



The background of the image features an aerial photograph of a dense forest. Overlaid on this are several thick, white, diagonal stripes that intersect at various angles, creating a sense of depth and movement. The forest floor is visible through the openings of these stripes.

CORPORATE SOCIAL RESPONSIBILITY 2020 REPORT



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UMC





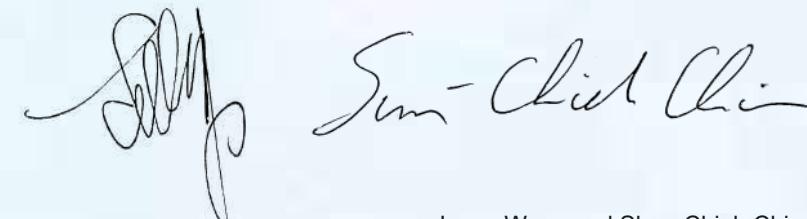
ESG STEERING COMMITTEE CHAIRMAN MESSAGE

To those who are concerned about UMC sustainability:

2020 marked the 40th Anniversary of UMC, a year that the COVID-19 pandemic has impacted the whole world, disrupted people's lifestyles and brought challenges to business operations. Nevertheless, the new working patterns along with the changes in market demand derived from such a situation have opened up an era of prosperity, which is also an epoch-making period, for the semiconductor industry. In the face of this turbulent situation, UMC's management team works together with all colleagues to seek various growth opportunities in technology, manufacturing, business and sustainable development by grasping market trends, with a proactive attitude and flexible responses.

UMC has a long-standing sustainable vision of "People-oriented, Environmental Symbiosis, and Social Prosperity". By combining our technological innovation capabilities with the spirit of sustainable coexistence, we fulfill our responsibilities as a global citizen to actively respond to the expectations of the environment and society, together with our value chain partners. Our deep commitment to sustainability has allowed UMC to be selected as a constituent of the Dow Jones Sustainability Indexes (DJSI) for 13 consecutive years; in Taiwan, we continue to be listed on the "FTSE4GOOD Emerging Index" and the "FTSE4GOOD TIP Taiwan ESG Index", keeping pace with the world's top companies. In response to greater levels of concerns about ESG governance, we established an "ESG Steering Committee" in 2020 Q4, consisting of our core operating executives, and appointed a Chief Sustainability Officer. In doing so, it means that sustainability will be taken into account in all of UMC's operational decisions in the future. We also hope that through organizational transformation and reshaping, sustainability will be deeply rooted as the core of UMC's culture and become the DNA of our employees, allowing UMC to achieve balanced ESG practices while pursuing operational performance.

In the past year, UMC achieved fruitful results in all aspects of ESG. In terms of corporate governance, UMC is one of the few listed companies that has been consistently ranked in the top 5% since the first Corporate Governance Evaluation was held in 2015. As regards environmental sustainability, we completed our 5-year plan of "Green 2020", successfully improved the efficiency of energy and resource use in our production process, and further set a more ambitious goal of Green 2025. With respect to social value creation and engagement, we continue to reach out to the most needy in our society through volunteer activities. In addition to providing services, we also donate UVD disinfection robots with our value chain partners to help prevent pandemic outbreaks by enhancing the frontline care. The various sustainable initiatives of UMC can also be found in this report.



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

In the future, we will continue to work hard for the sustainable development of mankind. Furthermore, together with our global operating partners and stakeholders, we will make the greatest possible contribution to the positive development of the environment, society and economy overall. We would like to express Our sincere gratitude to all of you who are concerned about sustainable development and wish you all peace and good health.





ABOUT THIS REPORT

This report is the 16th Corporate Social Responsibility Report issued by UMC and the 21th consecutive public non-financial annual report. UMC consistently upholds the principles of sincerity, pragmatism, transparency and joint sustainable development, and discloses its corporate sustainability philosophy and approaches to the general public. This report makes public the implementation of the 2020 UMC corporate sustainable development and social responsibility.

Scope Note

Information disclosed in this CSR Report includes various performance metrics and data of environmental protection, corporate governance, and community participation work carried out by UMC from January 1 to December 31, 2020, along with the major events till March 31, 2021.

The businesses of the Company and its affiliates range from the wafer fabrication, electronics, opto-electronics, investment, insurance, and trading of goods. In 2020, UMC's wafer fabrication and integration division accounted for the majority (more than 99%) of total sales, while the rest came from the new business unit engaged in solar energy.

The report is based on UMC Taiwan and Singapore, as well as ESG trends, industry characteristics and results of material issue identification, to also include the information of subsidiaries, 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). For the economic performance and financial information of other related joint ventures and subsidiaries, please refer to the Company's 2020 Annual Report on page 143 for the organization information of the related party.

Reporting Guidelines and Principles

The main structure of this report is based on the material sustainability issues and stakeholder issues identified in 2020, and explains UMC's impacts and feedback on economic, environmental, and social issues respectively. In addition, in accordance with the assurance standards and principle of the AA1000AS v3 (AA1000 Assurance Standard v3), UMC discloses the information related to the CSR implementation, which is compiled according to the global standards for sustainability reporting (GRI Standards 2016) issued by the Global Reporting Initiative (GRI), the Semiconductors Sustainability Accounting Standard 2018 issued by the Sustainability Accounting Standards Board (SASB), and the 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 14064-1:2016 standards and verified by DNV GL Business Assurance Co. Ltd. Taiwan. For further details, please refer to Chapter 3.



Internal Management Process and Issuing of this Report

After being approved by the top management of each department, this report is sent to the Corporate Sustainability Committee for inspection and review. The report is issued after being approved by the chairman of the committee.



2020 Corporate Social Responsibility Report: Issued in July 2021.

2021 Corporate Social Responsibility Report: Scheduled to be issued in July 2022.

In support of environmental protection, a paperless, electronic version of this report is posted on the company website. 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 2021 according to the AA1000 Assurance Standard (2008) TYPE II, High level assurance. The SGS ASSURANCE STATEMENT is attached in the appendix of this report.

Your Feedback

For any questions or comment about the report content or activity, please contact us at:



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UMC SUSTAINABLE PERFORMANCE HIGHLIGHTS

Important Achievements and Sustainable Performances in 2020

Environmental Endeavors

1.169 million tons of F-GHGs emissions reduction

The company-wide reduction of greenhouse gas (F-GHGs) emissions reached 1.169 million tons, and the emission intensity was reduced by 63.3% compared with the base year (2010), which remarkably exceeded the 30% reduction target set by the World Semiconductor Council (WSC).

Total amount of water saved is 212,000 tons company-wide

The total amount of water saved company-wide is 212,000 tons, effectively reducing the cost by NT\$4.43 million.

61,719 MWh company-wide energy saving

The company-wide energy saving performance was amounted to 61,719 MWh, which effectively saved NT\$128 million in cost and reduced CO₂ emissions by 27,781 tons.

Over 90% waste reuse rate

The amount of waste reused was 37,504 tons, with a reuse rate of over 90%, and the benefit from the recycling of waste was amounted to approximately NT\$37 million.

NT\$ 130 million in green procurement

Green procurement amount in 2020 reached NT\$130 million, and was awarded the "Green Procurement Performance Unit" by the Environmental Protection Agency of the Executive Yuan demonstrating UMC's commitment to green procurement.



Operation Management

>50% Non-executive directors

There are 4 independent directors and 1 independent outside director. The percentage of non-executive directors exceeds 50% of the total seats. In 2020, an external performance evaluation of the Board of Directors was conducted.

EPS has tripled

Consolidated revenue increased significantly by 19%, reaching NT\$176.82 billion; annual capacity utilization rate increased by 8% to 97%, earnings per share grew 3 times to NT\$2.42.

NT\$ 9.54 billion R&D expenses

R&D expenses amounted to NT\$9.54 billion, accounting for 7% of total revenue.

13,991 granted patents

Developed 484 domestic and foreign patents, accumulating to 13,991 granted patents worldwide.

100% of new suppliers have signed the supplier code of conduct

100% of the new suppliers signed the "employee business ethics clause" and the "supplier code of conduct," accumulatively more than 3,500 suppliers have signed.



Social Participation

Benefiting 60,167 person-times in total

Volunteers from UMC Foundation and UMC employee social clubs provided 6,425.4 hours of volunteering services, benefiting 60,167 person-times in total.

13,235 person-times participated of the talent Cultivation program

The PTP and AIED^{Note} programs have continued to cultivate outstanding talents in the semiconductor industry and have recruited 6,201 members by the end of 2020. Conducted industry-academia cooperation programs with 13 key colleges, including equipment internships, nanotechnology classes, and career guidance support, etc., and a total of 7,034 person-times participated.

30 projects were supported by "UMC Eco Echo Award"

Initiated the "UMC Eco Echo Award", which provides NT\$3 million annually to support ecological conservation. A total of 9 units was awarded in 2020, and 30 projects were implemented across Taiwan.

10 units were beneficial by the energy saving services

Provided energy saving services to 10 units, reducing 1,347 tons of CO₂ emission and helping them save NT\$8.493 million on utility bills.

1,567 Daan Forest Parks' annual carbon absorption

From 2017 to 2020, a total of 409,000 tons of CO_{2e} was reduced, which is equivalent to the sum of 1,567 Daan Forest Parks' annual carbon absorption.





Sustainability Recognition

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

Dow Jones Sustainability Indices

Selected as a DJSI global component for the 13th consecutive year.



FTSE4Good Emerging Indexes & FTSE4Good TIP Taiwan ESG Index

Since the launch of the FTSE4Good TIP Taiwan ESG Index in 2017, UMC has continuously been one of the index constituents.



ISS ESG Corporate Rating

Rated "Prime" by ISS ESG Corporate Rating.



International CDP Organization Scoring

Achieved Leadership Level in the "Water Security Disclosure Project" and Management Level in the "Climate Change Disclosure Project".



Taiwan Corporate Sustainability Awards

Awarded the Corporate Sustainability Report Awards for 13 consecutive years (the third time to win the top rank in the category.)



Corporate Governance Accreditation for listed companies

Top 5% for 6 consecutive years, Corporate Governance Assessment Award of the TWSE.



National Enterprise Environmental Protection Award

Awarded the 2nd National Enterprise Environmental Protection Award.
(For 18 consecutive years, UMC's Taiwan fabs were awarded with the Enterprises Environmental Protection Award by the Environmental Protection Administration.)



Green Chemical Application and Innovation Award

Awarded the 2nd Green Chemical Application and Innovation Award by the Environmental Protection Administration.



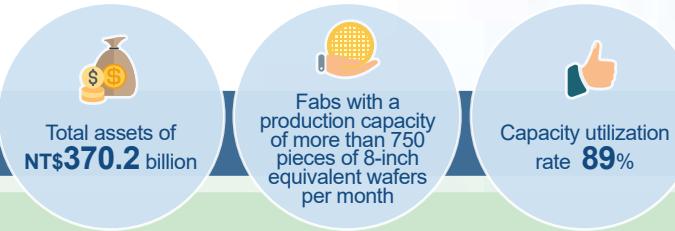
Excellence in Corporate Social Responsibility Award

Awarded the Excellence in Corporate Social Responsibility Award by the CommonWealth Magazine, ranking at No. 12 in the large enterprise category.



UMC's Six Major Capital Investments and Outputs

Hardware Resources



Financial Capital

The Meaning of Each Capital to UMC

Through operations and investments, the Company's daily operations, production and services are maintained.

Key Investment Projects

Financial structure strengthening, cost-competitive capacity expansion, and product portfolio adjustment.

Corresponding Sustainable Outputs in 2020

- Market capitalization increased by \$585.7 billion ($\uparrow 304\%$)
- Total consolidate revenue of \$176.8 billion ($\uparrow 19\%$)
- Earnings per share of \$2.42 ($\uparrow 295\%$)

Manufactured Capital

The Meaning of Each Capital to UMC

It includes 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.

Key Investment Projects

Capital expenditures of approximately US\$1 billion were mainly invested in the newly developed process equipment, and capacity expansion of Southern Taiwan Science Park Fab 12A and its subsidiaries, USCXM and HJ, as well as product portfolio optimization for each fab.

Corresponding Sustainable Outputs in 2020

- Annual foundry shipments reached 8.913 million pieces of 8-inch equivalent wafers ($\uparrow 24\%$)
- Capacity utilization rate of 96.9% ($\uparrow 8\%$)

Human Capital

The Meaning of Each Capital to UMC

By providing a good and positive working environment along with training, it can enhance the knowledge, experience, expertise, productivity and loyalty of employees.

Key Investment Projects

Promoted Holistic Health Management Program and health promotion activities.
Education and training costs amounted to NT\$44.49 million.
Salary and welfare expenses amounted to NT\$25.28 billion.

Corresponding Sustainable Outputs in 2020

- Employee engagement rate of 77.1% ($\uparrow 2\%$)
- Employee turnover rate of 7.8% ($\downarrow 0.9\%$)
- Average \$NT 3,110 training cost per employee ($\uparrow 5\%$)

Software Resources



Intellectual Capital

The Meaning of Each Capital to UMC

It enhances the Company's competitive advantage or generates intangible assets that exceed the Company's book value, including patents, R&D capabilities, and collaboration agreements.

Key Investment Projects

The overall number of patents granted has been growing steadily, with emphasis on patent portfolio to protect intellectual property rights of its technologies. Invested NT\$12.9 billion in R&D.

Corresponding Sustainable Outputs in 2020

- Revenue for wafers below 40 nm accounted for 36.9% of the total wafer sales ($\uparrow 2.5\%$)
- Obtained 484 domestic and foreign patents, with a total of 13,991 patents granted over the years.
- Customer satisfaction rate of 89.8% ($\uparrow 2.5\%$)

Natural Capital

The Meaning of Each Capital to UMC

Natural resource base, including minerals, water and raw materials.

Key Investment Projects

Promoted both the 369+ and Green 2020 Energy Resource Productivity Enhancement Programs to save water and electricity, and reduce waste and F-GHGs emissions. Environmental protection-related capital expenditures totaled over NT\$550 million. Green procurement amounted to NT\$130 million.

Corresponding Sustainable Outputs in 2020

- | | |
|--|---|
| • Water consumption reduced by 212,000 tons | • Waste volume reduced by 1,007 tons |
| • Electricity consumption reduced by 61,719 MWh (approximately 27,781 tons of CO ₂ e) | • F-GHGs emissions reduced by 1.169 million tons of CO ₂ e |

Social and Relationship Capital

The Meaning of Each Capital to UMC

The sum of resources or capabilities connected through social networks, including the maintenance of long-term partnerships with value chain partners and other stakeholders.

Key Investment Projects

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 \$5 million. Promoted volunteer services and Sowing Seeds of Hope Program, with a total of 6,425.4 hours spent in providing public services.

Corresponding Sustainable Outputs in 2020

- More than 900 people participated in the activities related to the 4th Eco Echo Award Program. In the 5th Eco Echo Award, a total of 30 entries were submitted
- UMC Energy Saving Service Team reduced about 1,337.2 tons of CO₂e emissions
- The recycling benefits of the Circular Economy Waste-to-Gold Project reached NT\$119 million
- More than 60,167 beneficiaries of public services



SPECIAL FEATURE: COVID-19 PREVENTION

PROVIDING CHIPS BY MEANS OF SUPER HOT RUN, UMC STRIVES TO COMBAT THE PANDEMIC IN THE FOREFRONT

The COVID-19 pandemic outbreaks have led to a global shortage of wafers. As a leader in the foundry industry, UMC has not only strengthened its own internal measures to prevent the pandemic, but has also made prompt and robust responses to ensure the just-in-time (JIT) production of wafers to go smoothly. In addition, UMC has also led its supply chain partners to speed up production, giving full play to its strengths and its value chain partners to protect the healthcare system in the frontline.



Ensure employees' health



Prevent supply chain disruption



Cooperate with hospitals



Promote Common-Prosperity Society



Internal advanced deployment for pandemic prevention

Supply Chain and Internal Pandemic Prevention Strategy

Supply Chain Strategy

To avoid supply chain disruptions caused by the pandemic, UMC has established the Property Management Pandemic Prevention Team, that is responsible to hold regular contingency meetings to check inventories of materials and suppliers' supply capacity, and activated the inter-fab material transfer mechanism to prevent material shortages resulting from the pandemic outbreaks. Additionally, UMC also gets to understand the status of its supplies (production/transportation/raw material stock) through COVID-19 Supply Chain Impact Surveys. Apart from that, pandemic prevention inventory standards have also been established, and UMC achieved 99% of the pandemic prevention inventory rate by shortening the delivery schedule, raising inventory levels of major and minor suppliers, and increasing UMC's stock levels.

★ Split Backup Mechanism

To ensure basic labor operation, UMC has taken pandemic prevention measures such as execution of working in different areas and splitting of traffic flow once (about one month) with 100% execution rate, and reducing of inter-fab activities, etc.

Colleague Pandemic Prevention Management

- To ensure that the health risks of employees are reduced, the Company's health promotion activities are all carried out in accordance with the announcement of the Taiwan Centers for Disease Control along with the pandemic prevention policy.
- For employees who canceled their travel trips due to the pandemic prevention policy, UMC provided subsidies of up to NT\$5,000 per person and NT\$20,000 per household to subsidize their losses as appropriate. In 2020, UMC subsidized nearly 500 people, amounting to NT\$1.35 million.

Fab Facility Improvement

In order to reduce the infection risk caused by physical contact among employees, UMC has set up infrared thermometers, purchased sinks and sensor toilet flush equipment, adjusted the frequency of environmental disinfection and air conditioning filter changing, and supplied alcohol disinfectant in public places, etc., so as to ensure that the Company is well-prepared with pandemic prevention materials.



Manufacturing process and end product applications

Chips for Medical Use



★ Speeding up the production process of medical use chips by means of super hot run wafer starts

- Microcontroller chips for medical use, such as forehead thermometer and so on.
- Chips for touch screen panel used on ventilators.
- Controller chips for storage systems of medical devices.

★ Protecting the most critical vaccine resources by ensuring proper temperature monitoring and controlling during vaccine delivery

- Medical-related sensor chip production and manufacture Chips for the production and manufacture of flow sensor used on ventilators.

Marc von Waldkirch, CEO of Sensirion:

"With its medically certified sensor solutions, Sensirion is an important hub for all manufacturers who need sensor technology to combat the COVID-19 pandemic. To maintain supply, it is essential that a manufacturer has the backing of upstream suppliers when it comes to raw materials such as semiconductor wafers. We would like to thank UMC for their incredible support to fight the pandemic together and are very happy about the excellent cooperation between our two companies."

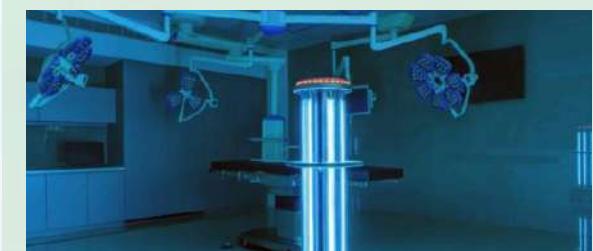


Social engagement / Community care

Donation of UVD Disinfection Robots

UMC works with the government to combat the pandemic outbreaks by leveraging the power of the high-tech industry. In 2020, UMC donated 5 UVD disinfection robots to Taipei Tzu Chi Hospital and Tai-An Hospital to practically support the healthcare workers on the frontline fighting the pandemic.

The donated UVD disinfection robots are able to quickly eliminate viruses in hospitals, operating rooms, and utensils in a wide range with their high-tech UV beams, achieving "Double E"- effectiveness and efficiency - for the disinfection work. They are suitable for various indoor high-risk areas, such as intensive care units, isolation wards, emergency rooms, screening stations, etc. Compared to the traditional UV disinfection approach which takes 2 to 8 hours to complete the process, a UVD disinfection robot can get the disinfection work done within 5 to 15 minutes. Through several donations, UMC has assisted government agencies to quickly support frontline healthcare workers and led Taiwanese enterprises to join in the effort to safeguard the health of the public.





STAKEHOLDER ENGAGEMENT

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

Principles for Communication with Stakeholders



Communication with Stakeholders

Mechanisms for Stakeholder Communication

Content	Frequency
Identified major stakeholder and concerned issues	
Integrated and coordinated by the Corporate Sustainability Committee.	Annually
Stakeholders communication plan and implementation	
<ul style="list-style-type: none"> Consultation and communication channels with stakeholders are established by respective sub-committees. 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 Corporate Sustainability Committee.	Once every 6 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/ Periodic
Public disclosure	
Annual financial reports, corporate social responsibility report, etc.	Annually
<ul style="list-style-type: none"> Press Releases UMC official website: The Stakeholder Area was established for stakeholder inquiry. 	As Required





MATERIAL TOPICS IDENTIFICATION

Procedure for Defining Report Content



Identify Stakeholders

UMC referenced the nature of its businesses as well as the 5 key principles of AA1000 SES (Stakeholder Engagement Standard) to identify a total of 7 types of stakeholders.

The Meaning of Major Stakeholders to UMC





Sustainability Issues Identification, Communication and Review

Identify sustainability issues that are related to UMC's current status and future operations.





Materiality Analysis

Material Topics Identification and Management Disclosure

Corporate Social Responsibility (CSR) issues cover a wide range of topics. UMC sorted the sustainability issues based on the material topics analysis results of the sustainability issues in the past three years. In addition to general disclosure issues such as "Sustainable Development Strategy," "Risk Management," "Stakeholder Engagement," "Governance" and "Ethics and Integrity," "Economic Performance" is included in UMC's long-term management considerations in which the company will continue to work hard on. In 2020, the six major sources of sustainability issues were emphasized on 19 issues in economic, environmental and social aspects that are closely related to the operation of UMC. These issues were identified and analyzed by means of questionnaire surveys and the opinions of external consultants.

Based on the identification results, there are totally 13 material topics as the most important issues that have immediate or future impact on UMC's value creation at this stage. For all 13 material topics, besides the topics of GRI Standards corresponding to this report and disclosure management policies and current practices, UMC established medium- and long-term management goals for each of them to 2025, and set a total of 29 management indicators as the basis for monitoring and reviewing their effectiveness.

The Changes and Differences of Material Topics Compared with the Previous Year:

The first four material topics

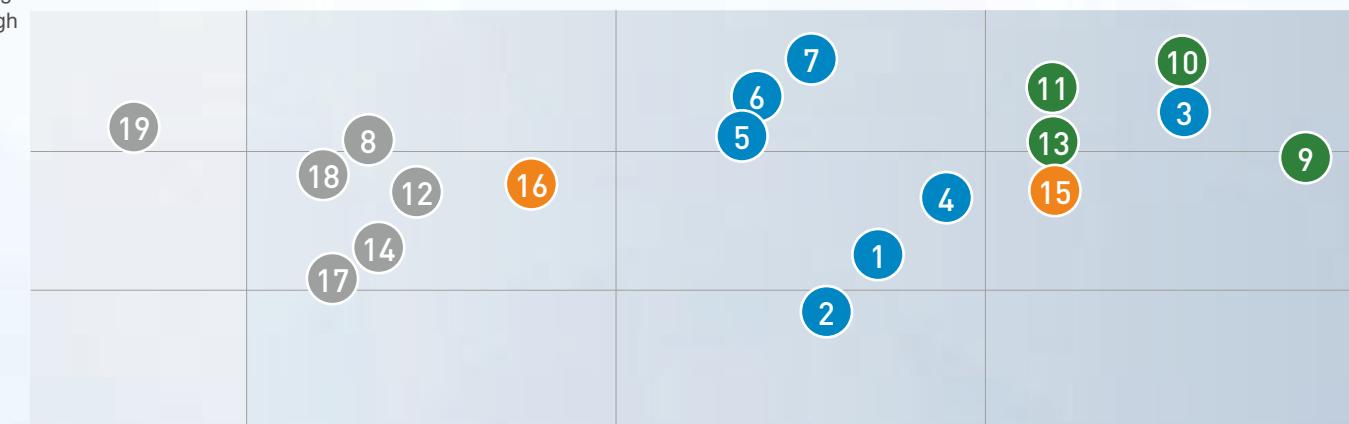
The name of the "Innovation Management and Intellectual Property Rights Protection" has been changed, which has expanded to cover intellectual property protection. The "Energy Management" issue is split from the "Climate Strategy and Action" issue to give it more focus. All of the three aforementioned issues continue to receive significant attention with their ranking remaining unchanged. The "Water and Wastewater Management" issue has replaced the "Talent Attraction and Retention" issue as one of the most important issues of the year due to its increased importance.

Other material topics

There are 9 major themes in total, among which "Risk Management" and "Information Security and Privacy Protection" are new major issues added this year, while "Human Capital Development," "Human Rights" and "Air Pollutant Prevention" are ranked as secondary issues because their ranking has dropped slightly this year.

This year, the scope of major issues in the subsidiary section has been expanded to include the descriptions of Wavetek and USJC, while the rest remains the same as the previous year.

Degree of Stakeholder Concern



Significance of Impact on Economy, Environment, Society and Operation
High

Material Topics

Economic Dimension

- 3 Innovation Management and Intellectual Property Rights Protection
- 7 Legal Compliance
- 4 Customer Service Quality
- 6 Ethical Corporate Management
- 1 Risk Management
- 5 Information Security and Privacy Protection
- 2 Procurement and Supplier Management

Environmental Dimension

- 10 Energy Management
- 9 Climate Strategy and Action
- 11 Water and Wastewater Management
- 13 Waste and Resource Utilization Efficiency

Social Dimension

- 15 Talent Attraction and Retention
- 16 Employee Safety and Health
- 12 Air Pollution Control
- 8 Product Liability and Lifecycle Assessment
- 14 Employee Diversity and Inclusiveness
- 18 Human Rights
- 17 Human Capital Development
- 19 Contribution and Participation in Society

Note: 1. 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=little concerned, 2 points=not concerned)

2. UMC Report Team member 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)

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



Material Topics

Economic Dimension

The Meanings to UMC (Importance of Operation)

Potential Impact

Economic, Environmental ,Social and Operation Impacts

UMC

UMC
Suppliers

Investor

Costumers

Indirect
Society

GRI Specific Topic

2020 Performances
(related chapters in this report)



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.



UMC self-defining topic (Innovation Management and Intellectual Property Rights Protection)

1.2.4 Legal Compliance
2.1 Excelling Innovative Development

Legal Compliance

Compliance with regulations is UMC's basic principle for sustainable development.

Violation of laws and regulations not only affects corporate image and reputation, but also brings financial risk as a result of fines.



307 Environmental Compliance
419 Socioeconomic Compliance

1.2.4 Legal Compliance

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.



UMC self-defining topic (Customer Service Quality)
201 Economic performance

2.2 Meeting Customer Demands
1.1.2 Business Performance

Ethical Corporate Management

Ethical management is the operational foundation for building UMC's sustainable development.

Establishing good business practices and ethical conduct requirement ensures UMC's sustainable operation by avoiding operational risks caused by illegal or illegitimate benefits funneling.



205 Anti-corruption

1.2.3 Ethical Corporate Management

Risk Management

Responding to the potential impacts in advance can reduce costs and also allows UMC to grasp the opportunities that may come with the risks.

The impacts of corporate strategy, operations, finance, and disaster risk are increased.



UMC self-defining topic (Risk Management)

1.3 Implementing Risk Management

Information Security and Privacy Protection

Due to extensive global operations and services, UMC places great importance on information security and privacy protection.

In addition to being exposed to the risks of data leakage and blackmail, the Company may also face serious operational losses due to production system disruptions, which may affect its reputation.



418 Customer Privacy

1.3.4 Committed to Information Security Risk Management
2.2.2 Customer Privacy Protection

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.



204 Procurement Practices
308 Supplier Environmental Assessment
414 Supplier Social Assessment

1.4 Building Sustainable Supply Chain



Environmental Dimension	The Meanings to UMC (Importance of Operation)	Potential Impact	Economic, Environmental ,Social and Operation Impacts					GRI Specific Topic	2020 Performances (related chapters in this report)	
			UMC	Suppliers	Investor	Costumers	Indirect Society			
Climate Strategy and Action										
Decent 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.	●	●			●	305 Emissions	1.3.5 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.	●	●				302 Energy	3.2 Energy Management	
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.	●	●				303 Water and Effluents	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.	●	●				306 Waste	3.4 Waste Management	
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.	●					202 Market Presence 401 Employment 405 Diversity and Equal Opportunity	4.2 Focusing on Recruitment and Cultivation	
Talent attraction and retention										
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.	●	●				403 Occupational Health and Safety	4.3.3 Enhancing Workplace Safety	



Secondary and Other Issues

A total of 6 secondary issues were identified, which will be highlighted in this report with reference to the GRI specific topics. The rest of the issues are responded to through existing communication channels, so not specifically noted in this report.

Direction of Response and Management	GRI Specific Topic	2020 Performances (related chapters in this report)
Air Pollution Control  Introducing and developing environment-friendly technologies to strengthen emission sources reduction and pollutants prevention.	305 Emissions	3.5 Air Pollution Control
Product Liability and Lifecycle Assessment  Promote hazardous material substitution programs, energy resource reduction programs, and product environmental impact assessment.	301 Materials 302 Energy 416 Customer Health Safety	1.2.4 Legal Compliance 2.3 Green Product Development
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
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
Human Capital Development  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. Commitment to Social Welfare

Other Opinions and Expectations of Communications with Various Stakeholders

In addition to the issues discussed above based on this year's stakeholder communication results obtained through open-ended questionnaires and interviews, other opinions on the expectations of UMC to exert its corporate influence and promote the sustainable development of society are listed as follows:

Economic Dimension

Opinions and expectations of communication

- UMC should exert positive influence from its core business.
- Deepen the corporate ESG impact by expanding outwardly to establish a collaborative partnership with supply chain in seeking optimization.
- The semiconductor industry consumes huge amounts of energy resources, so there is a need for UMC to think about promoting circular economy and innovative circular business models, etc.
- Expect UMC's assessment, audit, and management mechanism of its supply chain to be 100% compliant with the RBA (Responsible Business Alliance) Code of Conduct.
- Consider how to provide customers and potential customers with added value with lower carbon and more energy efficient products and services, from the perspective of foundry manufacturing and services.
- Be aware of the impact of COVID-19 pandemic outbreaks on the supply chain and production facilities.

Response

- Participating in organizations such as the Business Council for Sustainable Development of Taiwan, The Allied Association for Science Park Industries, and the Taiwan Semiconductor Industry Association to lead and promote activities relevant to environment, safety, health, and corporate sustainability. Serving as a representative to provide advice to advocate sound formulation and development of CSR policies by government and academic institutions.
- Re-examination and adjustment of the medium- and long-term environmental management goals for 2025 to enhance the Company's competitiveness in eco-efficiency.
- UMC has developed the "UMC Supplier Code of Conduct" in accordance with the RBA Code of Conduct, and requires suppliers to follow the regulations.
- Continue to promote carbon reduction in production and set the medium- and long-term process R&D management goals for 2025, with the expectation to gradually increase the proportion of sustainable products and improve the Company's competitiveness in all aspects.
- Set up the Pandemic Prevention Taskforce to establish countermeasures in advance and make preemptive preparations according to the business continuity plan.



Environmental Dimension



Opinions and expectations of communication

- In regards to climate related risks, UMC needs to clarify the potential financial impact more specifically, such as the potential business opportunities or costs for UMC associated with the recent sustainability related issues.
- Regularly provide information on the effectiveness of energy conservation and carbon reduction policies to community offices, in order to enable the neighbors to live with peace of mind.
- Consider bringing the circular economy thinking into the business, and examine in which part of the input and output ends as a whole can circular economy be integrated into (particularly the input end), such as environmental pollution monitoring equipment renting or chemical leasing, etc.
- For development activities, the damage they may cause to flora and fauna habitats, the corresponding avoidance and compensation measures should all be taken into consideration.
- Implement sustainable development of green environment, including air, water, raw materials, carbon footprint, etc.

Response

- Based on the TCFD (Task Force on Climate-related Financial Disclosures) initiative, UMC assesses the overall risks and opportunities that future climate conditions might cause to itself, and discloses its countermeasures and financial impacts.
- Issue CSR e-newsletters quarterly for public subscription.
- Re-examine and adjust the medium- and long-term environmental management goals for 2025 to enhance the Company's competitiveness in eco-efficiency.
- Set up a project to promote circular economy within the Company, with the goal of recycling waste that is subject to fees into marketable products and expanding cooperation with suppliers in circular economy.
- Organize the Eco Echo Award Program, expand the scope of participation, and increase subsidies for ecological conservation proposals that are both excellent and creative to promote green concept.
- Continue to organize environmental series activities to promote green concept within the Company, and set annual growth targets for green procurement. In 2020, UMC was awarded the Green Procurement Award by Environmental Protection Administration, Executive Yuan.
- Implement company-wide environmental education to enhance employees' awareness of PM2.5 and other pollutants, and further explore and evaluate the measures in enhancing pollutant management for both the manufacturing processes and local scrubbers.

Social Dimension



Opinions and expectations of communication

- Continue to expand the impact of corporate and organizational culture on society.
- More efficient communication across departments, with dedicated staff to coordinate and direct.
- Social engagement needs to demonstrate a clearer connection to the core business, so as to enhance social trust and corporate image.
- Continue to provide professional consultation or assistance to underprivileged groups for energy saving and carbon reduction.
- Continue to place great importance on and improve employee benefits.
- Issues of public welfare activities and various corporate social responsibility projects will be more accessible to the public if they are revealed in the form of stories.

Response

- Adjust and refine the sustainability promotion groups, and expand the promotion of the program involving the operation and SDGs through ESG committee.
- Collaborate with external parties through the UMC Fire Brigade and the Energy Saving Service Team to participate in social public welfare through core work competencies.
- Through the UMC Technology and Education Foundation, UMC continues to take root and deep cultivation in rural education, and support and accompany youths in special circumstances.
- Cooperation with several social enterprises in Taiwan
- Active participation in well-known domestic and foreign remuneration surveys to ensure that the overall remuneration offered by the Company is competitive in the market.
- Provide a LOHAS workplace environment, and uphold the spirit of the integration of benefit, vitality and public welfare. In addition, a variety of activities are designed to enable employees to build creativity and vitality through work and leisure activities.
- Issue UMC CSR e-newsletters quarterly for public subscription.



Key Points and Outcomes of Stakeholder Communication

Stakeholder communication method, frequency, key concerns and major outcome for 2020 are compiled as follows:

Communication Channel/Frequency	Key Communication Outcome in 2020				
Customers Main Focus of Material Topics: Legal Compliance, Ethical Corporate Management, Customer Service Quality, Information Security and Privacy Protection, Employee safety and health <ul style="list-style-type: none"> Online Service Platform (aperiodic) Regular communication and discussion meetings (according to customer needs) Questionnaire response (aperiodic) On-site audit and discussion (aperiodic) Voice of Customer (VOC) instant customer online complaint system (aperiodic) Customer satisfaction monitoring (when provided by customer) 	<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 78 BCM / BCP pieces of risk management data. Continued to invest in various semiconductor process R&D. Obtained 484 domestic and international patents in 2020. Currently, UMC has a total of 13,991 granted patents. 				
Employees Main Focus of Material Topics: Information Security and Privacy Protection, Legal Compliance, Employee safety and health, Customer Service Quality, Ethical Corporate Management <ul style="list-style-type: none"> Quarterly Town Hall meetings, Secretary forums, Welfare committee meetings, Employer-employee meetings, Communication platforms (quarterly) and Factory & Division meetings (once every 6 months) 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 (aperiodic) My UMC website (aperiodic) UMC CSR Newsletter (quarterly) Employee satisfaction survey on benefits measures, service satisfaction survey, HR satisfaction surveys, employee recognition survey (aperiodic) 	<ul style="list-style-type: none"> Continue to promote a comprehensive personnel health management program, which will be focusing on the three aspects of safe working environment, employee health protection and work-life balance. Completed employee work engagement surveys in 2020 to better understand the real needs of employees and their willingness to remain in their employment. Continue to implement industrial salary surveys and provide competitive performance-based and differentiated remuneration and welfare systems (including bonuses, salary, and stock shares). Continue to enhance the UMC welfare information platform to improve accessibility to employee benefits and discounts. Strengthen communication of business strategies and directives and to continue the provision of up-to-date information of corporate performance. A total of 172 communication meetings were held in 2020. The e-suggestion opinion feedback platform received 392 opinions from various employees in 2020; all cases (100%) have been closed. Strengthen the RBA Committee; continue to promote and respect international code and standards of laborers as well as human rights. <p>Conducted sharing activities on sustainability themes to strengthen employee awareness.</p>				
Investors Main Focus of Material Topics: Legal Compliance, Air Pollution Control, Waste and Resource Utilization Efficiency, Customer Service Quality, Product Liability and Lifecycle Assessment <table border="0"> <tr> <td>General Shareholders:</td> <td>Corporate shareholders</td> </tr> <tr> <td> <ul style="list-style-type: none"> General shareholder meeting (annually) Investor conferences (quarterly) Financial reports (annually) </td> <td> <ul style="list-style-type: none"> Domestic and overseas investor conferences (quarterly) Domestic and overseas seminars for investing institutions (aperiodic) Written or face-to-face communication (aperiodic) </td> </tr> </table>	General Shareholders:	Corporate shareholders	<ul style="list-style-type: none"> General shareholder meeting (annually) Investor conferences (quarterly) Financial reports (annually) 	<ul style="list-style-type: none"> Domestic and overseas investor conferences (quarterly) Domestic and overseas seminars for investing institutions (aperiodic) Written or face-to-face communication (aperiodic) 	<ul style="list-style-type: none"> Planned to issue green bonds in 2021 to raise funds for green investment projects. Continue to hold shareholders meetings and investor conferences in accordance with the annual plan, and communicate with shareholders about the list of director candidates. Upload multimedia information of the financial and business report in the shareholders' section of the UMC official website. http://www.umc.com/English/investors/e.asp <p>Worked with the Financial Supervisory Commission (FSC) to complete corporate governance accreditation.</p>
General Shareholders:	Corporate shareholders				
<ul style="list-style-type: none"> General shareholder meeting (annually) Investor conferences (quarterly) Financial reports (annually) 	<ul style="list-style-type: none"> Domestic and overseas investor conferences (quarterly) Domestic and overseas seminars for investing institutions (aperiodic) Written or face-to-face communication (aperiodic) 				



Communication Channel/Frequency

Key Communication Outcome in 2020

Suppliers	Main Focus of Material Topics: Information Security and Privacy Protection, Ethical Corporate Management, Legal Compliance, Waste and Resource Utilization Efficiency, Energy Management
<ul style="list-style-type: none"> • Review reports or meetings (aperiodic) • Environmental health and safety, and corporate social responsibility related management briefings (aperiodic) • Questionnaires and audit visits (annually) • Jointly implement ESH and corporate social responsibility program with suppliers (annually) 	<ul style="list-style-type: none"> • Promote 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 2020. • To promote circular economy and waste reduction, the UMC Triple R League sharing session was organized where suppliers were invited to share their experiences and 20 outstanding vendors were rewarded and recognized.
Governmental Agency	Main Focus of Material Topics: Legal Compliance, Employee safety and health, Contribution and Participation in Society, Human Rights, Water and Wastewater Management
<ul style="list-style-type: none"> • Participate in parks and Science Park Administration functional organizations for operations (monthly) • Participate in public hearings and business seminars organized by governmental authorities (aperiodic) 	<ul style="list-style-type: none"> • Played the role of coordinator for The Allied Association for Science Park Industries to discuss regularly related governing laws and regulations and to provide operation experiences and suggestions for policy draft. • Participate in the Industrial GHG Voluntary Reduction Information Platform organized by the Industrial Development Bureau, Ministry of Economic Affairs to strengthen exchange on energy conservation and carbon reduction issues. • The PFASs Evaluation Program and Green 2020 Program were promoted internally. • Participated in the "Safety and Health Inspection Education & Training" and "Safety and Health Inspection Factory Counseling Program" held by the Hsinchu Science Park Bureau, Ministry of Science and Technology, and shared practical experiences on respiratory protection program and hazardous chemical management operation. • 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. • Provided training on disaster preparedness for STSP manufacturers.
Community/Non-profit Organization	Main Focus of Material Topics: Contribution and Participation in Society, Legal Compliance, Information Security and Privacy Protection, Human Rights, Water and Wastewater Management
<ul style="list-style-type: none"> • The assigned department for community communication (aperiodic) • Invite community residents to participate in the company's Family Day activities (annually) • Participate in community activities or seminars (aperiodic) • Participate in the operations of outside associations (monthly) 	<ul style="list-style-type: none"> • Organized the 2020 UMC family day activity. • Volunteer work culture was promoted to provide volunteer work opportunities for the underprivileged. A total of 6,425.4 hours of volunteer work was conducted, which benefited more than 60,167 person-times. • Worked with the Society of Wilderness (SOW), an ecological conservation organization, to promote the Sauter's Frog (<i>Rana sauteri</i>) Habitat Conservation Project. • Organized the UMC Eco Echo Award program to offer grants to ecological conservation proposals, totaling more than 900 person-times beneficiaries. • The UMC Energy Saving Service Team assisted 10 organizations in energy saving, water saving and environmental safety improvement. • The PFASs Evaluation Program and Green 2020 Program were promoted internally.
Media	Main Focus of Material Topics: 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"> • Press conferences (aperiodic) • Press releases (aperiodic) • Company Website (monthly) 	<ul style="list-style-type: none"> • Issued 31 press releases on corporate governance and sustainability management. http://www.umc.com/English/news/2020



01 INNOVATIVE PRODUCTS AND SERVICES

1-1 About UMC

1-2 Excelling Corporate Governance

1-3 Implementing Risk Management

1-4 Building Sustainable Supply Chain

Important Stakeholders



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.



Performance Highlights 2020

2nd largest in global market share The world's No. 2 foundry.

Market value of NT\$ 585.7 billion Consolidated revenue increased significantly in 2020 by nearly 20% from the previous year, reaching a market capitalization of NT\$585.7 billion.

Ranked in the top 5% of companies for 6 consecutive years Ranked in the top 5% of listed companies in terms of corporate governance for 6 consecutive years.

Non-executive directors exceed 50% Over 50% of non-executive directors, including 4 independent directors and 1 outside director.

Established ESG Steering Committee Established the "ESG Steering Committee" with President Chien as the Chief Sustainability Officer (CSO), which is dedicated to integrating sustainable development into operations strategies to lead UMC towards growth and make a positive impact.

Over 3,500 suppliers signed the agreements All new suppliers are required to sign the "Employee Code of Ethics" and "Supplier Code of Conduct", with over 3,500 suppliers signing the codes.

Note: Unless otherwise noted, the scope of statistics for performance includes UMC's Taiwan and Singapore facilities.



Material Topics and Main Responses in this Chapter

Management policy	Goals of 2020	Achievements in 2020	Future goals (2021-2025) Summary	
Legal Compliance Strengthen UMC employee mindset in legal compliance. In addition to 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. Section 1.2.4 Legal compliance	Management purpose : Ensure UMC's commitment to legal compliance, fulfilling the company's core value of integrity.	<ul style="list-style-type: none"> The employees of UMC must abide by relevant laws and regulations while performing their duties. No major violations of corporate social responsibility.^{Note} 	<ul style="list-style-type: none"> 1 major violation in the economic dimension. The U.S. DOJ indicted UMC in 2018 for violating trade secret related laws and U.S. DOJ settled such case with UMC in 2020. For more details, please refer to Chapter 1.2.4 Legal Compliance. 	<ul style="list-style-type: none"> No major violations of corporate social responsibility.
Integrity Management 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 make a report to discover, prevent and avoid major misconduct and violations of government laws and regulations. 1.2.3 Ethical Corporate Management	Management purpose : Establish good business conduct and ethics to ensure UMC's sustainable operation and prohibit illegal or improper transfer of benefits.	<ul style="list-style-type: none"> Formulate Anti-Corruption and Anti-Bribery Policy. Prepare anti-corruption promotion materials. 	<ul style="list-style-type: none"> Completed the Anti-Corruption and Anti-Bribery Policy announcement and promotion courses for senior executives. No penalties resulted from violation of corporate governance and corruption occurred. 	<ul style="list-style-type: none"> The completion rate of annual education and training for anti-corruption: 100% The completion rate of annual education and training for business ethics: 100%
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. Section 1.3 Implementing Risk Management	Management purpose : Improve enterprise risk management, and manage major risk events preventively to reduce the negative impact of such incidents.	<ul style="list-style-type: none"> Formulate prevention plans and adaptation measures for potential risks to facilitate timely and appropriate response to possible crises and minimize possible impacts. 	<ul style="list-style-type: none"> A total of 39 countermeasures were formulated for the identified major risks. The implementation status was tracked quarterly, and all risk control activities have reached the set goals. A total of 10 fab-wide BCP drills and various emergency response trainings and reviews for a total of 1,050 person-times participants were completed. 	<ul style="list-style-type: none"> Carry out the identification of major risks every year. Formulate counter measures for all(100%) of the major risks, and raise the employees' awareness in risk management. Continue to promote the business continuity management system in all UMC fabs. 100% for 12-inch fabs ≥50% for 8-inch fabs
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. Section 1.3.4 Committed to Information Security Risk Management; For privacy protection, please refer to Section 2.2.2 Customer Privacy Protection	Management purpose : Protect the confidentiality, integrity and availability of information assets to ensure the Company's continuous business operation and achieve information security goals.	<ul style="list-style-type: none"> No major information security incident occurred. 	<ul style="list-style-type: none"> No major information security incident occurred. 	<ul style="list-style-type: none"> No major information security incident occurred. The deployment of protection mechanisms, including endpoint security, host backup and recovery mechanisms, etc. were strengthened in response to the increasingly serious trend of external attacks on information security around the world.

Note: I. Refers to a single violation incident with a total fine of NT\$1 million or more.

II. For detailed targets of 2025, please refer to: https://www.umc.com/en/Htm/UMC_strategy_and_goals_for_sustainable_development



Material Topics and Main Responses in this Chapter

Management policy	Goals of 2020	Achievements in 2020	Future goals (2021-2025) Summary
<p> Procurement and Supplier Management</p> <p>Section 1.4 Building Sustainable Supply Chain</p>	<p>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.</p> <ul style="list-style-type: none"> Through the supplier evaluation mechanism on Q (Quality), C (Cost), D (Delivery Time), S (Service), and S (Sustainability), the corresponding procurement measures for various rating levels are implemented. Through the supplier sustainability evaluation mechanism and the RBA evaluation mechanism, the suppliers are evaluated annually to monitor their efforts in making improvements. 	<ul style="list-style-type: none"> Implement ethics and codes of conduct for supplier's employees. The three-year cumulative supplier sustainability (ESG) & RBA self-assessment questionnaire and on-site audit completion rate reaches 100%. Promote the Sustainable Supply Chain (ESG) Initiative - Circular Economy. Hold at least 3 global supplier sustainability briefings. Award outstanding suppliers. Maintain zero conflict mineral procurement, and conduct conflict mineral investigation via on-site audits for four or more (>4) suppliers. 	<ul style="list-style-type: none"> Added 172 new suppliers and 100% of them have signed the agreement, with a total of more than 3,500 suppliers signed the agreement. Completed the annual key supplier sustainability (ESG) & RBA self-assessment questionnaire and on-site audit, reaching a completion rate of 100%. Promoted the Sustainable Supply Chain (ESG) Initiative to reduce CO₂e emissions by 409,000 tons from 2017 to 2020 accumulatively. Global supplier sustainability briefing was cancelled due to the epidemic. Online briefings will be held in 2021. Outstanding suppliers participating in the Triple R League were recognized by awards. 20 suppliers were awarded in 2020. On-site audits of conflict minerals for 4 suppliers were carried out by an independent auditing unit, and no deficiencies were identified, maintaining zero conflict mineral procurement.

Note: For detailed targets of 2025, please refer to:https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development

Mechanisms for Evaluating Effectiveness

Ensure that there are no regulatory violation incidents or stakeholder complaints.	Formulate a company-wide management plan, which will be reviewed by the Risk Committee on a quarterly basis.	Pass ISO 22301 Operation Continuity Management System Verification every year.
Through the supplier evaluation mechanism QCDSS (quality, cost, delivery, service, sustainability), make corresponding purchase response measures for various evaluation rankings.	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.



1-1 ABOUT UMC

1-1-1 Company Profile

United Microelectronics (UMC) is a world leading semiconductor foundry. The company leverages its manufacturing excellence and extensive technology portfolios to produce IC wafers for every major electronics sector. 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 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	Date Founded	Company Headquarter	Number of Employees	Total Capital amount	Main Operation
UMC United Microelectronics Corp.	May, 1980	No. 3, Li Hsin 2 nd Road, Hsinchu Science Park	More than 19,000 employees, including those in worldwide affiliated companies	Total capital of NT\$260 billion Paid-in/capital amounted to NT\$124.22 billion	Professional integrated foundry services
Product Services			Affiliated Businesses		
Wafer foundry services, silicon intellectual property according to customer needs, embedded integrated circuit design, design verification, photomask production, wafer manufacturing, testing and other services In 2020, UMC served 416 companies and provided up to 7,216 different kinds of customer products. Our foundry segment shipped a total of 8.9 million 200mm equivalent wafers for the year			Affiliated business operations including wafer manufacturing, electronics, optoelectronics, investment, insurance and trading		
			Consolidated Operating Revenues and Operating Costs		
			Annual revenue was NT\$1,76.82 billion Annual operating costs was NT\$137.82 billion		



1-1-2 Business Performance

Major production bases of UMC in Taiwan are located in the Hsinchu and Tainan Science Parks, while other production bases are located in Singapore, China and Japan. UMC is a 300mm manufacturing leader with several advanced 300mm fabs in operation. Fab 12A in Tainan, Taiwan has been in volume production for customer products since 2002 and is currently manufacturing 14nm and 28nm products. The multi-phase complex is actually three separate fabs, consisting of Phases 1&2, 3&4, and 5&6. Fab 12A's total production capacity is currently more than 75,000 wafers month. UMC's second 300mm fab, Fab 12i, is UMC's specialty technology center. With its specialty 300mm manufacturing processes, it produces ICs that are essential for a wide variety of application products demanded by customers.

Following the establishment of HJ (HeJian Technology Co., Ltd.) in Suzhou Industrial Park, UMC established United Semiconductor (Xiamen) Co., Ltd. in 2015. United Semiconductor Co., Ltd. (USCXM) is the first 300mm IC manufacturing fab in Southern China, which began its commercial operation in late 2016. Both of HJ and USCXM offer an excellent diversity of manufacturing services for local and global IC design companies in the region. It also helps fulfill the tremendous IC manufacturing demand for electronic products in China.

In October of 2019, UMC acquired 100% of Mie Fujitsu Semiconductor Limited (MIFS), to make MIFS a wholly owned subsidiary. The name was changed to United Semiconductor Japan Co., Ltd. (USJC). USJC is UMC's fourth 300mm fab. USJC offers foundry volume production for mature specialty nodes ranging from 90-nanometer to 40-nanometer.

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.

Key Performance Indicators

In 2020, both items reached the set goals



In recent years, UMC has continued to invest in advanced process and R&D equipment. The benefits generated in 2020 are as follows:

Proportion of advanced process capacity **for 40nm or below** has reached over 30%.



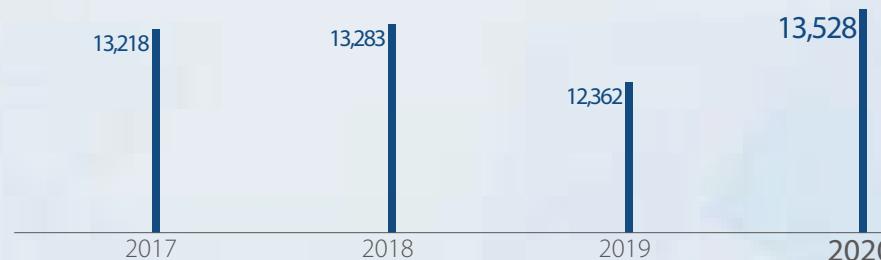
Compared to the previous year, the proportion of advanced process capacity **for 28nm or below** has increased by 11%.

Profitability

In 2020, the performance of all items have improved significantly compared to the previous year.

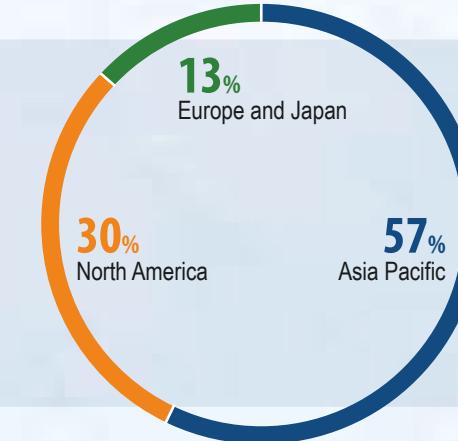


Note: The above entity financial information is based on the Executive Yuan Financial Supervisory Commission approved international financial reporting guidelines. For consolidated information, please refer to Page 187 of the company's 2020 Annual Report.

**Operating Revenues** (in NT\$10 millions)**Total Assets** (in NT\$10 millions)**Operating Incoming** (in NT\$10 millions)**Marketing and Sales Overview**

Being highly recognized by customers, UMC's customer base includes major companies in different regions. Asia Pacific and North America account for most of the product sales, where respective total sales in 2020 were 57% and 30%, while Europe and Japan accounted for 13% of the company's total revenue. UMC will continue to strengthen cooperation with world class customers, and is committed to developing high level customer products to ensure UMC's stable growth in the medium and long run.

Note: All of the products of UMC are manufactured from its own fabs.

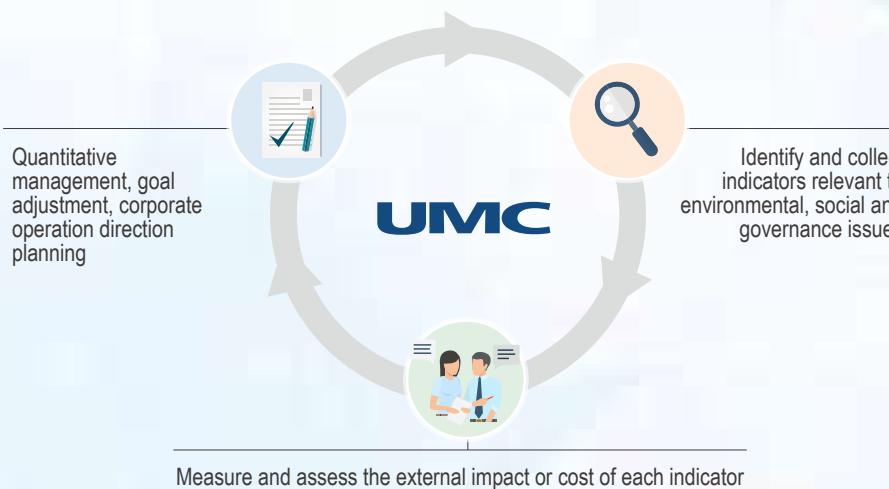
Export Ratio



Measurement and Evaluation of ESG True Value

UMC considers issues of interests to stakeholders, and plans to evaluate the environmental and social externalities generated by the entire value chain in the course of operations in stages according to the types of issues and attributes. At the same time, UMC uses true value assessment methods developed by KPMG to monetize various external costs and impacts to enable companies to conduct comprehensive business opportunity evaluations and risk assessments. Subsequently, the company will step up and quantifiably manage the issues related to sustainability, making them important pieces of reference information when making relevant decisions.

Schematic Diagram of True Value Measurement and Evaluation Steps



Scope of Evaluation



In the face of expanding global climate change and increasing shortages of energy and resources, UMC endeavors to give priority to evaluating significant environmental issues and indicators commonly used in industries. In the future, UMC plans to gradually expand into the assessment of other issues and indicators.

Aside from UMC, the scope of this evaluation includes upstream and downstream value chains.

Evaluation Results

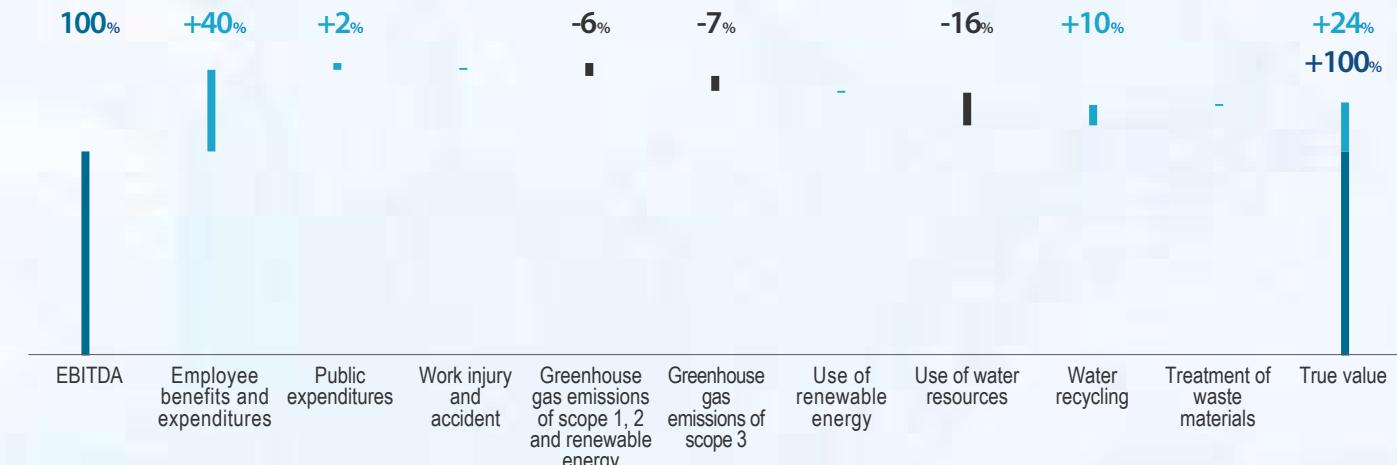


In 2018, UMC implemented a special project to conduct the first assessment of various 2017 indicators. Analysis indicates that, in 2017, overall external benefits increased by NT\$13.1 billion compared to traditional financial performance, which is about a 24% increase.

Greenhouse gas emissions and use of water resources are still the most important external costs in the overall assessment. As UMC has continued to promote a number of GHG scope 1 and scope 2 reduction plans over the years, the external cost of scope 3 is greater than the costs of scopes 1 and 2. On the other hand, the impact of the use of water resources accounts for a significant proportion.

Note: For detailed evaluation methods and results, please refer to UMC's 2017 CSR Report.

External Costs and Benefits Evaluation Results



Note: I. For emissions and reductions of greenhouse gases and water resources, please refer to Chapter 3-1 on Climate Action as well as Chapter 3-3 on Water Resources Management.

II. EBITDA: Earnings Before Interest, Taxes, Depreciation and Amortization.

III. The impact of public expenditure, use of renewable energy, work injury and accident and waste disposal cost is less than (+/-) 3 %.



Latest Status

Regarding major items of impact, we continue to track annual changes. In 2020, two major items of positive benefit continued to grow. With an increase of 11.9% in production capacity, the impacts from scope 1 and scope 2 greenhouse gas emissions of the negative-benefit items continued to reduce, and municipal water consumption and greenhouse gas emissions of scope 3 only increased slightly by 4% and 2%.

Positive Benefits

Employee benefits and expenditures (NT\$1000)



Water recycled (M³)



Negative Impact

Greenhouse gas emissions of scope 1, 2 (tCO₂e)



Greenhouse gas emissions of scope 3 (tCO₂e)



Use of water resources Municipal water usage (M³)



Future Promotion Focus



Reduce negative impact

Actively carry out in-fab regenerative energy installation, list solar energy system as a standard design and construction project for new fabs, and expand the promotion of greenhouse gas reduction plan, including reduction in major subsidiaries, procurement of green products, localization of procurement, and change of transportation methods, etc. to reduce overall greenhouse gas emissions.

The company continues internal promotion of the Green 2025 program to reduce the intensity of power, water, as well as waste by 15%.

Promote the security mindset 4.0 program and reinforce accident prevention management.



Expand and enhance of positive benefits

Through education, training and social participation, the company will expand the scale of the Eco Echo Award and support the Energy Saving Service Team as well as the Spreading the Seeds of Hope Project, all in an effort to create social values.

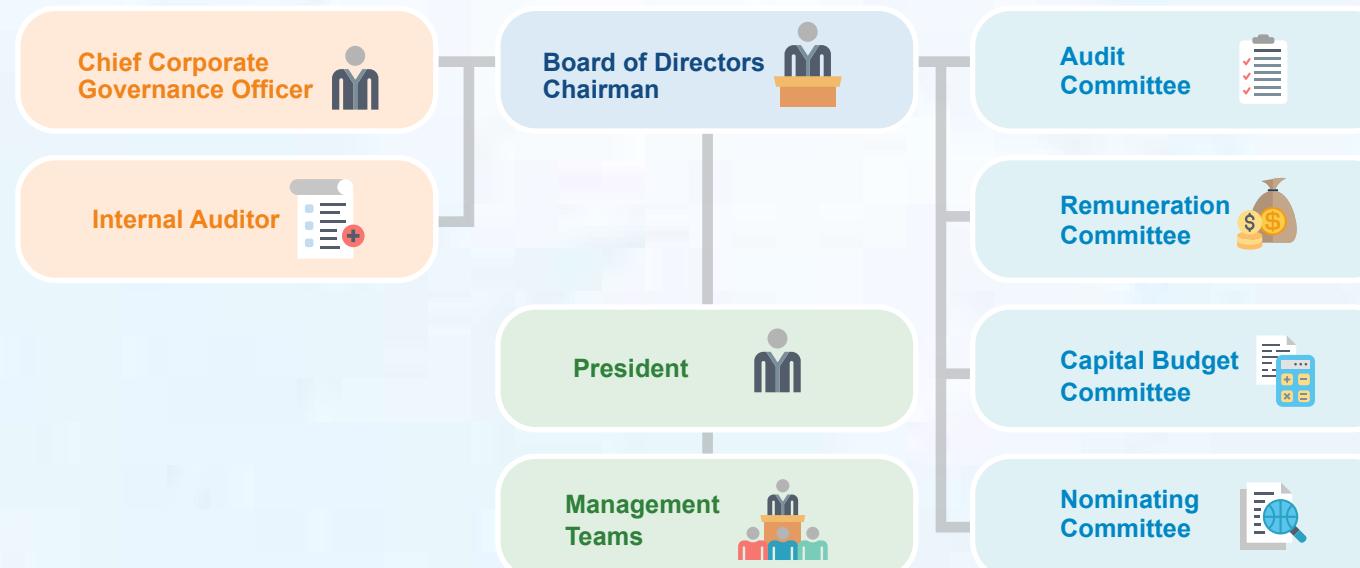
Promoting a circular economy – Working with suppliers to Reuse, Recycle, and Reduce (waste material energy and resource reduction) and increase the value of the environment.



1-2 EXCELLING CORPORATE GOVERNANCE

1-2-1 Board of Directors Operation

The UMC Board of Directors comprises of 8 members from different professional backgrounds, and is responsible for company operation and supervision. The diverse academic and industrial experiences of the Board members are an asset to corporate decision-making and long-term strategy planning. Currently, the Board has 4 seats for independent directors and 1 for outside directors. Half of the director seats are filled by members of outside companies. Each independent director concurrently does not serve as an independent director for more than 3 listed companies. As of 2020, the average tenure of all directors was 7.1 years. In 2020, UMC held 8 board meetings with an average attendance rate of 97.18%, which was higher than 80%, the criterion for board performance assessment. The ratio of total remuneration for board directors to company after-tax net income was 0.86% in 2020.



Policy for Nomination and Election of Directors

To ensure a fair, just, and open election of directors, the nomination and election procedures of the Company's directors shall be complied with the Company Act and all related laws and regulations. The organizational culture, business model and long-term development of the Company shall be taken into consideration to the composition of the Board members. The criteria established to ensure the diversity of the Board members shall include but not limited to the following three dimensions:



For the policy for nomination and election of directors, please refer to UMC website



Board of Directors

According to the laws and the Articles of Incorporation, the members of the Board are elected by all shareholders in accordance with the director election regulations in the shareholders meeting. The committees under the board of directors, according to their Charters, are nominated and selected by the board of directors. All 4 independent directors meet the requirements of the Regulations Governing Appointment of Independent Directors and Compliance Matters for Public Companies for professional qualification, work experience, and restrictions and the independence of independent directors.

Title	Age	Member of Functional Committee	Professional Background of Director	Attendance Rate	
Chair of Board, Chief Strategy Officer					
Stan Hung	♂ 61	None	<ul style="list-style-type: none"> • Financial accounting and strategic management • Electronics-related industrial experience 	100%	
Director, President					
Jason S. Wang	♂ 58	None	<ul style="list-style-type: none"> • Financial accounting and organizational leadership • Electronics-related industrial experience 	100%	
S C Chien	♂ 63	None	<ul style="list-style-type: none"> • Engineering technology and organizational leadership • Electronics-related industrial experience 	100%	
Director					
Ting-Yu Lin	♂ 59	<ul style="list-style-type: none"> • Capital Budget Committee member 	<ul style="list-style-type: none"> • Financial accounting and strategic management • Electronics-related industrial experience 	100%	
Independent Director					
Cheng-Li Huang	♂ 72	<ul style="list-style-type: none"> • Convenor and financial expert for Audit Committee • Remuneration Committee member 	<ul style="list-style-type: none"> • Convener for Capital Budget Committee • Nominating Committee member 	<ul style="list-style-type: none"> • Financial accounting and corporate sustainability • Electronics-related industrial experience 	100%
Wenyi Chu	♀ 54	<ul style="list-style-type: none"> • Audit Committee member and financial expert • Convenor for Remuneration Committee 	<ul style="list-style-type: none"> • Capital Budget Committee member • Nominating Committee member 	<ul style="list-style-type: none"> • Financial accounting and strategic management • Electronics-related industrial experience 	87.5%
Lih J. Chen	♂ 75	<ul style="list-style-type: none"> • Audit Committee member • Remuneration Committee member 	<ul style="list-style-type: none"> • Capital Budget Committee member • Convener for Nominating Committee 	<ul style="list-style-type: none"> • Engineering technology and organizational leadership • Electronics-related industrial experience 	100%
Yuo-Min Shyu	♂ 67	<ul style="list-style-type: none"> • Audit Committee member • Remuneration Committee member 	<ul style="list-style-type: none"> • Capital Budget Committee member • Nominating Committee member 	<ul style="list-style-type: none"> • Engineering technology and organizational leadership • Electronics-related industrial experience 	100%

Note: I. Director Chung Laung Liu was dismissed on November 9, 2020.

II. The Board has 9 seats, of which 3 are occupied by members who also serve as administrative directors, namely the President and Chief Strategy Officer. Related information please refer to the company's 2020 annual report pages 16-17.

III. Each year, UMC arranges for its directors and managers to participate in economic, social and environmental courses in corporate sustainability. Continuing training courses for directors in 2020 is disclosed on Pages 48-50 of the company's annual report.

Performance Assessment of the Board

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. In 2020, the Nominating Committee conducted the self-evaluation of the Board of Directors, functional committees and individual board members. The performance result was "Excellent" and was reported to the Nominating Committee and Board of Directors on February 24, 2021.

Besides internal Self-Assessment, the performance of the Board is also implemented by an external independent professional institution or a panel of external experts and scholars at least once every three years. The Company engaged with Taiwan Corporate Governance Association to conduct an assessment of board performance and efficiency, and completed the evaluation on November 25, 2020. The assessment comprised of 8 scopes including Composition, Direction, Authorization, Monitoring, Communication, Internal control, Risk management and Discipline of the Board, and was executed through online self-assessment and due diligence. The report concluded that the discretion of the company's long-term strategy was incorporated into the composition of the Board, and the establishment of the Nominating Committee surpassed governmental regulations; the independent directors with diversified background were devoted to and were fully accountable with regard to their duties of direction and monitoring; the intensive communication between board members and management team ensured timely and sufficient information delivery, thus building an open and transparent culture for the Board. The report also provided recommendations on periodic assessment and human resource development for the Company to enhance the efficiency of the Board.



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 Committee

Capital Budget Committee

The Capital Budget Committee 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.

Effectiveness in 2020

The UMC Capital Budget Committee was established in October 2013. In 2020, the committee met five times, audited and approved capital budget expenses of NT\$74,461 million.



Remuneration Committee

According to Regulations Governing the Appointment and Exercise of Powers by the Remuneration Committee of a Company Whose Stock is Listed on the Stock Exchange or Traded Over the Counter Act, UMC established the Remuneration Committee to strengthen corporate and risk management. In addition, to motivate and retain talent, the Committee reviews and supervises the remuneration system of the company's directors and managers. The committee meets at least twice a year.

Effectiveness in 2020

In 2020, the committee convened meetings in February, April, June, July and September. For the actual attendance status of the committee members, please refer to page 58 of UMC 2020 annual report.

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 of independent directors, of which two are financial experts. According to the terms and responsibilities stated in the company's Audit Committee Regulations, members shall meet at least once every quarter.

Effectiveness in 2020

In 2020, a total of five meetings were convened and the actual attendance rate was 95%. Good communication channels with the company's internal auditors, independent auditors, and management were maintained.

Nominating Committee

The Nomination Committee is composed of independent directors. With the purpose of promoting sustainable development of the company, assisting the Board of Directors to strengthen management mechanisms, and improving corporate governance, it reviews the selection as well as the performance evaluation of the directors and senior executives. It also supervises corporate social responsibility and corporate sustainable development strategies, including the planning and implementation of strategies in the environmental, social, corporate governance and risk management dimensions, protecting the rights and interests of stakeholders.

Effectiveness in 2020

The UMC Nominating Committee was established in December 2017. In 2020, the Committee met 2 times, reviewed the Company's achievement on corporate sustainability, climate change management, corporate governance, ethical management, risk management and IP management.



Internal Audit

UMC has established an internal audit 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 effects of the business operation.
- 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.

Since UMC is listed on the New York Stock Exchange (NYSE) and subject to US regulations for foreign issuers. Since 2006, UMC has complied with the SOX 404 Act and audited by the independent auditors annually. To date, the independent auditors have issued unqualified audit report for UMC's internal control design and implementation performance.



For details of the internal audit and operation, please refer to the company's website at

Executive Compensation

For motivation and talent retention purposes, performance evaluation and salary remuneration policies, system, standards and structure for directors and managers are determined and reviewed by the Remuneration Committee. The committee members include independent directors who provide suggestions and guidance from external perspective. In addition, 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, etc., which are regularly disclosed in the company's annual report every year. To ensure the stable operation and growth of the company and the pursuit of breakthrough innovation, the total compensation of the president and vice president is composed of two parts, the fixed and variable payments. UMC is committed to the continuous promotion of the three aspects of ESG for sustainability, which include "environment, society and governance," and has formulated medium- and long-term goals for sustainable development, aiming to create concord and prosperity between the enterprise and society. Therefore, in addition to valuing the company's competitiveness in the industry, the evaluation of executives' overall compensation include various ESG goals that support the company's sustainable development.

Fixed compensation

Based on job duties and relative importance of the position and other factors.

Variable compensation

Note1

According to the execution and achievement status of the operating strategy and objectives that the manager is responsible for.

Financial Performance Index: Return on equity (ROE%) % and Operating margin % (OM%), etc.

Other Performance Index: Profitability improvement, differentiating advanced manufacturing and development of specialty technologies, strengthening manufacturing capabilities and improving overall quality and productivity, expanding marketing and customer management, development of sustainable environment and talent cultivation, etc.

Taiwan	Singapore
Ratio of maximum remuneration to median annual remuneration	<small>Note2</small>
14.34	6.37

Taiwan	Singapore
Ratio of % increase in highest total annual remuneration to % increase in median total remuneration	<small>Note2</small>
3.84	0.48

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 recent fiscal year.

Long-term incentives

In order to attract and retain key talents for the achievement of its mid- and long-term objectives, in 2020, UMC issued the Restricted Stock Awards for Employees with a 4-year long-term performance goal which adopts the return on equity (ROE%) % and operating margin % (OM%) as performance indicators, with the intentions to motivate employees to spare no efforts in reaching performance goals by improving profits for the Company and its stakeholders, while the interests of the Company's employees are connected with those of its stakeholders.

Bonus reclaim for inappropriate behaviors

In order to promote ethics, integrity, and professional competence, UMC established the "Code of Conduct." As an organization that highly values integrity, UMC believes every employee is obligated to strive for the extension of the company's interests within legal limits and is responsible for preventing damages on or loss of the company's interests. The violators of the integrity regulations will be inflicted, in proportion to the conditions of the incident, with different penalties, 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 the 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.



1-2-2 Sustainable Governance

UMC is committed to the philosophy of "employee care, environmental focus and public service," and furthering sustainable development, corporate social responsibility and guiding society towards a positive cycle. 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 society" are the primary focus of the joint pursuit of sustainable growth.



UMC's Sustainable Corporate Culture

Based on the four competitive advantages of "Independent R&D capability," "Excellent manufacturing capability," "Capable employees" and "Sound financial structure," as well as the five business cultures of "customer orientation," "integrity," "innovation," "accountability" and "efficiency" that have been deeply rooted in the company's operations, UMC is able to maintain its position as an industry leader. Combining its competitive advantages, UMC also defines its corporate social responsibility and the three major directions based on its business culture:



Implementation of Corporate Social Responsibility Principles

To implement corporate social responsibility, promote economic, environmental and social advancement, and achieve the goal of sustainable development, the Corporate Sustainability Committee of UMC has formulated the company's "Corporate Social Responsibility Principles," which has been approved by the Board of Directors for implementation. The Corporate Sustainability Committee of UMC shall constantly review the development of relevant CSR guidelines and codes in Taiwan and other countries as well as changes to the business environment in order to review and improve upon the CSR system established in UMC and improve the performance of CSR activities.



Corporate Social
Responsibility
Principles

Sustainable Governance Structure

UMC's sustainable governance structure includes the Board of Directors (including the Nominating Committee), the ESG Steering Committee, the Corporate Sustainability Committee, and the Enterprise Risk Management Committee. Through the Co-Presidents, UMC implements its corporate sustainability policies from the top down. The Co-Presidents are members of the Board of Directors; they simultaneously serve as, respectively, Chairman of the Corporate Sustainability Committee and Chairman of the Enterprise Risk Management Committee. In 2020, UMC reorganized its sustainable governance structure, adding the ESG Steering Committee to be responsible for determining UMC's sustainable governance strategy/blueprint/long-term goals.

The Corporate Sustainability Committee of UMC was established in 2008 and serves as the highest ranking CSR organization in the company. The Committee is responsible for stipulating the direction and goals of CSR and sustainable development. Every 6 months, the Director and member of the Committee shall review the performance and target achievements of sub-committees. The Committee shall also provide annual reports to the Nominating Committee and the Board of Directors on the performance and plans of CSR activities. The representative of the Corporate Sustainability Committee reports the yearly CSR promotion results and plans to the board. The scope of the report will include the management and review of material issues in the area of economics, environment and society.





Corporate Sustainability Committee





Sustainable Governance Organization Operations

Each year, the functional committees of the Corporate Sustainability Committee identify sustainability issues and propose response plans to the Corporate Sustainability Committee for approval. They regularly review and manage implementation of annual plans according to their levels.

Corporate Sustainability Committee Management Mechanisms

Participant	Management Content	
Corporate Sustainability Committee		Review: Semi-annually
<ul style="list-style-type: none"> · Committee chair · Committee members · Chief administrator · Functional committee administrators 	<ul style="list-style-type: none"> · Committee reviews · Operational progress of various functional committees · Review and approve goals and plans, review executive performance 	
Functional Committees		Review: Quarterly
<ul style="list-style-type: none"> · Chief administrator · Functional committee administrators · Members 	<ul style="list-style-type: none"> · Develop key performance indicators (KPI) to quantify the execution of management performance · Implementation programs · Follow up implementation progress 	
Key Corporate Sustainability Projects		Review: Monthly
<ul style="list-style-type: none"> · Functional committee administrators · Members 	<ul style="list-style-type: none"> · Follow up and review based on company project management system · Follow up progress, and present results to the Corporate Sustainability Committee for review 	

The Implementation Status of Corporate Sustainability Committee

The types and total number of key issues related to sustainability that have been reported to the Nominating Committee and the Board of Directors in 2020 are as follows:



Board of Directors' resolutions related to sustainability are as follows:

-  Approved the UMC Science and Culture Foundation Donation proposal to promote social welfare activities.
-  Approved the Capital Budget Implementation Plan to add renewable energy, energy saving, carbon reduction, water saving, and pollution prevention facilities for environmental protection.

In addition, litigation cases are reported and discussed in the audit committee meeting each quarter. For detailed handling and responding mechanisms, please refer to Section 1.2.4 on regulations compliance.



Strategic Focuses for Sustainable Development

UMC maintains our established business strategy of "balancing financial structure improvement and continuous growth" to continuously strengthen our competitive advantages. UMC's strategic focuses for sustainable development include: (1) Sound risk management and legal compliance, and pursuit of sustainable corporate value; (2) continuously staying on top of key supply chains, establishing effective partnerships, and developing innovative business models; and (3) working hard on technological innovation to integrate advanced manufacturing, smart factories, data assets, and top talents. Sustainable plans are promoted in terms of "focusing on the development of differentiated advanced processes and specialty technologies to help customers succeed," "continuously strengthening manufacturing capabilities and shortening delivery cycles to improve overall quality and productivity," "expanding market and customer management to maintain our leadership status in wafer fabrication," and "maximizing employee potential and accountabilities, integrating organizational and operational performance, and enhancing competitiveness in sustainable operations."

In 2020, the UMC Corporate Sustainability Committee formulated 41 KPIs, which were promoted and implemented by the corresponding departments. A total of 36 KPIs were completed, for a completion rate of 88%, while the remaining 5 KPIs were listed as items to be tracked in 2021. In addition, UMC has added 35 new KPIs for 2021 and has promoted a number of ESG projects, which integrate with the UN's 14 Sustainable Development Goals (UN SDGs).





1-2-3 Integrity Management

UMC attaches great importance to the reputation of the organization as a whole, and is committed to maintaining the highest ethical standards and professional capabilities. UMC strictly requires that the company's employees, agents, distributors and contractors must comply with relevant anti-corruption and anti-bribery laws and regulations applicable to the country where the business is performed, including but not limited to the Foreign Corrupt Practices Act of the United States, the Bribery Act 2010 of the United Kingdom, and the Anti-Corruption Act of China.

In order to implement the aforementioned anti-corruption laws and regulations, UMC has formulated the "UMC Code of Conduct" (applicable to subsidiaries, joint ventures, suppliers, customers and other individuals with business relations with UMC) for all employees and business partners to follow, hoping all to have the required business integrity and ethics to gain public trust, ensuring the company's continuous growth and development to jointly practice corporate social responsibility, and promoting the economic, social, and environmental balance to achieve sustainable development.

UMC also encourages open communication with employees and other third parties. When the employees have doubts about ethical and legal compliance conducts or encounter any unequal treatment in the workplace, they can seek assistance through consulting with staffs in the Human Resources Department or other internal channels for employee care to obtain appropriate advice, and make a report to discover, prevent and avoid major misconduct and violations of government laws and regulations. For related information, please refer to the following website of UMC https://www.umc.com/en/Html/UMC_code_of_conduct

The Board of Directors, the highest governance body of UMC, also conducts the communication and training of anti-corruption policies and procedures every term. The 9 directors of this term have all completed the training on October 30, 2019, with a completion rate of 100%. As for the employees of UMC, all of them have received and clearly understood the concept of business ethics through online self-examination and physical training courses. In addition, UMC also put related norms on UMC's internal website as references for the employees to check at any time. If the employees have any questions, they can contact the staff of the Human Resources Department for further assistance. The combination of all these efforts have completely incorporated business ethics into the employees' daily work and execution of businesses. Moreover, UMC also formulated and announced the "Anti-Corruption and Anti-Bribery Policy" in 2020 and has promoted the implementation of "Anti-Corruption General Knowledge" and online self-examination for employees in 2021, achieving a completion rate of 98%.

To ensure that the related practitioners abide by the codes of ethics, UMC also formulated the "Policies and Procedures for Refraining from Insider Trading" continuously promoting the policies and making every effort to prevent insider trading. UMC has dedicated personnel to notify the directors and the management team on a monthly basis, providing them the dates when no transactions can be conducted in the next two months for reference.

On the other hand, through the annual internal control self-examination 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 Department has established an annual audit plan according to laws and regulations and risk considerations to conduct related audits, report the audit results to the Audit Committee and the Board of Directors regularly and monitor the improvements.

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 2020, UMC did not receive any penalties for the violation of anti-corruption laws and regulations.

Number of grievances received in 2020

	The Total Number of Grievances filed through the Mechanism	The Number of Grievances that were Addressed(or reviewed)	The Number of Grievances 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 2020.



1-2-4 Legal Compliance

UMC's customers are located around the world, and its operations are distributed over several countries. To ensure that operations are in compliance with the laws and regulations of each country, thereby avoiding losses due to legal violations or avoiding profit loss due to fines, UMC has consistently paid close attention to all changes in policies or laws that might impact the company's business or finances.

All UMC departments must comply with relevant laws and regulations. UMC has a dedicated legal department serving as a legal platform to offer legal advice and assistance to each department. UMC's employees can research relevant training course information and promotional materials on UMC's internal website. UMC and its employees are required to comply with relevant laws and regulations. UMC also arranges training programs and courses on legal compliance to familiarize employees with updated regulations. Prompt updates, internal reviews and specification revisions allow employees to implement job regulations into their daily management, thereby ensuring that the company complies with the law.

Training Courses for Legal Compliance

Online Courses

UMC ensures to comply with the law at any time through internal website update information, internal review, specification revision and update, and implementation, etc.

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 Act (anti-trust law), import and export control. Employees can obtain training course information and promotional information from UMC's internal intranet site.

Seminar Courses

Outside legal professionals and experts are invited to lecture on the latest legal trends and information, and exchange ideas.

Classroom Courses

Classroom instruction on important policy or statutes, including fair trade, insider trading, confidential information protection, high-tech export controls, intellectual property protection and personal data protection are offered.

Outsourced Courses

Arrangements are made for legal staff to attend outside training to update their knowledge of amendments and latest news and details to ensure compliance with latest requirements.



Legal Compliance Status

In 2020, UMC did not receive any penalties for violating corporate governance, anti-corruption or fair trade related laws and regulations, and there were no managers violating 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 according to law, major deficiencies and improvements are summarized in the annual report of UMC.

UMC discloses major judicial cases in its annual report every year. As of December 31, 2020, UMC has paid a fine of US\$60 million and a special tax of US\$400 due to the settlement of the trade secret lawsuit with the U.S. Department of Justice, and has recognized the aforementioned fines as non-operating losses. 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, controls related risks with various internal standard operating procedures, and regularly improves related regulations. UMC did not incur fines due 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 :

I. Anti-TrustLaw

In 2011, UMC formulated and announced a fair trade compliance policy, requiring its employees to follow the policy. Meanwhile, UMC arranged the required education and training courses for its supervisors and employees to avoid violating the laws. In 2020, UMC implemented the annual "Anti-Trust Law" online education and training as well as related tests, aiming to develop the basic knowledge of antitrust in all employees and reduce the risk of legal compliance. Furthermore, to enhance UMC's compliance with the antitrust or anti-unfair competition laws in various countries around the world, UMC released the "Regulation for Antitrust Procedures" in January 2021, which states the code of conduct, the responsible units for anti-trust matters and the countermeasures for related risks, serving as the guideline for internal units to follow when conducting business.

II. Trade Secret Protection

In 2017, UMC was accused of violating Micron's trade secrets. The case is currently tried in court. Prior to this, all employees of UMC were trained for the protection of trade secrets during the new-employee orientation. For the protection of trade secrets, UMC specifically requires its employees to take the refresher training every year to build their basic knowledge on trade secrets. UMC also takes this opportunity to publicize the confidentiality of contract signing process and appropriate review of data sharing. As of the end of March 2021, 8,030 employees have received the refresher training. In addition, for employees in related departments, UMC also implemented the test of "Basic Legal Concepts and Risk Awareness for Incoming Documents" in 2020 to raise the employees' risk management awareness for incoming documents, avoiding the violation of trade secrets. A total of 230 people completed the training course. In 2020, the course on intellectual property rights protection regulations was organized for new employees, with a total of 797 attendees.

To implement trade secret management procedures, UMC formulated several trade secret protection regulations in 2020, including the "Trade Secret Protection Management Regulations" and the "Evidence Information Preservation 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 strictly confidential project management measures for confidential information of different levels, and the timely preservation of necessary evidence for suspicious cases. As of 2020 Q4, no trade secret related cases have occurred.

Moreover, to prevent the risk of trade secret leakage caused by external personnel, UMC also completed the promotion of information security awareness for contractors in 2020 and retained the related training records. In addition to re-emphasizing UMC's "zero violation" control requirements, UMC also requires external personnel to comply with the regulations for physical information security inspection.

UMC has signed non-disclosure agreements with its vendors and customers to require mutual protection of confidential information. UMC has also set an internal regulation, Confidential Information/Data Management, so that customer information is handled by a designated unit to avoid inappropriate disclosure.



1-2-5 Participation in Associations

UMC plays an important role in the global semiconductor industry, hoping to exert its industrial influence and work together with other enterprises to cope with the changes in the international situation as well as the global industrial trend. We participate in different industrial associations and non-profit organizations to facilitate industrial exchanges of experiences and future development. Our topics of concern include corporate sustainability, technological innovation, supply chain management, etc. UMC upholds a politically neutral position and does not engage in political activities such as elections or political contributions.

Key Association Involvement

	Category	Member Fees Paid in 2020 (NTD)
  Allied Association for Science Parks Industries (ASIP)	Trade association	954,000
  Taiwan Semiconductor Industry Association (TSIA)	Trade association	900,000
 Semiconductor Equipment and Materials International (SEMI)	Trade association	668,709
 Responsible Minerals Initiative	Trade association	270,806
 Business Council for Sustainable Development of Taiwan (BCSD-Taiwan)	Trade association	60,000
 Taiwan Carbon Capture Storage and Utilization Association	Trade association	55,030
 Taiwan Electrical and Electronic Manufacturers' Association (TEEMA)	Trade association	42,000
 Chinese Professional Management Association (CPMA)	Trade association	20,000
Total		2,970,545

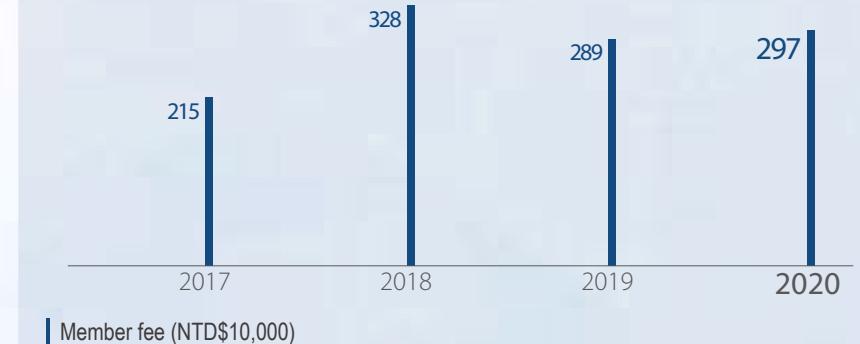


Participation in Project or Committee



Member

The Cost of Associations Participation





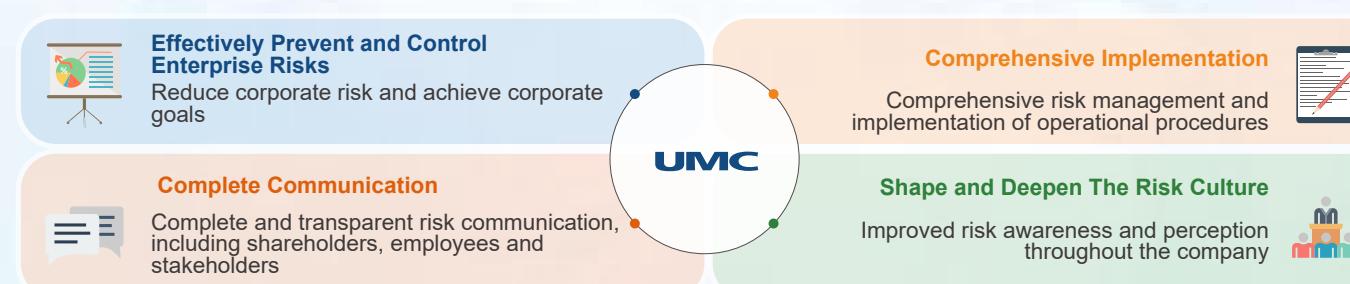
1-3 IMPLEMENTING RISK MANAGEMENT

1-3-1 Risk Management System

In view of the increasing international emphasis on enterprise risk management, 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, follow the company's risk management policy, and prioritize countermeasures and managements for major risks. Moreover, UMC completed the standard operating procedures of "Enterprise Risk Management Manual" in 2020 for all employees to follow for risk management and planned to cooperate with external consultants to identify the maturity of enterprise risk management to ensure that the completeness of risk management and the advancement of methods are keeping pace with the times.

Enterprise Risk Management Policies

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



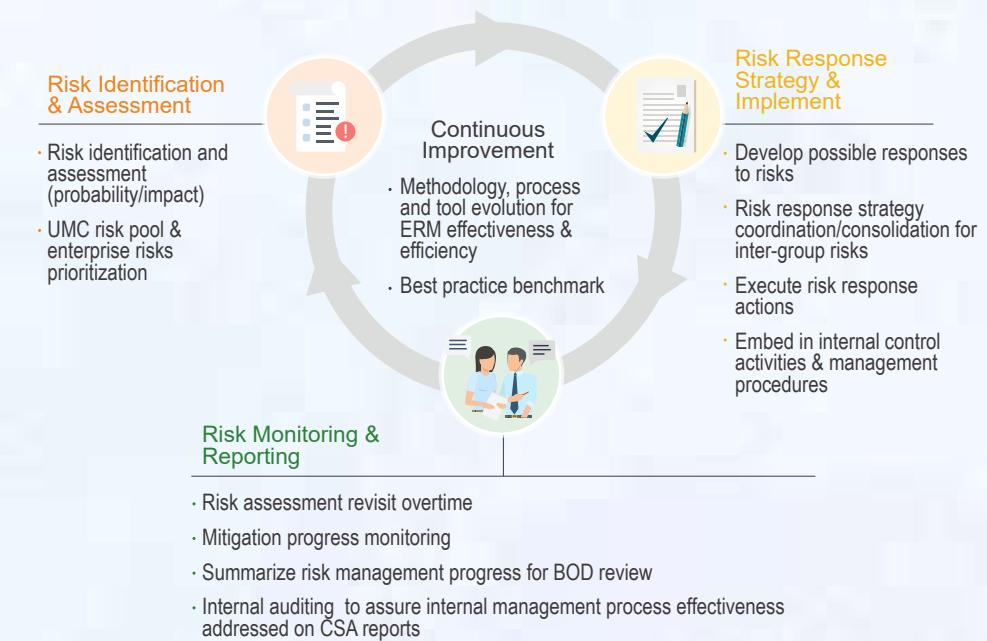
Enterprise Risk Management Architecture



Under the guidance of the enterprise risk management policy, the Enterprise Risk Management Committee coordinates relevant departments of the company, and senior representatives of various organizations to jointly review the internal and external risks that the company faces, facilitates risk response measures for company-wide major risks, and reports to the board of directors every year to communicate risk management policies and risk management effects. 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 risks in the areas of strategy, operation, finance, and hazard, and evaluates the possibility of their occurrence and the severity of their impact on the company (the impact assessment includes finance, operations, personnel, and company reputation), draws a risk map, and defines the priority order and risk level of risk items. After balancing reasonable risks and preventive costs that the enterprise can sustain, the risk management plans are drawn up and adopted. The committee periodically reviews possibility and severity of risks for changes over time to monitor the effectiveness of risk management plans and related control operations. At the same time, we also grasp the opportunities that may accompany risks.





1-3-2 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 the company's operations on environmental, social or corporate governance issues. In addition, in terms of emerging risks, the growth of Taiwan's semiconductor industry outpaces the global average. Driven by factors such as continued development of new process technology and clustering effects of peripheral equipment and material suppliers, UMC is optimistic that the competitive advantage and growth potential of Taiwan's semiconductor industry will remain a global leader in the next few years. The political or economic tensions between major countries in the world have even led to trade wars in recent years, green energy policies may cause investment and operation pressure, and climate change, etc., all of which will bring impacts as well as opportunities that cannot be overlooked. As a link in the supply chain, UMC also pays attention to the global risk situation in addition to the emerging risks of the industry and 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, the specific sections are provided to explain the content of the response. The remaining major risks and emerging risks in 2020 are as follows:

Strategy



Tension in Political or Economic Relations between Major Countries Cause Potential Impact to Company



Emerging Risk

Risk Description

Internationally, due to political or economic tensions between major countries, national power has been exerted to penalize specific entities or even trigger a trade war. The main methods include raising tariffs, embargoes, policy interventions, government subsidies, etc. Such tensions or trade wars seem to be difficult to resolve in the short run.

Potential Impact

The impact on UMC includes revenue, delivery, and business reputation. For example, a sharp increase in tariffs in importing countries may drive up end-market prices, thereby reducing consumer purchase demand and further reducing UMC customer orders. The United States Export Control Act regulates that if those whose content originating from the United States exceeds a certain ratio, their products may not be exported to specific countries. This may affect UMC's direct or indirect supply to specific customers. Restrictions on the export of high-tech materials may affect UMC's production, resulting in failure to deliver on time and damage to business reputation.

Countermeasures

- Increases the diversification of customers' region and product application. Besides cautiously facing existing business in North America and the Asia Pacific, UMC also aggressively expands its business from other regions such as Europe and Japan. In addition to the company's original business in server, automotive and industrial applications, UMC also has active efforts aimed at expanding its opportunities in 5G, IoT, AI, etc.
- Monitors and evaluates the impact of external changes (including global regulations, politics, economic conditions, etc.) on the Company's business (raw materials, customer demand, etc.) and takes necessary risk response measures. In practice, a raw material supply chain tracking mechanism is established, and the legal compliance response system is strengthened. Through a more accurate grasp of the country's component ratio of raw materials, UMC can analyze the possible impacts and respond in a timely manner.



The Impact of Cross-strait Relations on Company Strategy and Operation Management

Risk Description

The special relationship between the two sides of the strait is liable to change due to Taiwan's internal political situation, which may directly or indirectly affect the company's operation environment.

Potential Impact

For example, political tensions across the Taiwan Straits may affect the supplier's supply and customer's order; investment restrictions and regulatory changes may affect the company's strategic layout, operation performance and management complexity.

Countermeasures

- Based on the dependence of Chinese customers and China supply chain, the company plans to establish production flexibility and second suppliers in advance.
- Analyze and grasp the direction of changes in cross-strait laws and regulations, and timely adjust management processes and operation directions.



Operation



New M & A Fabs Cannot Create Production Synergy

Risk Description

The company pursues continuous growth and provides better wafer foundry services to local customers. Therefore, mergers and acquisitions are one of the company's important growth strategies. However, the new M&A fabs may not be able to fully achieve the expected production synergy due to factors such as differences in the corporate culture or management methods of both parties, difficult integration of production processes or system differences.

Potential Impact

The new M&A fab cannot achieve the expected merger synergy for some reasons, which may affect the achievement of the company's overall performance goals and even affect the company's long-term growth strategy. For example, cultural differences and communication barriers can reduce company productivity; differences in operation flows and systems may delay in the transfer of new process and new product.

Countermeasures

- A dedicated task force is established to ensure the smooth integration of the new M&A fab. The Company pays attention to cross-national cultural differences and establishes a communication channel at the beginning to build full trust between the employees and customers of the acquisition target.
- Operation process alignment and quality management system calibration are the key to smooth porting of new processes and new products. Benchmark learning facilitated by expert team and adoption of best practices can maximize overall operational efficiency.



The Impact of Contagious Diseases on the Company's Operations

Risk Description

The outbreak of COVID-19 in the end of 2019 is still in a global pandemic, which has adversely affected the world economy and has an impact on the stability of the supply chain. It is estimated that the epidemic will not be alleviated in the short run.

Potential Impact

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

Countermeasures

UMC established its coronavirus epidemic control and response center in January 2020 to coordinate relevant information and resources usage, such as

- Daily reports and discussions on issues such as operational impact, supply chain conditions, pandemic prevention strategies and preparations for response activities.
- Set clear stages of pandemic prevention management, and prepare countermeasures in advance according to the situation of each stage, and carry out corresponding activities in accordance with the development of the epidemic. For example: reduce human infection and impact on production; reduce material shortages by increasing buffer inventory, find and expedite the verification of second suppliers; reduce the operation impact of specific fabs by cross-fab products and order adjustment and transfer.
- Pay extra attention to the mid- to long-term changes caused by the epidemic in the relevant industrial environment, such as structural changes in market demand and global supply chain restructuring. We closely monitor and respond to the risks and opportunities brought by the epidemic.

For related information, please refer to 1.3.3 Improving Operational Risk Management and Special Feature "COVID-19 Prevention" in this report.

Finance



Currency Exchange and Interest Rate Risk

Risk Description and Potential Impact

- Revenue and capital expenditure in the semiconductor industry is mainly calculated in currencies other than NT, and hence fluctuates with exchange rates.
- Due to large exposure of deposits and loans in the semiconductor industry, changes in interest rates could result in deviations from expected financial performance

Countermeasures

UMC balances foreign currency assets and liabilities by natural hedging. In addition, appropriate management of debt period and fixed or floating interest rate structure reduces interest rate risk.

Hazard



Government's Green Energy Policy May Cause Investment and Operation Pressure



Emerging Risk

Potential Impact

- It is estimated that in the next 20 years, an additional expenditure of no more than NT\$200 million per year will be spent on photovoltaic system establishment to meet the target of 10%. In addition, it is estimated the collection of carbon tax in Singapore and Taiwan will not exceed NT\$40 million and NT\$200 million, respectively, which will cause profit erosion.
- If the Taipower generators break down and the renewable energy supplies are unstable during peak consumption periods, it may cause power trip or voltage dip risk due to insufficient backup capacity. Based on the statistical data of voltage dip loss from 2015 to 2020, it is estimated that the annual impact will not exceed NT\$50 million per year.

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 the electricity consumption.
- Install diesel oil generators and enhance UPS install percentage.
- Establish safety level management mechanism of diesel oil for generators.
- Replace existing lead-acid UPS batteries with lithium-ion UPS batteries year by year to improve supply stability.

For other response and achievements, please refer to related chapters: 1.3.5 Managing Climate-related Risks and Opportunities, 3.1 Climate Action ,and 3.2 Energy Management.

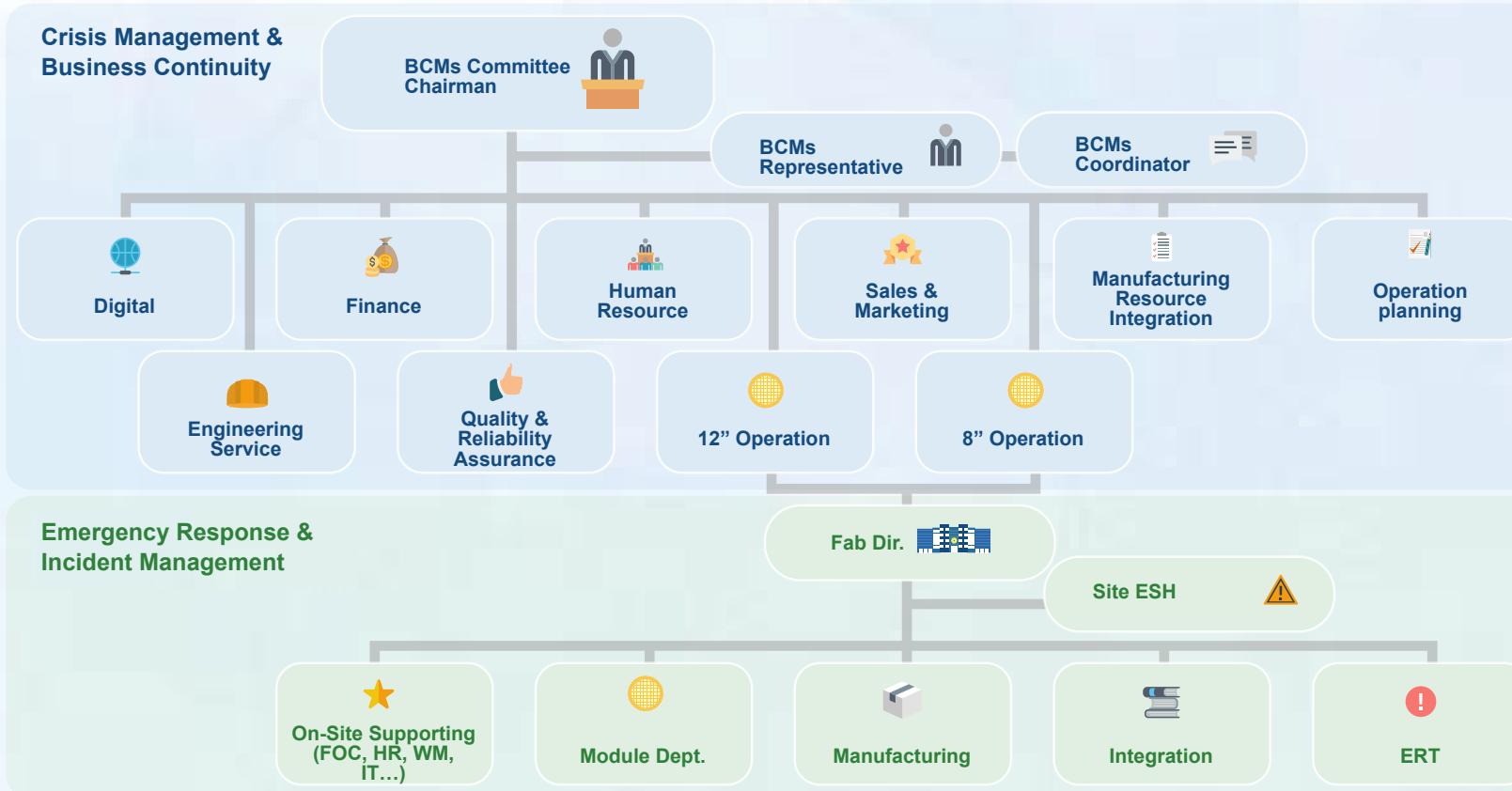


1-3-3 Improving Operational Risk Management

Business Continuity Management

As risks are escalating over the world, UMC recognizes the issue of business continuity, which means providing uninterrupted services to strategic customers and key stakeholders, and upholding customer diversity, sound quality and uninterrupted foundry manufacturing as the highest mission for business continuity management. Hsinchu headquarter, Fab12A, and Fab12i passed ISO 22301:2012 verification sequentially since 2013 and completed the renewal of verification to maintain the effectiveness of the certification in February 2020. Composed of the management teams, UMC's Taiwan headquarter established "Business Continuity Management Committee" to be in charge of resources integration, constant review of improvement plans, and, when risks arise, to ensure making all-out effort to maintain and recover the highest operation objectives and protect the utmost rights and interest of customers and stakeholders.

BCM committee Organization chart



Business Continuity Management Framework

UMC follows the ISO22301 standard to establish, implement, monitor and maintain BCMS, with continual improvement of the system, to ensure that business operations continue during incidents or disasters, and to realize the goal of non-interrupted operation.

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.

Stage 1 Emergency Response Control and rescue (hours-days)



Limit 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.



UMC Business Continuity Policy and Objective

UMC strives to provide the most competitive wafer foundry services and pursuing the business continuity of enterprise, strategic customers and stakeholders, and to fulfill risk management mechanism to ensure continuous service. Our business continuity policy and objectives are:



Policy

UMC aims to provide customers with more excellent and continuous service.

UMC carries out business continuity system operation and resources integration to ensure the system's effectiveness.

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.



Objectives

Personnel safety is the top business continuity objective.

UMC achieves its business continuity objective by reducing operational impact and shortening recovery time through thorough risk assessment and the establishment of preparedness as well as response capabilities to various disasters.

Business Continuity System



II. BCM Management Achievements

The BCM management review meeting is held annually to review both risks from internal and external and how precisely and effectively BCM system is operated. 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.



In 2019, after referring to external accident "smoke damage in clean room caused by fire in nearby factory", in 2020 we collaborated with the world-renowned professional disaster recovery expert "Belfor" to introduce "semiconductor equipment recovery after disaster" training course with fab BCP exercise scenario and incident management experience to enhance our abilities of self-recovery and loss reduction after disaster and strengthen continuous production and resilience.



After the breakout of COVID-19 epidemic at the end of 2019, UMC immediately established epidemic control taskforce to discuss countermeasures and response activities in early stage according to BCM guidelines, and we proactively provide stakeholders with epidemic control and response updates to relieve their concern about business continuity. The taskforce still holds weekly meeting as of today, and the frequency is rolling-adjusted according to epidemic condition. For detailed information about COVID-19 counter measures, please refer to the chapter on COVID-19 pandemic prevention and response.



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 an active attitude toward preventive disaster risk management, and seeks to achieve the highest standard of semiconductor industrial safety through rigorous risk engineering controls and implementation of safety regulations and standards.

Disaster Risk Management Objectives

Fire Safety



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. 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 professional training on fire scenes and have actual disaster relief capabilities.

Earthquake Protection



UMC actively plans and establishes sound disaster risk management and response procedures, and 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. For those fabs built before 2000, continuous improvements are scheduled. 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. Furthermore, new anti-seismic techniques such as seismic isolation platforms for production equipment and Earthquake Early Warning System (EEWS) are imported to UMC to further ensure personnel safety and reduce the potential loss of process tools and auxiliary equipment.

Equipment Safety



The Environmental Health and Safety Standard for semiconductor manufacturing equipment (SEMI-S2), NFPA, and FM are the primary international standards adopted by UMC. When adopting the Equipment ESH Purchasing Specifications into its procurement procedures, equipment must conform to review standards before being brought into the fab and conform to inspection after installation for effective equipment safety control.

2020 Hazard Risk Control Achievements

Upgraded loss prevention specification of HPM FDB/VM.



Signed red alert contract with world-renowned professional disaster recovery expert Belfor and conducted training sessions on loss mitigation and recovery after disaster to enhance self-rescue ability.

Collaborated with Marsh Risk consultant to execute risk assessment and improvement project of water (UPW, PCW, LSR, WWT, Drain), gas, and chemical systems.



2020 Practice of disaster recovery plan course

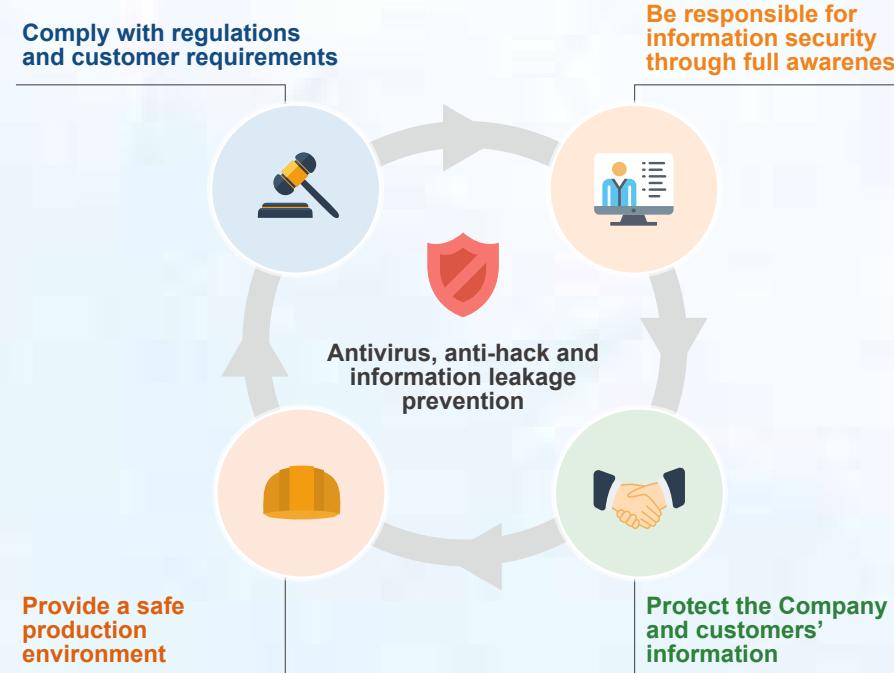
2020 BCP exercise: A workshop was held to facilitate cross-group communication. Fab director (AVP. Chuang from Fab 12A) acted as the commander and integrated ideas from each group to come out with the most appropriate strategies.



1-3-4 Commitment to Information Security Risk Management

Information Security Policy Implementation

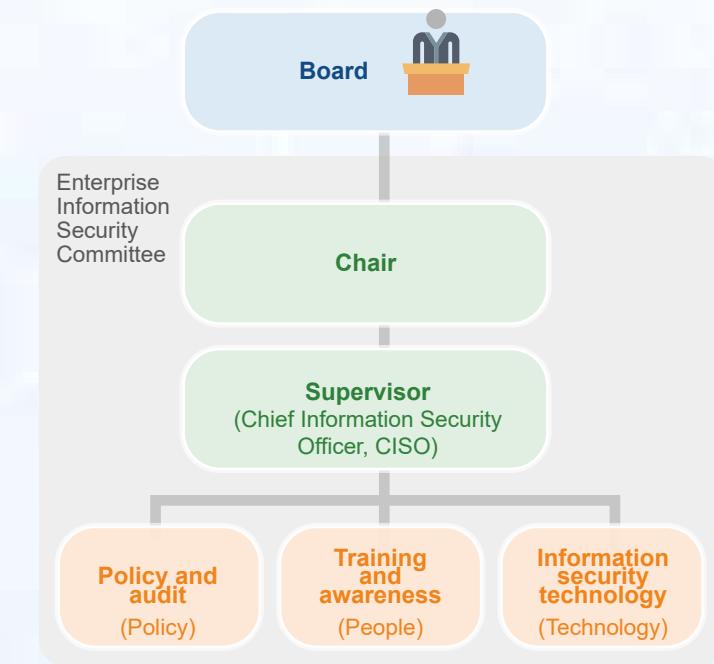
UMC's information security policy is based on these guiding principles: "To establish Information Security Management rules in accordance to customer requirements, to reach a consensus that information security is everyone's responsibility through full awareness, to protect information confidentiality, integrity, and availability for the Company and customers, and to provide a safe production environment to ensure sustainable operation of the Company's business." 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, antivirus systems, as well as various internal control systems to enhance the Company's ability to defend against external attacks.



Information Security Committee Organization

In 2018, UMC established the "Enterprise Risk Management Committee" to collaborate with key organizations in the Company's risk management and control to jointly examine and manage internal and external risks. Among them, "Enterprise Information Security Committee" is responsible for information security management system planning, establishing and maintenance, and the information security and cyber security policy is overseen by the Board of Directors.

Through the semiannual review of the analysis results for information security risks as well as the corresponding protective measures and strategies adopted by UMC, the adequacy, suitability and effectiveness of the information management system for continuous operation can be assured.

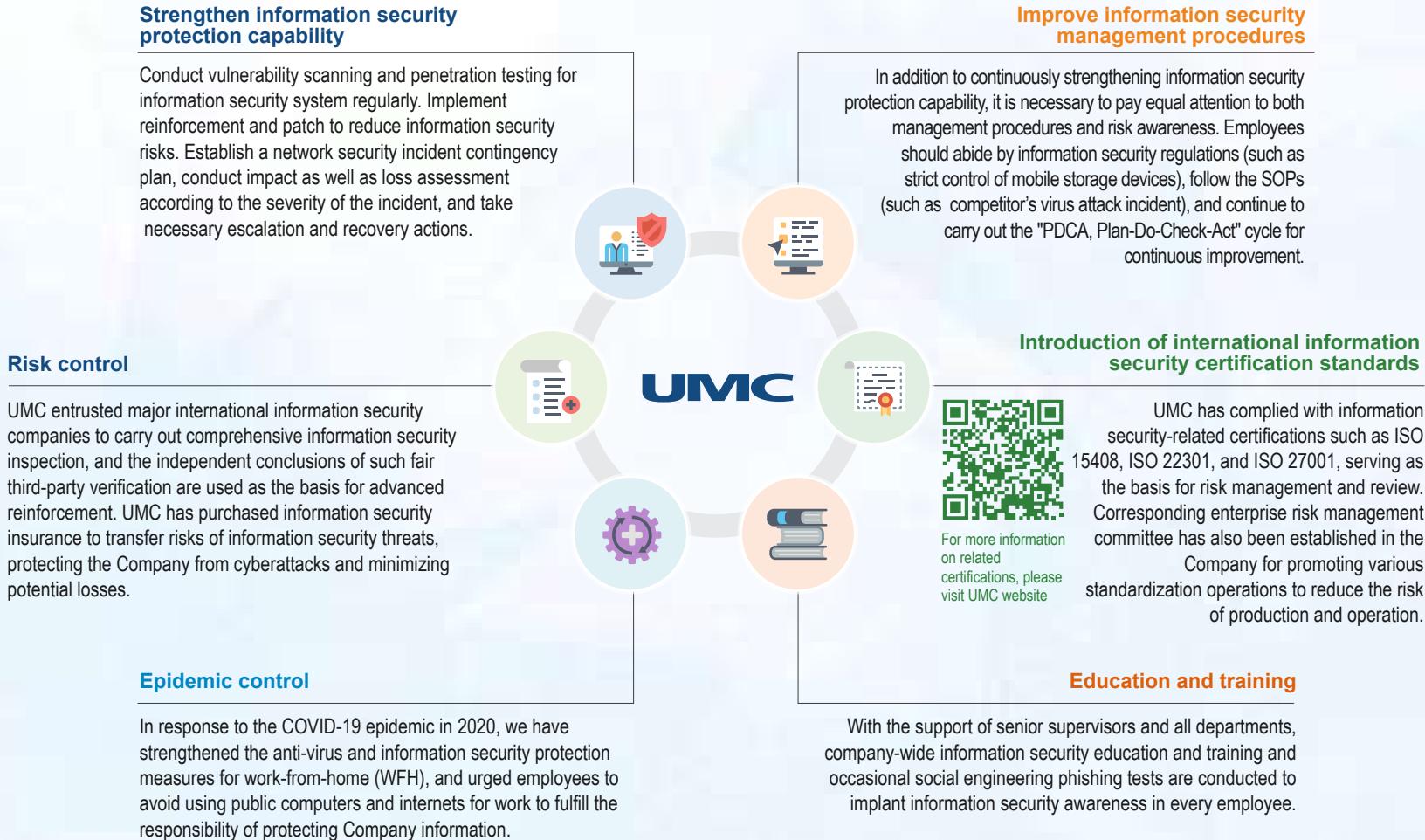


Information Security Risks and Impact

According to the Global Risks Report 2020 issued by the World Economic Forum, "Cyberattacks & Data fraud or theft" are still among the top 10 risks. Cyberattacks may not only expose the Company to the risks of data leakage and ransom threats, but also interrupt the production system, causing serious operating losses or even damaging the reputation of the Company. Many international and well-known companies have encountered serious losses due to the attack of ransomware. Facing the ever-changing and diverse external threats, it is critical to strengthen corporate information security. Correctly responding to the changing environment with limited resources is an important task. And UMC has no major information security incidents in 2020.



Countermeasures for Information Security Risks



1-3-5 Managing Climate-related Risks and Opportunities

UMC is actively attuned to the risks and new impact that climate change may bring under global climate change and the transformation of low carbon market. UMC has constructed the UMC Climate Change Risk and Opportunity Assessment based on multiple data points: ISO 14090:2019 Adaptation to Climate Change, and the assessment procedure in the UK Climate Impact Programme (UKCIP). Based on the aspects such as policies, regulations, transition of market and technology, reputation and physical risk by related responsible departments, UMC conducted the risk and opportunity analysis and developed strategies of adaptation and mitigation. With the participation of management team (MT) level connected with our corporate green process technology development roadmap, the opportunities were converted to specific benefits of carbon reduction and financial figures. Furthermore, we also disclosed the sustainable development and climate resilience of UMC by referring to the framework of TCFD (Task Force on Climate-related Financial Disclosures).



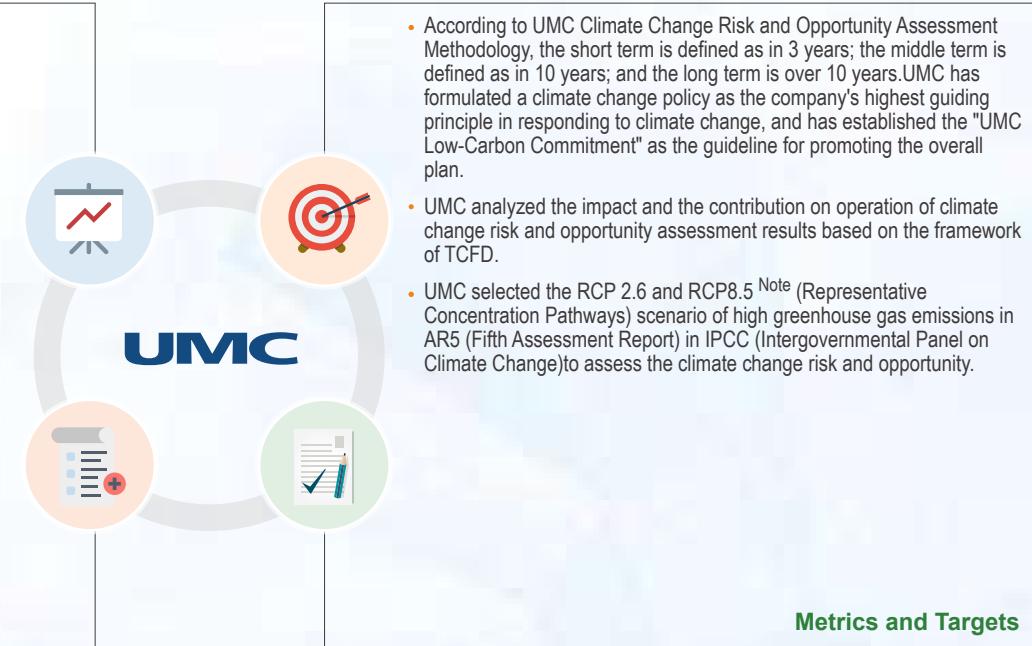
More details please refer to



TCFD Disclosure Framework and UMC Management

Governance

- Board of Directors:**
The Board oversees climate change risks, opportunities, coping strategies, and related promotion plans. The Board also oversees promotion results, including budget implementation, revision and addition; cost-effectiveness review; and following up on implementation results. It also oversees the company's major fundraising, issuance, and private placement of equity securities that are related to climate change.
- Enterprise Risk Management Committee:**
The Committee coordinates related departments within the company to jointly review the Company's internal/external risks (including climate change risks), formulates countermeasures for material risks, and reports to the Board of Directors annually.
- Corporate Sustainability Committee:**
Responsible for proposing and implementing the corporate social responsibility vision; tasks related to the corporate social responsibility vision; systems & related management policies; and specific promotion plans (including climate change). Also responsible for reporting climate change-related promotion plans and operational results to the Board of Directors every year.



Risk Management

- Identify possible policies, regulations, markets and technologies transitions, and business reputation and physical risks that may result under the RCP2.6 and RCP8.5 scenarios for risk and opportunity analysis.
- With the participation of related departments in the climate change risk and opportunity assessment task force, UMC developed the adaptation and mitigation strategies for top 3 risks. The overall results will be reported to CS committee.
- Annual review on risks and opportunities of transitions in policies, regulations, technologies, markets and business reputation; in every three to five years, when the IPCC and the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP) updates climate scenarios, re-examinations and on-going corrections on the assessment results of physical risks, transition risks, and opportunities will be carried out.

- According to UMC Climate Change Risk and Opportunity Assessment Methodology, the short term is defined as in 3 years; the middle term is defined as in 10 years; and the long term is over 10 years. UMC has formulated a climate change policy as the company's highest guiding principle in responding to climate change, and has established the "UMC Low-Carbon Commitment" as the guideline for promoting the overall plan.
- UMC analyzed the impact and the contribution on operation of climate change risk and opportunity assessment results based on the framework of TCFD.
- UMC selected the RCP 2.6 and RCP8.5 Note (Representative Concentration Pathways) scenario of high greenhouse gas emissions in AR5 (Fifth Assessment Report) in IPCC (Intergovernmental Panel on Climate Change) to assess the climate change risk and opportunity.

Metrics and Targets

- UMC has established climate-related risk and opportunity assessment management indicators such as water consumption, energy use, greenhouse gas emissions and waste output.
- Relevant emission information has been checked in accordance with the Greenhouse Gas (GHG) Protocol and the ISO 14064 Standard, and data verification by a third party has been commissioned. In addition to complying with regulations, the current status also complies with IEEE's standards for fluorinated greenhouse gas.
- UMC has established standards for new fabs and new equipment to respond to climate change and greenhouse gas reduction regulations, and has also set future KPIs including greenhouse gas, water and electricity reduction by 2025.

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.



Note: The climate change scenarios in IPCC-AR5 are defined as 4 types, including RCP2.6, RCP4.5, RCP6.0, and RCP8.5, which mean RCPs are labelled 2.6 W/m², 4.5 W/m², 6 W/m², and 8.5 W/m² respectively after a possible range of radiative forcing values in the year 2100. The RCP2.6 is scenario based on global warming mitigation which people proactively reduce carbon emissions, and the RCP8.5 is the worst scenario – Business as usual.



UMC Climate Change Risk and Opportunity Assessment Procedure

1. Collection of climate scenario data

Collection and updating of weather simulation data from IPCC-AR5 and physically hazardous threats caused by climate change identified by Taiwan government's down-scale simulation report.



2. Development of UMC climate change risk assessment tool



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

3. Climate change risk assessment

Related departments were invited to participate in the assessment of climate change risk and opportunity. Adaptation and mitigation strategies were developed for the top 3 risks in short, middle and long term from the identification.



4. Review the results

The overall results will be summarized and reported to CS Committee.



5. Continuous monitoring

Conduct annual review of the changes in policy, regulation, technology, market, and reputation of transition risk and opportunity. When IPCC and TCCIP renew their climate scenarios in every 3~5 years, the physical risks, transition risks, and opportunities are re-examined and the results evaluated. Revisions will be made accordingly in a rolling manner.



UMC Climate Change Risk and Opportunity Matrix



Ranking for short, medium, or long term

Transition Risks

- Short-term transition risk
- Mid-term transition risk
- Long-term transition risk

1 Imposing of carbon tax / fee

(4, 5, 10)

2 Customers' green energy requirements

(2, 3, 8)

3 Changes in customer preferences/green product demand

(1, 4, 4)

4 Inability to comply with international climate change actions affecting business reputation

(2, 3, 4)

5 Green energy policies increases the company's investment pressures

(5, 10, 15)

6 Green energy policies cause risk of power instability or shortages

(2, 4, 8)

7 Water surcharges imposed

(3, 4, 5)

Physical Risks

- Short-term physical risk
- Mid-term physical risk
- Long-term physical risk

8 The fab drainage systems are unable to discharge huge amount of runoff during heavy rainfall and cause operation disruption

(3, 3, 3)

9 Increasing loading in air conditioning and electricity consumption caused by global warming

(2, 6, 6)

10 Operation impact due to typhoon day-off

(2, 2, 3)

11 Increased cost of raw material distribution and transportation

(1, 4, 6)

12 Water restriction causes that parts clean suppliers are unable to produce and deliver on time

(1, 2, 2)

13 Water shortage influences production

(3, 3, 3)

14 Power outage or voltage drop caused by intensified typhoon influences production

(2, 2, 3)

Opportunity

- Short-term opportunity
- Mid-term opportunity
- Long-term opportunity

15 Increasing demand for environment-friendly product

(16, 25, 25)

16 Greenhouse Gas Reduction and Management Act carbon trading opportunities

(4, 10, 10)

17 Introducing BCM to reduce risks of customer supply chain disruption

(3, 3, 3)

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 colored words (blue words) indicate the top three risks.



The results of UMC climate change risks and opportunities in shortand mid/long termsare analyzed according to the TCFD:

Major Climate-related Risks and Responses

Category/Risk	Description of Scenario	Potential Financial Impacts	UMC's Response
Transition			
Policy and Legal Regulations Imposing of carbon tax/fee	<ul style="list-style-type: none"> Singapore imposes carbon tax and increases fees. Taiwan imposes carbon tax/fee,assuming that the rate is calculatedaccording to the first-stage rate in Singapore. 	<ul style="list-style-type: none"> The annual operating cost of the Singapore fab will increase, and it is estimated that it will not exceed NT\$40 million. The annual operating cost of theTaiwan fabs will increase, and it is estimated that it will not exceed NT\$200 million. 	<ul style="list-style-type: none"> Build UMC's own solar power generation facilities. Promote energy-saving plans and greenhouse gas reduction plans.
Policy and Legal Regulations Green energy policies increases the company's investment pressures	<ul style="list-style-type: none"> Regulations require expanded installation of renewable energy in Taiwan, or pay a monetary substitution. 	<ul style="list-style-type: none"> The annual operating cost of theTaiwan fabs will increase, and it is estimated that it will not exceed NT\$200 million. 	<ul style="list-style-type: none"> Expand Company's own renewable energy installations.
Policy and Legal Regulations Green energy policies cause risk of power instability or shortage	<ul style="list-style-type: none"> Impacts from voltage drops include reduced revenue and increased costs. 	<ul style="list-style-type: none"> Estimated annual financial impactis less than NT\$50 million. 	<ul style="list-style-type: none"> Evaluate installing additional generators.
Policy and Legal Regulations Water surcharges imposed	<ul style="list-style-type: none"> Taiwan imposes water surcharge, assuming a rate of NT\$3/ton is used as the basis for estimation. 	<ul style="list-style-type: none"> Annual operating costs is estimated to increase by no more than NT\$40 million. 	<ul style="list-style-type: none"> Improve the production efficiency of manufacturing process, reduce water consumption, and increase water recovery rate. Promote water surcharge reduction measures such as clean production certification and water footprint inventory.
Market Customers' green energy requirements	<ul style="list-style-type: none"> Green electricity must be purchased due to the requirement of the customer, assuming that 1% of green power is needed. 	<ul style="list-style-type: none"> Annual electricity cost is estimated to increase by about NT\$40 million. 	<ul style="list-style-type: none"> 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			
Long-Term Water shortage influences production	<ul style="list-style-type: none"> Daily deduction in tap water supply increases operating costs. 	<ul style="list-style-type: none"> Assuming that water rationing in Hsinchu Science Park (HSP) is 56% and that it is 58% in Southern Taiwan Science Park (STSP) for 30 days, the estimated cost will not exceed NT\$320 million. 	<ul style="list-style-type: none"> 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 pay attention to and monitor the government's capacity to strengthen cross-regional dispatching of water resources.
Long-Term Increasing loading in air conditioning and electricity consumption	<ul style="list-style-type: none"> According to the RCP8.5 scenario, the global mean surface temperature will rise by 0.9-1.7°C by 2040. As temperatures rise before 2040, HVAC power consumption will increase by 4.7%-9.0%. 	<ul style="list-style-type: none"> Estimated annual impact is about NT\$110 million. 	<ul style="list-style-type: none"> Introduce green-building design: <ol style="list-style-type: none"> 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.



Secondary Climate-related Risks and Responses

Category	Risk	UMC's Response
Transition		
Technology /Markets	<ul style="list-style-type: none"> Commitment to new technology investment. Stakeholders such as consumers, customers, investors, etc. demand that enterprises provide green products and exert their influence in the supply chain to indirectly eliminate energy/water-consuming products. 	<ul style="list-style-type: none"> Promote product environmental impact life cycle analysis and certification and carry out source reduction. UMC has already obtained carbon footprint and water footprint certifications, and continues to promote greenhouse gas reduction, energy saving, and water saving projects.

Reputation	<ul style="list-style-type: none"> Customer preferences change. Bad reputation causes negative feedback. 	<ul style="list-style-type: none"> Continue to develop technologies that can reduce chip power consumption, and develop a variety of energy management chips. Study the latest market trends.
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Physical

Short-Term	<ul style="list-style-type: none"> Increases in intensity and frequency of typhoons, storms, and natural disasters result in employee inability to go to work, damage to fab facilities, and interruption of energy/resource supplies. Changes in water quality due to changes in water sources. 	<ul style="list-style-type: none"> Conduct flood potential and risk improvement assessment. Promote enterprise continuous operation management system. Globalize factories and supply chains. Supplier water risk assessments. Conduct water quality risk assessment.
Long-Term	<ul style="list-style-type: none"> Rising sea levels from global warming unfortunately cause inland flooding, resulting in reduced clean water sources, water shortages, and abnormalities and damages to important fab infrastructures. 	<ul style="list-style-type: none"> Expand water recovery and reuse to reduce pressure on water demand. Use limited water resources efficiently. Evaluate the introduction of new water sources. R&D for water resource early warning tools. Include fab location within considerations for future site selection. Establish water status contingency plan.

Major Climate-related Opportunities and Responses

Category	Opportunity	UMC's Response
Product/Service	<ul style="list-style-type: none"> Increasing demand for environment-friendly product. 	<p>Continue to develop technologies related to customer and market demand. For example, the 22uLP technology has been developed to provide better low-power-consumption and power management performance. It is estimated that the compound annual growth rate from 2020 to 2023 will be up to three digits.</p>

Secondary Climate-related Opportunities and Responses

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

UMC's Response

Resource Efficiency

- Respond to policies promoted by the government to reduce greenhouse gas emissions and improve overall equipment and fab operation efficiency.
- Promote voluntary water saving plans every year, reduce water consumption and wastewater discharge, improve water use efficiency, and ensure water resource stability.
- Due to effective water resources management, monitoring and contingency plans, UMC's tolerance to extreme rainfall and drought is higher than that of other enterprises.

Energy Source

- 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

- Develop and apply diversified water sources; in addition to increasing water recovery and reuse in each fab, UMC also includes rainwater, condensate water, and reclaimed water as water sources.
- Water management plans and diversified water sources will reduce UMC's risk in water-stressed areas.

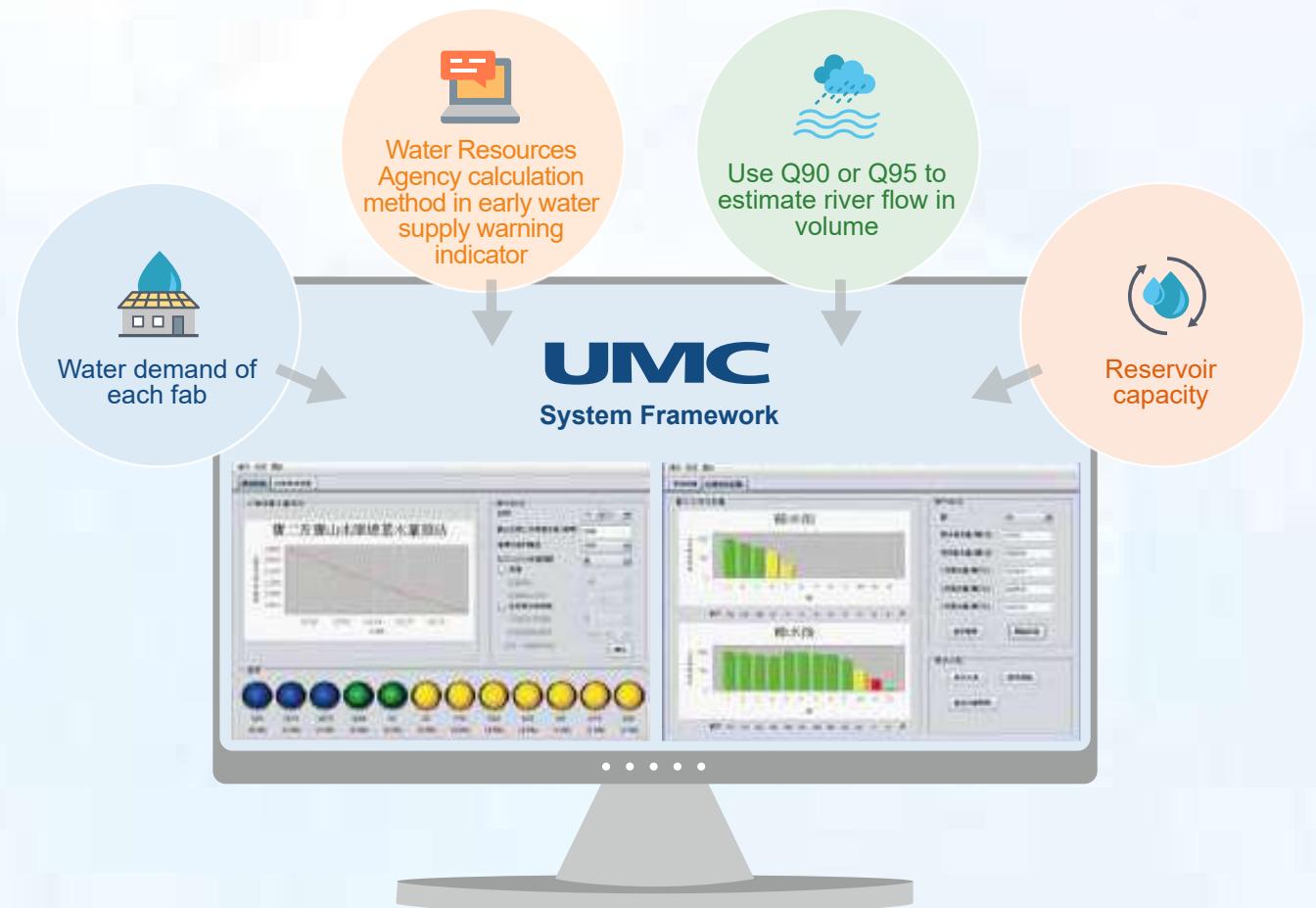
Product/Service/Market/Business reputation

- Implement ISO 22301 BCM to improve organizational resilience, reducing physical impacts from climate change and risks of customer supply chain disruption.
- 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 serves as an association representative in communicating with governmental units, and offers advice on water resource management. UMC also organizes water-saving activities for manufacturers in the Science Park, serving as a committee member to provide consulting services for the industry.
- Collaborate with suppliers to promote the "Triple R League" program and engage in exchange on water, energy and resource recovery, reuse and reduction.
- UMC's Energy Saving Service Team supplies schools, social welfare organizations and other community groups with technical consultations and engineering improvement services for water savings and sanitation, thus enhancing the corporate social image.
- Collaborate with suppliers to promote the Triple R League program, 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 on actual implementation, UMC will facilitate government and related organizations to formulate good and feasible policies and regulations.



Water Risk Management Tool Development

With regard to the water resource 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 know in advance about any possible water shortages. By combining with UMC's current water shortage response measures, water-saving measures can be planned or implemented ahead of time to significantly reduce operation risk.



Responding to the Water Crisis

Taiwan is facing its worst drought in 56 years. On February 2021, the Hsinchu and Tainan areas have been implementing second-phase water rationing, with water restrictions of 11% and 7%, 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. Furthermore, UMC has complied with the Water Resources Agency's reclaimed water construction schedule for using reclaimed water in fabs. For water rationing rates of under 20%, total investment cost is no more than NT\$3 million per day.

Response measures

- Formulate water-saving plans to reduce water consumption.
- Sign contracts with water tankers and private water suppliers, and conduct water delivery drills as needed.
- Develop contingency plans for different stages of water rationing, including a variety of water-saving measures and production scheduling adjustments.
- Act in concert with the Water Resources Agency's reclaimed water construction schedule to use reclaimed water in fabs.

Climate-Change 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 2020, UMC reached the Leadership Level in water security performance and the Management Level in climate change performance. This demonstrates that UMC has been recognized by international investment institutions for our sustainability information disclosure.



1-4 BUILDING SUSTAINABLE SUPPLY CHAIN

1-4-1 Building Sustainable Supply Chain

In 2020, UMC, including subsidiary HeJian Technology (Suzhou) Co. Ltd., and United Semiconductor (Xiamen) Co. Ltd., cooperated with more than 4,000 suppliers worldwide. The proportion of Tier1 suppliers in UMC Taiwan is as follows: 29 suppliers for equipment (7.4% of procurement amount), 161 suppliers for raw material (64.9% of procurement amount), 220 suppliers for facility (14.5% proportion of procurement amount), and 223 suppliers for spare parts (13.1% proportion of procurement amount).

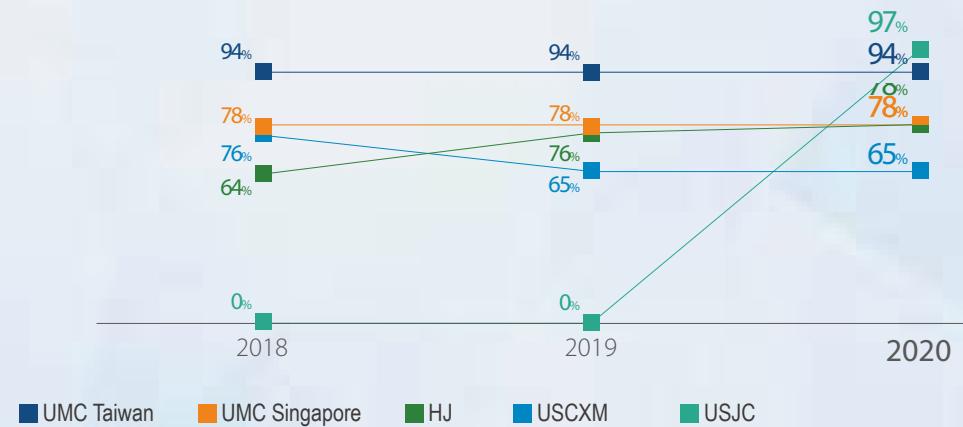
Procurement localization became a key guideline adopted by UMC when looking for potential partners and suppliers. In addition to enhancing close partnerships with local suppliers, UMC expects suppliers to provide services and products with higher efficiency, shorter delivery time, and less carbon footprints of raw materials required through local production. In doing so, UMC also indirectly provides job opportunities which in the end promotes local socio-economic development. UMC believes that a procurement localization strategy is the key value for fulfilling corporate sustainable development and is a part of corporate social responsibility.

UMC applies a procurement localization strategy to all production sites. In 2020, 94% of UMC Taiwan sites' suppliers were local suppliers, taking 87% of total procurement amount. For the supply chain in Singapore, up to 78% of UMC's suppliers were local suppliers in 2020, accounting for 96% of procurement amount. Among the supply chain in China, up to 78% of UMC's suppliers are domestic suppliers for HeJian Technology (Suzhou) Co., Ltd., taking 72% of total procurement amount. Up to 65% of UMC's suppliers are domestic suppliers for United Semiconductor (Xiamen) Co., Ltd., taking 51% of the total procurement amount. Up to 97% of UMC's suppliers are domestic suppliers for United Semiconductor Japan Co., Ltd. (Japan) Co., Ltd., which accounts for 99% of the total procurement amount.

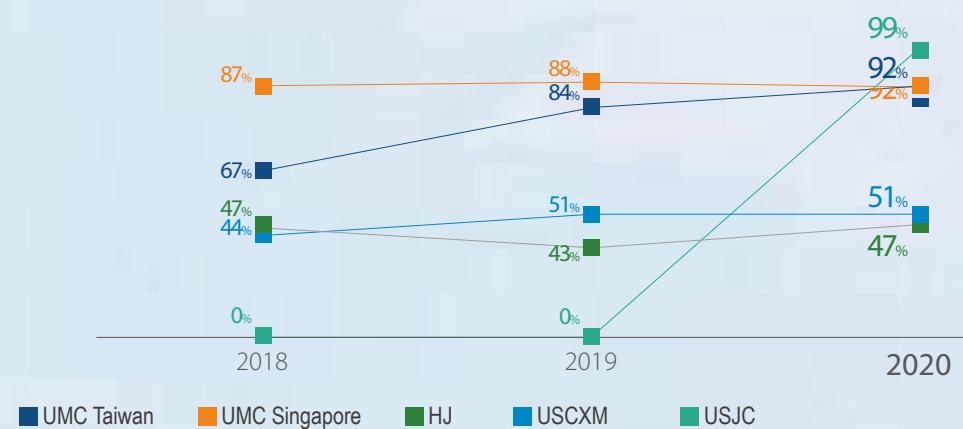




Percentage of Domestic Suppliers



Percentage of Domestic Procurement Amount



1-4-2 Sustainable Supply Chain Management

Supplier Management Policy

Improve cost-leading ability

Integrate UMC group resources to gain the most competitive supply chain value through strategic synergy.

Enhance supply capacity of supply chain

Continuously coach vendors to diversify and localize.

Building a green supply chain

Encourage suppliers to upgrade from energy conservation and carbon reduction to a circular economy.

Implement sustainable risk management

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

Establish sustainable supply chain ability

Drive suppliers to improve in terms of economic, social and environmental fulfillment.

Value eco-friendliness

Proactively implement green procurement and value environmental friendliness while pursuing economic benefits.

No compromise on conflict minerals

Ensure products and supply chain use conflict-free minerals.

UMC
Supplier Management Policy



Focus on environmental issues

Strengthening the recycling of waste resources and working to reduce the impact of environmental pollution.



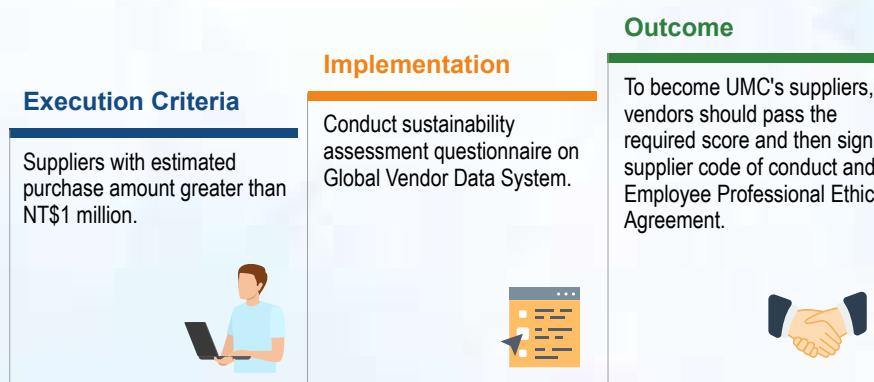
UMC's commitment is disclosed on UMC website. Please visit:



Supplier Sustainability Management Capability Evaluation

UMC adheres to the supplier policy of "treating suppliers as partners and guiding suppliers for long-term collaboration" to formulate a comprehensive supplier management approach, and adopt (1) new supplier sustainability assessment as well as (2) four major sustainability assessment guidelines to manage and support the existing suppliers, aiming to establish a sustainable supply chain management system.

New Suppliers Sustainability Assessment



4 Guidelines of Sustainability Suppliers Assessment

Execution



Policy

- Abide by "UMC Supplier and Employee Professional Ethics Agreement" & "UMC's Supplier Code of Conduct"
- Meet UMC Supplier Management Capability Assessment in 6 dimensions: Quality/Finance/Price/Delivery/Service/ Sustainability

Standards

- All suppliers need to commit and sign back (Remark A)
- All suppliers are responsible to require next-tier suppliers to commit and sign back

Risk Management



Policy

Conduct on-site audits with outsourced audit units according to "UMC's Supplier Sustainability Evaluating Mechanism"

Standards

- Domestic suppliers are audited by UMC audit team
- Worldwide suppliers are audited by third-party auditors authorized by UMC (Remark A)

Risk Exposure & Measures



Policy

Carry out risk classification and evaluation according to "UMC's Supplier Sustainability Assessing Mechanism"

Standards

- Formal risk identification processes are:
- Every year UMC issues ESG questionnaire to all major suppliers (procurement amount over 80%), including equipment suppliers, facility suppliers, spare parts suppliers and raw material suppliers etc.
 - If the ESG questionnaire score is below 80, the supplier is listed as high-risk vendor.
 - Suppliers that are found to be flawed during on-site audits or daily business execution are listed as medium-risk vendors

Counsel & Track



Policy

Abide by "UMC's Supplier Sustainability Assessing Mechanism"

Standards

- Provide guidance and suggestions for improvement during the audit
- Request suppliers to make improvement according to audit reports
- Suppliers whose audit results are lower than the requirements of UMC will be audited in the following year.
- For suppliers that have failed to meet the standards for 2 consecutive years, UMC will reduce transaction volume or stop transactions according to internal regulations



Supplier Evaluation - New Suppliers Selection Criteria

Criteria for selecting new suppliers include: (1) status on the Dow Jones Sustainability Index, (2) compliance with UMC Supplier and Employee Professional Ethics and Code of Conduct, and (3) compliance with principles of open and fair competition.

UMC has always attached great importance to the compliance of suppliers' employee ethics and supplier code of conduct, and adheres to the principle of open and fair competition. In 2018, all critical suppliers supporting production-related materials were included in the assessment. UMC adopted third-party certification for critical suppliers' evaluation in 2019.

In 2020, 628 vendors in Taiwan were evaluated as Tier 1 suppliers. As a result of the assessment, all suppliers in the environmental sector agreed to work with UMC to improve environmental protection measures such as energy, waste, hydropower resources and greenhouse gas emissions reduction. In terms of risk management, suppliers have realized the possibility of risk management affecting company operations..In 2020, UMC's operation sites in Taiwan added 172 new suppliers (new suppliers accounted for 10.47% in 2020), among which 18 suppliers were evaluated by the Dow Jones Sustainability Indices (DJSI), and 100% of the suppliers have signed the aforementioned employee ethical agreement required by UMC. In 2019, UMC began to require its suppliers to disclose the information of their tier1suppliers. In 2020, 9.8% of UMC's suppliers disclosed their critical tier2 suppliers for better management. (In 2019, UMC also required its suppliers to implement employee ethical agreement and supply chain assessment for their critical tier1 suppliers^{Note}, jointly promoting corporate social responsibility.)

Supplier Evaluation- Supplier Risk Management Evaluation

UMC have a high regard for the sustainable management of suppliers. In terms of sustainability, we focus on the environmental, social and corporate governance requirements of suppliers. In response to the supplier's sustainable management, UMC 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 improvement efforts that vendors are making. The management object of the Supplier Assessment Mechanism evaluation is crucial suppliers who support production, including equipment suppliers, raw material suppliers, facility engineering suppliers, consumables and component suppliers. Each year, these crucial suppliers' Q (Quality), C (Cost/Financial), D (Delivery), S (Service), S (Sustainability) are evaluated.

UMC supplier evaluation mechanism defines sustainable supplier rating and corresponding measures, and incorporates sustainable management requirements items into the evaluation items according to the level of importance, and send out the questionnaires to suppliers for reply annually. Suppliers having certifications related to environmental protection or hazardous substance management (ISO 14001, TS 16949, or QC080000) or can demonstrate capabilities in fulfilling the requirements of the RBA Code of Conduct may receive extra points. This incentive was provided to help guide and encourage suppliers to comply with these standards.

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

UMC has a mechanism to monitor suppliers when they are not making improvement. For suppliers whose scores are too low, and suppliers who are found at fault during order execution, on-site audits will be conducted to identify demerits, and assistance and guidance will be provided to help suppliers make improvements. If the supplier fails to improve, UMC will continue to provide guidance while considering temporary suspension or termination of business relationship with the supplier to solidly implement supply chain risk management. Suppliers that are still unable to improve within two years, according to Suppliers Failure Improvement Management mechanism,will face reduced purchase amount, suspended purchase orders, or disqualification as a qualified supplier.

Note: The Tier1 suppliers are those who directly or indirectly related to supporting production. Suppliers can be divided by functionality into raw materials, equipment, facility service, and spare parts.



UMC Supplier Risk Assessment Mechanism



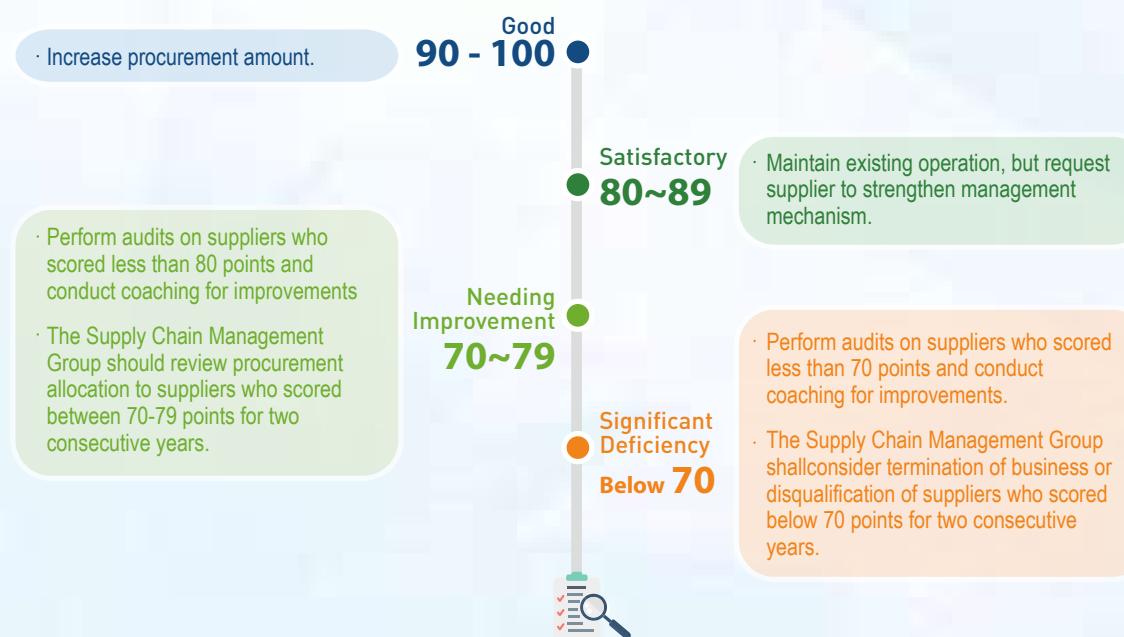


Evaluation Result

UMC launched third-party certification for suppliers' evaluation in 2019. Through the implementation of supplier evaluation, the risk of suppliers can be effectively reduced, which can in turn improve the competitiveness of the suppliers.

In 2020, through UMC's ESG risk assessment questionnaire, UMC Taiwan surveyed a total of 628 major suppliers supporting production related materials including raw materials, production equipment, facilities, and components. One-time vendors were excluded. Among them, 621 met the requirements of UMC for sustainable management, and 7 were identified as high-risk suppliers and listed as the target of the 2020 on-site audit.

Supplier Sustainability Grading and Response



In 2020, UMC conducted on-site audit for suppliers on the 2019 improvement-needed list, unqualified suppliers based on the response of the 2019 questionnaire, and suppliers randomly selected from the qualified supplier list based on the response of the questionnaire. A total of 212 suppliers were audited, which 180 suppliers were audited by third party. In the results of the 2020 audit, 121 suppliers reached the Good level, 90 suppliers reached the Satisfactory level, and one supplier was evaluated as Needing Improvement.

The supplier evaluation system was applied to all UMC's overseas subsidiaries/branchesNote in 2020, with a total of 478 suppliers evaluated. Among them, 58 suppliers were selected for sustainability evaluation, and all of them have met the requirements of UMC.

Note: Overseas subsidiaries/branches" include HJ, USCXM, and the UMC Singapore Fab 12i .

Number of Suppliers Evaluated in the Past 3 Years

Goals of Evaluation	Pass 3 Years Number/Percentage
Critical Tier1 Suppliers	1,989 (100%)
Complete ESG evaluation for all types of suppliers who support production materials with annual business amount over NT\$2M (one-time vendors are excluded).	
Critical non-Tier 1 Suppliers	436 (100%)
<ul style="list-style-type: none"> 80% of Critical non-tier 1 (Tier 2) suppliers will sign the supplier code of conduct 2025 30% of critical non-tier 1 (Tier 2) suppliers will be managed by supply chain assessment / audit / management 2025 	

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

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



In view of the 2020 sustainability evaluation mechanism, the ESG subjects that suppliers need to make improvement are summarized as follows. UMC continues to carry out suppliers' improvement plans to make sure their competitiveness will be raised.



Establishing Sustainable Supply Chain

The core value of UMC's sustainable supply chain is "Sustainability and Mutual-Development." UMC pursues sustainable operations by partnering with its supply chain to achieve mutual growth. In addition to the existing environmental training for the suppliers, UMC extended its supply chain management in 2020 to implement initiatives for sustainability, strengthening the guidance for local suppliers to establish sustainable supply chain capability. In order to strengthen the capacity of the supply chain, UMC continued to guide suppliers in establishing diversified and local supplying capability. To enhance the awareness of procurement personnel on sustainability initiatives and effectively implement the sustainable supply chain management, UMC held a number of educational training courses in 2020 to accelerate the development of sustainable supply chain management.

Strategy	Activity	Result
Environment, safety and health education training plan for suppliers and contractors	<ul style="list-style-type: none"> To ensure that the contractor has sufficient awareness of environmental safety 	<ul style="list-style-type: none"> Educate contractors about work safety related regulations Accumulated 37 training sessions held in 2020 Accumulated 5,058 attendees in 2020 Accumulated 15,174 hours of training in 2020
Contractor-aligned meeting	<ul style="list-style-type: none"> To make sure contractors are aware of workplace safety 	<ul style="list-style-type: none"> Regular on-site meetings are held to promote safety management and accident cases to contractors Accumulated 11 training sessions in 2020 Accumulated 1,235 attendees in 2020 Accumulated 1,581 hours of training in 2019
Sustainable supply chain sharing session	<ul style="list-style-type: none"> Themed with "Sustainability & Co-prosperity," advocate the concept of sustainable development to suppliers 	<ul style="list-style-type: none"> Advocate UMC's sustainable philosophy and conduct human-oriented and co-prosperity in society. Continue promoting supply chain to respond to ESG requirements. Continue promoting supply chain to respond to RBA or related risk management requirements. Sharing new challenges about sustainable supply chain with supply chain. The sharing session was paused because of COVID-19 and it would be held in 2021.
Increase the capacity of suppliers to respond the climate change	<ul style="list-style-type: none"> Strengthen the resilience of the supply chain 	<ul style="list-style-type: none"> Offering courses to suppliers casually with inviting external lecturers to share the perspective about energy, environment or sustainability.



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. We continue to make good use of UMC's influence as the leader in business to urge suppliers in joining the circular economy. The circular economy project includes four sub-projects (see the following table). In 2017, UMC took the initiative to launch the Triple R League project. In 2020, the number of suppliers participating in the Triple R League projects has increased by 10% as compared with that in 2019. This suggests that the influence of UMC on suppliers in discussion and activity promotion is quite significant, bringing more suppliers to join the development of green supply chain. The circular economy is an industrial economy which is friendly to the environment. While UMC continues to take sustainability initiatives for its suppliers, internal self-development was also emphasized by UMC. In 2020, the benefits of UMC's precious material waste recycling project reached a new high of NT\$119 million, and the percentage of "reclaimed wafer" usage grew to 61% in 2020. Moreover, the total amount of oxide slurry (Oxide Slurry S225) recycled reached 934 tons.

Triple R league: a 3-year project



Purpose

Through the supplier's customized quantifiable indicators to review and promote the implementation of energy saving, waste reduction, and circular economy results, to promote the upgrade of green supply chain

Activity

- Suppliers set quantifiable targets; UMC checks the targets through a scoring mechanism
- Hold sharing sessions for different sectors to exchange knowledge and experiences
- Hold annual award ceremony to encourage excellent suppliers

Outcome

- The third-year award ceremony was held in 2020 (for 2019) with 20 suppliers receiving awards.
- From 2017 to 2020, carbon dioxide emissions were reduced by 409,000 tons (CO₂e), equivalent to the annual carbon absorption of 1,567 Daan Forest Parks
- Sewage sludge saving was 109.5 tons from 2017 to 2020.



UMC Triple R League



2020 UMC Triple R Award Ceremony

Precious material waste recycling



Purpose

Sell leftovers and scraps to reuse/recycle vendors to decrease waste and promote effective reuse of resources

Activity

- Evaluate licensed waste disposal contractors
- Evaluate waste contractors with legal licenses, and sell waste to them in bulk through systematic control and recycling management in fabs

Outcome

- Since 2013, the annual sales profit has reached NT\$100 million
- In 2020, the sales profit from UMC's precious material waste recycling projects reached a new high of NT\$119 million, due to rising wafer unit price and strong NT\$ appreciation
- It is estimated that by 2025, the cumulative sales benefit will exceed NT\$500 million

Reclaim wafer reuse



Purpose

The more that UMC uses and recycles reclaimed wafers, the less likely UMC purchases dummy wafers

Activity

Authorize suppliers to process reclaimed wafers to ensure dummy wafers reach the best condition to be reused in UMC

Outcome

- Accumulated reclaimed wafer procurement quantity was 375,286 pieces in 2019
- Wafer usage grew to 61% in 2020

Oxide Slurry SS225 recycling



Purpose

Reuse slurry and decrease waste water treatment

Activity

Through a slurry recycle system to collect used slurry, UMC authorized suppliers to formulate these slurry for reuse in manufacturing process

Outcome

- The total amount of oxide slurry (Oxide Slurry S225) recycled reached 934 tons



The List of Environmental Protection Projects

Eco Echo Award (supplier's response)



Purpose

As a driving force for ecological environmental conservation, UMC rewards excellent conservation projects through its Eco Echo Award. UMC drives suppliers to sponsor this project.

Outcome

- Raised NT\$3 million for the award in 2020
- 10 suppliers sponsored in 2020, including Lam Research, 3M, BASF, Hermes Epitek, Unimicron, Hueng Luei Process, Edwards, Faraday, Wholotech, and Tokyo Electron Limited
- 5 winners won the Eco Echo Award in 2020.

Activity

- Select from an open audition of domestic green groups to encourage excellent conservation projects by providing cash prizes
- UMC calls on suppliers with the same philosophy to respond to the Eco Echo Award and make sponsorship with hands-on actions.



For details please visit

Green procurement



Purpose

UMC takes the development of green products as its mission and promotes green procurement from the source of product to conserve resources and protect the environment

Activity

Green procurement index:

- Domestic: Category no. 1 to no. 3 green-marked products, including Energy Label, Water Label, Green Building Material, Carbon Footprint Label, Carbon Label
- Overseas: green-marked products originated from countries having agreement with Taiwan, Energy Star, FSC, PEFC

Outcome

- An accumulated amount targeting NT 130 million in 2020
- Awarded for green procurement in 2020 (from Environmental Protection Administration, Executive Yuan)
- Awarded for green procurement in 2020 (from Hsinchu City government)
- Awarded for green procurement in 2020 (from Tainan City government)

The List of Social Impact Projects

Tier 2 key supplier management



Activity

To ensure that suppliers value their supply chain management, restrict their suppliers to abide by ethics, and carry out supply chain management actions to their suppliers (which are UMC's Tier 2 suppliers)

Activity

- Announced on e-Procurement platform (platform for suppliers)
- Key suppliers (UMC's Tier 2 supplier) are required to sign the Supplier Code of Conduct and to be subject to supply chain management

Outcome

In 2025:

- 80% of key suppliers (UMC's Tier 2 supplier) are required to sign the Supplier Code of Conduct
- 30% of key suppliers (UMC's Tier 2 supplier) need to be managed by supply chain management

Hsinchu Science Park 40th Anniversary International Forum



Activity

Invited by the Hsinchu Science Park Bureau to share experiences on sustainable supply chain projects with industrial partners

Activity

Held symposium with industry partners to share: Responsible Supply Chain - Triple R Circular Economy

Outcome

Participated in the 2020 event themed as "Technology Vision for 2030: Sustainability - Building a Circular - Economy Based Ecosystem" to share experience with participants from the same and different industries



Hsinchu Science Park 40th Anniversary International Forum



Conflict Minerals Management

UMC Conflict Minerals Management Measures

	Establish internal inspection for the company (including subsidiaries) and inspection mechanism for suppliers.
	Establish annual periods for inspecting operations and controlling operations.
	Establish and consolidate inspection data, and store in data bank.
	Retention of survey data to demonstrate legal compliance and due diligence.
	Vendor transparency and availability of information for evaluation is one of the company's conditions for transactions with the vendor.

Identification of Key Raw Materials

Minerals such as tantalum, tungsten, tin and gold (3T1G) that are inevitably used in the manufacturing process of the electronics industry are 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 all of UMC's products do not use minerals from the conflict areas.

Results of Recent Surveys

Since 2009, in terms of conflict minerals management, UMC has been conducting supply chain inspection 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 Q1. Meanwhile, UMC also requested suppliers to proactively monitor foundries and mines that were 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 started to attach "conflict-free mineral" labels on its product packaging to declare that its products did not use conflict minerals, effective from April 1, 2018. Other overseas sites (USCXM/HeJian/Fab 12i) will follow and make announcement. UMC issued an official statement on the My UMC website on March 1, 2018.

In 2020, UMC conducted inspections of suppliers whose products contain 3T1G. A total of 36 suppliers, including 13 suppliers, 8 contractors (suppliers providing packaging and testing services), and 15 UMC affiliates were inspected. In 2020, through an independent certification third party, 4 domestic suppliers involved in conflict minerals were audited on-site. The audit results met the requirements of UMC for conflict mineral management.



Conflict Minerals Management



The Number of Suppliers Investigated

Conflict Minerals



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.



UMC Specialized Disclosure Report

Strengthening Supply Chain Resilience

In 2020, UMC followed the "Code of Conduct-Responsible Business Alliance (RBA), Version 6.1.1". In addition to self-assessment, UMC also required its suppliers to comply with the specifications of RBA through the "UMC Suppliers Code of Conduct", which not only allows the suppliers to clearly understand UMC's requirements in Supplier Code of Conduct, but also urges the suppliers to abide by local laws and regulations. This ensures that the operation of the suppliers fulfills the essence and spirit of the Code of Conduct. Moreover, it also encourages and requires the suppliers, contractors, and service providers of UMC's suppliers to adopt this Code of Conduct for management.

Supply Chain Risk Assessment

To understand suppliers' compliance with the Code of Conduct-Responsible Business Alliance, UMC conducted the assessment of Tier 1 suppliers through "RBA Self-Assessment Questionnaire (SAQ)", "on-site audit" and "corrective action plan," ensuring that the suppliers meet the requirements of the Code. The Self-Assessment Questionnaire covers topics such as labor, health and safety, environmental standards, business ethics and management systems that are required by the "UMC Suppliers Code of Conduct". In 2020, a total of 50 UMC Taiwan suppliers completed the RBA Self-Assessment Questionnaire.

On-site Audit (remote audit) and Improvement

UMC selected the crucial suppliers specified by the RBA provisions from its Tier 1 suppliers, and carried out on-site audits as well as remote audits. In 2020, UMC Taiwan completed the RBA-based on-site audits for a total of 50 suppliers, proposed the "corrective action plan" for the deficiencies found during the audits, and continued to monitor the improvement progress of the suppliers, enhancing the suppliers' capability in sustainability management and strengthening the sustainable development of the supply chain. Starting from 2021, some suppliers will undergo RBA audits through an independent auditing body to strengthen the suppliers' compliance with the Code of Conduct-Responsible Business Alliance.



UMC Suppliers Code of Conduct



02 INNOVATIVE PRODUCTS AND SERVICES

2-1 Excelling Innovative Development

2-2 Satisfying Customer Needs

2-3 Green Product Development

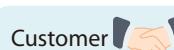
Important Stakeholders



Investor



Supplier



Customer

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.



Performance Highlights 2020

NT\$9.54 billion

R&D expenses amounted to NT\$9.54 billion, accounting for 7% of total revenue.

Total number of international patents reached

13,991

Developed 484 domestic and foreign patents, accumulating to 13,991 granted patents worldwide.

Yield exceeded

90%

Product yield rate of 14FFC (14nm FinFET Compact) process technology platform exceeded 90%, with reliability verified by customers and entered mass production.

Annual growth rate of shipments reached

24%

Served 416 customers and provided up to 7,216 different products. The shipments of the foundry equal to about 8.91 million 8-inch wafers, with an annual growth rate of 24%. [Annual Report: The annual growth rate is based on the annual report data]

Customer satisfaction reached

89.8%

Customer satisfaction score reached 89.8%, and continues to improve steadily.

Completed the development of the 3rd green halogen-free chemical

Completed the development of the 3rd green and halogen-free chemical, which is recyclable and is expected to reduce the production cost of the specific cleaning process by 50% and does not produce environmentally harmful substances containing fluorine.



Material Topics and Key Responses in this Chapter

Management Policies	Goals in 2020	Goals Achieved in 2020	Future Goals (2021–2025) Summary
 Innovation Management and Intellectual Property Rights Protection UMC is committed to promoting the development of advanced process technologies. UMC focuses on the patent portfolio, actively engages in independent research and development, establishes proprietary technologies, and proactively protects intellectual property rights. All this will gradually increase the proportion of sustainable products and respond to the sustainability trend. Chapter 2.1 Refining the Innovation of Research & Development	Management Objectives: <ul style="list-style-type: none"> Complete development of 4 green technology platforms. Complete development of the 3rd green chemical product. More than 200 patent applications worldwide per year. Sustainable(low energy consumption and environmental-friendly) products account for 56% of revenue. 	Management Objectives: <ul style="list-style-type: none"> Completed the development of 4 green technology platforms. The 3rd chemical product development was integrated into the production line in early 2021 (delayed success). 484 patent applications worldwide in 2020. Sustainable(low energy consumption and environmental-friendly) products accounted for 66.9% of revenue. 	<ul style="list-style-type: none"> Complete development of 3 green technology platforms (by 2021). Complete development of 1 green chemical product (by 2021). More than 200 patent applications worldwide per year. Accumulate more than 21,000 patent applications worldwide (by 2025). Accumulate more than 16,000 patents granted worldwide (by 2025). Sustainable (low energy consumption and environmental-friendly) products account for 72% of revenue (by 2025).
 Customer Service Quality Protect the security of customers' product information and intellectual property rights by raising employees' awareness of the need to protect customers' intellectual property rights and by establishing comprehensive policies and systems. Chapter 2.2 Satisfying Customer Needs	Management Objectives: <ul style="list-style-type: none"> Maintain a customer satisfaction rate of 85 points or higher. 100% completion rate for employee education and training on customers' intellectual property rights protection. Continue to have no major incidents affecting security of customers' product information. Zero product recalls. 	<ul style="list-style-type: none"> Maintained a customer satisfaction rate of 85 points or higher. Completion rate for employee education and training on customers' intellectual property rights protection reached 100%. Maintained no major incidents affecting the security of customers' product information Zero product recalls. 	<ul style="list-style-type: none"> Maintain a customer satisfaction rate of 85 points or higher every year. Continue to have no major incidents affecting the security of customers' product information. Zero product recalls. Continue to have no major deficiencies in internal and external audits of customer product information protection
 Information Security and Privacy Protection ^{Note1} Establish management rules and regulations, and arrange training courses to strengthen employee awareness. Section 2.2.2 Customer Privacy Protection. For information security, refer to Chapter 1.3.4, 'Commitment to Information Security Risk Management'.	Management Objectives: <ul style="list-style-type: none"> Establish Privacy Protection Procedures. Establish Privacy Policy. Revise the personal information consent form. 	Violation of laws and regulations not only affects the corporate image and reputation, but also exposes the Company to financial risks due to penalties.	<ul style="list-style-type: none"> Establish and implement a privacy audit mechanism.

Mechanisms for Evaluating Effectiveness

 Through commitment to promoting the development of advanced production process technologies.	 The company-wide management plans were set. The Enterprise Information Security Committee and Customer Relationship Management Committee will conduct a performance review annually.	 Pass the ISO 27001 Information Security Management System certification every year.	 Pass the ISO 9001 and IATF 16949 Quality Management System certification every year.
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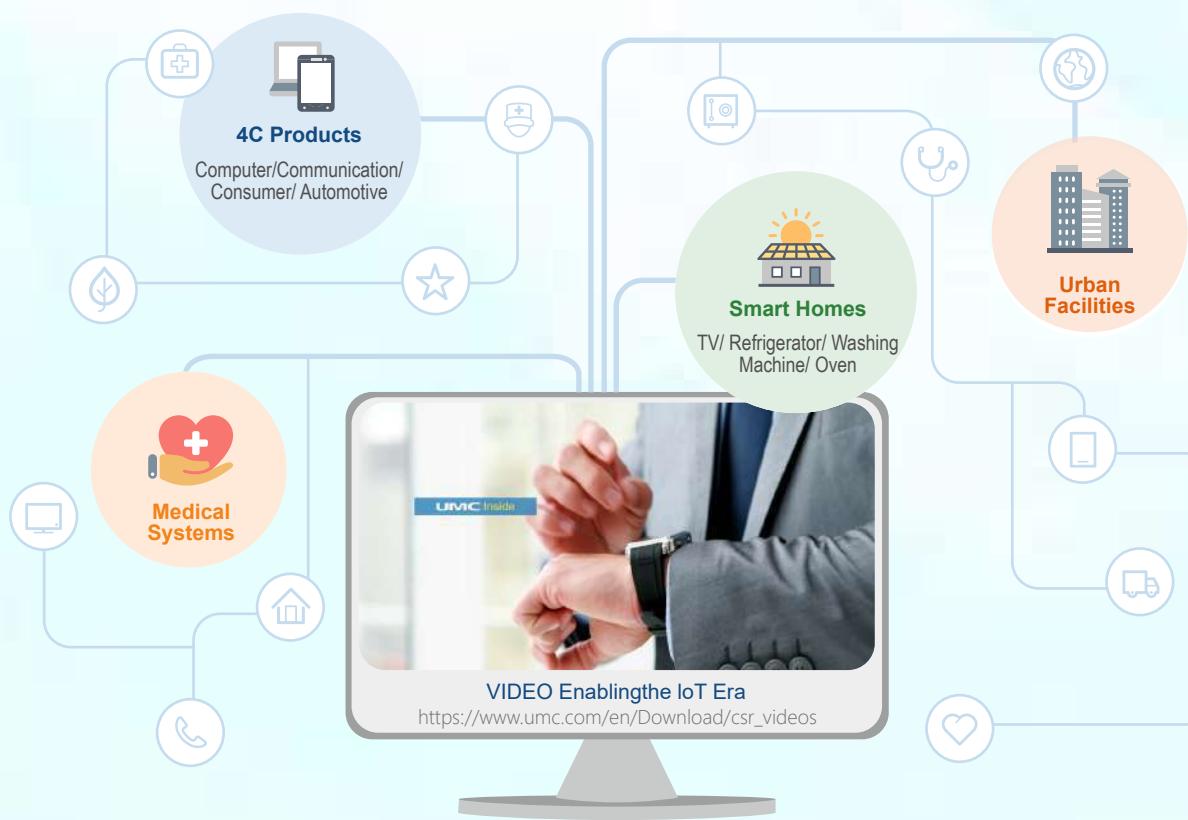
Note: 1. About the issue of Information Security, please refer to Chapter 1.

2. For detailed targets of 2025, please refer to: https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development



2-1 EXCELLING INNOVATIVE DEVELOPMENT

Since the end-user electronic products diversify rapidly, key technologies in smart phones, wearable electronics, virtual reality / augmented reality, self-driving / electric vehicles, artificial intelligence / deep learning, voice controlled products and Internet of Things are expected to be constantly adopted and commercialized. The four types of traditional IC products include computers, communication, consumer and automotive, continue to move towards high integration such as multi-functional, high-end processing, lightweight, more power-saving and everything interconnected. In addition, the incorporation of concepts such as artificial intelligence, deep learning and voice control have also driven the future trend of wafer design. Hence wafer manufacturing services must develop corresponding processes and silicon intellectual property as soon as possible to provide the core products with market competitiveness and meet the customer needs in various applications.



2-1-1 Abundant Energy for 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 2020, numerous domestic and foreign patents were awarded. To date, UMC has a total of 13,991 granted patents that provide our manufacturing process with comprehensive and powerful barriers to protect its intellectual property. 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, while generating profits for the corporation.

Numbers of Granted Patents (Accumulated)

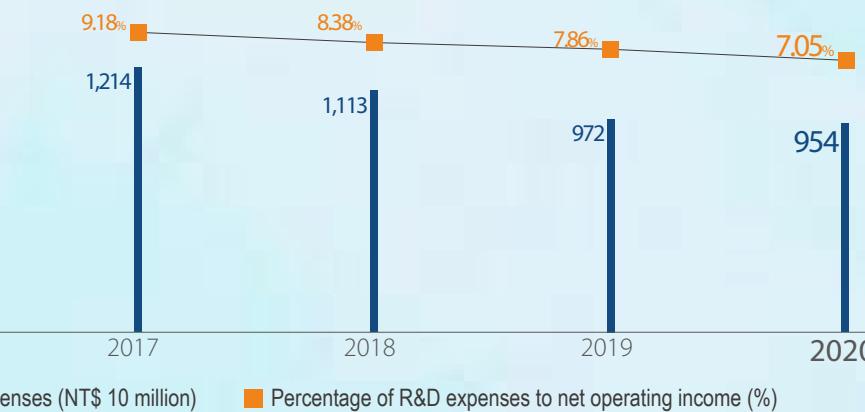


| Total number of granted patents



UMC continued to significantly invest in R&D resources with total annual R&D expense reaching NT\$9.54 billion in 2020. At the same time, with the expansion of UMC's Southern Science Park site, the Company continues to recruit and train a large number of R&D talent. In addition, in terms of overseas layout, China's semiconductor domestic market demand has reached the largest scale in the world. In order to stay close to the market and meet the needs of more local IC design companies, UMC and its subsidiaries, as of 2020, have invested approximately US\$1.37 billion to build a 12-inch wafer fab, United Semi in Xiamen, China, to provide wafer manufacturing services ranging from 28nm to 90nm in pursuit of further growth of the Group. UMC's investment policy is based on the principle of long-term strategic investment, in line with the company's operations and development, and through global deployment to reduce risks and improve operational efficiency.

R&D Expenses



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 the parent-company-only information of UMC. For the consolidated information, please refer to page 168 of UMC's 2020 Annual Report.

Green Process Development Plan

In response to the issue of climate change, UMC has gradually phased out old processes over the years, and instead focuses on low power or even ultra-low power and ultra-low leakage technology development; for example, 22nm Logic technology that reduces power consumption by up to 30%, and 14nm technology that reduces power consumption by 50%. We apply these technologies to traditional logic processes and specialty technology processes (such as embedded Resistive random access memory and embedded Magnetoresistive RAM). UMC has also upgraded its Power Management technology so that these technologies can be successfully applied to green and energy-saving products. Therefore, UMC has established the goal of developing new ultra-low power, ultra-low leakage, power management chips (PMIC), and micro control unit (MCU) platforms, increasing the technical options for low energy consumption, and making more new products adopt these technologies to increase the proportion of green manufacturing related products.

2020

In 2020, UMC completed two new platforms in the field of ultra-low power consumption and ultra-low leakage, including 22nm ultra-low power (uLP) and ultra-low leakage (uLL) platforms. In the radio frequency (RF) field, UMC launched 28nm low power 60GHz platform and 22nm uLP/uLL 60GHz platform. In addition, the 28nm low-power platform also completed the development for the automotive standard AUTO-G1 application. In the field of microprocessors (MCUs), five new product designs adopted the ultra-low power 40nm embedded non-volatile memory (uLPe NVM) platform and entered the stage of pilot production, to respond to the future Internet of Things (IoT), Wearable Devices, Cloud Applications, and Automotive Electronics. These technologies are expected to be effectively provided to innovative green and energy-saving product applications.

In the near future, UMC will continue to develop IC manufacturing technology for lower power consumption products, such as 28nm SST (Silicon Storage Technology) embedded memory (SuperFlash®), non-volatile memory platform, and 22nm emerging embedded technologies, such as resistive & magnetoresistive memories (eReRAM & eMRAM) to be applied in the field of microprocessors. In the power management IC (PMIC) field, with the bipolar-complementary metal oxide semiconductor-double diffusion metal oxide semiconductor (BCD) process, UMC has also begun developing a BCD+NVM technology platform as a complete SoC solution for energy-saving demands, with the core business capabilities to bring substantial benefits to global greenhouse gas mitigation.





2-1-2 Continuous Quality Improvement and Innovation

In line with the spirit of "continuous improvement and pursuing excellence", UMC strives to provide customers with high-quality products and services promptly in various aspects such as quality, process, manufacturing technology, and after-sales engineering services. To strengthen the company's entire quality system, UMC encourages all employees to participate in continuous improvement activities, including personal improvement and team improvement. Among them, the team improvement activities consist of QIT (Quality Improvement & Innovation Team) and PM (Project Management). In 2020, a total of 309 improvement teams have been established. In addition to training employees to think systematically and use scientific approach to solve problems, they also expand the growth of employees from personal learning/development to teamwork/participation, achieving the goal of self-development, common good and mutual prosperity.

After years of effort, UMC has been able to achieve excellent results in the "Taiwan Continuous Improvement Awards (TCIA)" for 17 consecutive years, demonstrating its success in promoting quality system improvement through the involvement of all employees. In 2020, a total of 109 companies and 188 teams participated in the TCIA competition. There were 8 UMC teams signed up for the event and all of them advanced to the finals, achieving an outstanding result of 6 gold medals and 2 silver medals in total. UMC is not only the company with the most teams advanced to the final round, but also the company with the most gold medals.

The participated UMC teams include units of advanced fab process/manufacturing, mask/test engineering, and functional support, working jointly to achieve the goal of continuous improvement and pursuing excellence. The total benefit from the improvement is estimated to be as high as NT\$1.58 billion. In the same year, the advanced manufacturing process has created an annual revenue of approximately NT\$ 4.4 billion and has successfully entered the OLED panel driver IC market in Korea to establish its leading position.

In recent years, the focus of UMC's development strategy has shifted to specialty process technologies, and the improvement topics of the advanced fab team were also in line with this new strategy. In addition to improving the yield of key products, by combining the process improvement with smart manufacturing techniques to expand strategy scopes, continuous quality improvement can be realized and carried out from between the process steps to within the steps and from the exterior of the equipment to the interior. Furthermore, through close collaboration among departments, the overall performance in delivery efficiency and production capacity has been greatly improved. In terms of wafer packaging and testing, outstanding results were also achieved. The Testing and Packaging Engineering Service Team extended its expertise in wafer testing to complete the one-stop flexible foundry value-added service, allowing customers to establish a complete ecosystem with various packaging and testing service providers through UMC, successfully launching the one-stop value-added service.

Moreover, UMC's improvements in energy saving and environmental protection are also very impressive. The Facility Operation & Construction Division Project Team adopted IoT and big data analysis techniques to build a smart power consumption decision-making system, which greatly reduced the power consumption of equipment, allowing the company to save approximately 15.80 million kWh of electricity (equivalent to the annual reduction of carbon emission of 21.7 Da'an Forest Parks) every year. This improvement project was honored by the Gold Medal of the "2019 Energy Saving Benchmark Award of the Ministry of Economic Affairs" and the "Best Paper Award of the 2019 Science Park Factory Service Technology Conference".

The topics of improvement proposed by the Continuous Improvement Team of UMC cover not only the improvement of its own processes, but also the improvement in environmental protection and energy saving, receiving recognition from both the judges and the organizer. The initiative took by various departments also demonstrated UMC's commitment to improving its core business capabilities and promoting sustainable development.

Winners of the "2020 Taiwan Continuous Improvement Awards"

Unit/Topic

 Gold Medal	Fab 12A <ul style="list-style-type: none"> • Shorten the production cycle of 40-nm high-voltage products - Establish a new benchmark in the industry • Improve the production process of ion implanter • eHV40 new navigation - Create a common platform for both ultra-low voltage and ultra-high voltage Fab 12I A breakthrough in the productivity of grinding machines for specialty processes
Facility Operation and Construction Division A breakthrough in smart energy saving - Build a smart power saving platform for industry 4.0	
Testing and Packaging Engineering Service Division Wafer fab integrated business model - Build a back-end process management system	
 Silver Medal	Fab 12I Improve production efficiency, incorporate smart processes to create a splendid life
Mask Engineering Service Division Revolutionize the mask data operation process - Comprehensively improve the overall efficiency of CAD	



UMC has won the "Taiwan Continuous Improvement Awards (TCIA)" for 17 consecutive years



2-1-3 Key Technology Mastery

In addition to continuous research and development to reduce the power consumption of chips, UMC also develops various power management chips, human body sensing medical chips, mobile communication chips, image sensing and display driver chips, to reduce the environmental load of terminal products when they are in use, and promote the convenience of social communication and human health and safety care.

Resistive Random Access Memory

ReRAM is a novel non-volatile memory (NVM) with simple structure, low operation voltage, low read current, fast program/erase speed and very good reliability. ReRAM process is fully logic compatible with less add-on masks and low extra cost. UMC started to co-develop with Panasonic in 2017 and already started mass production in 2020. Panasonic also plans to have more product tape outs in the near future.

Power Management Process Technology

UMC's super high voltage processes can meet industry demand for higher voltage and reduce the energy consumption during voltage conversion in order to save energy. UMC also can provide a complete silicon IP platform compatible with the standard logic process technologies that integrate world-class, third generation low conduction resistance/high sustained voltage devices that can be used for cell phone, tablet PC, appliance, vehicle applications, etc. In addition, UMC has also begun developing a BCD+NVM technology platform as a complete SoC solution for energy-saving demands. The BCD-Flash platform technology will be released in 2021 for customers' design-in and tape-out verification.

Display Driver IC Process Technology

UMC was the first in the foundry industry to introduce a 28nm High Voltage Process, and the mass production has been achieved for high-end LCD display and high-end OLED display markets. Besides, UMC has begun developing a 22nm High Voltage platform to provide smaller SRAM with higher capacity in order to meet the demand of the 2K/4K high-end display market.

CMOS Image Sensor (CIS) Technologies

For CMOS image sensor technology development, UMC's 65nm process has been verified to enter the mass production stage. The new processes, such as back-illuminated sensor (BIS) and 55nm CIS process technologies, have entered the verification stage. This technology is expected to provide higher sensing resolution to meet product upgrade requirements.

28nm High-Performance Process Technology

UMC's 28nm high-performance process utilizes high-k/metal gate stack technology. The 28nm high-performance computing process (28HPC^{U+}) entered mass production in 2020 for image signal processor (ISP) products, and more advanced and high-end products are expected to begin mass production in 2021. The 28HPC^{U+} millimeter wave (mmWave) process covers high-performance and low-power technology platforms; verification of the millimeter wave chip design process has already been completed and suitable to serve mobile phone, automotive/industrial radar and 5G FWA/CPE applications.

Technologies and products successfully developed in 2020

The product yield of the 14FFC (14nm FinFET Compact) manufacturing process platform exceeded 90%, passed the client reliability verification, and officially entered the wafer mass production stage

22nm manufacturing process reached the milestone of mass producing customer's digital TV (DTV) chip

Mass production of image signal processor (ISP) by using the 28HPC^{U+} manufacturing process

Collaborated with eMemory and PUFsecurity to jointly develop PUFflash, the world's first PUF application security embedded flash memory solution

The 2nd-generation CMOS-MEMS gas sensor, 90nm and 55nm RFSOI manufacturing processes have entered the mass production stage

R&D Project

Achievements in 2020

22nm ultra-low power/ultra-low leakage manufacturing process

22nm manufacturing process passed the reliability verification for the customer's product, and the process reached the milestone of mass producing customer's digital TV (DTV) chip.

Embedded Magnetoresistive Random Access Memory (eMRAM)

Characteristics such as the bit error rate of magnetic unit and the endurance as well as the data retention of macro circuit have reached the top level in the industry.

14nm process technology

The product yield of the 14FFC process technology platform has exceeded 90%, and the performance has met customer needs. It has passed the high-temperature reliability verification of the customer and officially entered the wafer mass production stage. Moreover, the product has been successfully used in applications such as 5G and Netcom, preparing to collaborate with several customers in carrying out product design and development.

Radio frequency silicon-on-insulator (RFSOI) technology

The 55nm RFSOI manufacturing process is preparing for mass production.

Future plan

Continue to optimize the manufacturing process and expand the application of 22nm process based products. It is expected that in 2021, more than 10 customers will use this technology platform to engage in trial production of IoT, consumer electronics, industrial applications and wearable products.

It is expected that the macros of embedded magnetoresistive RAM will be provided to customers on the 22nm platform in 2021, offering a complete system chip service solution for the circuit design of customers.

It is expected that more products will be mass-produced on the 14FFC process technology platform in 2021.

Develop the 40nm RFSOI technology platform to continue the growth momentum of subsequent products.





2-2 SATISFYING CUSTOMER NEEDS

2-2-1 Customer Satisfaction Improvement

UMC has always been committed to achieving customer satisfaction as its mission and set Customer-oriented products and services as our priorities. UMC has introduced My UMC, My HJTC (reserved for HJ customers) and MyUSC (reserved for USCXM customers) online service platforms to provide customers with complete and immediate online supply chain information, including production status of orders, shipping date inquiry, and product quality data and status. In the meantime, the website offers an Engineering Data Analysis feature which provides a convenient engineering analysis access to customers. Moreover, the Voice of Customer (VOC) instant online feedback system allows customers to offer requests, comments or suggestions to UMC products or services at any time. Designated personnel re-direct, process and respond to requests, and customers can enquire the progress of their products online at any time.

For UMC, understanding customer needs through the VOC, and transforming these requests into practical actions enhance the company's service quality and competitiveness, and ultimately achieves customer satisfaction. Through this positive cycle, UMC brings better service quality and more competitive products to our customers.

Online service platforms provide real-time information

My UMC

My UMC is UMC's online supply chain customer information portal. This application offers 24-hour access to detailed account information such as general account information, design works, design documents, reference design and production information through each user's own personalized My UMC start page.

Login

HEJIAN MyHJTC Online Service

HJTC is UMC's online supply chain portal. This application offers customers 24-hour access to detailed account information such as manufacturing, engineering and design data.

Username: _____ Password: _____ Login

Forgot Your Password? Add to Favorites

Please enable your browser's JavaScript option and use Internet Explorer 6.0 or above. If you have 1024*768 resolution or higher, then you can personalized My HJTC start page.

MyUSC

MyUSC is UMC's online supply chain customer information portal. This application offers 24-hour access to detailed account information such as general account information, design works, design documents, reference design and production information through each user's own personalized My USC start page.

User ID: _____ Password: _____

Forgot Your Password?

Login

My UMC

My HJTC

My USC

Customer Satisfaction Improvement

UMC (including its subsidiaries HJ and USCXM) uses scorecards to determine customer satisfaction and the immediate knowledge of 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 upholds its responsibility to make timely and effective improvements to increase customer satisfaction. In addition, UMC understands and responds to customer needs through visits and meetings to ensure proper attentions and solutions are provided. At the same time, the company lists product quality and timeliness as key indicators of the company's internal performance indexes to further enhance customer satisfaction and eventually create win-win outcomes.

Customer scorecard ratings show that customer satisfaction towards UMC (and its subsidiaries HJ and USCXM) keeps growing steadily. Meanwhile, UMC's overall performance over the years has received customer approval and awards, thereby indicating customer endorsement of UMC's product and service quality, and demonstrating the positive interaction and collaboration between UMC and its customers.

Customer Ratings



Note: The full score is 100 points.



2-2-2 Client Privacy Protection

Privacy Policy

UMC values the privacy of our customers, visitors to our websites, users of our products and services, our customers, suppliers, contractors, employment applicants, visitors, and make and announce our Privacy Policy.

UMC establishes a clear collection and utilization program, objective, mode, object of sharing, transmission, right of the collectors to claim, and information security management measures, retention period and destruction period. If the subject has any questions about UMC's Privacy Policy, he or she may contact UMC via the contact window: 03-5782258 / personnel_data_admin@umc.com.

Implications and Implications of Privacy Policy

UMC believes that providing public and transparent information on Privacy Policy can increase the reliance of the information providers in UMC's Privacy Policy declaration and privacy protection management. In doing so, UMC further promotes the overall awareness of privacy management in the industry and ultimately inspire healthy interactions in the legal sector, while enhancing the implementation of UMC's corporate social responsibility.

Administrative Policy

In view of UMC's frequent global business and services, in order to protect the personal privacy and information obtained by UMC, avoid outflow, abuse, theft, etc., which may damage personal privacy rights, UMC has referred to Personal Protection Law of Taiwan and GDPR, to formulate the privacy protection procedure in 2020, which clearly regulates the lawful use of personal data, preservation measures, responsible departments and processing procedures when personal data abuse incidents occur, etc. UMC also revised the personal information consent letter of colleagues and external personnel, rechecked of personal data currently held inside, and established appropriate data protection security mechanisms to prevent data from being stolen, altered, damaged, lost or leaked. In order to strengthen the basic knowledge of the colleagues in charge of this matter, UMC has planned and implemented regular training sessions so that they can be frequently reminded of the authority of different levels of personnel to process personal data, data storage restrictions, as well as warning and notification mechanisms.

In addition, UMC plans to establish internal audit mechanisms for privacy management, which will include audit cycles, content, procedures, etc., to regularly confirm the implementation of privacy management procedures within internal units, and to constantly optimize the management process and reporting mechanisms of privacy issues.

Risk Reporting Mechanism

UMC has obtained the certification of 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.

Compliant and Follow-up Procedure

In 2020, neither UMC's internal MyUMC platform nor 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 collected persons are acquired, their personal data will not be used for any other purposes.



UMC Privacy Policy



2-3 GREEN PRODUCT DEVELOPMENT

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.

Choice of raw materials or components

Promote the reuse of raw materials in the process, and self-develop green chemicals. Promote the use of chemicals without harmful substances that can be recycled and reused.



Distribution, storage and transportation

Reuse the package materials from raw materials and some products in order to reduce the demand for such materials and the generation of waste.

With regards to product delivery strategy, by considering the location of customers and the amount of products that can be transported by the available carriers, UMC adopts common-route delivery rather than frequent, small and un-routine delivery modes.

Direct operations, production & manufacturing

Promote clean production, reduce the use of hazardous substances.



Use phase - operation and servicing / maintenance

Develop environmentally friendly, low power consumption advanced process technologies.



End of life management

Maintain the uniformity of ICs and products and avoid composite materials for easy recycling and disposal.



2-3-1 Hazardous Substance Management

UMC implements the hazardous substance management system QC 080000 to ensure that products comply with the European Union's requirements for restricted substances in electronic products (such as EU RoHS) and global chemical control regulations. UMC also provides customers with green products to meet their needs, supporting customers to expand the market for green products. In addition, 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 avoid product scrapping or customer complaints caused by the violation of hazardous substances-related laws and regulations, as well as the requirements of customers for controlling hazardous substances. By raising the awareness of all employees, UMC provides products that comply with regulations and customer needs through the control and improvement of design and production, fulfilling the corporate social responsibility of protecting the environment as well as public health and safety.

Management



Dedicated to green supply chain promotion



About 400 controlled chemical substances listed



Constructed a system for evaluating raw materials



Hazardous Substance Free Policy



Established a thorough procedure for procuring green raw materials



Impartial third-party laboratory regularly tests products for hazardous substance content



The world's first foundry to achieve international QC 080000 IECQ HSPM certification

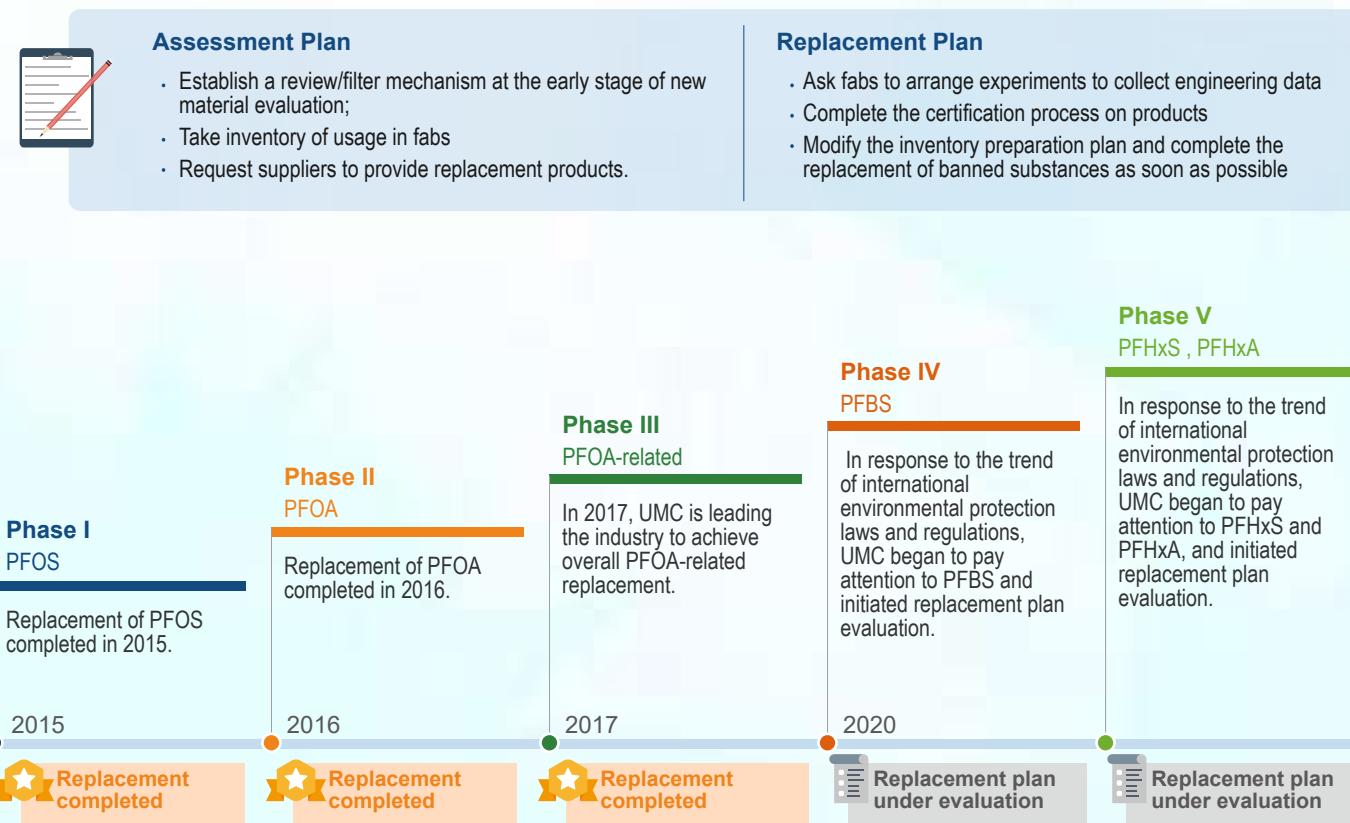


Hazardous Substances Process Management committee

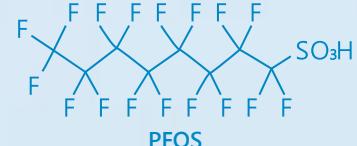
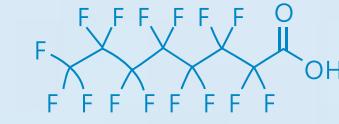


Process Hazardous Substance Replacement

UMC has been paying close attention to the development trend of international environmental protection regulations for a long time. In the drafting stage of relevant regulations, UMC has preplanned to launch the hazardous substance assessment plan and, as soon as the regulations are confirmed and publicized, UMC will immediately implement the replacement plan in all fabs.



Chemistry Encyclopedia



Introduction of perfluorocarbon (acid/sulfonic acid) compounds

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

- **Wide range of applications:** the extremely stable nature of perfluorocarbon bond (C-F) makes such substances more chemically and thermally stable as well as highly active on surfaces, so that they are widely used in manufacturing productions and consumer products.

- . **Material characteristics:** environmental durability (persistence), bioaccumulation in the human body (bioaccumulation), high mobility in water and soil, long-distance transmission

- **Toxicity to human body and environment:** reproductive toxicity, carcinogenic toxicity, immune system toxicity, fetal developmental toxicity.

Has been successively added to the REACH Regulation - Substances of Very High Concern Candidate List (SVHCs list) by the EU

Substances of Very High Concern as defined by the EU

- The world's top three economic systems are the United States, the European Union and China. Any countries wish to expand business territory, it must do business with the European Union, which is highly environmentally conscious! The EU announced the list of substances of high concern through REACH
 - REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) is the European Union's governing regulations on the registration, evaluation, authorization and restriction of chemicals added to products.
 - SVHC (Substances of Very High Concern) are determined according to the chemical hazard characteristics they contain, including carcinogenicity, mutagenicity, reproductive toxicity, etc., which may develop into banned substances.



UMC Response to Global Standards and Trends on Hazardous Substance Management

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 Waste of electrical and electronic equipment (WEEE)

- These regulations do not directly apply to UMC as UMC manufactures semiconductor chips which are not end products.
- The end product dealer is the one responsible for recycling end products containing semiconductor components which are discarded as waste after use.

Persistent Organic Pollutants, POPs

- 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.

R&D of Green Chemicals

UMC upholds the spirit of environmental protection to continuously develop reusable and environmentally friendly chemicals, which can be used to replace the chemicals in the current chemical cleaning process, to reduce the impact of semiconductor manufacturing process on the environment. Due to the fact that most of the special chemicals used in the cleaning process of semiconductors are imported from major international suppliers and the ingredients of the chemicals are secrets of the suppliers, it is quite difficult for the users to reduce the use of the chemicals or carry out recycling process. Furthermore, these chemicals often contain a lot of harmful substances, their impact on the environment and personal safety therefore needs to be addressed urgently. For this reason, UMC has taken the initiative to launch the green chemical research and development project many years ago, which aimed to design directly new green chemicals under the promise of environmental protection for replacing the above-mentioned imported chemicals, achieving the goal of chemical reduction, recycling and reuse, and reducing the impact of chemicals on the environment. For instance, the use of recyclable chemicals in the advanced chemical cleaning process has been tested and successfully applied to the 14nm manufacturing process, which can reduce the use of fluorine-containing solvent by 10 tons each year.

Since 2018, UMC has set the goal of completing the development of one green chemical per year. By 2020, UMC has completed the development of its third green halogen-free chemical. Through the oxidation-reduction process, the chemical solution can be recycled for reuse, while the halogen-free and environmentally friendly characteristics of the original chemical are maintained, reducing the cost of the specific cleaning process by 50% without the production of the fluorine-containing environmentally harmful substances. It is expected that the chemical can be applied to the back-end manufacturing process of 14nm and 22nm based products in 2021. In the future, UMC plans to develop special bio-acid green chemicals for the tricarboxylic acid cycle, which can be 100% compatible with the existing back-end cleaning process, and have 100% biocompatibility as well as biodegradability, reducing the use of fluorine-containing chemicals by 98%. This special chemical will be widely used in the key cleaning process of green electronic products, further expanding the environmental benefits of UMC's green products.

Looking ahead, UMC will continue to develop a new generation of R&D plans for green and environmentally friendly products, promote the advancement of process technologies, and achieve the goal of environmental protection through reduction and recycling of waste chemicals.



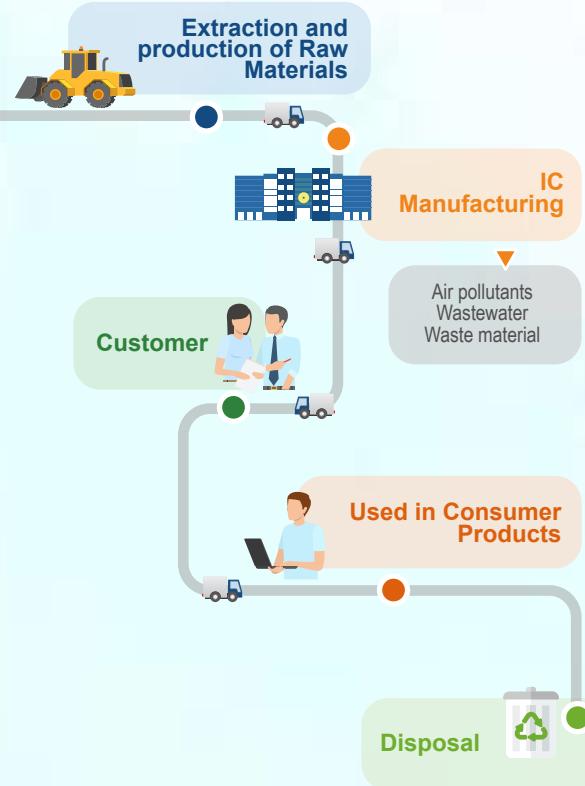


2-3-2 Product Environmental Impact Assessment

Since 2005, UMC has fully implemented LCA in all fabs, comprehensively covering from cradle to gate (UMC shipment), and checklist items including energy, raw materials and environmental pollutant emissions. We are able to systematically and constantly monitor the environmental impact of related products through the inventory results of the entire supply chain and production process as well as the use of Simapro software to apprehend the environmental impact assessment results.

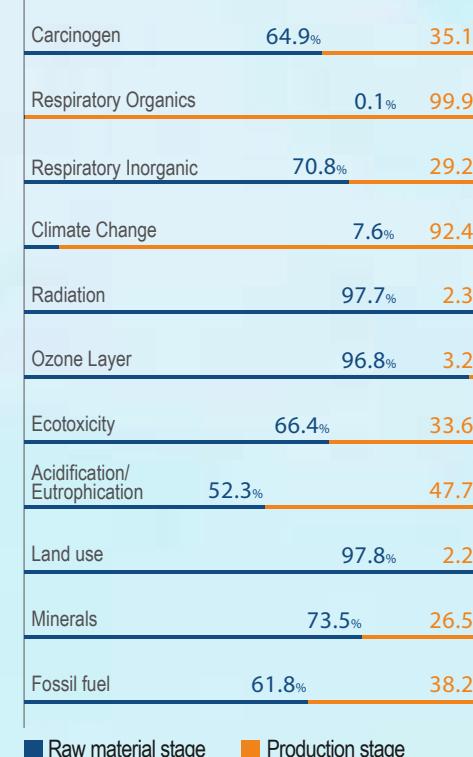
The results of the 2020 UMC Environmental Impact Assessment revealed that the environmental impact of "climate change" and "respiratory organics" is greater in the production stage than that in the raw material stage. This will serve as references for continuous improvement of the environmental management system operation.

Diagram of Semiconductor Product Lifecycle



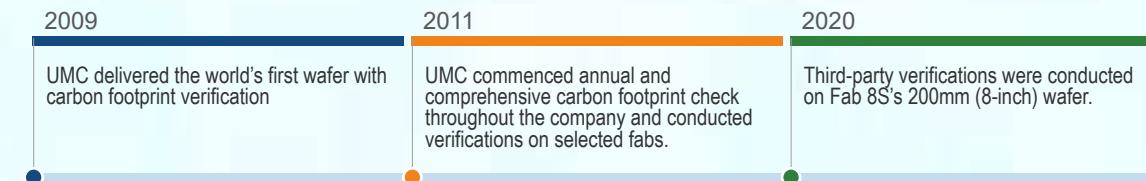
Results of 2020 Environmental Impact Assessment – Representative fab: Fab 8S

Assessment target product: 200mm (8-inch) wafer



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 2020, UMC completed carbon footprint verification of 8-inch wafers produced by 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 2020 is lower than that in 2011, with an average reduction of 36%, which demonstrated that UMC's carbon reduction projects over the years are considerably successful.



Product Water Footprint

Affected by climate change and extreme weather, global water resources have become one of the most discussed topics, and therefore water is called the "fossil fuel of the next generation". Water resources are critical and essential in semiconductor manufacturing processes, especially in Taiwan for its mountainous landscape, heavy rainfall along the mountain slopes, dense population, and extensive industrial and commercial developments. Consequently, following the Business Water Footprint Accounting standards developed by Water Footprint Network, an international NGO, UMC takes the lead in the industry to complete the water footprint verification of 200mm (8-inch) and 300mm (12-inch) fabs, identify that the water used in the direct production process of the factory is greater than the water used in the indirect supply chain, and develop and implement water-saving plans for related manufacturing processes. In 2020, UMC conducted the water footprint inventory throughout the company in accordance with the new standards, and third-party verification was implemented in Fab 8S and its 200mm (8-inch) wafers as the representative. UMC continues to check and analyze the water footprint of products to seize the right moments of water saving and improvement.

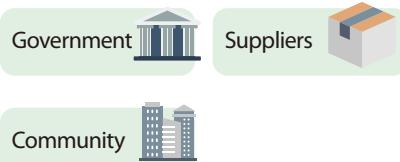




03 IMPLEMENTING GREEN OPERATIONS

- 3-1 Climate Action
- 3-2 Energy Management
- 3-3 Water Resources Management
- 3-4 Waste Management
- 3-5 Air Pollution Control
- 3-6 Smart Manufacturing Execution

Important Stakeholders



Climate change is an urgent issue to be solved. UMC is committed to minimizing the environmental impact brought about by business operation, and has formulated appropriate climate change strategies and set various environmental goals/indicators for carbon emissions, water, and waste to reduce the environmental load created at each stage of the product life cycles. Over the years, UMC has invested in process improvement, implemented source management measures, introduced environmentally friendly designs, optimized the energy/resources utilization efficiency, engaged in the development of green energy, and established a "carbon partnership" relationship with its customers and supply chains to achieve the goal of green operations, realizing co-prosperity with the environment.



Performance Highlights 2020

100%
achieved the
set goals

Completed and exceeded the 2020 energy saving, water saving, waste reduction and carbon reduction goals of the Energy, Resource Productivity Improvement Plan.

**Reduced
fluorinated
greenhouse gases
by 63.3%**

The company-wide reduction of fluorinated greenhouse gas emissions reached 1.169 million tons, and the emission intensity was reduced by 63.3% compared with the base year (2010), which remarkably exceeded the 30% reduction target set by the World Semiconductor Council.

**Saved
61,719
MWh of energy**

The company-wide energy saving performance was amounted to 61,719 MWh, which effectively saved NT\$128 million in cost and reduced CO₂ emissions by 27,781 tons.

**Reutilized
37,504
metric tons
of waste**

The amount of waste reused was 37,504 tons, with a reuse rate of over 90%, and the benefit from the recycling of waste was amounted to approximately NT\$37 million.

**Saved
212,000
tons of water**

The total amount of water saved is 212,000 tons company-wide, effectively reducing the cost by NT\$4.43 million.

Note: Unless specifically identified, the performance statistics are from UMC Taiwan and Singapore facilities.



Material Topics and Key Responses in this Chapter

Management Policies	Goals in 2020	Goals Achieved in 2020	Future Goals (2021–2025) Summary
Energy Management Actively promote various energy reduction measures, select equipment with high energy efficiency and energy-saving design, and increase the use of renewable energy to optimize energy utilization efficiency Section 3.2 Energy Management	Management Objectives: Improve energy efficiency, and reduce the energy consumption of enterprises as well as products to further enhance economic benefits and lower greenhouse gas emissions	<ul style="list-style-type: none"> Reduce electricity consumption per unit product by 10% compared with 2015 	<ul style="list-style-type: none"> Reduced annual electricity consumption by 54,682 MWh to achieve the planned annual goal
Climate Strategy and Action Incorporate low-carbon design into manufacturing process, promote green building as well as clean production, replace the use of process greenhouse gas for source reduction, and adopt the best available technologies to reduce greenhouse gas emissions Section 3.1 Climate Actions	Management Objectives: Promote climate change mitigation and adaptation plans, improve response resilience, reduce environmental loading, and boost operational performance	<ul style="list-style-type: none"> Reduce fluorinated greenhouse gas emissions per unit product by 36% compared with 2010 	<ul style="list-style-type: none"> Reduced fluorinated greenhouse gas emissions per unit product by 63.3% compared with 2010
Water and Wastewater Management Introduce a water resource risk management system, develop and apply diversified water sources; promote water saving and maximize water utilization efficiency Section 3.3 Water Resources Management	Management Objectives: Maximize water utilization efficiency, increase the tolerance of the upstream and downstream value chains to water risks, and promote the importance and conservation of water resources	<ul style="list-style-type: none"> Reduce water consumption per unit product by 10% compared with 2015 The fab-wide recovery rate and the process recovery rate are better than the regulated standards of the Science Park 	<ul style="list-style-type: none"> Reduced annual water consumption per unit product by 114,000 tons to reach the planned annual target Depending on construction schedule of each fab, the recovery rate of each fab exceeded the regulated standards of the Science Park, with a total annual recovery of 33.23 million tons of water
Waste and Resource Utilization Efficiency <ul style="list-style-type: none"> Promote manufacturing process improvement and implement source management measures to reduce the use of raw materials and waste generation Collaborate with global operating partners to carry out resource reutilization, achieving the goal of waste recycling and reuse Section 3.4 Waste Management	Management Objectives: Proper waste management can not only reduce waste generation and related costs, but also create profits and reduce the impact of operations on the environment	<ul style="list-style-type: none"> Reduce waste generation per unit product by 10% compared with 2015 The waste generated by fabs in Taiwan is properly handled, with landfill rate of less than 1% The recycling rate for liquid waste is >98% The recycling rate for acidic and alkaline liquid waste is 100% 	<ul style="list-style-type: none"> The annual waste generation was reduced by 705 tons; the waste generation per unit product reached the planned annual target The landfill rate for fabs in Taiwan was less than 1% The recycling rate for liquid waste was >98% The recycling rate for acidic and alkaline liquid waste was 100%

Note: I. For detailed targets of 2025, please refer to: https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development

II. The scope of proper waste handling covers only the fabs in Taiwan. As for the fab in Singapore, due to the restrictions of regulations as well as local treatment plant, the targets may vary as compared to those of the fabs in Taiwan.



Mechanisms for Evaluating Effectiveness

 <p>Check the company's greenhouse gas emissions and energy usage in accordance with ISO14064-1: 2006 every year to keep updated with the current situation, demonstrating the effectiveness of the reduction, and entrusting an independent verification body to conduct external audit.</p>	 <p>Confirm that there are no environmental protection abnormalities and complaints from the stakeholders.</p>
 <p>The Environment Committee reviews the needs and expectations of stakeholders quarterly.</p>	 <p>The company-wide waste reduction plans were set. The Environment Committee will conduct a performance review annually.</p>
 <p>The company-wide energy resource productivity improvement plans were set, with performance reviewed annually by the Environment Committee.</p>	 <p>Set company-wide KPIs for water-saving plans, and conduct annual performance reviews by the Environmental Committee</p>
 <p>Pass the ISO 14001 environmental management system certification every year.</p>	

UMC has long been committed to environmental protection, hoping to achieve a mutual-benefit between the economy and the environment with the green operation model of "maximizing production efficiency and minimizing environmental impact." Since the promotion of the three-phase "Green UMC - Energy Resource Productivity Improvement Plan" in 2010, ecological efficiency in the aspects of energy saving, water saving, waste reduction and greenhouse gas reduction were improved through source reduction and utilization efficiency improvement, making valuable contributions to environmental sustainability. Summarizing the 369+ Project (reduction of fluorinated greenhouse gases) and the results of the Green 2020 Project as of 2020, 91.88 million KWh of electricity, 6.4 million tons of water, 38,600 tons of waste, fluorinated greenhouse gas (F-GHG) reduction, and 5.71 million tons of CO₂e emissions were reduced, which is equivalent to a total economic benefit of NT\$10.909 billion.

At the end of 2020, when the second and third phases of the Plan (369+, Green 2020) came to an end, the company's president revealed the fourth phase of the Plan—Green 2025, setting the 2025 targets of 15% in electricity saving, 15% in water saving, 25% in waste reduction, and 65% in the reduction of fluorinated greenhouse gas emissions.



Environmental Protection Policy

Energy Resource Productivity Improvement Plan

Vision

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



UMC
Energy Resource Productivity Improvement Plan

Mechanism

Introduce ISO 14000: 2015 and ISO 50001: 2011 Management System Standards, establish standardized procedures, and carry out continuous improvement through the PDCA mechanism.

Project of Each Stage

- | | |
|--|---|
|  Goals Achieved | Phase 1: Project 333 Reduction (2010~2012) |
|  Goals Achieved | Phase 2: Project 369+ Reduction (2013~2015) ^{Note} |
|  Goals Achieved | Phase 3: Green 2020 (2016~2020) |
|  Ongoing | Phase 4: Green 2025 (2021~2025) |

Note: the target year of F-GHG reduction is 2020.

Goals of Green 2025 (Period 2021~2025)

Electricity Intensity	Water Intensity	Waste Intensity	F-GHG Emission Intensity
 15% reduction compared to the base year (2015)	 15% reduction compared to the base year (2015)	 25% reduction compared to the base year (2015)	 65% reduction compared to the base year (2010)

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.



Energy Resource Improvement Status in 2020

369+(The base year 2010)

F-GHGs Reduction

Goal: 36% reduction compared to the base year (2010)

**Performance
-63.3%**

**Economic Benefits
NT\$8,568 million**

Environmental Benefits

- Reduced 5.71 million tons of CO₂e emissions
- Equivalent to the annual carbon absorption of 15,000 Daan Forest Parks

Green 2020 (The base year 2015)

Electricity Saving

Goal: 10% reduction compared to the base year (2015)

**Performance
-13.0%**

**Economic Benefits
NT\$2,064 million**

Environmental Benefits

- Saved a total of 91.88 million kWh of electricity
- Reduced a total of 380,000 tons of CO₂e emissions
- Equivalent to the annual average CO₂ emissions of 20,000 households

Water Conservation

Goal: 10% reduction compared to the base year (2015)

**Performance
-14.2%**

**Economic Benefits
NT\$101 million**

Environmental Benefits

- Saved a total of 6.4 million tons of water
- Equivalent to the Water of 2,562 Olympic-standard swimming pools

Waste Reduction

Goal: 10% reduction compared to the base year (2015)

**Performance
-24.0%**

**Economic Benefits
NT\$176 million**

Environmental Benefits

- Reduced a total of 38,600 tons of waste
- Equivalent to the annual waste generation of 23,000 households

Implementation and Performance in 2020

Power Consumption

Main Reduction Measures

- Improvement on energy efficiency
- Improvement on air conditioning system
- Improvement on lighting system

Economic Benefits

- Savings of NT\$125.8 million

Environmental Benefits

- Additional power savings: 54,682 MWh
- Around 26,360 tons of CO₂e reduction

Water Consumption

Main Reduction Measures

- The drainage from the production equipment is recovered by the copper chemical/mechanical grinding recycling system
- Improve the efficiency of the chemical/mechanical grinding water recycling
- The drainage of the production equipment is recovered by 30% of the water recycling system

- Savings of NT\$2.85 million

- Additional water savings: 114,000 tons

Waste Generation

Main Reduction Measures

- Reduction of waste sulfuric acid: used as acid-base neutralization agent for the ammonia nitrogen treatment system in the wastewater treatment plant
- Sludge reduction: expansion of drying equipment and source reduction of fluorine-containing chemicals
- Reduction of waste solvent: reduce the water content of waste IPA and extend the lifetime of solvent

- Savings of NT\$5.82 million

- Additional waste reduction: 1,007 tons

F-GHG Emission

Main Reduction Measures

- Installation of control equipment
- The plan of replacing C₃F₈ by C₄F₈

- The gas replacement plan saved raw material costs by more than NT\$20 million

- Cumulative F-GHG reduction to 1.169 million tons of CO₂e

Note: I. In 2020, the Company's subsidiary HJ reduced power consumption by an additional 2,902 MWh, the subsidiary USCXM reduced power consumption by an additional 7,293 MWh, the subsidiary Wavetek reduced power consumption by an additional 816 MWh, and the subsidiary USJC reduced power consumption by an additional 788 MWh.

II. In 2020, the Company's subsidiary HJ and USCXM reduced water consumption by an additional 97,800 tons.

III. In 2020, the Company's subsidiary HJ and USCXM reduced waste generation by an additional 159 tons.

2010-2020

Note: I. The scope of the targets for the Green 2020 Project set in 2015 covers UMC's operating bases in Taiwan and Singapore, and HJ (subsidiary of UMC), but excludes the 2nd fabsite of Fab 12A, USCXM (subsidiary of UMC) and Wavetek (subsidiary of UMC).

II. The calculation of each item is explained as follows

i.Electricity saving: The economic benefit was calculated based on the electricity price of the current year, while the environmental benefit was calculated based on the latest Electricity Carbon Emission Factor. Per capita emissions were calculated based on the latest World Bank Open Data-CO₂ emission (metric tons per capita) (4.56 tons of CO₂/Person in 2016), and the family size was calculated based on 4 people per household.

ii.Water saving: The economic benefit was calculated based on the water price of the current year, while the environmental benefit was calculated based on the size of Olympic-standard swimming pool, which is 2,500 m³.

iii.Waste reduction: The economic benefit was calculated based on the waste handling cost of the current year, while the environmental benefit was calculated based on the annual waste generation per capita (417 kg/person in 2020) from the statistics of the Environmental Protection Administration. The family size was calculated based on 4 people per household.

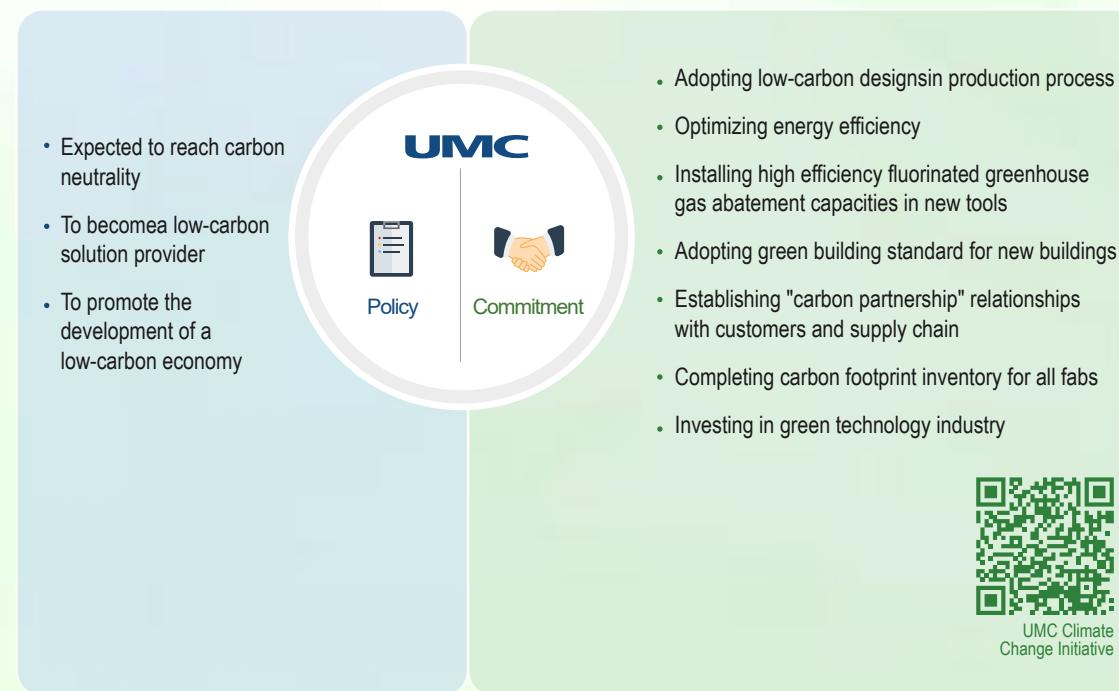
III. Reduction of fluorinated greenhouse gases: The economic benefit was estimated based on the monetary penalty of NT\$1,500/ton for exceeding the greenhouse gas emission allowance specified in the Greenhouse Gas Reduction and Management Act, while the environmental benefit was calculated based on the annual carbon absorption of Daan Forest Park (approximately 25.9 hectares), i.e. 389 tons of CO₂.



3-1 CLIMATE ACTION

In recent years, climate change has intensified rapidly. The concentration of carbon dioxide in the atmosphere has reached greater than 400ppm, and the global average temperature rise of 2°C (approximately 450ppm) is just a step away. Therefore, carbon reduction has become an important global issue that requires immediate attention and actions. As early as 2010, UMC led the industry in announcing the "UMC Climate Change Policy," serving as the company's highest guiding principle in responding to climate change. Furthermore, UMC also stipulated the "UMC Low Carbon Commitment," acting as the guideline for the promotion of future carbon reduction plans.

Note: For information on climate risks and opportunities, please refer to Section 1.3.5 Knowing Climate Risks and Opportunities



3-1-1 Carbon Emissions Management

Greenhouse Gas Inventory

In accordance with inventory guidelines defined by domestic and international organizations such as the ISO14064-1:2006 and WRI "Greenhouse Gas Protocol", UMC established its greenhouse gas (GHG) inventory standard mechanism. The company regularly inventories the GHG emissions of all its fabs each year to fully determine the status of its GHG and verify the effectiveness of their reduction. The results are used to ensure the reduction performance, and a third party is commissioned to conduct external verification. In 2020, UMC's Scope 1 direct greenhouse gas emission was 539,321 tCO₂e, and Scope 2 indirect greenhouse gas emission was 1,287,248 tCO₂e. The emission per unit wafer area defined by the energy resource productivity indicator was 2.44 tCO₂e/wafer-m² and 5.83 tCO₂e/Wafer-m², respectively for Scope 1 and Scope 2. Regardless of Scope 1 or Scope 2, UMC's emissions per unit wafer area in the past four years have shown a continuous downward trend.

Note: 2009, the base year's GHG emission is 1,623,036 tCO₂e

Direct GHG Emissions (Scope 1) and Emissions per Unit of Wafer Area



UMC | HJ | USCXM | Wavetek | USJC | Direct GHG emissions per unit of wafer area for UMC (tCO₂e/Wafer-m²)

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

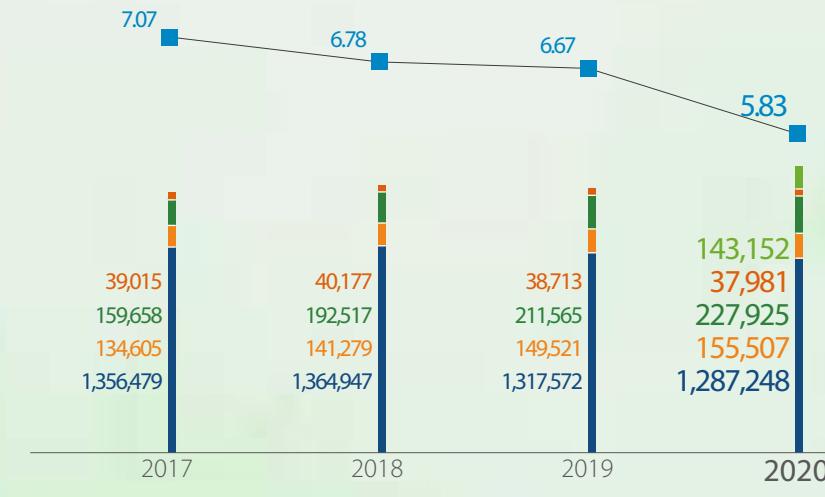
II. In 2020, the overall direct GHG emissions per unit of wafer area (m²) for UMC and its subsidiaries was 2.45 tCO₂e/Wafer-m².

III. Global warming potentials (GWP) used in the calculation are 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 498,108 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.



Indirect GHG Emissions (Scope 2) and Emissions per Unit of Wafer Area



■ Indirect GHG emissions per unit of wafer area for UMC (tCO₂e/Wafer-m²)

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 certified by third parties.

i. Taiwan: 0.509 KgCO₂e/KWh (2019 data) :

ii. Singapore: 0.4188 KgCO₂e/KWh;

iii. China: Suzhou(HJ) 0.7035 KgCO₂e/KWh, Xiamen(USCXM) 0.7921 KgCO₂e/KWh;

iv. Japan: 0.507 KgCO₂e/KWh.

III. In 2020, the overall indirect GHG emissions per unit of wafer area (m²) for UMC and its subsidiaries was 6.32 tCO₂e/Wafer-m².

In order to know well other Indirect GHG (Scope 3) emissions, UMC referred to carbon footprint calculation methods (ISO 14067: 2018 and PAS 2050) and technical documents provided by WRI and WBCSD for inventory checks to estimate the amount of Scope 3 GHG emissions from UMC's fabs in Taiwan and Singapore. UMC also passed DNV GL verification. In 2020, Scope 3 adjusted the organizational and inventory scale to include downstream factory building rental and waste water discharge. However, UMC continues 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. As a result, the greenhouse gas emission in 2020 was increased by only 9.1% compared with 2019.

Verified Data of Scope 3 GHG Emissions Inventory

Boundary	GHG Emissions (tCO ₂ e)		
	2019	2020	YoY
Purchased goods and services	632,853	513,850	-18.8%
Fuel-and-energy-related activities	396,613	340,964	-14%
Upstream transportation and distribution	179,643	165,677	-7.8%
Waste generated in operations	1,885	9,575	+508% ^{Note 1}
Business travel	1,079	532	-50.7%
Employee commuting	10,310	10,165	-1.4%
Downstream transportation and distribution	2,970	2,933	-1.2%
Downstream leased assets	(None of case) ⁰	7,480	+7480% ^{Note 2}
Upstream leased assets	(None of case) ⁰	(None of case) ⁰	-
Investments of subsidiaries	563,012	785,700	+39.6%
Capital assets	284,729	424,026	+48.9%
Total Amount	2,073,094	2,260,902	+9.1%

Note: Explanations of YoY

1. The emission of water discharge was included since 2020.

2. The emission of one newly leased building was included since 2020.

3. Due to the company re-org in 2020, the emissions of subsidiary USJC was included, and compared with 2019 when the emissions of NexPower Technologies Corp. was not included.



GHG Reduction

From the results of UMC's carbon footprint and GHG inventory, we learned that the main GHG sources of the process emission are fluorinated greenhouse gases (F-GHGs) in Scope 1 and from purchased electricity in Scope 2, respectively. These emissions account for about 90% of UMC overall GHG emissions. Therefore, reduction of both F-GHGs and electricity usage become UMC's priority.

Note: F-GHGs Reduction is described in this section. The emission of purchased electricity has been reduced through several measurements including implementing energy saving, improving energy efficiency, and expanding renewable energy usage. More details please refer to 3-2 Energy Management.

Primary Sources of GHG Emissions

Emission Source	Ratio
Purchased electricity	70%
Type of GHG	
CO ₂	
Reduction Measure	
Increasing energy efficiency and installing more renewable energy system. For the details, please refer to chapter 3.2 Energy Management.	
Emission Source	Ratio
The use of F-GHGs during manufacturing process	18%
Type of GHG	
CF ₄ , C ₂ F ₆ , C ₃ F ₈ , C ₄ F ₈ , C ₅ F ₈ , SF ₆ , NF ₃ , CHF ₃ , CH ₃ F, etc	

UMC established the F-GHGs Reduction Taskforce in 1999 to promote GHG reduction. Moreover, the company set GHG reduction goals for the various phases of the program, and currently, the reduction program is in Stage 3. UMC shall continue to implement F-GHGs reduction projects. UMC has continually conducted reduction measures such as installing a high performance local scrubber 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 for overall fabs has exceeded 75%, which is required by the Institute of Electrical and Electronics Engineers (IEEE) 1680.1: 2018 standard.

F-GHGs Reduction Results



I. Prevention equipment reduction result (tCO₂e)

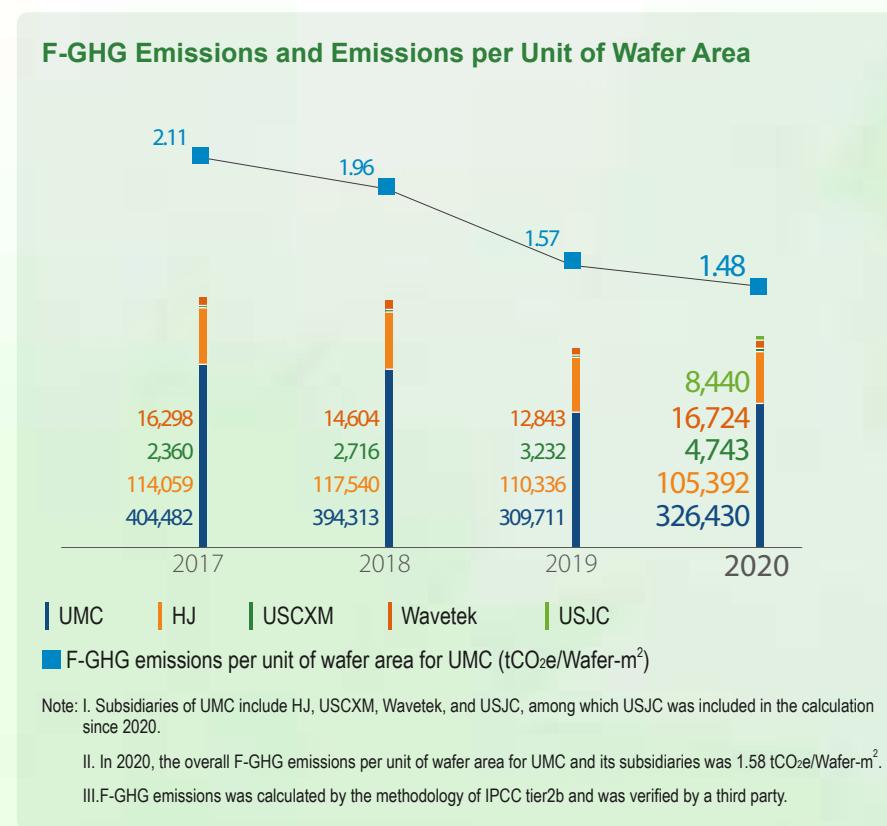
II. C₃F₈ > C₄F₈ gas replacement reduction result (tCO₂e)

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/C₄F₈ 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.



The fluorinated greenhouse gas emission of UMC in 2020 was 326,430 tons of CO₂e. Since USJC, a subsidiary of UMC in Japan, was included into the scope of the calculation for 2020, the company-wide fluorinated greenhouse gas emission was amounted to 461,728 tons of CO₂e, showing a slight increase from 2019. Nevertheless, UMC continues to implement various fluorinated greenhouse gas reduction measures, resulting in a reduction of the emission intensity for 4 consecutive years.



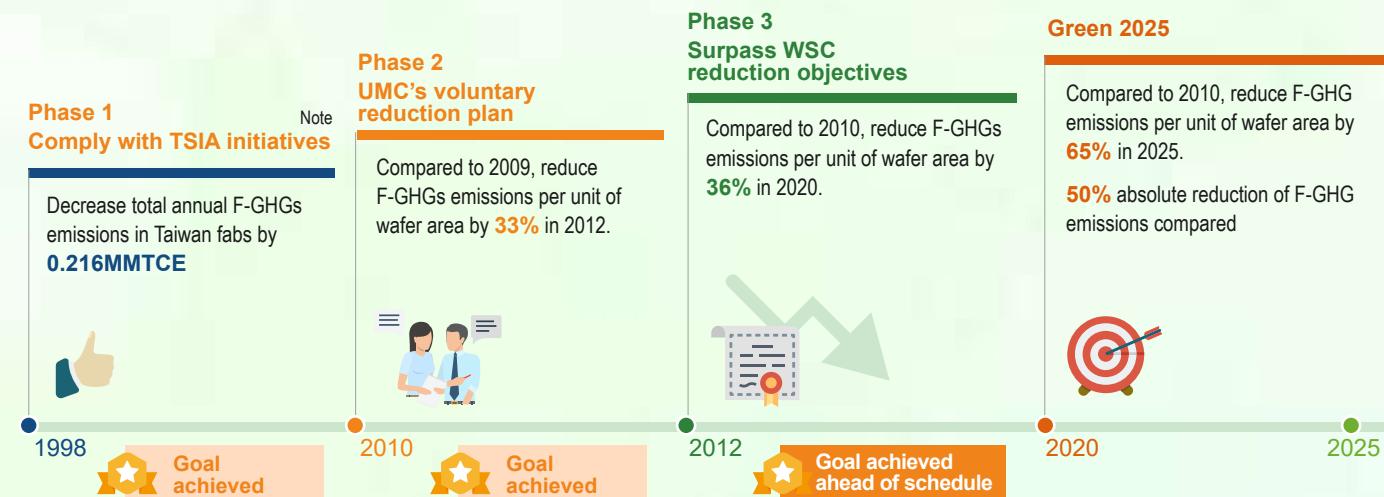
F-GHGs Emission per Unit of Product

	2017	2018	2019	2020
Unit of wafer area (tCO ₂ e/Wafer-m ²)	2.11	1.96	1.57	1.48
Unit of wafer weight (Kg F-GHGs/ton)	122.5	116.9	90.1	85.1

Note: The boundary of calculation includes UMC's fabs in Taiwan and Singapore.

F-GHGs reduction in 2020 reached 1.169 million tons, compared to 2010, the F-GHGs emission per unit of wafer area (m²) reduced by 63.3%. Such results showed that UMC not only managed to achieve Phase 3 objectives ahead of schedule, but also attained the reduction goal, which is 30% lower than 2010 levels, for 2020 stipulated by the World Semiconductor Council (WSC). At this stage, UMC has integrated with international trends and has complied with national policies to formulate reduction goals for 2025 including 65% reduction of F-GHGs emission per unit of wafer area (m²) and 50% absolute reduction of F-GHGs emission.

Reduction Plans and Objectives for Each Phase for F-GHGs





F-GHGs Reduction Current Status

Stage Goals

Compared to the base year (2010)

- Reduce the F-GHGs emissions per unit of wafer area by **36%** in 2020.



Compared to the base year (2010)

- Reduce **50%** absolute reduction of F-GHGs emissions in 2025.
(Estimated production capacity to increase by 1.36 times)



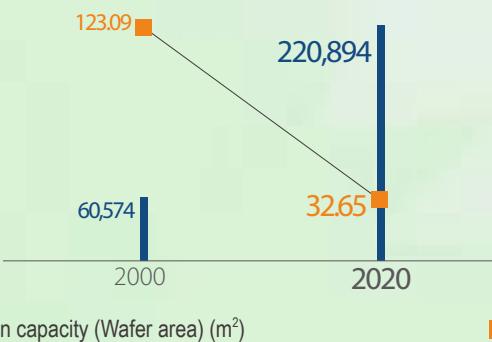
Status in 2020

63.3% reduction

46% reduction
(Real production capacity increased by 1.46 times)



Trend of UMC's Overall Production Capacity and F-GHGs Emission



Note: The base of calculation includes UMC's fabs in Taiwan and Singapore.

Since UMC began to implement F-GHGs reduction in 2000, F-GHGs emission has declined by **73%** while production capacity increased **3.65 times** compared to year 2000.

3-1-2 Carbon Assets Arrangement

Carbon Assets and Carbon Trading

From 2013 to 2014, UMC supported the Environmental Protection Administration (EPA)'Early Reduction Project' and acquired a carbon reduction allowance of 3.02 million tons. In 2014, a 2 million tons carbon trading deal was signed with Dragon Steel. 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 wholly used by UMC to establish the UMC Eco-Echo Ecological Conservation Hope Project that was exclusively dedicated to environmental protection, promoting environmental protection measures, and contributing towards environmental sustainability.

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). UMC also applied for the GHG Offset Project, which was approved by the EPA in 2020, to reserve carbon assets in accordance with Taiwan's regulations on voluntary greenhouse gas reduction incentive mechanism (under review). According to our estimation, UMC can build carbon assets of more than 2.2 million tons in 10 years.

Internal Carbon Pricing

UMC has a state-of-the-art 300mm wafer fab in Singapore. The Singapore government announced that it will introduce a carbon tax from 2019 onwards, making it the first country in Southeast Asia to promote this measure. In Taiwan, there are additional sub-laws to the Greenhouse Gas Reduction and Management Act and a revised Renewable Energy Development Act that stipulate fines for Greenhouse Gas (GHG) emissions exceeding the total controlled amount, and either mandatory green electricity certification purchase or payment for inadequate proportion of green electricity use.

At present, UMC has transformed the carbon emissions into potential carbon costs based on the analysis of the carbon risk scenarios of each fab, and has actively carried out a phased GHG reduction plan. The measures for the use of clean energy include the reduction of raw materials, setting of high-efficiency GHG breakdown equipment, etc., and building solar energy systems. The company takes an aggressive stance in reducing the impact of carbon emissions and taxes, enhancing its operational competitive advantage. In addition, UMC has organized inter-fab competitions such as the Green Fab Award and the Green Innovation Award to encourage plants to implement energy-saving and GHG reduction measures. Bonus incentives are available to business units and individuals which have achieved good results in reducing carbon emissions.



3-2 ENERGY MANAGEMENT

In order to eliminate the environmental impact from Greenhouse effect and minimize energy consumption, UMC set company-wide carbon reduction goals and development plans through the CS Committee to coordinate and integrate departmental energy saving and carbon reduction strategies and programs. Regular committee meetings are held to review the implementation outcome, and to introduce energy conservation technologies and implement energy efficiency improvement programs in all facilities. In addition to energy management strategies including energy saving implementation, increasing energy efficiency, and expanding renewable energy installation, UMC also promotes the implementation of energy management in its offices and common areas with promotional activities, education and training to cultivate a mindset and habit of energy conservation and GHG emission reduction among employees.

3-2-1 Energy Structure

Bulk purchases of electricity dominates the energy structure of UMC, accounting for about 92.8% of the total energy, followed by natural gas (including LPG) and diesel, accounting for about 7.1% and 0.1%, respectively. Therefore, energy saving is mainly aimed at reducing the use of electricity and natural gas. Due to the expansion of production capacity, UMC's total energy consumption in 2020 reached 2,782,105 MWh, showing a slight increase from 2019. Among which, electricity consumption was 2,581,341 MWh, while natural gas consumption was 198,214 MWh. The electricity consumption per unit wafer area was 11.69 MWh/Wafer-m², while the natural gas consumption per unit wafer area was 0.9 MWh/Wafer-m². A downward trend in energy consumption is observed in the past four years, reflecting UMC's continuous improvement in energy management.

Total Energy Consumption

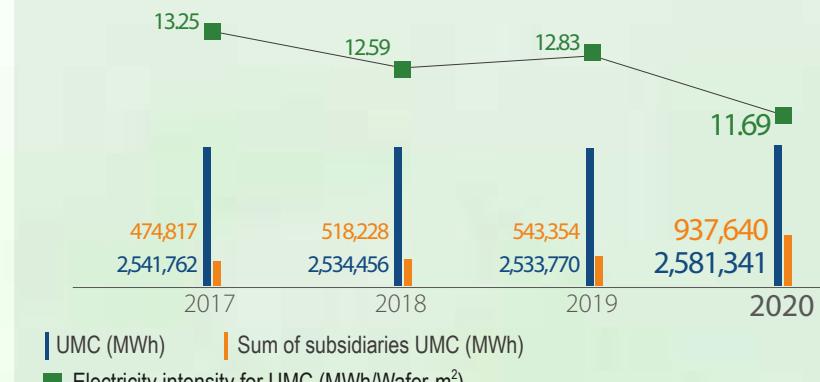
Unit: MWh	2017	2018	2019	2020
Non-renewable energy (a)	207,427	205,080	191,181	200,764
Purchased non-renewable energy (b)	2,541,762	2,534,456	2,533,770	2,581,341
Steam, heating, cooling and other purchased energy (c)	0	0	0	0
Total renewable energy (d)	2,730	2,882	2,747	2,912
Non-renewable energy sold (e)	0	0	0	0
Total energy consumption (a+b+c-e)	2,749,189	2,739,536	2,724,951	2,782,105

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

II. Renewable energy generated means solar energy installations. The total energy consumption in 2020 was about 1.00156×10^7 GJ

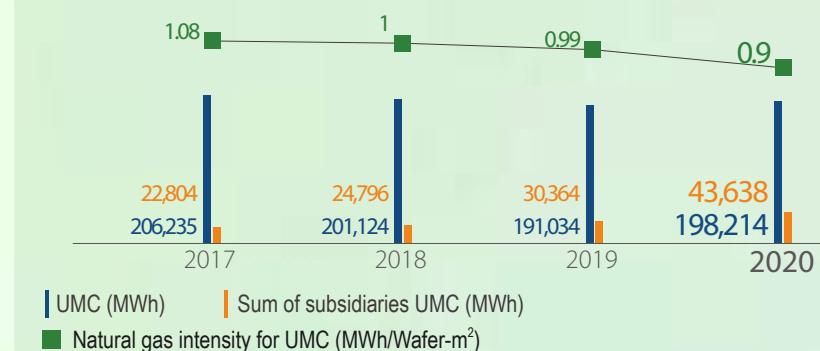
III. the percentage of grid electricity is >90%; the percentage of renewable energy is <1%.

Electricity Consumption



Note: I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. "UMC fabs in Taiwan" do not include the United Tower officebuilding and the Nitrogen Field.
III. In 2020, the overall electricity intensity for UMC and its subsidiaries was 11.82 MWh/Wafer-m².

Natural Gas Consumption

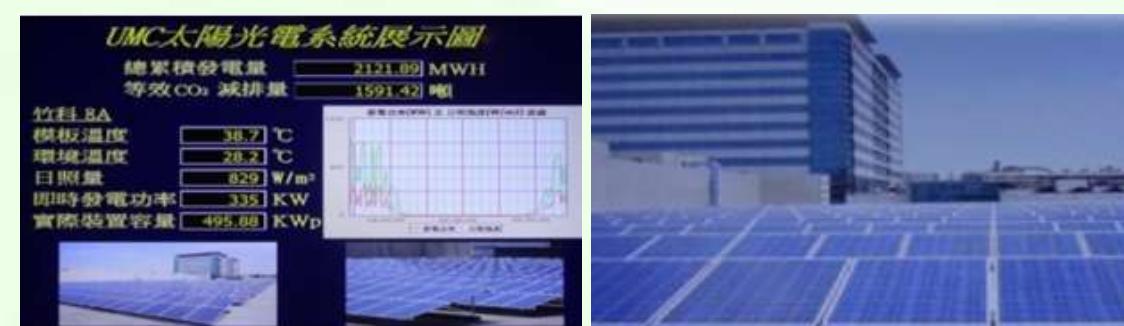
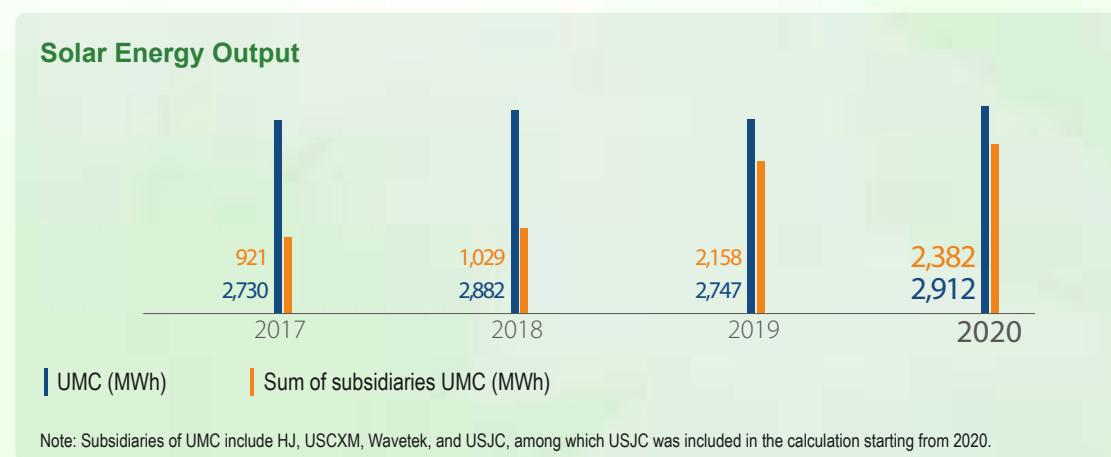


Note: I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. The unit gas calorific conversion coefficient is calculated according to the calorific value provided by the local gas suppliers of each fab.
III. In 2020, the overall natural gas intensity for UMC and its subsidiaries was 1.48 MWh /Wafer-m².



Promotion of Renewable Energy

Aside from UMC's ongoing energy efficiency improvement efforts, we are also actively setting up renewable energy sources in fabs, and with solar energy systems as a new fab standard design and construction project. Until the end of 2020, UMC and its subsidiaries have completed the installation of over 5,000 kWp solar energy system, which is expected to generate up to 5,000 MWh of electricity each year. The installation capacity is the highest in the semiconductor foundry industry in Taiwan. In addition, UMC has planned to add a total of about 2,000 kWp of solar photovoltaic systems in 2021, fully demonstrating that it attaches great importance to green energy and spares no effort to support clean energy. In 2020, UMC's solar photovoltaic system generated a total power of 2,912 MWh, and renewable energy accounted for less than 1% of total energy consumption.



3-2-2 Energy Efficiency Improvement

UMC continues to improve the energy utilization efficiency of all fabs through various energy-saving measures. In 2020, the total electricity and natural gas saved was 61,719 MWh, which is equivalent to a reduction of 27,781 tons of CO₂ emission.

Major Energy Conservation Measures in 2020

Achievement
<ul style="list-style-type: none"> Replace online UPS with offline UPS Energy saving measures for illumination AC units clean-up for energy conservation Compressed gas reduction to conserve energy Energy saving measures for cold water and AC systems Energy saving measures for production process cooling water Energy saving measures for production machine Energy saving measures for water treatment systems

<ul style="list-style-type: none"> L/S Zenith Modify to CT type NG Flow Adjustment VOC burning gas operation adjustment for optimal efficiency Boiler operation adjustment for optimal efficiency 	<ul style="list-style-type: none"> Reduced 7,037 MWh of natural gas usage 1,421 tons of reduction
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Electricity	Natural gas
Amount of Saving(MWh) 54,682	Amount of Saving (MWh) 7,037
Carbon Reduction (tCO ₂ e) 26,360	Carbon Reduction (tCO ₂ e) 1,421

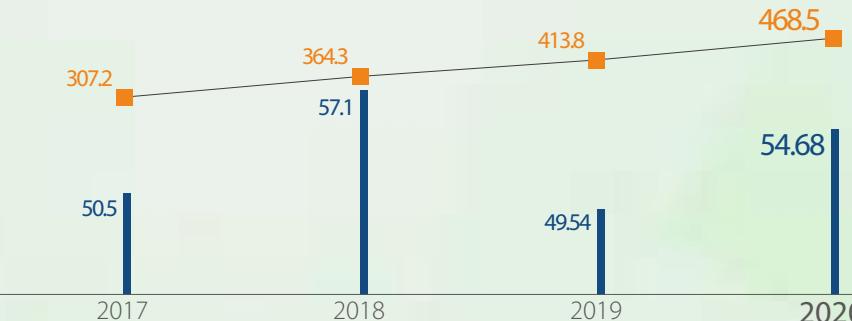
Note: I. The base of calculation includes UMC fabs in Taiwan and Singapore.

II. CO₂ emissions are calculated using the latest local electricity coefficient. Taiwan: 0.509 Kg CO₂e/KWh ; Singapore: 0.4085 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 2020 was counted.

Electricity Savings



Natural Gas Savings



Energy Conservation Plans

UMC's energy saving plans shall cover about 400 energy saving measures such as the complete introduction of equipment energy saving features, provision of inverters, replacing online uninterruptible power supplies (UPS) with offline UPS systems, and ice water system energy saving measures. Reduction goal for 2021 is 46,000 MWh, which would be equivalent to carbon dioxide emission reductions of about 24,518 tCO₂e. UMC shall continue to promote heat recycling and energy saving projects for high temperature heat pumps as well, which are expected to reduce natural gas consumption by 6,764 MWh, equivalent to carbon dioxide emission reductions of about 1,365 tCO₂e.



Frequency conversion air compressor



Cooling tower replacement



Intelligence chiller



Energy-saving motor



3-3 WATER RESOURCES MANAGEMENT

In recent years, climate change has altered the water environment considerably, making the occurrence of floods and droughts to become more frequent. For this reason, stakeholders have become increasingly concerned about water resources issues. Moreover, water resource is one of the important resources that are essential for the semiconductor manufacturing process. To respond to the complex water resources issues in advance and effectively integrate water management concepts such as prevention, conservation, and emergency response, UMC has completed the water risk factor identification and response, and issued the "UMC Water Resources Management Policy and Commitment" in 2015, serving as the company's highest guiding principle in response to water resources management. UMC took the initiative in implementing various water-saving improvements, including measures to improve water use efficiency and value, reduce the impact of water resources on the environment, and reduce the amount of water replenishment.

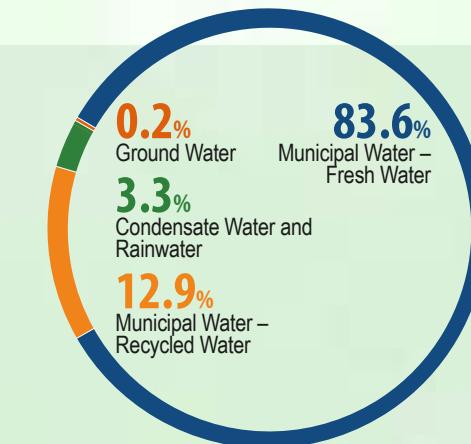
Note : For the identification of water risk factors, please refer to Section 1.3.5 Managing Climate-related Risks and Opportunities.



3-3-1 Water Use Structure

UMC use municipal water (including recycled water used by Fab 12i in Singapore) as the primary source, which is approximately 96.5% of total water usage. 3.3% of total water usage was supplemented by condensate water and rainwater. Although the production capacity was increasing and the statistic scale is expanded to involve the subsidiary USJC in Japan, the total water withdrawal in 2020 showed no significant change since we have conducted several water conservation measures and have increased water efficiency to reach the balance. The total water withdrawal was 25.16 million tons in 2020.

Total Water Withdrawal by Source



Note: I. The base of calculation includes UMC and its subsidiaries HJ, USCXM, WAVETEK and USJC.

II. Withdrawal from recycled water was mainly consumed by Fab 12i in Singapore and withdrawal from ground water was mainly consumed by USJC in Japan.



Municipal Water

Municipal water is the largest source of water for UMC, including the recycled water used by the fab in Singapore. In 2020, UMC's total water consumption was 15.50 million tons, which showed an increase from 2019 mainly due to the increase in production capacity. After UMC took the initiative to improve water use efficiency, the municipal water consumption per unit wafer area in 2020 was lower than that in 2019. The water consumption shows a downward trend in the past four years.

Using 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 being built, recycled water (Newater) was introduced in the production of 300mm wafers. On the other hand, the use of recycled water has been reviewed and evaluated in UMC's Taiwan fabs in areas where water resources are relatively depleted. In 2020, the company's use of recycled water reached 3.26 million tons, accounting for 95.4% of Fab 12i's total water use. In the future, the fab in the Southern Taiwan Science Park will work in conjunction with the completion of the government's recycling system, performing incremental testing before full utilization, to increase the amount of recycled water used and reduce the impact on local water resources.

Water Quality Risk Control

Effective monitor and control of the water quality can decrease the resources consumption during the manufacturing process, optimize the product yield, and increase the efficiency of water usage. Before entering the 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 SPC, to ensure the water quality and reliability. In Singapore, Fab 12i increased its HF treatment system to improve the quality of the discharged water of fluoride ion < 15ppm, meanwhile strengthening the classification management of the source of the machine, and controlled sulfates to < 1000ppm, in an effort to improve the stability of the water quality of the recycled water source.

Municipal Water Consumption



Note: I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. Water meter readings are recorded daily. Annual water amount is calculated based on average monthly water usage.
III. In 2020, the overall municipal water consumption per unit of wafer area for UMC and its subsidiaries was 81.77 m³/Wafer-m².



Condensate Water and Rainwater

Condensate water and rainwater are precious natural water sources, but are easily subjected to seasonal climate changes, and therefore account for only 5% of total water consumption. 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 2020 was 0.7 million tons.

Condensate Water and Rainwater Recovery



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

II. Annual water amount is calculated using flow meters and estimates.

Note: I. The WRI (Water Resource Institute) Aqueduct Tool is used to assess water risk.
<http://www.wri.org/our-work/project/aqueduct/aqueduct-atlas>

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

III. Regional supply-demand ratio: Calculated based on the water supply of the region and the water demand of the fab. High level has a supply-demand ratio of >2, medium level has a supply-demand ratio of between 1 and 2, and low level has a supply-demand ratio of <1.

IV. The Water Resources Agency plans to increase fresh-water constructions and the connection between Shimen Reservoir and Baoshan Reservoir in the Hsinchu area to ensure adequate regional water dispatch and meet the water demand in 2025.

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 the distribution of Taiwan's water resources, including water source stability, regional supply-demand ratio and other indicators, to identify the percentage of UMC fabs around the world that are located in water-deficient areas, serving as reference for formulating water risk management strategies. After the assessment, none of UMC fabs is located in high-risk water resource areas, and the water consumption of each fab and subsidiary is less than 5% of their locations, suggesting that there is no significant impact on local water resources. However, to take precautions against and reduce water use risks, although the Hsinchu Science Park in Taiwan was rated medium-to-low risk, it is listed as a relatively water-stressed area which requires further assessment and analysis.

Water Stress and Risk Assessment of UMC and Its Subsidiaries

Water Source	Water Scarcity	Water Source Stability	Regional Supply-Demand Ratio	Risk Assessment
Hsinchu Science Park	Fab(s): Fab 8A, Fab 8D, Fab 8E, Fab 8F, Fab 8S, and Subsidiary Wavetek Water Source: Baoshan Reservoir, Baoshan II Reservoir, Longen Dam			
In addition to the existing water supply (precipitation and reservoir cross-region water supply), · The Shimen Reservoir and Yonghe Mountain Reservoir provide support mechanisms. · Each year prior to the dry season, the Water Resources Agency convenes meetings to discuss the coming water use risks to minimize the risk of water shortage	Low	Moderate	Moderate	Low Moderate
Tainan Science Park	Fab(s): Fab 12A Water Nanhua Dam, Zengwen Dam			
In addition to the existing water supply (precipitation and reservoir cross-region water supply) (larger reservoirs and diverted agricultural water) · Water is mainly supplied by the Nanhua Reservoir. The annual dry season is from November to May of the following year. · The Water Resources Agency regularly reviews risks and schedules water supplies when needed.	Low	Moderate	Moderate	Low
Singapore	Fab(s): Fab 12i Water Source: Singapore Newater reclaimed water			
Newater reclaims and treats public waste water for reuse, and hence is a relatively stable source of water supply with lower risk.	Low	High	Moderate	Low
China Suzhou	Fab(s): Subsidiary HJ Water Source: The main water sources for Suzhou's Taihu Lake are the Suiji in Tianmu Mountain in Zhejiang Province, and Jingxi in Yili Mountain in Jiangsu Province			
Know well about the water resource distribution in regions with water use risk levels above the intermediate level. Taihu Lake has a water storage capacity of 2.72 billion tons, with abundant water resources, which can ensure a stable water supply.	High	High	-	Low
China Xiamen	Fab(s): Subsidiary USCXM Water Source: Jiulong River, Tingxi Reservoir			
The Jiulong River has a water volume of 446 cubic meters per second, and the Tingxi Reservoir has a storage capacity of 48.45 million cubic meters; these abundant water resources ensure stable water supply.	Low	Moderate	Moderate	Low
Japan Mie-Ken	Fab(s): Subsidiary USJC Water Source: Nagara River, Nakazato Dam			
The Nagara River has a water volume of 100 cubic meters per second, and the Nakazato Dam has a maximum water storage capacity of 16 million cubic meters, ensuring abundant water sources and stable water supply.	Low	Moderate	High	Low



Impact of Regional Water Consumption

UMC			Subsidiary			
Hsinchu Science Park	UMC Tainan Science Park	Singapore	HJ China Suzhou	USCXM China Xiamen	Wavetek Hsinchu Science Park	USJC Japan Mie-Ken
Regional Water Consumption (10,000 tons/day) ^{Note I}						
55	93	45	110	172	55	75
UMC Water Consumption (10,000 tons/day) ^{Note II}						
1.7	1.63	0.9	0.6	0.6	0.14	0.12
Impact of UMC Consumption						
3.09%	1.75%	2.0%	0.55%	0.34%	0.25%	0.16%

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

II. Source of water consumption data: water consumption measured by each fab's on-site flow meter.

Considering that UMC's main operating sites are in Taiwan and Singapore, water withdrawal was further divided according to the source to better understand regional water consumption. The water source of the Hsinchu Science Park seemed to be more water-stressed than other regions. UMC fabs in Taiwan and Singapore use municipal water as the main source of water, and water consumption shows an increasing trend over the years. To reduce the impact of regional water withdrawal, UMC is actively adopting various water conservation measures, and effectively preventing operational risks that may be caused by water resources management in advance.

Volume of UMC Water Withdrawal by Source

Unit: megaliters	2017		2018		2019		2020	
	All Areas	Fabs in Hsinchu						
Source of Withdrawal								
Surface water, groundwater, seawater, and produced water	0	0	0	0	0	0	0	0
Condensate water and Rainwater	782	377	911	433	828	373	705	310
Third-party water	14,903	5,871	14,907	5,996	14,809	6,003	15,495	6,238
Total water withdrawal	15,685	6,196	15,818	6,429	15,637	6,377	16,200	6,548

Note: I. The scope of calculation is UMC's 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 other regions where UMC fabs are located at.

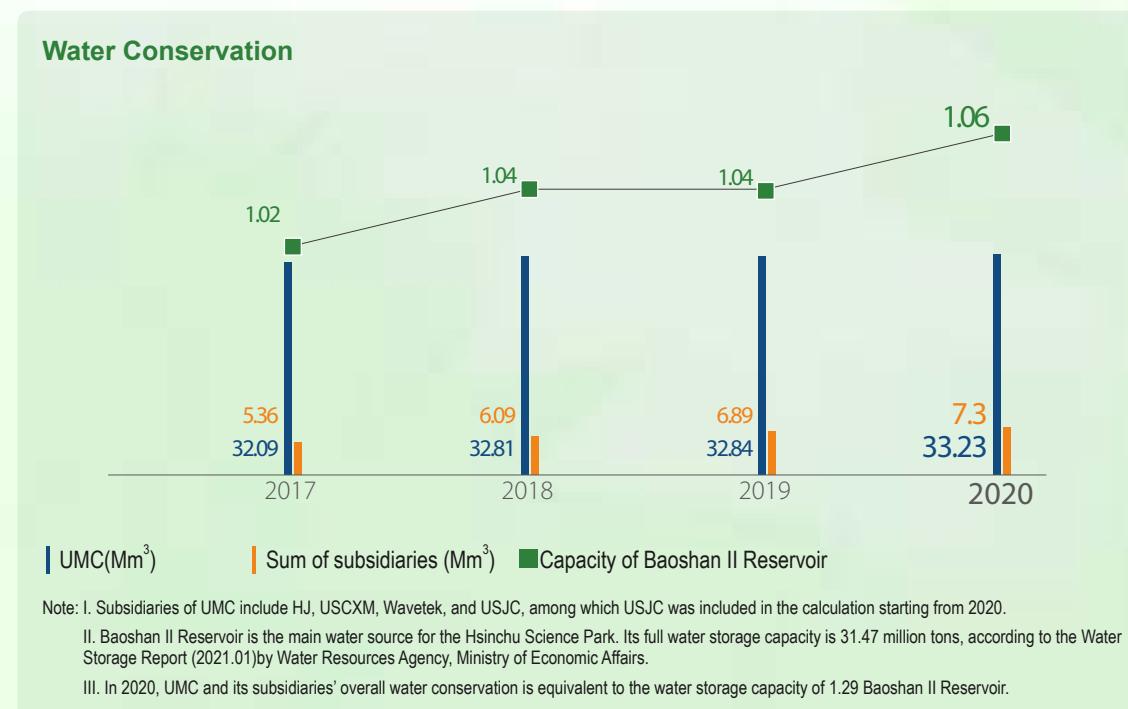
II. The third-party water includes municipal water and recycled water. Municipal water is provided by local water companies, and its source is all surface water and fresh water ($\leq 1,000$ mg/L total dissolved solids).



3-3-2 Water Conservation

UMC is aware of the preciousness of water resources and attaches great importance to water resources management. The principle of water use emphasizes first on the water-saving design for manufacturing process. It is then coupled with improved water resource recycling and reuse, as well as highly efficient water management to effectively reduce water consumption. UMC continues to implement improvement measures for water recycling and reuse, and actively sets water-saving goals at all stages to guide the implementation of various management policies as well as performance promotion. In 2020, UMC saved 33.23 million tons of water, which is equivalent to the water of 1.06 Bao-Er Reservoirs. Through strategies in water saving, water recycling, and reduction of ultra-pure water for the manufacturing process, the amount of water saved by UMC is increasing year after year, successfully achieving the goal of reducing water consumption per unit product by 10% in the Green 2020 Project. Moreover, in response to climate change around the world and the impact of extreme weather, UMC has promoted the 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 1.3.5 Managing Climate-related Risks and Opportunities.



Water Conservation Measures

According to the continuous improvement of water-saving plan, the volume of water conservation was 114,000 tons in 2020 accounting for 1.15% of municipal water usage, which is equivalent to economic benefits of NT\$2.85 million for that year. For subsidiaries, water conservation was 98,000 tons in 2020, which is equivalent to economic benefits of approximately RMB368,000(NT\$1.599 million) accounting for 2.2% of municipal water usage in 2020.

New Improvement Measures and Outcomes in 2020

Water Conservation Measure	Conservation (tons)
Additional RO concentrated water recycling system	63,900
Recycling of wastewater containing low-concentration hydrofluoric acid	48,575
Modify rejection rate of brine water reuse	23,790
Piping modification to recycle RO membrane concentrated water in water recycling system	16,060
Change water for LDI system of regeneration & back wash in the winter season	10,487
Increase conductivity of supply in exhaust scrubber system	7,686
Reduce system regeneration water consumption by fine tuning process exhaust scrubber tool water consumption	5,490
Improve loading of waste HF treatment system by reverse membrane	5,149
Improve the loading of the pre-treatment added to the hydrofluoric acid treatment system	4,954
Optimization of Lin Der system water consumption	4,636

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 2020 was counted.

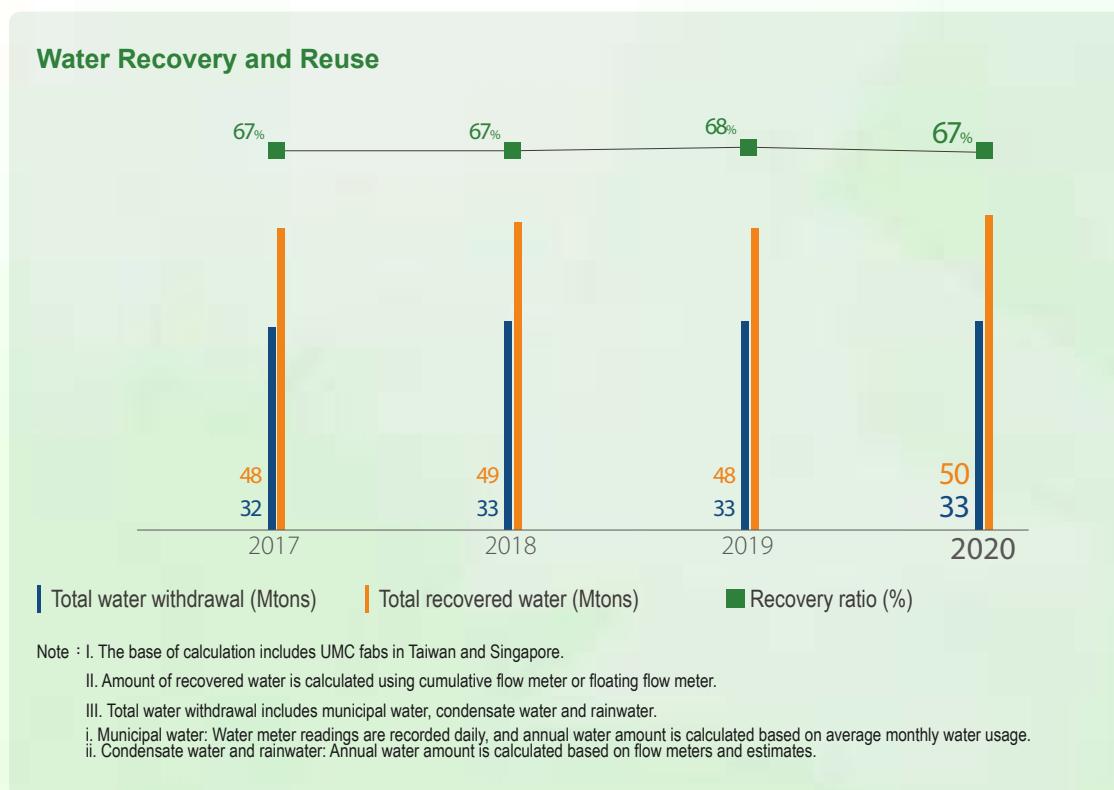
Water Conservation Improvement for 2021

Water Conservation Measure	Conservation (tons)
ROR back up LSR regeneration for reuse	25,480
OAC condensate recycled to DI system in winter	18,400
System operation time is extended during low-water season	21,331
C/T filtered water purification (RO system)	9,150
LHF system performance improvement	6,875



Water Recycled and Reused

UMC continued to promote water-saving and wastewater reduction, as well as recycling measures over the years. In 2020, the total recycled water reached 33 million tons, with a recovery rate of 67%. In addition, the water recovery rate of the entire fab area and that of the manufacturing process for each fab are better than the locally regulated standards.



Company-wide Recovery Rate

	Company-wide Recovery Rate		Manufacturing-process Recovery Rate	
	Standard	Actual	Standard	Actual
Taiwan				
8A	≥70%	75.7%	≥70%	77.3%
8D	≥70%	78.7%	≥70%	85.4%
8E	≥70%	81.0%	≥85%	86.5%
8F	≥70%	79.7%	≥85%	86.6%
8S	≥70%	74.8%	≥85%	87.0%
12A	≥75%	77.7%	≥85%	85.5%
Fab 12A II	≥75%	81.8%	≥85%	86.7%
Singapore				
12i	NA	65.9%	NA	71.8%

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. Through raising the awareness of all employees, careful control of production parameters, and improvement of technologies, the demand for ultrapure water (UPW) per wafer area is reduced year by year. The annual reduction goal of ultra-pure water (UPW) for the manufacturing process in the period between 2021 and 2025 was set at 0.2%. 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 increase the time interval between each flush during standby. The Green Manufacturing Committee gathers the reduction plans of different fabs and applies them to other fabs that have not been implemented to create maximum benefits.

UMC's ultrapure water consumption in 2020 was 18.2 million tons. Even though the goal was to expand production capacity, UMC still spare no efforts in maximizing the use efficiency of ultrapure water in production process. The ultrapure water consumption per unit wafer area in 2020 was 82.4 m³/Wafer-m², which is much lower than that in 2019.



Goals of 2020

- Reduce the consumption of ultra-pure water per wafer area year by year through production control and technology improvement
- Create benefits for the improvement activities and reduce the use of ultra-pure water by 0.3% per year ★ Goal achieved

Goals of 2025

- Reduce the consumption of ultra-pure water per wafer area year by year through production control and technology improvement
- Create benefits for the improvement activities and reduce the use of ultra-pure water by 0.2% per year

Ultrapure Water Consumption



I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. In 2020, the overall ultrapure water consumption per unit of wafer area for UMC and its subsidiaries was 85.37m³/wafer-m²



3-3-3 Water Pollution Control

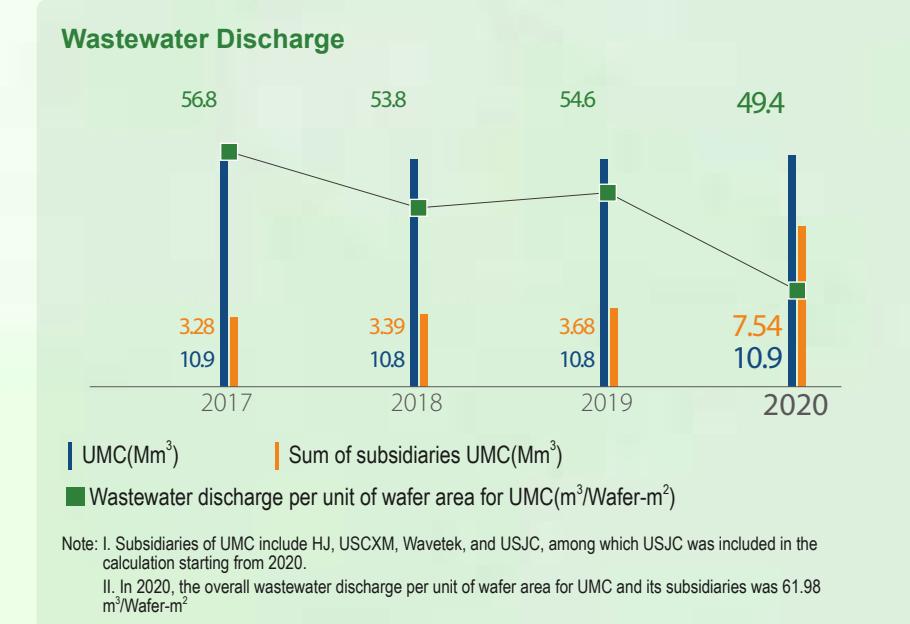
UMC's water pollution control strategies include process source reduction, waste liquid diversion, followed by categorization. In its new fab areas, there are up to 27 categories of wastewater diversion, which are further divided into solvent-based and high or low flash point for resource recovery or incineration while inorganic acids are reused. For multiple re-use, wastewater is categorized according to characteristics to maximize water resource efficiency and simplify wastewater composition. Finally, wastewater is treated in the fab's wastewater treatment facilities according to the control standards of the Science Park Administration before being 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 park 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 Discharge

UMC and Its Subsidiaries			Combined Waste Water Treatment			
Location (Site)	Note I Discharge Amount (10,000 tons/day)	Impact (%)	Treatment Department	Note II Current Treatment Amount (10,000 tons/day)	Re-use	Discharged into Drainage Area
Hsinchu Science Park (8A, 8D, 8E, 8F, 8S)	1.26	11.7%	Hsinchu Science Park Administration sewage treatment plant	10.8	-	Ke-Ya River
Tainan Science Park (Fab 12A)	1.07	9.1%	Tainan Science Park Administration sewage treatment plant	11.7	-	Yanshuei River
Singapore (Fab 12i)	0.71	0.88%	Public Utilities Board (PUB)	80	Industrial re-use	South China Sea
Hsinchu Science Park (Subsidiary Wavetek)	0.11	0.1%	Hsinchu Science Park Administration sewage treatment plant	10.8	-	Ke-Ya River
China Suzhou (Subsidiary HJ)	0.55	0.6%	Suzhou Industrial Park, Hua Yan Water Ltd.	90	-	Wusong River
China Xiamen (Subsidiary USCXM)	0.58	11.6%	Xiamen City, Xiang-an (Ma Xin) sewage treatment plant	5	-	Dongkeng Bay
Japan Mie-ken (Subsidiary USJC)	0.97	1%	USJC wastewater treatment facility	1	-	Osugidani River

Wastewater Treatment

To fulfill our corporate social responsibilities and reduce the environmental impact, UMC has continued to invest in the R&D of wastewater treatment technologies. In recent years, we introduced advanced ammonia nitrogen wastewater treatment techniques to reduce pollution burdens of water bodies. In 2020, the wastewater discharge of UMC was 10.9 million tons. Although the overall wastewater discharge of all UMC fabs was more than year 2019 due to statistic scale expanding involving subsidiary USJC in Japan, the wastewater discharge per unit of wafer area in 2020 was 49.4 m³/Wafer-m², which is lower than 2019.



Note: i. Sources of data:

i.fabs in Hsinchu and Tainan Science Park, subsidiaries Wavetek, HJ and USCXM: Water meter readings are recorded daily, and annual water consumption is calculated based on monthly amount.

ii.

Fab in Singapore: Based on daily record and accumulation

ii. Sources of data:

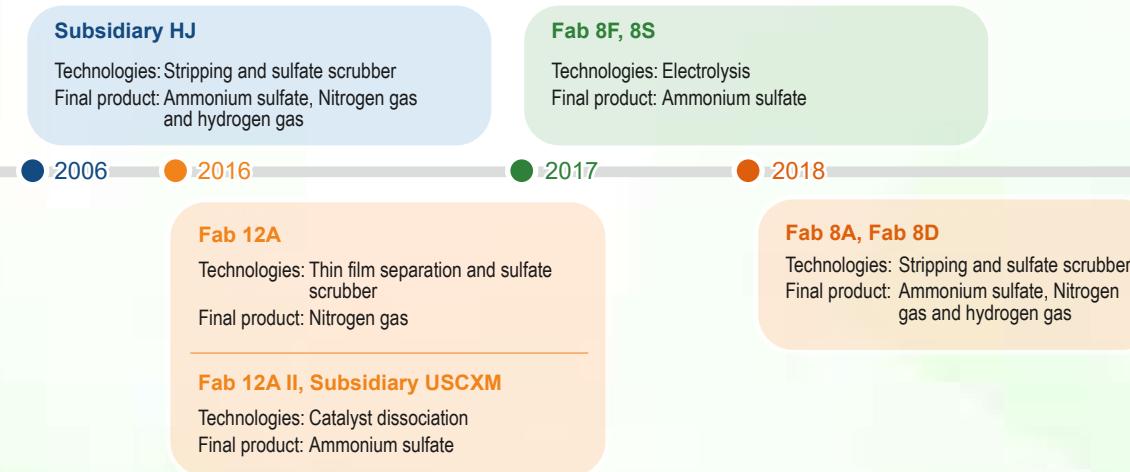
i. Fabs in Hsinchu and Tainan Science Park, subsidiary Wavetek: Ministry of Science and Technology Statistics and Data Bank; Fab in Singapore: Based on PUB website information.

ii.

HJ: Suzhou Industrial Park, Hua Yan Water Ltd. sewage treatment plant; USCXM: Xiamen City, Xiang-an (Ma Xin) sewage treatment plant



Nitrogen Wastewater Treatment Techniques' Setup Status



Nitrogen Wastewater Improvement

In responding to the addition of new wastewater pollutants, namely ammonia and Tetramethylammonium Hydroxide (TMAH), for regulation by the Science Park Administration Bureau, from 2013 to 2015, UMC has promoted the reduction of ammonia and source materials containing TMAH developer in Hsinchu and Tainan fab areas. As a result, the ammonia concentration in discharged water passed the sewage pollutant regulating standard of the Science Park.

Project Benefits

Economic Benefit

Annual operating cost is reduced by about NT\$48 million in cost of nitrogen raw materials. After 2018, wastewater charges paid to the Science Park Administration can be 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. The wastewater from UMC's fabs in Taiwan and Singapore are treated to meet the requirements of wastewater treatment plant prior to sending to a third-party treatment facility 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 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.

Volume of UMC Water Discharge by Source

Unit: megaliters	2017		2018		2019		2020	
	All areas	Fabs in Hsinchu						
Water Discharge by Destination								
Surface water, Groundwater, Seawater	0	0	0	0	0	0	0	0
Third-party water	8,274	4,311	8,146	4,286	8,020	4,319	8,274	4,456
Third-party water sent for use to other organizations	2,616	0	2,675	0	2,767	0	2,640	0
Total water discharge	10,890	4,311	10,821	4,286	10,788	4,319	10,914	4,456
Water Discharge by Level of Treatment								
No treatment	0	0	0	0	0	0	0	0
Secondary treatment in accordance with Hsinchu Science Park administration standards	4,311	4,311	4,286	4,286	4,319	4,319	4,456	4,456
Secondary treatment in accordance with Tainan Science Park administration standards	3,963	-	3,860	-	3,702	-	3,818	-
Secondary treatment in accordance with Singapore government administration standards	2,616	-	2,675	-	2,767	-	2,640	-

Note: I. 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.

II. 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.

III. 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.

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



Water Withdrawal and Consumption in 2020

	UMC	Subsidiary				
		HJ	USCXM	Wavetek	USJC	
Total water withdrawal	16,200	2,230	2,187	522	3,994	
Total water discharge	10,914	1,923	1,709	386	3,559	
Water consumption	5,286	308	528	136	435	

Note: I. Water consumption=Total water withdrawal - Total water discharge

II. The baseof calculation includes UMC fabs in Taiwan and Singapore.

Water Resources Sharing and Social Participation

In addition to internal water resource assessment and management, as well as active promotion of water conservation, UMC also serves as a representative in the industry's professional associations. The company proactively cooperates with the government and industrial peers in water resources communications and coaching sessions. UMC participated in the activities promoted by the Taiwan Water Corporation, including emergency response to water shortage and improvement 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



Water resources communication meetings convened by the Water Resources Agency and manufacturer's associations.

Increased water resources adjustment and coordination by manufacturers and the Water Resources Agency during dry season.

In cooperation with the Water Resources Agency's promotion of reclaimed water construction, UMC plans to use reclaimed water.

Establish a communication platform meeting with the Water Resources Agency to meet future water supply and demand.

Exchange and Counseling with Industry Peers

UMC has participated annually in water conservation coaching sessions within the Science Park since 2002. As of 2020, the program has conducted a total of 209 cases and coached more than 90 companies, sharing the company's valuable experiences in water conservation with industry peers to reduce the demand for water resources. For example, in 2020, the potential quantity of water saved after coaching was 284,000 tons per year. In 2019, UMC carried out water conservation coaching sessions and tracked the performance of 10 companies, realizing savings of 236,000 tons of water in 2020.

Accumulated Water-saving Counseling Cases



Accumulated water-saving counseling cases

Accumulated Water-conservation from Counseling Cases



Unit: 10,000 tons of water



3-4 WASTE MANAGEMENT

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 the operating costs, minimizing resource consumption, and hence environmental impact. To start off, UMC focuses on chemicals that get more attentions from global environmental protection perspective or concerns from government laws and regulations. The raw materials with the priority for reduction are first selected from those that generate larger amount of waste. Related cost reduction policies and case studies from benchmark companies in the industry are then implemented to assess technically feasible plans and carry out small-scale tests. After verifying the feasibility of plans, they will be implemented in each fab.

3-4-1 Waste Output Structure

UMC's total waste output in 2020 was 45,949 tons^{Note}. The treatment methods for the generated waste include recycling for reuse and direct disposal, of which 5,273 tons of waste sulfuric acid were recycled in fabs and used by the wastewater or air pollution control equipment, accounting for 11.5% of the total waste output. The remaining 40,676 tons of waste were recycled or disposed of by outsourced operators.

In 2020, UMC recycled 39,645 tons of waste for reuse, accounting for 86.3% of total waste generated, of which 34,372 metric tons of waste were recycled by outsourced operators, accounting for 74.8% of total waste generated. In 2020, UMC treated a total of 6,304 metric tons of wastes, of which 3,132 metric tons were used as auxiliary fuels or regenerated as derived fuels, accounting for 6.8% of the total waste. The waste treated by direct incineration process was 1,089 metric tons, accounting for 2.4% of the total waste. The waste treated by landfill disposal was 1,429 metric tons, accounting for 3.1% of the total waste. The waste treated by other methods was 655 metric tons, accounting for 1.4% of the total waste.

Note: excluding routine office waste

Waste Generation Status

Unit: metric tons	Output	Recycled	Treatment
Hazardous Waste			
Waste acid	19,171	19,171	-
Waste solvent	5,502	3,541	1,961
Waste copper sulfate	2,194	1,578	616
Container	795	766	28
Others	271	30	241
Subtotal	27,932	25,086	2,846
General Waste			
Waste solvent	1,794	368	1,426
Waste ammonium sulfate	6,576	6,576	-
Sludge	5,787	4,644	1,143
Container	679	679	-
Waste mixed hardware	346	346	-
Others	2,834	1,945	889
Subtotal	18,017	14,559	3,458
Total	45,949	39,645	6,304

Waste Recycling Status

Unit: metric tons	Inside the Fab	Outside the Fab	Treatment
Hazardous Waste			
Reuse for original purpose	-	-	0
Regeneration	5,273	19,813	25,086
Others	-	-	0
Subtotal	5,273	19,813	25,086
General Waste			
Reuse for original purpose	-	-	0
Regeneration	-	14,559	14,559
Others	-	-	-
Subtotal	0	14,559	14,559
Total	5,273	34,372	39,645

Note: I. Waste acid includes waste sulfuric acid, waste phosphoric acid, and BOE waste liquid

II. Direct disposal methods include incineration, landfill, solidification and chemical treatment



Waste Treatment Status

Unit: metric tons	Inside the Fab	Outside the Fab	Treatment
Hazardous Waste			
Incineration, serving as fuel	0	1,915	1,915
Incineration only	0	276	276
Landfill	0	-	-
Others	0	655	655
Subtotal	0	2,846	2,846
General Waste			
Incineration, serving as fuel	0	1,216	1,216
Incineration only	0	813	813
Landfill	0	1,429	1,429
Others	0	-	-
Subtotal	0	3,458	3,458
Total	0	6,304	6,304

Note: I. 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.
II. 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.
III. Other methods of disposal include solidification, chemical, and overseas treatment. UMC only delivered 0.5 tons of nickel-cadmium batteries to South Korea for recycling in 2020, 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

UMC's ultimate waste management goal is zero waste using the strategy of total waste reduction and waste-to-resource. By improving process technology, raw material source reduction and other source management measures, waste output is reduced to achieve waste reduction.

In 2020, UMC's total outsourcing waste was 40,676 tons ^{note}, and waste output per unit of wafer area was 184 kg/wafer-m², which shows a reduction of 1.1% compared to 2019.

In 2020, UMC's outsourcing hazardous waste amounted to 22,659 tons, and the per unit of wafer area of hazardous waste output was 103 kg/wafer-m², representing a decrease of 3.6% from 2019. Through various reduction plans and measures, the total 2020 waste reduction reached 1,007 tons.

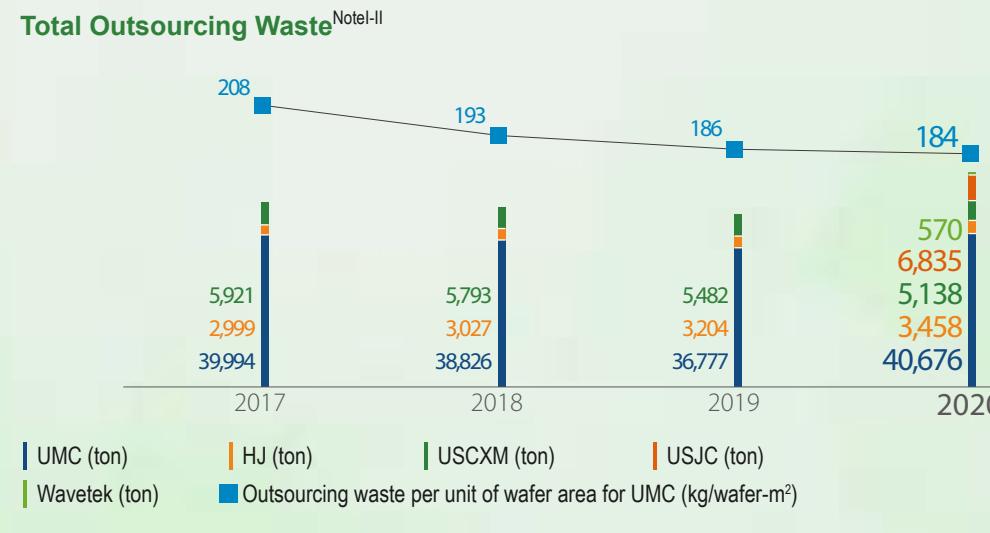
Note: excluding routine office waste

2020 Waste Reduction Measures and Performances

Plan/Measures	Reduction (tons)	
Reduction of waste sulfuric acid	Acting as the acid-base neutralizing agents for the ammonia nitrogen treatment system in wastewater treatment plant, and for process optimization	598
Reduction of waste solvent	Reducing the water content of IPA liquid waste, and extending life time	252
Waste phosphoric acid reduction	Optimize usage for manufacturing process	54
Sludge reduction	Expanding the drying equipment and source reduction for fluorine-containing chemicals	15
Ammonium sulfate reduction	Reduce the use of ammonia at the source and optimize the ammonia-nitrogen treatment system to increase the concentration of ammonium sulfate	18
Others	Extending the lifetime of chemicals, empty barrels, spare parts, filter, etc.	70
Total Amount	1,007	

Planned Reduction Measures in 2021

- Continuing to extend the lifetime of solvents to reduce the output of waste solvents
- Replacing the acid-base neutralizing agent in the wastewater treatment plant 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.
- Optimize ammonia nitrogen treatment system to reduce ammonium sulfate production.
- Build BOE waste liquid treatment system to reduce the amount of liquid waste for outsourced treatment



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 control to turn waste into resources, subsequently creating three advantages: waste reduction, waste disposal energy and cost reduction, creating a positive waste-to-resource ratio. Concerning sustainable supply chain management, UMC also requires our suppliers to set goals about waste reduction and reuse in the environmental aspect. And the promoting results particularly show in the 3-year initiative “Triple R League” which was raised by UMC, leading suppliers to promote energy saving, waste reducing, and circular economy prospering. Through working hard with our supply chain partners, we hope to minimize the waste generation among 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 related experiences and encourages its subsidiaries to practice. In 2020, UMC and its subsidiary HJ and USCXM, promoted the in-fab use of waste diluted sulfuric acid as an ammonia-nitrogen wastewater treatment or air pollution prevention and control equipment agent, after the acid has had its hydrogen peroxide removed from it. In this way, we reduced our total production output of waste sulfuric acid by approximately 7,960 tons, and also reduced our purchases of industrial-grade sulfuric acid by approximately 8,310 tons. The total economic benefit was NT\$49.31 million.

Conversion of Off-site Resources

The amount of off-site waste recycled by UMC in 2020 was 37,504 tons, and ratio of waste re-useage, which includes using in energy recovery, for the year reached 92%. Hazardous waste reused amounted to 21,728 tons, a hazardous waste re-useage rate of 96% including using in energy recovery. Revenue from the recycling of renewable resources in 2020 (fabs in Taiwan) was approximately NT\$37 million.

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

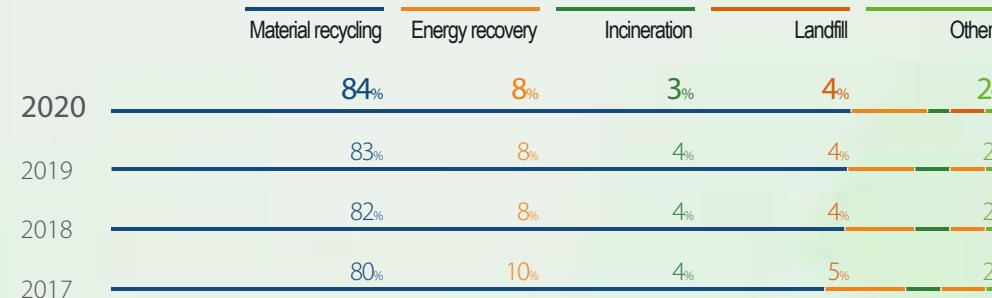
II. In 2020, the overall outsourcing waste per unit of wafer area for UMC and its subsidiaries was 190 kg/Wafer-m².

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

IV. In 2020, the overall outsourcing hazardous waste per unit of wafer area for UMC and its subsidiaries was 107 kg/Wafer-m².



Waste Recycling Outsourcing Trend



Note: I. Other waste recycling methods include solidification, overseas treatment and chemical treatment.

II. Energy Recovery means that waste solvent or waste wood were recycled as an auxiliary fuel.

Hazardous Waste Recycling Status



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

II. In 2020, the overall recycling rate of UMC and its subsidiaries HJ and USCXM was 90%.

Waste Recycling Outsourcing Status



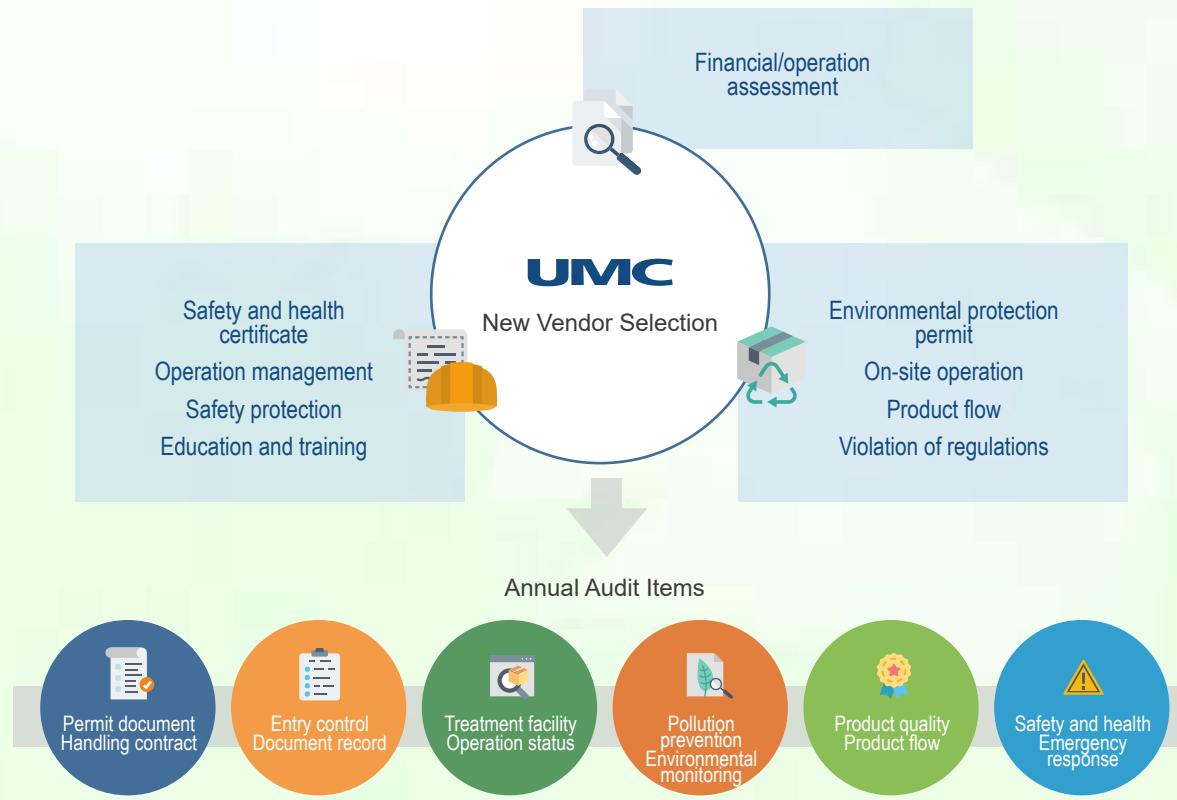
Note: I. USJC was included in the calculation starting from 2020.

II. In 2020, the overall recycling rate of UMC and its subsidiaries HJ and USCXM was 91%.



3-4-4 Contractor Management

UMC conducts on-site audit 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 result, 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 financial stability of the new vendors, whether they have environmental protection permits, safety and health certificates, and previous records of regulation violations. In addition, the operation management, safety protection, education and training of the new vendors must be counted in as the criteria for assessment to ensure their quality.



In 2020, UMC completed an audit of 79 waste treatment vendors. Audit results show that 94% vendors were rated Excellent or above and only 5 vendors received Satisfactory rating. We will continually conduct related audit to ensure all vendors follow UMC's requirements and regulations.

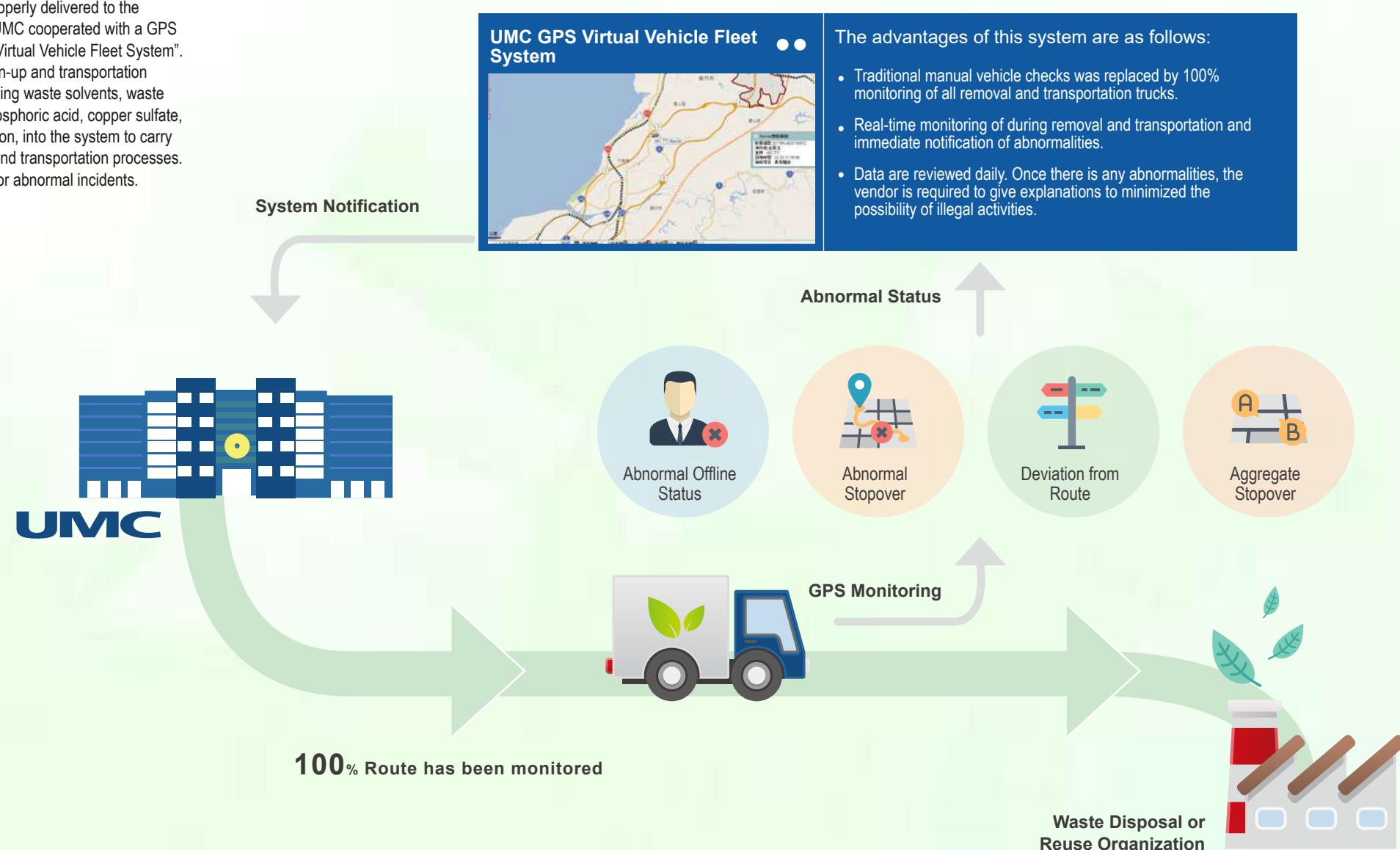


Result of Related Vendors Audit and Subsequent Follow-up





UMC has reinforced the management and control of commissioned waste disposal processes to ensure that waste is properly delivered to the designated disposal or reuse organizations. UMC cooperated with a GPS system manufacturer to develop "UMC GPS Virtual Vehicle Fleet System". In 2017, priority was given to introducing clean-up and transportation vehicles dealing with waste of concern, including waste solvents, waste sulfuric acid, waste effluent sludge, waste phosphoric acid, copper sulfate, ammonium sulfate, waste containers, and so on, into the system to carry out monitoring and management of removal and transportation processes. The 2020 monitoring results recorded no major abnormal incidents.





3-5 AIR POLLUTION CONTROL

UMC 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 emission is less than the emission standard set by the EPA. UMC categorizes waste gas from manufacturing processes into acidic exhaust, alkaline exhaust, volatile organic exhaust and general exhaust. The primary management policy is to adopt and develop environment-friendly technologies, to strength source reduction and pollutant prevention.

Acidic and alkaline exhaust

Stage 1

Installed abatement equipment on tools to treat toxic, flammable, and fluorinated greenhouse gases.

Stage 2

After end treatment by a central exhaust treatment system, gas is released into the atmosphere via a stack.



Acid and alkaline waste gas treatment facilities

Volatile organic compounds

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



Volatile organic compounds waste gas treatment facilities

In 2020, the efficiency of UMC's volatile organic compounds (VOC) treatment was maintained at an average of 95.17%, which exceeded not only the legal standard "90%," but also the self-control target "92%." The total VOC emission of UMC was 41.37 tons in 2020, which was a reduction of 814.4 tons per year. The VOCs emission per unit of wafer area was 0.19 kg/wafer-m², which shows the reducing trend by years.

Other Air Pollutant Emissions includes NOx and 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, estimated nitrogen oxide (NOx) and sulfur oxide (SOx) emissions amount in 2020 were quite small.

VOC Emission



I. Subsidiaries of UMC include HJ, USCXM, Wavetek, and USJC, among which USJC was included in the calculation starting from 2020.
II. In 2020, the overall VOC emission per unit of wafer area for UMC and its subsidiaries was 0.17 kg/Wafer-m².

Other Air Pollutant Emissions

UMC

SOx (kg): 4

NOx (ton): 9

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



3-6 SMART MANUFACTURING EXECUTION

Green fab and smart factory are the trend for future development, serving as the great aid for carbon reduction. UMC has obtained the green factory certification for cleaner production through practical actions, and has taken the initiative to introduce various innovative solutions to promote smart manufacturing, realizing co-prosperity for the environment and the society.

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 true energy-saving and carbon-reduction benefits. UMC introduced the green fab concept in 2007. By hiring green building and ecological experts, and conducting 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 the existing fabs and gradually introduced related green designs and constructions, making a contribution to the sustainability of the environment.

Note: In 2020, Fab 12A Phase II (the new plant) will apply for clean manufacturing assessment system certification and green factory.

Status of UMC's fabs

 LEED of the United States Gold Level Fab 12AP3&4 Fab 12AP5&6 USCXM	 Smart Architecture of Industrial Development Bureau, Ministry of Economic Affairs Diamond Level Fab 12A P5&6 FAB 12A P5&P6 Office Building	 EEWH-Green Architecture of Industrial Development Bureau, Ministry of Economic Affairs Qualified Level Fab 8A Fab 8F Fab 8S Gold Fab 12A P3&4	 Green Factory of Industrial Development Bureau, Ministry of Economic Affairs Fab 12A P3&4 Fab 8A Fab 8S Fab 8F	 Clean manufacturing assessment system certification of Industrial Development Bureau, Ministry of Economic Affairs All 200mm fabs Fab 12A in Taiwan
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Introduction of Smart Fab

UMC took the initiative to introduce innovative solutions such as Industry 4.0, artificial intelligence and machine learning to comprehensively improve energy efficiency and reduce carbon emissions, making a substantial contribution to environmental sustainability.

Optimization of the Overall Energy Utilization in Fabs

This allows the operator to immediately detect the energy usage status of the equipment in the fab, which is beneficial for analyzing the difference in power consumption between equipment and therefore improving the energy efficiency of all equipment. In recent years, through the adoption of various sensors, AIoT wireless smart meters and other new technologies, UMC has actively developed intelligent and optimized energy-saving control systems to successfully reduce a lot of costs due to unnecessary energy waste without affecting the production capacity.

Introduction of Tech-smart Inspection System

This only requires personnel to be in place to check meter readings and upload the data to the cloud, and the subsequent reports and forms to be signed will be generated automatically and instantly. This not only saves the time from doing most of the paperwork and reading meters, but also saves a substantial amount of paper otherwise required for recording data. Moreover, it also eliminates the need for printing reports, storage, and inquiry, all of which can be managed by a more environmentally friendly webpage inspection management system.

Installation of AIoT Smart Sensors for Important Equipment

The Prognostics and Health Management (PHM) system has been introduced, allowing the equipment in the fabs to have visualized health indicators (HI) and equipment Remaining Useful Life (RUL) prediction to avoid unexpected equipment crashes, and hence greatly improves system stability.



The 2020 Energy Saving Benchmark Award Observation Conference



04 ESTABLISHING A FRIENDLY WORKPLACE

4-1 Enforce Human Rights Management

4-2 Focusing on Recruitment and Cultivation

4-3 Protecting the Employees and the WorkEnvironment

Important Stakeholders



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.



Performance Highlights 2020

9,839.5
hours

100% of employees who should receive human rights training have completed training, accumulating a total of 9,839.5 training hours.

2,222
new employees

Promoted quality employment opportunities by hiring 2,222 new employees worldwide.

Average salary is
nearly 4 times
the basic salary
in Taiwan

The average full-time salary for non-supervisory positions in UMC Taiwan was NT\$1.369 million, and the median salary was NT\$1.071 million, which was nearly 4 times the basic wage in Taiwan.

Training sessions
for a total of
168,006
person-times
attendees

7,363 training sessions were held for the entire company, with a total of 168,006 person-times participating and NT\$54.27 million of training expenses spent.

Served a total of
38,885
person-times

Health-related promotional activities served 38,885 person-times with a total satisfaction score of 95.

The occurrence of
disabling injuries
is far below the
industrial average

The Disabling Frequency Rate was 0.13 and the Disabling Severity Rate was 9, both of which were much lower than the average of the semiconductor industry in Taiwan.^{Note}

Note: 1. Unless otherwise noted, the statistics basis includes only UMC facilities in Taiwan and Singapore.

2. Based on the data provided by the Statistics Department, Ministry of Labor.



Material Topics and Key Responses in this Chapter

Management Policies	Goals in 2020	Goals Achieved in 2020	Future Goals (2021–2025) Summary	
 Talent Attraction and Retention Chapter 4.2 Focusing on Recruitment and Cultivation	Management Objectives: Enhance employee involvement and team cohesion, and understand employees' thoughts on the organization through an employee engagement survey, so as to set management goals and effectively link them with management practices. <ul style="list-style-type: none"> Actively monitor market salary information to ensure that the Company offers an overall market competitive salary. Introduce an employee engagement survey to understand employees' needs. 	<ul style="list-style-type: none"> Provide complete training programs to attract and retain talents, with a retention rate of 91.3% for middle and high performers. Employee Engagement Survey <ol style="list-style-type: none"> Questionnaire coverage rate: 80% Engagement score is 76 	<ul style="list-style-type: none"> Retention rate of middle and high performers reached 94.4% Employee Engagement Survey <ol style="list-style-type: none"> Questionnaire actual coverage rate: 83.3% Engagement score is 77.1 	
 Employee Safety and Health Chapter 4.3.3 Improving Workplace Safety	Management Objectives: Meet or exceed the requirements of Occupational Safety and Health Act, with the goal of zero accident. UMC is committed to its steady development with the utmost priority of safety. <ul style="list-style-type: none"> Eliminate major accidents and continue to promote "safety first, no production without safety." Eliminate hazards by employing advanced safety and health, risk, and disaster relief technologies. Promote employees' occupational safety culture by raising safety awareness and implementing preventive management. 	<ul style="list-style-type: none"> Minor or above accidents \leq 9 The Disabling Injury Frequency Rate (FR) and the Disabling Injury Severity Rate (SR) are better than the 3-year average of semiconductor manufacturing industry^{Note 2} 	<ul style="list-style-type: none"> Minor or above incidents occurred: 9 The FR of 0.13 and SR of 9 were much lower than the average of semiconductor manufacturing industry 	<ul style="list-style-type: none"> Minor or above accidents \leq 7 (by 2021) The FR and SR are better than the 3-year average of semiconductor manufacturing industry (by 2021) The FR and SR are better than the 3-year average of semiconductor manufacturing industry, and reduce 25% from 2020 goal (by 2025)

Mechanisms for Evaluating Effectiveness

 The company-wide management plans were set. Human Rights and Social Engagement Committee will conduct annual performance review.	 The company-wide management plans were set. The Safety and Health Committee will conduct annual performance review.	 The Safety and Health Committee reviews the needs and expectations of stakeholders quarterly.	 Pass the ISO 45001 Occupational health and safety management system certification every year.
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Note: 1. The Disabling Injury Frequency Rate (FR) and Disabling Injury Severity Rate (SR) are calculated according to the statistical model regulated by the Occupational Safety and Health Administration, and (1) the number of employees' working hours is used as the denominator for the statistics; (2) Wavetek and UMC facilities in China and Japan are excluded.

2. The 3-year average figure of the semiconductor manufacturing industry is based on the data provided by the Department of Statistics of the Ministry of Labor.

3. Please refer to https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development for detailed targets set for 2025.

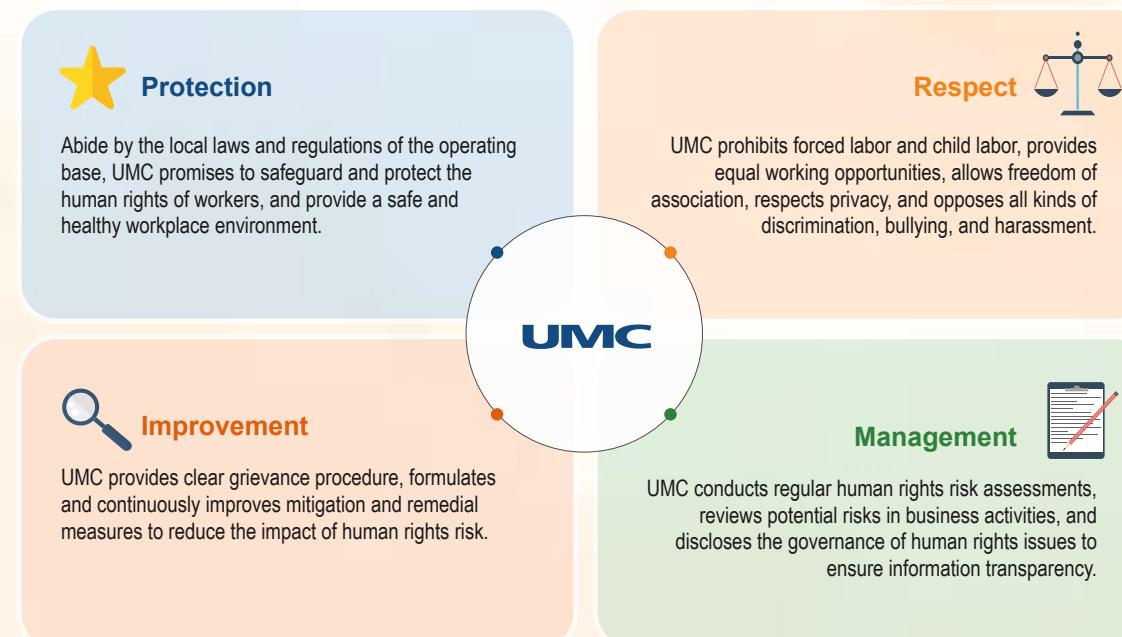


4-1 ENFORCE HUMAN RIGHTS MANAGEMENT

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:



UMC Human Right Policy Declaration

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.

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. The total number of training hours on human rights in 2020 is 9,839.5 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.



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 from February to March. 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.

STEP 1 Establish a list of human rights risk issues

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



STEP 3 Identify major human rights risks

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



STEP 2 Engage with stakeholder

Use stakeholder surveys to evaluate the potential risk issues.



STEP 4 Define the response targets of human rights risk

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



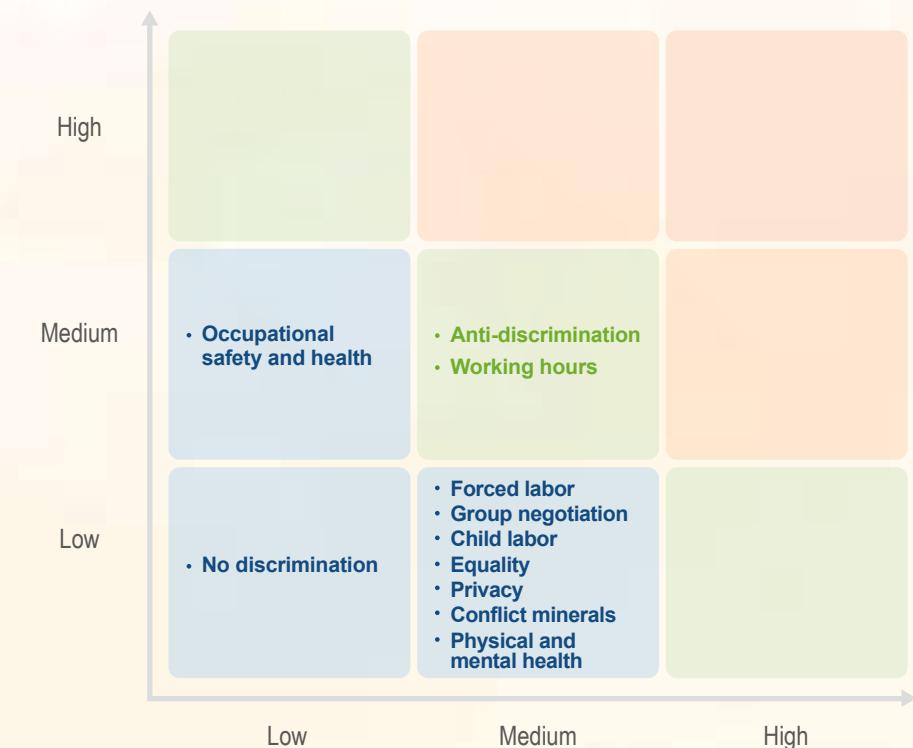
STEP 5 Check implementation effectiveness

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



Human Rights Risk Matrix

Human rights risk assessments are conducted by the execution members and officers of the CSR 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.



Note: Risk (R) = Degree of Impact (Impact) × Probability of Risk (Likelihood). 3 points or less is low risk; between 3 points (including) to 5 points is moderate risk; and 6 points (including) or higher is high risk.



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 2020, 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 2020, the Fab 12A 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.

2020 SAQ and VAP Risk Assessment Performance

	Fab 12A	Fab 12i	Fab 8A	Fab 8C	Fab 8D	Fab 8E	Fab 8F	Fab 8S
SAQ	91.9	91.2	90.3	90.3	90.3	91.2	91.6	91.8
VAP	173.8	190.1	N/A	N/A	N/A	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: perform evaluation on the 12-inch wafer fab and the perfect score is 200 points.

Management of Human Rights Issues

Through 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 feed back to the Human Rights Commitment Policy through real-life situations, thereby further reviewing relevant strategies and practices, and ensuring that they meet the expectations and needs of stakeholders.



Migrant employees and female employees

Core issues

Equality, Anti-discrimination, Forced labor

Impact assessment and mitigation measures

- The RBA Committee was established in the Human Rights Committee to regularly review human rights-related issues.
- The inspection and evaluation of the "Prohibition of Forced Labor" management procedures and various grievance procedures are carried out through internal audits.

Remediation Action

To include high-risk units or those units with a history of forced labor (forced work, mandatory overtime, underreporting of hours worked) in the priority list for future audits.

2020 management goals

- 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.

Achievements in 2020

- The annual online completion rate of new recruits for the "Labor/Ethics" education and training in the RBA Code of Conduct reached 100%.
- All fabs completed the RBA SAQ assessment and scored higher than 90 points.

Targets for 2021

- The annual online completion rate of new recruits for the "Labor/Ethics" education and training in the RBA Code of Conduct to reach 100%.
- All fabs to complete the RBA SAQ assessment and score higher than 90 points.



Suppliers

Core issues

Conflict minerals, Child labor, Forced labor, Working hours, Safety and health

Impact assessment and mitigation measures

- Conduct questionnaire surveys and on-site audits on suppliers' compliance with the RBA Code of Conduct.

Remediation Action

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.

2020 management goals

- Require Tier-2 major suppliers to sign the "Employee Code of Conduct".
- Tier-2 suppliers are required to comply with the RBA Code of Conduct.

Achievements in 2020

- 100% Tier-2 major suppliers completed the signing of "Employee Code of Conduct".
- 100% Tier-2 major suppliers complied with the RBA Code of Conduct.

Targets for 2021

- Ensure all new suppliers to sign the UMC Supplier Code of Ethics and Supplier Code of Conduct
- 100% completion rate of major supplier ESG and RBA self-assessment questionnaires, as well as on-site audits

Note: Human rights mitigation measures and remediation measures are implemented in 10 plant sites in Taiwan and Singapore.



Customers	All employees	Community residents	Indigenous people and the physically challenged
<p>Core issues</p> <p>Privacy</p> <p>Impact assessment and mitigation measures</p> <p>Regularly receive satisfaction ratings from customers</p> <p>Remediation Action</p> <p>In case of leakage of private information, UMC will make improvement and compensation according to the terms of the confidentiality agreement.</p> <p>2020 management goals</p> <ul style="list-style-type: none"> All employees, business partners, and customers must sign confidentiality contracts, requiring mutual protection of confidential information. Internally formulate the "Confidential Information/Data Management Regulations", and all customer information is handled by dedicated units. <p>Achievements in 2020</p> <ul style="list-style-type: none"> Business partners and customers have signed confidentiality contracts, requiring mutual protection of confidential information. Regulations and control measures have been formulated for the management of confidential information/data. Customer information is carefully managed by dedicated units. <p>Targets for 2021</p> <ul style="list-style-type: none"> All employees, business partners, and customers must sign confidentiality contracts, requiring mutual protection of confidential information. Internally formulate the "Confidential Information/Data Management Regulations", and all customer information is handled by dedicated units. 	<p>All employees</p> <p>Core issues</p> <p>Labor relation</p> <p>Impact assessment and mitigation measures</p> <p>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.</p> <p>Remediation Action</p> <p>Review meetings will be held to compensate employees for their losses in accordance with the resolution of labor disputes or grievance records.</p> <p>2020 management goals</p> <ul style="list-style-type: none"> "Labor-management meetings" and "company-wide town hall meetings" are held on a quarterly basis. 100% of appeal cases are handled and settled. Continue to implement the "company-wide engagement survey" and strengthen organizational identification. <p>Achievements in 2020</p> <ul style="list-style-type: none"> A total of 36 labor-management meetings and 4 company-wide town hall meetings were held. 100% of appeal cases were handled and settled. The coverage of the engagement survey was 83.3%, and the engagement rate of employees in Taiwan and Singapore reached 77.1%. <p>Targets for 2021</p> <ul style="list-style-type: none"> Hold regular "Labor-management meetings" and quarterly "company-wide town hall meetings" Settlement of appeal cases: 100% Continue to implement the "company-wide engagement survey" and strengthen organizational identification. 	<p>Community residents</p> <p>Core issues</p> <p>Physical and mental health</p> <p>Impact assessment and mitigation measures</p> <p>Carry out regular surrounding noise measurement and air pollution monitoring to properly manage these intrusions and reduce local residents' health risks.</p> <p>Remediation Action</p> <p>If any equipment is found to be abnormal, it will be instantly repaired and replaced with spare equipment.</p> <p>2020 management goals</p> <ul style="list-style-type: none"> Noise: Contract special agency to perform surrounding noise measurement every year, and the results shall meet the governing standards. Air pollution: Monitor the operating parameters of the air pollution control equipment, and the operating range meets the requirements of the licensing regulations. <p>Achievements in 2020</p> <ul style="list-style-type: none"> Noise: In accordance with the annual plan, all fabs have completed the surrounding noise measurement, achieving 100% of the set target. 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%). <p>Targets for 2021</p> <ul style="list-style-type: none"> Noise: Contract special agency to perform surrounding noise measurement every year, and the results shall meet the governing standards. Air pollution: Monitor the operating parameters of the air pollution control equipment, and the operating range shall meet the requirements of the licensing regulations. 	<p>Indigenous people and the physically challenged</p> <p>Core issues</p> <p>No discrimination</p> <p>Impact assessment and mitigation measures</p> <p>Pay attention to equal employment rights during recruitment and provide fair employment opportunities.</p> <p>Remediation Action</p> <p>Hold open recruitment activities, and review monthly on the People with Disabilities Rights Protection Act to ensure the adequate quota of employment.</p> <p>2020 management goals</p> <p>Jobs are offered through open recruitment. Ethnicity will not affect the recruitment or cause differential treatment in terms of compensation, benefits, promotion, salary adjustment and employment rights.</p> <p>Achievements in 2020</p> <ul style="list-style-type: none"> In 2020, a total of 136 people with disabilities were recruited, complying with and exceeding the governing regulations. Providing 8 hours of ritual leave to indigenous people each year to show respects to the unique culture of different ethnic groups. In 2020, 62 indigenous people were recruited. Open recruitment for the disabled and indigenous people was provided, and the compensation as well as benefits were well explained through different recruitment channels. <p>Targets for 2021</p> <ul style="list-style-type: none"> Meet the recruitment requirements specified in the People with Disabilities Rights Protection Act. Job are offered through open recruitment. Recruitment channels fully explain the compensation and benefits.



4-2 FOCUSING ON RECRUITMENT AND CULTIVATION

4-2-1 Human Resource Development

Human Resource Distribution

By the end of 2020, the total number of formal employees at UMC, including Wavetek, China subsidiaries HJ and USCXM and Japan subsidiaries USJC was 19,241. This figure included 2,100 supervisors, 9,326 engineers, 607 managers, 7,205 technicians, and 3 administrators.

The working population within the company can be divided into 2 categories by type of employment, namely formal employees (98.2%) and non-formal employees (1.8%) Note I. Formal employees can be further subdivided according to the type of their contracts, namely non-regular contracts (95.0%) and periodic contracts (about 5.0%) Note II. Non-formal employees include contract personnel (42.7%) and dispatched personnel delegated by external vendors to provide services in UMC (57.3%). 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 69.6% of employees work in the primary business locations in Taiwan. For age distribution, 67.5% of the total employee population was between 30 and 50 years of age. The overall average age was 37.7 years old.

The Trend of Total Formal Employees in UMC Group

The total employee number increased in 2020 due to needs of business and capacity expansion.



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.

	Male	Female		Total
Total Employees Type of employment		Unit: number of people		
1 Formal employees	56.8%(10,927)	43.2%(8,314)	98.2%(19,241)	2
2 Contract or temporary staff	75.8%(113)	24.2%(36)	0.8%(149)	3
3 Dispatched staff	48.0%(96)	52.0%(104)	1.0%(200)	1
Formal Employees Job Category		Unit: number of people		
1 Executive staff	87.3%(1,834)	12.7%(266)	10.9%(2,100)	4
2 Engineering staff	80.1%(7,470)	19.9%(1,856)	48.5%(9,326)	1
3 Managerial staff	19.4%(118)	80.6%(489)	3.2%(607)	3
4 Technicians	20.8%(1,502)	79.2%(5,703)	37.4%(7,205)	2
5 Office staff	100.0%(3)	0%(0)	0%(3)	
Formal Employees Job Site		Unit: number of people		
1 Taiwan	54.2%(7,255)	45.8%(6,140)	69.6%(13,395)	4
2 Singapore	63.4%(1,017)	36.6%(587)	8.3%(1,604)	3
3 China	54.0%(1,752)	46.0%(1,492)	16.9%(3,244)	2
4 Japan	90.5%(903)	9.5%(95)	5.2%(998)	1
Formal Employees Age		Unit: number of people		
1 Under 30	56.2%(2,297)	43.8%(1,791)	21.2%(4,088)	3
2 30-50	54.8%(7,117)	45.2%(5,870)	67.5%(12,987)	1
3 Above 50	69.9%(1,513)	30.1%(653)	11.3%(2,166)	2

Note: 1. UMC, including Wavetek, China subsidiaries HJ and USCXM, and Japan subsidiaries USJC.

2. Ratio of male and female is calculated by the same type, while the total ratio is calculated by type.

3. In 2020, 16.4% of UMC formal employees were under 30 years old; 73.5% were between 30 and 50 years old; and 10.1% were above 50 years old.



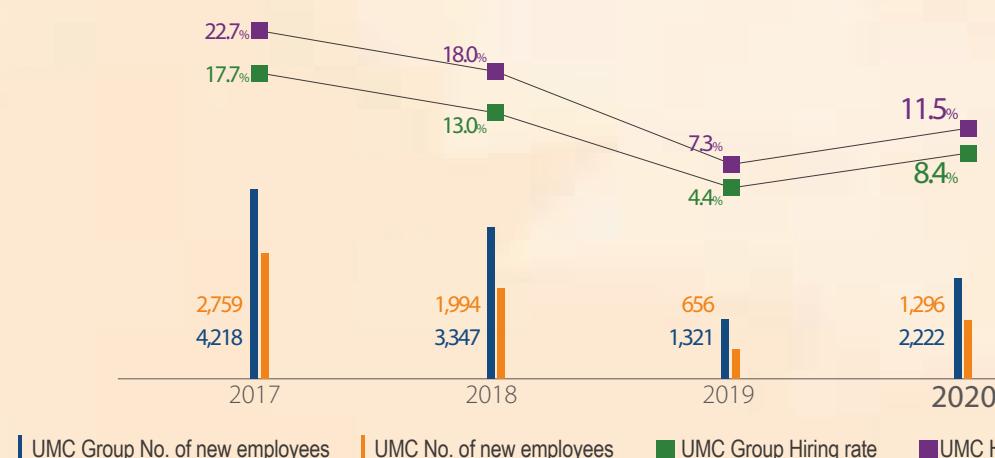
New Employees

In 2020, the company hired a total of 2,222 new employees. The hiring cost per new employee is about NT\$27,000.

Number of New Employees



Hiring Rate

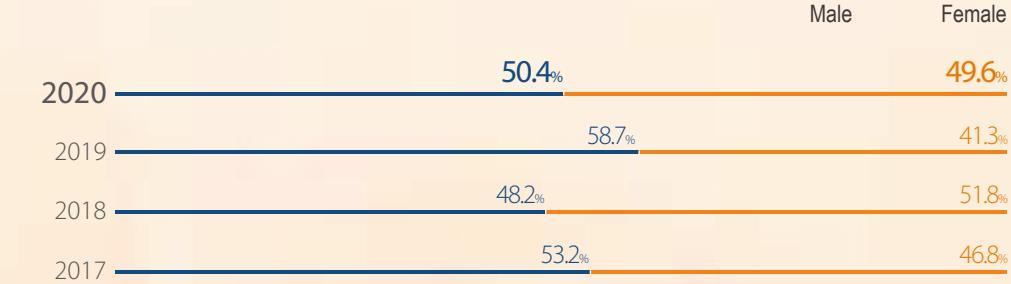


Note: 1. Annual employee hiring rate refers to the total number of newly hired employees/average number of existing employees. Annual average number of employees = (number of employees at the end of December of the previous year + total number of employees at the end of each month of the current year)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

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

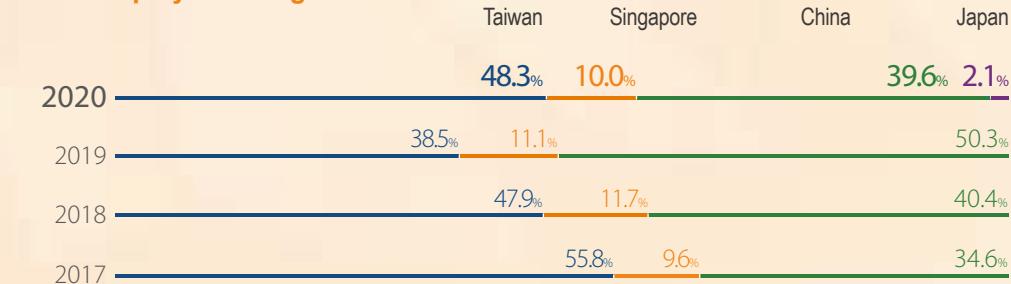
3. Including only UMC fabs in Taiwan and Singapore.

New Employees - Gender



Note: In 2019, 59.8% of UMC's new employees were males and 40.2% were females. In 2020, 48.1% of new employees were male and 51.9% were female.

New Employees - Region



New Employees - Age



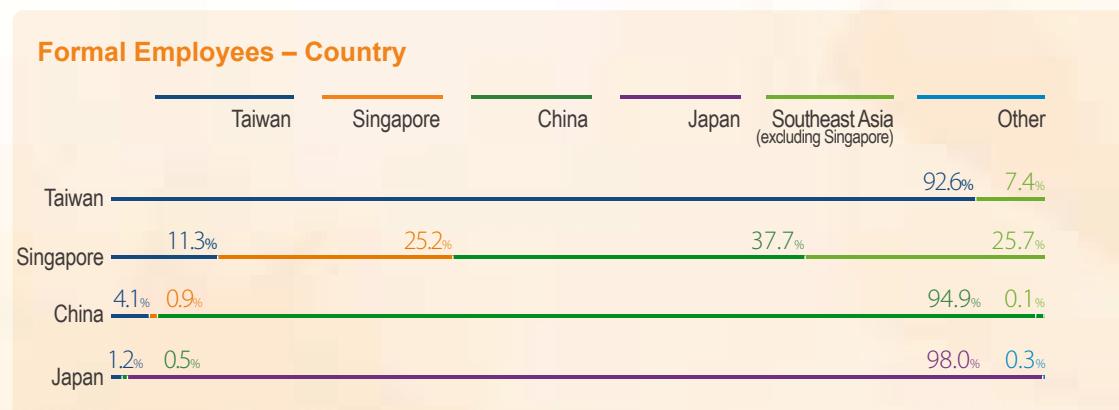
Note: In 2019, 58.2% of UMC new employees were under 30 years old; 38.1% were between 30 and 50 years old; and 3.7% were above 50 years old. In 2020, 68.6% of UMC new employees were under 30 years old; 30.4% were between 30 and 50 years old; and 1.0% were above 50 years old.



Local Employment

To fulfill social responsibility and create sufficient employment opportunities to local residents, the staff at the UMC headquarters and Wavetek in Taiwan comprised of 92.6% local employees as of 2020, and among these, 100.0% of the high level management is locally hired. Since Singapore is ethnically diverse, 25.2% of the employees and 37.5% of the high level management are locally hired. In UMC China fabs, namely HJ and USCXM, 94.9% of the staff and 3.7% of the high level management are locally hired. The staff at the USJC in Japan, 98.0% of the staff and 90.5% of the high level management are locally hired. Among the employees employed by UMC, Asians accounted for 90.1% of the total labor force, migrants accounted for 9.5%, and aborigines accounted for 0.4%

Formal Employees – Country



Locally Hired High Level Managers



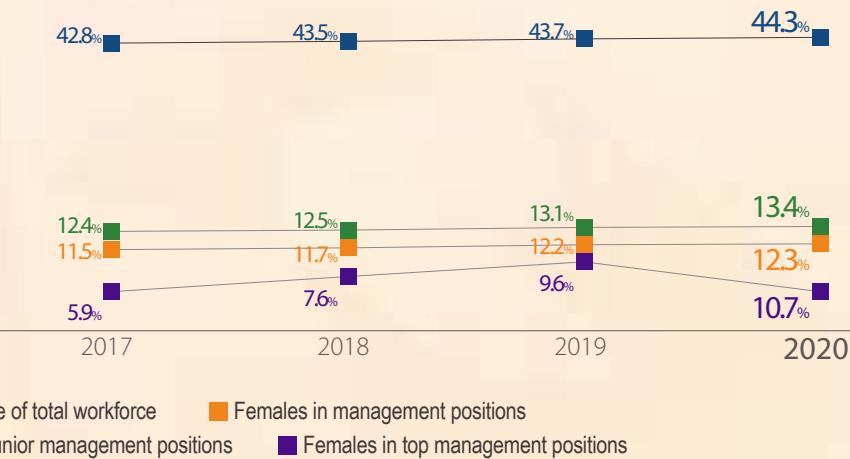
Note: 1. High level directors are defined as Local Level 1 directors (including deputy directors) and above.

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 the past four years, the ratio of female employees has increased year by year, and the ratio of female management workers has also increased. 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.

Proportion of Female Workers by Position



Note: Junior management positions include first line manager. Top management positions include two levels away from the President.

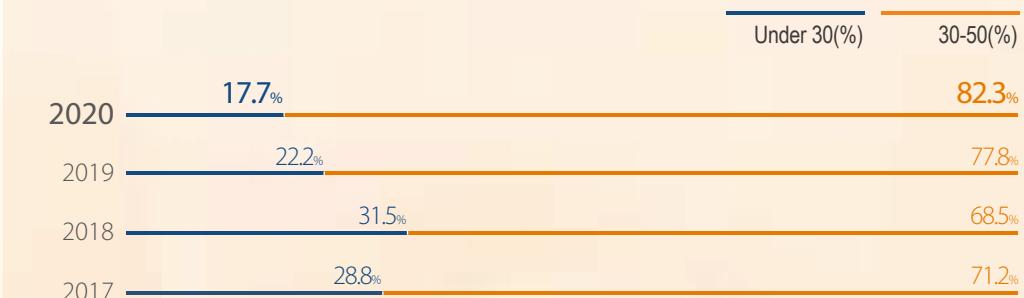


Aboriginal Employment

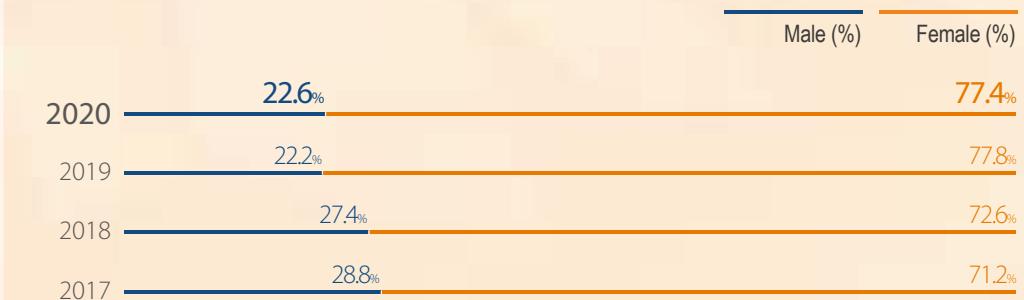
UMC respects the unique cultures of ethnic minorities. Singapore has no aboriginal people, and the aboriginal people are mainly employed in Taiwan fabs. Each year, employees with aboriginal status are given 8 hours of ritual leave, which can be flexibly used a holiday on their own. By the end of 2020, UMC Taiwan had a total of 62 aboriginal employees. In terms of gender, 22.6% are males and 77.4% are females. In terms of age, 17.7% are under 30 years old and 82.3% are between 30 and 50 years old.



Aboriginal Employees - Age



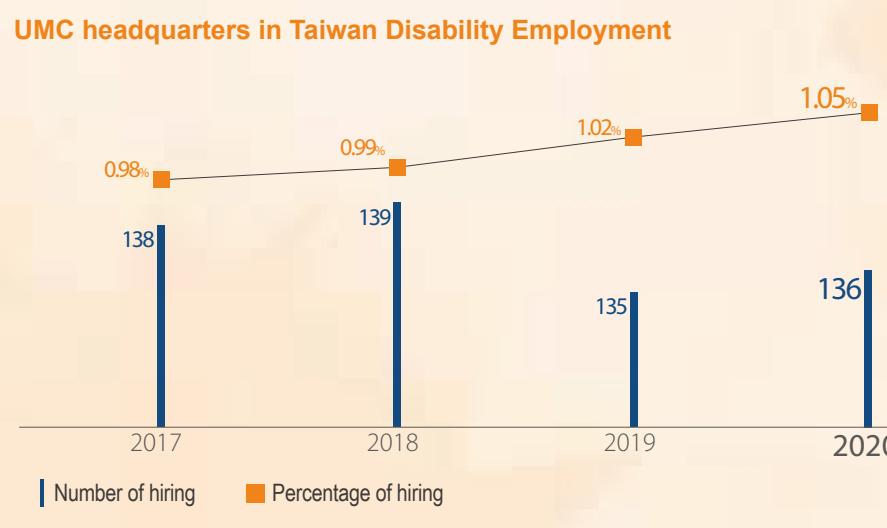
Aboriginal Employees - Gender





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 2020, UMC headquarters in Taiwan employed a total of 136 employees with disabilities, which exceeded the employment ratio specified by laws and regulations in Taiwan, demonstrating UMC's care for disadvantaged groups. In the future, UMC will continue to actively carry out job evaluations internally to create more job opportunities for people with disabilities.



Foreign Talent Recruitment

Under trend of globalization and international management policy, UMC evaluates the risks that may arise in the process of hiring foreign talents. Considering Trade Secret Protection, Export Control Restrictions and Sanctions, and relevant international laws and regulations, UMC formulated implementation rules for new hires control as a risk control element when recruiting foreign talents, and applies the rules to all foreign recruits.

Among the various possible risks, UMC attaches the greatest importance to the laws and regulations for hiring foreigners. Visa and work permit are processed according to governing laws by dedicated staff, and all application processes are controlled by management platform to ensure compliance with government laws and regulations to avoid risks.

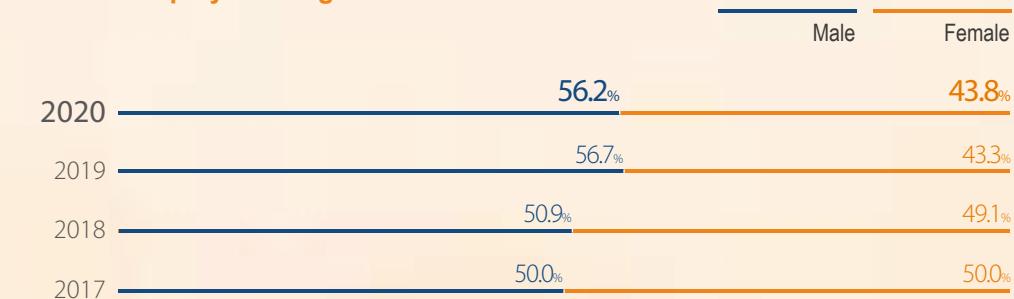
In order to assist foreign employees to adapt to the new environment, UMC not only provides dormitory and orientation to foreign employees, but also arranges on-site translators at fabs and dormitory to provide assistance on work and environment adaption. Also, dormitory held festival activities regularly, inviting supervisors and foreign employees to celebrate Dragon Boat Festival, Mid-Autumn Festival and Christmas together to facilitate cultural communications and exchange. In the 2020 UMC 40th Anniversary Celebration sports day, we see our migrant workers in fabs work with local employees to create glamorous and wonderful opening performances, and together strive for the honour for their fabs on the sports field.

Furthermore, no matter local employees or foreign employees have to abide Trade Secret Protection Act, intellectual property, information security regulation, and export control restrictions. In addition to providing on-the-job education and training, UMC conducts advocacy from time to time, reminding all colleagues to observe relevant regulations.

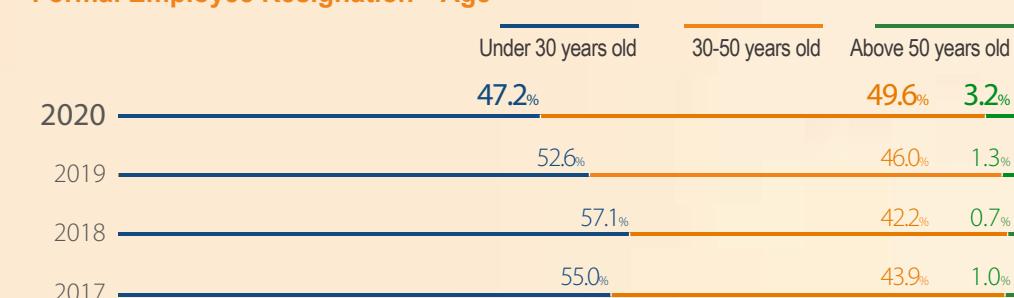
UMC will strive to create diversified and friendly workplace environments. Also UMC will pay attention to government policy and related regulations, and keep updating to avoid potential risks from recruiting foreigner.

Employee Turnover Rate and Internal Transfer Rate

From 2017 to 2020, the average turnover rate of is 9.7%, and the average turnover rate of the entire Group is 13.6%, mainly due to the high turnover rate of technical staff in HJ . 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, 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. Besides, through an 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 56.7% in 2020, which is better than the set target value of 55%. UMC will continue to provide transfer incentives and implement the internal transfer system to reduce turnover rate, and to achieve the goal of lower than 7.5% in 2021 and lower than 7.0% in 2025.

**Resignations in UMC Group****Formal Employee Resignation—Gender**

Note: In 2019, the gender of resigned employees accounted for 60.1% of males and 39.9% of females. In 2020, it accounted for 59.7% and 40.3% of male and female employees respectively.

Formal Employee Resignation—Region**Formal Employee Resignation—Age**

Note: In 2019, 41.1% of UMC employees who resigned were under 30 years old, 57.6% were 30-50 years old, and 1.3% were over 50 years old. In 2020, 36.6% are under 30 years old, 61.0% are 30-50 years old, and 2.4% are over 50 years old.

Turnover rate

	2017	2018	2019	2020
UMC Group	16.4%	15.4%	12.1%	10.3%
Turnover rate	11.9%	10.9%	8.7%	7.8%
Voluntary turnover rate	11.8%	10.8%	8.6%	7.6%
Internal Transfer Rate	52.0%	50.8%	83.0%	56.7%

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 USCBM, and Japan subsidiaries USJC.

3. Including only UMC fabs in Taiwan and Singapore.



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. 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, overtime, social insurances, retirement pension, and other mandatory benefits.

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. 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

- Plan latter half year company business strategy and plans
- Inform and communicate with employees



- Evaluate personal first half year major objectives and achievement

- Evaluate personal annual major objectives and achievement
- Plan personal major objectives (Future annual work plan)

- Supervisors give feedback and advice
- Employees evaluate major objectives and search for feedback

UMC offers salary adjustment, differentiated bonus / employee compensation system (Note) 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 to ensure that the overall remuneration offered by UMC is competitive in the market.

In 2020, UMC's total number of full-time employees for non-executive positions in Taiwan were 12,926 , with an average salary of NT\$1,369,000 and median salary of NT\$1,071,000 , which is about four times higher than Taiwan's minimum wage.

The number of full-time, non-executive employees in Taiwan, their average and median salary, and the difference over the years

2019 | 2020 | Difference

No. of employee		
13,580	12,926	Down by 654 people

Average Salary (10 thousand NT\$)		
109.9	136.9	Up by 27.

Median Salary (10 thousand NT\$)		
97.1	107.1	Up by 10.

Note: Sources and definitions are according to the specifications of the Taiwan Stock Exchange and checked by certified public accountants.

Basic Salary and Annual Total Compensation by Gender

Male | Female | Base Salary | Total Compensation

Taiwan

	Male	Female	Base Salary	Total Compensation
Executive level	100%	95.9%	100%	99.2%
Management level	100%	98.3%	100%	100.6%
Non-management level	100%	102.3%	100%	100.4%
Technicians	100%	103.7%	100%	96.6%

Singapore

	Male	Female	Base Salary	Total Compensation
Management level	100%	100.2%	100%	99.5%
Non-management level	100%	98.2%	100%	99.7%
Technicians	100%	97.3%	100%	96.4%

Note: 1. Executive level: Within two management levels from the CEO; 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.

3. From this year on, the calculation method is adjusted to ensure the salary ratio of female to male are based on the same position and job duties.

4. No female executive in Singapore.



Leave Policy That Is Superior to The Labor Standards Acts

UMC provides full-time employees with a comprehensive vacation system that is superior to the Labor Standards Act, and regularly reminds colleagues to take vacations in order to achieve a work-life balance. Contract personnel are granted leave hours according to various laws and regulations in accordance with the Labor Standards Law.



Supplemental holidays

Taking into account the reduction of national holidays after the revision of the Labor Standards Law, in 2020, 7 days of supplemental holidays are given for colleagues to use flexibly



Maternity leave

According to the Labor Standards Act, maternity leave will be provided at half-pay if the employee's period of service is less than 6 months. To provide better care to newly hired female employees, UMC gives full-pay for the said employees.



Funeral leave

To provide support to fellow employees, UMC offers funeral leave welfare that is superior to the Labor Standards Act. 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.

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 2020, a total of 66 female employees returned to their positions when their parental leave contract expired, indicating a return rate of 63.5%, and 13 male employees returned to their positions, indicating a return rate of 54.2% after parental leave. The work situation of those who returned after parental leave was observed. In 2019, 89.5% of female employees and 87.5% of male employees who took parental leave returned to work and continued to work over 1 year. The colleagues who have not returned after parental leave all voluntarily resigned because their parental leave have expired but the needs of the family remained.

2020 Parental Leave

	Female	Male	Total
Total eligible number for parental leave (A)	606	1,004	1,610
Actual number of parental leave (B)	124	28	152
Application rate for parental leave (B÷A)	20.5%	2.8%	9.4%
Total number of end of contract for parental leave (C)	104	24	128
Total number of returning from parental leave (D)	66	13	79
Return rate after parental leave (D÷C)	63.5%	54.2%	61.7%
2019 Total number of returning from parental leave (E)	95	8	103
2019 Total number of returning from parental leave (F)	85	7	92
2019 Number of returning from parental leave and retention rate.(F÷E)	89.5%	87.5%	89.3%

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.



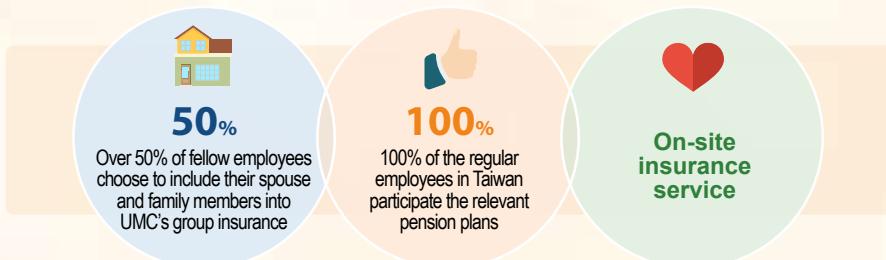
Overseas semiconductor fabs

UMC's China subsidiaries, HJ and USCXM, also provide paid annual leave that is superior to local Regulations of Paid Annual Leave of Employees. UMC Singapore fab provides newly hired employees with 10 days of leave in their first year which is better compared to the minimum length of 7 days prescribed by the Singaporean government. Contract or temporary staff who have worked in UMC for 3 months shall also be entitled to these types of leave on a pro-rata basis of their length of services. Japan subsidiaries USJC offers marriage leaves, funeral leave, parental leave after maternity leave, that are also superior to the local Regulations. Besides, USJC provides superior annual leaves to new employees who are on board before the calculation dateline with 20 days of annual paid leaves regardless of seniority. Furthermore, additional 5 days paid leave will be provided to employees in that year when their seniority in USJC reaches 10, 20 and 30 years.

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. Please refer to page 189 of UMC 2020 annual report for the relevant post-employment benefit plan allocation and expense amount.

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 enable employees who retire or terminate their employment with UMC to obtain necessary assistance, UMC also provides severance pay for repatriated 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). 331 improvement teams were established in 2018, 293 teams in 2019, and 309 teams in 2020. It not only trained employees to think systematically and to solve problems with scientific methods, but also helped the organization grow by enhancing work efficiency through individual learning and teamwork.



Company-Wide Education and Training Committee

In order to earnestly implement the policies of education and training, UMC has established a company-wide "Education and Training Committee" composed of education and training officers from various departments to improve the quality of training for all employees. In line with corporate policy, the company conducts a company-wide training needs survey every year and creates an annual training plan for the competency analysis of supervisors and associates. The Education and Training Committee holds quarterly meetings to review training operations. The committee also conducts selection activities of outstanding company-wide instructors each September to encourage colleagues to serve as lecturers.

In terms of professional training, UMC offers complete technical training curriculum. For managerial training, different training programs are designed for different levels of directors. For language, language proficiency tests and courses are offered according to job descriptions and positions. In terms of departmental and inter-departmental On-the-Job Training (OJT), the Education and Training Committee's downward education and training orientation allows department directors and their employees to fully participate in the planning, implementation and learning assessment. Moreover, the diversity of self-learning and development channels, such as e-Learning, creates an atmosphere of mutual peer learning, development and team cooperation, thereby forming a comprehensive environment for learning, sharing and innovation.

In 2020, UMC and its subsidiaries organized 7,363 training courses, with a total number of 168,006 person-times participating. The total cost of training was NT\$54,270,446, and the satisfaction level with the various courses was more than 94%. Due to Covid-19, the number of courses offered in 2020 is slightly lower than in previous years, so the total numbers of training courses and participants are different from those in the past.

Course Satisfaction

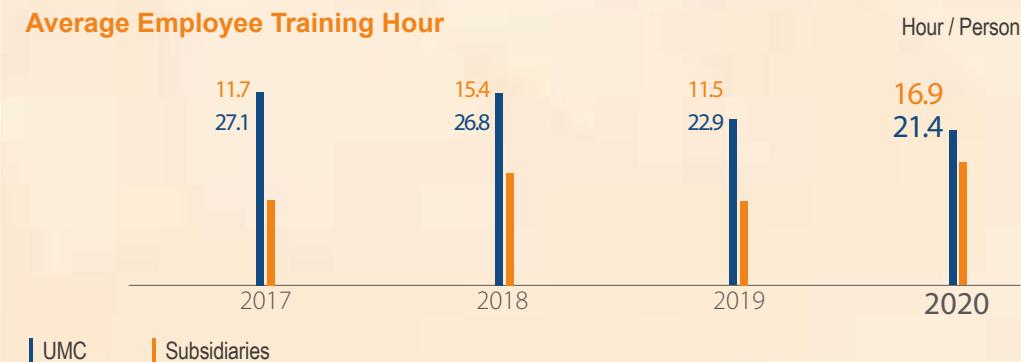
	2017		2018		2019		2020
Number of courses		9,703		9,071		7,723	7,363
Total number of participants		260,802		342,566		176,370	168,006
Training Satisfaction Average Value (%)	Overall Satisfaction		93.9%		94.8%		96.2% 94.5%
	Satisfaction with Instructor		93.4%		94.6%		96.2% 94.5%
	Satisfaction with Teaching Materials		93.7%		94.6%		96.2% 94.5%
	Beneficial to work		94.1%		94.6%		96.2% 94.8%

Note: The scope of statistics for 2017-2019 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

	2017	2018	2019	2020
Total Training Cost (NT\$)	38,935,585	48,124,745	43,134,714	44,492,278
Number of Employees (persons)	15,712	15,552	14,583	14,308
Training Cost per Employee (NT\$)	2,478	3,094	2,958	3,110

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 2020, the total number of training (persons) hours was up to 306,747 hours. The average training expense was NT\$3,110 per a person and the average training hours was 21.4 hours.

2020 Average Training Hours for Various Job Levels

	Training Time (Hours)	Number of Participants (Persons)	Average Training Hours
Director Level	28,120	1,660	16.9
Indirect Labor (non-director level)	230,709	7,486	30.8
Direct Labor	47,918	5,162	9.3

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.

2020 Average Gender Equality Training Time

	Training Time (Hours)	Number of Participants (Persons)	Average Training Hours
Male	214,879	7,967	27.0
Female	91,868	6,341	14.5

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

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

	2017	2018	2019	2020
Read Rate (%)	90%	91.8%	91.3%	92.3%
Writing Penetration Rate (%)	73%	73%	72%	73.9%
Expected Re-application Benefits (NT\$10,000)	138,232	72,547	90,238	69,924

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.

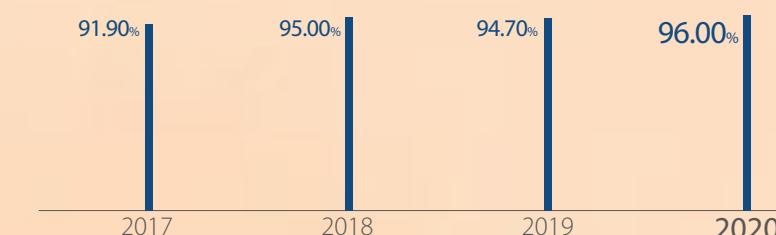


The 7 Habits of Highly Effective People

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 2020, the overall training completion rate continued to increase and meet the required standards.

Performance

The 7 Habits of Highly Effective Employees



The 7 Habits of Highly Effective Managers



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



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 2020, the actual completion rate in Taiwan was 99%, and the actual passing rate in Singapore was 99%.

Assessment System



SPC Assessment

In line with fab demand for manufacturing quality, engineers' understanding of SPC is emphasized



English Assessment

In line with the company's international orientation, the strengthening of employee English competency is emphasized



Professional Skills Assessment

Professional skills assessment system is used for determining the professional competency of engineers

Professional Skills Assessment

1. Category

Categorize according to facility, manufacturing and product

2. Content

Basic/Operations, Advanced/Learning from case examples, Connection with various tasks/Crisis management ability

3. Standard

Quarterly skills assessment

0-2 Continuing learning required

5-6 Independent operation

3-4 Completion of task through telephone instruction

7-10 Instructor

4. Method

Oral and written tests

SPC : 3-6-9 SPC Principle

Within 3 months - Courses (Knowledge)

New employees must complete SPC training courses within 3 months

Within 6 months - Courses (Knowledge)

New employees must complete the SPC written test within 6 months

Within 9 months - Practice (Application)

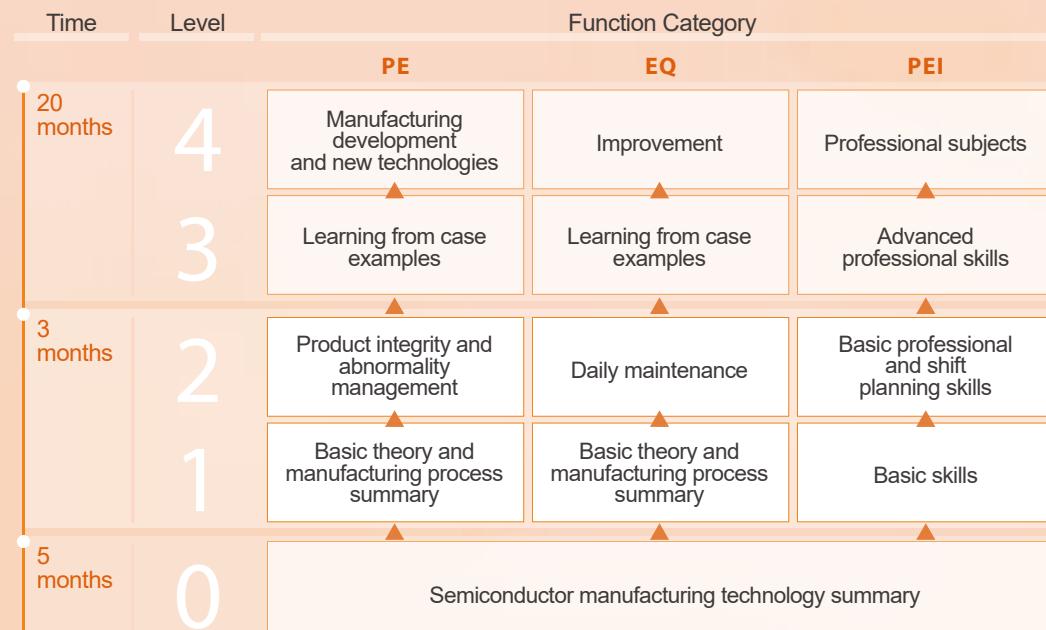
New employees must complete SPC practice within 9 months



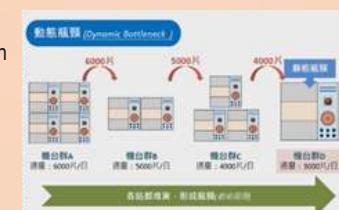
Technical Training for Engineers

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 2020 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.



此圖截取自新進工程師基礎訓練課程 - 「Semiconductor Manufacturing Management」



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 8 new-employee experience camps were held in 2020, and a total of 305 new employees completed the training courses.

Note: 305 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 newsletters were issued in 2020, with the themes of "Accurate Execution," "Challenges and Responses," "Development of Talents," and "Corporate Culture." In the 1st Issue of "Accurate Execution" conveys the ideas of senior executives, links them to the competencies of supervisors and provides tools as well as theories so that readers can have a better understanding for effective and accurate execution at all levels.





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

UMC conducts "Comprehensive Health Care Program" to ensure employees' health and prevent occupational diseases, the 2020 Health Service Management Plan was formulated according to the "Enforcement Rules of the Occupational Safety and Health Act" and the "2019 FAB Health Management Plan Effectiveness and Review."

In addition to dedicated efforts in building a quality and engaging workplace, UMC also referenced the latest amendments to the Occupational Safety and Health Act to initiate a series of activities to promote and improve upon ergonomic factors, health protection for female workers, and overwork-related conditions to protect and support our fellow employees. Extensive planning and preventive surveys were carried out to assess employee requirements, physical health, and mental states from multiple perspectives. Through the promotion of the concept of healthy workplaces, internal employee satisfaction and external support recognition will be achieved, and the recruitment and retention of outstanding talents will be strengthened, so as to achieve the goal of improving the overall performance of individuals and enterprises.

Comprehensive Health Care Program



Healthy Workplace

Safeguarding Employee Physical and Mental Health



LOHAS Workplace

Emphasis on Work-Life Balance



Stress-free Workplace

Focusing on Work Environment Safety



Stress-free Workplace: Focusing on Workplace Environment Safety

In 2020, UMC continued its efforts to build a safe and stress-free workplace environment and started planning and implementing a series of measures that were either compliant or superior to statutory regulations governing employee welfare, education, training, retirement, and other employer-employee issues. Management systems and safe environments were established to eliminate all risk factors in the workplace to achieve the "Safe UMC" objective in a comprehensive manner.

Preventing Overwork

To achieve a LOHAS workplace and provide a well-proportioned work-life balance, UMC adopted the Occupational Safety and Health Act in 2015 by taking the initiative to identify and assess the issue of overwork. To prevent employee overwork, the labor contract between each UMC employee and the Company is in accordance with local laws and regulations. The employment contract states that all employees work overtime on a voluntary basis, and the company's regulations stipulate that overtime work is not permitted.





Overwork Prevention Items



Questionnaire

- Based on the outcome of the overwork questionnaire, psychological stress questionnaire and other surveys, initiative is taken to address employee physical and mental conditions.
- Frequency: In principle, it will be filled out at least once a year, depending on the results of the questionnaire and according to the situation of the case.
- When needed, fill out the psychological stress questionnaire according to the type of work, such as travel management, night shift, etc.



Health Examination

- In 2020, surveys were conducted for employees with high risk of cardiovascular diseases and overwork. To ensure the health of our employees, a group of employees with high risks were screened out based on the results of health examination and questionnaire survey, and they have discussed their conditions with on-site doctors to implement relevant measures. In addition, interviews with doctors were also offered to employees selected for the case, providing them with proper health education. The follow-up health management and care tracking are carried out by UMC nurses.
- In 2020, there were 32 employees with high risk of illness that might be triggered by abnormal workload. All have completed the doctor's interview, and the completion rate of the doctor's assessment has reached 100%. The nurses also continue to care regularly and give these colleagues nursing education and guidance.



Control of Working Hours

- Working hours control: Fully connected entrance and exit records to implement working hours control and warnings
- Automated leave management: Using the automated system, an effective alert mechanism was installed to control work hours and excessive overtime. Overtime alerts are set at a more stringent limit than required by existing regulations. When overtime hours approach the limit set by the Company, the alert mechanism is activated.
- Since 2010, monthly reminders are sent to employees who have unused vacation hours, and supervisors are urged to schedule leave for their subordinates.
- In 2020, 7 days of special supplemental leave time are offered, which is superior to the requirements of the Labor Standards Act.



Soft Advocacy

- Advocated through labor-employee meetings, secretaries' forums, and other large scale meetings.
- Conducted a series of lectures on overwork, and incorporated it into annual key task list.
- Provided exclusive discount offers for UMC Recreation Center, UMC Institute Activity Center and LM dormitory.
- Organized activities such as short trips, inter-fab fun contests, sports day, and massage services by visually impaired massage therapists.
- Held family-day activities, conducted complete e-promotion, and established the Facebook Fanpage of UMC's Employee Welfare Committee.



Outcome Description

- 2020 is the year for mandatory health examinations. With a 100% participation rate, a total of 3,269 people participated in the health examination and completed the Questionnaire for Employee Overwork. The results of the health examination and case intake were used to improve the current situation.

Note: Only the mandatory health examination items were taken in 2020. Since the benchmark is set differently, it is unable to compare the improvement rate with that of 2019.

Measures for a Safe Workplace

Flextime for work and vacation to balance work and family

Work flextime, and employees of less than 1 year are offered special leave or supplemental leave.

In accordance with the Act of Gender Equality in Employment, both female and male employees may apply for unpaid parental leave without dues.

Establish a culture of gender equality

Measures for gender equality are consistent with or exceed those stipulated by the Labor Standards Act. Positive actions are implemented for employee selection, hiring, education and retention.



Comprehensive mechanism for sexual harassment prevention

"Reporting and Disciplinary Measures for Workplace Sexual Harassment," mechanism for complaint investigation, procedure for selecting team members, confidential complaint channel, education and training, and internal security service for providing assistance are established.

Assistance for pregnant women and employees with special needs

Priority meal order, designated parking spaces, cleaning and disinfection notification, no night shift, maternity allowance (for both male and female employees), breastfeeding room, eligibility to pre-apply for maternity leave after 3 months of pregnancy.

Measures for night time job safety for female employees

Night time car service, parking lot escort, roadside assistance, emergency buttons, other emergency assistance, day and night time shuttle, 24-hour employee hotline, and night time emergency response mechanisms.

Note: UMC complies with Taiwan government regulations such as the Labor Standards Act, Act of Gender Equality in Employment, and Sexual Harassment Prevention Act in its personnel policies, and also promotes related measures.



Healthy Workplace: Safeguarding Employee Physical and Mental Health

Employee Health Promotion

UMC formulates an annual Health Promotion Program for Occupational Safety and Health, and conducted control and performance tracking. UMC promotes health-related activities to increase employees' attention to their own health in order to improve work efficiency and production, and prevent the occurrence of occupational diseases. On top of that, various health services are also implemented at UMC.

Health examination

Physical examination for new employees, annual health examination and health examination for staff in special operating conditions.



Health management

Abnormal health examination report tracking, care management for special cases, maternity protection, mid- and high-risk personnel care, and clinical physician consultation services.

Health promotion

By analyzing epidemiological and health examination data of all colleagues, multiple self-funded health examinations, vaccination, epidemic prevention and mental health services are provided.

In order to keep employees informed of health promotion activities, UMC publishes these information through the Safety Committee, Occupational Safety Officer Meeting, secretary's seminars, digital banners, and website platform. Additionally, answer-and-win games are also designed to encourage employees' participation. In 2020, the health promotion plan of "2020 Health Care 2.0" was implemented, which included various physical and mental stress relief activities, disease and illnesses prevention seminars, cancer and health examinations, occupational diseases and illnesses prevention, vision care, and counseling appointments, etc.



In accordance with the "Enforcement Rules of the Occupational Safety and Health Act," along with the effectiveness and review of the 2019 FAB Health Management Program, UMC formulated the "2020 Health Management Program" and executed as many as 17 projects. Each quarter, in order to protect employees' health, UMC focused on different themes and promotional subjects, such as maternity protection, healthy body shape maintenance, stress avoidance, and improvement of health examination results, with the prevention of abnormal workload and overwork under the Occupational Safety and Health Act as the main theme. In 2020, all fabs in Taiwan obtained the "Badge of Accredited Healthy Workplace."

2020 Employee Health Promotion

Q1 Healthy "Spring" Feast – Pandemic Prevention Workshop



To enhance employees' understanding of the Company's COVID-19 pandemic prevention policy, UMC reinforced the correct concept of pandemic prevention through an online E-check "Pandemic Prevention Workshop" questionnaire.

Key Achievements

With a total of **5,965** participants, **5,677** employees answered the questionnaire correctly. **1,000** gifts (multi-functional mask keepers) were distributed as pandemic prevention gifts to the winners who were randomly drawn.

Q3 Health Care Practices in "Fall"



Encouraged colleagues to reduce fat, lose weight autonomously, and reduce body weight. Promoted the healthy habit of walking 10,000 steps per day since exercise can relieve stress and strengthen the body's immune system.

Key Achievements

- A total of 179 person-times participated in the weight loss exercise and seminars, resulting in **266.5** kg of weight loss altogether, with an overall average satisfaction score of 97 points.
- "10,000 Steps per Day Healthy Habit Activity" had a total of 150 participants, and 47 of which walked 10,000 steps daily for 50 days. All participants accumulated 3,019 days with 10,000 steps per day, with an achievement rate of about 31.1%.
- A total of **329** person-times participated in this activity in the third quarter.

Q2 "Summer": Cover All Up



Seminars on how to take care of elder parents was offered in order to improve the quality of healthy life at home.

Key Achievements

A total of **172** person-times attended the health seminar, with an overall average satisfaction score of **90.2** points.

Q4 "Winter" Care for the Heart and Liver



Promoted the health information reading platform to enhance colleagues' sensitivity to health hazards, and conducted seminars on traditional Chinese and western medicine to enhance colleagues' knowledge on the prevention and health care of chronic diseases.

Key Achievements

- "Health Information U-info" platform reading activities were attended by **7,393** participants, with a total of **14,373** views. 2,202 people checked in on the reading platform between July and September, with 56.1% of current employees participating.
- The seminars of "Health Seminar U-Class" titled <Traditional Chinese Medicine> Pre-fall Health Care Tips, and <Western Medicine> Cancer Gene Explained were attended by **457** people, with a satisfaction score of 96.2 points.
- The total number of participants was **14,830** person-times.

Employee Assistance Program

Employee Assistance Program (EAP) has been implemented in UMC Taiwan and Singapore fabs, which includes:



- Collaborated with Taiwan Lifeline International to provide employees with free counseling services.
- Relaxation Platform: Providing related information.
- Active prevention and outreach: Psychological education and training for the Employee Relations Department, Human Resource Service (Account) Department and supervisors.



List of Employee Caring Programs



Employee Assistance Program

UMC introduced the "Employee Assistance Service Program (EAP)" to provide free psychological consultation services to employees, releasing their physical/mental pressure and enabling them to have a healthy body/mind to face various challenges in their work as well as life. Through one-on-one consultation and privacy protection mechanism, helps were provided to solve employees' physical/mental stress problems. Each employee has the privilege to enjoy the service free of charge for 6 times in a year, fully paid by UMC. During the new employee training sessions, UMC provides employees with a small card with instructions on how to utilize the EAPC, as well as the contact information. Not only can this card be placed together with the identification card, but it can also be obtained freely at the Health Center of each fab.

2020 Performance

In 2020, a total of 310 people received assistance in dealing with their problems that are related to psychological issues.

Number of Employees Receiving Assistance



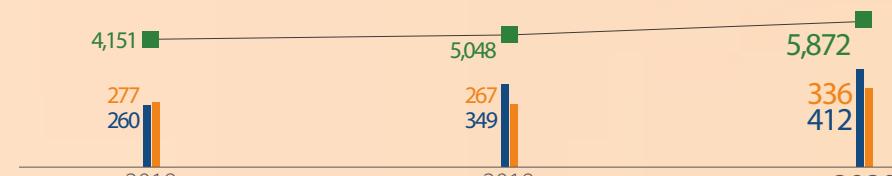
Injury, Disease and Illness Care Services

Through the injury, disease and illness management care mechanism, and based on the "Accident Care Notification System", UMC also works together with clinical physicians, registered nurses, the relevant department heads, human resources, and legal affairs departments to conduct rehabilitation/work assignment assessment and care of each case, so that the recovered employee can readapt to the operating environment through duty adjustment.

2020 Performance

The number of injury, disease and illness care services in 2020: 412 new cases, 336 closed cases, with a cumulative of 5,872 care cases provided.

Injury, Disease and Illness Care Cases



New cases in the year

Cumulative number of cases closed

Cumulative number of care cases provided



Maternity Health Protection

UMC has set up breastfeeding rooms in each fab and provides postpartum female workers with 60 minutes of breastfeeding time on every working day. Other than that, a company-wide maternity protection notification platform has been established, on which pregnant and postpartum breastfeeding employees can fill out information. After being notified, the Health Center will conduct risk assessment and medical consultation to implement maternity health protection.

2020 Performance

- In 2020, Fab 8AB, Fab 8E, Fab 8F and the UT Building all applied and were accredited as "Friendly Hsinchu Breastfeeding Room at Workplace" to create a comfortable and quality environment for breastfeeding.
- In 2020, the execution of the daily care list of "Health Care System" reached 100%



Individual Health Management Program

UMC conducts health examinations on an annual basis, and the examination items are beyond the requirements of the regulations. UMC provides employees with a customized "Individual Health Management Program" that combines the Company's eHR "Health Care System" to track abnormal cases, including follow-up appointment tracking, regular care tracking, and providing health education information, etc. The program provides a complete record of employee health indicators, and the health examination results are categorized and managed to enable the implementation of health examination tracking.

2020 Performance

- In 2020, 3,269 employees participated in the health examinations, with an overall satisfaction rate of 93.1%
- In 2020, the execution of the daily care list of "Health Care System" reached 100%



Occupational Disease and Illness Prevention

For the prevention of occupational diseases and illnesses, all employees and contractors working in the Company are included as the health protection targets. Through an annual health examination, combining the management list provided by the environmental safety department after environmental monitoring, the notification platform will be able to monitor the status of each case. After that, medical consultation will be arranged to evaluate the causal relationship between diseases and operations with reference to clinical history and causes of diseases.

2020 Performance

- In 2020, the "Occupational Injury, Disease and Illness Notification System" and "Accident Care Notification System" were established.
- There was zero occupational disease and illness related case reported.



Establishing a Comprehensive Healthy Workplace

The UMC Health Center implemented a total of 17 health promotion projects in 2020. The total number of person-times served was 38,885 and the overall satisfaction rate was 95%. The high participation in various activities, such as annual health examinations, shows that employees have increased their health awareness and attached importance to it. In addition, all fabs in Hsinchu Science Park and Tainan Science Park have obtained the "Badge of Accredited Healthy Workplace." The United Tower site has passed the renewal certification in 2021, and the rest of the fabs are all within the validity period.



Number of individuals served in health promotion activities	Total satisfaction for health promotion activities	Number of individuals subject to annual health examinations
38,885 person-times	95 points	3,269 person-times

Note: 1. The total number of people served in the Health Promotion Activities does not include Fab 12i in Singapore.

2. The result of satisfaction rate is after rounding.

3. Number of individuals served in annual health examinations is calculated for general health examinations only.

Dedication to Public Welfare and Social Responsibility

UMC has introduced massage services for the visually impaired in Hsinchu Science Park (HSP) and Southern Taiwan Science Park (STSP), which not only provides employment opportunities for the disabled, but also helps colleagues relieve their discomfort through professional massage in a safe environment, thereby enhancing their physical and mental health. UMC colleagues also warmly respond to blood donation drives, and held blood donation activities every year to save others and pass on the life of love. A total of 8 blood donations were organized in 2020, with more than 456 colleagues enthusiastically participating, donating a total of 722 bags of blood.



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.

Site Events for Building Team Identities

2020 marked the 40th anniversary of UMC, thus the scale of Family Day was expanded and held at National Tsing Hua University and Far East University, together with the inter-fab departmental team competition, where the employees joined the competition in the form of different district teams. Through the team competitions, UMC deepens the spirit of teamwork and self-challenge, enlivens the atmosphere of each department, thereby increasing employees' engagement in the organization and building a highly cohesive team.

UMC Inter-fab Team Competition and Family Sports Day Team Performance



Employee Social Club Activities





Strategic Engagement of the Employee's Family

UMC emphasizes "Work-Life Balance", which not only cares for UMC colleagues, but also extends to their families. UMC arranges activities around specific themes which are appropriate for employees and their families to participate in. The 2020 Sports and Family Day combined the elements of employee recognition and family bonding activities, and included parent-child relay races in all competitions for employees to enjoy the fun with their family members and friends. Furthermore, a parent-child stage and peripheral activities were set up to effectively unite employees and strengthen their family members' recognition. In addition, the various activities of the Art Festival were open to the family members of employees. In doing so, UMC looks forward to caring for employees' families in addition to the employees at work, so that they could relieve stress, maintain physical and mental health, and enjoyed the parent-children time together. By getting the employees' family members to know UMC better, UMC hopes that they can provide constant support for the employees to work and contribute at UMC.

2020 UMC Family Sports Day Activity



UMC Leisure Facilities



Hsinchu Science Park UMC Activity Center

Tainan Science Park UMC Activity Center



Five-star Fitness Equipment



Multi-purpose Basketball and Badminton Court

Art and Cultural Activities Promotion

UMC plans diversified art activities to enhance the humanistic qualities of employees and helps them to achieve "Work-Life Balance." The annual art event, "2020 UMC Extraordinary Artistic," included different activities between July and August with the theme of "Wandering Arts in Four Ways": "Enjoy Arts," "Listen to Arts," "Do Arts," and "See Arts," bringing art closer to employees and offering a series of art feasts, which led all colleagues to experience the arts of everyday aesthetics.

2020 Art Festival



2020 Performance

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. When social clubs represent UMC in public competitions, they can receive additional subsidies.

- 30 social clubs (Taiwan)
- 2 rounds of selection - a total of 15 excellent social groups will receive subsidies each round.
- 2,347 club members

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: 80,000 person-times visitors including UMC employees and their family members in 2020
- The UMC recreation centers serves over 260 person-times per day.

多样性 of employee activities

- Organized regular One-day Travel, Family Day, and Art Festival.
- The scale of 2020 UMC Family Day was expanded and held in conjunction with the 40th anniversary celebrations at Hsinchu Science Park and Tainan Science Park respectively.
- Monthly screenings of popular movies. (Due to COVID-19 pandemic prevention, it suspended from February 2020)

- 290 people participated in the one-day trip program
- 7,952 employees and dependents participated in UMC 40th Family Sports Day
- 1,600 person-times participated in the Art Festival

Note: excluding temporary or one-time members.

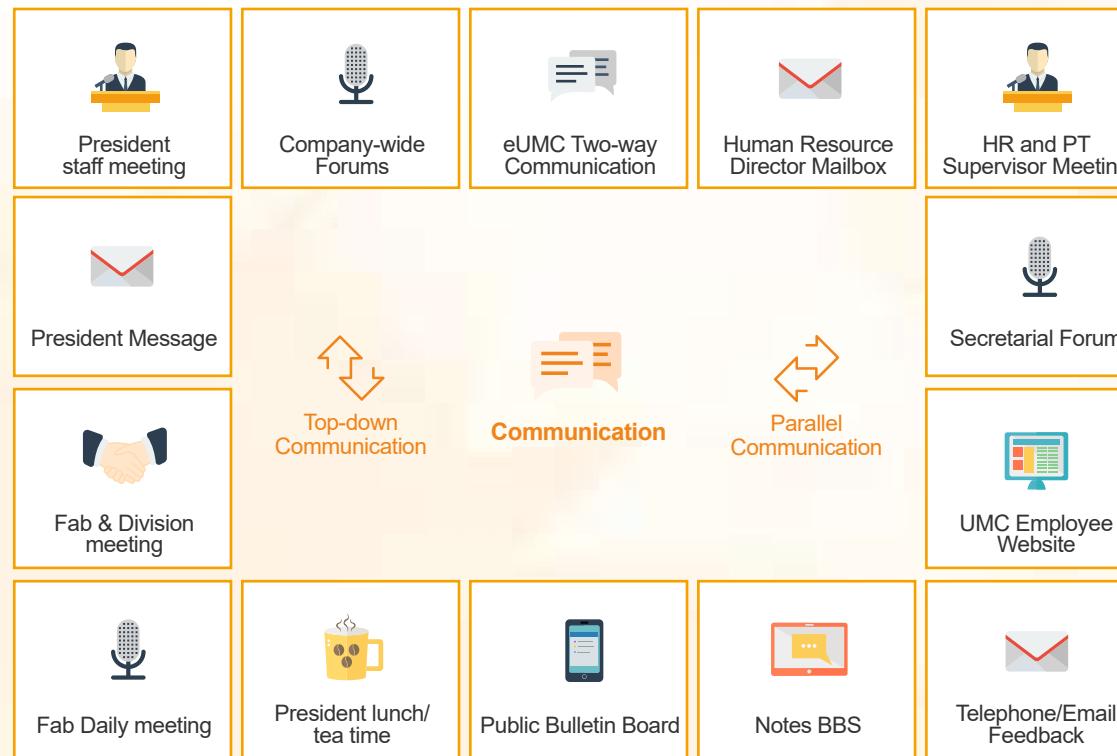


4-3-2 Employer-employee Communication

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 2020, it received 392 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.



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, the departments of UMC 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 selected 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's employee is 100%. In addition, the subsidiary HJ also established a labor union to communicate with employees through conferences, departmental meetings and suggestion boxes.

Item	Details	Notes	2017	2018	2019	2020
UMC						
Company-wide conferences	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 quarterly after the investor conference.	4	4	4	4
Fab and Departmental communication meetings	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.	69	69	58	84
Secretary Conference	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	8	8	8	8
Employer-employee meeting	The HR department shall delegate colleagues and employees familiar with relevant regulations to organize and assemble a form cross-unit and cross-functional consulting team. The team shall follow up on specified meeting topics and facilitate subsequent improvements to effectively promoting harmonious employer-employee relationships.	Held quarterly in 9 fabs.	36	36	36	36
Welfare committee meeting	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	4	4	4	4
HeJian Technology (HJ)						
Employee conference	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	12	12	12	12
Union-employee conference	Communication and discussions with union members on employee welfare and employer-employee related topics.	Semi-annually	12	12	12	12
Secretary conference	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	7	0	0	12

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

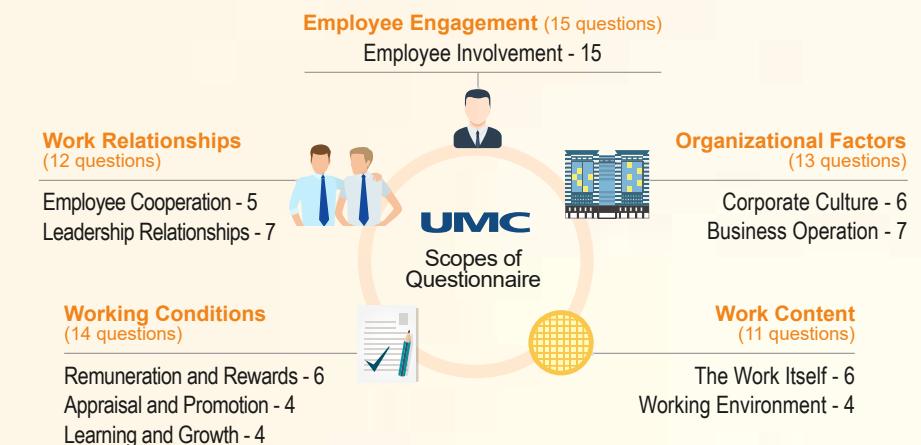
Employee Work Engagement Survey

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's Taiwan and Singapore fabs. After the implementation of the improvement plan in 2019, the overall survey outcome in 2020 continued to improve. The survey is scheduled to be implemented to all of UMC's operation sites in China in 2021. Through the survey report, key issues of the organization can be identified and improvement countermeasures can be implemented, which all contribute to top talents retention.

Improvement and Follow-up after the Survey

The Employee Work Engagement Survey questionnaire contains assessment in 5 major areas to cover 9 job satisfaction dimensions and 1 employee engagement dimension, with a total of 65 questions. Regarding the outcome of the survey in 2020, in addition to cross-comparing the annual differences to verify the effectiveness, communication was carried out into each functional unit, and the feedback of more than 40 senior supervisors was collected to help improve the subsequent survey. UMC continues to provide guidance to units that are in need of assistance, and establish improvement plans which are reviewed quarterly, hoping to increase the employees' sense of identity towards the organization and their devotion to work through continuous improvement and action.

Engagement Questionnaire Topics





Survey Target and Outcome

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

2020 Employee Work Engagement Survey Outcome-by age

	Average	<30	30-39	40-49	50-59	>=60
Satisfaction survey	76.4	76.5	76.0	76.2	78.7	76.8
Engagement survey	77.1	75.7	76.3	77.5	80.5	80.5

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 2020.

Comprehensive Appeal and Employee Support Systems

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	CHO's e-mail box
Report of sexual harassment and unfair treatment extension 3199; Mailbox: 31995@umc.com	CSR mailbox csr@umc.com
Employee Relationship (ER Service) Hotline extension 12885	Fraud and Ethics Violation Report Box whistleblower@umc.com
Whistleblower Hot Lines 03-5782258, extension 31425	※ 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	

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 172 formal and large scale conferences were held in 2020 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 2020, 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.

Numbers of Grievances

	Human Rights Issues			Labor Affairs		
	2018	2019	2020	2018	2019	2020
Filed through the mechanism	7	4	10	14	20	17
Addressed	7	4	10	14	20	17
Reviewed	5	4	10	14	20	17
Officially undergoing judiciary proceedings	0	0	0	0	0	0
Resolved	6	5	10	14	20	17

Note: The human rights category include complaints such as sexual harassment, illegal infringement, and forced labor. There was one sexual harassment case filed in 2020, which had been resolved.

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



Please refer to the
UMC Code of
Conduct



4-3-3 Enhancing Workplace Safety

With the goal of zero accidents, UMC is committed to maintaining a stable growth of the company under the priority of safety, preventing safety and health risks, avoiding major losses due to safety and health related issues, so the company's competitiveness can be ensured. With the goal of zero accident, UMC is committed to its steady development with the utmost priority of safety, in order to prevent safety and health risks, and avoid major losses caused by safety and health issues, so as to maintain the Company's competitiveness.

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" with reference to DuPont's experience to identify and improve unsafe behaviors and environments. Furthermore, each fab's performance index is compiled quarterly and the overall safety climate performance is presented in the form of light signals to prevent the occurrence of accidents, as well as to continuously reduce the Disabling Injury Frequency Rate (FR) and the Disabling Injury Severity Rate (SR).



Safety and Health Organization

UMC in Taiwan has a company-wide safety and health committee that meets every quarter, chaired by the vice president. The committee board comprises a total of 9 labor representatives elected from respective fabs, who account for 33% of the 27-member committee. Each fab also has its own safety and health committee. In the Singapore fab, the safety and health committee is set up in accordance to local regulations, and, in compliance with the governing law, its number of employee representatives is greater than the number of director representatives. The company's subsidiaries HJ, USCXM, Wavetek, and USJC have all established safety and health committees that meet every quarter. (The committee of USJC meets monthly.)

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

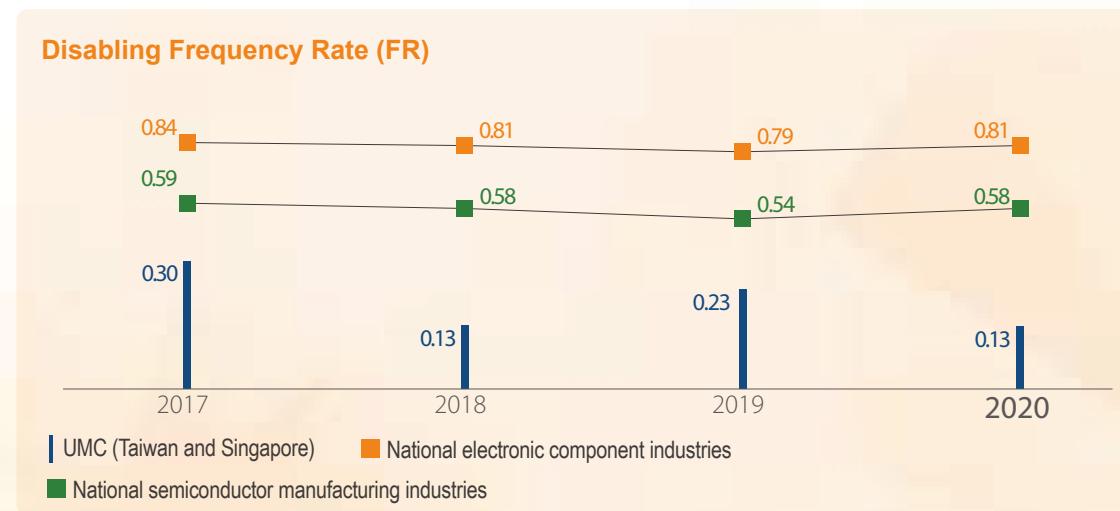
Using Failure Mode & Effect analysis (FMEA), engineering risks are identified before construction and communicated with relevant personnel.

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.



Occupational Disaster Management

In 2020, UMC's Disabling Frequency Rate (FR) was 0.13 and Severity Rate (SR) was 9, which are far below the average of the semiconductor industry. UMC will continue to promote disaster reduction programs and move towards the goal of zero disasters.



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 2020, UMC held the "Advanced Safety Culture Seminar" for senior executives, "Safety Awareness Course for Supervisors" for key departments, along with professional training sessions which were conducted by professors and scholars with expertise in the field of occupational safety and health for managers handling occupational safety and health issues. In 2020, UMC organized 2,082 classes and trained 38,776 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 2020, 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.

Note: 1. According to data provided by the Department of Statistics of the Ministry of Labor.

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

3. SR = Number of lost day due to disability x 1,000,000 / Total number of working hours [per million working hours].

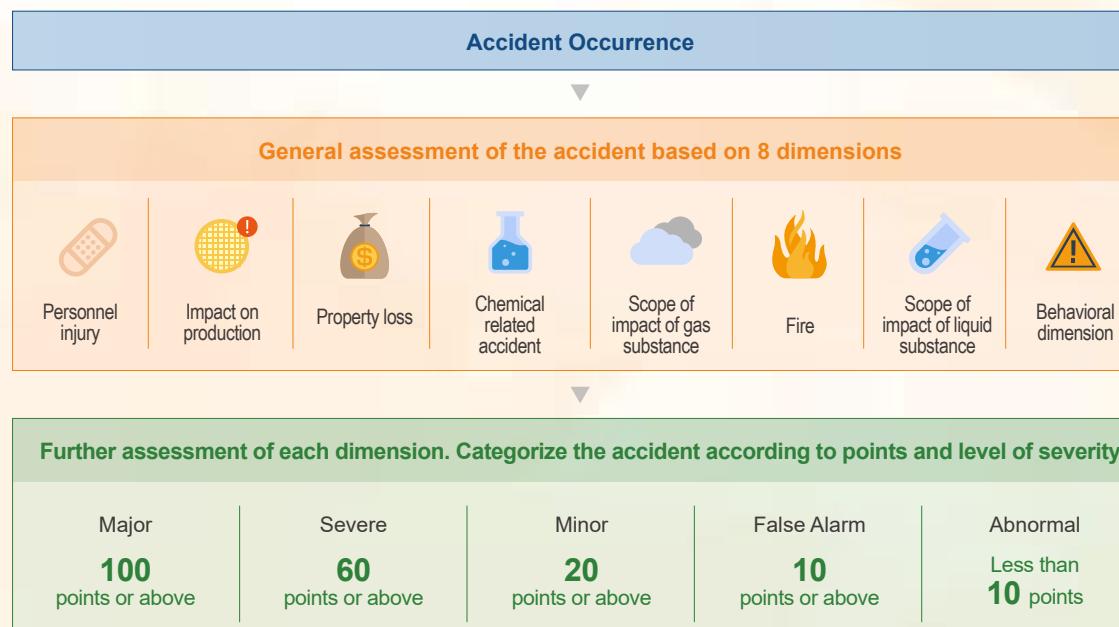


Accident and Analysis and Management

Accident Investigation and Analysis

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.

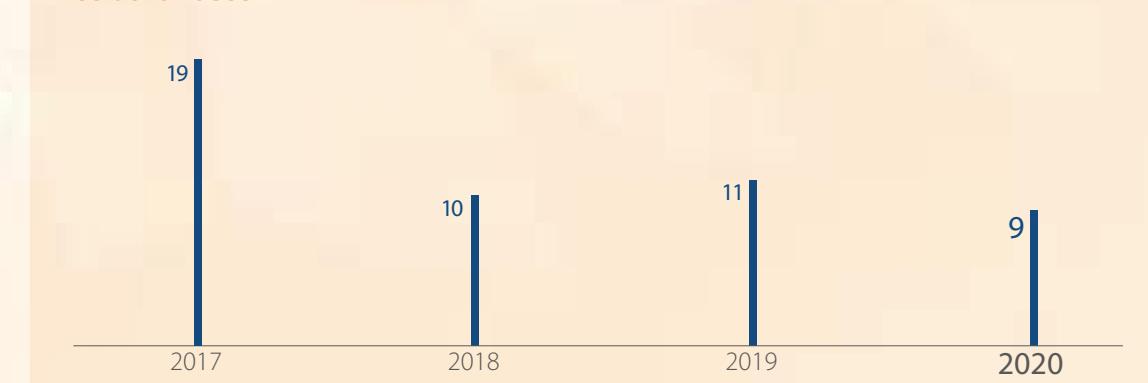


Accident Management

UMC is committed to reducing the number of industrial safety accidents. In 2020, there were 9 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 9 accidents in 2020, chemical leaks: 3, walking injuries: 2, mechanical injuries: 1, fire alarms: 1, chemical injuries: 1, scalds: 1. According to the statistical results of the company's injury cases, we notice that "walking injuries" and "chemical exposures" are the two main causes. UMC will continue to promote "Safety First" as the accident prevention theme, and continue to advocate the company's BBS (Behavior-Based Safety) culture. 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.

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 2020, 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 2020, there were 5 care cases reported. (No new cases in 2020.)

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.



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 reportable injuries
Refers to the number of deaths, permanent disability, permanently total or partial disability or temporarily total disability due to occupational injuries.

Number of people with disabling 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].

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.

UMC

UMC	Taiwan	Singapore
2020 Relevant Index	UMC Employees	Non-employee Workers
No. of people	12,835	1,733
Total No. of working hours	25,682,128	5,059,184
No. of people with disabling injuries	4	0
No. of lost days due to disability	270	0
No. of reportable injuries	13	1
No. of work-related deaths	0	0
Occupational Disease Rate (ODR)	0	0
Injury Rate (IR)	0.10	0.03
Lost Day Rate (LDR)	2.1	0

Note: There were no third party illnesses, injuries, disabilities or deaths caused



Subsidiaries

2020 Relevant Index	China HJ		China USCXM		Taiwan Wavetek		Japan USJC	
2020 Relevant Index	Employees	Non-employee workers	Employees	Non-employee workers	Employees	Non-employee workers	Employees	Non-employee workers
No. of people	2,132	87	1,038	386	700	23	1,031	433
Total No. of working hours	4,143,763	254,592	2,286,826	1,127,040	1,334,838	67,376	2,019,228	744,500
No. of people with disabling injuries	0	0	0	0	0	0	1	0
No. of lost days due to disability	0	0	0	0	0	0	21	0
No. of reportable injuries	0	0	0	0	0	0	1	3
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	0	0	0	0	0	0.09	0.80
Lost Day Rate (LDR)	0	0	0	0	0	0	2.08	0

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



05 COMMITMENT TO SOCIAL WELFARE

5-1 Promote Common-Prosperity Society

5-2 Youth Talent Cultivation

5-3 Environmental Protection Initiative

5-4 Care for the Disadvantaged and Underprivileged

Important Stakeholders

Suppliers

Employees

The Society

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.



Performance Highlights 2020

Accumulated
6,201
members participated

The PTP and AIED ^{Note} programs have continued to cultivate outstanding talents in the semiconductor industry and have recruited 6,201 members by the end of 2020.

7,034
people joined the
Industry-academic
cooperation

Conducted industry-academia cooperation programs with 13 key colleges, including equipment internships, nanotechnology classes, and career guidance support, etc., and a total of 7,034 person-times participated.

NT\$ 3 million
dollars to support
eco-conservation

Initiated the "UMC Eco Echo Award", which provides NT\$3 million annually to support ecological conservation. A total of 9 units was awarded in 2020, and 30 projects were implemented across Taiwan.

1,347 tCO₂
emission reduction

Provided energy saving services to 10 units, reducing 1,347 tons of CO₂ emission and helping them save NT\$8.493 million on utility bills.

A total of
60,167
beneficiary
person-times

Volunteers from UMC Foundation and UMC employee social clubs provided 6,425.4 hours of volunteering services, benefiting 60,167 person-times in total.

Note: PTP stands for Prospective Talent Program, and AIED stands for Advanced Intelligent Elite Development



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 its 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 in 2020
 UMC Social and Culture Foundation	<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	<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 2020 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 the Caring Month activity of the Southern Taiwan Science Park 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	<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 Anlei Elementary School in Tainan City

Taiwan is an important global semiconductor production center, and UMC, as a major wafer foundry in the world, is quite influential on society and the environment. 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, jointly shaping a sustainable future of common kindness, common good, and common beauty.



Constructing the Main Theme of Social Participation



Cultivate young talents

United Nation's Sustainability Development Goals (UN SDGs)



Decent Work and Economic Growth

Business Trend

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.

UMC cultivates potential high-tech talents and strengthens industry-academia partnerships through a variety of projects. Industry-academia cooperation projects are conducive to enhance corporate image, expand the pool of potential R&D talents, and have a significant impact on campuses and communities.

Business Key Performance

Enhance positive corporate image

- Through the Prospective Talent Program (PTP) and the Advanced Intelligent Elite Development Program (AIED), 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.
- Additionally, these programs provide exclusive opportunities for students to acquire knowledge and sensitivity to the semiconductor industry while they are still pursuing their studies, and build close relationships with students to make future career plans in advance, thereby effectively connecting UMC with target talents.

Expand talent pool to reduce the cost of recruitment

- In order to expand the talent cultivation on campuses, UMC continues to develop the PTP program in addition to AIED program that was started in 2018. The PTP program has been recruiting talented individuals since 2013, with a total of 4,910 talents recruited and 1,331 students participating. The AIED program has been recruiting talented individuals since 2018, with 4,238 students participating and 1,291 members recruited in total. The average cost of recruiting one single employee is NT\$27,000.

Build high-tech talent network based on good business reputations

- In 2020, UMC carried out industry-academia cooperation projects with 13 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.

Social/Environmental Key Performance

Cultivate high-tech talents and enhance career prospects

- From 2013 to 2020, a total of 436 students have obtained internship opportunities, increasing their competitiveness as college students.
- Beneficiaries of special program for industry-academia cooperation: A total of 7,034 person-times participated in these programs.
- Campus relationship development and related seminars: In 2020, 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 1,029 student participants.
- UMC visits: Provide opportunities for students to visit and tour UMC. In 2020, in order to comply with the epidemic-prevention policy, UMC only received around 140 person-times from the special semiconductor training program.



Promote Environmental Protection

United Nation's Sustainability Development Goals (UN SDGs)



Climate Action



Life Below Water



Life on Land



Partnerships for the goals

Business Trend

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.

Business Key Performance

Carbon Reduction Volume of UMC Triple R League

- From 2017 to 2020, a total of 409,000 tons of CO₂e was reduced, which is equivalent to the sum of 1,567 Daan Forest Parks' annual carbon absorption, and 109.5 tons of sludge was reduced. The total economic benefit of water and electricity saving is about NT\$9.62 million.

The green supply chain initiative aims to emit zero pollution. Through the quantifiable indicators established by the suppliers, implementation of energy saving, waste reduction, and circular economy measures are reviewed and promoted. In addition, suppliers are invited to attend several workshops held by UMC to share their experiences, promoting and discussing UMC's policy of green supply chain management.

Eco Echo Award Starts to Make a Difference, Building Good Corporate Image

- In 2020, the UMC Eco Echo Award event received more than 35 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

- Assist the client to save on utility bills for operations. In 2020, a total of 1,337 tons of CO₂ was reduced, which is equivalent to an overall social/environmental economic value of NT\$8.493 million.

Social/Environmental Key Performance

Number of Triple R League Suppliers and Outstanding Suppliers

- Triple R League suppliers increased by 10% in 2020 to reach 39 members in the League
- The 3rd Annual Awards Ceremony was held in 2020, and the number of award-winning suppliers grew to 20.

Triple R League has effectively raised members' environmental protection awareness. The number of Triple R League suppliers has increased year by year, showing that this project urges more suppliers to pay attention to environmental protection issues. Through this project, outstanding implementation results were produced, effectively helping partnering suppliers to forge ahead from implementing energy saving and carbon reduction measures to circular economy.

Number of Projects Supported by Eco Echo Award

- In the past five years, 30 ecological conservation plans and youth environmental action projects have been realized in Taiwan.

Service Targets and Service Hours of the Energy Saving Service Team

- In 2020, the Energy Saving Service Team has served 6 disadvantaged groups and 4 community units (schools and hospitals), accumulating a total of 1,112.9 hours of service. The services provided included energy-saving and safety consultation, energy technology and engineering improvement, allowing disadvantaged groups to enjoy the wonderful energy-saving and carbon-reduction life as well.



Caring for the Disadvantaged in Society

United Nation's Sustainability Development Goals (UN SDGs)



Quality Education

Business Trend

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.

Business Key Performance

Build a positive image and maintain good corporate reputation

- Made donations to more than 18 groups
- A total of 60,167 person-times were benefited

Recipients of these supports include academic circles, non-profit organizations and environmental groups. By actively supporting disadvantaged groups, it not only builds a good image for the company, but also earns the recognition from the public.

Expand employee participation and enhance the cohesiveness of employees

- 6,425.4 hours of volunteering time in total

Starting from 2020, 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 2020, due to the COVID-19 epidemic, the number of outdoor activities was reduced; however, employees of UMC still contributed 6425.4 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.

Social/Environmental Key Performance

Number of underprivileged school children benefited

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 2,411 volunteers who cumulatively devoted 26,490 hours of their precious time, the number of beneficiaries in 2020 reached 4,916 person-times.



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

In 2020, the social welfare investment of UMC emphasized on the importance of continuous care, ensuring that 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 2020 was NT\$160 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, including donations to the construction of the UMC-Junshan Concert Hall at National Tsing Hua University, UMC Science and Culture Foundation, UMC Management Paper Award Fund, and "Nano Integrated Circuit Engineering" Fund of the National Cheng Kung University. The percentage of investment increased from 29.55% in 2019 to 56.88%. Other recipients of UMC financial supports include Taiwan Semiconductor Industry Association Environmental Safety Fund, Eco Echo Award, VLSI International Conference, and GLO Taiwan Leadership Summit.

These outcomes demonstrate continued growth of human resources and kindness of UMC volunteers offering services to the needy throughout Taiwan. In 2020, UMC employees provided a total of 6,425.4 volunteer hours and the number of beneficiaries reached over 60,167 person-times.

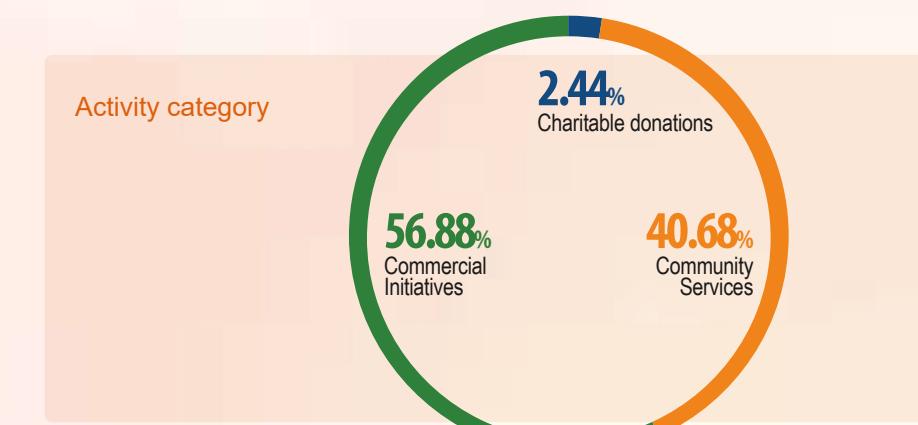
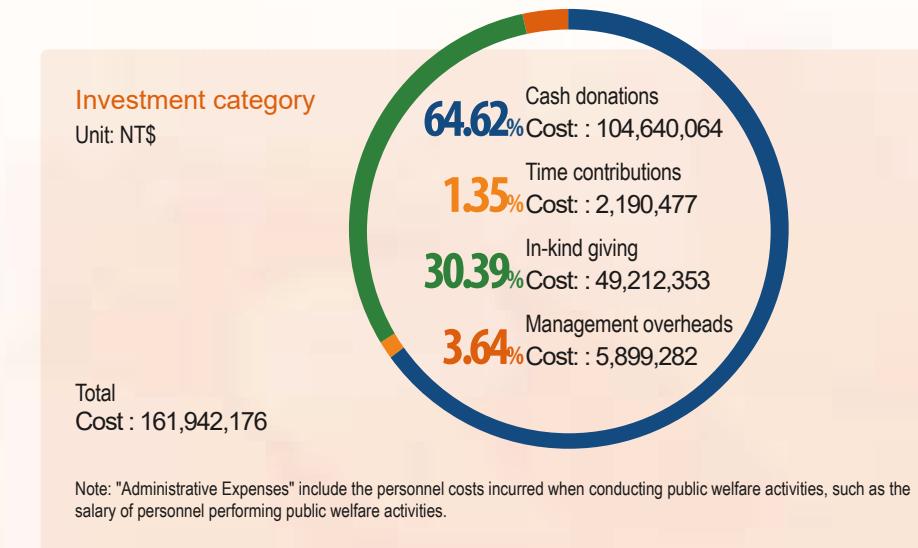
Community Service Participation and Number of Beneficiaries in 2020



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 2020





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. In 2020, UMC focused on two major orientations in its collegiate relationships: (1) Positioning outstanding R&D talents, and (2) In-depth development of talents from technical colleges. In addition, university-industry collaboration and prospective talent programs are two major directions of development.

5-2-1 Industry-education Partnerships

UMC continued to strengthen industry-education partnerships in 2020. 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). A series of brand image development activities such as paper discussions, career sharing panels, on-site internships, and exhibits of semiconductor products were scheduled, with more than 1,029 person-times participating in eleven paper discussion sessions in 2020. These measures enhanced the academia's support and recognition of UMC and gave a comprehensive demonstration of a successful industry-education partnership.

Item	Semiconductor seed-Taiwan high-tech talent cultivation
Execution	<ul style="list-style-type: none"> · Semiconductor industry-education hands-on programs · Innovation RD projects · Other industry-education projects · Campus relationship projects
2020 Result	<ul style="list-style-type: none"> · Semiconductor industry-education hands-on programs jointly offered in 4 colleges · Initiated innovation RD projects with multiple colleges and obtained patents · Industry-education hands-on programs had 503 participating students
Impact	Cultivate seed talents for semiconductors by providing semiconductor-related knowledge and technologies to young students when they are in schools

5-2-2 Semiconductor Talent Cultivation

UMC continues to implement the "Prospective Talent Program (PTP)" and the "Advanced Intelligent Elite Development Program (AIED)" 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 terms of campus talent cultivation, the Prospective Talent Program (PTP) was expanded to increase the cultivation of talent on campuses. Since 2013, 4,910 candidates have been recruited, of which 1,331 are still in school. In 2018, Advanced Intelligent Elite Development Program (AIED) was launched and attracted 4,238 participating students. Among them, 1,291 students became AIED members.

Through a series of activities and courses, close interaction is maintained with prospective collegiate talent to promote their identification with UMC. By establishing a close relationship and pre-appointments, these programs effectively connect UMC with target students. At the same time, the PTP also effectively markets the corporate image of UMC and exerts considerable influence on campuses and communities, thereby ensuring future R&D prospects for UMC in advance.

In 2020, an UMC Camp was organized. In this one-day event, the PTP participants and mentors from UMC were invited to exchange and discuss with each other. 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.





Planning for Outstanding R&D Talents

Target Schools Visited

UMC provided on-site visits to target schools every year for students to gain early understanding of the semiconductor industry work environment. However, due to covid-19 in 2020, UMC only conditionally received about 140 faculty and students from target schools to visit UMC facilities. By interacting and communicating with UMC employees, these students had better understanding of their own directions in learning and employability.



Summer Internship Program

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.



In 2020, a total of **16** interns were recruited.

Prospective Talent Program

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.



PTP: Since 2013, **4,910** candidates have been recruited, of which **1,331** are still in school.

AIED: In 2018, Advanced Intelligent Elite Development Program (AIED) has been launched, and attracted **4,238** participating students. Among them, **1,291** students became AIED members.

Planning for Outstanding R&D Talents



Potential Management Talent Cultivation

In addition to supporting training efforts for high-tech professionals, UMC is also leading the way in supporting professionals with management potential. 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.



In 2020, a sum of NT\$3.8 million was bestowed to the award.

Career Coaching Programs

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.



With National Cheng Kung University as an example, 9 career coaching programs have already been carried out. Each batch had over 200 participants from the university and the program is still on-going to this day. In addition, practical resume writing advice is offered to help new graduates highlight and market themselves to capture the attention of companies and executives.

UMC also offered career counsel to student of National Taiwan University, National Tsing Hua University, and National Chiao Tung University.



5-3 ENVIRONMENTAL PROTECTION INITIATIVE

5-3-1 Energy Saving Service

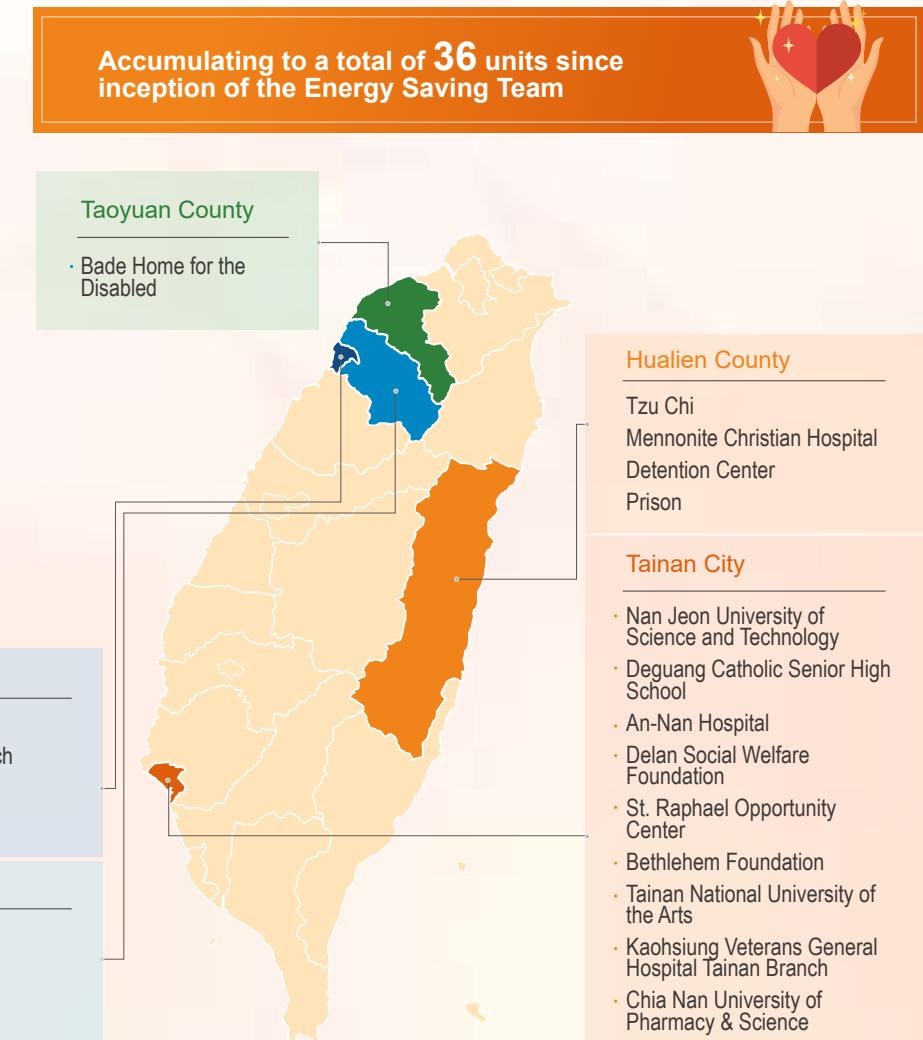
To enhance energy efficiency and expand the benefits of our core business functions, UMC has established the “UMC Energy Saving Service Team” with “energy saving and safety” as the core. By stepping out the foundry fabs, the Team allows UMC colleagues to bring their experiences and expertises to bear 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 2020, the Energy Saving Service Teams of Hsinchu Science Park and Southern Taiwan Science Park served 10 organizations, including 6 underprivileged organizations and 4 community units (schools and hospitals), accumulating to a total of 36 units since inception of the Team. A further calculation of the public benefit resulted from the energy saving service in 2020 showed that the relevant staff input and cost brought economic benefits to underprivileged organizations and community units, such as electricity conservation amounting to NT\$8.493 million, which benefited 566 people and reduced CO₂ emissions by 1,337.21 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.

Hsinchu City		
• Hsinchu Church of the Sacred Heart of Jesus	• Life Line Association	Good Shepherd Social Welfare Services
• St. Joseph Social Welfare Foundation	• Ai Heng Social Welfare Foundation	Saint Joseph Social Welfare Foundation Xi-da Branch
• Renai Children and Youth House	• Intellectual Disability Welfare Association	Miracle Home
• Jesuit Hsinchu Social Service Center		
Hsinchu County		
• Shih Guang Educational and Nursing Institution	• Hsih Guang Hospice Care	• National Hsinchu Special School
• Grown-up with Hands Family	• St. Joseph Home	• Good Shepherd Dexin Home
• Chengjheng High School	• Hua Kuang Social Welfare Foundation	• NTUH Hsinchu Branch
• Hsiang Yuan Education and Nursing Institution (Hukou Township/Xinfeng Township)		





2020 Public Benefit Evaluation

Input			Output		
Table of Benefit for Underprivileged Organizations					
Labor Cost NT\$	Construction Cost NT\$	Total Cost NT\$	Economic Benefits NT\$	Environmental and Social Benefits -75.21 ton (s) of CO ₂	Total Benefit 433,000 NT\$
440,250	651,305	1,091,555	433,000	-75.21	433,000
Table of Benefit for Community Units					
Labor Cost NT\$	Construction Cost NT\$	Total Cost NT\$	Economic Benefits NT\$	Environmental and Social Benefits -1,262 ton (s) of CO ₂	Total Benefit 8,060,000 NT\$
115,500	0	115,500	8,060,000	-1,262	8,060,000

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 0.509 kg CO₂e/kWh in 2019 was adopted for the calculation of 2020



Assisted Hsinchu Social Welfare Center in installing energy-efficient lighting fixtures



Provided Saint Joseph Workshop, Xi-da Branch with energy saving diagnosis and improvements



Provided Miracle Home with energy saving diagnosis and improvements



Provided Taoyuan Bade Home for the Disabled with energy saving diagnosis, as well as suggestions to improve fire safety and assisted in fire drills



Provided St. Raphael Opportunity Center with energy saving diagnosis and improvements



Provided Bethlehem Foundation with energy saving diagnosis and improvements



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 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 2020, a total of 5 NGOs were awarded the UMC Eco Echo Award grants for ecological conservation projects, including "Saving the Habitat of Winter Wandering Birds - The Restoration Project for the Luzhou Wetland along the Danshui River", "Window Killing of Birds - Window Killing Investigation, Prevention and Promotion of Bird-Friendly Buildings", and "Relationship Garden - Harmony between People and Formosan Macaque", etc. 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, including "Frogs Love Xikou", "Old Tree Protection Formula", etc. 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.

During the implementation of the 2019 UMC Eco Echo Award winning projects in 2020, all UMC employees worked together to facilitate the impact on the issues and successfully completed the various projects to protect Taiwan's local ecology, with more than 900 person-times participating in the 4th UMC Eco Echo Award related events.

In the five years since the inception of the UMC Eco Echo Award, a total of 30 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 2020, UMC joined hands with partners such as BASF Taiwan, 3M Taiwan, Formosa Sumco Technology, Heung Luei, Tokyo Electron, Hermes-Epitek, Faraday, Edwards, Wholotech System, etc. UMC expects the UMC Eco Echo Award will achieve the co-prosperity of enterprises and the environment, and to be the powerful guardian of Taiwan's ecological environment.

Recipient Feedback



Hsinchu Saint Joseph Social Welfare Foundation - Community Day Work Facility for People with Disabilities - Xi-da Branch

Representative: Ms. Hsiang-ya Lin, CEO

Group photo of the CEO of Saint Joseph Social Welfare Foundation, Ms. Lin Hsiang-ya (back row, second from the right) with the children

Feedback

"Xi-da Branch" is a learning and training facility for the physically challenged, serving 20 people each year and totaling to 4,642 person-times in 2020. The CEO of Hsinchu Saint Joseph Social Welfare Foundation, Ms. Hsiang-ya Lin, expressed her gratitude to UMC Energy Saving Service Team for providing the "Xi-da Branch" with an energy saving and electricity safety diagnosis on July 23 and 24, 2020, and for completely replacing the old lighting fixtures with LED energy-efficient lighting fixtures, which has in turn saved 50% of electricity used for lighting, and meanwhile created a safer and better learning environment for the physically challenged.

Project results and effects:

- 1.Replaced all the traditional lamps in each classroom with LED energy-efficient lighting fixtures, which not only saves electricity but also improves the lighting level.
- 2.Added more electrical outlets in the sewing area to minimize the danger of improper use of extension cords.
- 3.Installed new outlets at tables for making egg rolls in the baking area to expand the working area and to reduce collisions among workers due to limited space.
- 4.Relocated the electricity supply of pressurized motor for the water tower to provide independent power supply and hence increase safety.

Review and Future Prospects:

We thank UMC Energy Saving Service Team for caring the underprivileged with practical actions, so as to bring more kindness into the society by assisting "Chen-si Development Center" in 2017, "Xi-da Branch" in 2020, and "Guang-fu Branch" in 2021 with repair services such as energy saving and safety, etc.

Triple R League

UMC's environmental protection initiatives also include the Triple R League - the local manufacturers in the upstream and downstream industries. It aims to set the goal of energy saving, carbon reduction, and waste reduction through the Triple R (reduce, reuse, recycle) initiative, and to implant the Triple R concept in the procedure and operations of local manufacturers to continuously create a green supply chain. For more details, please refer to CH1.4.2 Sustainable Supply Chain Management.





The 5th Eco Echo Award Winning Project List

NGO Group



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



Relationship Garden - Harmony between People and the Formosa Macaque
Implemented by: Formosan Macaque Coexistence Promotion Association



Return to the Pearl of the Inland Sea - Dacang Islet
Implemented by: Marine Citizens Foundation



The Seal Rock and Badouzi Fishing Village Protection Project
Implemented by: Wild Bird Society of Keelung



Window Killing of Birds - Window Killing Investigation, Prevention and Promotion of Bird-Friendly Buildings
Implemented by: Raptor Research Group of Taiwan

Youth Group

Youth Environmental Action Award



**First Prize
Frogs Love Xikou**



Youth Environmental Action Award



**Merit Reward
Old Tree Protection Formula**



Youth Environmental Action Award



**Merit Reward
The Air of the Taoyuan Night Market is Very Fresh—Action Research on the Impact of Environmental-friendly Night Market on Improving Air Quality**



Youth Environmental Action Award



**Merit Award
Journey to Reduce Styrofoam**





4th UMC Eco Echo Award-winning Projects Implementation Status

(Implemented between January to December, 2020)

Shuanglianpi Endangered Plant In-Situ Conservation and Education Promotion

Implemented by: The Society of Wilderness

Shuanglianpi is known as a paradise for aquatic plants in Taiwan, but more than 90% of the aquatic plants have disappeared due to human destructions. The project plans to build a pond in situ to conserve endangered aquatic plants, so as to collect data on habitat environmental factors for future aquatic plant restoration. At the same time, volunteer training and working holidays are organized for the public to participate in the conservation work of aquatic plants.



Distribution spots survey on the endangered plants

16 species of endangered aquatic plants were conserved, with 18 volunteers trained and working holiday programs organized, totaling to 81 participants.

Invisible Glass Trap - Investigation of Wild Birds Being Killed by Flying into Windows in the Northern Area and Bird-Friendly Glass Education Promotion Program

Implemented by: Raptor Research Group of Taiwan

In many countries, the death or injuries of bird hitting glass windows (bird strike in short) have been taken seriously, and some European and American countries have even included bird-friendly glass in their green building codes, but this subject is rarely discussed in Taiwan. New buildings are often fitted with large areas of glass windows, but birds are unable to recognize them and window collisions lead to their death or injury. This project is to investigate the situation of wild bird window strike in Taipei and to promote the concept of bird-friendly glasses for educational purpose, in the hope to draw the attention of the public, clubs/associations, enterprises and the government.



43 on-site surveys in sample areas, 30 promotional activities in schools and institutions, assisted in improving 6 bird strike high-risk buildings

Firefly Habitat Construction in Jhouzai Wetland and Education Promotion Project

Implemented by: Wetlands Taiwan

Located in the citycenter of Kaohsiung City, the Jhouzai Wetland is a precious and key habitat for urban organisms. Wetlands Taiwan notices the presence of pyrocoelia analis in Jhouzai Wetland, which shows that the natural environment and ecosystems of the wetland are in ideal conditions. This project investigates the ecological circumstances of fireflies in the Jhouzai Wetland, constructs a habitat for fireflies and diverse array of aquatic life through public involvement, and promotes related ecological observation and environmental education activities.



Organized firefly ecology seminar, firefly habitat construction experience activities, and firefly and night time ecological observation activities, totaling to 153 participants.

Coral Field Planting Project for Children

Implemented by: Marine Citizens Foundation

Climate change and habitat destruction have led the coral reefs in Penghu to great ecological disasters, along with the gradual depletion of inland fishery resources. This project focuses on marine habitat restoration, species survey, environmental education, and marine culture transmission, which aims at allowing more people to understand the marine ecology of Penghu, the importance of coral reefs to marine and fishery resources, as well as to support coral reef conservation actions.



Planted a total of 1,200 coral seedlings, with volunteer training held, marine education promoted in schools, and intertidal surveys conducted, totaling to 484 participants.

Clown Fish Arriving Home to Bitou Cape Park

Implemented by: Taiwan Ocean Conservation and Fishery Sustainability Foundation

The beautiful waters of Taiwan were once a clown fish paradise, but the rise of the aquarium fishery industry has caused many precious marine wildlife to be indiscriminately hunted down, and clown fish, the "movie star", is indeed the first to be affected. The "Clown Fish Arriving Home" project is implemented starting from the waters of the Bitou Cape Park in New Taipei City, which focuses on the ecology and humanities to further develop local involvement in clown fish restoration. In addition, to raise the ecological awareness and increase the sense of identity of clown fish among residents and tourists, the eco-tourism concept of "Take away garbage, not the fish" is concurrently promoted.



The ecological release of 131 Clark's anemonefish was completed, with "Clown Fish Arriving Home to Bitou Community Presentation" and Teacher-Student Learning Course held, totaling to 183 participants.



5-4 CARE FOR THE DISADVANTAGED AND UNDERPRIVILEGED

5-4-1 Diversification of Input

UMC is well aware that the success of a company requires the support of a harmonious society in addition to its own efforts, for it to grow and flourish. Therefore, the UMC Science and Culture Foundation was established in 1996, with the hope to contribute to the fullest extent by linking corporate and social resources and calling on colleagues to get involved. By investing in the "Diversification of Education Program", UMC hopes to give back to the society and create every possibility for a better society.

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.



Sponsoring 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, 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.

Media Literacy Education and Popular Science Education

This "Seeing Hometown" - Aerial Photography Project for Rural Students" was initiated by Prof. Wen-yu Su and others from the Program the World Association. The project aims to help students in remote areas - where educational resources are relatively scarce - understand their hometowns and learn to record their hometown stories with images, thereby creating a deeper sense of identity with their hometowns and providing more humanistic care for the land. YanJou Elementary School in Pingtung County, whom the Foundation has been working with, participated in the project and shared their hometown stories with 6 other elementary and secondary school teams in the final presentation.





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. In addition, 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.



The UMC Foundation’s Projects on Caring for the Community and Underprivileged

Reading Seeds National Reading Culture Promotion

Method

- Research on and promotion of reading
- Participation of storytelling volunteers

Content

- Organizing reading activities for elementary schools in remote areas
- Sponsoring the Mandarin Daily News to promote newspaper reading in education

Achievement

The newspaper reading project is implemented in **27** classrooms across **18** elementary schools

Volunteer Seeds Life Education Promotion

Method

- Organizing Volunteer Training
- Regular visits to correctional schools

Content

- Going on the “Dream Team” tour, a play self-written by the UMC Love Story Group to promote life education
- UMC Reading Club provides counseling for associations at Chengjiheng High School
- Sponsoring the program “All about Rationality” hosted by Prof. Daisy Lan Hung on IC Radio Broadcasting

Achievement

- Since 2010, a total of **69** performances have been held, totaling **22,000** person-times audiences.
- Regularly visiting the youth in remote areas to provide care and convey the correct concept of life education, allowing them to understand the true meaning of life and growing up.

"Pushing the Strong to the Front and Supporting the Weak from the Back" Sponsorship Program

Method

- Sponsoring the social welfare units
- Participation of UMC Volunteer Team

Content

- Sponsoring foster children of the Taiwan Fund for Children and Families
- UMC colleagues serve as letter writing volunteers to provide care and encouragement to the foster children.

Achievement

Sponsoring a total of **110** foster children of the Taiwan Fund for Children and Families

Seeds of Hope Taiwan Youth Diversity Training Program

Method

- After-school tutorial classes and companionship
- Character Education
- Art, Humanities, and Civic Education
- Media Literacy and Popular Science Education

Content

- After-school tutoring
- Sponsoring Nantou Karate Association, What's Young, and Program the World Association

Achievement

- NUNT UMC Tutorial Program completed **23,469** hours of classes and UMC Shengxin After-school Tutoring Center completed **3,021** hours of classes.
- “Seeing Hometown” - Aerial Photography Project for Rural Students taught the young participants to record their hometown stories with images, thereby enabling them to develop a deeper sense of identity with their hometown.



The UMC Foundation's Volunteer Activity

In the summer vacation of 2020, the Foundation called on UMC colleagues to participate in a one-day volunteer activity. In which, they led a school trip for tutorial class children to visit Nantou Karate Association, National Taichung Theater, and the National Taiwan Museum of Fine Arts. In addition, the Foundation also held the "One-day Farm Volunteer Experience at Unite Farmers Dream Farm in Hsinchu" and "Christmas Volunteer" activities and invited UMC colleagues to join in the fun.



Supporting Arts, Humanities and Civic Education

To encourage the youth to learn through different ways of thinking, UMC has been supporting the What's Young to organize the "Fancy Years - National Youth Drama Festival" since 2010, which guides high school students to learn what society is with dramas. In 2020, 30 teams participated in the drama festival despite the pandemic outbreak, and the warmth of dramas was expressed through online classes and live streaming.



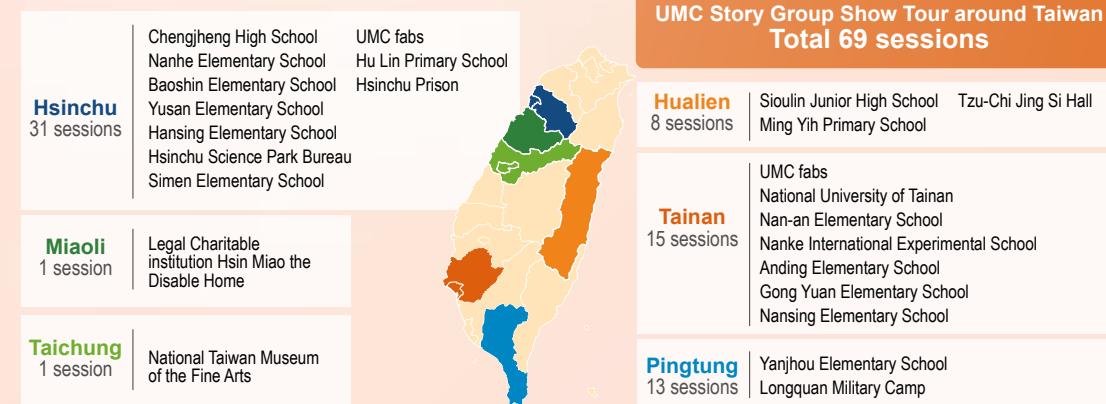
Nurturing Taiwan's Sports Talents on a Long-term Basis

The Foundation has long supported the "Nantou Karate Team", led by instructors Tai-chi Huang and De-lan Liao, in nurturing children from underprivileged families in Taiwan to practice Karate. Over the past 20 years, UMC is proud to have nurtured two Asian Games gold medal winners - one in 2014 by Tsui-ping Ku and another in 2018 by Shiau-shuang Gu - with more than 10 President's Educational Award winners. In addition to funding, UMC has also organized various types of camps with the support of corporate volunteers. In May 2020, UMC invited karate athletes to perform at the opening ceremony of the UMC 40th Anniversary Sports & Family Day. This not only matches the aims of the anniversary celebration activities, but also gives UMC colleagues a chance to witness the results of the athletes' efforts.



Creative Stage Plays Motivate Life Education

UMC Story Group is the first troupe founded by technology professionals in Taiwan. Through creative stage plays, this group aims to gather the love of UMC employees and spread the faith of life education to children. Furthermore, employees are encouraged to show and express themselves bravely on stage so that their "technology nerds" stereotype can be broken. It's not only making employees' life more wonderful, but also conveying the heartfelt side of technology professionals.



5-4-2 Volunteer Culture Promotion

| Social Welfare Activities from 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 2020, UMC employee social clubs provided 93 volunteer services in total, serving 57,592 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 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. "Love Is Always There" and "Dream Team" are the two plays written by UMC colleagues, conveying the heart felt side of technology professionals.



UMC Reading Club

It's been 10 years now since UMC Reading Club has offered reading classes at Chengjiheng High School, a subordinate unit of the Agency of Corrections, Ministry of Justice and served the children according to the schedule designated, with the aim to help improve youth education and to bridge the gap between family functioning and juvenile delinquency.

Storytelling Volunteer

As a "Storytelling Volunteer", UMC colleagues have been leading reading activities at Baoshih Elementary School in Hsinchu county for 10 years with the hope to enhance their motivation to read, serving altogether 9,939 children.

Letter Writing Volunteer

UMC has been sponsoring 110 foster children of the Taiwan Fund for Children and Families on a long-term basis, and has formed a "Letter Writing Volunteer" group, in which UMC colleagues serve as volunteers to provide care and encouragement to the foster children by means of letter writing. This allows technology professionals to express their love and care for social welfare work at all times.

UMC Clubs Volunteering Record 2020

Volunteering Content	Target	Collaboration Unit
Service Club		
Candlelight Club	Total Sessions of Volunteering Services 40	No. of Beneficiaries 3,180
<ul style="list-style-type: none"> Services in remote areas Fund raising Co-organizing charity sales with the UMC Foundation 	<ul style="list-style-type: none"> Underprivileged students Care for underprivileged senior citizens Environmental protection 	Renai Social Service Center, Eden Social Welfare Foundation, World Vision, St. Joseph Social Welfare Foundation, Changhua County Erin Happy Christian Home, and Joyce Nursing Home, etc.
Energy Saving Service Team	Total Sessions of Volunteering Services 38	No. of Beneficiaries 49,050
<ul style="list-style-type: none"> Providing energy saving and safety diagnosis of the sites Funding and manpower input 	<ul style="list-style-type: none"> Underprivileged organizations Community units 	Jesuit Hsinchu Social Service Center, NTUH Hsinchu Branch, Saint Joseph Workshop, Taoyuan Bade Home for the Disabled, Miracle Home, St. Raphael Opportunity Center, Bethlehem Foundation, Tainan National University of the Arts, Kaohsiung Veterans General Hospital Tainan Branch, and Chia Nan University of Pharmacy & Science.
Musical Club		
Ukulele Club	Total Sessions of Volunteering Services 7	No. of Beneficiaries 622
<ul style="list-style-type: none"> Servicing rural students Teaching rural students Ukulele Charity Performance 	<ul style="list-style-type: none"> Underprivileged students 	Fu-sing Elementary School, Nanhe Elementary School, Hsin Hsing Elementary School, National Taxation Bureau of the Northern Area-Hsinchu Branch, and Hsinchu Jiangong community.
Music Club	Total Sessions of Volunteering Services 6	No. of Beneficiaries 4,500
<ul style="list-style-type: none"> Active club participation Supporting UMC Foundation's social welfare activities Music-related charities 	<ul style="list-style-type: none"> Underprivileged students Community involvement 	Southern Taiwan Science Park Bureau Caring Month Project
UMC Drum Team	Total Sessions of Volunteering Services 2	No. of Beneficiaries 240
<ul style="list-style-type: none"> Charity Performance 	<ul style="list-style-type: none"> Caregiver support groups for the underprivileged 	UMC Shengxin After-school Tutorial Class, "Keeping the Time and Love" Elderly Caring Promotion Charity Fair





Volunteering Experience by the UMC Candlelight Club Member, Ms. Hsiu-Chuan Hsieh

2020 was indeed a tough year for many people as well as for social welfare organizations. Many activities had to be canceled or postponed, and there were less interactions and connections between people. As a result, many social welfare organizations received less funding and exposure to the outside world.

In line with the Company's outbreak prevention measures, Candlelight Club too was forced to suspend its annual charity sales for the three major festivals. However, the members felt that social welfare organizations should be more in need of funding at this critical time, so an internal vote was held to help decide whether to donate Candlelight Club's charity fund to some of these units in Hsinchu and Tainan, thereby helping them to operate with the fund in hand. Although there was no charity sale held, we were able to spread the love of UMC employees to social welfare units through this action.

At the beginning of this year, we also donated AED patches to the Hsinchu City Fire Bureau. After our visit to the site prior to the donation, we came into realization that each of their service session requires a lot of tools and equipment that have to be replaced after a certain period, and many of these are donated by kind-hearted people. Thus, although the amount of money and AED patches donated by Candlelight Club isn't much, our donation of AED patches for ambulance use serves as a small token of our appreciation.

Due to the pandemic, only one large-scale second-hand charity sale event, that "Regeneration Practice", was eventually able to be held in the second half of 2020 successfully. We would like to thank our colleagues and volunteers for their donations, as well as efforts spent in organizing these donated items and peddling them during the event. It's them who carried on this annual charity sales event as well as the kindness.



Improving Local Disaster Prevention Capabilities

During the 20 years since the establishment of UMC high-tech Fire Brigade in April 1999, UMC has sponsored the staff from many county and city fire bureaus to overseas (the United States, Singapore, Austria and other countries) for advanced fire-fighting training. In addition to regular basic training, UMC also invites suppliers to conduct training sessions on handling gas and chemical spills. Besides, UMC also helps introduce "advanced simulated fire-fighting training facilities", which enables firefighters nationwide to be equipped with more advanced fire-fighting skills and to receive safe fire-fighting training before actual disaster relief operation. In doing so, it improves their understanding of fire scene to reduce unnecessary casualties, and all public and private fire-fighting and response units in Taiwan are benefited.

Other than the safety of the Company, UMC Fire Brigade is also responsible for the safety protection of the Company's factory and emergency rescue works, as well as assisting neighboring factories and communities in responding to accidents and disasters and participating in disaster relief. Additionally, for quite a long time, UMC has also participated in the Joint Prevention Mechanism of Public Safety in the Science Park, and held many disaster prevention and rescue drills with the Hsinchu Science Park Bureau, the Environmental Protection Bureau and the Fire Department to build up camaraderie for joint disaster relief.

As a result, UMC Fire Brigade has been awarded the National Industrial Safety & Health Award (NISHA) and has gained recognition in the industrial safety and environmental protection section in Taiwan. By sharing the relevant experiences, UMC hopes to enhance the disaster prevention capability in different regions and will continue to refine the disaster prevention practices.



A total of 41 teachers and students from Tainan Annei Elementary School visited the Company's fabs, during which they were guided to use the fire-fighting equipment, and joined the answer-and-win game with the purpose of deepening the children's concepts of disaster prevention.



Invited by the American company, Amkor Technology, UMC assisted in its disaster response training and received high praise from Amkor colleagues after the completion of two training sessions. They even requested to add one extra session so more Amkor colleagues can participate.



Hosted the "National Environmental Accident Case Conference and Actual Response Capability Observation and Learning Activity for Joint Prevention Organizations" and presented disaster response to serve as a reference for the industry.



Invited by Southern Taiwan Science Park Bureau for 2 consecutive years to assist Southern Taiwan Science Park manufacturers in handling relocation response training.



APPENDIX I: GRI STANDARDS_2016 CONTENT INDEX

Disclosures	Location	Page	Notes/Omissions	External Assurance
 Organizational profile				
102-1 Name of the organization	1.1 About UMC	22		●
102-2 Activities, brands, products, and services	1.1 About UMC	22		●
102-3 Location of headquarters	1.1 About UMC	22		●
102-4 Location of operations	1.1 About UMC	22		●
102-5 Ownership and legal form	1.1 About UMC	22		●
102-6 Markets served	1.1 About UMC	22		●
102-7 Scale of the organization	1.1 About UMC	22	For more information, please refer to the 2020 Annual Report (page 169).	●
102-8 Information on employees and other workers	4.2.1 Human Resource Development	111		●
102-9 Supply chain	1.4 Building Sustainable Supply Chain	52		●
102-10 Significant changes to the organization and its supply chain	1.1 About UMC 1.4 Building Sustainable Supply Chain	22、52	No significant changes occurred during the reporting period.	●
102-11 Precautionary Principle or approach	1.2.1 Board of Directors Operation 1.3. Implementing Risk Management	27、39		●
102-12 External initiatives	1.3.5 Managing Climate-related Risks and Opportunities 1.4.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	46、53、107		●
102-13 Membership of associations	1.2.5 Participation in Associations	38		●
 Strategy				
102-14 Statement from senior decision-maker	ESG Steering Committee Chairman Message	02		●
102-15 Key impacts, risks, and opportunities	Material Topics Identification 1.3.2 Risk Management and Countermeasures 1.3.5 Managing Climate-related Risks and Opportunities	10、40、46		●



Disclosures	Location	Page	Notes/Omissions	External Assurance
Ethics and integrity				
102-16 Values, principles, standards, and norms of behavior	1.2.2 Sustainable Governance 1.2.3 Ethical Corporate Management 1.4.2 Sustainable Supply Chain Management	31、35、53		●
102-17 Mechanisms for advice and concerns about ethics	1.2.3 Ethical Corporate Management	35		●
Governance				
102-18 Governance structure	1.2.1 Board of Directors Operation 1.2.2 Sustainable Governance	27、31		●
102-19 Delegating authority	1.2.2 Sustainable Governance	31		●
102-20 Executive-level responsibility for economic, environmental, and social topics	1.2.2 Sustainable Governance	31		●
102-21 Consulting stakeholders on economic, environmental, and social topics	1.2.2 Sustainable Governance	31		●
102-22 Composition of the highest governance body and its committees	1.2.1 Board of Directors Operation	27		●
102-23 Chair of the highest governance body	1.2.1 Board of Directors Operation	27		●
102-24 Nominating and selecting the highest governance body	1.2.1 Board of Directors Operation	27		●
102-25 Conflicts of interest	1.2.1 Board of Directors Operation	27		●
102-26 Role of highest governance body in setting purpose, values, and strategy	1.2.2 Sustainable Governance	31		●
102-27 Collective knowledge of highest governance body	1.2.1 Board of Directors Operation	27		●
102-28 Evaluating the highest governance body's performance	1.2.1 Board of Directors Operation 1.2.2 Sustainable Governance	27、31		●
102-29 Identifying and managing economic, environmental, and social impacts	1.2.2 Sustainable Governance	31		●
102-30 Effectiveness of risk management processes	1.2.2 Sustainable Governance 1-3. Implementing Risk Management"	31、39		●
102-31 Review of economic, environmental, and social topics	1.2.2 Sustainable Governance	31		●
102-32 Highest governance body's role in sustainability reporting	About This Report 1.2.2 Sustainable Governance	03、31		●
102-33 Communicating critical concerns	1.2.2 Sustainable Governance	31		●
102-34 Nature and total number of critical concerns	1.2.2 Sustainable Governance	31		●
102-35 Remuneration policies	1.2.1 Board of Directors Operation	27		●
102-36 Process for determining remuneration	1.2.1 Board of Directors Operation	27		●



Disclosures	Location	Page	Notes/Omissions	External Assurance
Governance				
102-37 Stakeholders' involvement in remuneration	1.2.1 Board of Directors Operation 4.2.2 Compensation and Benefit	27、117		●
102-38 Annual total compensation ratio	1.2.1 Board of Directors Operation	27		●
102-39 Percentage increase in annual total compensation ratio	1.2.1 Board of Directors Operation	27		●
Stakeholder engagement				
102-40 List of stakeholder groups	Stakeholder Engagement	09		●
102-41 Collective bargaining agreements	4.3.2 Employer-employee Communication	130	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	Material Topics Identification	09		●
102-43 Approach to stakeholder engagement	Material Topics Identification Key Points and Outcomes of Stakeholder Communication	09、10		●
102-44 Key topics and concerns raised	Material Topics Identification	10		●
Reporting practice				
102-45 Entities included in the consolidated financial statements	About This Report 1.1.1 Company Profile	03、22		●
102-46 Defining report content and topic Boundaries	Material Topics Identification	10		●
102-47 List of material topics	Material Topics Identification	10		●
102-48 Restatements of information			There is no restatement of information from previous report.	●
102-49 Changes in reporting	About This Report Material Topics Identification	03、10		●
102-50 Reporting period	About This Report	03		●
102-51 Date of most recent report	About This Report	03		●
102-52 Reporting cycle	About This Report	03		●
102-53 Contact point for questions regarding the report	About This Report	03		●
102-54 Claims of reporting in accordance with the GRI Standards	About This Report	03		●
102-55 GRI content index	Appendix I: GRI Standards_2016 Content Index	155		●
102-56 External assurance	About This Report Appendix V: Assurance Statement	03、166		●



Disclosures	Location	Page	Notes/Omissions	External Assurance
201 Economic Performance			Management Approach : 20、106	
201-1 Direct economic value generated and distributed	1.1.1 Company Profile 1.1.2 Business Performance 4.2.2 Compensation and Benefit	22、23、117	For more information, please refer to the 2020 Annual Report (page 182).	●
201-2 Financial implications and other risks and opportunities due to climate change	1.1.2 Business Performance 1.3.5 Managing Climate-related Risks and Opportunities	23、46		●
201-3 Defined benefit plan obligations and other retirement plans	4.2.2 Compensation and Benefit	117		●
201-4 Financial assistance received from government			For more information, please refer to the 2020 Annual Report (page 307).	●
202 Market Presence			Management Approach : 106	
202-1 Ratios of standard entry level wage by gender compared to local minimum wage	4.2.2 Compensation and Benefit	117		●
202-2 Proportion of senior management hired from the local community	4.2.1 Human Resource Development	111		●
204 Procurement Practices			Management Approach : 20	
204-1 Proportion of spending on local suppliers	1.4.1 Types of Supply Chain and Procurement	52		●
205 Anti-corruption			Management Approach : 20	
205-1 Operations assessed for risks related to corruption	1.2.3 Ethical Corporate Management	35		●
205-2 Communication and training about anti-corruption policies and procedures	1.2.3 Ethical Corporate Management	35		●
205-3 Confirmed incidents of corruption and actions taken	1.2.3 Ethical Corporate Management	35		●
302 Energy			Management Approach : 76	
302-1 Energy consumption within the organization	3.2.1 Energy Structure	84		●
302-2 Energy consumption outside of the organization	3.1.1 Carbon Emissions Management	79		●
302-3 Energy intensity	3.2.1 Energy Structure	84		●
302-4 Reduction of energy consumption	3.2.2 Energy Efficiency Improvement	85		●
302-5 Reductions in energy requirements of products and services	1.3.5 Managing Climate-related Risks and Opportunities 2.1. Excelling Innovative Development 2.3. Green Product Development	46、65、71		●



Disclosures	Location	Page	Notes/Omissions	External Assurance
303 Water and Effluents (GRI Standards_2018)		Management Approach : 76		
303-1 Interactions with water as a shared resource	3.3.1 Water Use Structure 3.3.3 Water Pollution Control	87 & 94		●
303-2 Management of water discharge-related impacts	3.3.3 Water Pollution Control	94		●
303-3 Water withdrawal	3.3.1 Water Use Structure	87		●
303-4 Water discharge	3.3.3 Water Pollution Control	94		●
303-5 Water consumption	3.3.3 Water Pollution Control	94		●
305 Emissions		Management Approach : 76		
305-1 Direct (Scope 1) GHG emissions	3.1.1 Carbon Emissions Management	79		●
305-2 Energy indirect (Scope 2) GHG emissions	3.1.1 Carbon Emissions Management	79		●
305-3 Other indirect (Scope 3) GHG emissions	3.1.1 Carbon Emissions Management	79		●
305-4 GHG emissions intensity	3.1.1 Carbon Emissions Management	79		●
305-5 Reduction of GHG emissions	3.1.1 Carbon Emissions Management	79		●
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	103		●
306 Waste (GRI Standards_2020)		Management Approach : 76		
306-1 Waste generation and significant waste-related impacts	3.4 Waste Management	97		●
306-2 Management of significant waste-related impacts	3.4.2 Source Reduction 3.4.3 Circular Economy Promotion 3.4.4 Contractor Management	98 & 99 & 101		●
306-3 Waste generated	3.4.1 Waste Output Structure	97		●
306-4 Waste diverted from disposal	3.4.1 Waste Output Structure	97		●
306-5 Waste directed to disposal	3.4.1 Waste Output Structure	97		●
307 Environmental Compliance		Management Approach : 20		
307-1 Non-compliance with environmental laws and regulations	1.2.4 Legal Compliance	36	No non-compliance with environmental laws and regulations occurred during the reporting period.	●



Disclosures	Location	Page	Notes/Omissions	External Assurance
308 Supplier Environmental Assessment			Management Approach : 20	
308-1 New suppliers that were screened using environmental criteria	1.4.2 Sustainable Supply Chain Management	53		●
308-2 Negative environmental impacts in the supply chain and actions taken	1.4.2 Sustainable Supply Chain Management	53		●
401 Employment			Management Approach : 106	
401-1 New employee hires and employee turnover	4.2.1 Human Resource Development	111		●
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	4.2.2 Compensation and Benefit	117		●
401-3 Parental leave	4.2.2 Compensation and Benefit	117		●
403 Occupational Health and Safety (GRI Standards_2018)			Management Approach : 106	
403-1 Occupational health and safety management system	4.3.3 Enhancing Workplace Safety	133		●
403-2 Hazard identification, risk assessment, and incident investigation	4.3.3 Enhancing Workplace Safety	133		●
403-3 Occupational health services	4.3.1 Creating a Reassuring Workplace 4.3.3 Enhancing Workplace Safety	124 、 133		●
403-4 Worker participation, consultation, and communication on occupational health and safety	4.3.3 Enhancing Workplace Safety	133		●
403-5 Worker training on occupational health and safety	4.3.3 Enhancing Workplace Safety	133		●
403-6 Promotion of worker health	4.3.1 Creating a Reassuring Workplace 4.3.3 Enhancing Workplace Safety	124 、 133		●
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 Enhancing Workplace Safety	124 、 133		●
403-8 Workers covered by an occupational health and safety management system	4.3.3 Enhancing Workplace Safety	133		●
403-9 Work-related injuries	4.3.3 Enhancing Workplace Safety	133		●
403-10 Work-related ill health	4.3.1 Creating a Reassuring Workplace 4.3.3 Enhancing Workplace Safety	124 、 133	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.	●



Disclosures	Location	Page	Notes/Omissions	External Assurance
405 Diversity and Equal Opportunity			Management Approach : 106	
405-1 Diversity of governance bodies and employees	4.2.1 Human Resource Development	111		●
405-2 Ratio of basic salary and remuneration of women to men	4.2.2 Compensation and Benefit	117		●
414 Supplier Social Assessment			Management Approach : 20	
414-1 New suppliers that were screened using social criteria	1.4.2 Sustainable Supply Chain Management	53		●
414-2 Negative social impacts in the supply chain and actions taken	1.4.2 Sustainable Supply Chain Management	53		●
418 Customer Privacy			Management Approach : 64	
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	2.2.2 Customer Privacy Protection	70	There were no cases during the reporting period.	●
419-1 Non-compliance with laws and regulations in the social and economic area			Management Approach : 20	
419-1 Non-compliance with laws and regulations in the social and economic area	1.2.4 Legal Compliance	36		●
Other Topic: Innovation management and protection of intellectual property rights			Management Approach : 20、64	
R&D and patent deployment for new product, technology, and process optimization; employees must respect the company's patents and intellectual property rights.	1.2.4 Legal Compliance 2.1. Excelling Innovative Development	36、65		●
Other Topic: Risk management			Management Approach : 20	
Risk identification, response management strategies, and business continuity management and control, etc.	1.3. Implementing Risk Management	39		●
Other Topic: Quality of Customer service			Management Approach : 64	
Strengthen service quality, improve customer satisfaction, and maintain customer relationships.	2.2. Satisfying Customer Needs	69		●



APPENDIX II: SASB CONTENT INDEX

Topic / Code	Accounting metric	Category	Summary	Location	Page
Greenhouse Gas Emissions TC-SC-110a.1	(1) Gross global Scope 1 emissions (2) Amount of total emissions from perfluorinated compounds	Quantitative	The Scope 1 direct emissions are 539,321 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 498,108 tons of CO ₂ e. The F-GHGs (Fluorinated greenhouse gas) emissions is 326,430 tons of CO ₂ e.	3.1.1 Carbon Emissions Management	79
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	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 also promotes the emissions reduction plan of Green 2025, and plans to achieve the goal of reducing F-GHGs emissions per unit area of wafer by 65% compared to the base year (2010).	3.1.1 Carbon Emissions Management	79
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	(1)Total energy consumption is 2,782,105 MWh (1.00156 x 107 GJ). (2)Total electricity consumption is 2,581,341 MWh (9.293 x 106 GJ) (3)Total renewable energy consumption is 2,912 MWh (Ratio of renewable energy used <1%)	3.2.1 Energy Structure	84
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	UMC's total water withdrawal is 16.2 million metric tons and total water consumption is 5.286 million metric tons. All of UMC's fabs are not classified as high water risk areas.	3.3.1 Water Use Structure 3.3.3 Water Pollution Control	87 94
Waste Management TC-SC-150a.1	Amount of hazardous waste from manufacturing, percentage recycled	Quantitative	UMC's total hazardous waste volume in 2020 was 27,932 metric tons, accounting for 60.8% of total waste and 89.8% of recyclable waste.	3.4.1 Waste Output Structure	97
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	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	4.3.3 Enhancing Workplace Safety	133
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	There were no incidents of such violations in 2020 and the total related monetary loss was NT\$0.	1.2.4 Legal Compliance 4.3.3 Enhancing Workplace Safety	36 133



Topic / Code	Accounting metric	Category	Summary	Location	Page
Recruiting & Managing a Global & Skilled Workforce TC-SC-330a.1	Percentage of employees that are (1) Foreign nationals (2) Located offshore	Quantitative	The demographic data is based on the statistics of Taiwan, Singapore, China and Japan. In addition, it also demonstrates the percentage of local employees in each country and region as follows: 92.6% for Taiwan (including its subsidiary Wavetek); 25.2% for Singapore; 94.9% for its Chinese subsidiaries HJ and USCXM; and 98.0% for its Japanese subsidiary USJC.	4.2.1 Human Resource Development	111
Product Lifecycle Management TC-SC-410a.1	Percentage of products by revenue that contain IEC 62474 declarable substances	Quantitative	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.	2.3.1 Hazardous Substance Management	71
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	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.	1.4.2 Sustainable Supply Chain Management	53
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	There were no incidents of such violations in 2020 and the total related monetary loss was NT\$0.	1.2.3 Ethical Corporate Management	35
Activity Metrics TC-SC-000.A	Total production	Quantitative	In 2020, UMC, as a whole, manufactured and integrated approximately 8.913 million pieces of 8-inch equivalent wafers.	1.1.1 Company Profile	22
Activity Metrics TC-SC-000.B	Percentage of production from owned facilities	Quantitative	In 2020, 100% of UMC's production all came from its own fabs.	1.1.2 Business Performance	23



APPENDIX III: UNITED NATION GLOBAL COMPACT COMPARISON TABLE

10 Principles	Location	Page
Human Rights		
Businesses should support and respect the protection of internationally proclaimed human rights.	4.1 Enforce Human Rights Management	107
Make sure that they are not complicit in human rights abuses.	1.4.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	53 107
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	107
The effective abolition of child labor.	4.1 Enforce Human Rights Management	107
The elimination of discrimination in respect of employment and occupation.	4.1 Enforce Human Rights Management	107
Environment		
Businesses should support a precautionary approach to environmental challenges.	3 Implementing Green Operations	75
Undertake initiatives to promote greater environmental responsibility.	3 Implementing Green Operations	75
Encourage the development and diffusion of environmentally friendly technologies.	2.1 Excelling Innovative Development 2.3 Green Product Development	65 71
Anti-Corruption		
Businesses should work against corruption in all its forms, including extortion and bribery.	1.2.3 Ethical Corporate Management	35

APPENDIX IV: ISO 26000 INDEX

Core Subjects and Issues	Location	Page
Organizational governance		
Decision-making processes and structures	1.2 Excelling Corporate Governance	27
Human rights		
Due diligence	1.4.2 Sustainable Supply Chain Management 4.1. Enforce Human Rights Management	53 107
Human rights risk situations	1.4.2 Sustainable Supply Chain Management 4.1 Enforce Human Rights Management	53 107
Avoidance of complicity	1.2 Excelling Corporate Governance 4.1 Enforce Human Rights Management	53 107
Resolving grievances	1.2.3 Ethical Corporate Management 4.1 Enforce Human Rights Management 4.3.2 Employer-employee Communication	35 107 130
Discrimination and vulnerable groups	4.1 Enforce Human Rights Management 5.4 Care for the Disadvantaged and Underprivileged	107 150
Civil and political rights	4.1 Enforce Human Rights Management	107
Economic, social and cultural rights	5.1 Promote Common-Prosperity Society	140
Fundamental principles and rights at work	4.1 Enforce Human Rights Management	107



Core Subjects and Issues	Location	Page
Labor practices		
Employment and employment relationships	4.2. Focusing on Recruitment and Cultivation 4.3.2 Employer-employee Communication	111 130
Conditions of work and social protection	4.1 Enforce Human Rights Management 4.3 Protecting the Employees and the Work Environment	107 124
Social dialogue	Stakeholder Engagement 4.3.2 Employer-employee Communication	09 130
Health and safety at work	4.3 Protecting the Employees and the Work Environment	124
Human development and training in the workplace	4.2.1 Human Resource Development	111
The environment		
Human development and training in the workplace	3.1.1 Carbon Emissions Management 3.3.3 Water Pollution Control 3.4.2 Source Reduction 3.5 Air Pollution Control	79 94 98 103
Human development and training in the workplace	3.2.2 Energy Efficiency Improvement 3.3.2 Water Conservation 3.4.3 Circular Economy Promotion	85 91 99
Human development and training in the workplace	1.3.5 Managing Climate-related Risks and Opportunities 3.1 Climate Action 3.2 Energy Management 3.3 Water Resources Management	46 79 84 87
Human development and training in the workplace	5.3.2 UMC Eco Echo Award Initiative	147
Fair operating practices		
Anti-corruption	1.2.3 Ethical Corporate Management	35
Responsible political involvement	UMC did not provide any political donations in the reporting year	
Fair competition	4.1 Enforce Human Rights Management	107
Promoting social responsibility in the value chain	1.4.2 Sustainable Supply Chain Management	53
Respect for property rights	1.2.4 Legal Compliance	36

Core Subjects and Issues	Location	Page
Consumer issues		
Fair marketing, factual and unbiased information and fair contractual practices	1.2.3 Ethical Corporate Management	35
Protecting consumers' health and safety	2.3 Green Product Development	71
Sustainable consumption	1.4.2 Sustainable Supply Chain Management 2.3 Green Product Development	53 71
Consumer service, support, and complaint and dispute resolution	2.2 Satisfying Customer Needs	69
Consumer data protection and privacy	2.2 Satisfying Customer Needs	69
Access to essential services	2.2 Satisfying Customer Needs	69
Education and awareness	2.3 Green Product Development	71
Community involvement and development		
Community involvement	1.2.5 Participation in Associations	38
Education and culture	5.1 Promote Common-Prosperity Society 5.4 Care for the Disadvantaged and Underprivileged	140 150
Employment creation and skills development	2.1 Excelling Innovative Development 4.2 Focusing on Recruitment and Cultivation 5.2 Youth Talent Cultivation	65 111 143
Technology development and access	5.2.1 Business-education Partnerships	143
Wealth and income creation	1.4 Building Sustainable Supply Chain	52
Health	5.4 Care for the Disadvantaged and Underprivileged	150
Social investment	5.1 Promote Common-Prosperity Society	140



APPENDIX V: ASSURANCE STATEMENT

SGS

ASSURANCE STATEMENT

SGS TAIWAN LTD.'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE UNITED MICROELECTRONICS CORPORATION'S CORPORATE SOCIAL RESPONSIBILITY REPORT FOR 2020

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 Corporate Social Responsibility Report for 2020 (hereinafter referred to as the 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 on-site verification from 5 March 2021 to 20 April 2021. SGS reserves the right to update the assurance statement from time to time depending on the level of report content discrepancy of the published version from the agreed standards requirements.

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

RESPONSIBILITIES
The information in the UMC's CSR Report of 2020 and its presentation are the responsibility of the directors or governing 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 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 2016 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	Level of Assurance
A SGS ESG & SRA Assurance Protocols (based on GRI Principles and guidance in AA1000)	n/a
B AA1000ASv3 Type 2 (AA1000AP Evaluation plus evaluation of Specified Performance Information)	High

Assurance has been conducted at a high level of scrutiny.

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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:

Select specific reporting criteria included in the contract

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 scrutiny for UMC and moderate level of scrutiny for subsidiaries, joint ventures, and applicable aspect boundaries outside of the organization covered by this report;
- AA1000 Assurance Standard v3 Type 2 evaluation of the report content and supporting management systems against the AA1000 Accountability Principles (2018); and
- evaluation of the report against the requirements of Global Reporting Initiative Sustainability Reporting Standards (100, 200, 300 and 400 series) claimed in the GRI content index as material and in accordance with:

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

LIMITATIONS AND MITIGATION
Financial data drawn directly from independently audited financial accounts and Task Force on Climate-related Financial Disclosures (TCFD) 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 and providing services including management systems and service certification; quality, environmental, social and ethical auditing and training, environmental, social and sustainability report assurance. SGS affirm our independence from UMC, being free from bias and conflicts of interest with the organisation, its subsidiaries and stakeholders.

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

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 organisation has chosen an appropriate level of assurance for this stage in their reporting.

AA1000 ACCOUNTABILITY PRINCIPLES (2018) CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

Inclusivity
UMC has demonstrated a good commitment to stakeholder inclusivity and stakeholder engagement. A variety of

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engagement efforts such as survey and communication to employees, customers, investors, suppliers, CSR experts, and other stakeholders are implemented to underpin the organization's understanding of stakeholder concerns. UMC has demonstrated internal collaboration at all levels of across governance, strategy, management and operations, to achieve continual improvement.

Materiality

UMC has established effective processes for determining issues that are material to the business. Formal review has identified stakeholders and those issues that are material to each group and the report addresses these at an appropriate level to reflect their importance and priority to these stakeholders. The materiality determination has been undertaken regularly and aligned with UMC's processes for strategy development, decision-making, operational management and reporting.

Responsiveness

The report includes coverage given to stakeholder engagement and channels for stakeholder feedback. UMC has responded in a way that addressed the needs, concerns and expectations of stakeholders.

Impact

UMC has demonstrated a process on identifying impacts that fairly encompass a range of environmental, social and governance topics from wide range of sources, such as activities, policies, programs, decisions and products and services, as well as any related performance. Impacts related to material topics were in place at target setting, with qualitative and quantitative measurements and evaluation.

GLOBAL REPORTING INITIATIVE REPORTING STANDARDS CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

The report, UMC's CSR Report of 2020, 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. Disclosures of identified material topics and boundaries, and stakeholder engagement, GRI 102-40 to GRI 102-47, are correctly located in content index and report. UMC has built up a systematic information collecting approach which provides the evidence of supporting reliability in assumptions or conclusions. Moreover, UMC's ESG committee was established to promote its sustainability performances and to respond to stakeholders, which has fully demonstrated their efforts towards sustainable development.

SASB CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

UMC adopted SASB's Standard, TECHNOLOGY & COMMUNICATIONS SECTOR- SEMICONDUCTORS INDUSTRY STANDARD, VERSION 2018-10 to communicate their sustainability accounting performance to their investors. UMC has determined which disclosure topics and associated metrics are financially material to its business and has illustrated appropriately in the content index. By using both GRI and SASB standards together, the efficiency of communication and the identification of material issues are substantially increased during the whole reporting preparation process. Besides, it is best practice to implement a gap analysis and comparison of reported issues and benchmark within or across sectors in next reporting.

Signed:
For and on behalf of SGS Taiwan Ltd.

David Huang
Senior Director
Taipei, Taiwan
25 May, 2021
WWW.SGS.COM



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APPENDIX VI: ENVIRONMENTAL DATA

	2017	2018	2019	2020
Gas Emissions				
Scope 1 /Direct greenhouse gas emissions Unit : 1000 ton CO ₂ e	604	596	513	539
Scope 2 /Indirect greenhouse gas emissions Unit : 1000 ton CO ₂ e	1,356	1,365	1,318	1,287
Scope 3 Greenhouse gas emissions Unit : 1000 ton CO ₂ e	2,218	1,968	2,073	2,261
Scope 1 / Direct carbon dioxide (CO ₂) emissions Unit : 1000 ton CO ₂ e	42.1	42.2	39.4	41.1
Scope 1 / Direct methane (CH ₄) emissions Unit : 1000 ton CO ₂ e	0.5	0.5	0.5	0.4
Scope 1 / Direct nitrous oxide (N ₂ O) emissions Unit : 1000 ton CO ₂ e	155.6	158.5	163.1	171.3
Scope 1 / Direct hydrofluorocarbon (HFC) emissions Unit : 1000 ton CO ₂ e	34.4	37.7	29.5	31.0
Scope 1 / Direct perfluorocarbon (PFC) emissions Unit : 1000 ton CO ₂ e	251	255.2	193.3	205.2
Scope 1 / Direct sulfur hexafluoride (SF ₆) emissions Unit : 1000 ton CO ₂ e	72.4	69.4	66.3	67.7
Scope 1 / Direct nitrogen trifluoride (NF ₃) emissions Unit : 1000 ton CO ₂ e	47.9	32.1	20.8	22.6
Scope 1 / Fluorinated greenhouse gases (F-GHGs) Unit : 1000 ton CO ₂ e	404	394	310	326
Volatile organic compounds (VOCs) Unit : ton	42.28	47.32	43.36	41.37

	2017	2018	2019	2020
Waste Generation				
Total outsourcing waste Unit : ton	39,994	38,826	36,777	40,676
Recycling waste Unit : ton	35,998	35,053	33,296	37,504
Landfill waste Unit : ton	1,840	1,570	1,480	1,429
Total waste generated Unit : ton	9,323	8,562	7,957	9,596
Total waste used/recycled/sold ^{Note 1} Unit : ton	7,079	6,586	6,266	7,944
Waste disposed ^{Note 2} Unit : ton	2,244	1,976	1,691	1,652
Hazardous waste Unit : ton	23,141	22,966	21,025	22,659
Volume of valuable hazardous waste sold ^{Note 3} Unit : ton	5,515	5,488	5,522	5,642
Volume of non-valuable hazardous waste disposed Unit : ton	17,626	17,479	15,503	17,017

Note 1. Waste treatment process includes material recovery or energy recovery.

Note 2. Waste treatment includes landfill or incineration, in which incineration does not include energy recovery.

Note 3. Hazardous wastes with market value, including waste EBR, waste IPA, phosphoric acid, and waste plastic containers, are sold at a positive price.



	2017	2018	2019	2020
Water				
Total water withdrawal Unit :1000 m ³	15,685	15,818	15,637	16,200
Third-party water (Municipal Water) Unit :1000 m ³	14,903	14,907	14,809	15,495
Condensate water and rainwater Unit :1000 m ³	782	911	828	705
Surface freshwater/underground water/salt water Unit :1000 m ³	0	0	0	0
Purified water Unit :1000 m ³	16,806	17,169	17,400	18,204
Total water withdrawal per unit of production Unit :m ³ /wafer-m ²	81.8	78.6	79.2	73.3
Total waste water discharge Unit :1000 m ³	10,890	10,821	10,788	10,914
Chemical oxygen demand (COD) Unit :1000 m ³	1.85	1.79	1.5	1.42
Total recycled water Unit :1000 m ³	32,090	32,806	32,842	33,228
Water recycling rate (Company-wide recovery rate) Unit : %	75.2	76.1	75.9	75.6

	2017	2018	2019	2020
Energy				
Total energy consumption (including renewable energy) Unit :1000 MWh	2,752	2,742	2,728	2,785
Total energy consumption (non-renewable energy) Unit :1000 MWh	2,749	2,740	2,726	2,782
Electricity Unit :1000 MWh	2,542	2,534	2,534	2,581
Renewable energy Unit :1000 MWh	2.73	2.88	2.75	2.91
Natural gas Unit :1000 MWh	206	201	191	198
Diesel Unit :1000 MWh	1.19	3.96	0.73	2.55

	2017	2018	2019	2020
Environmental-related costs and benefits				
Capital investments Unit : millions	762	540	434	554
Operating expenses Unit : millions	1,148	1,317	1,225	1,193
Amount of fines related to environmental violations Unit : millions	0	0	0	0
Cost saving ^{Note} Unit : millions	438.5	448.9	449.2	468.8

Note : Cost saving mainly calculates the benefits generated through the implementation of management measures for water, electricity, waste, natural gas, and greenhouse gases.



CORPORATE SOCIAL RESPONSIBILITY REPORT



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