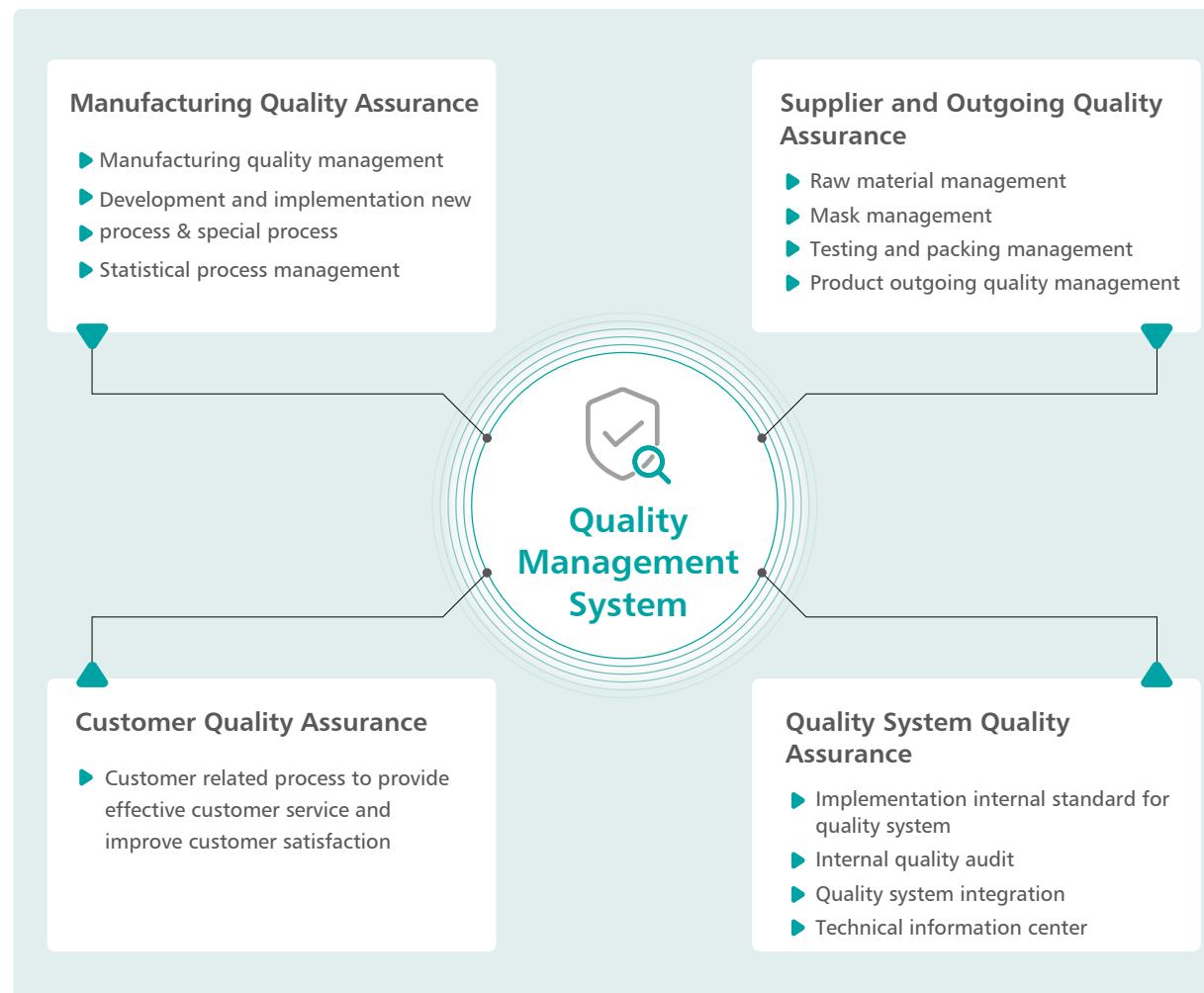
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Quality Management System

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 and meet international automotive industry standards, including the latest version of AIAG-VDA failure mode and effects analysis (FMEA), which was implemented in 2021.



► 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.



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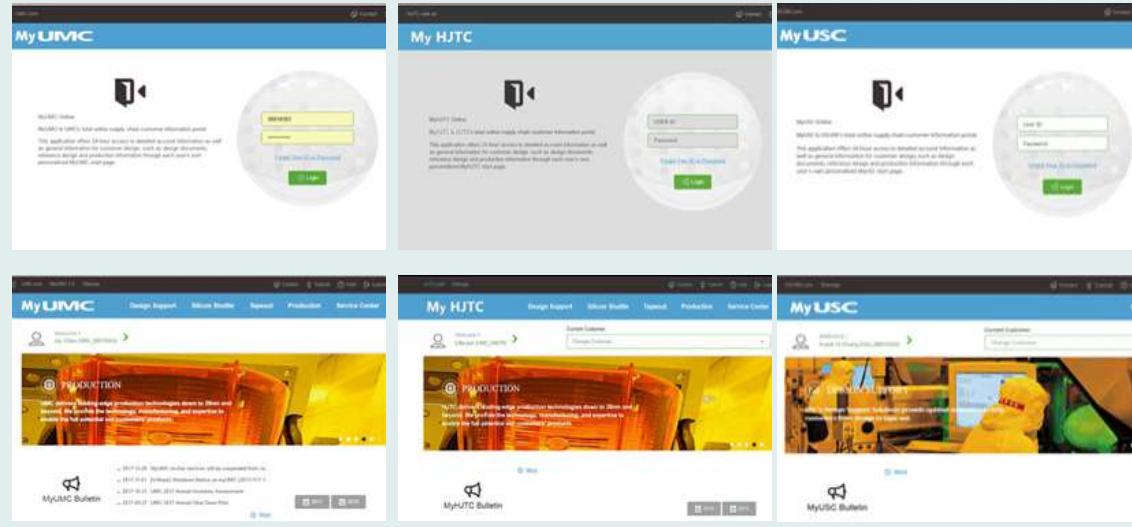
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2.2.2 Customer Satisfaction Improvement

UMC is committed to achieving customer satisfaction as its mission and prioritizes Customer-oriented products and services. The Company's My UMC, My HJTC (reserved for HJ customers), and MyUSC (reserved for USCXM customers) online service platforms provide customers with complete and real-time online supply chain information, including production status of orders, shipping dates, and product quality data and status. These service platforms are accessed and utilized over 300,000 times every year. The Voice of Customer (VOC) instant online feedback system allows customers to make requests, comments, or suggestions to UMC products or services. Designated personnel re-direct, process and respond to requests made through the VOC system, and customers can enquire the status of their products online at any time.

Digital Service Platforms Providing Real-Time Information



Customer Satisfaction Improvement

UMC (including its subsidiaries HJ and USCXM) uses scorecards to determine customer satisfaction and receive feedback on customer needs. Customer scorecards are distributed on an annual, semi-annual, or quarterly basis. All scorecards from customers will be analyzed to identify areas for improvement, and UMC will take timely and effective actions to increase customer satisfaction. Through meetings with customers, UMC ensures it fully understands the demands of its customers and that its solutions address those needs. Product quality and timeliness are included as key indicators of the Company's internal performance reviews to encourage actions that further enhances customer satisfaction.

Customer scorecard ratings for UMC (and its subsidiaries HJ and USCXM) have remained at a high level (>85). Meanwhile, UMC's overall performance over the years has received customer approval and awards, indicating endorsement of UMC's product and service quality and recognition of the Company as a valued partner.

Customer Ratings



2.2.3 Client Privacy Protection

Privacy Policy

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 and private information collected from the groups mentioned above.

Impact and Implications of Privacy Protection Policy

UMC believes that, by providing open and transparent privacy policy information, stakeholders will be able to enjoy the rights to make independent decisions about their privacy. Data subjects' 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 2020 in accordance with Taiwan's Personal Protection Law and the European Union's General Data Protection Regulation (GDPR) in order to avoid leak, abuse, or theft of data collected by the Company. The Procedure clearly regulates the lawful use and storage of personal data. In addition, according to the Procedure, when a privacy incident is discovered or a complaint is received, the Company will investigate the relevant entities where personal privacy has been compromised, such as where the personal privacy may be stored or used, take stock of the compromised personal privacy information, evaluate the loss caused by such privacy incident, record the investigation results, and review the follow-up improvement plan to reduce the risk of privacy violations occurring. In addition, UMC has a zero tolerance policy against any violation of the Procedure. UMC may impose disciplinary measures, including but not limited to imposing warnings or demerits on those who violate the Procedure. If an employee abuses others' personal data that is not within the scope of his/her duties and without obtaining approval of his/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 Procedure and seek for provisional remedies, such as provisional attachment, provisional injunction or confidentiality preservation orders.

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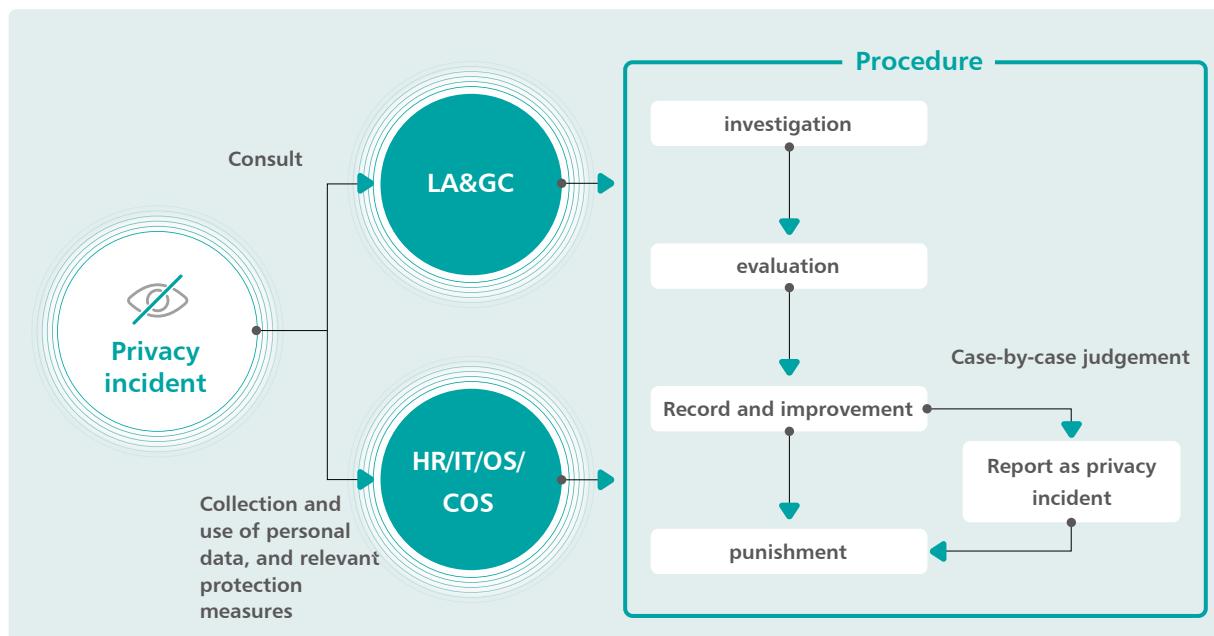
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UMC also revised the personal information consent letter of colleagues and external personnel, reviewed the database of personal data, and established appropriate data protection security mechanisms to prevent data from being stolen, altered, damaged, lost, or leaked. In order to strengthen internal awareness, regular training sessions are held for employees on the access to personal data depending on authority level, data storage restrictions, as well as warning and notification mechanisms.

In response to "Personal Information Protection Law of the People's Republic of China" effective in 2021, USCXM and HJTC have also carried out legal compliance work, including revising their privacy policies, amending personal information consent letters, and establishing a personal asset risk assessment system to comply with the requirements of China's new law.

In addition, UMC also ensures the protection of privacy information through the company's routine audit mechanism. UMC will continue to optimize the management process and the reporting mechanism for privacy incidents.

Region / Applicable Law	Response Measures
EU General Data Protection Regulation	<ol style="list-style-type: none"> Update UMC's Privacy Policy and relevant documents such as personal information, consent letter, and contracts in accordance with current laws.
Taiwan Personal Data Protection Act	<ol style="list-style-type: none"> To protect data subject's rights, UMC established the Privacy Protection Procedure, which specifies the conditions to collect, process, and use personal data, and the procedure to handle the privacy incident.
China Personal Information Protection Law of the People's Republic of China	<ol style="list-style-type: none"> UMC established internal privacy audit mechanism to ensure the protection of privacy information by regular audit.

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 2021, the Company received no complaints.

Complaints and Follow-up Procedure

UMC will take actions in accordance with the Procedure upon receiving notice of privacy incidents.

In 2021, 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 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. Unless written consents from the data subjects are acquired, their personal data will not be used for any other purposes.

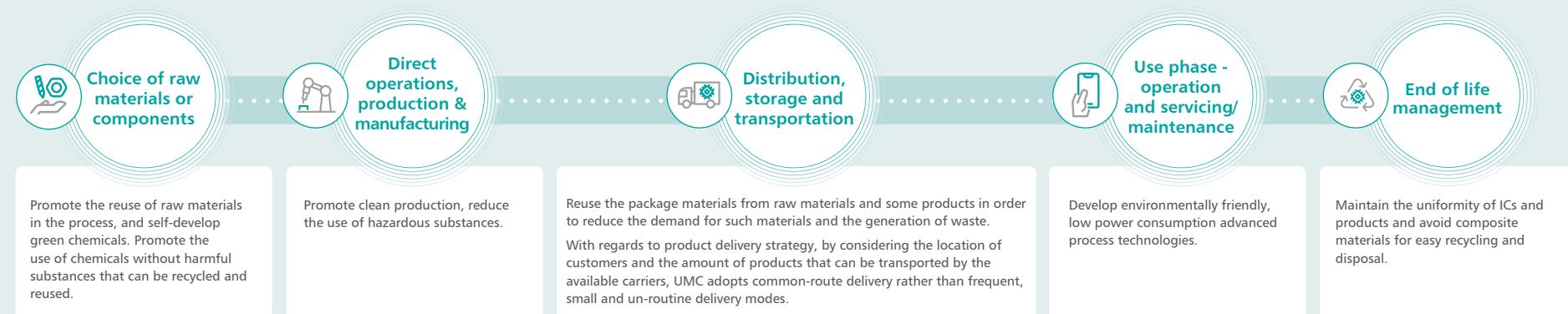


2.3 Product Responsibility

Material Topic • • • • •

Management Purpose	Provide green products with zero hazardous substances and with low environmental impact.															
Management Approach	<ul style="list-style-type: none"> ▶ Establish the Hazardous Substance Free Policy, thus preventing product scrapping and customer complaints resulting from violations of laws/regulations on hazardous substance or of our customers' requirements for hazardous substance controls. 															
Goals and Targets	<div style="display: flex; justify-content: space-between;"> 2021 Goals Achievements </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Zero scrapped products resulting from violation of regulations/customers' requirements</td> <td style="padding: 5px;">▶ ACHIEVED</td> </tr> <tr> <td style="padding: 5px;">No customer complaints resulting from regulation violations</td> <td style="padding: 5px;">▶ ACHIEVED</td> </tr> </table> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> Future Goals Short-Term Goals 2022 Mid-Term Goals 2023~2025 Long-Term Goals 2026~2030 </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Zero scrapped products resulting from violation of regulations/customers' requirements</td> <td style="padding: 5px;">Maintain</td> <td style="padding: 5px;">Maintain</td> <td style="padding: 5px;">Maintain</td> </tr> <tr> <td style="padding: 5px;">No customer complaints resulting from regulation violation</td> <td style="padding: 5px;">Maintain</td> <td style="padding: 5px;">Maintain</td> <td style="padding: 5px;">Maintain</td> </tr> </table>				Zero scrapped products resulting from violation of regulations/customers' requirements	▶ ACHIEVED	No customer complaints resulting from regulation violations	▶ ACHIEVED	Zero scrapped products resulting from violation of regulations/customers' requirements	Maintain	Maintain	Maintain	No customer complaints resulting from regulation violation	Maintain	Maintain	Maintain
Zero scrapped products resulting from violation of regulations/customers' requirements	▶ ACHIEVED															
No customer complaints resulting from regulation violations	▶ ACHIEVED															
Zero scrapped products resulting from violation of regulations/customers' requirements	Maintain	Maintain	Maintain													
No customer complaints resulting from regulation violation	Maintain	Maintain	Maintain													
Mechanisms for Evaluating Effectiveness	<ul style="list-style-type: none"> ▶ Establish relevant plans and conduct annual performance reviews by the Environmental Planning and Management Group and the Green Operation Group. ▶ Validate the QC 080000 certification of hazardous substances free management system every year. ▶ Ensure products complies with regulations and customer requirements. 															

In addition to our dedication in providing core products with market competitiveness to meet our customers' demands, as a citizen of the Earth, UMC has also taken on the responsibility of developing green products with efforts in cherishing resources and protecting the environment starting from the source. Through acquiring green factory certification, hazardous substance replacement, product environmental impact assessment, and green product development, we have gone one step further to be a good green role model in the semiconductor industry.



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2.3.1 Hazardous Substance Management

UMC implements the QC 080000 hazardous substance management system to ensure that products comply with the European Union's requirements for restricted substances in electronic products (such as the "Restriction of Hazardous Substance" directive) and global chemical control regulations. UMC also provides customers with green products to meet their needs and further expand the market for eco-friendly 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 has established a "Hazardous Substances Free Policy" to prevent product loss or customer complaints caused by violations of hazardous substances-related laws and regulations, as well as the customer requirements for hazardous substance control. By raising employee awareness, UMC provides products that comply with regulations and customer needs through the control and improvement of design and production, fulfilling the Company's corporate social responsibility of protecting the environment as well as public health and safety.



Hazardous Substance Free Policy https://www.umc.com/en/Html/green_products_and_services

Management



UMC Response to Global Standards and Trends on Hazardous Substance Management

Control Items	UMC's Status
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 from Electrical and Electronic equipment (WEEE) Directive	<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 provider 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.

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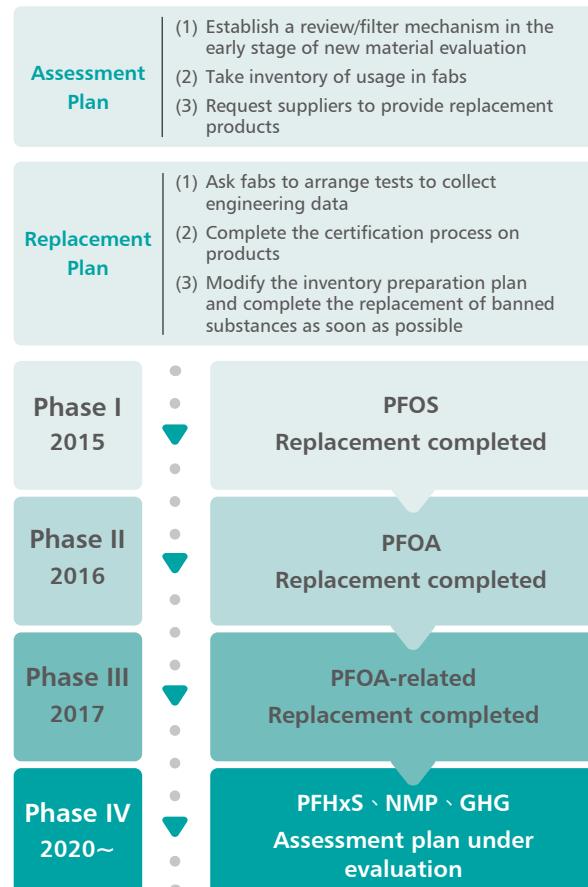
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Hazardous Materials Replacement Program

UMC has closely monitored the development of international environmental protection regulations over the years. The Company initiates assessment plans in the initial stage of draft regulations to prohibit or limit use of hazardous materials. When relevant regulations are enacted, the Company is prepared to implement the replacement plan across all fabs.

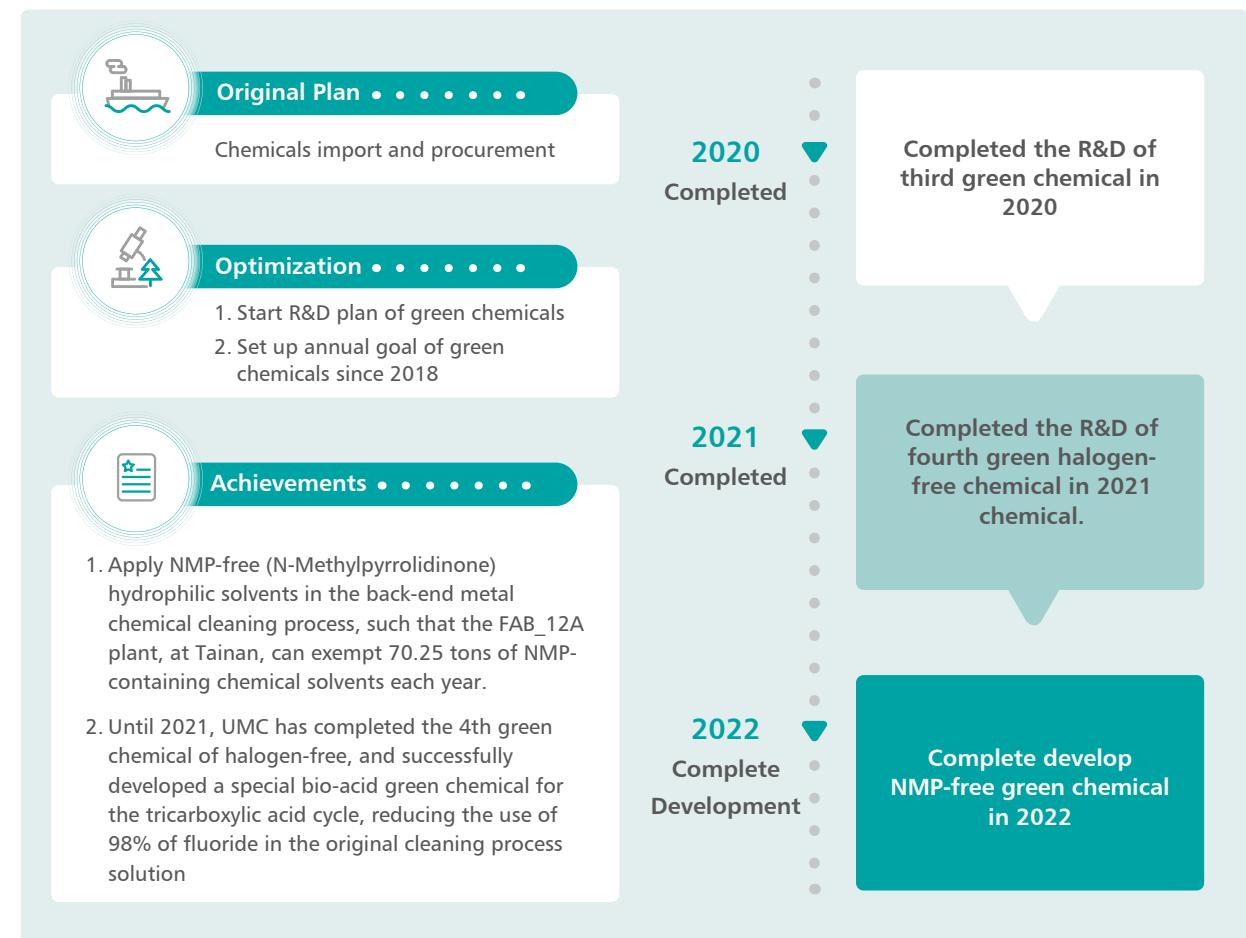


- Phase I: Replacement of PFOS completed in 2015.
- Phase II: Replacement of PFOA completed in 2016.
- Phase III: In 2017, UMC is leading the industry to achieve overall PFOA-related replacement.
- Phase IV:
From 2020, UMC began to focus on PFHxA and initiated assessment plan evaluation.
From 2021, UMC began to focus on NMP, GHG (Greenhouse gas) and initiated assessment plan evaluation.

R&D of Green Chemicals

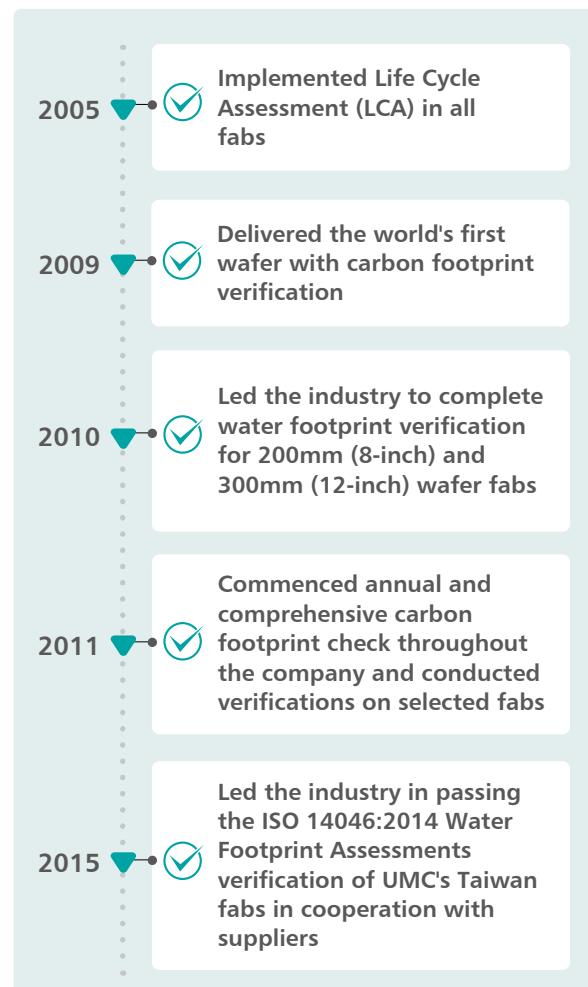
To reduce the environmental impact of semiconductor manufacturing, UMC strives to develop recyclable and environmentally friendly chemicals to replace harmful chemicals used in the wafer cleaning process. Since most of the chemicals used in the cleaning process are imported from overseas suppliers and chemical formula are proprietary, it is quite difficult for users to reduce chemical usage or recycle used chemicals. For this reason, UMC launched a green chemical research and development project years ago, and has set targets since 2018, aiming to develop new green chemicals to replace imported chemicals.

The Company closely follows the progress of EU environmental protection regulations and green processes. In 2022, the Company is expected to develop a post-cleaning process that complies with the EU green environmental protection process specifications, changing the traditional solvent cleaning to hydrophilic NMP-free (N-Methylpyrrolidinone). This chemical can be widely used in the back-end key cleaning process, reducing the environmental impact of UMC's green products even further. In the future, UMC will continue to reduce, recycle, and phase out harmful chemicals in its manufacturing processes.



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.

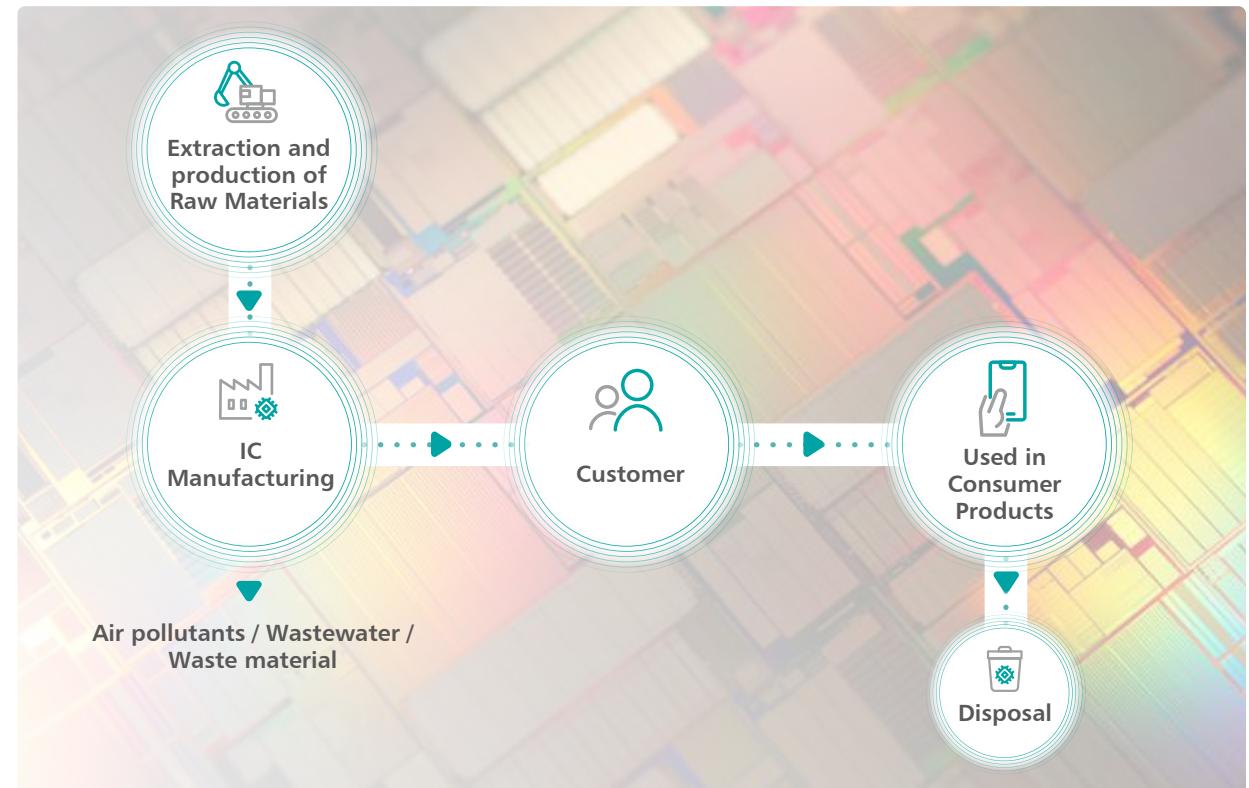


Product Lifecycle Assessment

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 2021 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.

Semiconductor Product Lifecycle



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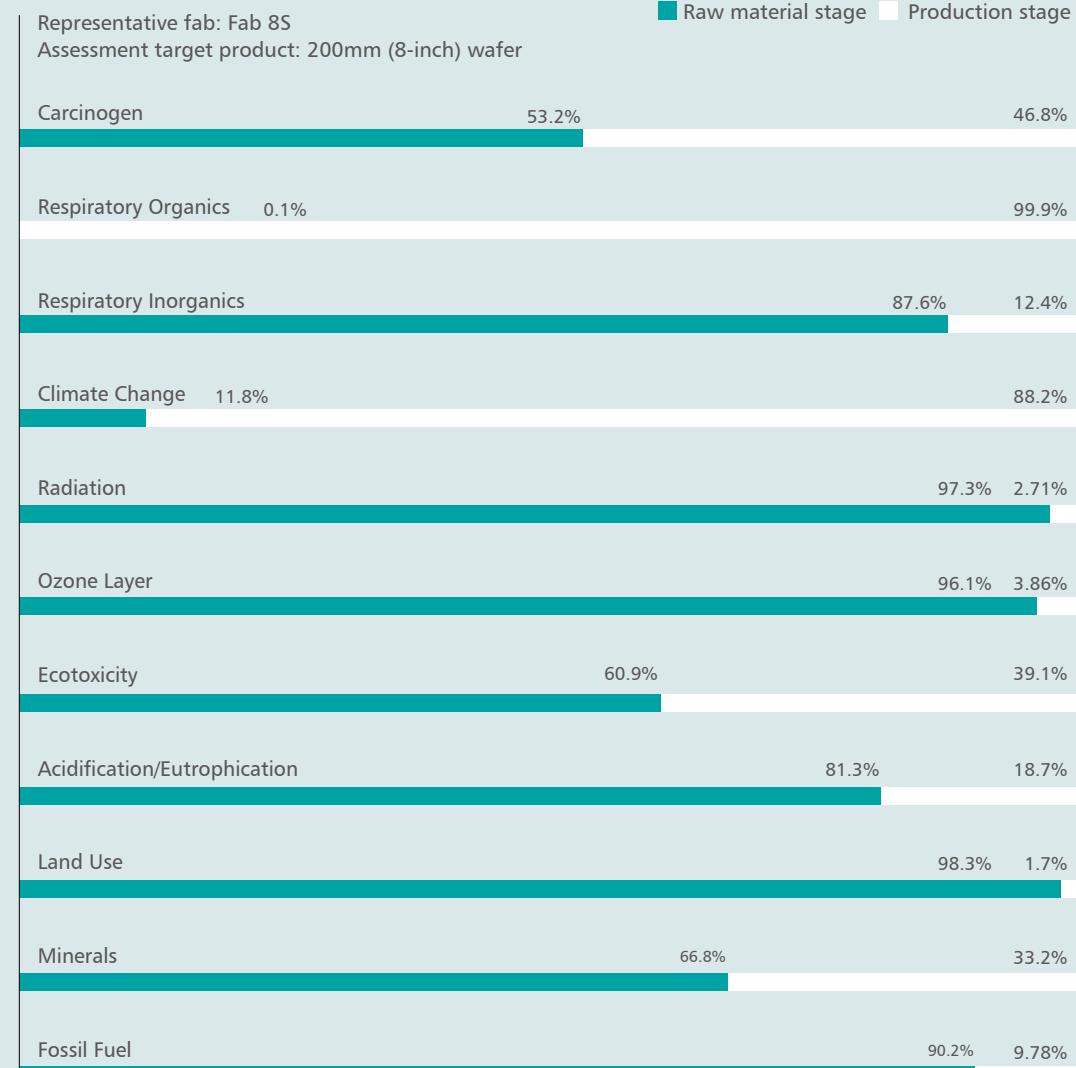
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Results of 2021 Environmental Impact Assessment



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 2021, UMC completed carbon footprint verification of 8-inch wafers produced by Fab 8A and Fab 8S as the representative fab. After comparing the carbon footprint of each fab at various stages of the greenhouse gas reduction plan among UMC fabs in Taiwan, it is found that the carbon footprint of each product in 2021 is on average 41% smaller than that in 2011, which demonstrates that UMC's carbon reduction projects over the years have been considerably successful.

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 Water Footprint Network, an international NGO, UMC leads the industry to complete the water footprint verification of its 200mm (8-inch) and 300mm (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 2021, third-party verification of water footprint (ISO 14046:2014) was completed using 200mm (8-inch) wafers from Fab 8A and Fab 8S as the representative fab. UMC will continue to enhance its water usage reduction efforts through inventory and analysis of the water footprint of its products.



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 2021



For goals of energy saving,
water conservation, waste
reduction, and carbon
emissions reduction.



Passed the TCFD
third-party assessment,
attaining the highest
“pioneer” rating.



1st semiconductor
foundry globally
committed to net zero
and joined RE100.



F-GHGs reduction in 2021,
which represents a 63%
decrease in emission
intensity compared with
the base year (2010).



Total amount of energy
saved, equivalent to CO₂
emissions reduction of
33,655 tons.



Recognized for
leadership in
“Water Security”
by CDP.



which generated
economic benefit of
NT\$40 million.

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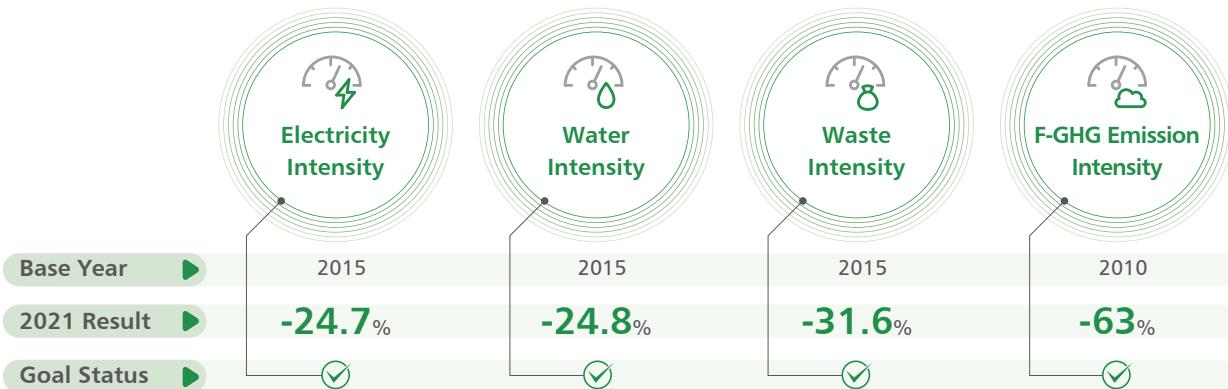


UMC has long been committed to environmental protection, striving to balance both economic and environmental goals through the green operation model of maximizing production efficiency while minimizing environmental impact. In 2010, the company launched the three-phase Green Action Plan, which has improved 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) emission intensity.



Environmental Protection Policy

Progress of Green 2025



Note: The unit for intensity calculation is 1 square meter of wafer (Wafer-m²). The scope of the targets for the Green 2025 Project set in 2020 covers UMC's fabs in Taiwan and Singapore, and subsidiaries of UMC including HJ, USCXM, Wavetek, and USJC.

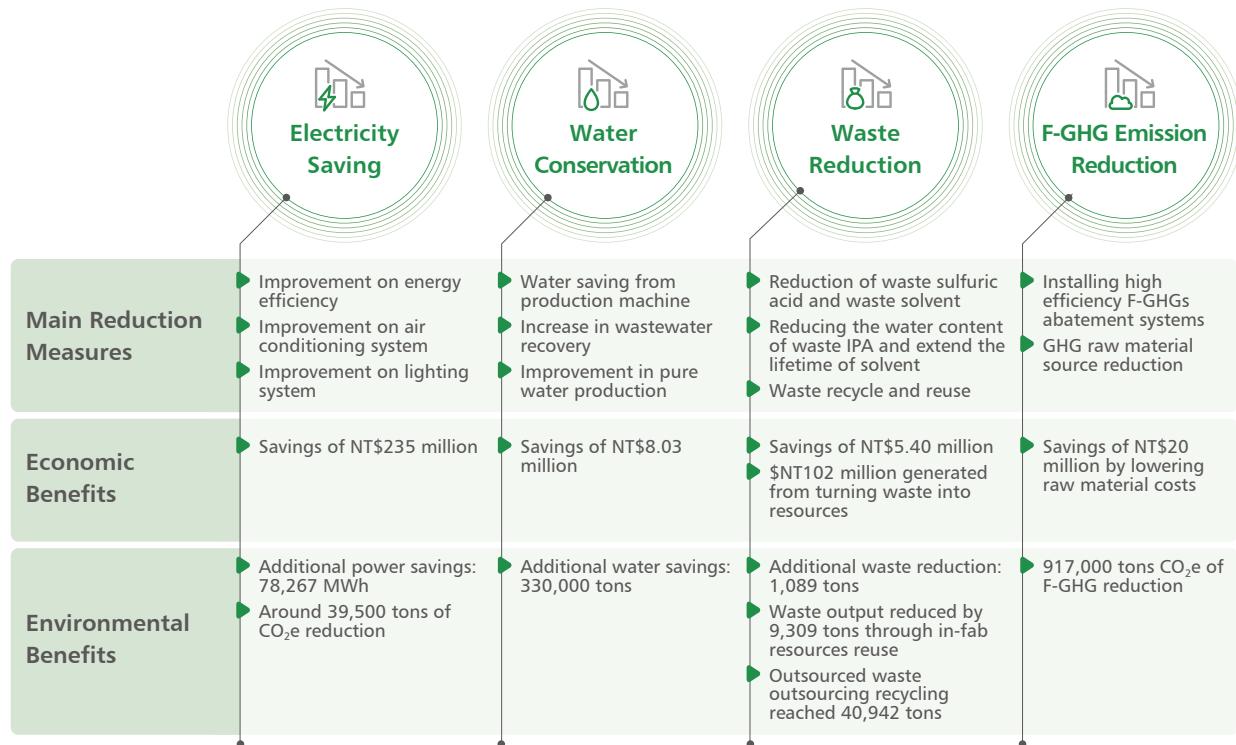
UMC Group Implementation and Performance in 2021

Vision

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

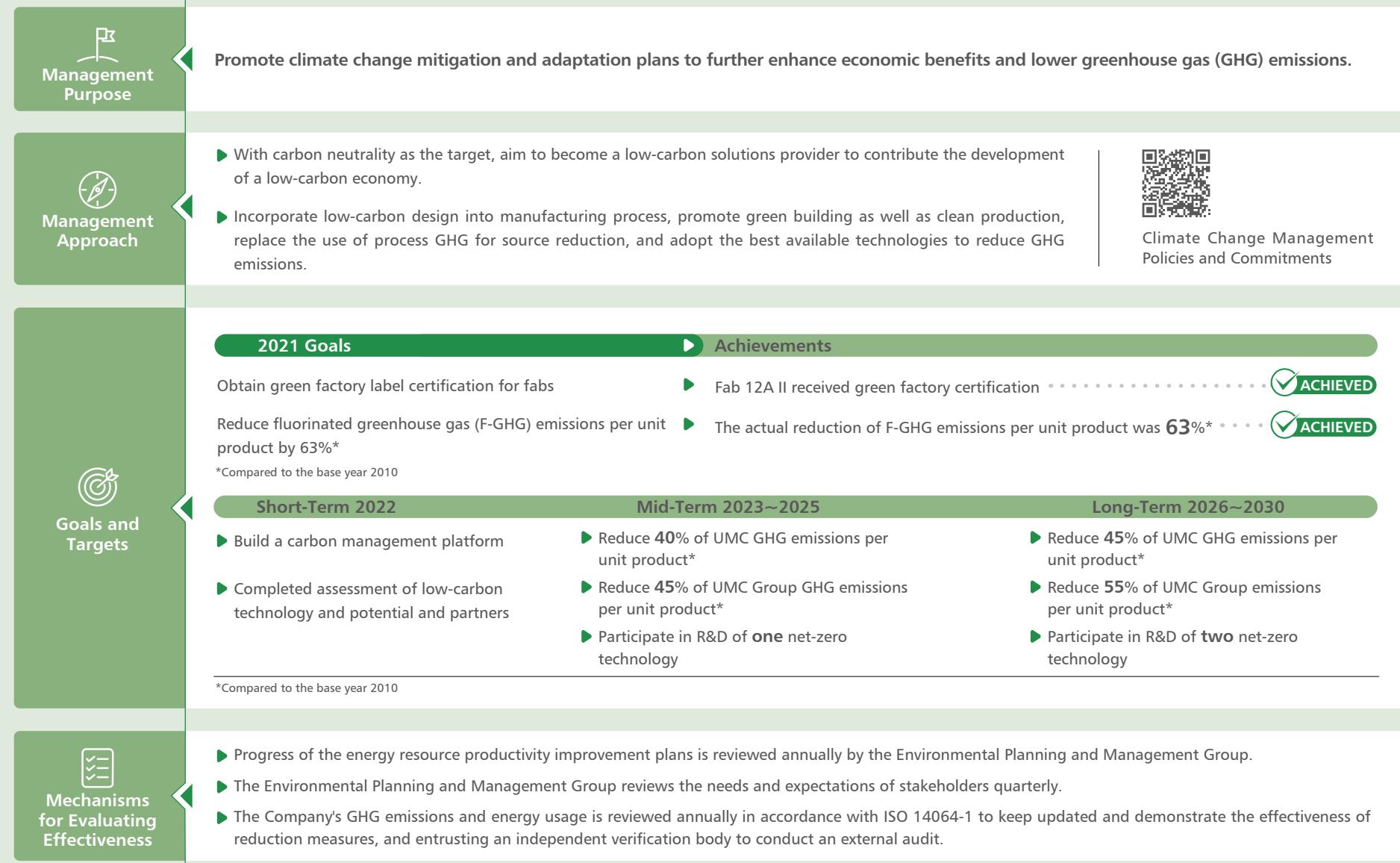
Project of Each Stage

- Phase 1: Project 333 Reduction (GOAL ACHIEVED)
(2010~2012)
- Phase 2: Project 369+Reduction (GOAL ACHIEVED)
(2013~2015)
- Phase 3: Green 2020 (GOAL ACHIEVED)
(2016~2020)
- Phase 4: Green 2025 (ONGOING)
(2021~2025)



Note: The statistics covers UMC's fabs in Taiwan and Singapore, and subsidiaries of UMC including HJ, USCXM, Wavetek, and USJC

3.1 Climate Action

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3.1.1 Carbon Emissions Management

UMC continually expands the scale of greenhouse gas (GHG) management as part of its climate action. Through a GHG inventory mechanism, the Company is able to identify emissions hotspots and areas with the greatest potential for carbon reduction. In order to integrate carbon management into daily operations, UMC has been introducing mechanisms, such as internal carbon pricing (ICP) and a carbon management platform, to strengthen the link between manufacturing and GHG emissions, and increase accountability. In addition, introducing low-carbon design into production processes and optimizing energy efficiency will also contribute to the Company's overall GHG emissions reduction.



Low-carbon
Commitment

1. Adopting low-carbon designs in production process
2. Optimizing energy efficiency
3. Installing high efficiency fluorinated greenhouse gas abatement systems in new fab facilities
4. Adopting green building standard for new buildings
5. Establishing "carbon partnership" relationships with customers and supply chain
6. Completing carbon footprint inventory for all fabs
7. Investing in green energy industry

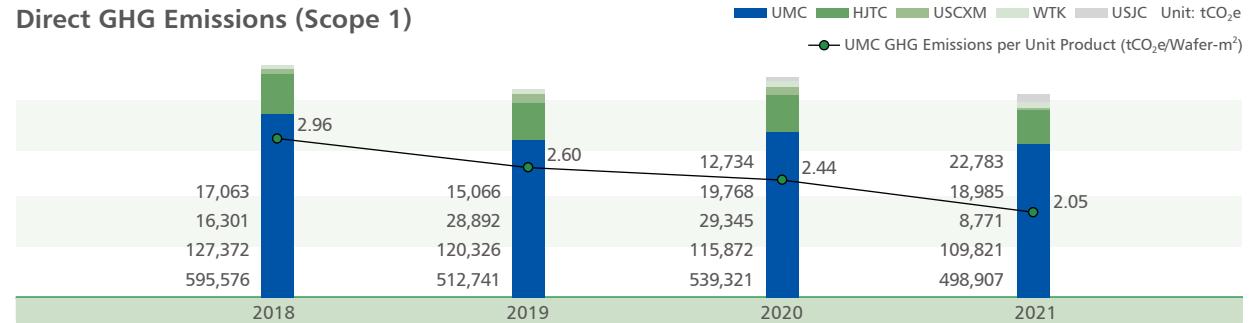
- ▶ For information of UMC carbon reduction progress and achievement, please refer to the ESG Special Feature in this report.
- ▶ For details on the risks and opportunities of climate change, please refer to Chapter 1.2.5 Managing Climate-related Risks and Opportunities.
- ▶ For details on the related information of energy efficiency improvement, 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 ISO14064-1:2006 and World Resources Institute's Greenhouse Gas Protocol. 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, not only UMC's subsidiaries (including HJ, USCXM, Wavetek, and USJC) all introduced the GHG inventory mechanism and conduct third-party verification. In 2021, UMC's Scope 1 direct GHG emissions totaled 498,907 tCO₂e, and Scope 2 indirect GHG emissions amounted to 1,298,439 tCO₂e. The emissions per unit product defined by the UMC Green 2025 indicator was 2.05 tCO₂e/wafer-m² and 5.33 tCO₂e/Wafer-m², respectively for Scope 1 and Scope 2. Regardless of Scope 1 or Scope 2, UMC's GHG emissions per product in the past four years have shown a continuous downward trend.

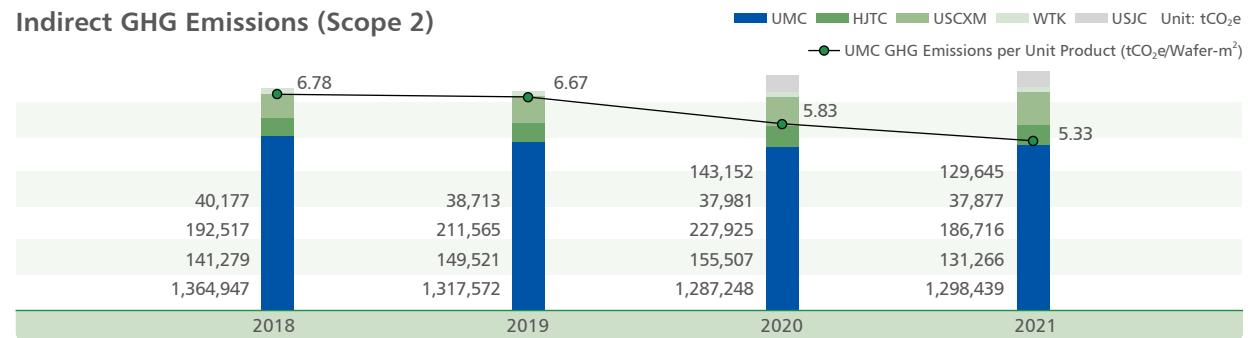
Note: GHG emissions in the base year 2009 were recorded at 1,623,036 tCO₂e

Direct GHG Emissions (Scope 1)



Note: I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. In 2021, the overall direct GHG emissions per unit product for UMC Group was 1.99 tCO₂e/Wafer-m².
III. Global warming potentials (GWP_s) used in the calculation is according to the definitions in the IPCC Fourth Assessment (IPCC AR4) (2007), and the GHG emissions is based on version 6.0.4 of the EPA Greenhouse Gas Emissions Factor Management Table.
IV. The amount of direct GHG emissions will otherwise be 449,238 tCO₂e when the calculation is based on GWP_s IPCC AR5 (2014), and the GHG emissions is based on version 6.0.4 of the EPA Greenhouse Gas Emissions Factor Management Table.
V. The statistics above is calculated in accordance with ISO 14064-1: 2006 while the results from UMC and Wavetek had been verified by a third party. In response to the transfer of ISO 14064-1, UMC and its subsidiaries such as HJ, USCXM and, USJC have all conducted GHG inventory following the latest 2018 version and have been verified by a third party.

Indirect GHG Emissions (Scope 2)



Note: I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. CO₂ emissions are estimated based on the latest local power factor available in the year. Except for Japan, all factors were certificated by third parties. Taiwan: 0.502 KgCO₂e/KWh (2021 data); Singapore: 0.408 KgCO₂e/KWh; China: Suzhou(HJ) 0.581 KgCO₂e/KWh, Xiamen(USCXM) 0.581 KgCO₂e/KWh; Japan: 0.379 KgCO₂e/KWh.
III. In 2021, the overall indirect GHG emissions per unit product for UMC Group was 5.38 tCO₂e/Wafer-m².
IV. The statistics above is calculated in accordance with ISO 14064-1: 2006 while the results from UMC and Wavetek had been verified by a third party. In response to the transfer of ISO 14064-1, UMC and its subsidiaries such as HJ, USCXM and, USJC have all conducted GHG inventory following the latest 2018 version and have been verified by a third party.

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 GL verification. In 2021, UMC continued to reduce unnecessary potential carbon emissions in items such as purchase of raw materials, fuel and energy-related activities beyond Scope 1 and 2, and transportation and distribution of upstream raw materials. However, the Scope 3 GHG emissions in 2021 was 17.8% higher compared to emissions in 2020 due increase in capital asset purchase.

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	598,678
Fuel-and-energy-related activities	Upstream emissions of purchased fuels (diesel and NG) and electricity	309,313
Upstream transportation and distribution	Transportation of 85% (by weight) of purchased goods	177,299
Waste generated in operations	Transportation and disposal or treatment of waste.	18,770
Business travel	Transportation of employees for business-related activities	758
Employee commuting	Transportation of employees (in vehicles operated by the company and employees)	10,926
Downstream transportation and distribution	Transportation of products sold by the company	3,384
Downstream leased assets	Emissions from downstream assets leased	7,640
Investments of subsidiaries	Including HJ, USCXM, Wavetek, and USJC	645,864
Capital assets	Facilities and assets purchased by capital expense	945,122
Total Amount		2,717,754

Note: The statistics covers UMC Taiwan and Singapore. The data was verified by a third party and obtained the certification of ISO 14064-1: 2006.

Carbon Management Mechanism

In order to integrate carbon management into daily operations, UMC has been introducing mechanisms, such as internal carbon pricing (ICP) and a carbon management platform, to strengthen the link between manufacturing and GHG emissions, and increase accountability. In Singapore, where UMC has a state-of-the-art 300mm wafer fab, the government introduced a carbon tax in 2019, making it the first country in Southeast Asia to promote this measure. In Taiwan, the Environmental Protection Administration proposed a draft revision to the Greenhouse Gas Reduction and Management Act with an amendment of its name to "Climate Change Response Act" in 2021. There are additional stringent regulations including a carbon-fee charging to promote GHG reduction and low-carbon economy development. There is also a revised Renewable Energy Development Act that either mandatory "Renewable Electricity Certification" purchase or payment for inadequate proportion of renewable energy use. At present, UMC has transformed the GHG emissions into potential carbon costs based on the analysis of carbon risk scenarios at each fab. Carbon cost-effectiveness is taken into account while assessing investments in energy saving or carbon reduction plans to ensure that carbon management is ingrained in daily operation through implementing ICP. UMC also actively executes a phased GHG reduction plan, which includes improving energy efficiency, purchasing energy-saving machines, building solar energy systems, reducing raw materials at the source, setting of high-efficiency GHG abatement systems, assessing adoption of low-carbon fuel/energy, and developing carbon-negative technology. The Company takes an aggressive stance in reducing the impact of GHG emissions, which also enhances its operational competitive advantage.

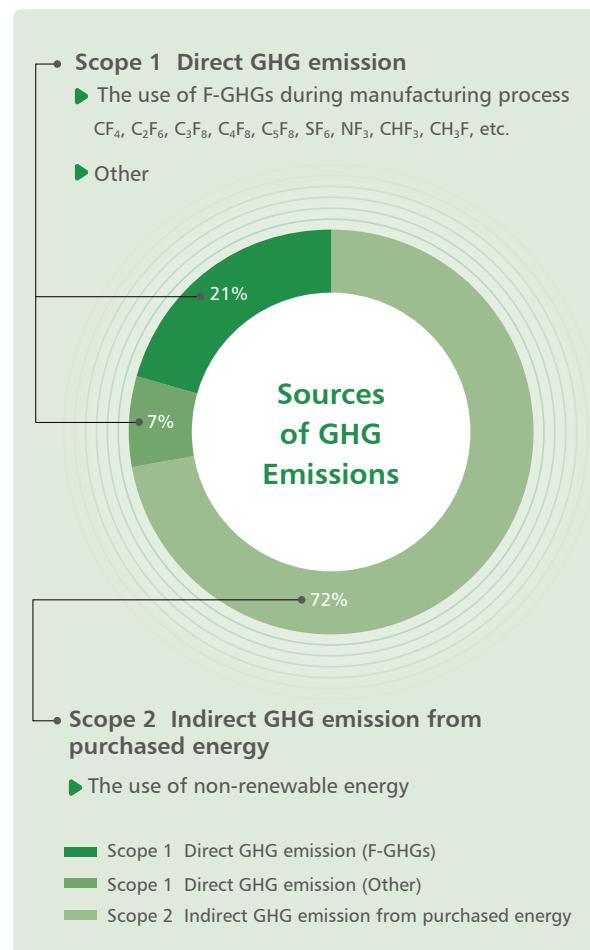
In order to incentivize the management team and all employees to work towards goals reducing greenhouse gas emissions and improving energy and resource efficiency, UMC has incorporated relevant key goals of into its management and used them as the basis for employee performance evaluation and rewards. In addition, inter-fab competitions such as the Green Fab Award and the Green Innovation Award are held every year to encourage fabs to implement energy-saving and carbon-reduction measures; rewards are provided to units and individuals with outstanding carbon-reduction performance. In 2021, UMC established a mechanism for linking ESG performance and employee remuneration, providing additional bonuses to employees when company-wide goals are achieved.

On the other hand, in order to fully integrate real-time information of the Company's greenhouse gas emissions, UMC is planning the launch of its "Carbon Management Platform Project", a real-time and smart carbon management system that will combine with the internal carbon pricing mechanism to facilitate carbon reduction actions.

3.1.2 GHG 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 90% 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 emission from purchased electricity (Scope 2), please refer to Chapter 3.2 Energy Management.



Participating in International Science-Based Targets Initiative

Despite efforts from governments and enterprises around the world to reduce carbon emissions, global warming is expected to reach 5.7°C by the end of this century in the worst case scenario, according to the IPCC Sixth Assessment Report. Science Based Targets (SBT) are based on achieving the total carbon emissions reduction that limits global warming to below 2°C. Through scientific and weighting methods, the reasonable emission (carbon reduction) allowance of a specific industry and a specific company under the scenario of the global carbon budget is calculated.

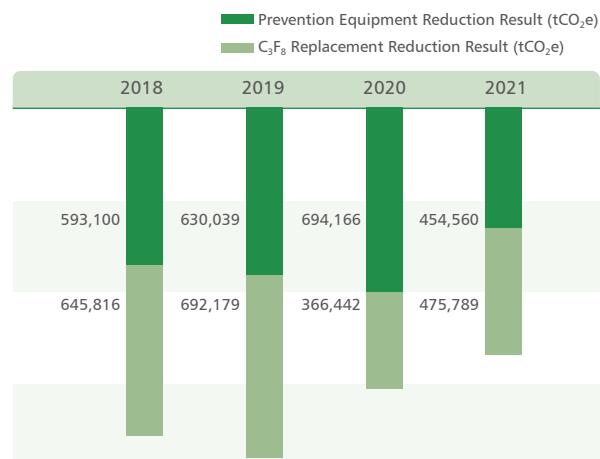
In response to the goal of the Paris Agreement, which calls for limiting global warming to below 1.5°C, UMC not only officially announced its commitment to achieve net-zero emissions by 2050, but also participated in the Science Based Targets Initiative (SBTi) in November 2021. The Company formulated medium- and long-term carbon reduction targets in line with the SBTi methodology based on the Scope 1, Scope 2 and Scope 3 emissions that have been verified. By setting clear carbon reduction goals and schedules, UMC is strengthening efforts to battle climate change and striving to contribute to the vision of sustainable development.

F-GHGs Reduction

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. Furthermore, all UMC's 300mm fabs, including fabs of the subsidiaries, have adopted F-GHGs reduction practices. The total F-GHGs reduction rate has exceeded 75%, which meets the Institute of Electrical and Electronics Engineers (IEEE) 1680.1: 2018 standard.

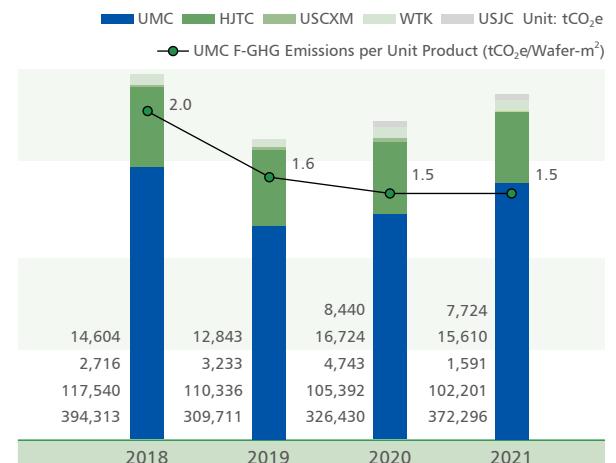
Even though the Company's production capacity expanded 10% in 2021, overall F-GHG emissions amounted to 372,296 tCO₂e, only a slight increase from 2020. Nevertheless, UMC continues to implement various F-GHGs reduction measures to keep emission intensity in a downward trend.

F-GHGs Reduction Results



Note: I. The area to promote the emission preventive (reduction) equipment includes all fabs. The reduction efficiency was calculated based on the difference between GHG emissions before and after the treatment by the emission preventive (reduction) equipment.
II. The area to promote C₃F₈/C₂F₆ gas replacement includes all 200mm fabs. The reduction efficiency was calculated based on the difference of GWP_s and the difference of equipment utilization rate.

F-GHG Emissions



Note: I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation since 2020.
II. In 2021, the overall F-GHG emissions per unit product for UMC Group was 1.51 tCO₂e/Wafer-m².
III. F-GHG emissions was calculated by the methodology of IPCC tier2b and was verified by a third party.

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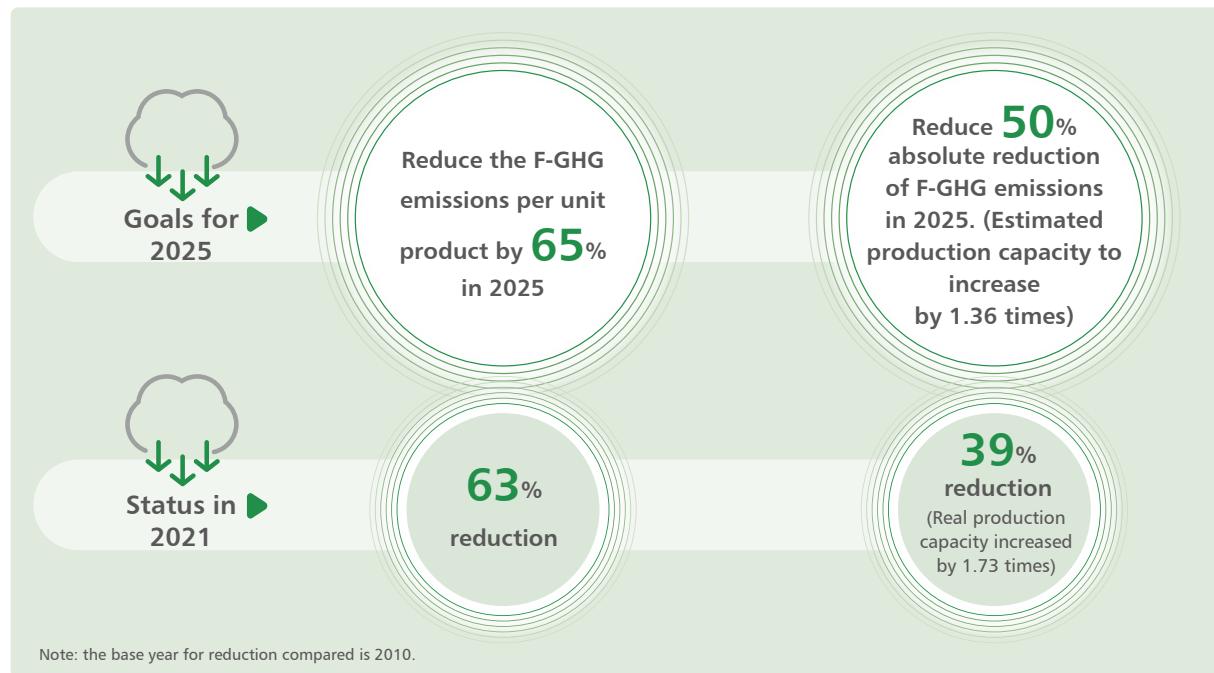
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F-GHG reduction in 2021 reached 917,000 tCO₂e, which represents a 63% decline in F-GHG emissions per unit product. The results showed that UMC not only managed to achieve Phase 3 objectives ahead of schedule, but also surpassed the 2020 goal of 30% reduction from 2010 levels set by the World Semiconductor Council (WSC). 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 and 50% absolute reduction of F-GHG emissions.

F-GHG Reduction Current Status



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 tons. In 2014, a 2 million-ton 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.

Green Fab

An ecological, energy-saving, waste-reducing, and healthy building can not only provide employees with a great working environment to improve work efficiency, but also create real energy-saving and carbon-reduction benefits. UMC introduced the green fab concept in 2007. By hiring green building and ecological experts, and through joint research programs with universities, UMC planned the design and construction of green buildings in accordance with the US LEED and domestic EEWH standards. In addition to incorporating the design principles of green fabs, green factories, and smart buildings into the design of new fabs, UMC also implemented the assessment of green fabs and green factories for existing fabs and gradually introduced related green designs and constructions, contributing to a more sustainable environment.

LEED of the United States

Gold Level: Fab 12A P3&4, Fab 12A P5&6, USCXM

Smart Architecture of Industrial Development Bureau, Ministry of Economic Affairs

Diamond Level: Fab 12A P5&6, Office Building in Fab 12A P5&6

EEWH-Green Architecture of Industrial Development Bureau, Ministry of Economic Affairs

Qualified Level: Fab 8A, Fab 8F, Fab 8S

Gold Level: Fab 12A P3&4

Diamond Level: Fab 12A P5&6

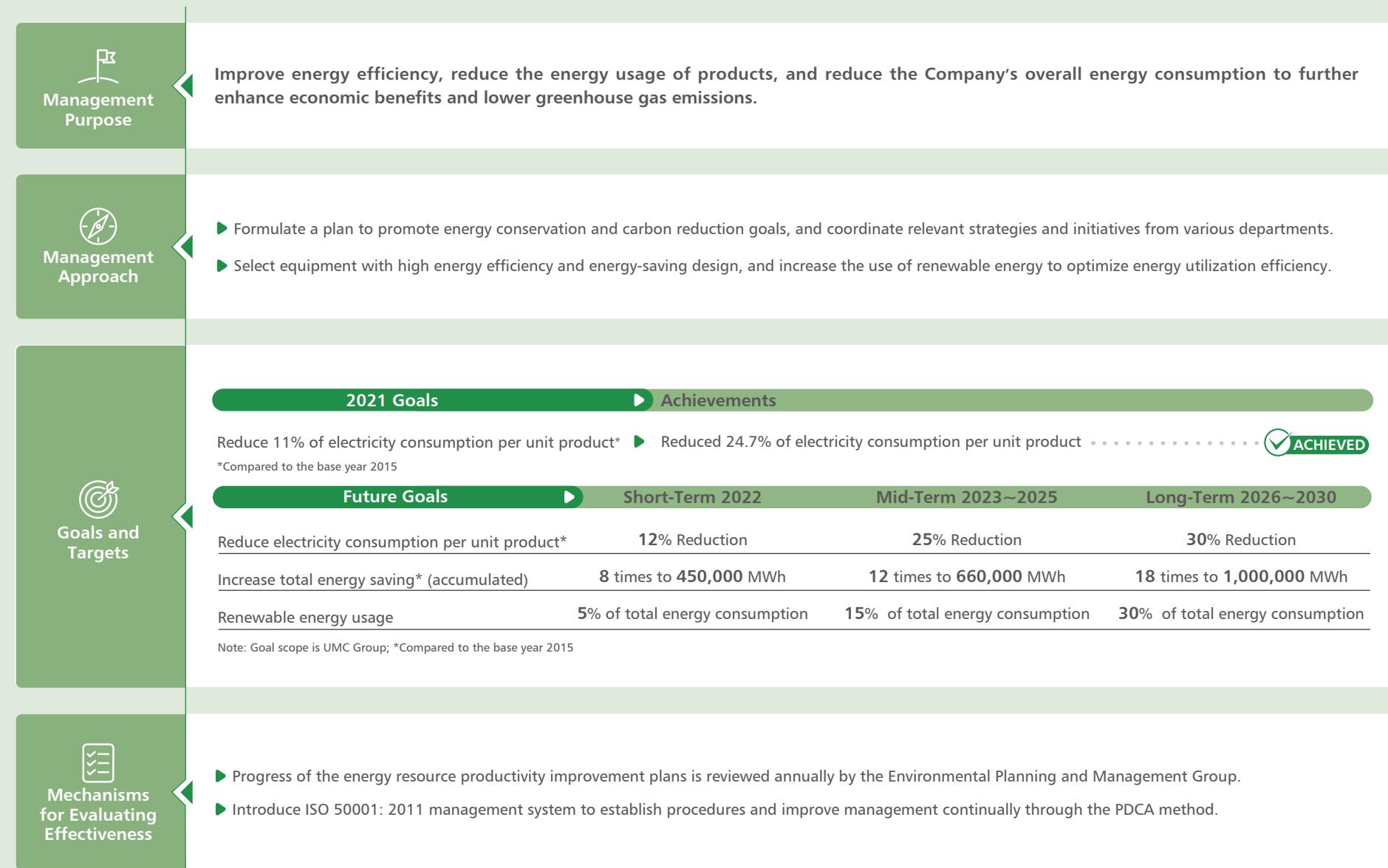
Green Factory of Industrial Development Bureau, Ministry of Economic Affairs

Fab 12A P3&4, Fab 8A, Fab 8S, Fab 12A II

Clean manufacturing assessment system certification of Industrial Development Bureau, Ministry of Economic Affairs

All 200mm and 300mm fabs in Taiwan

3.2 Energy Management

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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% of the total consumption, followed by natural gas (including LPG) and diesel, which account for about 6.7% and 0.3% 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 2021 reached 2,835,163 MWh, showing a slight increase from 2020. Of the total, electricity consumption was 2,635,744 MWh, while natural gas consumption was 189,694 MWh. The electricity consumption per unit product was 10.82 MWh/Wafer-m², while the natural gas consumption per unit product was 0.78 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

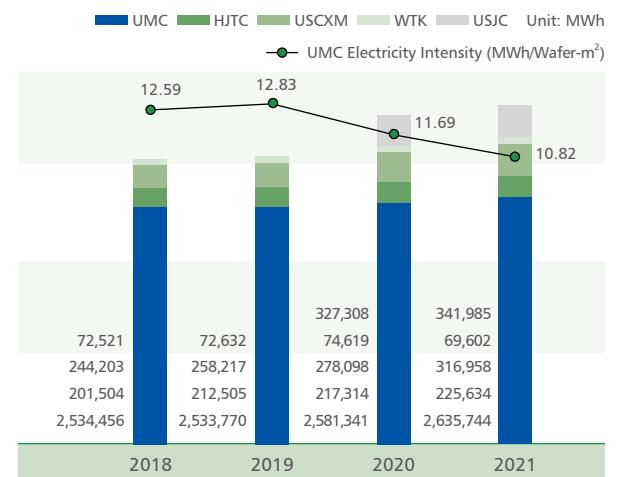
	Unit: MWh	2018	2019	2020	2021
Non-renewable Energy	Purchased Electricity	2,534,456	2,533,770	2,581,341	2,635,744
	Nature Gas, Diesel	205,080	191,181	200,764	197,273
	Steam, Heating, Cooling and Other Purchased Energy	0	0	0	0
	Non-renewable Energy Sold	0	0	0	0
Total Non-renewable Energy Consumption (a)		2,739,536	2,724,951	2,782,105	2,833,017
Renewable Energy	Total Renewable Energy (b)	2,882	2,747	2,912	4,321
	Renewable Energy Sold (c)	2,187	2,054	2,263	2,175
Total Energy Consumption (a+b-c)		2,740,231	2,725,644	2,782,754	2,835,163

Note: 1. The base of calculation includes UMC fabs in Taiwan and Singapore, and excludes subsidiaries of UMC including HJ, USCXM, Wavetek, and USJC.

2. Renewable energy generated from solar energy installations.

3. The total energy consumption in 2021 was about 1.00199×10^7 GJ; the percentage of grid electricity is >90%; the percentage of renewable energy is <1%.

Electricity Consumption

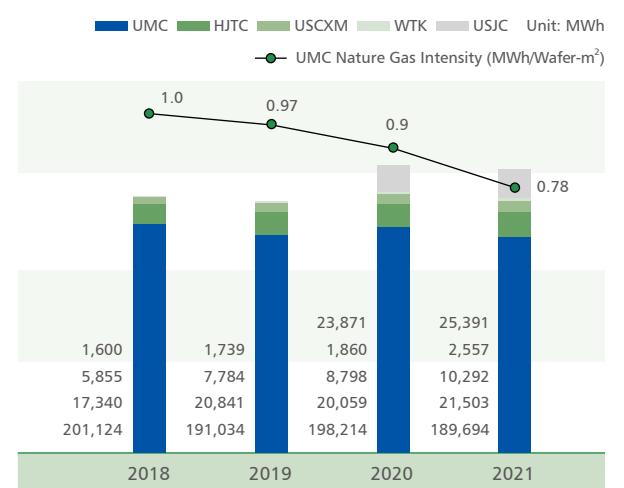


Note: I. UMC includes fabs in Taiwan and in Singapore, while the United Tower office building and the Nitrogen Field are not included.

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

III. In 2021, the overall electricity intensity for UMC Group was 10.93 MWh/Wafer-m².

Natural Gas Consumption



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

II. The unit gas calorific conversion coefficient is calculated according to the calorific value provided by the local gas suppliers of each fab.

III. In 2021, 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 2021, some older models of solar photovoltaic (PV) modules were replaced with high efficiency models, increasing power generation by 4.4 times. In total, a total of 2,161 kWp of solar PV system was installed, including replacement of old models. As of end-2021, UMC and its subsidiaries have completed the installation of over 6,300 kWp of solar energy, which is expected to generate up to 7,000 MWh of electricity each year.

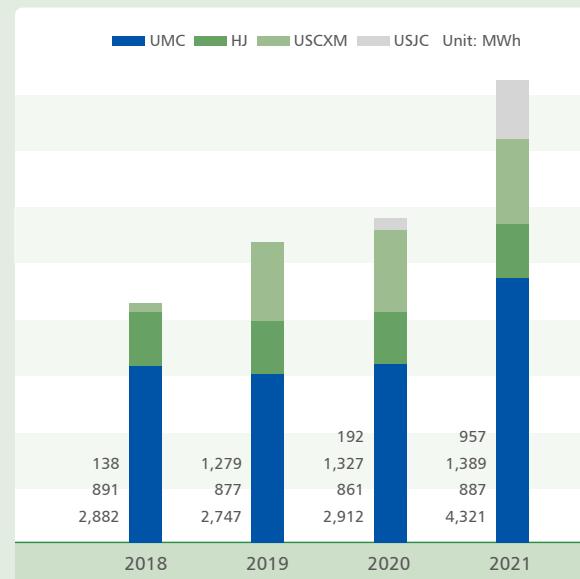
In addition, UMC plans to add a total of roughly 2,000 kWp of solar photovoltaic systems in 2022, demonstrating the Company's commitment to green energy. In 2021, UMC's solar photovoltaic system generated a total of 4,321 MWh (on-site), highest in the semiconductor foundry industry in Taiwan.

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, and has set progressive goals of 15% by 2025 and 30% by 2030. UMC intends to reach its targets through diversifying energy sources.

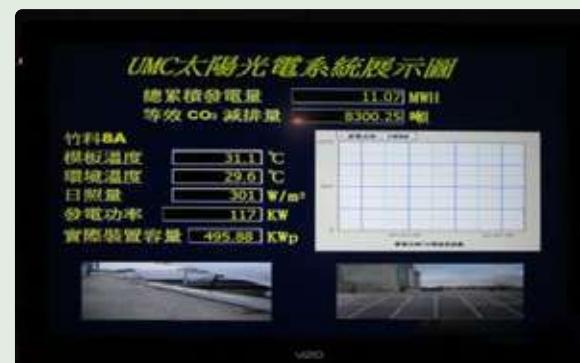
RE100

RE100 is a global initiative bringing together the world's most influential businesses committed to 100% renewable power. Led by international non-profit the 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 2021, the total electricity and natural gas saved was 74,642 MWh, which is equivalent to a reduction of 33,655 tons of CO₂ emissions.

Major Energy Conservation Measures in 2021



Electricity

- ▶ 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

Achievement

- ▶ **2.76%** reduction of electricity usage
- ▶ **66,156** MWh of electricity savings
- ▶ **31,920** tons of CO₂ reduction



Natural Gas

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

Achievement

- ▶ Reduced **8,486** MWh of natural gas usage
- ▶ **1,735** tons of CO₂ reduction

Total Energy Conservation in 2021

Electricity

Amount of Savings (MWh) **66,156**
Carbon Reduction (tCO₂e) **31,920**

Natural Gas

Amount of Savings (MWh) **8,486**
Carbon Reduction (tCO₂e) **1,735**

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

II. CO₂ emissions are calculated using the latest local electricity coefficient. Taiwan: 0.502 Kg CO₂e/KWh ; Singapore: 0.408 Kg CO₂e/KWh.

III. 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.

IV. The newly added improvement item was calculated based only on the 12-month performance. For the cross-year project, only the performance generated in 2021 was counted.

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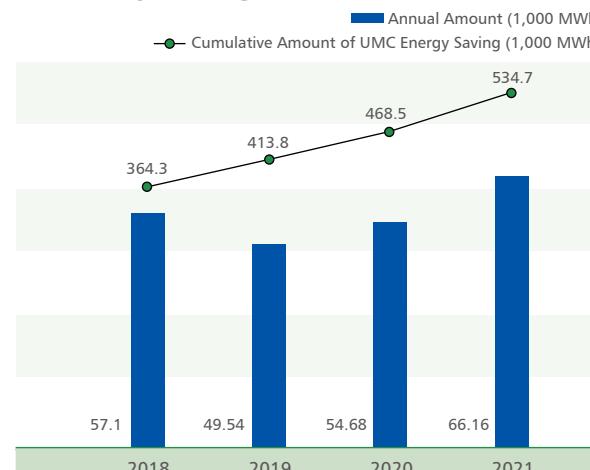
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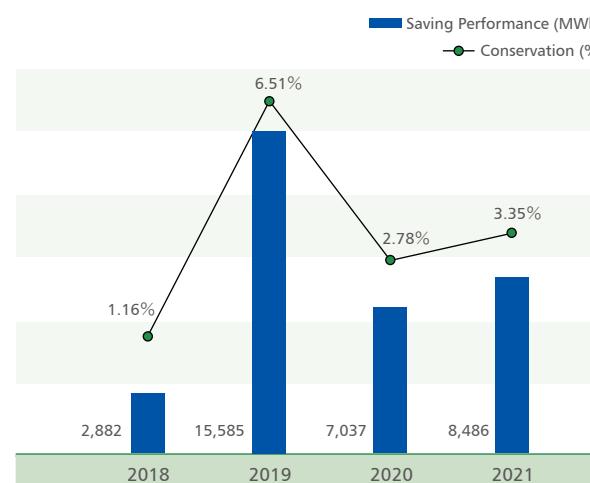
Appendix

Electricity Savings



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

Natural Gas Savings



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

Energy Conservation Plans

UMC's energy saving plan covers approximately 370 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 2022 is 60,000 MWh, equivalent to CO₂ emissions reduction of about 29,000 tCO₂e. UMC will continue its program to replace VOC rotors and LSR, which is expected to reduce natural gas consumption by 3,348 MWh, equivalent to CO₂ emissions reduction of about 761 tCO₂e.



▶ Conversion air conditioner



▶ Cooling tower replacement



▶ Intelligence chiller



▶ Energy-saving motor

For more details about energy saving: ▶ [Making the Impossible Possible: Using AI, Big Data, and Green Operations to Reduce Electricity Use]

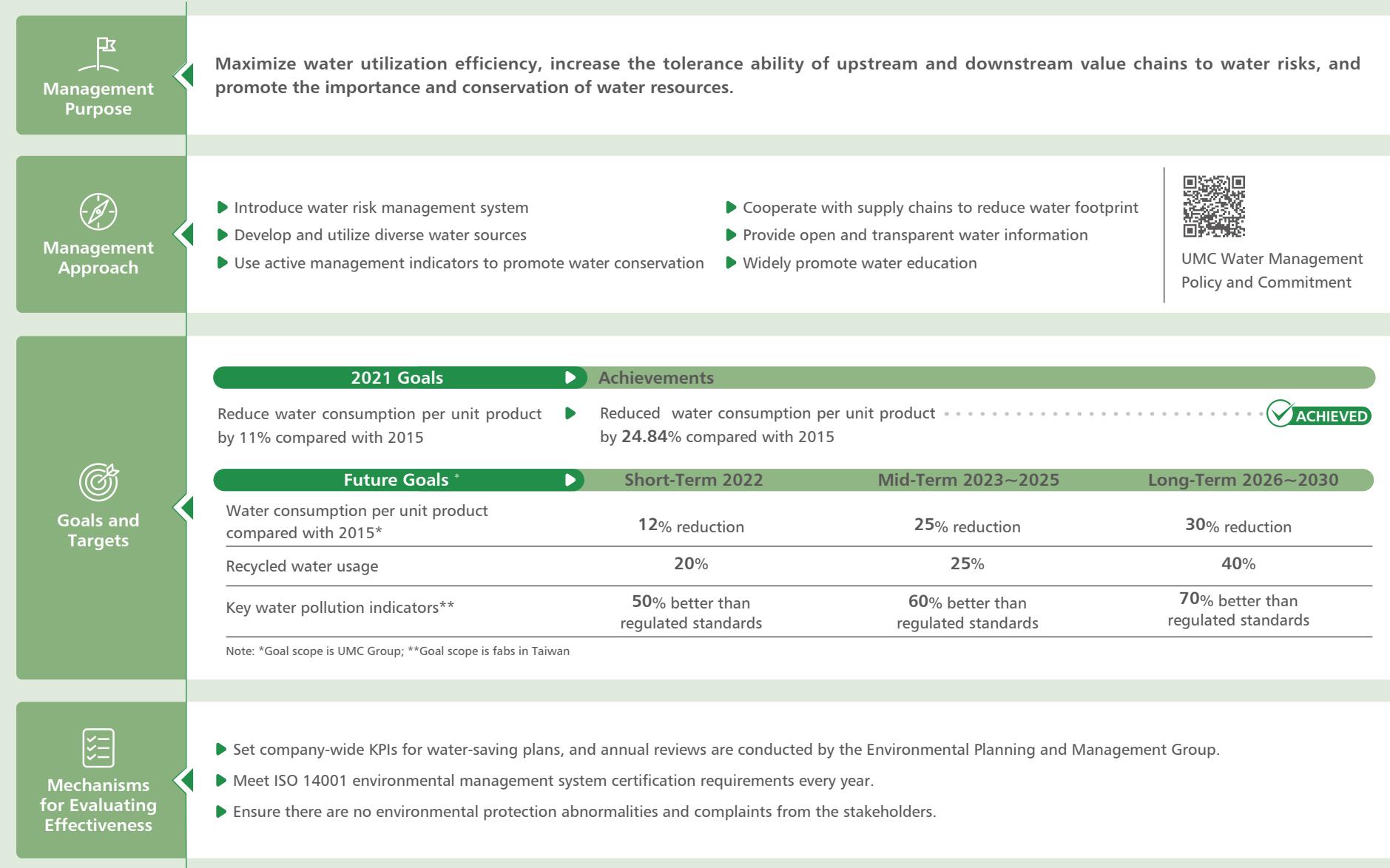


3.3 Water Resources Management



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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. The Company completed the identification of water risk factors and response, and had 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. UMC 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 water supplement.

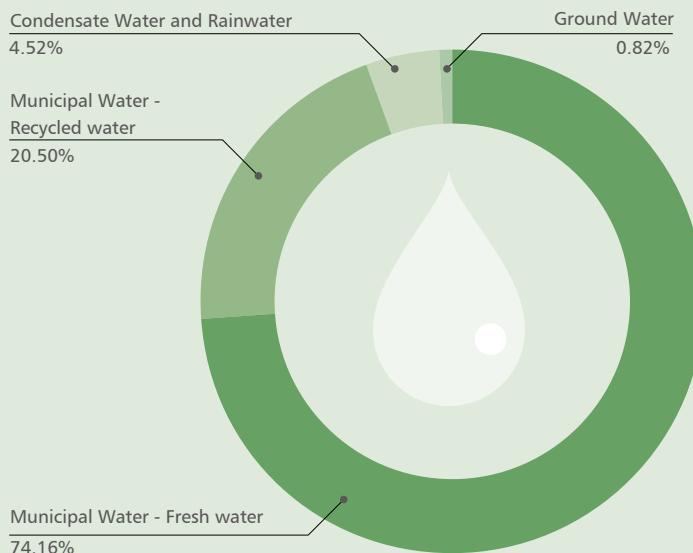
Note: For the identification of water risk factors, please refer to Section 1.2.5 Managing Climate-related Risks and Opportunities

3.3.1 Water Structure

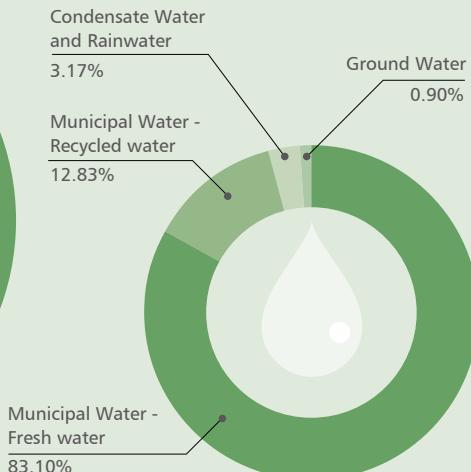
UMC actively seeks ways to boost water efficiency and value, reduce the environmental impact of water resources, and lower the amount of water supplement. UMC use municipal water as the primary source, which is approximately 74.16% of total water withdrawal. Recycled water (including recycled water used by Fab 12i in Singapore) account for 20.50 % of total water withdrawal, and the rest is from condensate water and rainwater sources, which account for about 4.52%.

In 2021, the western part of Taiwan suffered the worst drought since 1947. However, UMC effectively allocated external water resources and launched various water-saving measures to ensure that production was not interrupted. Therefore, even with the increase in production capacity, the total water withdrawal did not increase significantly. The total amount of water withdrawn by UMC was 16.21 million tons, and the total amount of Group's water withdrawal was 25.92 million tons, an increase of 0.76 million tons over the previous year.

2021 UMC Water Withdrawal by Source



UMC Group



Note: 1. The scope of UMC covers fabs in Taiwan and Singapore; and the scope of Group includes UMC and its subsidiaries HJ, USCXM, Wavetek, and USJC.
2. The recycled water is used by UMC's fabs in Taiwan and Singapore. The groundwater used in 2021 was by subsidiary USJC and UMC's Taiwan fabs, which activated water trucks.

Water Withdrawal and Consumption in 2021

Unit: megaliters

Item	UMC	Subsidiary			
		HJ	USCXM	Wavetek	USJC
Total Water Withdrawal	16,213	2,347	2,418	548	4,393
Total Water Discharge	10,676	2,154	1,809	398	4,076
Water Consumption	5,537	193	609	150	317

Note: 1. 1 Mm³ = 1,000 megaliters
2. Water consumption=Total water withdrawal - Total water discharge
3. The base of calculation includes UMC fabs in Taiwan and Singapore.

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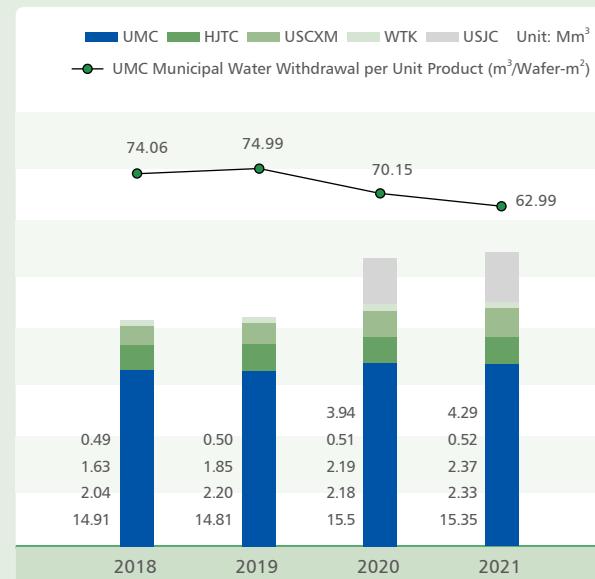
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Municipal Water

Municipal water, which includes both fresh water and recycled water, is the largest source of water withdrawal for UMC. In 2021, UMC's total water withdrawal was 15.30 million tons, a decrease of approximately 0.15 million tons from 2020 mainly due to water shortages during the dry season. The Company coordinated the use of water trucks to supplement other water sources such as groundwater and recycled water. Furthermore, UMC also actively took steps to boost water utilization efficiency and implemented various water-saving measures. After UMC took the initiative to improve water use efficiency. The municipal water consumption per unit product in 2021 was lower than that in 2020, extending the downward trend over the past four years.

Water Withdrawal



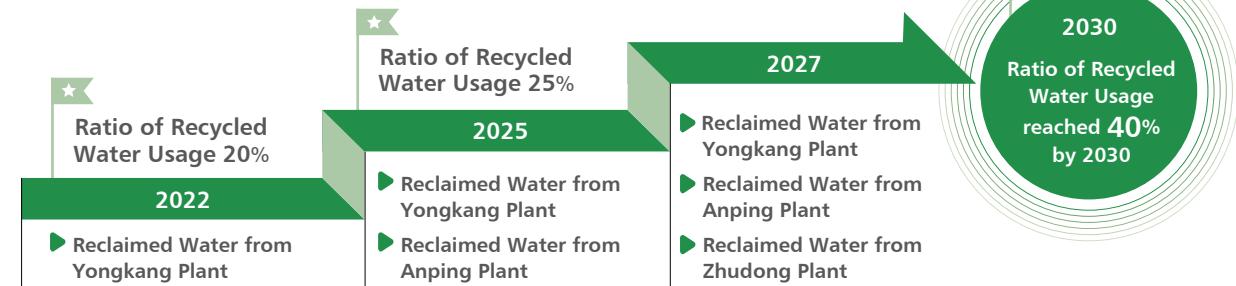
- Note: 1. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
2. Water meter readings are recorded daily. Annual water amount is calculated based on average monthly water usage.
3. In 2021, the overall municipal water withdrawal per unit product for UMC Group was 74.97 m³/Wafer-m².

Recycled Water

UMC has diversified the sources of water withdrawal to include recycled water. Withdrawal from recycled water was mainly consumed by Fab 12i in Singapore. When Fab 12i was built, recycled water (NEWater^{Note}) was introduced in the production of 300mm wafers. The use of recycled water has also been reviewed and evaluated in UMC's Taiwan fabs in areas where water resources are relatively scarce, and is expected to be introduced in 2022. In 2021, Fab 12i's recycled water reached 3.30 million tons, accounting for 99% of whole fab water usage. Going forward, the fabs in the Hsinchu Science Park and Southern Taiwan Science Park will work in conjunction with the government's water recycling system and perform incremental testing before fully implementing recycled water utilization to reduce burden on local water resources.

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

Recycled Water Promotion



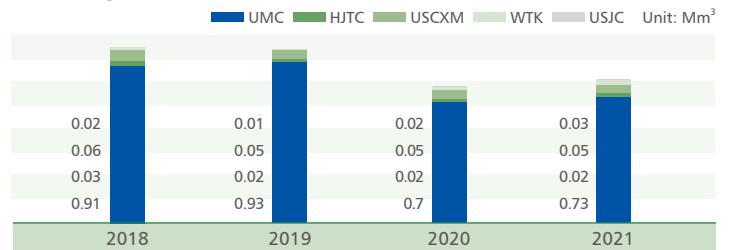
Note: The application for Yongkang reclaimed water has been approved. The application of Anping and Zhudong reclaimed water have completed, which is subject to official review and implementation in coordination with the government's development progress.

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 <1000ppm in order to increase the stability of recycled water quality.

Condensate Water and Rainwater Recovery

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 the secondary manufacturing process and plants watering at UMC, and the total consumption amount in 2021 was 0.73 million tons.



- Note: 1. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
2. Annual water amount is calculated using flow meters and estimates.

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 around the world 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 classified as an area with high level of water deficiency. HJ accounts for about 9.06% and 2.83% 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 tons and the newly added water supply (50 tons/day) from the Jiuyang Lake, HJTC also implements water-saving measures to improve water use efficiency and reduce the impact of water risks on operations. In 2021, 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 3%.

UMC Indicators of Water Related Risks Assessment

- The WRI (Water Resource Institute) Aqueduct Tool is used to assess water risk. <http://www.wri.org/our-work/project/aqueduct/aqueduct-atlas>
- 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	Location	Regional Water Withdrawal ¹ (10,000 tons/day)	UMC Water Withdrawal ² (10,000 tons/day)	Impact ³
UMC	Hsinchu Science Park	56	1.64	2.93%
	Southern Taiwan Science Park	93	1.68	1.81%
	Singapore	45	0.91	2.00%
Subsidiary	HJ (China Suzhou)	47	0.64	1.36%
	USCXM (China Xiamen)	172	0.65	0.38%
	Wavetek (Hsinchu Science Park)	56	0.14	0.25%
	USJC (Japan Mie-Ken)	75	1.18	1.57%

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%

Considering that UMC's main operating sites are located in Taiwan and Singapore, water withdrawal is further divided according to the source to better understand regional water withdrawal to deal with situations such as the drought in the Hsinchu region in 2021. UMC fabs in Taiwan and Singapore use municipal water as the main source of water, and water consumption has trended upwards over the years. To reduce the impact of regional water withdrawal, UMC is actively adopting various water conservation measures, and effectively identifying and preventing operational risks that may be caused by water resources management.

Volume of UMC Water Withdrawal by Source

Unit: megaliters

Source of Withdrawal water	2018		2019		2020		2021	
	All Areas	Fabs in Hsinchu						
Surface water, Groundwater, Seawater, and Produced water	0	0	0	0	0	0	132	84
Condensate water and Rainwater	911	433	828	373	705	310	733	371
Third-party Water	14,907	5,996	14,809	6,003	15,495	6,238	15,348	5,927
Total Water Withdrawal	15,818	6,429	15,637	6,376	16,200	6,548	16,213	6,382

Note: 1. 1 Mm³ = 1,000 megaliters

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

3. After the assessment, "Hsinchu Science Park" was listed as a medium-to-low risk area, which is more water-stressed than other regions where UMC fabs are located at.

4. The third-party water includes municipal water and recycled water. Municipal water is provided by local water companies, and its source is all surface water and fresh water ($\leq 1,000 \text{ mg/L}$ total dissolved solids).

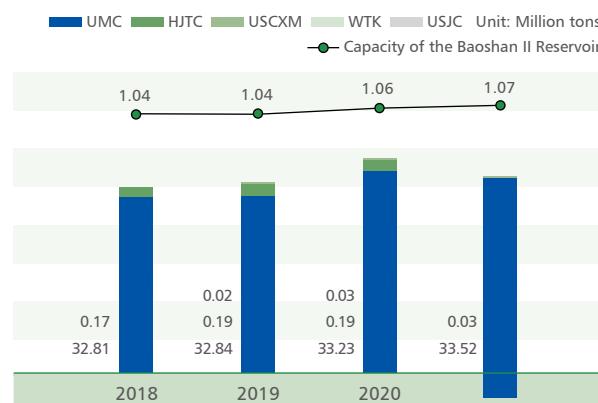
5. Due to the response for the dry period in 2021, we hired water trucks to supplement water usage which water sources includes groundwater (renewable) 132 megaliters.

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. In 2021, UMC saved 33.52 million tons of water, which is equivalent to the storage capacity of 1.07 Baoshan II Reservoir in Hsinchu County. Through strategies in water saving, water recycling, and reduction of ultrapure water for manufacturing, the amount of water conserved by UMC has been increasing year after year, successfully achieving the 2021 goal of reducing water withdrawal per unit product by 11% set out in the Green 2025 Project. 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 Section 1.2.5 Managing Climate-related Risks and Opportunities.

Water Conservation



Note: 1. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

2. Baoshan II Reservoir is the main water source for the Hsinchu Science Park. Its full water storage capacity is 31.47 million tons, according to the Water Storage Report (2022.01) by Water Resources Agency, Ministry of Economic Affairs.

3. In 2021, UMC Group water conservation is 33.61 million tons which is equivalent to the water storage capacity of 1.07 Baoshan II Reservoir.

Water Conservation Measures

Through continuous improvement of water-saving measures, the volume of water conserved by UMC was 304,000 tons in 2021, accounting for 1.96% of municipal water usage. The savings for the year is equivalent to economic benefits of NT\$7.6 million. For subsidiaries, water conservation was 25,500 tons in 2021, accounting for 0.54% of municipal water usage, and is equivalent to economic benefits of approximately NT\$438,000 (RMB 104,550).

New Improvement Measures and Results in 2021

Category	Water Conservation Measure	Conservation (10,000 tons)
Water saving from production machine	Reduce water consumption and wastewater recovery	12.65
Wastewater recovery increasing	(New) Recover low-concentration hydrofluoric acid wastewater	3.43
	(New) Recover acidic wastewater	4.26
Pure Water Production Improving	Extend the service time of branch/sand filter towers	3.52
	Recover recycled water from pure water systems	2.17
Reduce supplement from municipal water	Purify and recover cooling tower drain water	2.31
	Water recovery upgrade	4.62
Total Amount		32.95

Note: The newly added improvement items were calculated based only on 12-month performance. For multiyear projects, only the performance generated in 2021 was counted.

Water Conservation Improvement for 2022

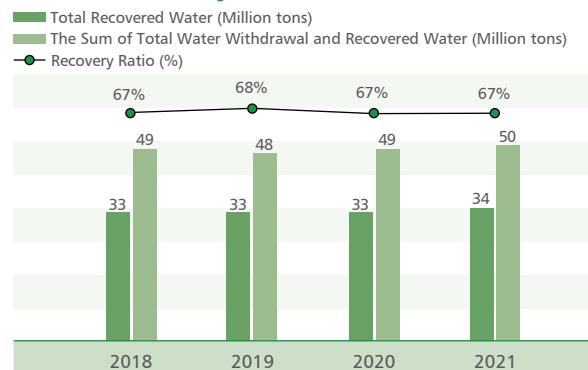
Water Conservation Measure	Conservation (tons)
Water resource recovery upgrade	15,000
HJ ultrapure water system instrument sampling water recycling	29,200
Copper process chemical-mechanical grinding wastewater recycling to acidic wastewater recycling	12,000
Add reverse osmosis membrane for recycled acidic water	8,500
Resin tower pH detector drainage recycling	2,920
Production equipment drainage recycling	16,700

Note: The newly added improvement item was calculated based only on the 12-month performance. For the cross-year project, only the performance generated in 2021 was counted.

Water Recovery and Reuse

UMC continued to promote water-saving and wastewater reduction, as well as recovery measures over the years. In 2021, total water recovery reached 33.52 million tons, with a recovery rate of 67.36%. In addition, for all UMC fabs, the water recovery rates of the overall fab and of the manufacturing process are better than the locally regulated standards.

Water Recovery and Reuse



Note: 1. The base of calculation includes UMC fabs in Taiwan and Singapore.
2. Amount of recovered water is calculated using cumulative flow meter or floating flow meter.
3. Total water withdrawal includes municipal water, condensate water and rainwater.
(1) Municipal water: Water meter readings are recorded daily, and annual water amount is calculated based on average monthly water usage.
(2) Condensate water and rainwater: Annual water amount is calculated based on flow meters and estimates.

Company-wide Recovery Rate

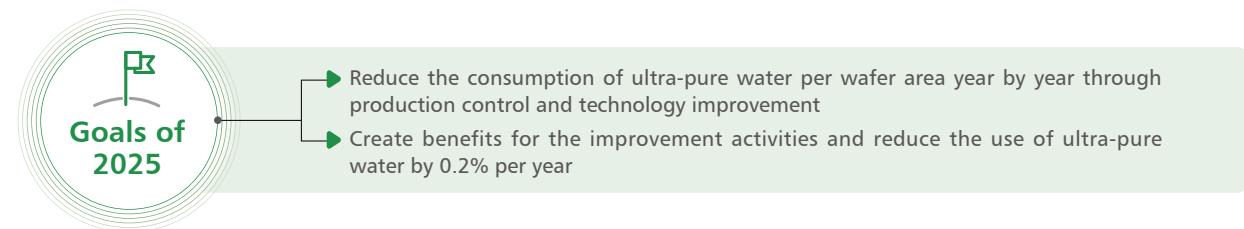
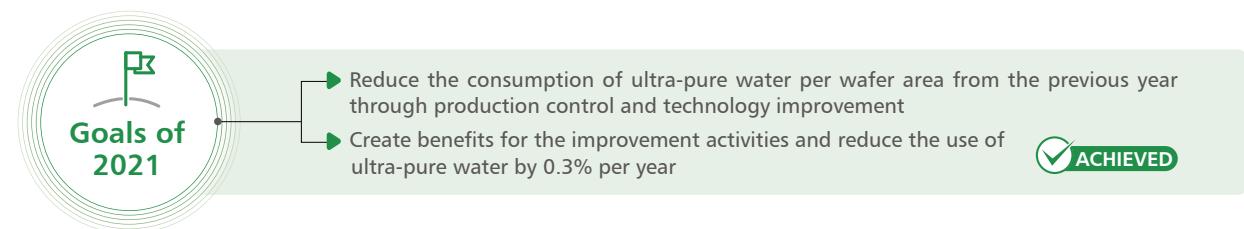
Site	Company-wide Recovery Rate		Manufacturing-process Recovery Rate		
	Standard	Actual	Standard	Actual	
Taiwan	8A	≥ 70%	77.3%	≥ 70%	80.6%
	8D	≥ 70%	80.0%	≥ 70%	86.8%
	8E	≥ 70%	81.4%	≥ 85%	86.3%
	8F	≥ 70%	79.8%	≥ 85%	85.0%
	8S	≥ 70%	74.7%	≥ 85%	87.6%
	12A	≥ 75%	77.9%	≥ 85%	87.1%
	12A II	≥ 75%	83.1%	≥ 85%	86.7%
Singapore	12i	NA	65.7%	NA	67.2%

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

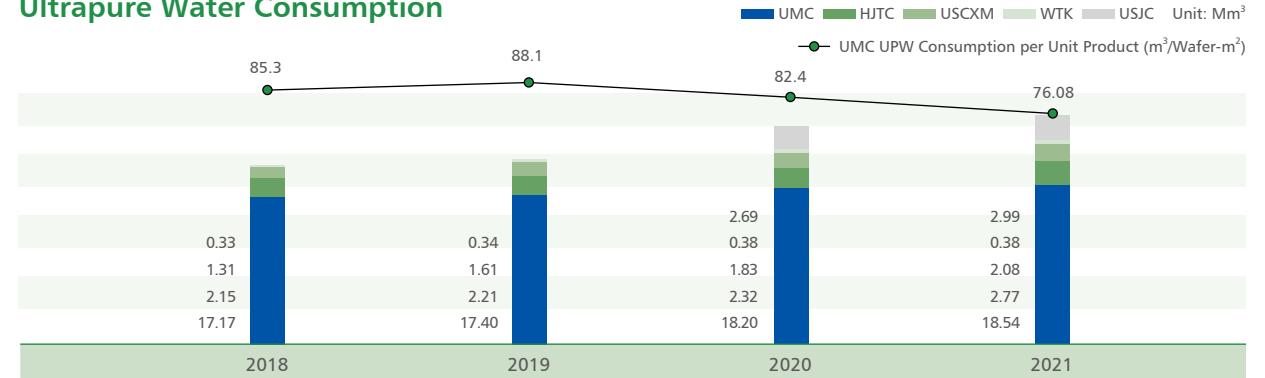
Manufacturing Process Ultrapure Water Reduction

UMC adheres to the principle of continuous improvement. By raising the awareness of all employees, careful control of production parameters, and improvement of technologies, the Company is able to systematically decrease its demand for ultrapure water (UPW) per wafer area. The main water consumption for the manufacturing process in fabs is the Wet Bench, including Single-Wafer and Batch-Type Wet Bench. The commonly used reduction methods are to optimize the manufacturing process water flow, standby water flow, or to increase the time interval between each flush during standby. The Company's Green Operation Team consolidates the reduction plans of fabs and applies them to other sites that have not yet implemented UPW reduction measures.

UMC's UPW consumption in 2021 was 18.54 million tons. Despite capacity expansions, UMC was able to continue increasing the utilization efficiency of UPW during the production process. The UPW consumption per unit wafer area in 2021 was 76.08 m³/Wafer-m², which is significantly lower than that in 2020.



Ultrapure Water Consumption



Note: 1. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
2. In 2021, the UPW consumption per unit of wafer area for UMC Group was 80.67 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 Diversion • • • • • ►

- Divided into 27 categories
 - a. Solvent-based wastewater: through high or low flash point for resource recovery or incineration
 - b. Inorganic acids: resource reuse
 - c. Waste water: Processed and reused according to characteristics

Wastewater Treatment • • • • • ►

- Compliance with the effluent standards of the Science Park Administration
- Real-time monitoring and response, equipment for continuous monitoring of water quality (pH, fluoride ion concentration) and water quantity
- SPC management is adopted for self and early prevention

Effluent Monitor • • • • • ►

- Each factory also regularly outsources wastewater testing and long-term tracking and monitoring of wastewater quality
- Unscheduled quality inspections by the Science Park Administration

Wastewater Discharge

UMC and Its Subsidiaries				Combined Waste Water Treatment				
Location	Site	Discharge Amount (10,000 tons/day) ^{Note I}	Impact (%)	Treatment Department	Current Treatment Amount (10,000 tons/day) ^{Note II}	Re-use	Discharged into Drainage Area	
Hsinchu Science Park	Fab 8A、Fab 8D、Fab 8E、Fab 8F、Fab 8S	1.17	11.5%	Hsinchu Science Park Administration sewage treatment plant	10.2	—	Ke-Ya River	
Southern Taiwan Science Park	Fab 12A	1.05	8.5%	Southern Taiwan Science Park Administration sewage treatment plant	12.4	—	Yanshuei River	
Singapore	Fab 12i	0.71	0.88%	Public Utilities Board (PUB)	80	Industrial reuse	South China Sea	
Hsinchu Science Park	Subsidiary WAVETEK	0.11	0.11%	Hsinchu Science Park Administration sewage treatment plant	10.2	—	Ke-Ya River	
China Suzhou	Subsidiary HJ	0.59	0.66%	Suzhou Industrial Park, Hua Yan Water Ltd.	90	—	Wusong River	
China Xiamen	Subsidiary USCXM	0.50	10%	Xiamen City, Xiang-an (Ma Xin) sewage treatment plant	5	—	Dongkeng Bay	
Japan Mie-ken	Subsidiary USJC	0.12	—	USJC wastewater treatment facility	—	—	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.

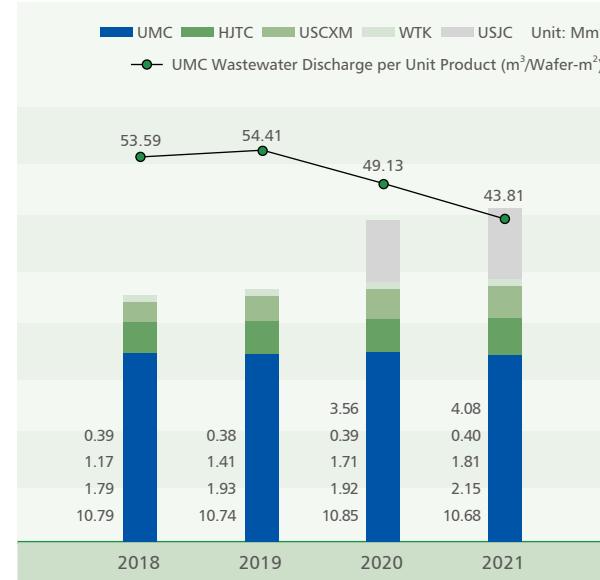
2. Sources of data:

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

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 2021, the wastewater discharge of UMC was 10.68 million tons, which was lower than the previous year. Wastewater discharge per unit of wafer area in 2021 was $43.81 \text{ m}^3/\text{Wafer-m}^2$, also lower than a year earlier.

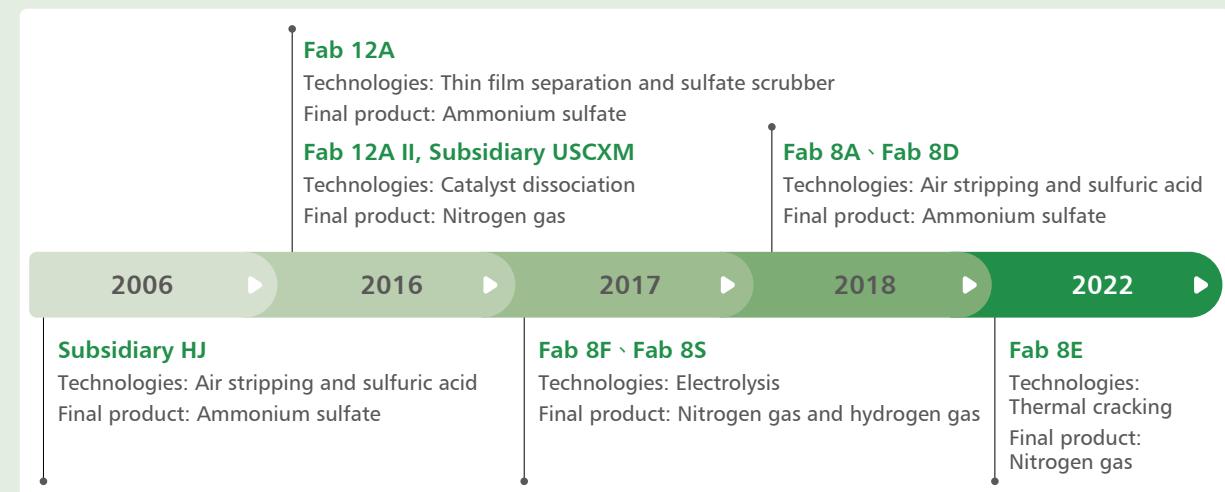
Wastewater Discharge



Note: 1. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.

2. In 2021, the overall wastewater discharge per unit of wafer area for UMC Group was $57.62 \text{ m}^3/\text{Wafer-m}^2$.

Nitrogen Wastewater Treatment Techniques' Setup Status



Nitrogen Wastewater Improvement

Responding to the addition of new wastewater pollutants, namely ammonia and Tetramethylammonium Hydroxide (TMAH), in the regulated standards set by the Science Park Administration Bureau, the ammonia concentration in water discharged by UMC meets the Science Park's standards.

Project Benefits

Economic Benefit: Annual operating cost is reduced by about NT\$48 million in cost of nitrogen raw materials. From 2018, wastewater charges paid to the Science Park Administration is reduced by about NT\$180 million per year.

Environmental Benefit: Through ammonia source reduction, ammonia concentration in the wastewater is reduced by 28~63%.

Considering that UMC's main operation sites are in Taiwan and Singapore, water discharge volume was further divided according to the discharge categorization and level of treatment to better understand regional water discharge volume. The water discharge of UMC fabs in Hsinchu Science Park seemed to suffer more water stress than other regions.

Wastewater from UMC's fabs in Taiwan and Singapore are treated to meet regulated standards prior to sending to third-party treatment 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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Steering Committee
Chairman

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Appendix

Volume of UMC Water Discharge by Source

Unit: megaliters

	2018		2019		2020		2021	
	All areas	Hsinchu	All areas	Hsinchu	All areas	Hsinchu	All areas	Hsinchu
Destination								
Surface water, Groundwater, Seawater	0	0	0	0	0	0	0	0
Third-party water	8,146	4,286	8,020	4,319	8,274	4,456	8,088	4,274
Third-party water sent for use to other organizations	2,675	0	2,767	0	2,640	0	2,588	0
Total Water Discharge	10,788	10,821	4,286	10,788	4,319	10,914	4,456	4,197
Level of Treatment								
No treatment	0	0	0	0	0	0	0	0
Hsinchu Science Park administration standards	4,286	4,286	4,319	4,319	4,456	4,456	4,274	4,274
Southern Taiwan Science Park administration standards	3,860	—	3,702	—	3,818	—	3,814	—
Singapore government administration standards	2,675	—	2,767	—	2,640	—	2,588	—

Note: 1. 1 Mm³ = 1,000 megaliters

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

3. The scope of calculation is UMC fabs in Taiwan and Singapore. After the assessment, "Hsinchu Science Park" was listed as a medium-to-low risk area, which is more water-stressed than UMC fabs in other regions.

4. 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.

5. 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.

6. The wastewater discharged by UMC is not fresh water ($\leq 1,000$ mg/L Total Dissolved Solids).

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Appendix

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 during dry season.
3. Assessed the utilization of recycled water to align with the Water Resources Agency's recycled water facilities.
4. Established a communication platform with the Water Resources Agency to meet future water supply and demand.

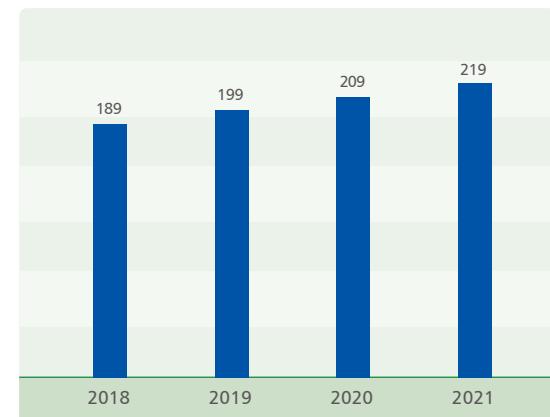
Results: The Taoyuan-Hsinchu pipeline will be extended to the Hsinchu Science Park. It is expected to supply 90,000 metric tons of water per day from 2024. From 2026, water from reservoirs in the Taoyuan and Hsinchu regions will be connected, and the reservoir flow will reach 300,000 tons per day, further increasing supply stability.

▶ Exchange and Counseling with Industry Peers

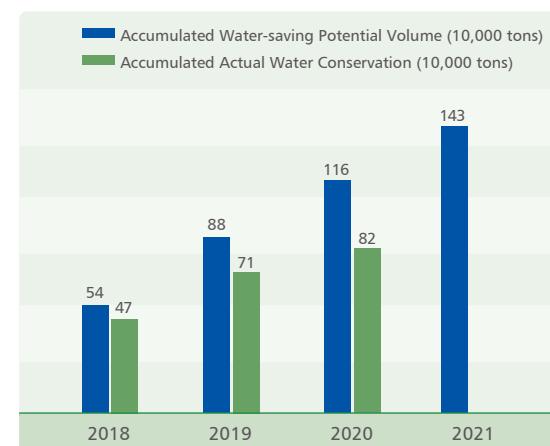
UMC has participated annually in water conservation coaching sessions in the Science Park since 2002. As of 2021, the program has conducted a total of 219 sessions and coached more than 90 companies. Water conservation by companies coached by UMC has reached an accumulated amount of 822,000 tons over 4 years (2018~2020). Companies counseled by UMC in 2021 are estimated to have water-saving potential of 268,000 tons per year. In 2020, UMC coached 10 companies, which were able to realize savings of 130,000 tons 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

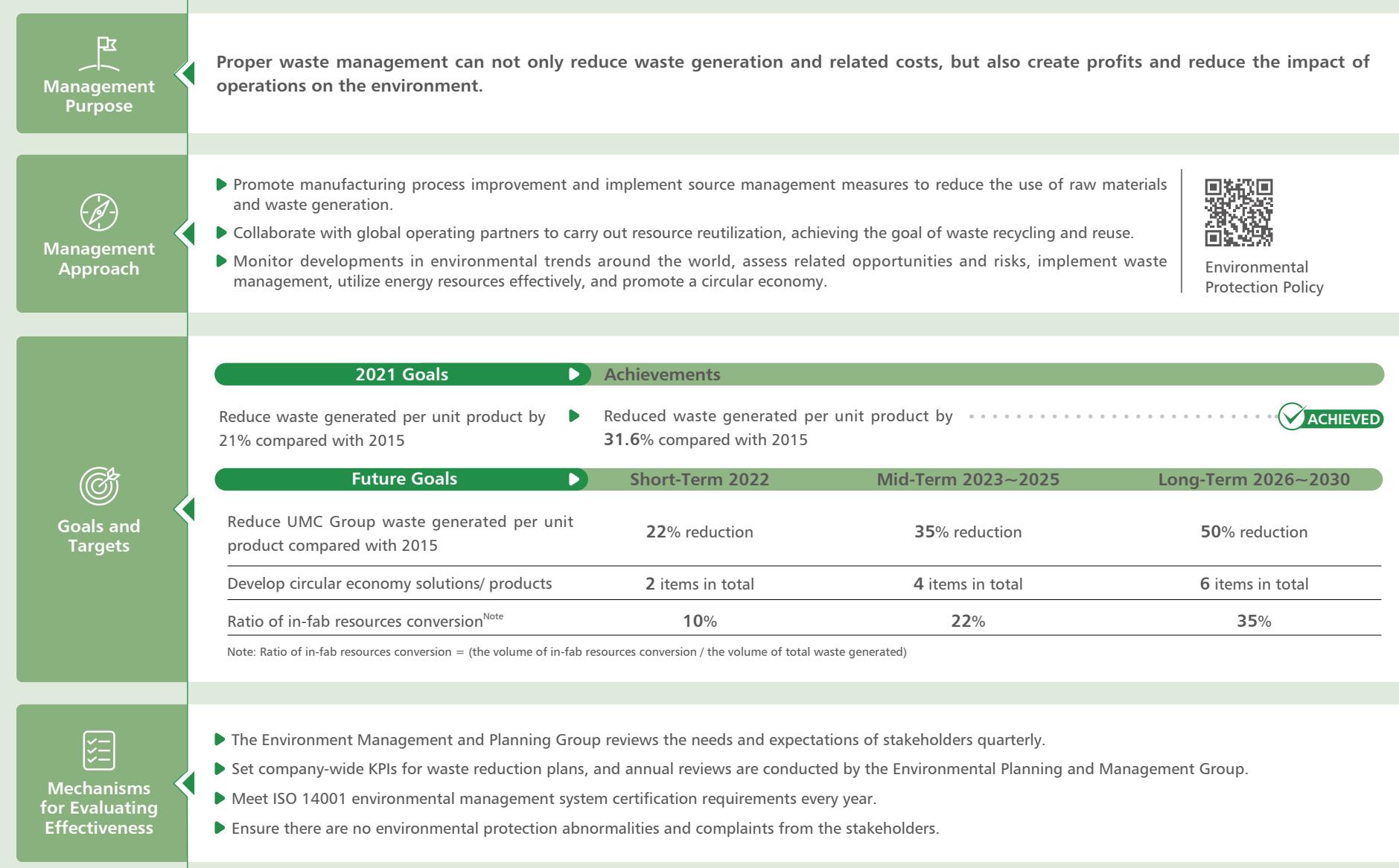


Accumulated Water Conservation from Counseling Cases



Note: The Water-saving Potential Volume in 2021 will be tracked by 2022.

3.4 Waste Management

Material Topic
• • • • •


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, minimizing resource consumption and the corresponding environmental impact. Considering chemicals that are concerns for environmental protection and government regulations, the Company selects raw materials that are significant waste generators for priority reduction. Referencing benchmark players in the industry, the Company then design technically feasible plans and conduct small-scale tests. The plans will be extended to fabs for implementation after their feasibility is verified.

3.4.1 Waste Output Structure

UMC's total waste output in 2021 was 50,033 tons^{Note}. Of the total, 43,758 tons of waste was recycled or reuse, accounting for 87.5%. The Company treated a total of 6,275 tons of waste during the year.

Note: excluding routine office waste

Waste Generation Status

Unit: ton			
Hazardous Waste ►	Output	Recycled	Treatment
Waste solvent	21,691	21,691	0
Waste ammonium sulfate	6,079	3,844	2,235
Sludge	2,287	1,658	628
Container	770	745	25
Others	244	16	228
Subtotal	31,070	27,954	3,116

General Waste ►			
General Waste ►	Output	Recycled	Treatment
Waste solvent	1,626	354	1,272
Waste ammonium sulfate	6,829	6,829	0
Sludge	6,025	4,928	1,097
Container	752	752	0
Waste mixed hardware	286	286	0
Others	3,445	2,655	790
Subtotal	18,963	15,804	3,159

Total Amount ► 50,033 43,758 6,275

Note: 1. The category of general waste and hazardous waste is in accordance with Taiwan "Waste Disposal Act", which also used by Fab 12i in Singapore.
 2. Waste acid includes waste sulfuric acid, waste phosphoric acid, and BOE waste liquid.
 3. Direct disposal methods include incineration, landfill, solidification and chemical treatment.
 4. The percentage of hazardous waste is 89.97%.

Waste Recycling Status

Unit: ton			
Hazardous Waste ►	Inside the Fab	Outside the Fab	Treatment
Reuse for original purpose	0	0	0
Regeneration	5,978	21,976	27,954
Others	0	0	0
Subtotal	5,978	21,976	27,954

General Waste ►			
General Waste ►	Inside the Fab	Outside the Fab	Treatment
Reuse for original purpose	0	0	0
Regeneration	0.6	15,803	15,804
Others	0	0	0
Subtotal	0.6	15,803	15,804

Total Amount ► 5,979 37,779 43,758

Waste Treatment Status

Unit: ton			
Hazardous Waste ►	Inside the Fab	Outside the Fab	Treatment
Incineration, serving as fuel	0	2,153	2,153
Incineration only	0	298	298
Landfill	0	0	0
Others	0	664	664
Subtotal	0	3,116	3,116

General Waste ►			
General Waste ►	Inside the Fab	Outside the Fab	Treatment
Incineration, serving as fuel	0	1,010	1,010
Incineration only	0	870	870
Landfill	0	1,280	1,280
Others	0	0	0
Subtotal	0	3,159	3,159

Total Amount ► 0 6,275 6,275

Note: 1. 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.
 2. 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.
 3. Other methods of disposal include solidification, chemical, and overseas treatment. UMC only delivered 1.29 tons of nickel-cadmium batteries to South Korea for recycling in 2021, which are regarded as overseas treatment and was disposed of in accordance with the governing regulations of the Basel Convention.

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 2021, UMC's total waste outsourced for treatment was 44,054 tons^{Note}, and waste output per unit of wafer area was 181 kg/wafer-m², which shows a reduction of 1.8% compared to 2020. In 2021, hazardous waste outsourced for treatment amounted to 25,091 tons, and the per unit of wafer area of hazardous waste output was 103 kg/wafer-m², roughly the same as 2020. Through various reduction plans and measures, the total waste reduction in 2021 reached 1,089 tons.

Note: excluding routine office waste

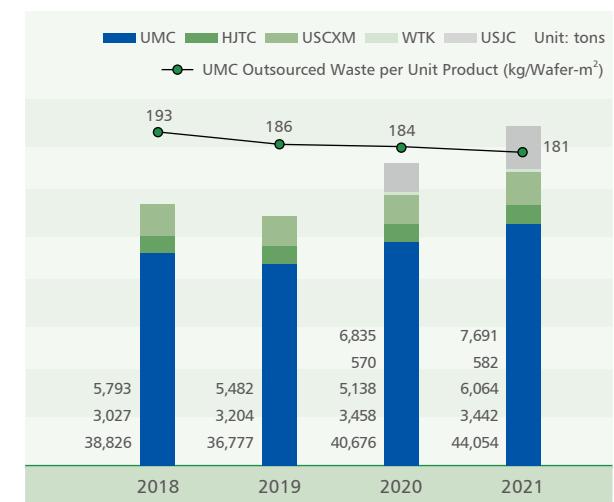
2021 Waste Reduction Measures and Performances

Plan	Measures	Reduction (tons)
Reduction of waste sulfuric acid	Optimize usage for manufacturing process	614
Reduction of waste solvent	Lower backside rinse flow, Extending the lifetime of chemicals	318
Sludge reduction	Source reduction for fluorine-containing chemicals	97
Reduction of ammonium fluoride waste liquid	Optimize usage for manufacturing process	18
Reduction of waste cupric sulfate	Reduce the ratio of acid excretion to acid supplementation	16
Others	Extending the lifetime of chemicals, empty barrels, spare parts, filter, etc.	26
Total Amount		1,089



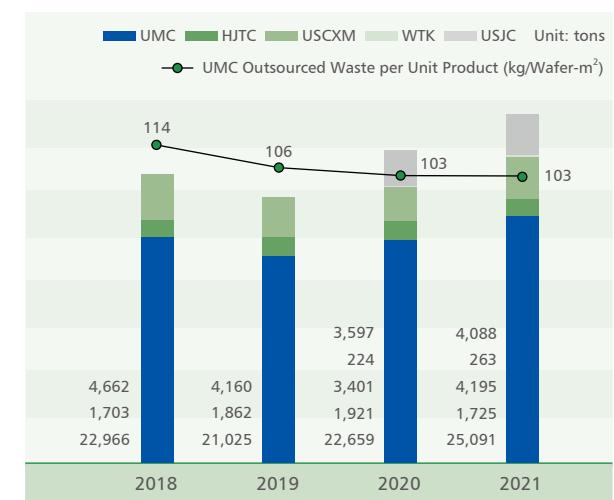
- ▶ Continuing to extend the lifetime of solvents to reduce the output of waste solvents
- ▶ Replacing the acid-base neutralizing agent in wastewater treatment plants with waste sulfuric acid to reduce the amount of waste sulfuric acid generated
- ▶ Extending the time for replacing waste sulfuric acid to reduce the amount of waste sulfuric acid generated
- ▶ Extending the service life of equipment parts to reduce waste from scrapped items
- ▶ Build BOE waste liquid treatment system to reduce the amount of waste outsourced for treatment

Outsourced Waste



Note: 1. USJC was included in the calculation starting from 2020.
2. In 2021, the overall outsourced waste per unit of wafer area for UMC Group was 186 kg/Wafer-m².

Outsourced Hazardous Waste



Note: 1. USJC was included in the calculation starting from 2020.
2. In 2021, the overall outsourced hazardous waste per unit of wafer area for UMC Group was 107 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 techniques. 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. The Company's three-year initiative "Triple R League" led suppliers to make progress in energy saving, waste reduction, and circular economy. By working together with supply chain partners, UMC hopes to minimize the waste generation of the whole value chain. In the future, UMC will continue to actively collaborate with waste management companies and raw material suppliers to research and develop new waste recycling methods and projects.

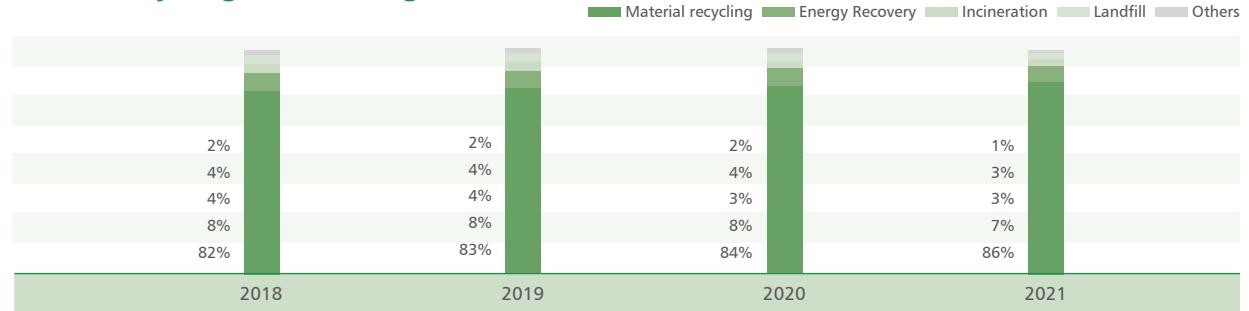
Conversion of In-fab Resources

UMC shares its in-fab resource reuse experiences with its subsidiaries and encourage them to implement similar initiatives. In 2021, UMC, and its subsidiary HJ and USCXM, introduced the in-fab use of diluted waste sulfuric acid as an ammonia-nitrogen wastewater treatment or air pollution control equipment agent, after the acid is stripped of hydrogen peroxide. The total reduction in waste sulfuric acid output was approximately 9,308 tons, and the Company was also able to reduce purchases of industrial-grade sulfuric acid by approximately 9,751 tons, saving up to NT\$61 million. In 2021, UMC initiated the Waste Photomask in-Fab Recycling Project. Waste photomasks were cleaned in the fab to remove their patterns, and then sold as quartz substrates, which reduced the generation of waste photomasks by 0.63 tons and the economic benefit for selling the recycled products totaled NT\$1 million. In 2022, the Company will launch another circular economy project which recycles copper sulfate waste liquid to produce copper metal through electrolysis.

Conversion of Off-site Resources

The amount of off-site waste recycled by UMC in 2021 was 40,942 tons, and ratio of waste reused, which includes usage in energy recovery, for the year reached 93%. Hazardous waste reused amounted to 24,128 tons, or 96% reuse rate including usage in energy recovery. Revenue from the recycling of renewable resources in 2021 (fabs in Taiwan) was approximately NT\$40 million.

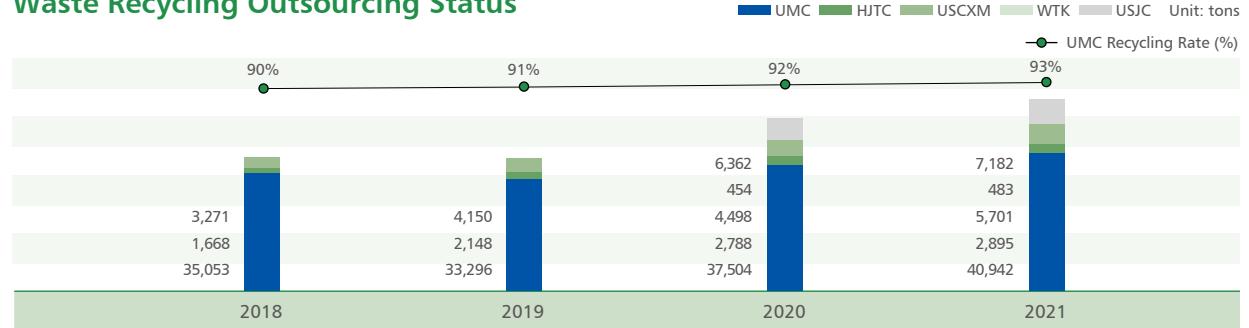
Waste Recycling Outsourcing Trend



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.

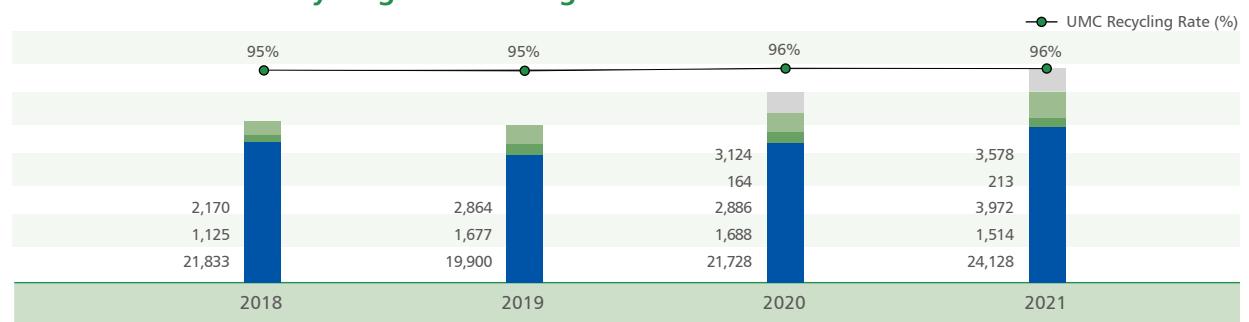
Waste Recycling Outsourcing Status



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

2. In 2021, the overall recycling rate of UMC Group was 93%.

Hazardous Waste Recycling Outsourcing Status

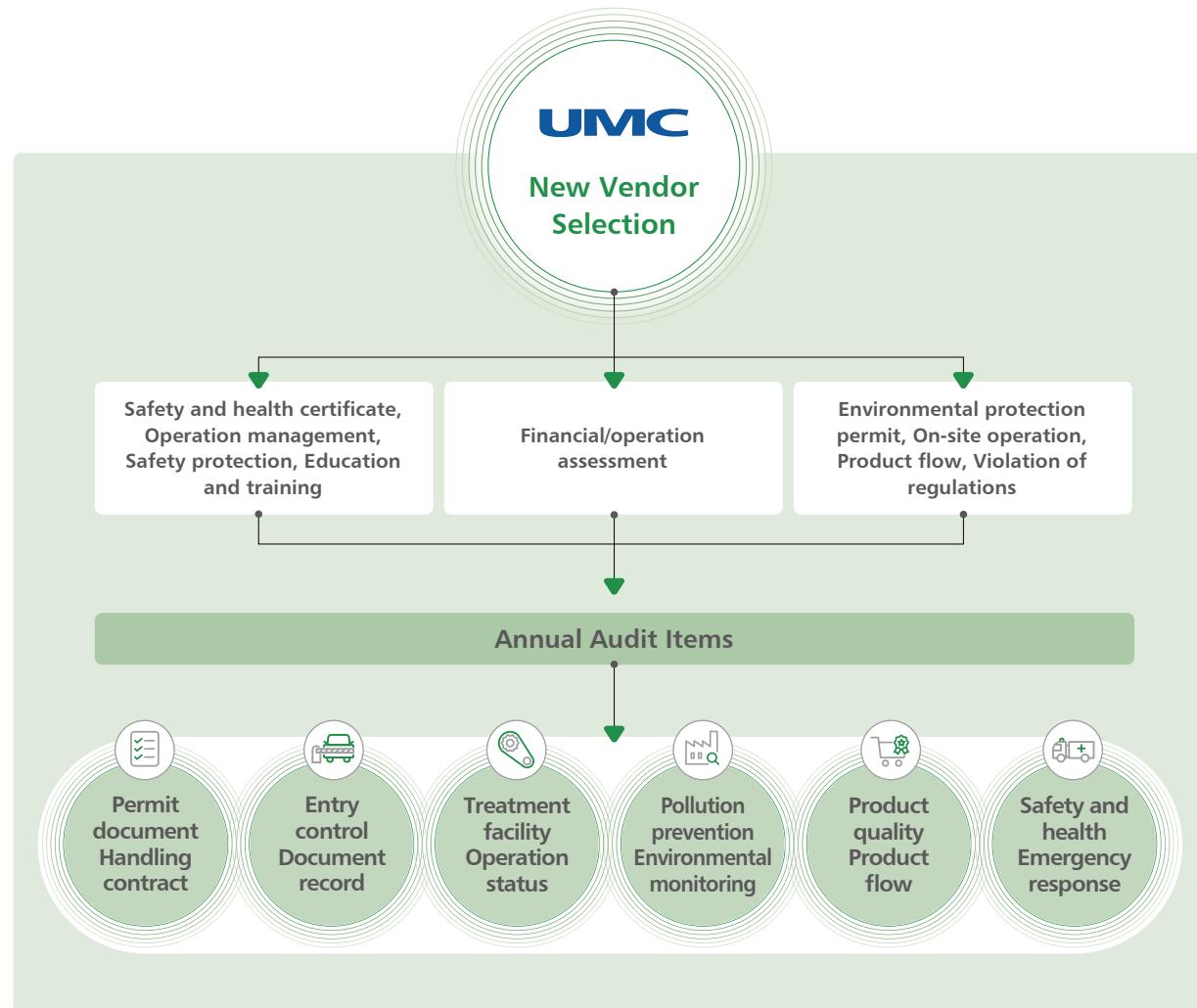


Note: 1. USJC was included in the calculation starting from 2020.

2. In 2021, the overall recycling rate of UMC Group was 94%.

3.4.4 Contractor Management

UMC conducts on-site audits of its waste clearance/disposal/reuse vendors mainly 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 2021, UMC completed audits of 87 waste treatment vendors. Audit results show that 97% vendors were rated excellent or higher, and only two vendors received satisfactory rating and one vendor received inadequate rating. We will continually conduct related audits to ensure all vendors follow UMC's requirements and regulations.

Audit Result of Waste Treatment Vendors



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

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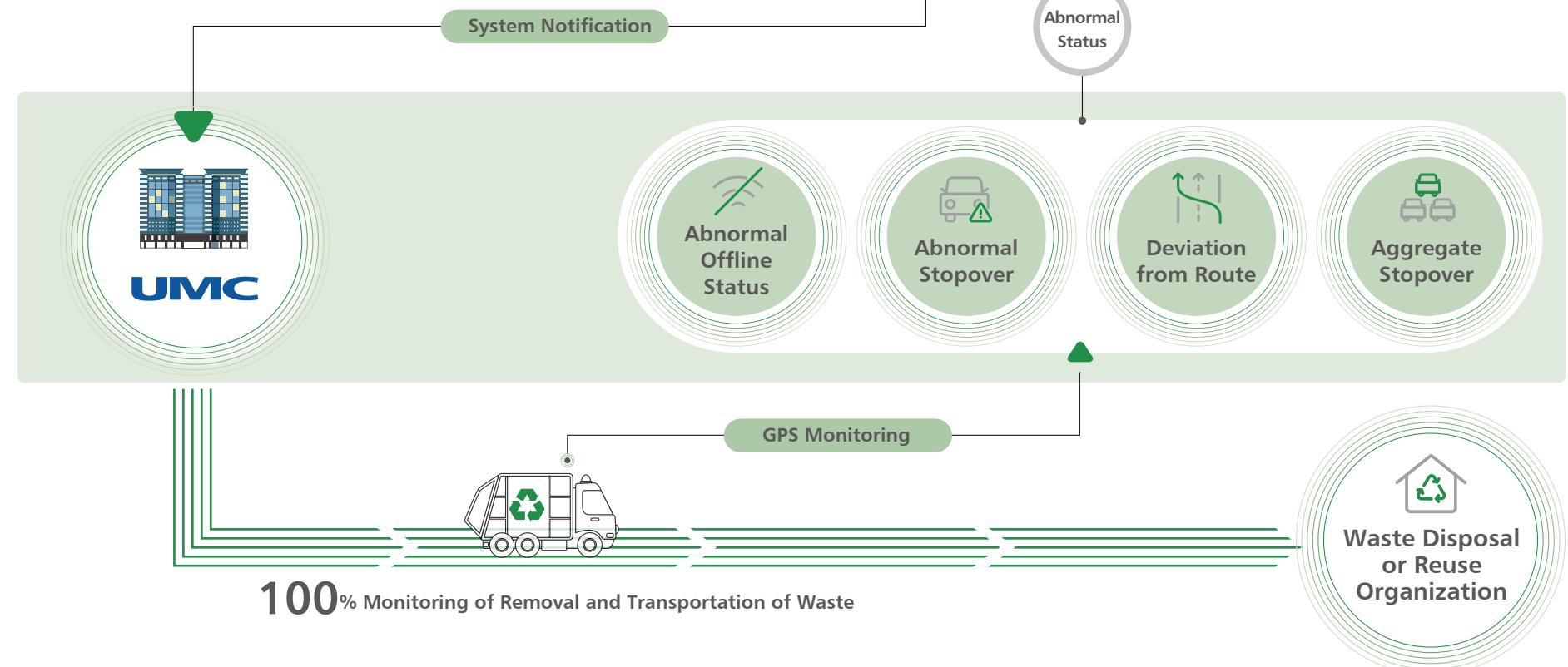
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The disposal of UMC's waste by contractors is carried out in accordance with the regulations of the Environmental Protection Administration. Before disposing, the Company is required to visit the "Industrial Waste Report and Management System (IWR&MS)" on the Environmental Protection Administration's website to make declaration in advance, confirm and revise the content on the declaration form within 2 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 2021.



**The advantages of this system
are as follows:**

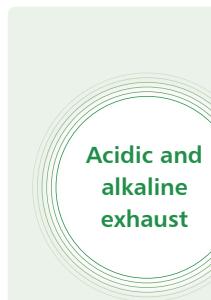
- ▶ Traditional manual vehicle checks were replaced by 100% monitoring of all removal and transportation trucks.
- ▶ Real-time monitoring during removal and transportation, and immediate notification of abnormalities.
- ▶ Data is reviewed daily. If there is any abnormality, the vendor is required to give an explanation to minimize the possibility of illegal activities.



3.5 Air Pollution Control

Goals and Targets	2021 Goals	Achievements		
	Future Goals	Short-Term 2022	Mid-Term 2023~2025	Long-Term 2026~2030
	Control volatile Organic Compound (VOC) emissions per unit product to 0.176 kg/wafer-m ²	▶ Actual volatile Organic Compound (VOC) emissions per unit product was 0.146 kg/wafer-m ²		✓ ACHIEVED
	Removal efficiency of VOC control equipment	93%	95%	Existing fabs 95%, New fabs 97%

UMC's air pollution control strategies involve using high-performance equipment to treat exhaust gas from rationally reduced contaminants to reduce the emission of air pollutants 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, to strengthen source reduction and pollutant prevention.



- ▶ 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 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

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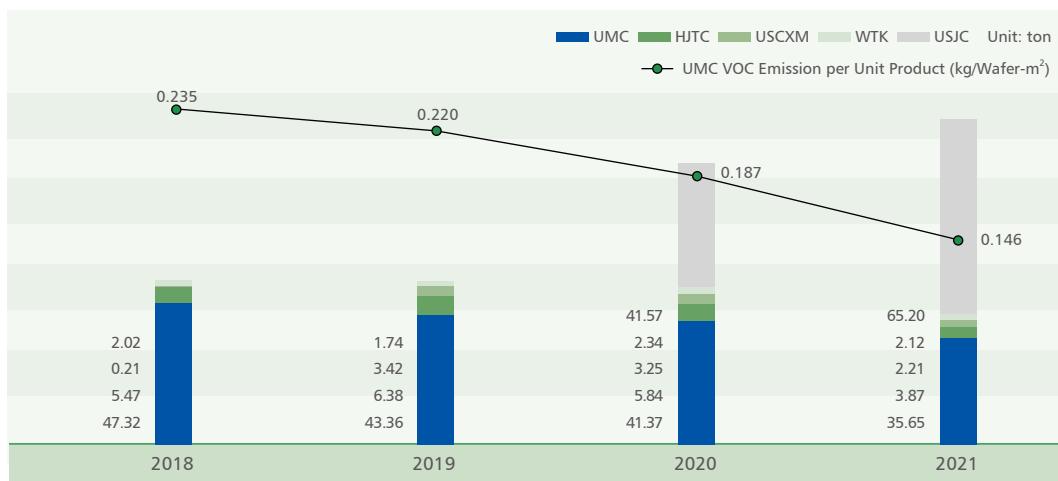
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In 2021, the volatile organic compound (VOC) control equipment of Fab 8A and Fab 8D had new rotors installed to improve removal efficiency, and Fab 12A was equipped with two sets of VOC control equipment. As a result, UMC's VOC emissions amount in 2021 decreased from the previous year. The efficiency of the Company's VOC treatment was maintained at an average of 96.22% in 2021, which exceeded not only the legal standard of 90%, but also the internal target of 92%. The total VOC emission of UMC was 35.65 tons in 2021, bringing total VOC reduction to 907.4 tons per year. The VOC emissions per unit of wafer area in 2021 was 0.146 kg/Wafer-m², which is lower than 2020, continuing the downward trend of VOC emissions.

Other air pollutant emissions includes 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 2021 was not significant.

VOC Emissions



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

II. In 2021, the overall VOC emissions per unit of wafer area for UMC Group was 0.329 kg/Wafer-m².

Other Air Pollutant Emissions

UMC

SOx: 24.438 ton

NOx: 106.94 ton

Note: I. Note: The statistics covers UMC's fabs in Taiwan and Singapore, and subsidiaries of UMC including HJ, USCXM, Wavetek, and USJC.
II. Measurement: Stack Emission Management System (SEMS).
III. From 2021, the measurement scope of SOx is included in the flue testing of all fabs.

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

Green Bonds

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 and HSBC (Taiwan) separately. 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	2021 Goals	Actual Results
GHG Management	35%~36% reduction for GHG Emission per unit product compared to the base year 2010	-40.9%
Water Management	15% reduction for Water consumption per unit product compared to the base year 2017	-18.9%
Air Pollution Control	20% reduction for VOC emission per unit product compared to the base year 2017	-33.6%

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

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



Chapter

Providing a Friendly Workplace

Talent is the most important asset at UMC, thus UMC is committed to creating a workplace environment that is suitable for our employees and provides them with peace of mind. UMC offers a robust 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 Governmental Agency



Performance Highlights 2021



are better than the 3-year average of Taiwan's semiconductor industry



New employees were hired for worldwide locations.



Average entry-level fixed pay in Taiwan is 1.66-1.68 times higher than minimum wage.



All required employees have completed human rights training courses.



Health and wellness events received a total satisfaction score of 95.



Reduces labor costs and improves supervision efficiency.



4.1 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.

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



More details for UMC Human Right Policy

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

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.

Improvement

UMC provides clear grievance procedure, formulates and continuously improves mitigation and remedial measures to reduce the impact

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 in China (HJ and USCXM) 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.

The total number of training hours on human rights in 2021 is 10,013.1 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.



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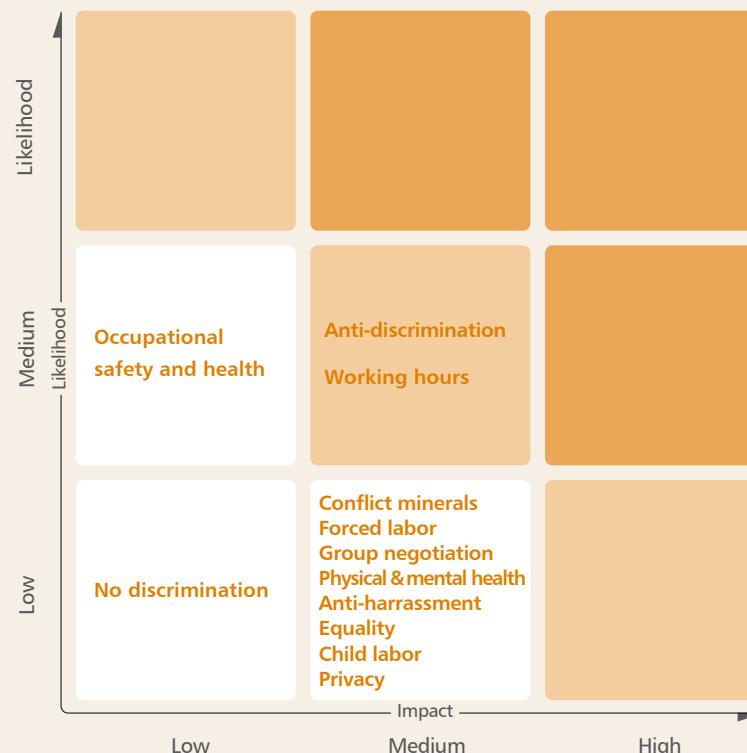
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Human Rights Risk Matrix

Human rights risk assessments are conducted by the execution members and officers of the CS 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 plant are assessed through the RBA-Online platform to prevent potential risks from occurring. In 2021, the RBA SAQ scores of all plants 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 2021, the Fab 12A, Fab 8A, Fab 8C, Fab 8D 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.

2021 SAQ and VAP risk assessment performance

12-inch wafer fab				8-inch wafer fab				
	Fab 12A	Fab 12i	Fab 8A	Fab 8C	Fab 8D	Fab 8E	Fab 8F	Fab 8S
SAQ	92.2	91.1	91.5	91.8	91.8	92.1	92.3	92.1
VAP	200	180.7	190.1	190.1	190.1	N/A	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 2021, no customer required Fab 8E, 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. 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.

Party of Concern	Core Issues	Impact Assessment and Mitigation Measures	Remediation Action	2021 Management Goals	Achievements in 2021	Targets for 2022
 Migrant employees and female employees	Equality Anti-discrimination Forced labor	1. The RBA Committee was established in the Human Rights Committee to regularly review human rights-related issues. 2. The inspection and evaluation of the "Prohibition of Forced Labor" management procedures and various grievance procedures are carried out through internal audits.	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.	The annual online completion rate of new recruits for the "Labor/Ethics" education and training in the RBA Code of Conduct to reach 100%	 ACHIEVED	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.	 ACHIEVED	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	Conduct questionnaire surveys and on-site audits on suppliers' compliance with the RBA Code of Conduct.	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.	Ensure all new suppliers to sign the UMC Supplier Code of Ethics and Supplier Code of Conduct	 ACHIEVED	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	 ACHIEVED	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	Regularly receive satisfaction ratings from customers	In case of leakage of private information, UMC will make improvement and compensation according to the terms of the confidentiality agreement.	All employees, business partners, and customers must sign confidentiality contracts, requiring mutual protection of confidential information.	 ACHIEVED	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.	 ACHIEVED	Internally formulate the "Confidential Information/Data Management Regulations", and all customer information is handled by dedicated units.
 All employees	Labor relation	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.	Review meetings will be held to compensate employees for their losses in accordance with the resolution of labor disputes or grievance records.	"Labor-management meetings" and "company-wide town hall meetings" are held on a quarterly basis.	A total of 36 labor-management meetings and 4 company-wide town hall meetings were held.	Hold regular "Labor-management meetings" and quarterly "company-wide town hall meetings"
				100% of appeal cases are handled and settled.	 ACHIEVED	Settlement of appeal cases: 100%
	Working hours	Take the initiative to construct a sound working hour management mechanism and system.	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.	Continue to implement the "company-wide engagement survey" and strengthen organizational identification.	 IMPLEMENTING AS PLANNED	Continue to implement the "company-wide engagement survey" and strengthen organizational identification.
				Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees.	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.	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	2021 Management Goals	Achievements in 2021	Targets for 2022
Community residents	Physical and mental health	Carry out regular surrounding noise measurement and air pollution monitoring to properly manage these intrusions and reduce local residents' health risks.	If any equipment is found to be abnormal, it will be instantly repaired and replaced with spare equipment.	Noise: Contract special agency to perform surrounding noise measurement every year, and the results shall meet the governing standards.	ACHIEVED	Noise: Contract special agency to perform surrounding noise measurement every year, and the results shall meet the governing standards.
Indigenous people and the physically challenged	No discrimination	Pay attention to equal employment rights during recruitment and provide fair employment opportunities.	Hold open recruitment activities, and review monthly on the People with Disabilities Rights Protection Act to ensure the adequate quota of employment.	Air pollution: Monitor the operating parameters of the air pollution control equipment, and the operating range meets the requirements of the licensing regulations.	Air pollution: All operating parameters of the air pollution control equipment have met the requirements; the VOC removal efficiency is higher than the governing standard (90%).	Air pollution: Monitor the operating parameters of the air pollution control equipment, and the operating range shall meet the requirements of the licensing regulations.
Subsidiary company-USCXM・HJ	Working hours	Take the initiative to construct a sound working hour management mechanism and system.	1. Pay overtime according to local laws 2. If the extended working hours of an employee exceeds the legal limit, the system will alert the supervisor to pay attention. 3. If the overtime is due to an unforeseen circumstance, the supervisor must specify the reason and propose countermeasures to prevent reoccurrence.	Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees.	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.	Continue to strengthen the working hour management system to bring the benefits of managing the working hours and caring for employees.
Subsidiary company-Wavetek	Labor relation	Review and evaluate through quarterly labor-management meetings and different complaint channels	Hold discussion meetings based on labor-management disputes or complaint resolution records; provide compensation for employees' losses.	► Hold labor-management meetings on a quarterly basis ► 100% of complaint cases have been resolved and closed	► Hold labor-management meetings on a quarterly basis ► No complaint filed in 2021	► Hold labor-management meetings on a quarterly basis ► 100% of complaint cases have been resolved and closed
Subsidiary company-USJC	No discrimination	Take notice of equal employment rights in recruitment, and provide equal employment opportunities	Maintain the practice of open recruitment, and check recruitment requirements stipulated in disability-related regulations.	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	Open recruitment is conducted; salary and benefit information is clearly disclosed through recruitment channels	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
		Promote and facilitate correct understanding through educational training, and build up complaint channels	Take punitive measures for perpetrators in accordance with company regulations, and assist victimized employees in receiving compensation.	Online educational training reached 100% completion rate	99.5% Completion rate	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: 1. Human rights mitigation measures and remediation measures are implemented in 13 plant sites in Taiwan, China, Japan and Singapore

2. The scope of human rights risk assessment includes our own operations, value chain, and new business partner relations (mergers, acquisitions, joint ventures...).

4.2 Focusing on Recruitment and Cultivation



Material Topic

Management
Purpose

UMC aims to strengthen talent attraction and retention through comprehensive training, diversified employee benefits, and attractive compensation. Activities and events are organized regularly to promote team building and work-life balance. In addition, the Company actively listens to employees' suggestions, maintain good labor relations, and conducts surveys to seek room for improvement.

Management
Approach

- Strengthen employees' corporate identification and enhance team cohesion
- Proactively keep abreast of market salary data in order to attract/retain talent through competitive compensation
- Provide better-than-average annual salary adjustments, provided the Company's operation is profitable
- Conduct education and training to strengthen employees' abilities and workplace adaptation
- Track turnover trends and continue to strengthen employee retention

Goals and
Targets**2021 Goals**

Employee engagement survey coverage rate of 80%; target score 77.1

Achievements

► Employee engagement survey coverage ... ACHIEVED rate of 80.3%; target score 79.5

Short-Term Goals 2022

Provide better-than-average annual salary adjustments, provided the Company's operation is profitable

Mid-Term Goals 2023~2025**Long-Term Goals 2026~2030**

► Strengthen performance-based compensation; provide differentiated raises and bonuses for outstanding employees.

Mid-high performance retention rate of 93.1%

► Mid-high performance retention rate of 93.5%

Mechanisms
for Evaluating
Effectiveness

- The Human Rights and Employee Development/Welfare Group conducts annual performance reviews based on the company-wide management plan.
- Regularly implement employee engagement surveys to understand employees' opinions, and make continuous organizational improvements.



4.2.1 Human Resource Development

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 2021, the Company hired a total of 3,630 new employees, including young generation, aborigines 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.

Human Resource Distribution

By the end of 2021, the total number of formal employees at UMC Group was 19,593. This figure included 2,103 supervisors, 9,560 engineers, 614 managers, 7,313 technicians, and 3 administrators.

The working population within the Company can be divided into 2 categories by type of employment, namely formal employees (97.5%) and non-formal employees (2.5%)^{Note I}. Formal employees can be further subdivided according to the type of their contracts, namely non-regular contracts (95.4%) and periodic contracts about (4.6%)^{Note II}. Non-formal employees include contract personnel (30.3%) and dispatched personnel delegated by external vendors to provide services in UMC (69.7%). Non-formal 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 70.3% of employees work in the primary business locations in Taiwan. For age distribution, 67.0% of the total employee population was between 30 and 50 years of age. The overall average age was 38.0 years old.

Note 1: Non-formal employees include contract personnel as well as dispatched personnel delegated by external vendors to provide services in UMC.

2. Periodic contracts refer to labor contracts for migrant technicians.

Category	Type	Male	Female	Total
Total Employees Type of Employment	Formal employees	11,269 (57.5%)	8,324 (42.5%)	19,593 (97.5%)
	Contract or temporary staff	120 (78.4%)	33 (21.6%)	153 (0.8%)
	Dispatched staff	243 (69.0%)	109 (31.0%)	352 (1.7%)
Formal Employees Job Category	Executive staff	1,840 (87.5%)	263 (12.5%)	2,103 (10.8%)
	Engineering staff	7,658 (80.1%)	1,902 (19.9%)	9,560 (48.8%)
	Managerial staff	118 (19.2%)	496 (80.8%)	614 (3.1%)
	Technicians	1,650 (22.6%)	5,663 (77.4%)	7,313 (37.3%)
	Office staff	3 (100.0%)	0 (0.0%)	3 (0.0%)
Formal Employees Job Site	Taiwan	7,517 (54.6%)	6,248 (45.4%)	13,765 (70.3%)
	Singapore	1,011 (64.1%)	567 (35.9%)	1,578 (8.1%)
	China	1,849 (56.7%)	1,412 (43.3%)	3,261 (16.6%)
	Japan	892 (90.2%)	97 (9.8%)	989 (5.0%)
Formal Employees Age	Under 30	2,463 (60.4%)	1,615 (39.6%)	4,078 (20.8%)
	30-50	7,161 (54.5%)	5,971 (45.5%)	13,132 (67.0%)
	Above 50	1,645 (69.0%)	738 (31.0%)	2,383 (12.2%)

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

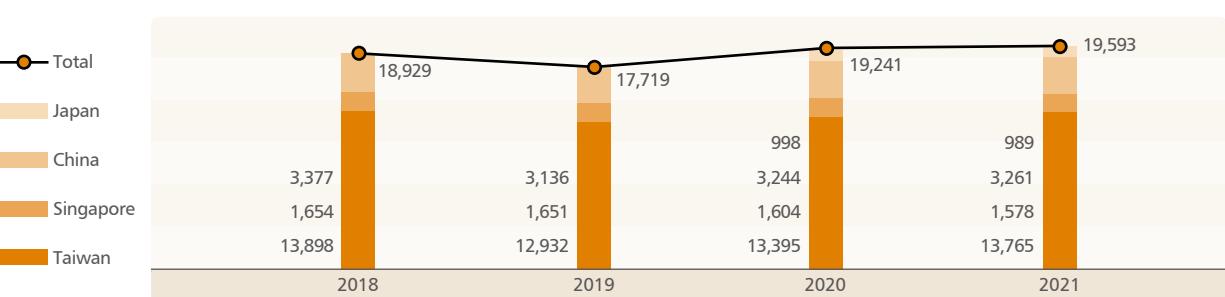
2. The gender ratio of employees is calculated on the same work category, while the total ratio is calculated based on work type.

3. In 2021, 16.8% of UMC's formal employees were under 30 years old, 72.1% were between 30 and 50 years old, and 11.1% were above 50 years old.

4. As for the dispatched employees, based on the regional distribution, there are 23 people in Taiwan, 75 people in Singapore, 103 people in China, and 151 people in Japan. Their main job function is production line support.

UMC Group Manpower Trend

The total employee number increased in 2021 due to needs of business and capacity expansion.



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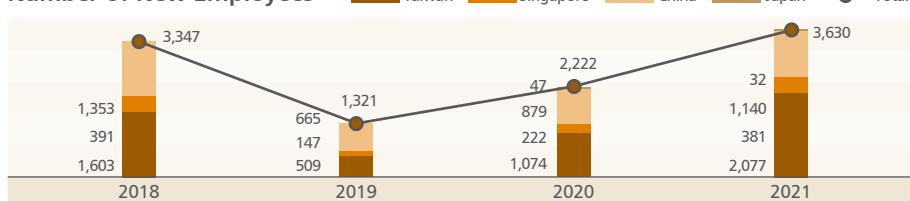
5 Enhancing Society Mutual-Prosperity

Appendix

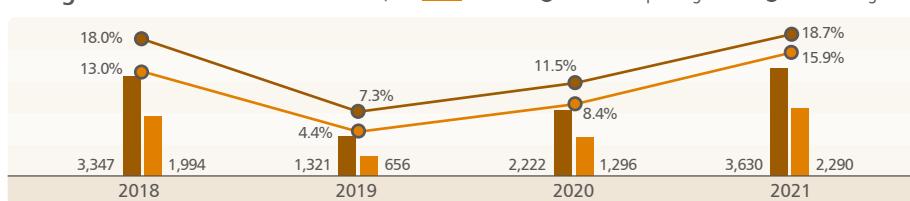
New Employees

In 2021, the Company hired a total of 3,630 new employees. The hiring cost per new employee is about NT\$19,000.

Number of New Employees



Hiring Rate¹



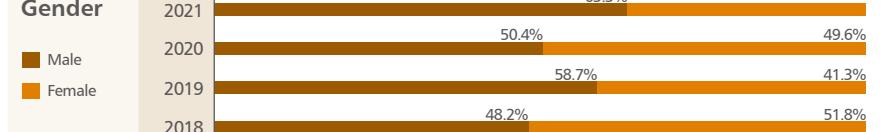
Note: 1. Annual employee hiring rate refers to the total number of newly hired employees/average number of existing employees. Annual average number of employees = (number of employees at the end of December of the previous year + total number of employees at the end of each month of the current year)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

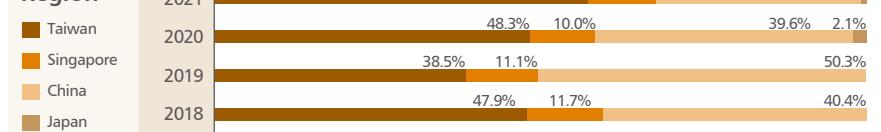
New Employees

Gender

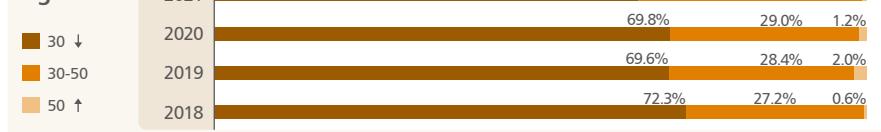


Note: In 2020, 48.1% of UMC's new employees were males and 51.9% were females. In 2021, 58.9% of UMC's new employees were male and 41.1% were female.

Region



Age

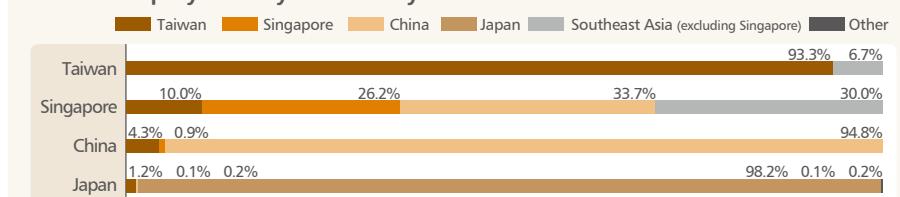


Note: In 2020, 68.6% of UMC new employees were under 30 years old; 30.4% were between 30 and 50 years old; and 1.0% were above 50 years old. In 2021, 60.8% of UMC new employees were under 30 years old; 38.6% were between 30 and 50 years old; and 0.6% were above 50 years old.

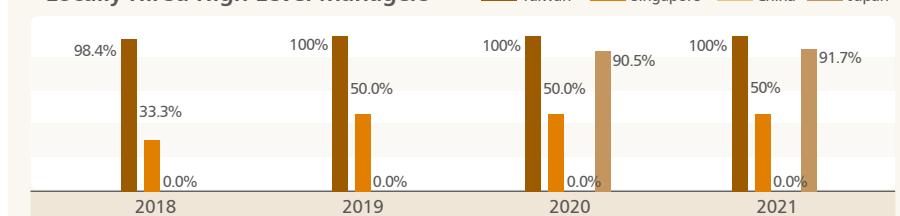
Local Employment

To fulfil social responsibility and create sufficient employment opportunities to local residents, the staff at the UMC headquarters and Wavetek in Taiwan comprised of 93.3% local employees as of 2021. Since Singapore is ethnically diverse, 26.2% of the employees are locally hired. In UMC China fabs, namely HJ and USCXM, 94.8% of the staff are locally hired. The staff at the USJC in Japan, 98.2% of the staff are locally hired. Among the employees employed by UMC, Asians accounted for 90.9% of the total labor force, migrants accounted for 8.7%, and aborigines accounted for 0.4%.

Formal Employees – by Nationality



Locally Hired High Level Managers



Note: 1. High level directors are defined as Local Level 1 directors and above. (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 colleagues. In view of the characteristics of semiconductor industry, most of the Company management and professional engineering staff are male. Meanwhile, managerial staff and technicians are mostly females. In 2021, UMC held sharing sessions on exemplary female leadership and management to enhance the willingness of female colleagues to assume supervisory positions. In 2022, UMC plans to increase the proportion of female worker gradually and achieve the target of 10% women in top management positions.

Proportion of Female Workers by Position



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

2. Management positions in revenue-generating functions: FAB+S&M managers

3. STEM-related positions: Engineering related jobs

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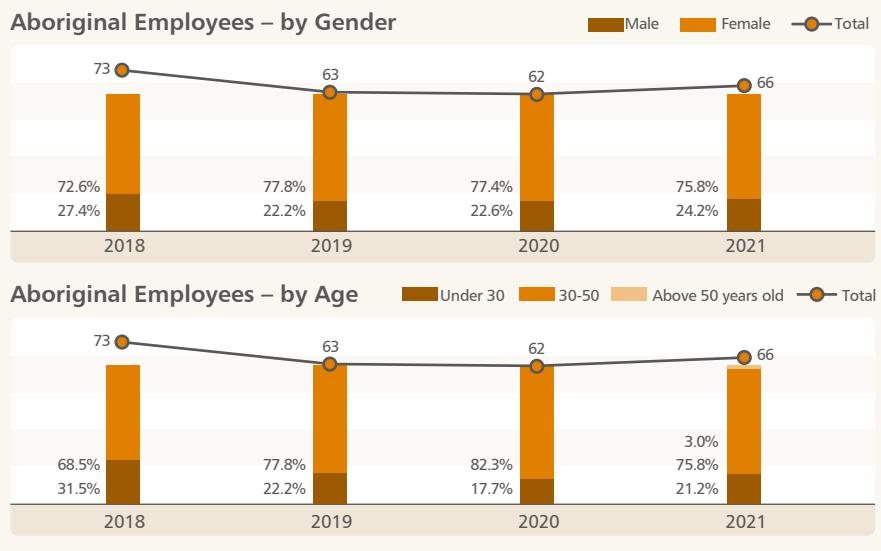
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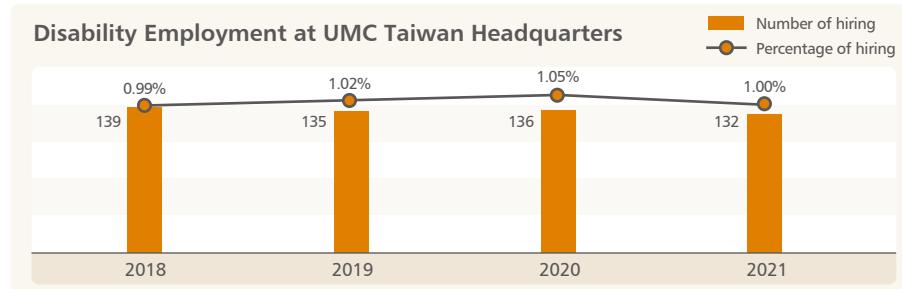
Aboriginal Employment

UMC respects the unique cultures of ethnic minorities. Since there is no aboriginal people in Singapore, the aboriginal employees are mainly employed in Taiwan fabs. Each year, employees with aboriginal status are given 8 hours of ritual leave, which can be flexibly used holidays of their own choice. By the end of 2021, UMC Taiwan had a total of 66 aboriginal employees. In terms of gender, 24.2% were males and 75.8% were females. In terms of age, 21.2% were under 30 years old and 75.8% were between 30 and 50 years old, and 3.0% were above 50 years old.



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 2021, UMC headquarters in Taiwan employed a total of 132 employees with disabilities, which counts 1% of total employment and meets the employment ratio required by local laws and regulations, 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.



Foreign Talent Recruitment

In view of the trend of globalization and international trade 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 all potential risks from recruiting foreign talents, UMC first attaches importance to legal compliance with all regulation such as visa and work permit application when recruiting foreign talents. Designated personnel are assigned to supervise each process and step and a control platform was created to ensure that all procedures comply with governing laws and regulations to avoid potential risks.

UMC conducts monthly, quarterly, and annual manpower estimates and risk management. Structural reviews of long-term manpower supply and demand, turnover warnings, and impact of epidemic shocks were conducted to formulate relevant measures and manpower deployment among fab sites. In 2021, due to the impact of the epidemic, Taiwan did not allow foreigners to enter. In order to ensure sufficient manpower, in addition to increasing the recruitment channels for local technicians, new domestic recruitment of foreign technicians and related incentive measures have been added to make up for the manpower gap. In order to strengthen Fab 12i's long-term manpower competitiveness, UMC adopted effective transformational multi-ethnic employment strategies, and hence the percentage of non-Chinese-speaking employees reached record high in 2021.

On the other hand, foreign employees may need some time to adapt to a new environment. UMC not only provides dormitory and orientation to foreign employees, but also sets translator at fabs and dormitories to provide assistance on work and life adaption. Also, dormitories held festival activities from time to time, inviting supervisors and foreign employees to celebrate Dragon Boat Festival, Mid-Autumn Festival and Christmas together to enhance cultural exchange and interaction.

Furthermore, all local employees and foreign employees are required to abide Trade Secret Protection, Intellectual Property, Information Security Regulation, and Export Control Restrictions and Sanctions. In addition to providing education and training during new employee orientation, periodical advocacy is conducted to remind all employees to pay attention to abide by the relevant regulations.

UMC will strive to provide diversified and friendly working environment. On top of that, UMC will pay attention on government policy and related regulation and keep updating to avoid risk arising from the employment of foreigner.

Employee Turnover Rate and Internal Transfer Rate

From 2018 to 2021, the annual average turnover rate of is 9.4%. (Note: As for 2021 turnover rate by gender, 11.1% was male and 9.6% was female. And for age group, 23.0% was under 30 years old, 8.9% was 30-50 years old, and 2.0% was above 50 years old in 2021.) The average turnover rate of the entire Group is 12.8%, mainly due to the high turnover rate of technical staff in subsidiaries in mainland China.

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, and opportunities are provided for those who wish to return to UMC. The Company emphasize the retention of qualified talent, UMC continue to improve the weakness aspects through employee engagement survey and offers talent management program, career development program and varies employee benefits to keep the talents.

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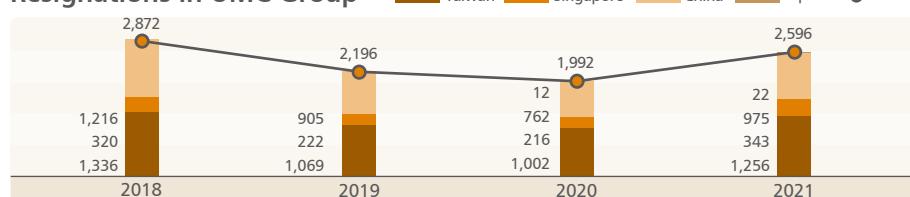
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Besides, through internal job transfer system, UMC also provides employees with job skill enhancement, career development and self-challenge opportunities. Internal transfer rate in UMC Taiwan and Singapore is 57.9% in 2021, which is better than the set target value of 57%. UMC will continue to provide internal transfer incentives and implement the internal transfer system to reduce turnover rate, and to gradually achieve the target of 7.0% in 2025.

Resignations in UMC Group



Turnover rate¹

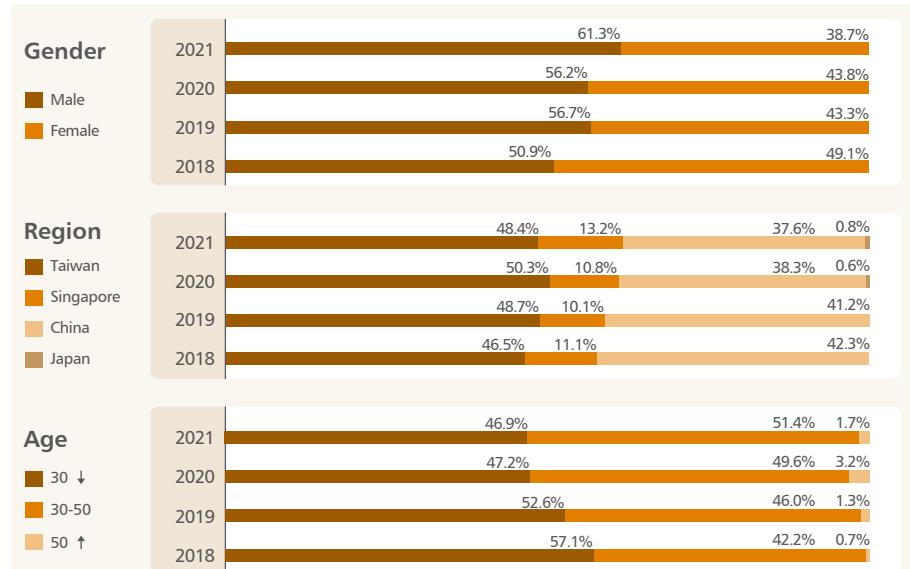
Years	2018	2019	2020	2021	
UMC Group ²	15.4%	12.1%	10.3%	13.4%	
Turnover Rate	10.9%	8.7%	7.8%	10.5%	
UMC ³	Voluntary Turnover Rate	10.8%	8.6%	7.6%	10.4%
	Internal Transfer Rate	50.8%	83.0%	56.7%	57.9%

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.

Formal Employee Resignation



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 2021, a total of 70 female employees returned to their positions when their parental leave contract expired, indicating a return rate of 74.5%, and 11 male employees returned to their positions, indicating a return rate of 61.1% after parental leave. The work situation of those who returned after parental leave was observed. In 2020, 90.9% of female employees and 69.2% of male employees who took parental leave returned to work and continued to work over 1 year. The employees who have not returned after parental leave all voluntarily resigned because their parental leave have expired but the needs of the family remained.

2021 Parental Leave	Female	Male	Total
Total eligible number for parental leave (A)	475	942	1,417
Actual number of parental leave (B)	181	28	209
Application rate for parental leave (B ÷ A)	38.1%	3.0%	14.7%
Total number of end of contract for parental leave (C)	94	18	112
Total number of returning from parental leave (D)	70	11	81
Return rate after parental leave (D ÷ C)	74.5%	61.1%	72.3%
2020 Total number of returning from parental leave (E)	66	13	79
2020 One year retention rate after return from parental leave(F)	60	9	69
2020 Number of returning from parental leave and retention rate (F ÷ E)	90.9%	69.2%	87.3%

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.

4.2.2 Compensation and Benefits

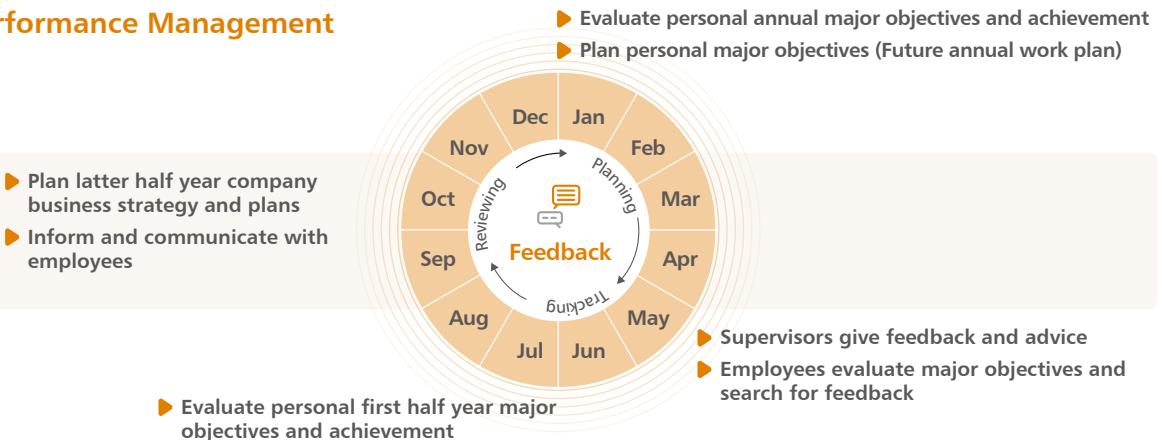
UMC has always regarded its employees the most important asset, and provides a competitive overall compensation and benefit package to attract excellent talent to join the UMC team. UMC's employee compensation is based on educational level, performance, and market value, regardless of gender, race, religion, 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 2021, based on the same positions, job duties, and performances, the average fixed pay of female entry-level employees in Taiwan is 1.68 times of minimum wage and male's is 1.66 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, UMC conducts annual performance evaluation for all employees regardless of gender and job category. In 2021, the completion rate of evaluation reached 100%.

The information obtained can be used as a reference during employee promotions, training, and compensation adjustment. The evaluation includes reviewing of previous performance and the setting of future goals, and managers and colleagues 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.

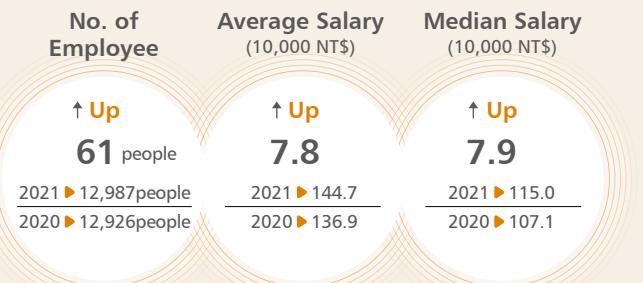
Performance Management



UMC offers salary adjustment, differentiated bonus / employee compensation system and stock remuneration (employee stock option certificates and treasury shares) 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 worldwide enterprises, annual review and analyze our compensation policy based on compensation survey results and adjust 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 associated with employees' variable compensation. Through the alignment of interests of employees and the Company, corporate sustainability can become a common goal. In 2021, 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: Sources and definitions are according to the specifications of the Taiwan Stock Exchange and checked by certified public accountants.

2021 Basic Salary and Annual Total Compensation by Gender

— Male — Female

Taiwan	Base Salary	Total compensation
Executive level	100.0%	97.1%
Management level	100.0%	97.9%
Non-management level	100.0%	101.2%
Technicians	100.0%	100.8%
Singapore	Base Salary	Total compensation
Management level	100.0%	99.7%
Non-management level	100.0%	97.7%
Technicians	100.0%	95.5%

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. Base on the cash compensation in current year. In 2021, performance is included in the comparison factor, comparing the salaries of female and male based on the same position, job duties and performance to ensure the comparison is made on the same basis.

3. For executive level and management level, the reason for the difference is due to seniority. When excluding this factor, the ratio of female to male base salary is 100.4% for executive level and 99.7% for management level.

4. No female executive in Singapore.

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Comprehensive Benefits Superior to Statutory Regulation

UMC is committed to providing workplace with work-life balance and offers various welfare benefits beyond what is required by statutory regulations including holidays, insurance, financial assistance for emergencies, subsidies for marriage/childbirth/funerals, discounts in designated shops and employee assistance service. The Company actively reminds colleagues to take vacations and organizes stress relieve activities. Moreover, UMC provides parenting measures and breastfeeding accommodations for employees with 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 for colleagues to use flexibly; UMC Singapore fab and other overseas subsidiaries also provide paid annual leave that is superior to local Regulations of Paid Annual Leave of Employees.
- To provide better care to newly hired female employees, UMC provides fully paid maternity leave even if the employee's period of service is less than 6 months.
- To provide support to fellow employees, colleagues whose maternal great grandparents, maternal great grandparents-in-law, or maternal grandparents-in-law who have passed away shall be given a funeral leave of 24 hours at full-pay which is superior to the Labor Standards Act.

Health Care and Emergency Help

- 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 to take 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

Parenting Measures and Breastfeeding Environment

- To encourage employees to have 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
- 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 primary and secondary schools in the science park.

Diverse Activities and Discounts in Designated Shops

- Welfare committee holds diverse activities such as year-end party, Secretary's Day, the Company's celebration, Engineering's Day, one-day travel, family day, and art festival, etc.
- 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

- Staff restaurant, free shuttle bus, activity center, telecommunications/banking/insurance on-site services, supermarkets/coffee shops and other stores are available in offices and fabs.

Note: Employees also have the paid leave hours for public welfare activities.

Comprehensive Insurance and Retirement Policy

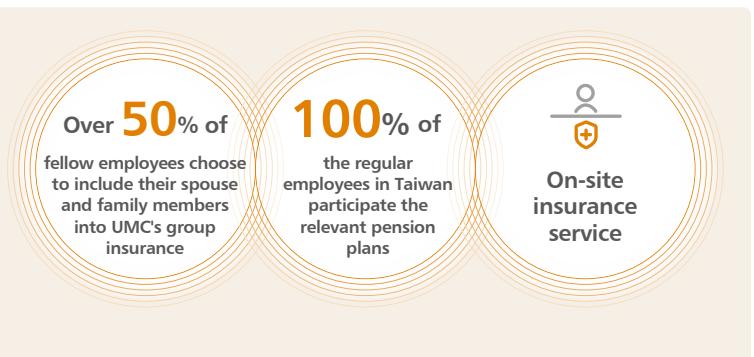
UMC provides insurance coverage that is consistent with local laws and regulations to ensure the basic rights and interests of employees. In accordance with the law, the Company headquarters in Taiwan also provides labor insurance (including Employment Insurance) and national health insurance. In addition, 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, 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 2021, total pension expenses of NT\$23,080,000 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\$991,811,000 were contributed by the Company in 2021.

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.



4.2.3 Strengthening Talent Cultivation

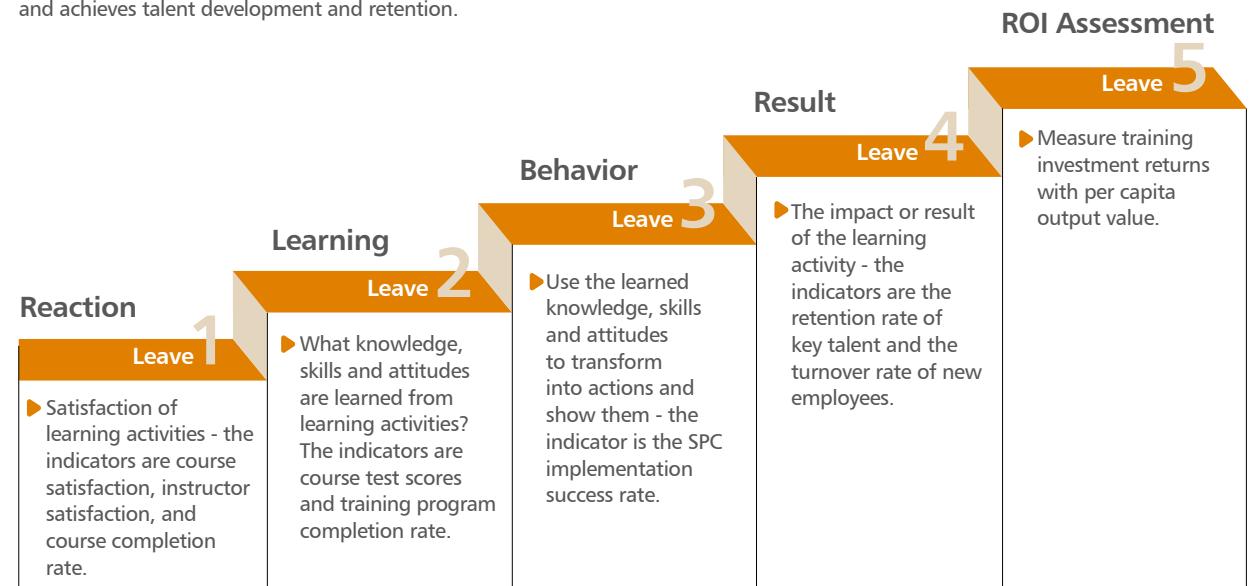
Comprehensive Learning Environment

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 learn by themselves to help the organization grow. From 2019 to 2021, 293 groups, 309 groups and 278 groups of improvement teams were formed respectively. For related information, please refer to 2.2.1 Continuous Quality Improvement and Innovation.

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

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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.

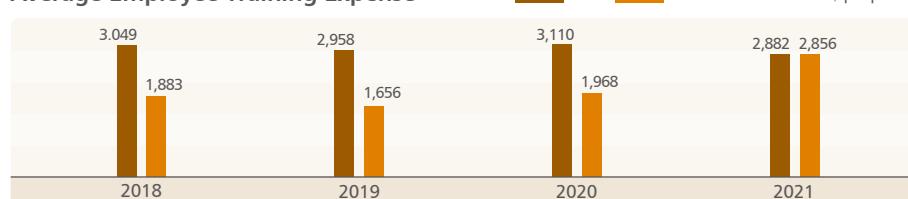
In 2021, UMC Group offered a total of 8,248 classes, with a total of 161,231 person-times participants, and the total training cost was NT\$56,387,221. The satisfaction rate of various courses is over 94%. In the second half of 2021, due to the impact of the Covid-19 epidemic, some courses were converted to online courses, and the number of classes has increased slightly compared with previous years, but the total number of participants has decreased slightly.

Course Satisfaction

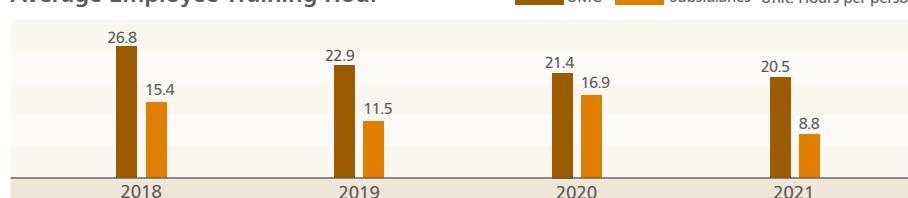
Type	2018	2019	2020	2021
Number of Courses	9,071	7,723	7,363	8,248
Total Number of Participants	342,566	176,370	168,006	161,231
Training Satisfaction Average Value (%)	94.8	96.2	94.5	95.2
Overall Satisfaction	94.8	96.2	94.5	95.2
Satisfaction with Instructor	94.6	96.2	94.5	95.2
Satisfaction with Teaching Materials	94.6	96.2	94.5	95.1
Beneficial to Work	94.6	96.2	94.8	95.1

Note: The scope of statistics for 2018-2019 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.

Average Employee Training Expense



Average Employee Training Hour



Note: The UMC's scope of statistics includes UMC's fabs in Taiwan and Singapore. From 2018 to 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 Cost

Year	2018	2019	2020	2021
Total Training Cost (NT\$)	48,124,745	43,134,714	44,492,278	42,120,553
Number of Employees (Persons)	15,552	14,583	14,308	14,613
Training Cost per Employee (NT\$)	3,094	2,958	3,110	2,882

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 2021, the total number of training (persons) hours was up to 299,464 hours. The average training expense was NT\$2,882 per a person and the average training hours was 20.5 hours.

Average Training Hours for Various Job Levels

Type	Training Time (Hours)	Number of Participants (Persons)	Average Training Hours	Total Cost (NTD\$)
Director Level	24,345	1,648	14.8	4,750,200
Indirect Labor (Non-director level)	216,518	7,673	28.2	22,116,677
Direct Labor	58,601	5,292	11.1	15,253,676

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 men.

Average Gender Equality Training Time

Type	Training Time (Hours)	Number of Participants (Persons)	Average Training Hours	Total Cost (NTD\$)
Male	207,099	8,203	25.2	23,644,351
Female	92,365	6,410	14.4	18,476,202

Note: The scope of statistic included UMC fabs in Taiwan and Singapore.

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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 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	▶	2018	2019	2020	2021
Read Rate (%)		91.8%	91.3%	92.3%	93.4%
Writing Penetration Rate (%)		73%	72%	73.9%	74.9%
Expected Re-application Benefits (NT\$10,000)		72,547	90,238	69,924	80,479

- 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.

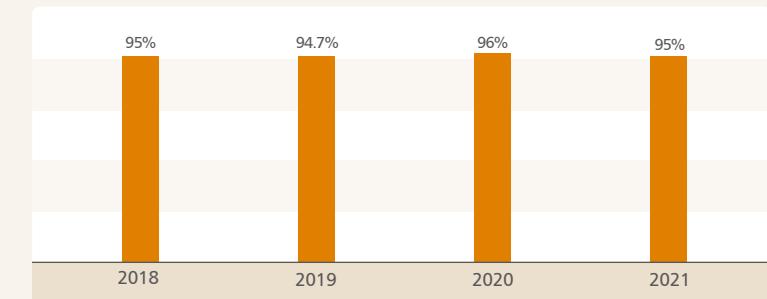


The 7 Habits of Highly Effective People

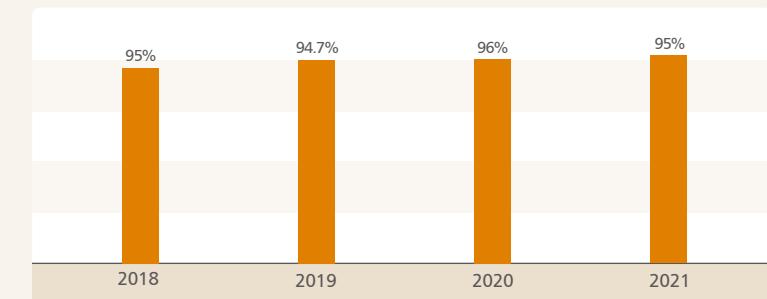
To implement the core values of the organization and practice the spirit of "accountability", UMC has introduced the "Seven Habits of Efficient Managers" course in 2011, and continues to strengthen its promotion. The course has been extended to the "Seven Habits of Efficient Employees" course to create a common language across departments. From 2017 to 2021, the overall training completion rate continued to increase and meet the required standards.

Performance of Training Completion Rate

The 7 Habits of Highly Effective Employees



The 7 Habits of Highly Effective Managers



Note: The scope of statistic included UMC Taiwan and Singapore.

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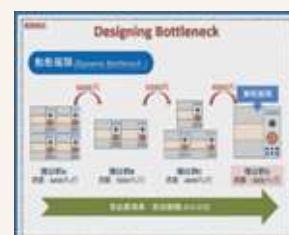
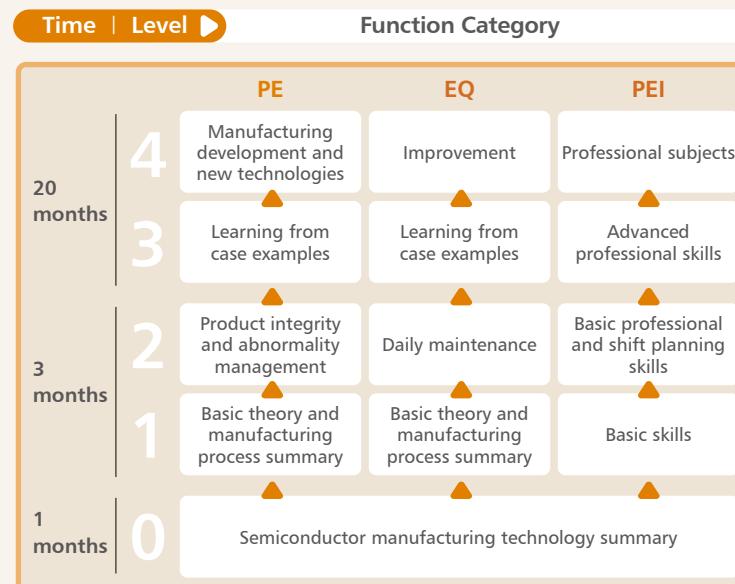
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Technical Training for Engineers

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



The internally developed courses were completed in 2021 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.



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 2021, the actual completion rate in Taiwan was 99%, and the actual passing rate in Singapore was 99%.

▶ Assessment System

SPC Assessment	English Assessment	Professional Skills Assessment
In line with fab demand for manufacturing quality, engineers' understanding of SPC is emphasized	In line with the Company's international orientation, the strengthening of employee English competency is emphasized	Professional skills assessment system is used for determining the professional competency of engineers

▶ Professional Skills Assessment

1 Category	Categorize according to facility, manufacturing and product	Within 3 months - Courses (Knowledge)
2 Content	Basic/Operations, Advanced/Learning from case examples, Connection with various tasks/Crisis management ability	New employees must complete SPC training courses within 3 months
3 Standard	0-2 Continuing learning required 3-4 Independent operation 5-6 Completion of task through telephone instruction 7-10 Instructor	Within 6 months - Courses (Knowledge)
4 Method	Oral and written tests	New employees must complete the SPC written test within 6 months

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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-tress 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 6 new-employee experience camps were held in 2021, and a total of 311 new employees completed the training courses.



Note: 311 new employees were all indirect personnel in Taiwan, including both full-time and temp staff.



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 2021, with themes of [Daily Management], [Talent Retention], [Plan Better], and [Building a High-Performance Team]. The fourth issue, [Building a High-Performance Team], promotes the concept of senior executives through practical case study, so that managers at all levels can more deeply implement the establishment of high-performance teams.



4.3 Protecting the Employees and the Work Environment

Healthy employees are an important asset for corporate profitability, and UMC firmly believes that healthy employees are an important cornerstone of corporate success. "UMC is only possible with the input of our employees, and only with happy employees can we achieve the vitality of sustainable development." UMC has been deeply engaged in shaping a safe workplace environment, safeguarding employee health, and reaching work-life balance to safeguard the physical and mental health of colleagues and family members.



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 2021, we designed a series of "Earning Health Together" activities. 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 cultural

Gender equality measures are superior to or in accordance with the Labor Standards Act.



► Safety measures for women working at night

Night car call, night escort to parking lot, vehicle rescue, emergency button, various emergency rescue assistance, day and night traffic connection, 24-hour staff service line, night emergency response reporting mechanism.



► Pregnant women and special need assistance

Priority meal pickup, priority parking space, notification of cleaning and disinfection avoidance, night shift transfer, maternity subsidy (both male and female colleagues can apply), dedicated breastfeeding room.



► Flexible work and vacation system for work and family balance

Provide employees with a flexible commuting system. For employees with kid under 3, the working hours can be moved one hour. 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

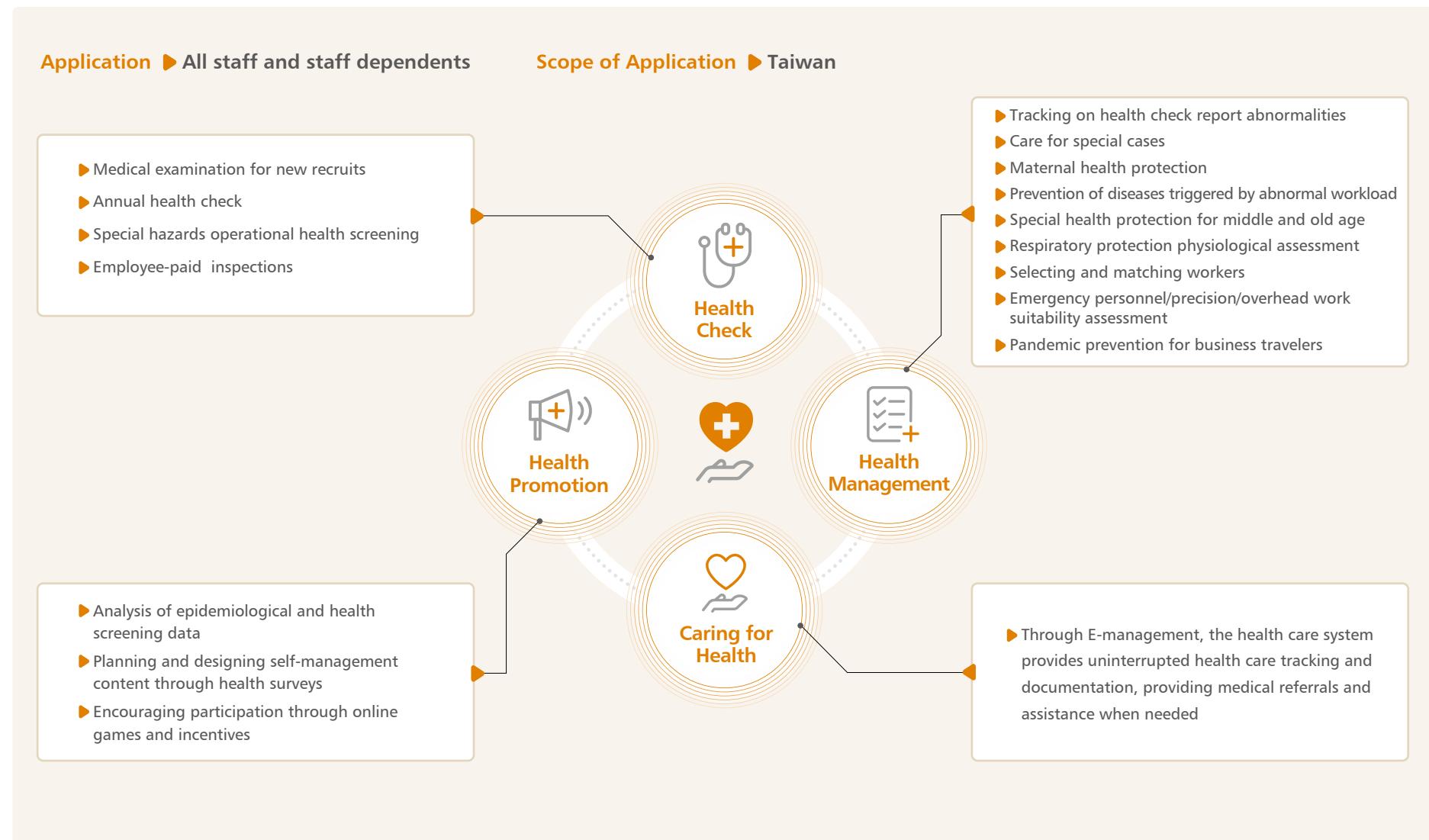
Formulate the "Complaint and Punishment Measures for Sexual Harassment Prevention and Control in the Workplace" and "Workplace Sexual Harassment Prevention Measures, Complaints and Disciplinary Regulations". Provide case investigation mechanism, membership procedures, dedicated complain channels for 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 2020 plan, then implement the 2021 health service management plan. After approval by the supervisor, the plan is announced to all employees.



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Health Promotion Activities in 2021

Season	Theme	Event Spine	Key Achievements
Q1	Vaccination together	In response to the rolling adjustment of the epidemic, we regularly promote health education information on the Company's home page and bulletin boards to enhance new knowledge of epidemic prevention and correct hygiene concepts.	<ul style="list-style-type: none"> A total of 35 pieces of information on epidemic prevention were disseminated in 2021.
Q2	Doing health check together	<p>To implement the concept of early detection and early treatment, we regularly conduct various health examinations. For example, on Mother's Day, the Company cooperates with medical institutions to conduct breast ultrasound examinations, and gives priority to annual health checkups at the fabs to enhance employees' awareness of preventive medicine.</p>	<ul style="list-style-type: none"> A total of 161 employees attended the event, which was subsequently cancelled due to the seriousness of the epidemic in the domestic area. After the epidemic has stabilized, the program was adjusted to allow employees to arrange their own annual health check-ups at medical institutions until June 30, 2022, with NT\$1,500 granted for official leave and supplementary health check-ups to allow flexibility in scheduling and check-ups items.
Q3	Move together to lose weight	In response to the COVID-19 epidemic, UMC adjusted our activity plan and held the "Punch Card for Health Protection - Nine Grids" activity to promote a series of health education and epidemic prevention to strengthen the concept of individual health management and epidemic prevention among employees.	<ul style="list-style-type: none"> A total of 1,066 participants. [First box] Health Declaration 353 people attended [Second box] Health column 831 people participated [Third box] Keep a good mood 196 people participated [Fourth box] healthy weight loss ~ weight from time to time 114 people participated [Fifth box] Quick monitor of health condition ~ Download the National Health Insurance Administration APP 47 people participated
Q4	Listen to the consultation together	We promote and assist in various issues through onsite consultation services. We conducted health seminars to enhance the concept of prevention and health care for our colleagues, taking into account the problems of dysautonomia and daily pain that are common among modern people.	<ul style="list-style-type: none"> From October to December: 2,426 person-times consulted with physicians The total number of participants in the health seminars was 305, with a total satisfaction score of 95. Such seminars were widely praised by colleagues.

Health Promotion Results Description

- Total number of people served by health promotion activities: 17,768
- Overall satisfaction level of health promotion activities: 95 points

Health promotion seal with health autonomy certification

Fab	Expiration Date	UT	Fab 8D	Fab 8E	Fab 8F	Fab 12A_P5	Fab 8AB	Fab 8S	Fab 12A_P1
	2021-2023			2020-2022				2021-2024	



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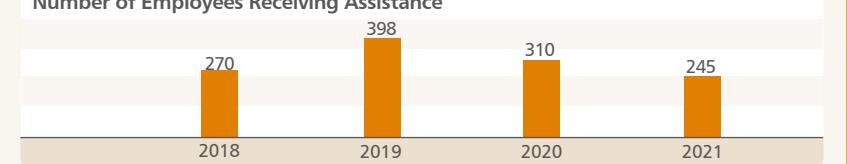
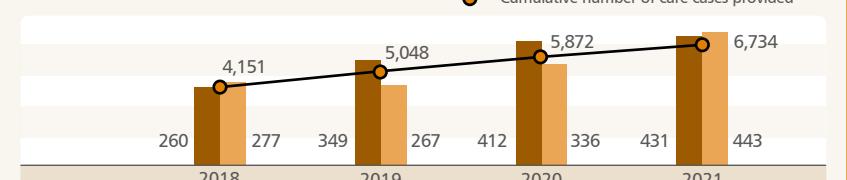
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Worry-Free Workplace: Focus on Work Environment Safety

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 law, implementing comprehensive hazard identification, risk and suitability assessment, prevention and improvement measures, and occupational injury prevention.

Safety Protection Items	Execution Instructions	Key Performance in 2021															
 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, arrange occupational doctor interviews, on-site visits as necessary, and evaluate and clarify the relationship between diseases and work, and provide individual health consultation.</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. <p>Occupational disease-related case in 2021: 0</p>															
 Maternal Health Protection	<p>UMC has set up breastfeeding rooms in each fab. Women in need have 60 minutes per day for lactating. The break is regarded as working hour. Employees can use online system to inform the health center to initiate the maternal health protection measures.</p>	<ul style="list-style-type: none"> In 2021, the daily care list care rate of "Health Care System" was 100%. 															
 Special Health Protection for Middle and Old Age	<p>Surveys are conducted for workers over 45 years old (include 45). Work fitness survey results were assessed, and employees at risk received physician consultations and future follow-up.</p>	<ul style="list-style-type: none"> A total of 3,319 employees completed the Work Fitness Health Questionnaire. The results of the Health Questionnaire - Work Fitness Self-Assessment showed that middle-aged and senior employees have good self-assessment of their work ability. The survey shows that most of them are "always able to perform daily activities, always energetic and alert, and always full of expectations for the future". Two health seminars on "Daily Pain Management" and "Dysautonomia and Physical and Mental Health" were conducted, and both were well received and recorded on video for review at any time. 															
 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.</p>	<ul style="list-style-type: none"> Total 245 uses in 2021 <p>Number of Employees Receiving Assistance</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>Number of Employees Receiving Assistance</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>270</td> </tr> <tr> <td>2019</td> <td>398</td> </tr> <tr> <td>2020</td> <td>310</td> </tr> <tr> <td>2021</td> <td>245</td> </tr> </tbody> </table>	Year	Number of Employees Receiving Assistance	2018	270	2019	398	2020	310	2021	245					
Year	Number of Employees Receiving Assistance																
2018	270																
2019	398																
2020	310																
2021	245																
 Caring for Health	<p>According to the injury and illness treatment and care protocol, the health center worked together with physicians, department heads, 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"> Number of injury and illness care services in 2021: 431 new cases, 443 accumulated cases closed, and 6,734 care visits <p>Injury, Disease and Illness Care Cases</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>New cases in the year</th> <th>Cumulative number of cases closed</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>260</td> <td>277</td> </tr> <tr> <td>2019</td> <td>349</td> <td>5,048</td> </tr> <tr> <td>2020</td> <td>412</td> <td>5,872</td> </tr> <tr> <td>2021</td> <td>431</td> <td>6,734</td> </tr> </tbody> </table>	Year	New cases in the year	Cumulative number of cases closed	2018	260	277	2019	349	5,048	2020	412	5,872	2021	431	6,734
Year	New cases in the year	Cumulative number of cases closed															
2018	260	277															
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2020	412	5,872															
2021	431	6,734															

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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

Responding to the impact of the epidemic, and with the aim of avoiding the risk of infection and protecting employees' well-being and health, UMC promptly converted our LOHAS Workplace activities into online events starting in 2021. Through rich online resources and active sharing by the Welfare Committee, the activities enabled employees to enjoy art appreciation, participate in family day matching Q&A activities, and enjoy thematic attractions while staying at home. This experience not only achieved the purpose of caring for employees and their families, but also demonstrated the organization's resilience and flexible response capacity.

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 created 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

► UMC Employee Social Club Events

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.

2021 Performance

- ▶ 30 social clubs (Taiwan fabs)

- ▶ 2 rounds of selection - a total of 15 excellent social groups received subsidies each round.

- ▶ 2,369 club members Note

► UMC Recreational Facilities and Services

(UMC Recreation Center/UMC Park/UMC Hill)

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 II) provides fitness equipment for employees.

Recreation Center in Hsinchu:

- ▶ 7,500 person-times visitors in 2021

► Diversified Employee Activities

Organized regular One-day Travel, Family Day, and Art Festival. Event formats were adjusted in 2021 in response to impacts from the pandemic, demonstrating UMC's flexibility and response capacity.

- ▶ The "Travel Light" activities were conducted online.

- ▶ 2021 Family Day was presented through online activities, including a great review of previous years' Family Day events, and the provision of a Shopping Bonus for employees to enjoy shopping with their family.

- ▶ The Art Festival was transformed to an online arts & literature exhibition. Free online resources were compiled for employees and families to participate in art appreciation activities online while staying at home.

2021 Performance

- ▶ 17,673 person-times participated in the online trip program

- ▶ 6,155 person-times participated in 2021 UMC online Family Day

- ▶ 989 person-times participated in the Art Festival

4.3.2 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 2021, it received 372 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	2018	2019	2020	2021	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	69	58	84	96	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
HeJian Technology (HJ)						
Employee Conference	12	12	12	12	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.	Monthly
Union-employee Conference	12	12	12	12	Communication and discussions with union members on employee welfare and employer-employee related topics.	Semi-annually
Secretary Conference <small>Note</small>	0	0	12	12	The Human Resources Department shall collect important issues to communicate with secretaries, and the secretaries shall convey key issues of the meeting to colleagues to achieve two-way communication.	Monthly

Note: From 2020, HJ have combined the New-employee Conference and the Employee Conference to form the "Secretary Conference."

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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 subjects of the test were all colleagues in UMC Taiwan and Singapore fabs. The overall survey results continued to improve in 2021. Through the survey report, key issues of the organization can be identified and improvement countermeasures can be formulated, which all contribute to top talents retention.

Achievements of the Year

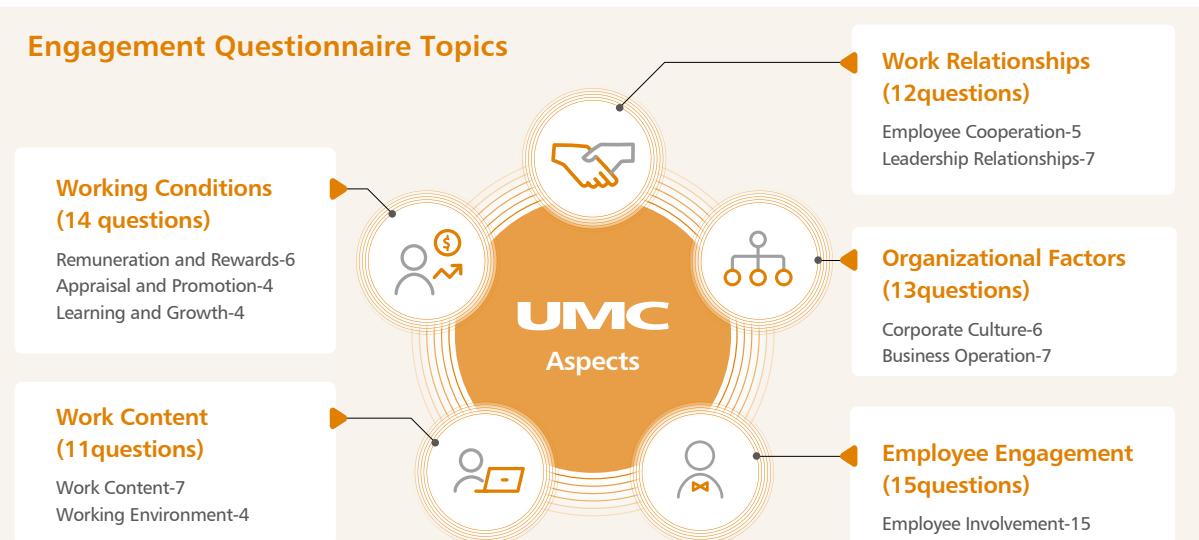
In 2021, five improvement measures were launched for key units, and three corresponding improvement projects were initiated for the Company as a whole. The Taiwan and Singapore Employee Engagement Index was 79.5 points, up by 3%. In addition, with questionnaire surveys, the Company discovered organizational problems as perceived by employees, and initiated a cultural reshaping campaign for the organization.

Post-survey Improvement Plans and Practices

Quarterly progress tracking has been conducted with regard to the five response measures taken by specific units since 2020. The improvement results for specific units' less-than-satisfactory scores in 2021 showed improvements that were all higher than the improvement of the Company as a whole. This indicates that the response measures were having an effect. Moreover, in terms of the Company's overall operating environment, the projects proposed to improve system integration and labor balance, work patterns were adjusted through further review of work hours and diagnosis of reasons for leaving, in the hope of enhancing retention rates at fabs using advanced process technologies.

As for the collected 2021 survey results, effectiveness was confirmed through cross-comparison of annual variations. In addition, communication was implemented based on department function to help improve the future survey. Continuous guidance was provided to departments with weak results, including improvement actions/measures and quarterly reviews. Through such continuous improvement, we can help employees identify with the organization, and put their hearts into their work for the Company.

Engagement Questionnaire Topics



Survey Target and Outcome

Year	Coverage Rate		Work Engagement Index			
	Target	Actual	Target	Overall	Male	Female
2019	70%	80.8%	--	75.1	75.6	74.5
2020	75%	83.3%	76	77.1	77.9	75.9
2021	80%	80.6%	77.1	79.5	80.6	77.9

2021 Employee Work Engagement Survey Outcome - by Age

Age	Satisfaction Survey		Engagement Survey	
	Male	Female	Male	Female
Average	78.1	74.9	80.6	78.0
<30	79.1	75.6	80.2	76.9
30-39	76.8	74.9	79.4	77.6
40-49	78.1	74.6	80.9	78.0
50-59	80.4	75.6	83.4	79.9
>=60	81.1	77.6	85.2	83.7

Note: 1. Statistics include all UMC employees in Taiwan and Singapore.

2. The distribution population is the number of full-time employees within the scope of the survey conducted in 2021.

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Comprehensive Appeal and Employee

To achieve effective communication and resolution of issues between UMC and its fellow employees, UMC established the aforementioned communication platforms as well as the following channels and systems for employee appeals.



**Appeal channels for all employees
and all types of cases**



**Report of sexual harassment and
unfair treatment:**

extension 3199; Mailbox: 31995@umc.com



CHO's e-mail box:

UMC_CHO_Mailbox@umc.com



CSR mailbox:

csr@umc.com



**Employee Relationship (ER) Service
Hotline:**

extension 1288512885



**Fraud and Ethics Violation Report
Box:**

whistleblower@umc.com

whistleblower@umc.com (This e-mail box will automatically forward messages to ADT Division Director, HR Division Director, IPLA Director, and Audit Committee.) External reporting hotline: 0800-024-399 (toll free)



**Information Security and
Confidentiality Protection
Complaint:**

Infosec@umc.com



Whistleblower Hot Lines:

03-5782258, extension 31425

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 184 formal and large-scale conferences were held in 2021 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 2021, 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 2021, and a total of 7,996 indirect labors and 4,779 direct labors participated, with a completion rate of 100%. The total number of participating supervisors (Level-4 and above) was 1,441. Supervisors performed online self-checks to see if they had any inappropriate behavior toward employees. The completion rate was 100%.

Numbers of Grievances

Category / Year	Human Rights Issues				Labor Affairs			
	2018	2019	2020	2021	2018	2019	2020	2021
Filed through the mechanism	7	4	10	9	14	20	17	11
Addressed	7	4	10	9	14	20	17	11
Reviewed	5	4	10	8	14	20	17	11
Officially undergoing judiciary proceedings	0	0	0	1	0	0	0	0
Resolved	6	5	10	9	14	20	17	11

Note: 1. The human rights category includes complaints such as sexual harassment, illegal infringement, and forced labor. There was one sexual harassment case filed in 2021, which had been resolved.

2. The labor affairs category includes work hours and salary, occupational safety, education and training, and promotion/benefits.

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

Processing Flow of Illegal Violation/ Workplace Violence

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

1. Physical violence, 2. Verbal violence , 3. Psychological violence, 4. Sexual harassment (hostile environment sexual harassment or quid pro quo sexual harassment)

Fill out 「Workplace Infringement Report and Action Form」(Appendix I) within 24 hours

case established or not **N**

Review Committee is formed
Conduct confidential investigation

Make penalty or notify decision according to
guidelines

Case closed

Record archives for at least 3 years

4.3.3 Maintain Workplace Safety

Material Topic • • • • •



Achieving the goal of zero injury and zero disaster

- Meet or exceed the requirements of industry safety and health laws, aiming for zero disaster.
- Continue to promote safety and health management system and risk improvement processes to achieve and maintain world - class safety/health and risk management performance.
- Use advanced safety and health technologies as well as risk and disaster rescue techniques to aggressively enhance all safety aspects in pioneering manner.
- Implement prevention management and auditing systems to ensure the safety of the work environment and operations, maintaining the physical and mental health of employees.
- Through communication, consultation and participation in decision-making with workers or their representatives, make it a responsibility for personnel of all levels to exercise influence, eliminate hazard factors, prevent occurrence of accidents and work-related illnesses, and promote effective safety and health interactions through cooperation and sharing.
- Continue conducting safety and health education and advocacy; encourage active participation in safety and health activities, allow for health and safety to be a habit and a way of life for all employees.



Grievance Mechanisms

- Proposal improvement system: Employees can put forward various improvement proposals including environmental safety and health issues through the proposal improvement system, and the case will be countersigned by the relevant departments for implementation. The environmental safety and health improvement of various operating processes and facilities can be carried out through the brainstorming of all colleagues.
- ESH mailbox: When employees find environmental safety and health related issues, they can get resolutions through the ESH mailbox. The issues raised by employees are all answered and processed by designated personnel using the most professional and prompt consultation and handling methods to solve the environmental safety and health related matters encountered by employees in daily operations.



Goals of 2021

Severe or above accident = 0

Minor or above incident ≤ 7

The Disabling Injury Frequency Rate (FR) and the Disabling Injury Severity Rate (SR) are better than the 3-year average of semiconductor manufacturing industry

Achievements

- Severe or above accident occurred: 0 ACHIEVED
- Minor or above incidents occurred: 9 ACHIEVED
- The FR of 0.30 and SR of 7 were much lower than the average of semiconductor manufacturing industry (which are 0.61 and 38 separately) ACHIEVED



Short-Term Goals 2022

- 0 Severe or above accident
- Minor or above accidents ≤ 6
- FR and SR are better than the 3-year average of Taiwan SEMI industry

Mid-Term Goals 2023~2025

- Reduce number of incidents by 88% compared to 2011.
- According to statistical model of OSHA:
 1. Perform better than the 3-year average FR of Taiwan SEMI industry and reduce by 25% compared to 2020 goal.
 2. Perform better than the 3-year average SR of Taiwan SEMI industry and reduce by 25% compared to 2020 goal.

Mid-Term Goals 2026~2030

- According to statistical model of OSHA:
 1. In 2030, FR will drop to less than 1/3 of the 3-year average of Taiwan SEMI industry in 2024.
 2. In 2030, SR will drop to less than 1/3 of the 3-year average of Taiwan SEMI industry in 2024.

- The company-wide management plans were set. The Safety and Health Committee will conduct performance review quarterly.
- The Safety and Health Committee reviews the needs and expectations of stakeholders every 6 months.
- Pass the ISO 45001 Occupational health and safety management system certification every year.

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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).



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. HJ and USCXM have also established the same safety and health management systems.



UMC's ISO 45001 Certificate

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

Hazard Identification and Risk Assessment

UMC conducts hazard identification and risk assessment for routine and non-routine operations, including:

Hazardous workplace assessment ►

UMC fabs are inspected according to Hazardous Workplace Review and Inspection Rules as category A workplaces. The hazardous workplaces are evaluated by process safety assessment personnel who are trained and qualified in safety and health.



Process and activity safety and health risk assessment ►

The safety and health risks of processes and tool transfer in fabs are evaluated by personnel who are trained and qualified in safety and health identification. The personnel assess the severity and frequency of risks, calculate safety and health risk indicators, and compile a list of major safety and health risks for improvement.

Identifying engineering risk using FMEA ►

Using Failure Mode & Effect analysis (FMEA), engineering risks are identified before construction and communicated with relevant personnel.

The Company also has a category of Extraordinary Operations that includes operations that are unanticipated, special, not implemented for over a year, or have no specified procedures. Before implementing an extraordinary operation, FMEA must first be conducted to systematically review any problems that may arise during the execution of the extraordinary operation. Through the risk assessment, preventive countermeasures are formulated and reported to the fab manager before the operation can proceed. During the construction, the construction authority must lead the site control, with the safety personnel assisting with management and supervision.

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Occupational Disaster Management

In 2021, UMC's Disabling Frequency Rate (FR) was 0.30 and Severity Rate (SR) was 7, 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: According to data provided by the Department of Statistics of the Ministry of Labor.

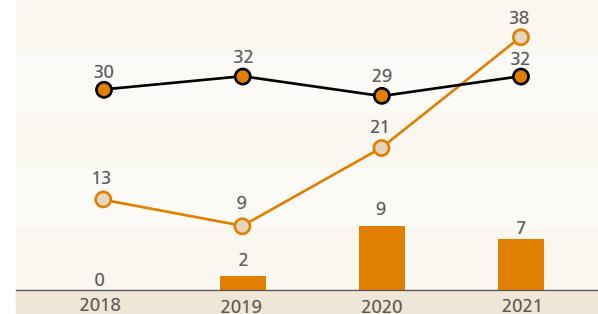
Disabling Frequency Rate (FR)

UMC (Taiwan and Singapore) National electronic component industries
National semiconductor manufacturing industries



Disabling Severity Rate (SR)

UMC (Taiwan and Singapore) National electronic component industries
National semiconductor manufacturing industries



Note: 1. FR = Number of people with disabling injuries x1,000,000 / Total number of working hours [per million working hours].

2. 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 2021, UMC organized 2,235 classes and trained 97,301, 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 2021, 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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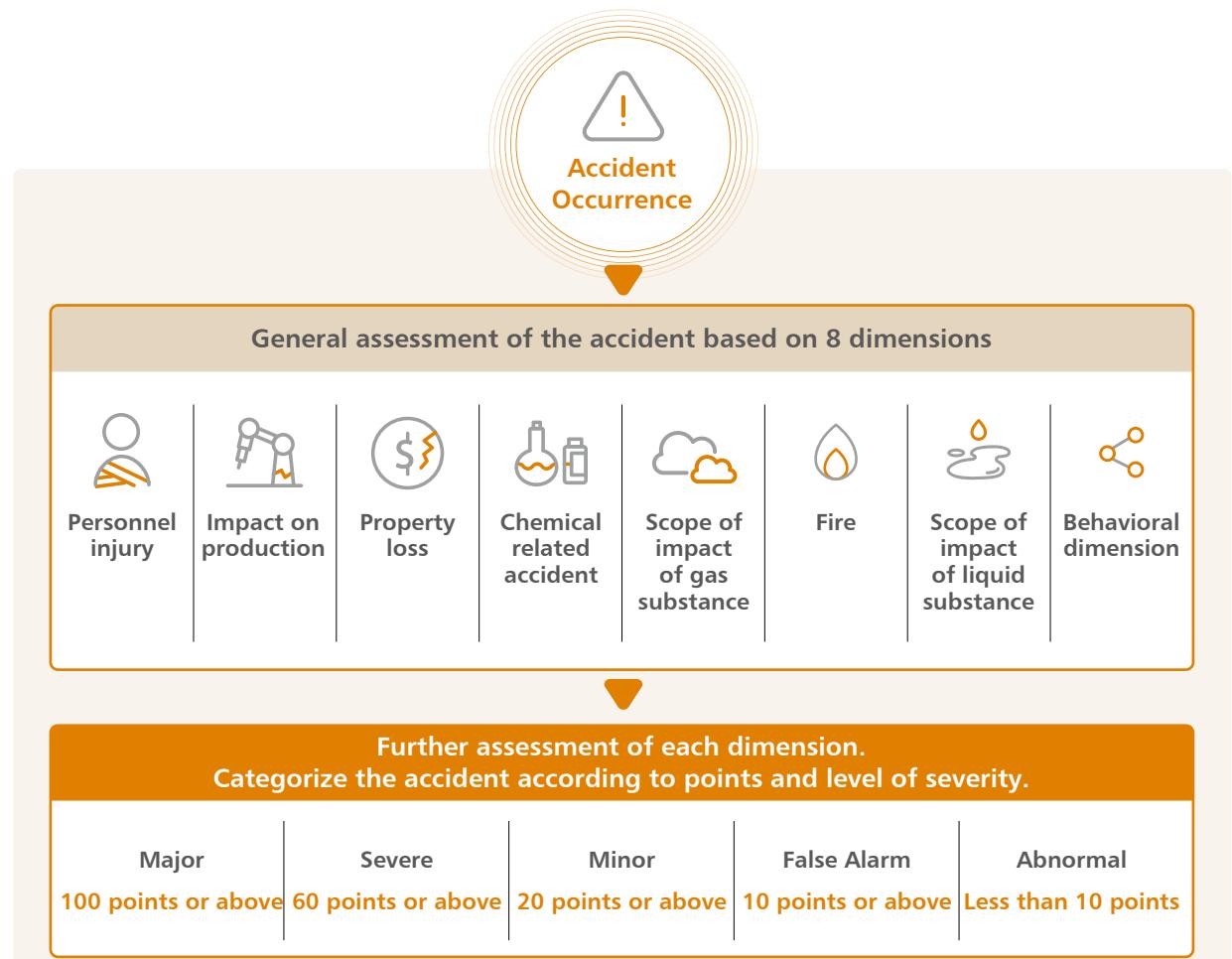
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Accident and Analysis and Management

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 8 dimensions, and quantifies the accident into major, severe, minor, false alarm or abnormal categories for more objective evaluation of the accident management performance.

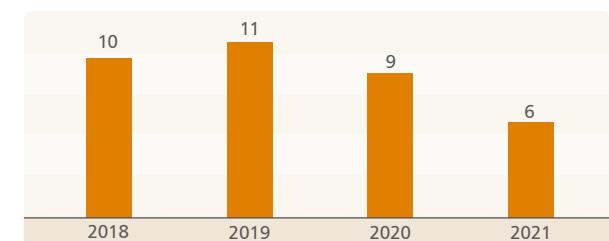


Accident Management

UMC is committed to reducing the number of industrial safety accidents. In 2021, there were 6 minor or above accidents reported. As a result, the target was successfully achieved, and no regulatory violation related to safety and health incidents occurred.

Analysis of 6 accidents in 2021, heavy object crush injury:4, mechanical crush injury:1, PM cut:1. UMC will continue to promote "Safety First" 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.

Accident Cases



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.

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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 2021, 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 2021, there were 5 care cases reported. (No new cases in 2021.)

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 i-CARE APP

Background information

Engineering safety and contract management are the key items of industrial safety management. Due to the input of a lot of manpower and a wide range of people involved, there are multiple processes, repetitive operations of personnel, and the consumption of a lot of resources and labor costs. Therefore, ESH i-CARE APP was developed to reduce unnecessary paperwork and administrative operations, reduce labor costs and improve the quality of supervision.

Challenge

Because of the facts that the annual numbers of engineering projects applications and people from different fabs and departments involved are large, and the changes in regulations require timely information updates, more real-time and efficient system tools are required to avoid human errors.

Measures

1. Streamline the process: review the existing process, delete repetitive operations, and adopt automatic data, so that the on-site supervisors can do things right the first time.
2. Establish automated and mobile management platform: by means of automatic regulation identification, automatic data import, digital sign-off, digital process control mechanism and mobile verification tools to replace manual paperwork and paper printing in earlier times, and make communication more instant.

Benefit

1. Delete unnecessary actions to greatly improve execution efficiency.
2. Possible escape points can be eliminated through digital control.
3. Paper printing is significantly reduced to reach the goal of 100% paperless, which is equivalent to saving 53.25 trees per year.
4. When information is updated in real time, the information gap of on-site personnel can be reduced.
5. Mobility and automation shorten the time spent on communication, and hence speed up project progress.

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UMC	Taiwan		Singapore	
	Employees	Non-employee Workers	Employees	Non-employee Workers
2021 Relevant Index				
No. of people	12,868	2,038	1,636	488
Total No. of working hours	25,682,128	5,951,848	3,727,560	1,018,904
No. of people with disabling injuries	9	1	0	1
No. of lost days due to disability	214	16	0	72
No. of reportable injuries	19	2	0	1
No. of work-related deaths	0	0	0	0
Occupational Disease Rate (ODR)	0	0	0	0
Injury Rate (IR)	0.14	0.06	0	0.19
Lost Day Rate (LDR)	1.66	0.53	0	14.13

Note: There were no third-party illnesses, injuries, disabilities or deaths caused by UMC operations.

Subsidiaries	China HJ		China USCXM		Taiwan Wavetek		Japan USJC	
	Employees	Non-employee Workers	Employees	Non-employee Workers	Employees	Non-employee Workers	Employees	Non-employee Workers
2021 Relevant Index								
No. of people	2,059	141	1,164	414	704	62	1,039	147
Total No. of working hours	4,025,867	412,112	2,639,352	1,210,528	1,339,016	180,888	2,130,800	279,383
No. of people with disabling injuries	1	0	2	0	0	0	1	0
No. of lost days due to disability	7	0	6	0	0	0	4	0
No. of reportable injuries	2	0	2	0	0	0	2	1
No. of work-related deaths	0	0	0	0	0	0	0	0
Occupational Disease Rate (ODR)	0	0	0	0	0	0	0	0
Injury Rate (IR)	0.09	0	0.15	0	0	0	0.18	0.71
Lost Day Rate (LDR)	0.34	0	0.45	0	0	0	0.37	0

Note: There were no third-party illnesses, injuries, disabilities or deaths caused by HJ/USCXM/Wavetek/USJC operations.

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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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 Taiwan society.

► **Important Stakeholders:** The Society, Employees and Suppliers



Performance Highlights 2021

5,081

Participants
In the PTP
Program

Prospective Talent Program
has recruited 5,081
members since 2013, and
384 students are still in the
program as of end-2021.

7,851

Participants

Collaborated with key
academic institutions on
internships, nanotechnology
programs, and career
guidance.

26,661

Beneficiaries

UMC's employee social
clubs organized 80
volunteer events.

19,059

Service Hours

Tutorial Center transitioned
to online courses to minimize
disruptions for students due
to the pandemic.

10

Groups
Benefited

Energy saving services
reduced 879.3 tons of CO₂
emissions and helped save
NT\$4.614 million in utilities.

9

Eco Projects
Awarded

UMC's Eco Echo Award
provides NT\$3 million
annually to support
ecological conservation.

5.1 Promote Common-Prosperity Society

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 social welfare activities. In terms of social welfare, UMC has established the "UMC Science and Culture Foundation" and the "UMC LOHAS Education Foundation" to integrate related resources every year for the promotion of social welfare. Furthermore, since UMC has been promoting social welfare for many years, the concept of "common-prosperity society" has been deeply rooted in our employees. In recent years, more and more UMC employees have contributed their creativity and influence developed in UMC employee social club activities to engage in or organize social welfare activities, delivering warmth and kindness to more people in the communities. Regarding public issues such as disaster prevention within communities, UMC also shared disaster prevention experience and fire protection expertise through its well-known high-tech fire brigade, helping to strengthen the disaster-prevention resilience of communities. Through diversified forms of cooperation and promotion, UMC maximized the benefits of social participation and enhanced the social value system of common prosperity. This not only allows more external groups to know about UMC, but also extends the impact to more people in need, forming a virtuous cycle from the inside out.

Diversified Ways of Promoting Social Welfare

	Social Welfare Promotion Scope and Dimension	Social Welfare Projects
 UMC Social and Culture Foundation Year of Establishment 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 Year of Establishment 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 in 2021 Sponsored the sports events of the Science Park Cup
 Employee Social Clubs	<ul style="list-style-type: none"> Organize social welfare 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 Year of Establishment 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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Based on the belief of "take from society and give back to society," UMC has involved enormously in various social welfare 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 social welfare 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 -- SDG 8: Decent Work and Economic Growth, SDG 13: Climate Action, and SDG 4: Quality Education. Through the implementation of various social welfare 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 Welfare Main Theme	Business Trend	Type	Business Key Performance	Social/Environmental Key Performance	UN SDGs
 Cultivate 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>	Prospective Talent Program	<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"> ● In order to expand the talent cultivation on campuses, UMC continues to develop the PTP program that was started since 2013, with a total of 5,081 talents recruited and 384 students participating. ● The average cost of recruiting one single employee is NT\$19,000. ▶ Build high-tech talent network based on good business reputations <ul style="list-style-type: none"> ● In 2021, UMC carried out industry-academia cooperation projects with 14 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. 	<ul style="list-style-type: none"> ▶ Cultivate high-tech talents and enhance career prospects <ul style="list-style-type: none"> ● From 2013 to 2021, 494 students have obtained internship opportunities, increasing their competitiveness as college students. ● Beneficiaries of special program for industry-academia cooperation: A total of 7,851 person-times participated in these programs. ● Campus relationship development and related seminars: In 2021, a series of eleven brand development and promotional activities, including seminars, career plan sharing sessions, internships, semiconductor product demonstrations and so on, were arranged, attracting more than 645 student participants. ● UMC visits: Provide opportunities for students to visit and tour UMC. In 2021, in order to comply with the epidemic-prevention policy, UMC only received around 242 person-times from the special semiconductor-training program. 	 8 DECENT WORK AND ECONOMIC GROWTH
 Promote 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>	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 2021, 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 2021, a total of 879.3 tons of CO₂ was reduced, which is equivalent to an overall social/environmental economic value of NT\$4.614 million. 	<ul style="list-style-type: none"> ▶ Number of Projects Supported by Eco Echo Award <ul style="list-style-type: none"> ● In the past 6 years, 39 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 2021, the Energy Saving Service Team has served 7 disadvantaged groups and 3 community units (schools and hospitals) ▶ Service hours of Energy-saving team <ul style="list-style-type: none"> ● Accumulating a total of 1,950.5 hours of service. ● Reduced CO₂ emissions by 879.3 tons <p>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.</p>	  13 CLIMATE ACTION 14 LIFE BELOW WATER
 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>	Tutorial centers for the disadvantaged and underprivileged Community Participation Pandemic-prevention resources donation	<ul style="list-style-type: none"> ▶ Build a positive image and maintain good corporate reputation <ul style="list-style-type: none"> ● A total of 62,007 person-times were benefited. Recipients of these supports include academic circles, non-profit organizations and environmental groups. ▶ Increase corporate voice and reduce media exposure costs <ul style="list-style-type: none"> ● The number of social benefit partners reached 54 partners ● The number of news in corporate sustainability category on UMC official website reached 16 pieces ▶ 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"> ● 6,781.8 hours of volunteering time in total ● Volunteers from UMC employee social clubs provided 80 times of volunteering services ● 1,071 employees participating in volunteering services <p>Starting from 2021, employees from various sites were encouraged to participate in public welfare activities. Through the themes of social welfare engagement and the improvement of paid leave hours for public welfare activities, employees demonstrated higher willingness to participate in welfare activities. In 2021, due to the COVID-19 epidemic, the number of outdoor activities was reduced; however, employees of UMC still contributed 6,781.8 hours in volunteer activities cumulatively. The initiations of various types of public welfare activities also give UMC employees the opportunities to understand the company's efforts and achievements in external affairs, and consequently promotes employees' identification and retention.</p>	<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 648 volunteers who cumulatively devoted 19,059 hours of their precious time, the number of beneficiaries in 2021 reached 2,247 person-times. ▶ Number of donation beneficiary units <ul style="list-style-type: none"> ● Donation to corporate units: More than 36 institutions, hospitals, and social welfare groups were supported. ▶ Pandemic-prevention resources donation amount and number of beneficiary units <ul style="list-style-type: none"> ● More than 17 hospitals and government units received donations of pandemic-prevention resources and medical equipment with a total amount exceeding NT\$49 million. <p>By donating medical supplies, UMC and the medical team worked together to fight the pandemic. Disinfection equipment was also donated to Taoyuan International Airport and government agencies such as the CDC, etc., to realize social prosperity.</p>	 4 QUALITY EDUCATION

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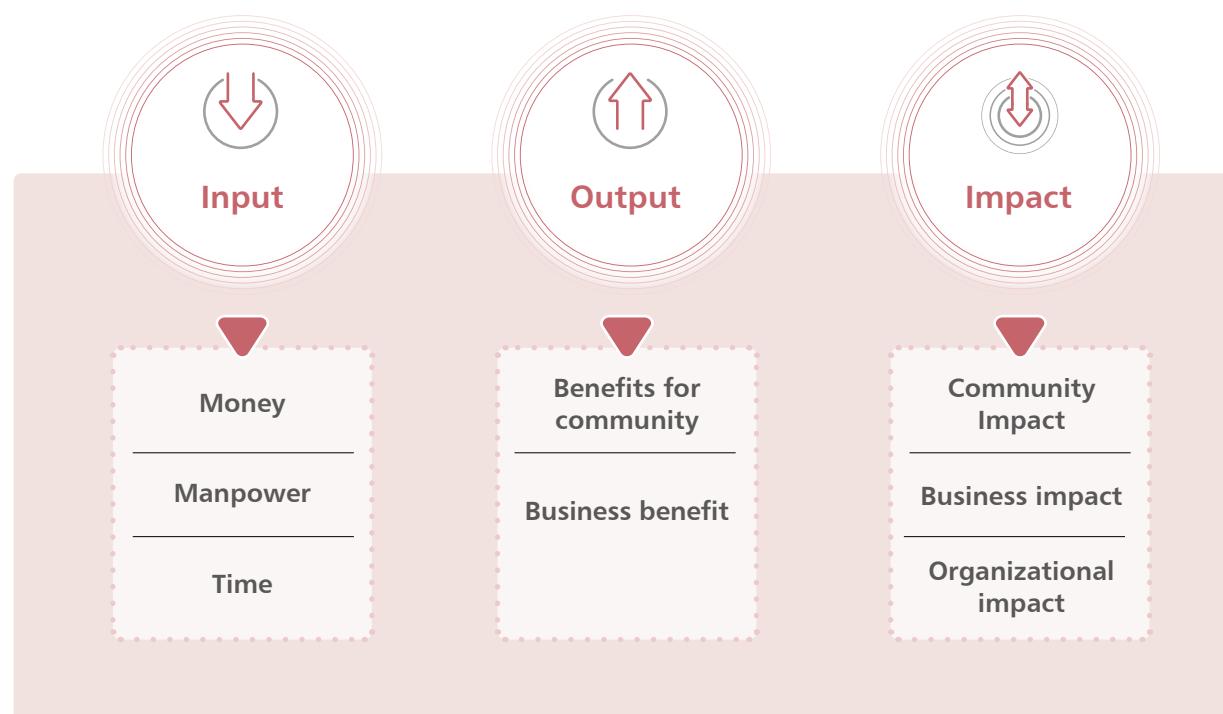
Community Services Benefits Assessment

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 (CSR), establishing positive value systems amongst school children, and helping to compensate for the inadequacy of educational resources for school children living in remote areas.

Public Welfare Investment

To ensure the targets can receive long-term and stable caring. 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 56.88% in 2020 to 62.31% in 2021.



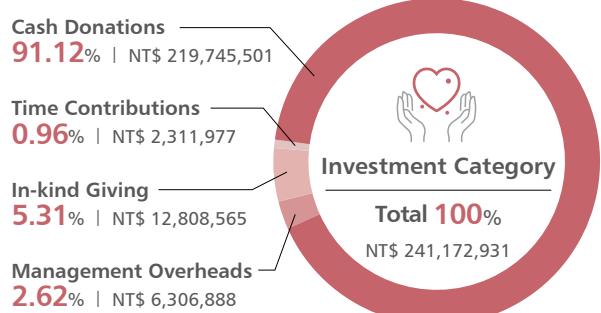
Community Service Participation and Number of Beneficiaries in 2021

Charitable Donations ¹	NT\$ 240 Million
Number of Beneficiaries	More than 62,007 person-times
Total Employee Volunteer Hours ²	More than 6,781.8 hours

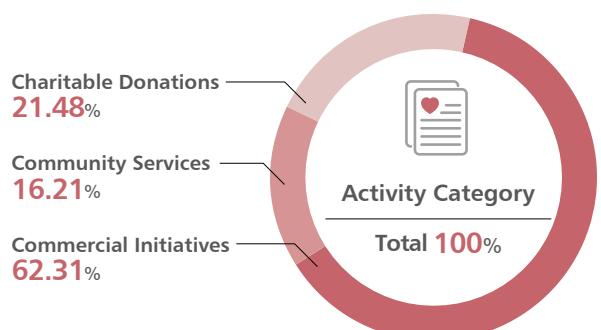
Note: 1. This table only covers projects carried out by the Science and Culture Foundation, UMC LOHAS Education Foundation, Company donations, and employee social clubs as well as employee donations.

2. Includes volunteer leave and holiday leave hours.

Category and Sums of Community Service Investments in 2021



Note: "Administrative Expenses" include the personnel costs incurred when conducting public welfare activities, such as the salary of personnel performing public welfare activities.

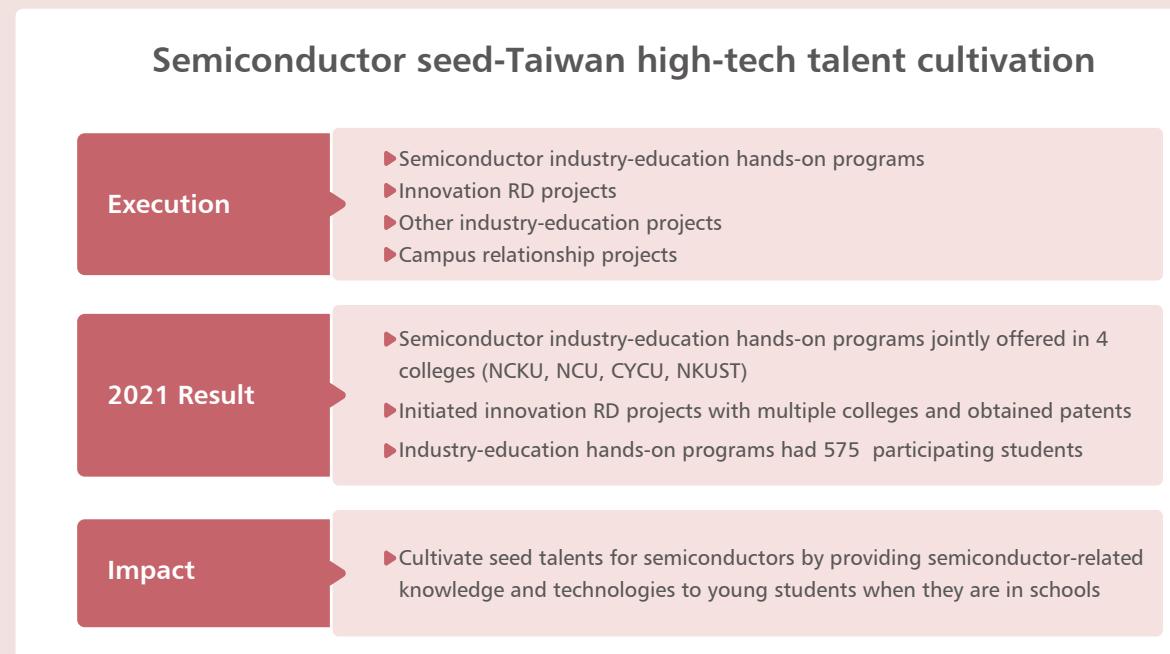


5.2 Youth Talent Cultivation

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 devoting to cultivating youth talent.

5.2.1 Industry-education Partnerships

UMC continued to strengthen industry-education partnerships in 2021. 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). From 2013, more than 7,851 students participated. A series of brand image development activities such as paper discussions, career sharing panels, on-site internships, and exhibits of semiconductor products were scheduled. There were six academic paper discussion sessions held and 645 person-times participated in 2021. These measures enhanced the academia's support and recognition of UMC and gave a comprehensive demonstration of a successful industry-education partnership.



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 2021, a UMC Camp was organized. In order to comply with the epidemic-prevention policy, the one day UMC had been adjusted to online event. The PTP participants and mentors from UMC were invited to exchange and discuss with each other online. In addition, various interactive games and activities were designed during the event, allowing outstanding students from different schools to understand more about the characteristics and dynamics of the semiconductor industry.

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Planning for Outstanding R&D Talents



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.



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.

Summer Internship Program

In 2021,
a total of 13 interns
were recruited

Prospective Talent Program

PTP: Since 2013, 5,081
candidates have been
recruited, of which 384
are still in school.



R&D Talents

Potential Management Talent Cultivation

In 2021, a sum of
NT\$3.2 million
was bestowed to the
award.



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.

Career Coaching Programs

Take National Cheng Kung University as an example, 10 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.

Target Schools Visited

Due to COVID-19, UMC conditionally received about 242 faculty and students from target schools to visit UMC facilities in 2021.



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.



UMC provided on-site visits to target schools every year for students to gain early understanding of the semiconductor industry work environment. By interacting and communicating with UMC employees, these students had better understanding of their own directions in learning and employability.

5.3 Environmental Protection Initiative

5.3.1 Energy Saving Service

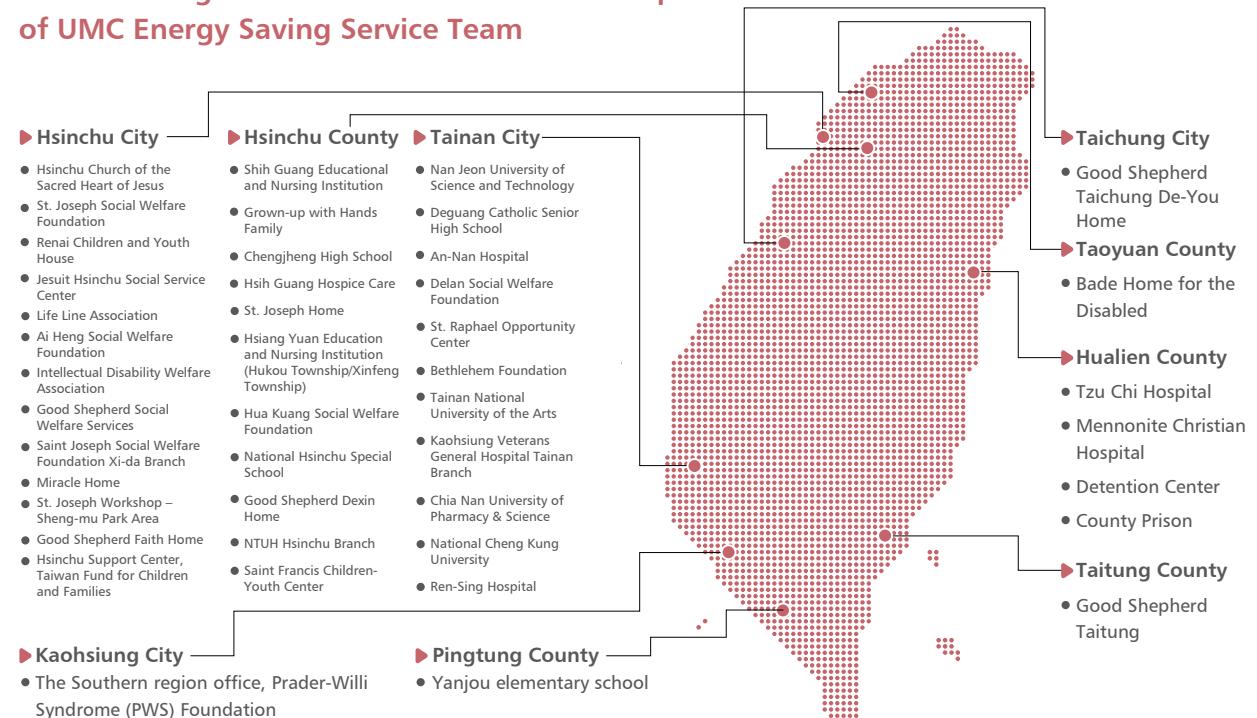
To enhance energy efficiency and expand the benefits of our core business functions, UMC has established the "UMC Energy Saving Service Team" with "energy saving and safety" as the core. By stepping out the foundry fabs, the Team allows UMC colleagues to bring their experiences and expertise to bear 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 Senor, Kaifa, Cherntai, Kaiser, and Shifuh have all acknowledged and responded to UMC's initiative by providing not only manpower but also sharing the costs for equipment improvements.

In 2021, the Energy Saving Service Teams of Hsinchu Science Park and Southern Taiwan Science Park served 10 organizations, including 7 underprivileged organizations and 3 community units (schools and hospitals), accumulating to a total of 46 units since inception of the Team. A further calculation of the public benefit resulted from the energy saving service in 2021 showed that the relevant staff input and cost brought economic benefits to underprivileged organizations and community units, such as electricity conservation amounting to NT\$4.614 million, which benefited 23,688 people and reduced CO₂e emissions by 879.3 tons.

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 sustainable cities and towns.

Accumulating to a total of 46 units since inception
of UMC Energy Saving Service Team



		Input		Output			
		Labor Cost	Construction Cost	Total Cost	Economic Benefits	Environmental and Social Benefits	Total Benefit
Benefit for Underprivileged Organizations							
572,750	NT\$	639,330	NT\$	1,212,080	171,000	-22.2 ton (s) of CO ₂ e	171,000 NT\$
Benefit for Community Units							
402,500	NT\$	288,645	NT\$	691,145	4,443,400	-857.12 ton (s) of CO ₂ e	4,443,400 NT\$

Note: 1. Scope of Statistics: Input and output of all Energy Saving Service Team's service in 2020
 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 0.502 kg CO₂e/kWh in 2020 was adopted for the calculation of 2021

Video:

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► Assisted the Good Shepherd Taichung De-You Home in energy-saving diagnostics and provided improvement suggestions



► Assisted the Saint Francis Children-Youth Center in fire-safety drills



► Assisted the Hsinchu Support Center, Taiwan Fund for Children and Families in energy-saving diagnostics and improvement of electricity/bathroom/toilet equipment



► Assisted the Taitung Good Shepherd Center in energy-saving diagnostics and improvement



► Assisted the Saint Francis Children-Youth Center in energy-saving diagnosis and provided fire-safety drills



► Assisted the Prader-Willi Syndrome (PWS) Foundation in energy-saving diagnostics and improvement



► Assisted the St. Joseph Workshop – Sheng-mu Park Area in energy-saving diagnostics and improvement



► Assisted the Good Shepherd Faith Home in energy-saving diagnostics & improvement and provided fire-safety improvement and drills

Recipient Feedback



Taiwan Fund for Children and Families, Hsinchu Support Center
Director Shen, Chun-Hsien

Being affected by the uncertainty of the pandemic over the past two years, the Hsinchu Family Support Center had reduced the input of non-essential volunteer manpower, so the electrical and plumbing maintenance that used to be taken care of by volunteers had to be suspended. Fortunately, with the energy-saving checks conducted by the UMC Energy-saving Service Team, the damaged electrical and plumbing equipment in the Center's Guangfu Road Main Building could be fixed. These added or repaired facilities will provide a better environment for counselling services and activities for the disadvantaged children and parents we serve in the coming year, and will also provide the Center's staff a more thoughtful work environment.

According to past experiences, most enterprises engage in NPOs' social services by means of direct donations, and rarely any enterprises pay attention to the fact that physical environment repair and renovation, as well as equipment replacement, are always at the bottom of NPOs' priority list. Therefore, we truly appreciate UMC for noticing our disadvantaged situations when promoting CSR and ESG by helping NPOs through the services provided by the Company's Energy-saving Service Team volunteers, which gave significant favors to social service organizations such as ours.

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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, with a total prize of NT\$1 million in the first year. The cash prize reward is rising every year with the enthusiastic response from the value chain manufacturers, 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 2021, a total of 5 NGOs were awarded the UMC Eco Echo Award grants for ecological conservation projects. The ecological conservation projects span land, sea, and air, reflecting the many precious species and rich ecology in Taiwan, and representing the project initiators' concerns for nature and the love and care for all creatures. In the meantime, four projects were awarded the Youth Environmental Action Award. These projects range from urban to suburban areas, and youth creativity can be found everywhere from the promotion of personal behavior change to assisting in the creation of community-based enterprises. On December 24, 2021, the 6th Eco Echo Award Ceremony was held, and an achievement exhibition was held simultaneously to showcase the achievements of the past five award-winning units. In addition, in response to UMC's 2050 net zero commitment, the carbon emissions generated by the activities were offset by UMC's early carbon reduction rights to achieve carbon neutrality, and a third-party verification company was present on-site to conduct carbon neutrality verification to demonstrate the Eco Echo Award's consistent support to Taiwan's environmental protection forces.

In the six years since the inception of the UMC Eco Echo Award, a total of 39 ecological conservation projects and youth environmental actions 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 2021, UMC joined hands with partners such as 3M Taiwan, Edwards, Tokyo Electron, Hermes-Epitek, Wholtech 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.

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UMC Eco Echo Award Initiative



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The 6th Eco Echo Award Winning Project List

NGO Group



About you and me, guarding the horned owl that hides beside you
Implemented by: Taipei Outdoors Fun Association



Help marine creatures build a sustainable home
Implemented by: Taiwan Shanhai Angel Environmental Conservation Association



Peace of mind to understand the "bee" ~ Know the solitary bee ecological education promotion plan
Implemented by: The Society of Wilderness



Raptor poison crisis
Implemented by: Raptor Research Group of Taiwan



Hold more umbrellas for Fairy Limbo
Implemented by: Kaohsiung Wild Bird Society

Youth Environmental Action Award



Proud of "Food" —
a series of activities to promote the
issue of leftover food



Transnational Sustainable Action
under the Epidemic — Taiwan and
Japan SDGs Climate Action



The legendary Huludun —
the original intention of protecting
the environment remains unchanged



Xingxiang Bowl —
A large collection of friendly stores
to take out environmentally friendly
bowls of Zhongxing University

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**5th UMC Eco Echo Award-winning Projects Implementation Status**

Note: Implemented between January to December, 2021

UMC Eco Echo Award Official Website

► Saving the Habitat of Winter Wandering Birds -

The Restoration Project for the Luzhou Wetland along the Danshui River

Implemented by:

Guandu Nature Park Management Office, Wild Bird Society of Taipei



The Luzhou beach is a wetland rich in biodiversity in the freshwater river basin. However, since 2005, the Shuibianzi mangroves have spread and proliferated on the river beach, and the habitat of the Sandpiper Plover family has gradually disappeared. The plan actually leads the public and volunteers to care for wetland ecology and waterfowl protection together, and invites local schools to join the seed school network to provide teacher training and expand the capacity of local environmental education.

► More than 16 hectares of mangroves were cut down on the beach

► Beach bird monitoring survey: 19 times in total, including Guandu Wetland, Wugu, Luzhou, Danshui River Beach, etc.

► On-campus promotion: In response to the epidemic, online promotion, a total of 5 sessions, 160 people participated

► Window Killing of Birds -

Window Killing Investigation, Prevention and Promotion of Bird-Friendly Buildings

Implemented by:

Raptor Research Group of Taiwan



Birds hitting glass and causing injury and death (referred to as "window killing") are gradually becoming more and more important. It is planned to educate, explain and assist in the improvement of window killing cases, promote the concept of window killing prevention and bird-friendly buildings, and issue friendly building signs to the implementation of window killing. The improved public buildings, restaurants and other units are exposed on the internet platform, hoping to attract the attention of the public, and the ultimate goal is to include bird-friendly glass in the national green building regulations.

► Restored 1,000 corals

► Intertidal environment monitoring: 4 indoor courses, 2 intertidal biological surveys

► Filmed 1 documentary short film and held 1 screening seminar with 46 participants

► Return to the Pearl of the Inland Sea -

Dacang Islet

Implemented by:

Marine Citizens Foundation



The whole island of Da Cangyu in Penghu is only 18 hectares, but it has a large area of intertidal zone and shallow coral reef area, which breeds diverse and rich marine ecology, and is also known as the "Pearl of the Inland Sea". The plan focuses on marine coral restoration, species survey, environmental education and marine culture inheritance. Through video and text records, it will resonate with the public and make Da Cangyu a "sustainable island" where people can live and work in peace and contentment.

► Cultivating visiting investigators: Accumulated 122 reported cases

► Lectures on admission to the school: 36 sessions in total, with a total of 3,687 person-times participation

► Experiential Education Camp: 3 sessions with 90 participants

► Civic Participation Workshop: 2 sessions with 40 participants

► Relationship Garden -

Harmony between People and the Formosa Macaque

Implemented by:

Formosan Macaque Coexistence Promotion Association



There are still many misunderstandings about Taiwanese macaques. However, Taiwanese macaques are still animals protected by the Animal Conservation Law and cannot be bred or hunted arbitrarily. The plan hopes to cultivate full-time investigators, provide records to relevant units for research, and through environmental education such as publicity lectures, experiential education camps, and civic participation workshops, to improve the public's literacy in ecological conservation, and to achieve peaceful coexistence between wild animals and humans win-win.

► Cultivating visiting investigators: Accumulated 122 reported cases

► Lectures on admission to the school: 36 sessions in total, with a total of 3,687 person-times participation

► Experiential Education Camp: 3 sessions with 90 participants

► Civic Participation Workshop: 2 sessions with 40 participants

► The Seal Rock and Badouzi Fishing Village Protection Project

Implemented by:

Wild Bird Society of Keelung



According to media reports, the popular seal rock has become a tourist attraction, but it has a negative effect on the ecology of Daping intertidal zone due to tourist activities. Therefore, the Keelung Bird Association proposed a concept of protection. In addition to proposing the seal rock as a natural monument, it also hopes to awaken the cherished eight Conservation issues of Daping pristine coast and intertidal zone ecology in Douzi. On top of that, through the preservation and promotion of the cultural assets of the traditional fishing village, the young people who have moved abroad can return to their hometowns, igniting the hope of the regeneration of the Badouzi fishing village.

► Lesson plan and lecture on "Story of Seal Rock and Badouzi Fishing Village": 34 sessions, 1,700 person-times participation

► Intertidal zone guard and guide: 60 days, 120 person-times participation

► The experience of a fishing rod caught in a net: 4 sessions, 120 teachers participated

5.4 Commitments to Social Welfare

5.4.1 Social Engagement

Over the past 26 years, UMC has continued its long-term engagement in schools, communities, and society by sponsoring and supporting public interest groups in different fields. By planting the seeds of "Hope, Caring, Reading, and Volunteering," UMC helps many youths and disadvantaged groups in Taiwan's remote areas gain diversified opportunities for development, thereby realizing the spirit of corporate social responsibility and enhancing humanistic care in society.

Seeds of Hope Taiwan Youth Diversity Training Program

Setting Up a Charitable Tutorial Platform

UMC has been working with different social welfare organizations in Hsinchu and Tainan to set up tutorial classes. Additionally, UMC used the advantage of service learning in local universities to recruit students from National Tsing Hua University, National Chiao Tung University, and National University of Tainan to serve the children from disadvantaged families as tutors and tutorial class volunteers. The Foundation provides free tutoring for students in need, and introduces diversified and life-oriented learning courses to implement the spirit of 12-year Basic Education, and cultivates students' spontaneous and active learning habits. Some tutoring volunteers have spent a lot of time in after-school tutoring classes since they were younger; now they, as university students, have come back to help these young school kids, by which a cycle of kindness has been created.

In May 2021, the tutorial centers in Hsinchu and Tainan stepped up their preparation of online courses in response to the acute phase of the pandemic, turning this crisis into an opportunity for a flipped education. As online tutoring services have gradually got on track, volunteers extended their service to Taitung's "Kids' Bookhouse" and Taiwan Love- Continuation Association's Madou Children-Youths Service Station by sharing online tutoring resources with them. Other than online homework guidance and reading education, the daily online tutoring classes provided by the tutorial centers also included courses on different topics jointly offered by volunteers and external agencies such as life education, current events/news, media literacy, art, music, comic drawing, basic digital graphics tutorials, etc., to help students develop diversified skills. In order to cope with low motivation caused by distance learning, the tutorial centers in Hsinchu and Tainan also adjusted the course content based on feedbacks from students. Moreover, tutors and students designed timetables together, through which students' knowledge management abilities were fostered, and their independent thinking skills in discovering, analyzing, and problem solving were also enhanced.



Supporting Nantou Karate Team

The Foundation has long supported the "Nantou Karate Team", led by instructors Tai-chi Huang and De-lan Liao, in nurturing over 60 children from underprivileged families in Taiwan to practice Karate. Over the past 20 years. Students are also provided with meals and accommodations for their basic needs, and are encouraged to see their own strengths through Karate. Over the past 20 years, these children have achieved excellent performance in local and international competitions. On top of that, several children won the President's Education Awards and turned their lives around through Karate.



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Promote Artistic Education in Chengjiheng High School

It's been more than ten years since the "Reading Promotion Club" was set up in Chengjiheng High School in 2010. Moreover, in 2021, UMC sponsored the "Drama Education Program for At-risk Teens" launched by Studio Q Performance Art Theatre and PUMUSIC, through which professional education in drama creation, dancing and performing arts are brought into corrective schools for teenagers to obtain more diverse life experiences and broader perspectives.



Supporting the What's Young Association

UMC has been supporting the What's Young Association to organize the "Fancy Years - National Youth Drama Festival" since 2011, which leads sustainable development to teenagers through drama education and artistic creation. This program guides high school students to learn what society is with dramas and helps them develop creativity, teamwork skills and empathy as well as encourages them to learn through different ways of thinking.



Supporting National Tung-Shih Senior High School Baseball Team

Tung-Shih Senior High Schoo's baseball team, a rising star in Southern Taiwan's youth baseball teams, consists of 50-plus students. UMC donated NT\$1 million to Tung-Shih Senior High School's baseball team in 2021, and drew up a five-year mid- and long-term cooperative sponsorship plan. In addition, resources from different businesses are matched for them to do their parts in cultivating Taiwan's young baseball talents.



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Special Education Promotion and
Popular Science Education

Supporting Special Education Promotion and Popular Science Education plan initiated by Program the World Association. It's hoped that the public's knowledge about special education can be improved, and junior high/primary school students' interest in popular science can be enhanced through lectures and courses.

Supporting TECO Technology
Foundation "Exclamation Mark" Plan

UMC collaborates 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-Dai Amis Ancient Ballad Team" by supporting these schools in learning and passing on traditional tribal songs and dances, and assisting tribal schools in inheriting indigenous traditional culture, through which the indigenous groups can trace back their roots and enhance their self-identity.

The "2021 Musical and Dancing Exclamation Mark - Taiwan Aborigines Music and Dancing Festival" was performed at Sun Yat-Sen Memorial Hall and Pingtung Art Museum. There were eight tradition-inheriting teams consisting of more than 200 team members participating in the performance. Both live performance and livestreaming were provided for audience and online viewers. With the assistance of professional technical teams, 48 ancient melodies and dances were presented in a rigorous and fantastic way, through which indigenous people's ancient songs can be spread, passed on, and carried forward.

Care Seeds  "Pushing the Strong to the Front and Supporting the Weak from the Back" Sponsorship ProgramSponsoring the Taiwan Fund for
Children and Families

UMC has sponsored a total of 110 foster children to help alleviate the impact of economic factors on these underprivileged families for 19 years, as well as to help children from underprivileged or disadvantaged families with the assistance of professional social workers. In addition, UMC colleagues also serve as letter writing volunteers to provide care and encouragement to the foster children. This enables UMC's "tech-savvy employees" to manifest their kindness and give back to the community. With the company's "Funding from Company, Endeavors from Staff" approach, love and hope can be linked up with the simplest and the realest companionship.

Reading Seeds  National Reading Culture 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, "UMC Love Story Group" - which has been established for 11 years - has toured 69 times across 6 counties and cities in Taiwan, totaling to 22,000 person-times audiences. Volunteers tell stories in innovative ways to connect up UMC people's kindness, and use creative drama performance to convey the true meaning of life education to children. These activities gave the tech workers an opportunity to stand on stage and express different aspects of themselves, allowing them to reveal the warmth in their hearts instead of being confined to the cold scales or meter readings of their daily workplace routines. The UN SDGs were incorporated into the drama scripts for 2021. It's hoped that the concept of sustainability can be conveyed to the general public through drama performance in the future.



Video :



Newspaper Reading Program

The company sponsors the "Newspaper Reading Program" launched by Mandarin Daily News. With the reading resources provided by Mandarin Daily News, students can expand their horizons, pay attention to current events, and develop media literacy skills from an early age through newspaper reading. The newspaper provider was also invited to hold book fairs, lectures, and newspaper reading activities in UMC for employees to understand such a great medium for parent-child learning.

Sponsoring the Quality Educational Program
"All about Rationality" by IC Radio Broadcasting

UMC has exclusively sponsored the program "All about Rationality" hosted by Prof. Daisy Lan Hung on IC Radio Broadcasting on a long-term basis. The program is linked to the Company's platform to enable UMC colleagues to acquire new knowledge about education without much effort. Prof. Hung shares her views on parenting education through neuroscience research, and leads a wise life with the audience on air, which has given full play to the positive influence of media.

Storytelling Volunteer

As a "Storytelling Volunteer," UMC colleagues keep leading reading activities at Baoshih Elementary School in Hsinchu county in 2021. These activities presented picture book content in interesting and vivid ways to motivate children to read, and guide children in thinking about the educational meaning conveyed by the picture books, through which moral and life education can be promoted.



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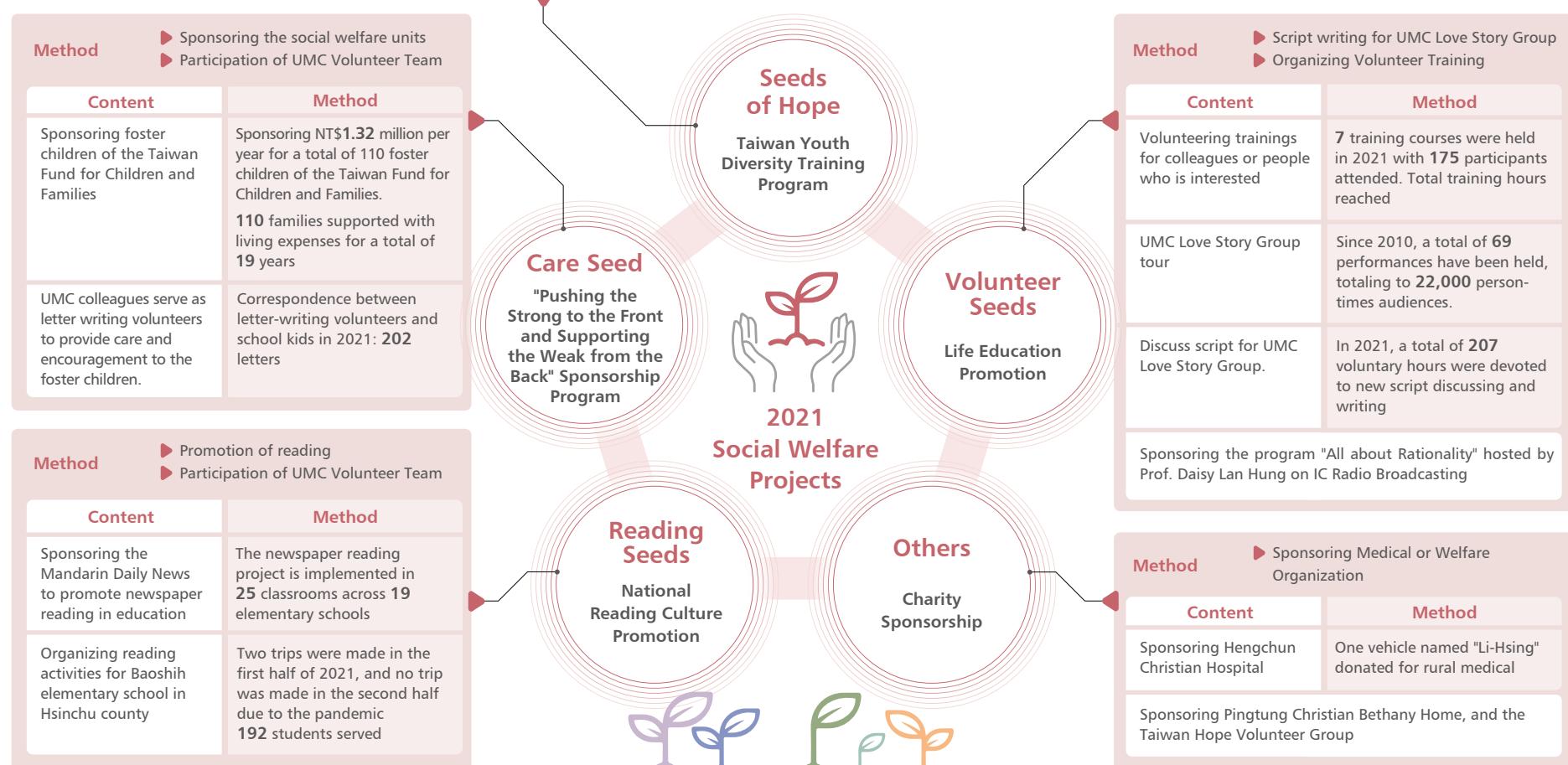
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Social Welfare Projects

Method	► After-school tutorial classes and companionship	► Supporting Sports players training	► Promoting Art, Humanities, and Civic Education	► Supporting Popular Science Education			
Content	After-school tutoring at Hsinchu and Tainan.	Sponsoring Nantou Karate Association	Sponsoring National Tung-Shih Senior High School Baseball Team	Sponsoring What's Young Association	Supporting TECO Technology Foundation "Exclamation Mark" Plan	Promote Artistic Education in Chengjhung High School	Sponsoring Program the World Association
Achievement	Hsinchu Tutoring Class Volunteer Service: 1,354 person-times; Tainan Tutoring Class Volunteer Service: 893 person-times. Total service hours: 19,059 hours	Sponsored funds used for the training and room & board (meals) for 60-plus young Karate students	Sponsored funds used for the training of 50-plus baseball players from Tung-Shih Senior High School.	Since 2011, 3,000 teenagers have been inspired 180 original stage plays for teenagers were created; a total of 39,600 audience members participated; 3 play sets were released	Two tribal schools were sponsored to learn and pass on traditional song and dance Sponsored event: The performance of the "2021 Musical and Dancing Exclamation Mark-Taiwan Aborigines Music and Dance Festival"	40 courses for motivating drama/dance creation which influenced upon 600 persons	Held lectures for special education



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2021 Highlights of Foundation Volunteer Activities

READ MORE :



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Jan.

Volunteer Training Course of Promoting Education for Picture Book "DUO DUO, the Butterfly"

The Foundation offers different types of volunteer training courses every year. The course organized this time was aimed at enriching participants' knowledge about child sexual abuse prevention, and was conducted both in Hsinchu Science Park and Southern Taiwan Science Park. In addition to UMC employees, personnel engaged in child education and child care were also invited to participate in the course and share resources.

The 2-day course covered legal knowledge, counseling skills, gender awareness, Education Theatre, etc., enabling participants, after they return to their workplace or families, to help children understand what sexual assault is and learn how to seek help and protect themselves. The total number of participants in both sessions was about 100.



30
Mar.

Box of Hope, Forward Your Love - Children's Day Gift Donation Activity

On the eve of Children's Day, the Foundation and Candlelight Club volunteers jointly organized the "Adoption and Donation Activity for 'Box of Hope - Forward Your Love,' " and delivered 210 "Boxes of Hope" with unique packaging to St. Joseph Social Welfare Foundation - Dawn Development Association for the students there.

On that day, the Association's Angel Percussion Ensemble welcomed UMC volunteers with a warm performance, and the UMC Drum Team also presented a fantastic Okinawan drum performance for the children. A unique way of communication was created through music presented by these two groups.

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Apr.

Make Strides for Your Youth – Career Visit for Teenagers from World Vision Taiwan

The Foundation and staff of the Southern Taiwan Science Park organized an activity for a group of teenagers from World Vision Taiwan to "know UMC through walking." The performance by UMC's Music-lovers Club and staff's brief sharing of career life fun had brought an impressive "workplace" experience to everyone. With the addition of the UMC Music-lovers Club's performance, the staff broadened the teenagers' perspective with their actions, and gave everyone an impressive "workplace" experience.



23
Oct.

Bluetooth Headphones Module

Program the World Association worked with both the Nantai Maker Education Club and the UMC Sacred Heart Club to hold a "Hand-made Head Cover for Bluetooth Headphones" activity, allowing children to learn different skills through hands-on activities and to appreciate the strengths of others. The energetic children became settled and listened carefully with their full attention while participating in the activity. The university students engaged in the activity also gained valuable experiences from service work and sharing when they see children showing their work cheerfully to other people.



30
Oct.

My Khiu-Kong Tour Stories - Tutoring-class Day Trip Camp

Kids from the UMC Sacred Heart Tutoring Class and UMC volunteers were invited to join a Khiu-Kong Village ecological tour and drama performance activity organized by Miss Wu Su-Chi of Witch's Drama & Magic Story House. Participants were taught how to dig for clams and take a wetland ecological tour. The village head also introduced the bits and pieces of the Khiu-Kong Bridge. Students experienced the ancient way of doing laundry with well-water, traditional fishing techniques, and making children's toys in olden days, through which the students as well as the volunteers got to know more about their hometown.



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Aug.

Minor-reconstruction Program in Tung-Shih Senior High School

VEDIO :



The company worked with "Skills for U" members and a crossover partner, Unimicron, as well as baseball team members of Tung-Shih Senior High School to improve the environment of the school's baseball team cafeteria. By combining the enterprises' resources, the volunteers' contribution, and the professional skills of Skills for U members, young members of "Skills for U" demonstrated their hard skills and were seen by more people. Additionally, baseball team members could make efforts for their own living space and expand their career horizons.



Donating a Vehicle Named "Li-Hsing" for Community Care to Hengchun Christian Hospital

UMC donated a vehicle named "Fu-yin" to Hengchun Christian Hospital for medical tour and community care 10 years ago. The vehicle's mileage has exceeded 400,000 kilometers after years of service for numerous doctors to travel back and forth from Chiayi, Tainan, Kaohsiung, and Pingtung City to Hengchun Christian Hospital, making it an indispensable role in the hospital. The Foundation donated a new vehicle named "Li-Hsing" for medical and community care in 2021 for the continuation of rural medical services and the extension of the Foundation's aspiration in caring for southern Taiwan.

06
Dec.

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► Blood Donation for Charity

UMC spares no effort in blood donation for the public good. In the past 2 years, despite the disruption caused by the Covid-19 epidemic, blood drives were still hosted following epidemic prevention guidelines. In 2021, 484 people donated 722 bags of blood in Hsinchu Science Park, and 225 people donated 342 bags of blood in Southern Taiwan Science Park, totaling 709 people participated and 1,064 bags of blood were donated.



► Experience of Disaster Prevention Sharing for Charity

For more information, please refer to:



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 Park, and hence established close cooperation with the county and city fire bureaus. In 2021, UMC Fire Brigade renewed a memorandum of cooperation with the Tainan Fire Bureau to share resources with the city government and carry out regional joint protection and mutual support to increase firefighting and disaster relief energy as well as to support disaster relief in Tainan to reduce disaster losses. The STSP Environmental Protection Foundation, jointly founded by the STSP, the Environmental Protection Bureau and the Fire Bureau, also requested assistance in conducting poison disaster-related training for the industrial safety and environmental protection members of the factories under the Tainan Science and Technology Administration Bureau. Moreover, the Hsinchu County Government also invited the UMC Fire Brigade to explain the disaster prevention and contingency measures for high-tech factories to the fire protection managers of Hsinchu Science Park, Hsinchu Industrial Park, and the city fire department.

In addition to regular basic training, fire brigade training also invites relevant units to teach solar and electric vehicle fire handling training, and continue to improve firefighting skills and techniques. In 2021, UMC Fire Brigade won the second "Green Chemistry Application and Innovation Award" from the Environmental Protection Administration of the Executive Yuan, in the Disaster Prevention and Rescue Group category. Mr. Ye-Wai Chung, the deputy director of UMC Fire Brigade, was awarded the Lifetime Achievement Award in the individual category, in recognition of his contribution to domestic disaster prevention and rescue training and the improvement of resilience over the past 37 years.



5.4.2 Volunteer Culture Promotion

Social Welfare Activities and Employees

UMC is keen to participate in social welfare activities. In order to encourage employees to engage in social welfare work, UMC employees are eligible for official leave to participate in volunteer services. With the guidance of UMC Science and Culture Foundation, the volunteer culture of UMC has been gradually expanded from merely the Foundation's volunteer team to all employees. In 2021, UMC employee social clubs provided 80 volunteer services in total, serving 26,661 person-times.

UMC's commitment and participation in the social welfare work is a testament to the importance UMC places on building a volunteer culture and to the mobility, love and selflessness of UMC's volunteers. Adopted a comprehensive employee social club's evaluation system, UMC provides funding to top-performing clubs based on the annual evaluation results to encourage employees to participate in club activities and call on different clubs to join in the social welfare work. In addition, when planning annual corporate events, UMC co-organizes the events with the related clubs according to the nature and purpose of the events, in order to intertwine the corporate event planning with clubs and social welfare activities, thereby creating all-inclusive synergy.



UMC Clubs Volunteering Record in 2021



Service Club

Volunteering Content	Target	Collaboration Unit
Candlelight Club ▶ Services in remote areas ▶ Fund raising ▶ Co-organizing charity sales with the UMC Foundation	Total Sessions of Volunteering Services 7 No. of Beneficiaries 1,410 ▶ 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 ▶ Providing energy saving and safety diagnosis of the sites ▶ Funding and manpower input	Total Sessions of Volunteering Services 57 No. of Beneficiaries 23,688 ▶ 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

Volunteering Content	Target	Collaboration Unit
Ukulele Club ▶ Servicing rural students ▶ Teaching rural students Ukulele ▶ Charity Performance	Total Sessions of Volunteering Services 8 No. of Beneficiaries 462 ▶ Underprivileged students ▶ Community members	Fu-Sing Elementary School, Nan-Han Elementary School, Sin-Sing Elementary School, Hsinchu General Village, and Hsinchu Cathy General Hospital
Music Club ▶ Active club participation ▶ Supporting UMC Foundation's social welfare activities ▶ Music-related charities	Total Sessions of Volunteering Services 3 No. of Beneficiaries 440 ▶ Underprivileged students ▶ Community involvement	STSP Late Spring Arts Festival, UMC Science and Culture Foundation - Youth Talent Development Visit, L'arc Hotel Market
UMC Drum Team ▶ Charity Performance	Total Sessions of Volunteering Services 2 No. of Beneficiaries 410 ▶ Caregiver support groups for the underprivileged	Children's Day Activity at St. Joseph Social Welfare Foundation-Dawn Development Association, Hsinchu Hexing Station Concert

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► Organizational Profile				
102-1 Name of the organization	About UMC	5		●
102-2 Activities, brands, products, and services	About UMC	5		●
102-3 Location of headquarters	About UMC	5		●
102-4 Location of operations	About UMC	5		●
102-5 Ownership and legal form	About UMC	5		●
102-6 Markets served	About UMC	5		●
102-7 Scale of the organization	About UMC	5	For more information, please refer to the 2021 Annual Report (page 159).	●
102-8 Information on employees and other workers	4.2.1 Human Resource Development	114		●
102-9 Supply chain	1.3 Building Sustainable Supply Chain	50		●
102-10 Significant changes to the organization and its supply chain	1.1 About UMC 1.3 Building Sustainable Supply Chain	5 50		●
102-11 Precautionary Principle or approach	1.1.1 Board of Directors Operation 1.2 Implementing Risk Management	27 37	No significant changes occurred during the reporting period.	●
102-12 External initiatives	1.2.5 Managing Climate-related Risks and Opportunities 1.3.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	45 59 110		●
102-13 Membership of associations	About UMC	7		●
► Strategy				
102-14 Statement from senior decision-maker	Message from the ESG Steering Committee Chairman	3		●
102-15 Key impacts, risks, and opportunities	Materiality Analysis and Stakeholder Engagement 1.2.2 Risk Management and Countermeasures 1.2.5 Managing Climate-related Risks and Opportunities	17 38 45		●
► Ethics and Integrity				
102-16 Values, principles, standards, and norms of behavior	1.1.2 Sustainable Governance 1.1.4 Integrity Management 1.3.2 Sustainable Supply Chain Management	31 35 54		●
102-17 Mechanisms for advice and concerns about ethics	1.1.4 Integrity Management	35		●

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► Governance				
102-18 Governance structure	1.1.1 Board of Directors Operation 1.1.2 Sustainable Governance	27 31		●
102-19 Delegating authority	1.1.2 Sustainable Governance	31		●
102-20 Executive-level responsibility for economic, environmental, and social topics	1.1.2 Sustainable Governance	31		●
102-21 Consulting stakeholders on economic, environmental, and social topics	1.1.2 Sustainable Governance	31		●
102-22 Composition of the highest governance body and its committees	1.1.1 Board of Directors Operation	27		●
102-23 Chair of the highest governance body	1.1.1 Board of Directors Operation	27		●
102-24 Nominating and selecting the highest governance body	1.1.1 Board of Directors Operation	27		●
102-25 Conflicts of interest	1.1.1 Board of Directors Operation	27		●
102-26 Role of highest governance body in setting purpose, values, and strategy	1.1.2 Sustainable Governance	31		●
102-27 Collective knowledge of highest governance body	1.1.1 Board of Directors Operation	27		●
102-28 Evaluating the highest governance body's performance	1.1.1 Board of Directors Operation 1.1.2 Sustainable Governance	27 31		●
102-29 Identifying and managing economic, environmental, and social impacts	1.1.2 Sustainable Governance	31		●
102-30 Effectiveness of risk management processes	1.1.2 Sustainable Governance 1.2 Implementing Risk Management	31 37		●
102-31 Review of economic, environmental, and social topics	1.1.2 Sustainable Governance	31		●
102-32 Highest governance body's role in sustainability reporting	About This Report 1.1.2 Sustainable Governance	4 31		●
102-33 Communicating critical concerns	1.1.2 Sustainable Governance	31		●
102-34 Nature and total number of critical concerns	1.1.2 Sustainable Governance	31		●
102-35 Remuneration policies	1.1.1 Board of Directors Operation	30		●
102-36 Process for determining remuneration	1.1.1 Board of Directors Operation	30		●
102-37 Stakeholders' involvement in remuneration	1.1.1 Board of Directors Operation 4.2.2 Compensation and Benefit	30 118		●
102-38 Annual total compensation ratio	1.1.1 Board of Directors Operation	30		●
102-39 Percentage increase in annual total compensation ratio	1.1.1 Board of Directors Operation	30		●



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► Stakeholder Engagement				
102-40 List of stakeholder groups	Materiality Analysis and Stakeholder Engagement	17		●
102-41 Collective bargaining agreements	4.3.2 Employer-employee Communication	131	No employee labor unions were formed before the end of the reporting period. No employees signed any collective agreement.	●
102-42 Identifying and selecting stakeholders	Materiality Analysis and Stakeholder Engagement	17		●
102-43 Approach to stakeholder engagement	Materiality Analysis and Stakeholder Engagement	23		●
102-44 Key topics and concerns raised	Materiality Analysis and Stakeholder Engagement	24		●
► Reporting Practice				
102-45 Entities included in the consolidated financial statements	About This Report About UMC	4 5		●
102-46 Defining report content and topic Boundaries	Materiality Analysis and Stakeholder Engagement	17		●
102-47 List of material topics	Materiality Analysis and Stakeholder Engagement	20		●
102-48 Restatements of information	-	-	There is no restatement of information from previous report.	●
102-49 Changes in reporting	About This Report Materiality Analysis and Stakeholder Engagement	4 19		●
102-50 Reporting period	About This Report	4		●
102-51 Date of most recent report	About This Report	4		●
102-52 Reporting cycle	About This Report	4		●
102-53 Contact point for questions regarding the report	About This Report	3		●
102-54 Claims of reporting in accordance with the GRI Standards	About This Report	4		●
102-55 GRI content index	Appendix I GRI Standards: 2016 Content Index	160		●
102-56 External assurance	About This Report Appendix VI Third Party Assurance Statement	4 173		●



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► Ethical Corporate Management				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	1.1.4 Integrity Management	35		●
103-3 Evaluation of the management approach	1.1.4 Integrity Management	35		●
GRI 205 Anti-corruption				
205-1 Operations assessed for risks related to corruption	1.1.4 Integrity Management	35		●
205-2 Communication and training about anti-corruption policies and procedures	1.1.4 Integrity Management	35		●
205-3 Confirmed incidents of corruption and actions taken	1.1.4 Integrity Management	35		●
► Procurement and Supplier Management				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	1.3 Building Sustainable Supply Chain	50		●
103-3 Evaluation of the management approach	1.3 Building Sustainable Supply Chain	50		●
GRI 204 Procurement Practices				
204-1 Proportion of spending on local suppliers	1.3.1 Types of Supply Chain and Procurement	51		●
GRI 308 Supplier Environmental Assessment				
308-1 New suppliers that were screened using environmental criteria	1.3.2 Sustainable Supply Chain Management	52		●
308-2 Negative environmental impacts in the supply chain and actions taken	1.3.2 Sustainable Supply Chain Management	55		●
GRI 414 Supplier Social Assessment				
414-1 New suppliers that were screened using social criteria	1.3.2 Sustainable Supply Chain Management	52		●
414-2 Negative social impacts in the supply chain and actions taken	1.3.2 Sustainable Supply Chain Management	55		●



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► Innovation Management and Intellectual Property Rights Protection				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	2.1 Innovation & Technology Development	61		●
103-3 Evaluation of the management approach	2.1 Innovation & Technology Development	61		●
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 1.1.5 Legal Compliance	61 36		●
► Customer Service Quality				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	2.2 Customer Satisfaction	68		●
103-3 Evaluation of the management approach	2.2 Customer Satisfaction	68		●
UMC Specific Topic - Quality of Customer Service				
Quality of Customer service Strengthen service quality, improve customer satisfaction, and maintain customer relationships.	2.2.1 Continuous Quality Improvement and Innovation 2.2.2 Enhancing Communication with Customers	69 71		●
GRI 418 Customer Privacy				
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	2.2.3 Customer Privacy Protection	71	There were no cases during the reporting period.	●
► Product Liability and Lifecycle Assessment				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	2.3 Product Responsibility	73		●
103-3 Evaluation of the management approach	2.3 Product Responsibility	73		●



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► Product Liability and Lifecycle Assessment				
UMC Specific Topic - Product Liability and Lifecycle Assessment				
No scrapped products resulting from violation of regulations/ customers' demand	2.3 Product Responsibility	73		●
► Climate Strategy and Action				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	3.1 Climate Action	80		●
103-3 Evaluation of the management approach	3.1 Climate Action	80		●
GRI 305 Emissions				
305-1 Direct (Scope 1) GHG emissions	3.1.1 Carbon Emissions Management	81		●
305-2 Energy indirect (Scope 2) GHG emissions	3.1.1 Carbon Emissions Management	81		●
305-3 Other indirect (Scope 3) GHG emissions	3.1.1 Carbon Emissions Management	82		●
305-4 GHG emissions intensity	3.1.1 Carbon Emissions Management	81		●
305-5 Reduction of GHG emissions	3.1.2 GHG Reduction	83		●
305-6 Emissions of ozone-depleting substances (ODS)	-	-	Ozone-depleting substances were not used or emitted during the reporting period.	●
305-7 Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	3.5 Air Pollution Control	106		●
GRI 307 Environmental Compliance				
307-1 Non-compliance with environmental laws and regulations	1.1.5 Legal Compliance	36	No non-compliance with environmental laws and regulations occurred during the reporting period.	●
► Energy Management				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	3.2 Energy Management	85		●
103-3 Evaluation of the management approach	3.2 Energy Management	85		●

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► Energy Management				
GRI 302 Energy				
302-1 Energy consumption outside of the organization	3.2.1 Energy Mix	86		●
302-2 Energy consumption outside of the organization	-	-	UMC's external energy consumption is covering the up-/down-stream of the value chain. The Company has conducted GHG inventory annually to seize the potential reduction from scope 1 and 2. For more information, please refer to 3.1.1 Carbon Emissions Mangement	●
302-3 Energy intensity	3.2.1 Energy Mix	86		●
302-4 Reduction of energy consumption	3.2.2 Energy Efficiency Improvement	88		●
302-5 Reductions in energy requirements of products and services	1.2.5 Managing Climate-related Risks and Opportunities 2.1 Innovation & Technology Development 2.3.2 Product Environmental Impact Assessment	45 61 76		●
► Water and Wastewater Management				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	3.3 Water Resources Management	90		●
103-3 Evaluation of the management approach	3.3 Water Resources Management	90		●
GRI 303 Water and Effluents: 2018				
303-1 Interactions with water as a shared resource	3.3.1 Water Use Structure 3.3.3 Water Pollution Control	91 96		●
303-2 Management of water discharge-related impacts	3.3.3 Water Pollution Control	96		●
303-3 Water withdrawal	3.3.1 Water Use Structure	91		●
303-4 Water discharge	3.3.1 Water Use Structure	91		●
303-5 Water consumption	3.3.1 Water Use Structure	91		●
GRI 307 Environmental Compliance				
307-1 Non-compliance with environmental laws and regulations	1.1.5 Legal Compliance	36	No non-compliance with environmental laws and regulations occurred during the reporting period.	●



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► Waste and Resource Utilization Efficiency				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	3.4 Waste Management	100		●
103-3 Evaluation of the management approach	3.4 Waste Management	100		●
GRI 306 Waste: 2020				
306-1 Waste generation and significant waste-related impacts	3.4 Waste Management	100		●
306-2 Management of significant waste-related impacts	3.4.2 Source Reduction 3.4.3 Circular Economy Promotion 3.4.4 Contractor Management	102 103 104		●
306-3 Waste generated	3.4.1 Waste Output Structure	101		●
306-4 Waste diverted from disposal	3.4.1 Waste Output Structure	101		●
306-5 Waste directed to disposal	3.4.1 Waste Output Structure	101		●
GRI 307 Environmental Compliance				
307-1 Non-compliance with environmental laws and regulations	1.1.5 Legal Compliance	36	No non-compliance with environmental laws and regulations occurred during the reporting period.	●
► Talent Attraction and Retention				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	4.2 Focusing on Recruitment and Cultivation	113		●
103-3 Evaluation of the management approach	4.2 Focusing on Recruitment and Cultivation	113		●
GRI 401 Employment				
401-1 New employee hires and employee turnover	4.2.1 Human Resource Development	114		●
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	4.2.2 Compensation and Benefit	118		●
401-3 Parental leave	4.2.1 Human Resource Development	117		●
GRI 201 Economic Performance				
About UMC				
201-1 Direct economic value generated and distributed	1.1.3 Business Performance 4.2.2 Compensation and Benefit 5.1 Promote Common-Prosperity Society	34 118 143	For more information, please refer to the 2021 Annual Report (page 172).	●

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► Talent Attraction and Retention				
201-2 Financial implications and other risks and opportunities due to climate change	1.1.3 Business Performance 1.2.5 Managing Climate-related Risks and Opportunities	34 45		●
201-3 Defined benefit plan obligations and other retirement plans	4.2.2 Compensation and Benefit	119		●
201-4 Financial assistance received from government	-	-	For more information, please refer to the 2021 Annual Report (page 299).	●
GRI 202 Market Presence				
202-1 Ratios of standard entry level wage by gender compared to local minimum wage	4.2.2 Compensation and Benefit	118		●
202-2 Proportion of senior management hired from the local community	4.2.1 Human Resource Development	115		●
► Employee Safety and Health				
GRI 103 Management Approach				
103-1 Explanation of the material topic and its Boundary	Materiality Analysis and Stakeholder Engagement	20		●
103-2 The management approach and its components	4.3.3 Maintaining Workplace Safety	134		●
103-3 Evaluation of the management approach	4.3.3 Maintaining Workplace Safety	134		●
GRI 403 Occupational Health and Safety: 2018				
403-1 Occupational health and safety management system	4.3.3 Maintaining Workplace Safety	135		●
403-2 Hazard identification, risk assessment, and incident investigation	4.3.3 Maintaining Workplace Safety	135		●
403-3 Occupational health services	4.3.1 Creating a Reassuring Workplace 4.3.3 Maintaining Workplace Safety	128 137		●
403-4 Worker participation, consultation, and communication on occupational health and safety	4.3.3 Maintaining Workplace Safety	135		●
403-5 Worker training on occupational health and safety	4.3.3 Maintaining Workplace Safety	136		●
403-6 Promotion of worker health	4.3.1 Creating a Reassuring Workplace 4.3.3 Maintaining Workplace Safety	126 137		●
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	4.3.1 Creating a Reassuring Workplace 4.3.3 Maintaining Workplace Safety	126 138		●
403-8 Workers covered by an occupational health and safety management system	4.3.3 Maintaining Workplace Safety	135		●
403-9 Work-related injuries	4.3.3 Maintaining Workplace Safety	136		●
403-10 Work-related ill health	4.3.1 Creating a Reassuring Workplace 4.3.3 Maintaining Workplace Safety	128 137	There is no case of legally defined occupational disease during the reporting period. For the number of cases of mental and physical health related problems in employees, please refer to the Section 4.3.1 Creating a Reassuring Workplace.	●



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Topic / Code	Accounting Metric	Category	Reference	Page	Summary	External Assurance
► Greenhouse Gas Emissions TC-SC-110a.1	(1) Gross global Scope 1 emissions (2) Amount of total emissions from perfluorinatedcompounds	Quantitative	3.1.1 Carbon Emissions Management	81, 83	(1) The UMC Scope 1 direct emissions are 498,907 tons of CO ₂ e. If the GWP value is adopted from the IPCC 5th Assessment Report 2014, the direct greenhouse gas emissions will be 449,238 tons of CO ₂ e. (2) The UMC F-GHGs (Fluorinated greenhouse gas) emissions is 372,296 tons of 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 Reduction	83	UMC Scope 1 emissions is mainly due to the F-GHGs used in the manufacturing process. Over the years, UMC has promoted emissions reduction measures including source reduction with gas substitution, and the installation of high-efficiency local scrubbers. Currently, UMC's Green 2025 emissions reduction plan is in progress, and the Company plans to achieve the goal of reducing F-GHGs emissions per unit area of wafer by 65% compared to the base year (2010).	●
► Energy Management in Manufacturing TC-SC-130a.1	(1) Total energy consumed (2) Percentage grid electricity (3) Percentage of energy it consumed that is renewable energy	Quantitative	3.2.1 Energy Mix	86	(1) Total energy consumption is 2,835,163 MWh (1.00199 x10 ⁷ GJ). (2) Total electricity consumption is 2,635,744 MWh (9.488678 x10 ⁶ GJ) (3) Total renewable energy consumption is 4,321 MWh (Ratio of renewable energy used <1%).	●
► Water Management TC-SC-140a.1	(1) Total water withdrawn (2) Total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	3.3.1 Water Use Structure	91、93	(1) UMC's total water withdrawal is 16.213 million tons and the total water withdrawal of UMC Group is 25.919 million tons. The subsidiary HJ is located at Suzhou which was identified as water-stress area by WRI. The water withdrawal of HJ was accounted for 9.06% of the Group. (2) UMC's total water consumption is 5.537 million tons and the total water consumption of UMC Group is 6.806 million tons. The water withdrawal of the subsidiary HJ was accounted for 2.83% of the Group.	●
► Waste Management TC-SC-150a.1	Amount of hazardous waste from manufacturing, percentage recycled	Quantitative	3.4.1 Waste Output Structure	101	UMC's total hazardous waste volume in 2021 was 31,070 tons, accounting for 62.1% of total waste and 89.97% of recyclable waste.	●
► 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	4.3.3 Maintaining Workplace Safety	135	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	1.1.5 Legal Compliance	36	There were no incidents of such violations in 2021 and the total related monetary loss was NT\$0.	●



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Topic / Code	Accounting Metric	Category	Reference	Page	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	116	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: 93.3% for Taiwan (including its subsidiary Wavetek); 26.2% for Singapore; 94.8% for its Chinese subsidiaries HJ and USCXM; and 98.2% 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	74	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 system-level 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	59	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	1.1.5 Legal Compliance	36	There were no incidents of such violations in 2021 and the total related monetary loss was NT\$0.	●
► Activity Metrics TC-SC-000.A	Total production	Quantitative	About UMC	5	In 2021, UMC, as a whole, manufactured and integrated approximately 9.862 million pieces of 8-inch equivalent wafers.	●
► Activity Metrics TC-SC-000.B	Percentage of production from owned facilities	Quantitative	About UMC	5	In 2021, 100% of UMC's production came from its own fabs.	●

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Appendix III: TCFD Disclosure Comparison Table

Dimension	Recommended Disclosures	Reference	Page	External Assurance
► Governance	The board's oversight of climate-related risks and opportunities.	1.1.1 Board of Directors Operation 1.2.5 Managing Climate-related Risks and Opportunities	27 45	●
	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-related Risks and Opportunities	31 37 45	●
	The climate-related risks and opportunities the organization has identified over the short, medium, and long term.			●
► Strategy	The impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	1.2.5 Managing Climate-related Risks and Opportunities	47	●
	The resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.			●
	The organization's processes for identifying and assessing climate-related risks.	1.2.5 Managing Climate-related Risks and Opportunities	46	●
► Risk Management	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-related Risks and Opportunities	37 40 45	●
	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-related Risks and Opportunities	37 40 46	●
	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-related Risks and Opportunities	46	●
► Metrics and Targets	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	1.2.5 Managing Climate-related Risks and Opportunities 3.1.1 Carbon Emissions Management	47 81	●
		1.1.2 Sustainable Governance 2.1.1 Robust Wafer Manufacturing Services	31 62	
	Targets used by the organization to manage climate-related risks and opportunities and performance against targets.	3.1.2 Carbon Assets Arrangement 3.2.1 Energy Mix 3.3.1 Water Use Structure 3.3.2 Water Conservation	83 86 91 94	●

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Appendix IV: United Nation Global Compact Index

10 Principles	Reference	Page
Human Rights		
Businesses should support and respect the protection of internationally proclaimed human rights.		
4.1 Enforce Human Rights Management	109	
Make sure that they are not complicit in human rights abuses.	1.3.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	52 109
Labor		
Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	4.3.2 Employer-employee Communication	130
The elimination of all forms of forced and compulsory labor.	4.1 Enforce Human Rights Management	109
The effective abolition of child labor.	4.1 Enforce Human Rights Management	109
The elimination of discrimination in respect of employment and occupation.	4.1 Enforce Human Rights Management	109
Environment		
Businesses should support a precautionary approach to environmental challenges.	Chapter 3 Implementing Green Operations	78
Undertake initiatives to promote greater environmental responsibility.	Chapter 3 Implementing Green Operations	78
Encourage the development and diffusion of environmentally friendly technologies.	2.1 Innovation & Technology Development 2.3 Product Responsibility	61 73
Anti-Corruption		
Businesses should work against corruption in all its forms, including extortion and bribery.	1.1.4 Integrity Management	35

Appendix V: ISO 26000 Index

Core Subjects and Issues	Reference	Page
Organizational Governance		
Decision-making processes and structures		
1.1 Excelling Corporate Governance	27	
Human Rights		
1.3.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	52 109	
Due diligence	1.3.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	52 109
Human rights risk situations	1.3.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	52 109
Avoidance of complicity	1.1 Excelling Corporate Governance 4.1 Enforce Human Rights Management	27 109
Resolving grievances	1.1.4 Integrity Management 4.1 Enforce Human Rights Management 4.3.2 Employer-employee Communication	35 109 130
Discrimination and vulnerable groups	4.1 Enforce Human Rights Management 5.4 Commitment to Social Welfare	109 151
Civil and political rights	4.1 Enforce Human Rights Management	109
Economic, social and cultural rights	5.1 Promote Common-Prosperity Society	141
Fundamental principles and rights at work	4.1 Enforce Human Rights Management	109
Labor practices		
Employment and employment relationships	4.2 Focusing on Recruitment and Cultivation 4.3.2 Employer-employee Communication	113 130
Conditions of work and social protection	4.1 Enforce Human Rights Management 4.3 Protecting the Employees and the Work Environment	109 125
Social dialogue	Materiality Analysis and Stakeholder Engagement 4.3.2 Employer-employee Communication	17 130
Health and safety at work	4.3 Protecting the Employees and the Work Environment	125

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Appendix VI: Third Party Assurance Statement

The image shows three panels of the SGS Assurance Statement report for UMC's 2021 Sustainability Report. The left panel is the cover page with the SGS logo and title. The middle panel is the main body of the report, and the right panel is a summary or conclusion section.

ASSURANCE STATEMENT

SGS TAIWAN LTD.'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE UNITED MICROELECTRONICS CORPORATION'S SUSTAINABILITY REPORT FOR 2021

NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION
SGS Taiwan Ltd. (hereinafter referred to as SGS) was commissioned by UNITED MICROELECTRONICS CORPORATION (hereinafter referred to as UMC) to conduct an independent assurance of the Sustainability Report for 2021 (hereinafter referred to as the SR Report). The scope of the assurance, based on the SGS Sustainability Report Assurance methodology, included the sampled text, and data in accompanying tables, contained in the report presented during verification 2022/02/21-2022/04/06. SGS reserves the right to update the assurance statement from time to time depending on the level of report content discrepancy of the published version from the agreed standards requirements.

INTENDED USERS OF THIS ASSURANCE STATEMENT
This Assurance Statement is provided with the intent of informing all UMC's stakeholders.

RESPONSIBILITY
The information in the UMC's SR Report of 2021 and its presentation are the responsibility of the directors or management body (as applicable) and the management of UMC. SGS has not been involved in the preparation of any of the material included in the Report.

OUR RESPONSIBILITY
Our responsibility is to express an opinion on the text, data, graphs and statements within the scope of verification, with the intention to inform all UMC's stakeholders.

ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE
The SGS ESG & Sustainability Report Assurance protocols used to conduct assurance are based upon internationally recognized assurance guidance, including the Principles contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) 101: Foundation 2018 for report quality, and the guidance on levels of assurance contained within the AA1000 series of standards and guidance for Assurance Providers.

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

Assurance Standard Options and Level of Assurance

- A. SGS ESG & SRA Assurance Protocols (based on GRI Principles and guidance in AA1000)
- B. AA1000ASv3 Type 2 High Level (AA1000AP Evaluation plus evaluation of Specified Performance Information)

SCOPE OF ASSURANCE AND REPORTING CRITERIA
The scope of the assurance included evaluation of quality, accuracy and reliability of specified performance information as detailed below and evaluation of adherence to the following reporting criteria:

Reporting Criteria Options

- 1. GRI Standards (Comprehensive)
- 2. AA1000 Accountability Principles (2018)
- 3. SASB

Evaluation of content veracity of the sustainability performance information based on the materiality determination at a high level of severity for UMC and moderate level of severity for subentities, joint ventures, and applicable aspect boundaries relative to the organization covered by this report.

Evaluation of the report against the requirements of Global Reporting Initiative Sustainability Reporting Standards (101, 201, 301, 400 and 400 series) claimed in the GRI content index as material and in accordance with;

Evaluation of the report against the SAB Standards and Metrics included in the SEMICONDUCTORS Sustainability Accounting Standard (VERSION 2018-10) and conducted alongside an evaluation of assurance assurance at moderate level of severity.

ASSURANCE METHODOLOGY
The assurance completed a combination of pre-assurance research, interviews with relevant employees, stakeholders, SAB committee members and the senior management in Taiwan, documentation and record review and validation with external bodies prior stakeholders where relevant.

LIMITATIONS AND MITIGATION
Financial data drawn directly from independently audited financial accounts and GHG emissions disclosures of entities' subsidiaries adopted ISO 14064-1/2006 have not been checked back to source as part of this assurance process.

STATEMENT OF INDEPENDENCE AND COMPETENCE
The SGS Group of Companies is the world leader in inspection, testing and verification, operating in more than 140 countries worldwide. Our capabilities include management systems and service certification, quality, environmental, social and ethical auditing and testing, environmental, social and sustainability risk assurance. SGS affirm our independence from UMC, being free from bias and conflicts of interest with the organization, its auditees and stakeholders.

THE ASSURANCE TEAM
The assurance team was assembled based on their knowledge, experience and qualifications for this assignment, and comprised auditors registered with ISO 26000, ISO 20121, ISO 50001, SA8000, RBA, GMIS, EMIS, SAIS, OPRM, CFP, WFP, CHG Verification and GHG Validation Lead Auditors and experience on the SRA Assurance service providers.

VERIFICATION/ASSURANCE OPINION
On the basis of the methodology described and the verification work performed, we are satisfied that the specified performance information included in the scope of assurance is accurate, reliable, has been fairly stated and has been prepared, in all material respects, in accordance with the reporting criteria.

We believe that the organization has chosen an appropriate level of assurance for this stage in their reporting.

AA1000 ACCOUNTABILITY PRINCIPLES (2018) CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

Integrity
UMC has demonstrated a good commitment to stakeholder inclusivity and stakeholder engagement. A variety of engagement efforts such as survey and communication to employees, customers, investors, suppliers, sustainability experts, and other stakeholders are implemented to underpin the organization's understanding of stakeholder concerns. For future reporting, UMC has been communicating with stakeholders in an appropriate, transparent and timely manner, as per UMC's established boundaries of disclosure.

Materiality
UMC has established effective processes for determining issues that are material to the business. Formal review and identification of material and those issues that are material to each group and the report addresses those of highest importance and those that are most relevant to their importance and priority to those stakeholders. The materiality determination has been undertaken, initially and aligned with UMC's processes for strategy development, decision-making, operational management and reporting.

Stakeholders
The report includes reference given to stakeholder engagement and outreach for stakeholder feedback. UMC has responded to its material accountability topics, related impacts and stakeholders in a comprehensive, accurate, timely, accessible and balanced manner.

Impact
UMC has demonstrated a process on identifying impacts that fairly encompasses a range of environmental, social and governance topics from wide range of sources, such as activities, policies, programs, decisions and products and services, as well as any related performance. Impacts related to material topics were in place at target setting with quantitative and qualitative measurements and evaluation.

GLOBAL REPORTING INITIATIVE REPORTING STANDARDS CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

The report, UMC's SR Report of 2021, is adequately in line with the GRI Standards in accordance with Comprehensive Option. The material topics and their boundaries within and outside of the organization are properly defined in accordance with GRI's Reporting Principles for Defining Report Content. Disclosure of identified material topics and boundaries, and stakeholder engagement, GRI 103-40 to GRI 103-47, are correctly located in content index and report. For future reporting, when assessing impacts, UMC should consider economic, environmental, human rights, and other societal challenges at local, regional, and global levels related to sectors and the geographic location of its activities and business relationships. By means of diversified approaches, UMC could control and mitigate negative impacts effectively.

SAB CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

UMC has referenced with SAB's Standard, SEMICONDUCTORS, VERSION 2018-10 to disclose information of material topics that are vital for enterprise value creation. The reporting boundaries of the disclosed information correspond to the financial data reported in UMC's audited consolidated financial statement. UMC used SAB accounting and activity metrics to assess and manage the topic-related risks and opportunities, where relevant sustainability information was assessed for its accuracy and completeness to support the comparability of the data reported. Process to identify, assess, and manage topic-related data and opportunities were integrated into UMC's overall management process. It is recommended that regular monitoring of peer disclosure can help UMC better understand evolving expectations—among investors and other stakeholders and ensure to provide comparable information.

Signed:
For and on behalf of SGS Taiwan Ltd.

David Huang
Senior Director
Taipei, Taiwan
03 June, 2022
www.sgs.com

**AA1000 Licensed Report
000-8/V3-0AR7C**

Appendix VII: ESG Data

The statistic covers UMC excluding subsidiaries.

► Governance & Economic

Indicator	2018	2019	2020	2021
Directors of the Board Unit: seat	9	9	8	9
Independent directors of the Board Unit: seat	4	4	4	5
Proportion of female directors Unit: %	11.1	11.1	12.5	22.2
Average attendance rate of Board meeting Unit: %	97.1	100.0	97.2	98.7
Revenue from sustainable products as % of total revenue ^{Note} Unit: %	—	—	66.9	68.7
Accumulated granted patents worldwide Unit: number	12,992	13,507	13,991	14,423

Note: 68.7% of total revenue derived from sustainable products in 2021, with 57.1% from low power consumption, low leakage, and power management products, 5.8% from automotive chips which used in advanced driver assistance systems (ADAS) and powertrain, etc., and 5.8% from microcontroller unit (MCU) and epidemic prevention & medical related products.

► Environment | GHG

Indicator	2018	2019	2020	2021
F-GHG emission per unit product (wafer weight) Unit: Kg F-GHGs/ton	116.9	90.1	85.1	83.0
Direct (Scope 1) greenhouse gas emissions Unit: ton CO ₂ e	595,576	512,741	539,321	498,907
Indirect (Scope 2) greenhouse gas emissions Unit: ton CO ₂ e	1,364,947	1,317,572	1,287,248	1,298,439
GHG emission per unit product (wafer area)(Scope 1 & 2) Unit: tCO ₂ e/wafer-m ²	9.74	9.27	8.27	7.38
Others indirect (Scope 3) greenhouse gas emissions Unit: ton CO ₂ e	1,967,773	2,073,094	2,260,902	2,717,754

► Environment | Energy

Indicator	2018	2019	2020	2021
Total energy consumption (including renewable energy) Unit: MWh	2,740,231	2,725,644	2,782,754	2,835,163
Renewable energy production for self-consumption Unit: MWh	695	693	649	2,146

► Environment | Water

Indicator	2018	2019	2020	2021
Total water withdrawal Unit: 1,000 m ³	15,818	15,637	16,200	16,213
Total water discharge Unit: 1,000 m ³	10,821	10,788	10,914	10,676
Total water consumption Unit: 1,000 m ³	4,997	4,849	5,286	5,537
Third-party water - Municipal Water Unit: 1,000 m ³	11,754	11,567	12,232	12,024
Third-party water - Renewable Water Unit: 1,000 m ³	3,153	3,242	3,263	3,324
Condensate water and rainwater Unit: 1,000 m ³	911	828	705	733
Surface freshwater/underground water/salt water Unit: 1,000 m ³	0	0	0	132
Water withdrawn per unit product Unit: m ³ /wafer-m ²	78.58	79.18	73.34	66.54
Water consumed per unit product Unit: m ³ /wafer-m ²	24.82	24.55	23.93	22.72

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► Environment | Water

Indicator	2018	2019	2020	2021
Water recycling rate (Company-wide recovery rate) Unit: %	76.1	75.9	75.6	76.0
Chemical oxygen demand (COD) Unit: 1,000 ton	1.79	1.50	1.42	0.90

► Environment | General Waste

Indicator	2018	2019	2020	2021
Total amount of waste re-use/reutilization Unit: ton	6,665	6,032	7,641	8,557
Total amount of waste outsourcing Unit: ton	2,154	1,924	1,955	1,887
Total amount of landfill waste Unit: ton	1,543	1,447	1,429	1,280
Total amount of incineration but serving as fuel Unit: ton	405	302	382	376
Total amount of incineration Unit: ton	206	175	144	231
Total amount of other treatment ^{Note} Unit: ton	0	0	0	0

Note: Other methods of waste treatment include solidification, chemical, and overseas treatment.

► Environment | Hazardous Waste

Indicator	2018	2019	2020	2021
Total amount of waste re-use/reutilization Unit: ton	19,928	18,250	19,813	21,977
Total amount of waste outsourcing Unit: ton	3,011	2,775	2,846	3,115
Total amount of landfill waste Unit: ton	29	33	28	25

► Environment | Hazardous Waste

Indicator	2018	2019	2020	2021
Total amount of incineration but serving as fuel Unit: ton	1,869	1,652	1,915	2,153
Total amount of incineration Unit: ton	613	482	276	299
Total amount of other treatment^I Unit: ton	500	608	627	638

Note: Other methods of waste treatment include solidification, chemical, and overseas treatment.

► Environment | Costs and Benefits

Indicator	2018	2019	2020	2021
Amount of fines related to environmental violations^I Unit: million NT\$	0	0	0	0
Cost saving^{II} Unit: million NT\$	449	449	469	477
Capital investments Unit: million NT\$	540	434	554	1,670
Operating expenses Unit: million NT\$	1,317	1,225	1,193	1,463

Note: I. Other methods of waste treatment include solidification, chemical, and overseas treatment.

II. Cost saving mainly calculates the benefits generated through the implementation of management measures for water, electricity, waste, natural gas, and GHGs.

► Social

Indicator	2018	2019	2020	2021
Employee turnover rate Unit: %	10.9	8.7	7.8	10.5
Female management position rate Unit: %	11.7	12.2	12.3	12.2
No. of people with disabling injuries Unit: person	4	7	4	9
People with disabling injuries rate(No. of people with disabling injuries/total employees) Unit: %	0.03	0.05	0.03	0.06
Total amount of public welfare funds Unit: million NT\$	87.53	146.96	161.94	241.17

► NET ZERO



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