

2019

UMC

CORPORATE SOCIAL
RESPONSIBILITY REPORT



Corporate Sustainability Committee
Chairman Message

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VIDEO



UMC CS Video



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Corporate Sustainability Committee Chairman Message

To those who are concerned about UMC sustainability :

I am very pleased to share with you UMC's achievements towards sustainability. Despite the global uncertainties caused by geopolitical threats as well as the COVID-19 epidemic, all UMC employees continue to work together, seeking for various growth opportunities in technology, manufacturing, business and sustainable development. In 2019, we not only set new medium- and long-term goals for UMC's sustainable development by 2025 that are in line with the United Nations Sustainable Development Goals (UN SDGs), but also took the lead in the diversification of 12-inch production by acquiring USJC fab in Japan, increasing our cost-effective production capacity to serve the company's long-term growth needs.

2019 was also the year that UMC achieved fruitful results in the implementation of its sustainable management strategy. We have been listed on the "DJSI-World" of the Dow Jones Sustainability Indices (DJSI) for 12 consecutive years, keeping pace with the world's top companies. In Taiwan, we continue to receive the greatest honor of being selected for the "FTSE4Good TIP Taiwan ESG Index" and winning the "Taiwan Corporate Sustainability Report Award" every year. Moreover, we continue to cultivate the aspects of "environment, society and governance," and have attracted tremendous external recognition.

In terms of environmental sustainability, UMC regards climate change, water and energy resource management issues as challenges and opportunities for the company, and integrates them closely with operational development. In 2019, we successfully reached the 4th-year goals of the "Green 2020" project in power-saving, water-saving as well as waste reduction, and have received the greatest honor of being awarded with the "Enterprise Environmental Protection Award," issued by the Environmental Protection Administration for 17 consecutive years. On the other hand, through the introduction of innovative solutions such as Industry 4.0, artificial intelligence and mechanical learning, we have comprehensively improved energy usage efficiency, and won the "Energy Saving Leadership Award" issued by Taiwan's Ministry of Economic Affairs. UMC's contribution to global climate change mitigation and adaptation has also been recognized internationally by reaching the "Leadership Level" in CDP assessment, the highest score achieved by domestic companies in the foundry industry. Furthermore, based on environmental friendliness and employee responsibility, UMC introduced green chemicals with low environment and health impacts through technological innovations and established a standard traceability management process to achieve the goal of green design and clean production. In 2019, UMC was awarded the first "Green Chemical Application and Innovation Award" by the government of Taiwan, demonstrating UMC's outstanding execution in environmental sustainability management.

With regards to social value creation and participation, through the initiative of "Triple R League," UMC invited suppliers to build a green supply chain, and promote circular economy in order to reduce, reuse and recycle. In 2019, a total of 39 suppliers participated in the event. This exchange platform was implemented to jointly expand the influence of the overall industry and enhance the value of sustainable development. In addition, we also brought the spirit of "global partnership" of the UN sustainable development goals into full play by calling on companies with the same belief to participate in the Eco Echo Award and the Energy Saving Service Team. With the support of UMC's partners, the Eco Echo Award initiated by UMC has been held for 4 consecutive years. The number of project submissions has reached a record high, and a total of 19 large ecological conservation projects have been supported by the Award to produce fruitful results in places throughout Taiwan and the offshore island Penghu, making the Award a friendly promoter in domestic ecology conservation. Moreover, the Youth Environmental Action Award, newly established in 2019, also provided opportunities for young people to voice their opinions on environmental issues, encouraging more youth to engage in environmental protection. The UMC Energy Saving Service Team provides services in environmental protection and public welfare and established a sub-division in 2019, expanding its services from Hsinchu to Tainan. The Team connected more professional and technical operating partners to work together as volunteers to provide services to disadvantaged groups, social welfare organizations and schools, giving back to the communities directly with core competencies.

In strengthening of corporate governance, UMC continues to pay attention to the independence and balance of directors and also established four committees under the board of directors: "Audit Committee," "Remuneration Committee," "Capital Budget Committee" and "Nomination Committee" to conduct performance evaluation outside of the board of directors, improving operation supervision and transparency to ensure the rights and interests of all shareholders. In 2019, in order to continuously strengthen corporate governance and improve the effectiveness of the board of directors, UMC newly designated a Chief Corporate Governance Officer, and formulated the "Policy for Nomination and Election of Directors" and the "Skill Matrix of Board Members" by the Nomination Committee, serving as the reference for the composition of the board of directors. In the corporate governance evaluation conducted by the domestic stock exchange, UMC is also one of the few listed companies that has maintained positioning in the top 5% in each year since the implementation of the corporate governance evaluation in 2015.

Looking ahead, as UMC enters its 40th anniversary, we will continue to uphold our vision of "People-oriented, Environmental Symbiosis, and Social Prosperity," strengthen our own advantages, and work together with global operating partners and stakeholders to exercise our influence. We will also continue to advance on the road to corporate sustainability and make the greatest contribution to the positive development of the overall environment, society and economy.



Co-President and CS Committee Chairman

Sun Chieh-Chia

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About This Report

This report is the 15th Corporate Social Responsibility Report issued by UMC and the 20th 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 2019 UMC corporate sustainable development and social responsibility.

Scope

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, 2019. For the disclosure of major activities, the period was further extended to March 31, 2020. In addition to information about UMC Headquarters and wafer fabs in Taiwan and Singapore, this CSR Report also included information from HeJian Technology (Suzhou) Co., Ltd. (HJTC) and United Semiconductor (Xiamen) Co., Ltd. (USC), which are UMC subsidiaries relevant to the key material topics. For other information of affiliated joint ventures and subsidiaries including USJC, please refer to Page 147 in this report.

Reporting Guidelines and Principles

The content framework in this report is based mainly on major UMC corporate sustainability issues in 2019 and stakeholder concerns, to report on impacts related to specific economic, social, and environmental topics. In addition, this report is compiled according to the GRI standards 2016 of the Global Reporting Initiative (GRI) for global sustainability reports, and complies with the AA1000 Accountability Assurance Standard (2008) and principles for identifying, implementing and disclosing information pertaining to the implementation of corporate social responsibility. 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.

Draft	Compilation	Finalization
Approved by the top management of related departments	Overall inspection and review by the Corporate Sustainability Committee Office	Reviewed and approved by the chairman of the Corporate Sustainability Committee

2019 Corporate Social Responsibility Report: Issued in July 2020.

2020 Corporate Social Responsibility Report: Scheduled to be issued in July 2021.

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 March 2020 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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| website : www.umc.com

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Positive Acclaim for Our Corporate Sustainability



Dow Jones Sustainability Indices

Selected as a DJSI global component for the 12th consecutive year.



FTSE4Good Emerging Indexes & FTSE4Good TIP Taiwan ESG Index

FTSE4Good Emerging Indexes & FTSE4Good TIP Taiwan ESG Index. (Since the launch of the FTSE4Good TIP Taiwan ESG Index in 2017, the company has continuously been one of the index constituents.)



ISS ESG Corporate Rating

Rated "Prime" by ISS ESG Corporate Rating.



International CDP Organization

Climate Change Score Level: Achieved Leadership Level Score of A- for the 4th consecutive year.



Taiwan Corporate Sustainability Awards

Awarded the Corporate Sustainability Report Awards for 12 consecutive years.



Corporate Governance Accreditation for listed companies

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



National Enterprise Environmental Protection Award

Awarded the 1st National Enterprise Environmental Protection Award. (For 17 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 1st Green Chemical Application and Innovation Award by the Environmental Protection Administration.

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Sustainable Performance in 2019

Social Performance

Education and Training

91.3% Knowledge management document reading rate
In 2019, the rate of employees reading knowledge management documents reached 91.3%, reaching a re-application benefit of about NT\$ 900 million.

96.2% overall satisfaction with the courses
In 2019, a total of 7,723 courses were held that were attended by a total of 176,370 individuals. Overall satisfaction for these training courses was 96.2%.

94.7% completion for training courses on The 7 Habits of Highly Effective Managers and Employees
To achieve company core values and attain the spirit and principle of responsibility, 94.7% of employees completed training courses on The 7 Habits of Highly Effective Managers and Employees.

Public Service

18,223 total number of volunteers hours

31,398 number of beneficiaries
In 2019 UMC invested a total of 18,223hours in terms of volunteer work, with more than 31,398 beneficiaries.

Positive Labor Relations

100% of e-Suggestions were handled and closed.
Through the audit and reminder system, 100% of cases were closed in 2019.

0 labor disputes
Actively promoted harmonious labor relations to reduce the likelihood of labor conflict. In 2019 there was no case of labor dispute.

100% communication meetings were completed
By the end of 2019, a total of 134 sessions of company-wide forums, fab communication meetings, secretary forums, newcomers' forum, labor-management conferences, and benefits committee meetings were conducted.

87.1% employee satisfaction level
In 2019, the overall employee level of satisfaction towards education and training, work environment, salary and benefits, employee performance, communication mechanisms, career development, administrative services, and so on, reached 87.1%.

0 cases of human rights complaints.

Benefits System

100% Holistic Health Management Program
Created a safe working environment, and protected health and work-life balance of employees.

All fab sites in Taiwan received the "Self-Certification Health Promotion Badge" from Bureau of Health Promotion, Department of Health, Executive Yuan.

95% satisfaction with health promotion activities
To implement a total of 18 health promotion projects in 2019. The total number of people served was 64,055 and the overall satisfaction rate was 95%.

Safe Work Environment

59% reduction in workplace accidents
16 fewer accidents compared to the reference basis (the year of 2011) and achieved a savings of NT\$ 46.56 million in potential asset loss.

In 2019, the disabling injury frequency rate was **0.23**, and disabling severity rate was **2**, which were much lower than the semiconductor industry average.

0 major occupational hazard



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Environmental Performance

Energy and Greenhouse Gas Management



49,540 MWh Power reduction

The newly added reduction for 2019 was 49,540 MWh, which is equivalent to a decrease of 25,372 tons in CO₂ emissions and a savings of about NT\$ 114 million.



2.8 Million kwh renewable energy generation

UMC has completed the installation of a 4,335 kWp solar energy system, which is expected to generate up to 2.8 million kWh of electricity each year. The installation capacity is the highest among Taiwan's wafer fab industry.



15,585 MWh Natural gas reduction

The newly added reduction for 2019 was 15,585 MWh, reaching the targeted goal, which is equivalent to a decrease of 3,147 tons in CO₂ emissions and a savings of about NT\$ 20.82 million.



61% Reduction in Units of Fluorinated Greenhouse Gas Emissions.

Achieved the objective for reducing emissions by 61%. Reductions in fluorinated greenhouse gas emissions were equivalent to 996,000 tons of CO₂e. Gas replacement measures also achieved savings in raw material procurements of over NT\$ 20 million.

Waste Management



705 Tons of waste reduction

The newly added reduction for 2019 was 705 tons, reaching the targeted goal, which is equivalent to a savings of about NT\$ 3.19 million in annual treatment costs.



91% Waste Recycling

The amount of reused waste was 33,296 metric tons, which is a gain of more than NT\$ 40 million from recycled resources.



4,728 Tons of waste sulfuric acid conversion of in-plant resources

Reduced UMC's purchases of sulfuric acid by approximately 4,728 metric tons. The total economic benefit was NT\$ 18.61 million.

Water Resource Management



187,000 Tons of reduction in water usage

The newly added reduction for 2019 was 187,000 tons, reaching the targeted goal, which is equivalent to a savings of about NT\$ 4.67 million.



3.24 Million tons of recycled water usage

In Singapore, UMC's use of recycled water (Newater) reached 3.24million tons, accounting for 94% of Fab 12i's total water use of 3.43 million tons, thus reducing the impact on local water resources.



32.84 Million Tons of Recovered Water

Recovered water is equivalent to saving 1.04 of the stored water in No.2 Baoshan Reservoir.



28% or more in ammonia and nitrogen concentration reduction for wastewater

Owing to ammonia source reduction, ammonia and nitrogen concentration in wastewater was reduced by 28%~63%, which saved annual raw material costs of NT\$ 48 million and annual wastewater treatment cost of approximately NT\$ 180 million.

Environmental Management



100% Certification

All UMC fabs have passed the ISO 14064-1 greenhouse gas emissions certification, the ISO 14001 environmental management certification, and the QC 080000 Hazardous Substance Process Management Certification.



0 Environmental Incidents or Fines

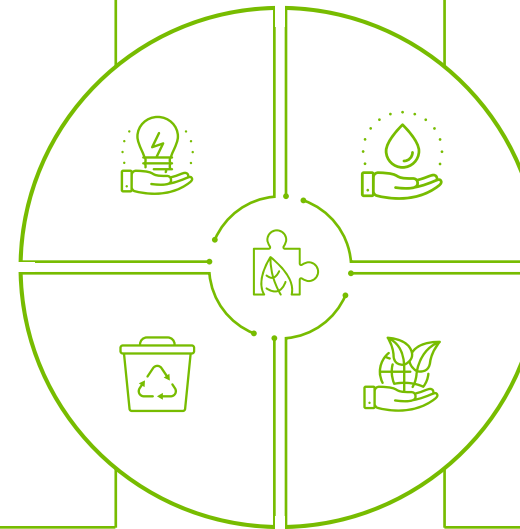
In 2019 there were no environmental incidents or fines.



3 Million total prize money for UMC Eco Echo Award

UMC invested NT\$ 3 million in rewarding excellent and innovative eco preservation proposals.

Various projects were successfully completed, totaling more than 5,000 participants in the Eco Echo Award activities.



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Economic Performance

Innovative research and development of advanced technologies

13,507 patents

In 2019, UMC was awarded 515 domestic and foreign patents, totaling 13,507 patents to date.

30% advanced process capacity

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

17.7 Billion of investment in advance technology R&D and manufacturing equipment

Approximately NT\$ 17.7 Billion was invested in advance technology R&D and manufacturing equipment.

20% reduction in power consumption

UMC has developed 22nm process technology and a 28nm high performance compact low power process technology platform (HPCU+). With the same number of mask layers and compatible design criteria as 28nm, the performance of 22nm process technology has been enhanced by 10%, power consumption has been reduced by 20%, and area has been reduced by 10%.

Operations Management and Supply Chain Management

87.3% Customer satisfaction

Customer satisfaction maintaining a steady level.

3,000 suppliers

More than 3000 suppliers joined UMC in committing to sustainable development.

177 Million Resource recycling benefits

The project of turning waste into gold, with a resource recycling benefit reaching NT\$ 177 million

39 suppliers participate in UMC's Triple R Major League Initiative

39 suppliers participated in this cooperation platform, a total reduction of about 125,000 tons of CO₂e.

0 High-risk Suppliers

UMC has established the ISO 22301 business continuity management system, and completed business continuity risk assessment for vendors who supply 95% of the company's procurement.

0 Conflict Minerals

UMC's 13 suppliers, 8 contractors and 15 UMC subsidiaries all use non-conflict minerals.

Economic Performance

14.4% Gross margin

7.189 Million wafers in production volume

Annual shipments were 7.189 million wafers in 8-inch wafer equivalents, with an annual growth rate of 1.1%.

NT\$ 148.2 billion

Annual consolidated revenue reached NT\$148.2 billion.

89% production capacity utilization

About UMC

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.



Company Name

United Microelectronics Corp



Date Founded

May, 1980



Company Headquarter

No. 3, Li Hsin 2nd Road, Hsinchu Science Park



Number of Employees

More than 19,000 employees, including those in worldwide affiliated companies



Total Capital amount

Total capital of NT\$260 billion



Main Operation

Professional integrated foundry services



Product Services

Wafer foundry services, silicon intellectual property according to customer needs, embedded integrated circuit design, design verification, photomask production, wafer manufacturing, testing and other services.



Affiliated Businesses

Affiliated business operations including wafer manufacturing, electronics, optoelectronics, investment, insurance and trading.



Consolidated Operating Revenues and Operating Costs

Annual revenue was NT\$148.2 billion. Annual operating costs was NT\$ 126.88 billion.



Number of Products or Services Provided

In 2019, UMC served 404 companies and provided up to 6,637 different kinds of customer products. Our foundry segment shipped a total of 7.2 million 8-inch equivalent wafers for the year.

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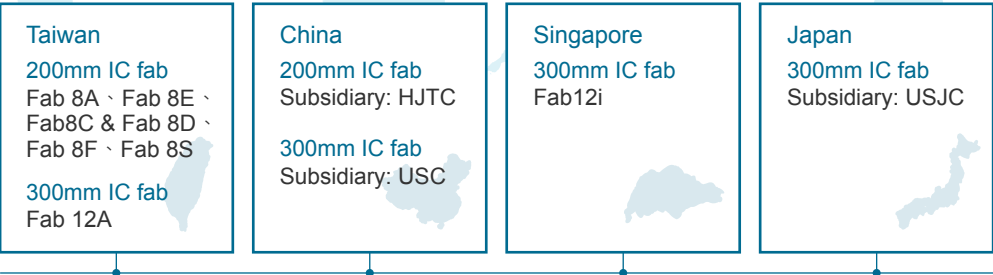
Firm Taiwan Roots, Global Presence

UMC plays an important role in Taiwan's semiconductor industry. In addition to being Taiwan's first wafer fabrication 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.

Worldwide Locations



Foundry Manufacturing



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 special technology center. With its specialty 12-inch manufacturing processes, it produces ICs that are essential for a wide variety of application products demanded by customers.

United Semiconductor Co., Ltd. (USC) is the first 12-inch IC manufacturing fab in Southern China, which began its commercial operation in late 2016. USC offers 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.

Japan-based USJC, fully acquired in October of 2019, is UMC's fourth 300mm fab. USJC offers foundry volume production for mature specialty nodes ranging from 90-nanometer to 40-nanometer.

Note: 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).

Management Team



Participation in Outside Associations

Besides promoting corporate sustainability related activities within the organization, UMC also actively participates in events that are initiated by outside organizations such as industrial unions and associations. It is hoped that by offering practical experiences and suggestions to the industry, UMC could help government and related authorities to come up with appropriate policies and regulations.

Key UMC Association Involvement

Member Fees Paid in 2019 (NTD)		
Association of Industries in Science Parks (ASIP)	1,008,000	
Taiwan Semiconductor Industry Association (TSIA)	900,000	
Semiconductor Equipment and Materials International (SEMI)	526,118	
Responsible Minerals Initiative	228,900	
Taiwan IC Industry & Academia Research Alliance(TIARA)	100,000	
Business Council for Sustainable Development of Taiwan (BCSD-Taiwan)	60,000	
Taiwan Electrical and Electronic Manufacturers' Association (TEEMA)	42,000	
Chinese Professional Management Association (CPMA)	20,000	

Note1: The cost of UMC participating in important associations in the past.
2019: NT\$ 2,885,018, 2018: NT\$3279,039, 2017: NT\$ 2,148,000, 2016: NT\$ 2,729,000

Note2: From 2016 to 2019, the types of organizations participated by UMC were all trade associations.

Note3: Annual total monetary contributions to and spending for political campaigns, political organizations, lobbyists or lobbying organizations, ballot measures or referendums is zero.

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1 Corporate Sustainable Development

1-1 Sustainable Development Strategy
and Organization

1-2 Communication with Stakeholders

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.

7

Material issues

Multiply the score for degree of stakeholder concern over each issue and the score for its significant economic, environmental, social and operation impact. Rank issues for disclosure.

13

Major sources of sustainability issues

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

6

KPIs

Set medium- and long-term management goals for each major material issue and conduct effectiveness reviews annually.

62

Questionnaires

Conduct questionnaire surveys to determine the degree of stakeholder concern over the various types of sustainability issues so that stakeholders can express their needs.

583

Major directions

Economic: Continue to improve corporate governance.
Environment: Dedicate itself to manufacturing green wafers.
Social: Fulfill corporate social responsibilities.

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1-1 Sustainable Development Strategy and Organization

1-1-1 Commitment to Sustainability

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.

Vision

Creating a friendly global ecology where the new value is people orientation, co-existence with the environment and shared social prosperity



Mission

Company growth is built on green innovation and corporate social responsibility, and helping customers meet the challenges of sustainable development.



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.

Equal Emphasis on Core Competitiveness and Social Responsibility

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:

Economic

Continue to improve corporate governance



Environment

Dedicate itself to manufacturing green wafers



Social

Fulfill corporate social responsibilities



Corporate Governance

Improve Corporate Governance Performance



Social Welfare

Perform our Duty as a
Corporate Citizen



Environmental Protection

Green Wafer Foundry

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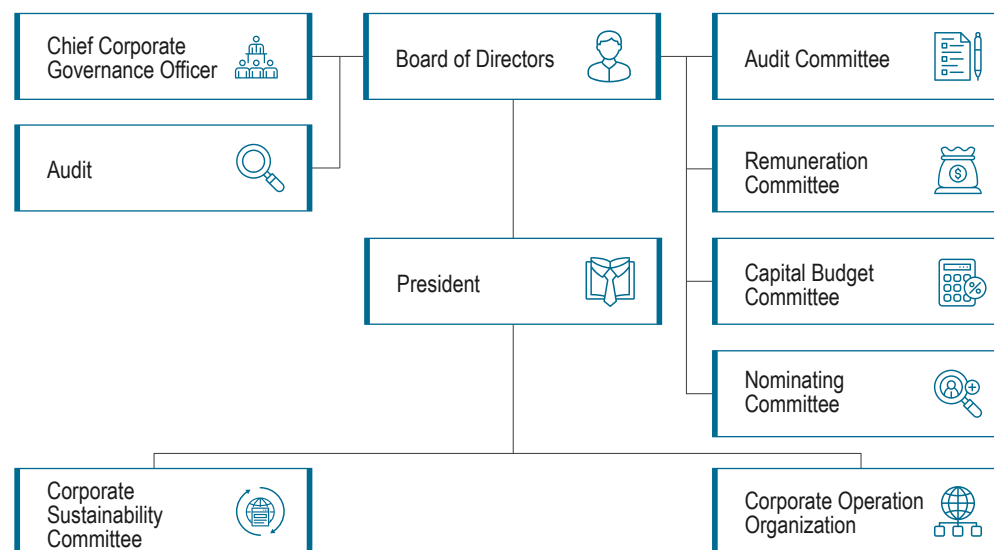
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1-1-2 Corporate Sustainability Committee Organization and Operation

In its longstanding spirit of focus, cultivation and sustainability, UMC fulfills its corporate governance and corporate social responsibility.

UMC's sustainable organizational structure includes the Board of Directors, the Corporate Operation Organization and the Corporate Sustainability Committee. From the co-president down through all general managers, UMC thoroughly implements its corporate sustainability policies from the top down, and an audit organization oversees the execution. The Board of Directors has set up the Remuneration Committee, Audit Committee and Capital Budget Committee, and also the Nomination Committee for evaluating the external performance of the Board of Directors. These committees aim to enhance operational supervision and transparency and ensure the interests of all shareholders. Corporate Operations Organization and Corporate Sustainability Committee also set up sub-committees to meet their respective needs and to jointly execute and practice sustainable commitments.

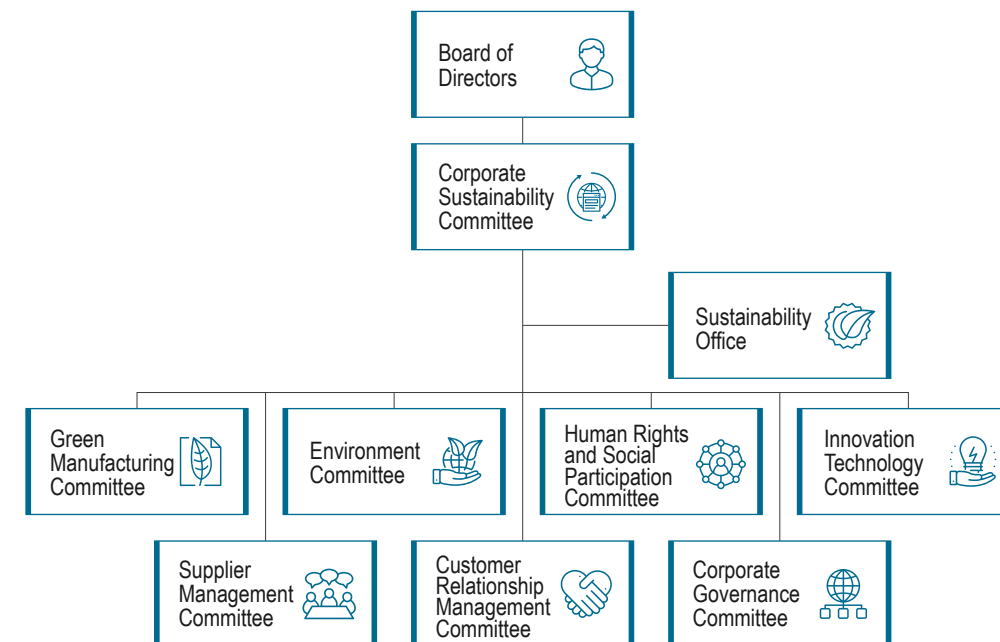
Corporate Operations Organization vs. Corporate Sustainability Committee



The President is a member of the Board of Directors, and simultaneously serves as the Chair of the Corporate Sustainability Committee.

Corporate Sustainability Committee

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 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.



Vice Presidents, Assistant Vice Presidents and Senior Division Directors of the functional divisions within the Operations Organization serve as the administrators of the various committees.

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The types and total number of key issues related to sustainability that have been reported to the Board of Directors in 2019 are as follows:

Corporate sustainability	Corporate governance
Ethical corporate management	Climate change
Risk management	Intellectual property management
Operation performance	Law compliance

Appropriate response measures have been established for each key issue, and the Committee in charge will monitor the results of corporate sustainability promoted by UMC.

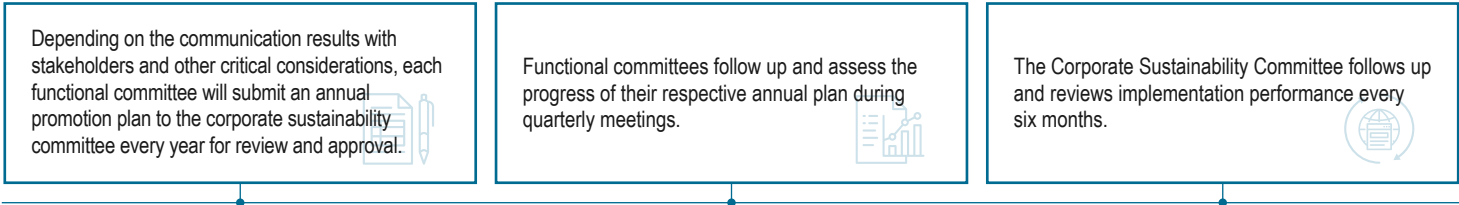
The Corporate Sustainability Committee has seven functional committees: Corporate Governance Committee, Customer Relationship Management Committee, Supplier Management Committee, Innovation Technology Committee, Human Rights and Social Participation Committee, Environment Committee and Green Manufacturing Committee.

Descriptions of Committee Functions

	Corporate Governance Committee Helps strengthen the function of the Board and shareholder equity, integrates related regulations and policies of relevant departments, and helps complete and implement the company's internal control system to ensure information transparency and disclosure, and compliance with regulations.		Customer Relationship Management Committee Refines customer service and quality control, improves service quality and customer satisfaction, and protects customer interests and relevant trade secrets.
	Innovation Technology Committee Promotes green product research and development and innovations, and leads in cutting-edge green technology.		Supplier Management Committee To establish a protective environment and emphasize the obligation to society, labor rights, security and health while pursuing the goal of a continuously evolving supply chain, this sub-committee develops long-term partnerships with vendors for quality, cost leadership, delivery, service/response, and sustainability.
	Green Manufacturing Committee Promotes company-wide green processes, such as hazardous materials management and increases in resource productivity.		Human Rights and Social Participation Committee Responsible for protecting the basic rights of employees and promoting communication with outside communities and society. Integrates the UMC Cultural and Educational Foundation, and with focus on education, arts, sports, public service and environmental protection, strives to promote technological research and development cooperation, long-term educational assistance, arts and sports activities and other social welfare events.
	Environment Committee Promotes company-wide environmental, safety and health, energy, water and greenhouse gas emission management to enhance sustainable competitiveness.		

To maintain and effectively implement UMC's corporate sustainability promises, UMC's corporate sustainability committee will adjust the organizational structure in accordance with actual operating results.

Operation Management Model



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Corporate Sustainability Committee Management Mechanisms

Participant	Management Content
Corporate Sustainability Committee Review: Once every 6 months	
<ul style="list-style-type: none"> Committee chair Committee members Chief administrator Functional committees 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

In 2019, the corporate sustainability committee stipulated a total of **45 KPI items** which were carried out by relevant departments in UMC. A total of **43 KPI items were successfully attained** for a completion rate of **96%**.

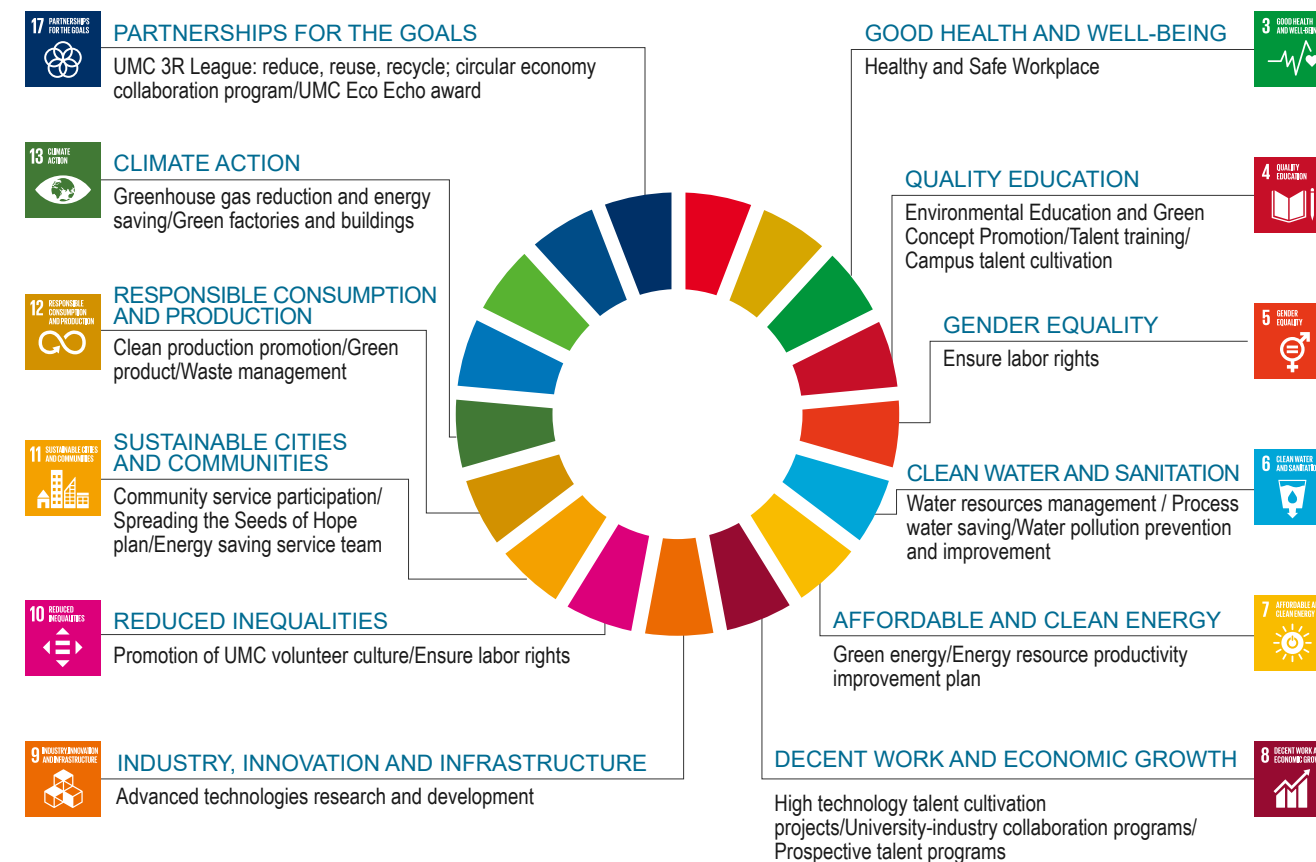
For 2020, 41 KPI items in 5 categories were proposed by the corporate sustainability committee based on UMC's operational goals and 12 of the United Nation's Sustainability Development Goals (UN SDGs).

UMC's Operational Goals

- Focus on differentiating advanced manufacturing and development of specialty technologies to help customers succeed.
- Continue to strengthen manufacturing capabilities, shorten lead-time, and improve overall quality and productivity.
- Expand marketing and customer management to maintain the company's leadership in foundry.
- Cultivate employee potential and responsibility, integrate the organization's operational efficiency, and increase competitiveness in sustainable management.

Direction

- International trend/assessment integration
- Ensure completion of Green 2020 Plan
- Strengthen the connection with subsidiary/supply chain/customers in terms of CS issues
- Strengthen employee's CS cognition
- Cultivate volunteer work culture



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1-2 Communication with Stakeholders

To maintain effective stakeholder communication, UMC formulated a management 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



Active and timely
disclosure



Providing adequate
amounts of information



Providing suitable and a
diverse selection of
communication channels

1-2-1 Mechanisms for Stakeholder Communication

Identified major stakeholder issues and concerns Frequency: Annually

- Integrated and coordinated by the Corporate Sustainability Committee



Stakeholders communication plan and implementation Frequency: According to plan

- 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.



Assessment of stakeholder communication outcome Frequency: Once every 6 months

- Stakeholder communication outcome reported, and key issues reviewed and responded to the Corporate Sustainability Committee.



Report major stakeholder concerns Frequency: Annually/ TBD

- Regularly report major communication issues to the Board of Directors.
- Report specific events to the Board of Directors through extraordinary (irregular) meetings.



Public disclosure Frequency: Annually

- Annual financial reports, corporate social responsibility report, etc.



Public disclosure Frequency: As Required

- Press Releases
- UMC official website (The Stakeholder Area was established for stakeholder inquiry)



Objectives



Evaluate and understand the reasonable expectations and requirements of the stakeholders and providing appropriate responses to key corporate social responsibility (CSR) issues that the said stakeholders are concerned with.



Consider all related CSR issues and analyze the potential impact that each issue may exert upon the environment, society, economy, and business operations.



Employ a system-based mechanism to continuously review and enhance corporate sustainability.

1-2-2 Procedure for Defining Report Content

Identification

- Stakeholders
- Sustainability issues

Confirmation

- Discuss and review sustainability issues
- Set management goals for important sustainability issues

Analysis/Sorting

- Stakeholders' degree of concern on sustainability issues
- The impact of sustainability issues

Report

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.



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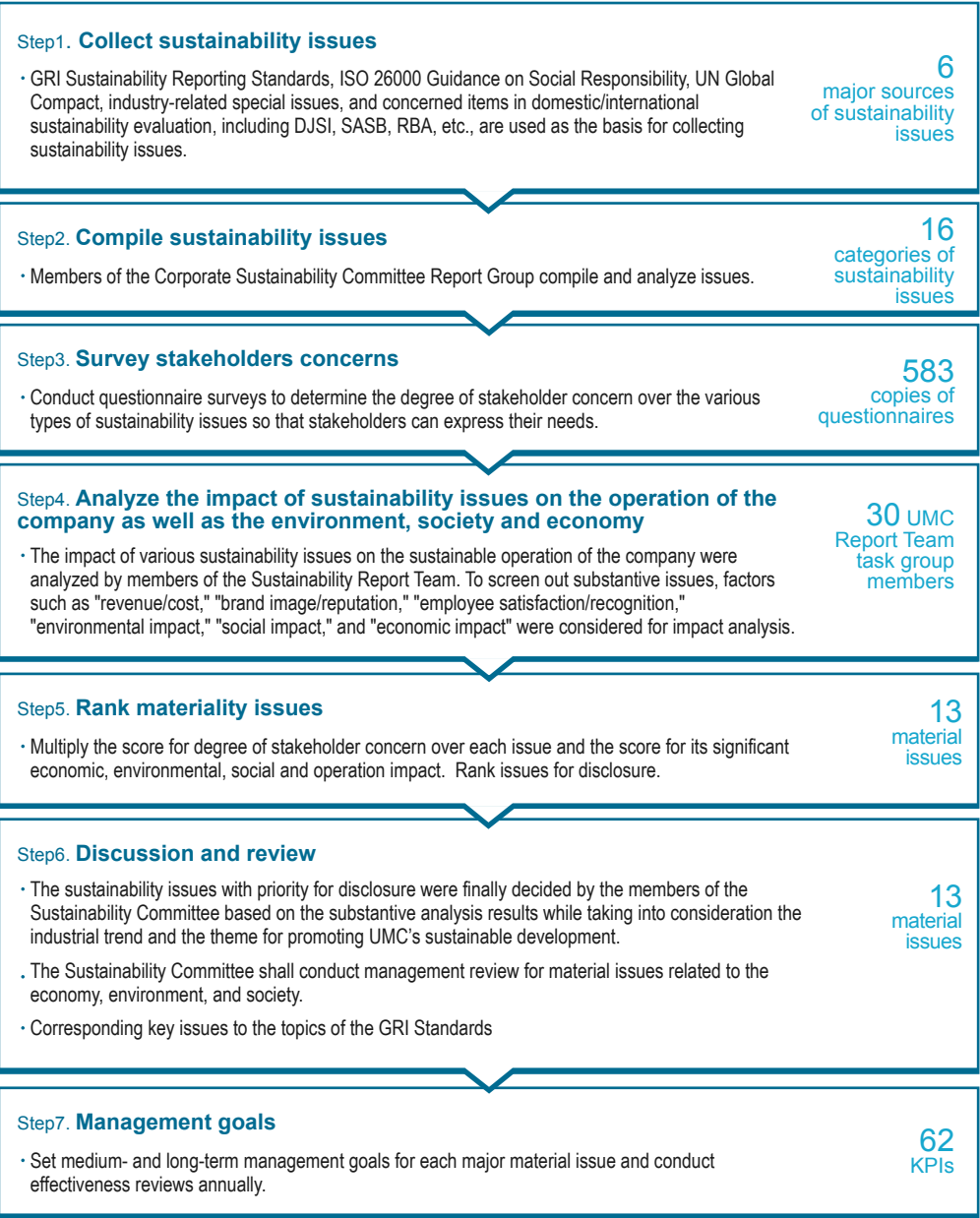
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Identify sustainability issues that are related to UMC's current status and future operations

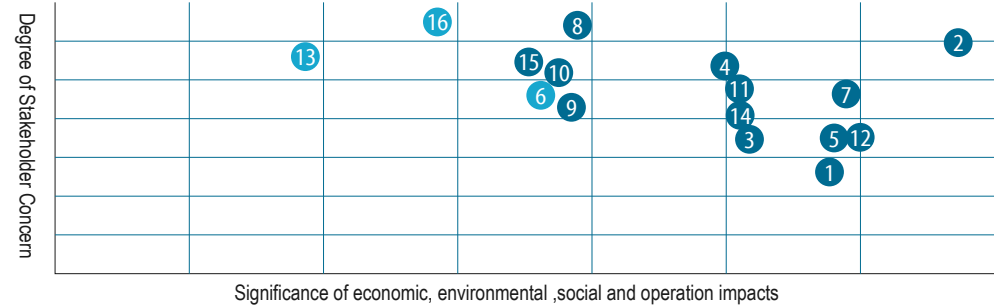


Major Issue Identification and Management Disclosure

Corporate Social Responsibility (CSR) issues cover a wide range of topics. UMC sorted the sustainability issues based on the substantive 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 & integrity," "economic performance" is included in UMC's long-term management considerations in which the company will continue to work hard on. In 2019, the six major sources of sustainability issues were emphasized on 16 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, "innovation management," "climate strategy and action" and "talent attraction and retention" are the most important issues that have immediate or future impact on UMC's value creation at this stage. For all 13 major issues, besides the topics of GRI Standards corresponding to this report and disclosure management policies and current practices, UMC established mid-/long-term management goals for each major issue to 2025, and set a total of 62 management indicators as the basis for monitoring and reviewing their effectiveness.

Ranking the Materiality Analysis Result of Sustainability Issues



Material Issues			Secondary Issues
Economic Dimension	Environmental Dimension	Social Dimension	
2 Innovation management	7 Climate strategy and action	12 Talent attraction and retention	6 Product liability and lifecycle assessment
5 Regulatory compliance	8 Water and wastewater management	11 Employee safety and health	16 Contribution and participation in society
4 Anti-corruption and fair trade	10 Waste and resource utilization efficiency	14 Human capital development	13 Employee diversity and inclusiveness
1 Procurement and supplier management	9 Air quality	15 Human rights	
3 Customer service and customer privacy			

Note 1: Stakeholders scored differently in their degree of concern and influence for each issue (10 points = very concerned, 8 points=concerned, 6 points =somewhat concerned, 4 points=little concerned, 2 points=not concerned)

Note 2: UMC Sustainability Report Group member score for impact of each issue on economic, environmental, social and operation impacts (5 points=highly impacted, 4 points= impacted, 3 points=moderately impacted, 2 points=not very impacted, 1 point=not impacted)

Note 3: Impact factors include "revenue/cost," "brand image/reputation," "employee satisfaction/recognition," "environmental impact," "social impact" and "economic impact."

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The Top Three Material Issues Related to UMC

Business Impact	Business Strategies Direction of Response and Management Approach	Long-Term Target /KPI (Summary)		GRI Topic Category	Performance in 2019 (Chapter in the 2019 CSR Report)
<div> Innovation Management Importance: Continuous innovation can strengthen UMC's core competitiveness and fulfill sustainable development</div>					
Continuous innovative breakthroughs can increase revenue.	<ul style="list-style-type: none">Continue to invest in semiconductor process development to maintain a leading position in semiconductor process technology.Continue patent distribution to ensure that the Company's R&D achievements and intellectual properties are fully protected.Gradually increase proportion of sustainable products	Goals for 2020 <ul style="list-style-type: none">Complete development of 4 green technology platforms.Complete 3 green chemical developments.Obtain more than 200 patent applications worldwide each year.Achieve 56% in eco- products. Goal for 2022 <ul style="list-style-type: none">Complete development of 18 key products to generate a double-digit compound revenue growth rate.	Goals for 2025 <ul style="list-style-type: none">Obtain more than 20,000 total patent applications worldwide.Achieve more than 14,000 total patents worldwide.Achieve 60% in eco-products..	UMC self-defining topic	2-2 Innovation Management
<div> Climate Strategy and Action Importance: Good greenhouse gas emissions and energy management can improve operational performance and reduce environmental burden.</div>					
Governments have successively set national long-term reduction targets for greenhouse gases. Power restrictions will directly affect production, and lack of appropriate countermeasures will increase operating costs.	<ul style="list-style-type: none">Introduce low-carbon design into production processes for source replacement and reduction of process greenhouse gas. Use the best available technologies to reduce greenhouse gas emissions.Promote various types of reduction measures to optimize energy efficiency. Construct green buildings and increase use of renewable energy.	Goals for 2020 <ul style="list-style-type: none">Reduce fluorinated greenhouse gas (F-GHG) emissions per unit of product by 36% compared to 2010.Reduce electricity consumption per unit of product by 10% compared to 2015.	Goals for 2025 <ul style="list-style-type: none">30% absolute reduction of fluorinated greenhouse gas (F-GHG) emissions compared to 2010.Reduce total greenhouse gas emissions per unit of product by 5% compared to 2010.<ul style="list-style-type: none">Reduce Scope 1 greenhouse gas (Scope-1 GHG) emission by 40%.Reduce fluorinated greenhouse gas (F-GHG) emissions per unit of product by 55%.Reduce electricity consumption per unit of product by 15% compared to 2015.	302 Energy 305 Emissions	3-2 Carbon Asset Management
<div> Talent attraction and retention Importance: Attracting and retaining outstanding employees can improve UMC's performance</div>					
Loss of excellent talent will directly impact UMC's competitiveness.	<ul style="list-style-type: none">Above average pay adjustment for high-performing employees, and measures for differentiated rewards.Introduce engagement surveys to understand employee needs.Strengthen effective differentiation of target talent, talent supply and demand, and quantity and capability planning. Introduce talent that fit operational demand.	Goals for 2020 <ul style="list-style-type: none">Provide comprehensive training programs to attract and retain talent. Achieve retention rate of 91.3% for medium and high performing talent.Scores of up to 70% in employee engagement surveys.Improve quality and quantity of human resources supply, develop market competitiveness of talent, and achieve talent fit rate of 80%.	Goals for 2025 <ul style="list-style-type: none">Provide comprehensive training programs to attract and retain talent. Achieve retention rate of 91.5% for medium and high performing talent.Scores of up to 75% in employee engagement surveys.Improve quality and quantity of human resources supply, develop market competitiveness of talent, and achieve talent fit rate of 85%.	202 Market Presence 401 Employment 405 Diversity and Equal Opportunity	4-2-1 Human Resource 4-2-2 Compensation and Benefits

Note: Please refer to UMC's website for details on mid and long-term goals/management indicators for 2020 and 2025.https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development

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Other Material Issues - Economic Dimension

Business Impact	Business Strategies Direction of Response and Management Approach	Long-Term Target /KPI (Summary)		GRI Topic Category	Performance in 2019 (Chapter in the 2019 CSR Report)
<div>Regulatory compliance Importance: Compliance with regulations is UMC's basic principle for sustainable development.</div>					
Violation of laws and regulations not only affects corporate image and goodwill, but also brings financial risk as a result of fines.	<ul style="list-style-type: none">Through regular education and training, continue to strengthen supervisors' and employees' understanding and knowledge of professional ethics.	<ul style="list-style-type: none">Maintain 0 cases of environmental, social and economic regulation violations.		307 Environmental Compliance 419 Socioeconomic Compliance	2-1-6 Legal Compliance
<div>Anti-corruption and fair trade Importance: Integrity management is the operational foundation for building UMC's sustainable development.</div>					
Establishing good business practices and ethics can ensure UMC's sustainable operation by avoiding operational risks caused by illegal or illegitimate benefits funneling.	<ul style="list-style-type: none">Through regular education and training, continue to strengthen supervisors' and employees' understanding and knowledge of professional ethics.	Goals for 2020 <ul style="list-style-type: none">100% completion rate for annual education and training in professional ethics.	Goals for 2025 <ul style="list-style-type: none">100% completion rate for annual education and training in professional ethics.	205 Anti-corruption	2-1-5 Code of Ethics and Anti-Corruption
<div>Procurement and supplier management Importance: UMC has numerous upstream and downstream suppliers. Cooperation with global partners can improve sustainability performance in the overall value chain.</div>					
A good supply chain can bring stable economic benefits by reducing the risk of operating disruption and impact of cost increase.	<ul style="list-style-type: none">Establish a supply chain that protects the environment and values social responsibility, labor and human rights, safety, health and sustainable development. Build long-term partnerships with suppliers.	Goals for 2020 <ul style="list-style-type: none">Supplier Sustainability Management<ul style="list-style-type: none">Supply chain assessment/review/management mechanisms are in 100% compliance with the Responsible Business Alliance Code of Conduct (RBA).100% of new suppliers sign supplier ethics and code of conduct.Maintain zero procurement of conflict minerals.Conduct at least 3 sessions of global sustainability briefings for suppliers.Establish supply chain risk maps and a real-time reporting mechanism. In case of major disasters, supplier response time for starting stock preparation mechanism is expected to decrease by 75%.Establish the 3R (Reduce, Reuse, Recycle) DNA in local vendors. Lead suppliers to save energy and reduce carbon emissions, reducing supply chain carbon consumption by 350,000 tons.	Goals for 2025 <ul style="list-style-type: none">80% of key second-tier suppliers to sign the Employee Ethics Agreement, and 30% to be included in the supply chain assessment/review/management mechanisms.NT\$664 million in total precious metal recycling.	204 Procurement Practices 308 Supplier Environmental Assessment 414 Supplier Social Assessment	2-5 Sustainable Supply Chain Management
<div>Customer service and customer privacy Importance: Customer validation can enhance the competitiveness of the company and its customers, and is the key foundation for UMC's long-term operation.</div>					
Operating performance directly affects the company's cost and profitability.	<ul style="list-style-type: none">Provide customers with competitive and superior foundry solutions to enhance company competitiveness, customer competitiveness and customer satisfaction.Protect security of customer product information and intellectual property rights by increasing employee awareness of customer intellectual property rights, institutional soundness and systems soundness.	Goals for 2020 <ul style="list-style-type: none">Maintain customer satisfaction at 85 points or more.100% completion rate in employee education and training on customer intellectual property protection.Maintain zero customer product information security impact in network and information security incidents.Zero product recalls	Goals for 2025 <ul style="list-style-type: none">Remain within top 3 in customer ranking.Internal and external audits to find no failings in customer product information protection.Zero product recalls	201 Economic Performance UMC self-defining topic 418 Customer Privacy	2-1-6 Legal Compliance 2-2-2 Business Performance 2-3 Customer Service

Note: Please refer to UMC's website for details on mid and long-term goals/management indicators for 2020 and 2025.https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development

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Other Material Issues - Environmental Dimension

Business Impact	Business Strategies Direction of Response and Management Approach	Long-Term Target /KPI (Summary)		GRI Topic Category	Performance in 2019 (Chapter in the 2019 CSR Report)
<div> Water and wastewater management Importance: Water is basic to semiconductor production. Effective water resources management can enhance competitiveness</div>					
The lack of water caused by climate change will increase operating costs, and water restrictions will directly affect production and revenue.	Introduce water risk management system, develop and adopt diversified water sources. Promote water conservation and maximize water efficiency.	Goals for 2020 <ul style="list-style-type: none">· Reduce water consumption per unit of product by 10% compared to 2015.· Improve action efficiency and save UPW by 0.3%/year.	Goals for 2025 <ul style="list-style-type: none">· Reduce water consumption per unit of product by 15% compared to 2015.· Improve action efficiency and save UPW by 0.2%/year.	303 Water	3-3 Water Risk Management
<div> Waste and resource utilization efficiency Importance: Reducing environmental load at all stages of a product life cycle is an important goal in UMC's environmental protection promotion.</div>					
Proper waste management can reduce waste generation and related costs, create revenue value and reduce the environmental impact of operations.	Improve process technology and source management measures to reduce raw material use and waste output. Cooperate with global operating partners to recycle and reuse waste resources.	Goals for 2020 <ul style="list-style-type: none">· Reduce waste per unit of product by 10% compared to 2015.· Landfill rate of less than 1%.· Greater than 98% recycling for liquid waste.· 100% resource recycling for acid-base liquid waste.	Goals for 2025 <ul style="list-style-type: none">· Landfill rate of less than 1%.· Greater than 98% recycling for liquid waste.· 100% resource recycling for acid-based liquid waste.	306 Effluents and Waste	3-4 Waste Management
<div> Air quality Importance: Good air pollutant emissions management can prevent regulation violations and also enhance corporate image.</div>					
Lack of appropriate response will increase operating costs.	Introduce and develop eco-friendly technologies to strengthen source reduction and prevent pollution.	· Continue to ensure volatile organic gas reduction rate is >92%.		305 Emissions	3-1-3 Air Pollution Control

Note: Please refer to UMC's website for details on mid and long-term goals/management indicators for 2020 and 2025.https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development

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Other Material Issues - Social Dimension

Business Impact	Business Strategies Direction of Response and Management Approach	Long-Term Target /KPI (Summary)		GRI Topic Category	Performance in 2019 (Chapter in the 2019 CSR Report)
<div><div></div><div>Employee safety and health Importance: Maintaining employee safety and health and providing a good working environment for employees is UMC's basic responsibility.</div></div>					
In addition to impacting employees, any safety and health risk may also lead to significant economic or social loss for the company and undermine its competitiveness.	<ul style="list-style-type: none">· Adopt advanced security, risk and disaster relief technologies to eliminate hazard factors.· Promote a culture of occupational safety for every worker, increase safety awareness and implement preventive management.	Goals for 2020 <ul style="list-style-type: none">· Reduce number of incidents by 67% compared to 2011.· Perform better than the 3-year average Disabling Frequency Rate (FR) and Disabling Severity Rate (SR) for semiconductor manufacturing.	Goals for 2025 <ul style="list-style-type: none">· Reduce number of incidents by 88% compared to 2011.· Perform better than the 3-year average Disabling Frequency Rate (FR) and Disabling Severity Rate (SR) for semiconductor manufacturing and reduce by 25% compared to 2020 goal.	403 Occupational Health and Safety	4-3 Healthy and Safe Workplace
<div><div></div><div>Human capital development Importance: UMC regards its employees as the most important partners.</div></div>					
Training excellent talent can strengthen UMC's competitiveness and ensure the company's sustainable growth.	<ul style="list-style-type: none">· Develop yearly performance improvement plan for low-performing employees to coach and improve operations.· Through the company's Education Committee, conduct regular meetings and annual performance review to ensure completion rate in company-wide training programs.	Goals for 2020 <ul style="list-style-type: none">· 100% completion rate in improvement programs for low-performance employees.· 95% completion rate in annual training programs.	Goals for 2025 <ul style="list-style-type: none">· 100% completion rate in improvement programs for low-performance employees.· 100% completion rate in annual training programs.	404 Training and Education	4-2-3 Education and Training
<div><div></div><div>Human Rights Importance: Protecting the basic rights and interests of employees and providing a harmonious working atmosphere is UMC's responsibility.</div></div>					
Ensuring the job security and labor rights of employees can facilitate a harmonious and inclusive operational performance and enhance UMC's competitiveness.	<ul style="list-style-type: none">· Introduce engagement surveys to understand employee needs.· Ensure that the formulation and implementation of remunerations are free from discrimination due to gender, race, religion, political position, or marital status.	Goals for 2020 <ul style="list-style-type: none">· 70% coverage in employee engagement surveys.· Continue to ensure fair treatment of employees and compliance with laws and regulations.· Review compliance with relevant labor laws each quarter.· Each fab completes and scores more than 90 points on the Responsible Business Alliance Code of Conduct assessment survey.	Goals for 2025 <ul style="list-style-type: none">· 80% coverage in employee engagement surveys.· Continue to ensure fair treatment of employees and compliance with laws and regulations.· Review compliance with relevant labor laws each quarter.· Each fab completes and scores more than 90 points on the Responsible Business Alliance Code of Conduct assessment survey.	401 Employment 406 Non-discrimination 407 Freedom of Association and Collective Bargaining 408 Child Labor 409 Forced or Compulsory Labor 412 Human Rights Assessment	4-1-2 Employer-employee Communication 4-2 Recruitment and Cultivation 4-1 Labor Rights 4-1-1 Human Rights

Note: Please refer to UMC's website for details on mid and long-term goals/management indicators for 2020 and 2025.https://www.umc.com/en/Html/UMC_strategy_and_goals_for_sustainable_development

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The Changes and Differences of Major Issues Compared with the Previous Year




For the first three major issues, the title, content and ranking of the issue of "innovation management" remained unchanged. The issue of "climate strategy and action" changed its name, but the content and the ranking remained unchanged. Due to the increase in its significance, the issue of "talent attraction and retention" replaced the issue of "occupational health and safety," becoming one of the top three major issues for this year.

There are 10 other key issues. Except for the issue of "economic performance" which has been considered for the company's long-term management and has not been listed for comparison, the changes in this year are mainly based on the slight name and ranking adjustment. There is no significant difference in the content covered by each issue.

The reporting boundaries of major issues are the same as those in the previous year.

Secondary and Other Issues

A total of 3 secondary issues were identified in 2019, which will be highlighted in this report with reference to the GRI topic category. No special response has been made to any remaining general issues.

Business Strategies Direction of Response and Management Approach	GRI topic category	Performance in 2019 (Chapter in the 2019 CSR Report)
<div> Product liability and lifecycle assessment</div>		
Promote hazardous material substitution programs, energy resource reduction programs, and product environmental impact assessment.	301 Materials 302 Energy 416 Customer Health and Safety	2-1-6 Legal Compliance 3-5 Green Product
<div> Contribution and participation in society</div>		
Serving the community with core professional skills.	413 Local Communities	3-1-4 Promoting the "Green" Concept 4-4 Community Service
<div> Employee diversity and inclusiveness</div>		
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 Recruitment and Cultivation

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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 and expectations hoping UMC can further take into consideration to further leverage its corporate influence and promote the sustainable development of society are listed as follows:



Economic Dimension

Opinions and expectations of communication

- Make timely proposals to the government regarding the rational distribution of power and water resources; improve utilization efficiency and increase resource recycling and reuse.
- Early response to the green energy plan required by the government for companies with high energy consumption.
- Attention should be paid to the impact of the Novel Coronavirus (COVID-19) on supply chain and production facilities.
- Process services should be oriented towards differentiation and diversification to increase competitiveness, such as innovative applications of biomedical wafers.

Response

- Participate 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 and lead and promote activities relevant to environment, safety, health, and corporate sustainability. Serve as a representative in providing advice to advocate sound formulation and development of CSR policies by government and academic institutions.
- UMC formulated the energy-saving and carbon-reduction targets and implementation plans for 2025, and conducted the green power procurement project.
- UMC organized an epidemic prevention team to establish response measures within the company, and acts in advance according to the business continuity management plan.
- UMC formulated mid- and long-term management goals for process R&D in 2025, hoping to gradually increase the proportion of sustainable products and enhance the company's competitiveness in all aspects.



Environmental Dimension

Opinions and expectations of communication

- It is recommended to strengthen the integrated management mechanism for climate risk and operational risk, and evaluate the impact in a quantitative manner.
- It is recommended to take into consideration circular economy and integrate the opportunities where circular economy can be incorporated into the input and output end, especially the input end, such as the rental of environmental pollution monitoring equipment or chemicals.
- The destruction of animal and plant habitats by the development activities, and the corresponding preventive and compensation measures.
- In addition to greenhouse gases, please evaluate the possibility of disclosing air pollution emission information that concerns the general public, such as fine suspended particulates (PM2.5) and other harmful air pollutants regulated by laws

Response

- The UMC climate change risk assessment methodology was established to evaluate the risks and opportunities brought by climate change for UMC in the future. In addition, the climate change risk and opportunity matrix was established to develop the connection between climate change opportunities and the UMC Business Model, strengthening UMC's resilience to climate change.
- A special project was established to promote circular economy within the company. The goal is to turn waste into resources and transform them into marketable products. In addition, the Triple R League initiative was promoted to expand the circular economy cooperation with suppliers.
- The expanded UMC Eco Echo Award with increased subsidies for excellent and innovative ecological conservation proposals was organized, boosting the promotion of green concepts.
- Organization of a Green Festival. Promote an environmental protection mentality within the company, and set the annual growth target for green procurement. In 2019, UMC was awarded with the Green Procurement Award by the Environmental Protection Administration.
- UMC implemented company-wide environmental education to improve employee awareness of PM2.5 and other pollutants and plans to perform further assessment on the pollution management measures for manufacturing process and process exhaust gas treatment equipment.



Social Dimension

Opinions and expectations of communication

- Continue to prioritize and increase employee benefits.
- Promote the development of cultural education and offer caring and companionship for teenagers in struggling families.
- Cultivate public and private cross-border education to realize the urban and rural connection.
- Continue to pay attention and support to the society and education in the future.

Response

- Actively surveys the remuneration adjustments of well-known domestic and foreign enterprises to ensure that the overall remuneration offered by the Company is competitive.
- Provide a happy working environment and uphold the spirit of integrating benefit, vitality and public welfare. Through a wide variety of events, employees can develop creativity and vitality in work and leisure activities.
- Through the UMC Technology and Education Foundation, continue to establish and cultivate education in rural areas, and support and help youths in special circumstances.
- Collaborate with external parties through the UMC Fire Brigade and the Energy Saving Service Team and participate in social public welfare through core work competencies.
- Cooperate with several social enterprises in Taiwan to organize Green Festival and Green Market activities at UMC where employees can purchase social enterprise products.

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1-2-3 Key Points and Outcomes of Stakeholder Communication

Stakeholder communication method, frequency, key concerns and major outcome for 2019 are compiled as follows:

Employees Key Concern: Employee safety and health, Regulatory compliance, Customer service and customer privacy, Employee diversity and inclusiveness, Human rights

Communication Method (Frequency)

- President –employee forums, Secretary forums, Welfare committee meetings, Employer-employee meetings, Communication platforms (Quarterly)
- Factory & Division meetings (Once every 6 months)
- eUMC information website for employees, BBS message boards, sexual harassment complaint channel, mailbox for reporting fraud or professional ethics violation, e-suggestion and feedback platform, confidential complaint system, 12885ER help hotline (Periodic)
- My UMC website (Periodic)
- UMC CSR Newsletter (Quarterly)
- Employee satisfaction survey on benefits measures, service satisfaction survey, HR satisfaction surveys, employee recognition survey (Periodic)

Key Stakeholder Communication Outcome in 2019

- 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 2019 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 rewards, bonuses, and 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 130 communication meetings were held in 2019.
- The e-suggestion opinion feedback platform received 278 opinions from various employees in 2019; all cases (100%) have been closed.
- Strengthen the RBA Committee; continue to promote and respect international code and standards of laborers as well as human rights.
- Conducted sharing activities on sustainability themes to strengthen employee perspectives.

Customers Key Concern: Regulatory compliance, Customer service and customer privacy, Risk management, Employee safety and health, Anti-corruption and fair trade

Communication Method (Frequency)

- Online Service Platform (Periodic)
- Regular communication and discussion meetings (According to customer needs)
- Questionnaire response (Periodic)
- On-site audit and discussion (Periodic)
- Voice of Customer (VOC) instant customer online complaint system (Periodic)
- Customer satisfaction monitoring (When provided by customer)

Key Stakeholder Communication Outcome in 2019

- 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.
- In 2019, we also leveraged an international professional security company's resources to help on inspecting the robustness of overall security as a trusted third party verifier and a basis for further improvement.
- Continuous customer services - provide a total of 66 BCM / BCP pieces of risk management data.
- Continued to invest in various semiconductor process R&D. Won numerous domestic and international patents in 2019. Currently, UMC has a total of 13,507 patents.

Investors Key Concern: Regulatory compliance, Contribution and participation in society, Customer service and customer privacy, Talent attraction and retention, Procurement and supplier management

Communication Method (Frequency)

General Shareholders

- General shareholder meeting (Annually)
- Investor conferences (Quarterly)
- Financial reports (Annually)

Corporate shareholders

- Domestic and overseas investor conferences (Quarterly)
- Domestic and overseas seminars for investing institutions (Periodic)
- Written or face-to-face communication (Periodic)

Key Stakeholder Communication Outcome in 2019

- Continue to hold shareholder meetings and seminars.
- Upload multimedia information of the financial and business report in the shareholders' section of the UMC official website.
- Participated in 7 seminars held by domestic and international investment institutions.
- Worked with the Financial Supervisory Commission (FSC) to complete corporate governance accreditation.



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Suppliers Key Concern: Regulatory compliance, Employee safety and health, Procurement and supplier management, Anti-corruption and fair trade, Human rights

Communication Method (Frequency)

- Review reports or meetings (Periodic)
- Environmental health and safety, and corporate social responsibility related management briefings (Periodic)
- Questionnaires and audit visits (Annually)
- Jointly implement ESH and corporate social responsibility program with suppliers (Annually)

Key Stakeholder Communication Outcome in 2019

- 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 2019.
- Advocated the UMC 3R League. To promote circular economy and waste reduction, a sharing session was organized in 2019 where suppliers were invited to share their experiences and 18 outstanding vendors were recognized.



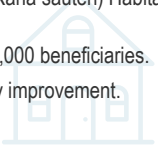
Community/Non-profit Organization Key Concern: Contribution and participation in society, Waste and resource utilization efficiency, Air quality, Water and wastewater management, Product liability and lifecycle assessment

Communication Method (Frequency)

- Assigned a department for community communication (Periodic)
- Invite community residents to participate in the company's Family Day activities (Annually)
- Participate in community activities or seminars (Periodic)
- Participate in the operations of outside associations (Monthly)

Key Stakeholder Communication Outcome in 2019

- Organized the 2019 UMC family day activity.
- Volunteer work culture was promoted to provide volunteer work opportunities for minority groups. A total of 18,223.5 hours of volunteer work was conducted, which benefited more than 31,000 people.
- Worked with the Society of Wilderness (SOW), an ecological conservation organization, to promote the Sauter's Frog (Rana sauteri) Habitat Conservation Project.
- Organized the UMC Eco Echo Award program to offer grants to ecological conservation proposals, totaling more than 5,000 beneficiaries.
- The UMC Energy Saving Service Team helped 6 organizations in energy saving, water saving and environmental safety improvement.
- The PFASs Evaluation Program and Green 2020 Program were promoted within the organization.



Governmental Agency Key Concern: Water and wastewater management, Regulatory compliance, Climate strategy and action, Employee safety and health, Risk management

Communication Method (Frequency)

- Participate in parks and Science Park Administration functional organizations for operations (Monthly)
- Participate in public hearings and symposiums organized by governmental authorities (Periodic)

Key Stakeholder Communication Outcome in 2019

- Played the role of coordinator for the Science Industrial Park Union to discuss regularly related laws and regulations and to provide operation experiences and suggestions for 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.
- Participated in the "Safety and Health Guidance and Inspection Education and Training Program" of the Hsinchu Science Park Bureau, Ministry of Science and Technology, and provided the experience in promoting chemical classification and management.
- Participated in the "Work Safety Personnel Improvement Program" of the Hsinchu Science Park Bureau, Ministry of Science and Technology, and provided practical experience in hazardous chemical management and operation.
- Signed a memorandum of cooperation with the Tainan City Government Fire Bureau to share resources with the municipal government, providing mutual support for regional joint defense, and increasing the capacity for fire prevention and rescue.



Media Key Concern: Contribution and participation in society, Risk management, Regulatory compliance, Customer service and customer privacy, Employee safety and health

Communication Method (Frequency)

- Press conferences (Periodic)
- Press releases (Periodic)
- Company website (Periodic)

Key Stakeholder Communication Outcome in 2019

- Released 25 press articles on corporate governance and sustainability management
- https://www.umc.com/en/News/press_release



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Summary of Outcomes from UMC Partnerships and Feedback

Community/Non-profit Organization

UMC Eco Echo Award Cooperation Project

Marine Citizens Foundation Director

Yi-Jun Chen

The Marine Citizens Foundation is committed to promoting marine education, environmental conservation, and citizen action in Penghu. As a citizen group, we have the responsibility to integrate resources and manpower, uniting everyone to work together to solve environmental problems. Through the support of the UMC Eco Echo Award as well as the organizer, work done by those groups who deeply cultivated local communities can be seen by more people, attracting more attention. Moreover, through the collaboration with an enterprise, involvement in the activities can be expanded, enabling more people to pay attention to the health of marine habitats.

Conservation is a constant effort that requires persistence. We continue to regenerate coral, promote marine education, and leave a record of investigation for the ocean, hoping to make the seeds of the ocean to blossom in Penghu.



Community/Non-profit Organization

UMC Energy Saving Service Team Cooperation Project

Director Mei-Hua Yang,

St. Theresa Opportunity Center

For more than 30 years, St. Theresa Opportunity Center has provided services to people with physical and mental disabilities, children with developmental challenges, and their families in remote areas, accompanying thousands of families every year through important moments of their life. St. Theresa Opportunity Center adheres to the belief of caring and protecting for the local communities and the environment. It not only cares for the physically and mentally handicapped and disadvantaged families in remote areas, but also attaches great importance to environmental protection. In recent years, it has actively implemented and promoted the value of energy saving, conservation and environmental protection in its services.

We would like to thank the UMC Energy Saving Service Team for visiting St. Theresa Opportunity Center to provide inspection services. In addition to providing professional advice and contacting vendors to conduct the work, the overall public safety and energy-saving equipment in the main base as well as the community bases of the St. Theresa Opportunity Center are substantially improved. Through the generosity of the UMC Energy-Saving Service Team in offering professional planning and implementation services, the overall safety and comfort of the staff working in the St. Theresa Opportunity Center are greatly improved, which also significantly reduces our costs in water and electricity. The money saved can then be invested to provide more services to disadvantaged families.



Supplier

Triple R League; Reduce, Reuse, Recycle, Circular Economy Cooperation Project

Wholetech System Hitech Limited

President / Sting Hsieh

Wholetech System Hitech Limited is a leading manufacturer of comprehensive high-tech factory system integration IPO: 3402, which has received ISO9001 / ISO45001 / OHSAS18001 and other certifications. We deeply understand that the process of continuous growth will also cause an impact on society and the environment. Therefore, Wholetech System has long been adhering to the corporate social responsibility and sustainable business philosophy, and is highly committed to environmental sustainability. We continue to promote green manufacturing, and actively invest in research and development of waste reduction and pollution prevention to pursue the best use of energy and resources. We look forward to our unremitting efforts, and at the same time, share our knowledge and experience with the outside world, hoping that with our experience, we will become a social upward force and work with everyone to cope with the severe challenges of climate change.



Customer

Strengthen collaborative efforts for manufacturing processes and expand strategic partnerships

Faraday and UMC Collaborate to Launch a Complete Set of 22nm Fundamental IP

"With our long-term collaboration with UMC and extensive ASIC experience, we are able to provide professional services for IP adoption on UMC's process technologies. By leveraging UMC's 22nm technology, our newly-launched logic library and memory compiler IP can facilitate customers to develop lower-power SoC targeted to IoT, AI, data communication, multimedia, and other emerging applications with cost advantages and faster time-to-market."

C.H. Chien, associate vice president of R&D at Faraday,



Cadence and UMC Collaborate on Certification of Analog/Mixed-Signal Flow for 28HPC+ Process

"In collaboration with UMC, Cadence has delivered a certified, integrated flow for AMS design at 28HPC+ technology based on Cadence's industry-leading custom/analog, digital and signoff, and verification platforms. This certification drives SoC design excellence and allows UMC customers to take advantage of the most advanced tool feature sets for circuit design, performance and reliability verification, automated layout, and block and chip integration, enabling them to design automotive, industrial IoT and AI applications with confidence."

Wilbur Luo, vice president, product management in the Custom and PCB Group at Cadence.



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Annual consolidated revenue

Annual consolidated revenue reached NT\$ 148.2 billion.

NT\$
148.2
billion

Customer satisfaction

Customer satisfaction maintaining a steady level.

87.3%

Patents

In 2019, UMC was awarded 515 domestic and foreign patents, totaling 13,507 patents to date.

13,507
patents

Participate in UMC's Triple R Major League Initiative

39 suppliers participated in this cooperation platform, with a total reduction of about 125,000 tons of CO₂e.

39
Suppliers

Advanced process capacity

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

30%

High-risk Suppliers

UMC has established the ISO 22301 business continuity management system, and completed business continuity risk assessment for vendors who supply 95% of the company's procurement.

0

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2-1 Corporate Governance

UMC has an effective corporate governance framework that is consistent with Taiwan's Company Act, Securities and Exchange Act, and other related laws and regulations. UMC also established the "UMC Corporate Governance Practice Principles," "UMC Ethical Corporate Management Best Practice Principles" and "UMC Corporate Social Responsibility Principles" as practical company considerations to protect shareholders' equity, respect stakeholders, enhance information transparency, strengthen the competency of the Board, and uphold corporate integrity and code of conduct. The Corporate Sustainability Committee reports the performance to the Board on the regular basis. It is hoped that through effective corporate governance, the company can fulfill its corporate responsibility in sustainable development and enhance corporate performance.

How We Manage

- By formulating a management code of practice.
- By establishing a thoroughgoing corporate governance organization.
- By dedicating a legal department to serve as a legal platform to offer legal advice and assistance to each department.
- By arranging training programs and courses on legal compliance to familiarize employees with updated regulations.

Goals and Targets

- Reasonably ensure the effectiveness and efficiency of the company's operations, and provide recommendations as needed for improvement, allowing various systems to be continuously and effectively implemented.
- All UMC employees should abide by the company's ethical standards during their daily work and business operations in order to gain public trust and ensure the company's sustainable growth and development.
- Company employees carrying out their work should always adhere to the relevant laws and regulations.
- No major violation of Corporate Social Responsibility Note.

Purposes

- Ensure that the company keeps its commitment to comply with the law to realize its core values of integrity and honesty.
- The establishment of a corporate culture of ethical management and sound development.

Relevant Policies

'Corporate Governance Practice Principles,' 'Ethical Corporate Management Best Practice Principles,' 'Corporate Social Responsibility Principles,' 'UMC Code of Conduct,' 'Code of Ethics for Directors and Officers' and 'Employee Code of Conduct.'

The Mechanisms for Evaluating the Effectiveness

- Carry out regular Board of Directors performance evaluations
- Audit Committee regularly reviews operational status of audits
- Ensure that there are no regulatory violation incidents or stakeholder complaints

Applicable Entities

- UMC and its subsidiaries HJTC and USC.

Note: Refers to a single incident with a fine of more than NTD 1 million.

Executive Summary

Performance in 2019

Plans and Objectives for 2020



Establish effective corporate governance framework

- The Corporate Sustainability Committee reported the promotional outcomes and plans to the Board.
- The Nominating Committee selected and set up the chief corporate governance officer and submitted it to the board of directors for approval to strengthen competencies of the Board.
- The Corporate Sustainability Committee will meet regularly with the Board to report promotional outcomes and plans.



Ensure shareholder equity, strengthen competencies of the Board

- The performance of the board, functional committees and individual board members were reviewed and evaluated according to the Rules for Performance Evaluation of the Board of Directors.
- Built up the skill matrix of board members. Enhanced the diversity policy for nomination and election of directors.
- Established the standardized operating procedures for handling the requests of any board member.
- The performance of the board, functional committees and individual board members will be reviewed and evaluated annually according to the Rules for Performance Evaluation of the Board of Directors.
- The Nominating Committee approved the Policy and procedure of UMC's risk management. The management team reports the structure and operation of the risk management organization and also the plan and execution of IP management to the Nominating Committee and the Board.



Enhance information transparency

- UMC was rated the top 5% of listed companies for the fifth consecutive year in the Corporate Governance Evaluation Results in Taiwan.
- Continue to promote the effectiveness of the Corporate Governance Evaluation.
- The annual financial report is published within two months after the end of a fiscal year to enhance the timeliness of information disclosure.

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The UMC Board of Directors, Audit Committee, Remuneration Committee, Capital Budget Committee and Nominating Committee conduct their duties according to the regulations of "Convention Rules for Meetings of Board of Directors," "Audit Committee Charter," "Compensation Committee Charter," "Capital Budget Committee Charter" and "Nominating Committee Charter." 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 self-evaluate the performance of the Board, functional committees and individual board members annually. In 2019, the self-evaluation of the Board of Directors, functional committees and individual board members concluded that the performance was "Excellent," and the reports were submitted to the Nominating Committee and Board of Directors on February 26, 2020.

Furthermore, the Company's board performance evaluation is conducted by an external independent professional institution or a panel of external experts and scholars at least once every three years.

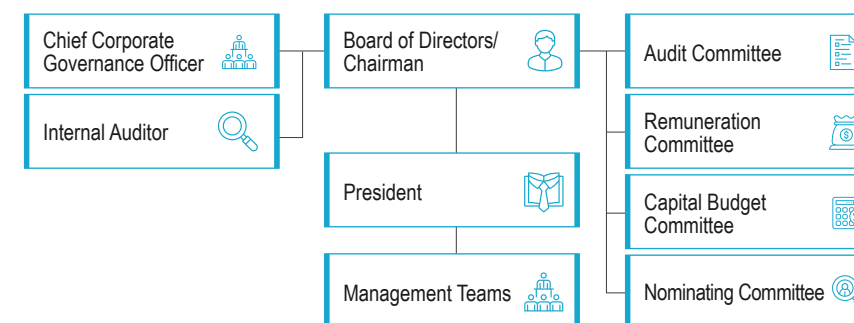
The Company engaged with Taiwan Corporate Governance Association to conduct an evaluation of board performance and efficiency, and completed the evaluation on March 7, 2018. The evaluation comprised of 8 scopes and 38 indicators including Composition, Direction, Authorization, Monitoring, Communication, Internal control, Risk management and Discipline of the Board, and was executed through online self-evaluation 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 evaluation and human resource development for the Company to enhance the efficiency of the Board.

In addition to the company's annual operational disclosure, the company has a corporate governance section on the UMC website so that stakeholders can easily access UMC corporate governance information to view its Corporate Governance Policy.



2-1-1 Board of Directors

The UMC Board of Directors comprises of 9 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 two for outside directors. Two third of the director seats are filled by members of outside companies. As of 2019, the average tenure of all directors was 6.9 years. In 2019, a total of 6 board meetings were held, the average attendance rate was 100%, 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 0.68% in 2019.



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:



Basic criteria

Shared visions, gender, race, nationality, independence and culture etc.

Professionalism

Educational background, professional skills and industry experience etc.



Corporate sustainability and communal participation

Corporate governance, environmental sustainability, corporate social responsibility, legal compliance and human rights protection etc.

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UMC Board of Directors

Name	Gender	Age	Attendance Rate
Chair of Board			
Stan Hung	Male	60	100%
Director			
Jason S. Wang	Male	57	100%
S C Chien	Male	62	100%
Ting-Yu Lin	Male	58	100%
Member of Functional Committee			
· Capital Budget Committee member			
Chung Laung Liu	Male	86	100%
Member of Functional Committee			
· Capital Budget Committee member			
Independent Director			
Cheng-Li Huang	Male	71	100%
Member of Functional Committee			
· Convener and financial expert for Audit Committee			
· Remuneration Committee member			
· Convener for Capital Budget Committee			
· Nominating Committee member			
Wenyi Chu	Female	53	100%
Member of Functional Committee			
· Audit Committee member and financial expert			
· Convener for Remuneration Committee			
· Capital Budget Committee member			
· Nominating Committee member			
Lih J. Chen	Male	74	100%
Member of Functional Committee			
· Audit Committee member			
· Remuneration Committee member			
· Capital Budget Committee member			
· Convener for Nominating Committee			
Jyuo-Min Shyu	Male	66	100%
Member of Functional Committee			
· Audit Committee member			
· Remuneration Committee member			
· Capital Budget Committee member			
· Nominating Committee member			

Directors' current position at UMC or other company is disclosed on Pages 16~17 of the company's annual report.



The Board has 9 seats, of which 4 are occupied by independent directors. The various committees are composed of independent directors and outside directors, and members do not include members who also serve as administrative directors. The Company's policy restricted no more than 3 other public companies' mandates for the independent directors.



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.



Board members are elected by shareholders according to regulations for Director Election during shareholder meetings, and in compliance with the Board of Directors Regulations and company constitution. Jurisdiction for each committee is based on organizational constitution, and committee members are nominated and approved by the Board.



The Nominating Committee shall perform the duty to supervise the corporate governance system and its execution of the Company and its subsidiaries, in order to protect the interests of stakeholders.



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 2019 is disclosed on Pages 52-54 of the company's annual report.



Independent director Cheng-Li Huang, with research expertise of international accounting, green accounting and CSR, attended the Asian Pacific Conference on International Accounting Issues in 2009 and won the Vernon Zimmerman Best Paper Award with his paper on environmental accounting.



To implement corporate governance, enhance capability and review performance of the Board, UMC instituted Board of Directors' Self-Assessment of Performance to assess the performance of the Board annually, and the board performance assessment will be conducted by an external independent professional institution or a panel of external experts and scholars at least once every three years in order to enhance operation efficiency of the Board.



The Company engaged with Taiwan Corporate Governance Association to conduct an assessment of board performance and efficiency, and completed the evaluation on March 7, 2018. The assessment comprised of 8 scopes and 38 indicators 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.

Principles for Avoiding Conflict of Interest in Management

Provisions for avoiding conflict of interest are stated in the company's Convention Rules for Meetings of Board of Directors, Audit Committee Charter and Nominating Committee Charter. Directors with vested interest in an agenda, personal or representing organizations should explain the key content of their interest at the meeting. Should that interest undermine company interest, the said directors are not permitted to participate in discussions or votes, must be excused from discussions and decisions, and must not vote on behalf of another director. The name, key content and excuse from participation are recorded in the minutes of the meeting.

The company has formulated the Ethical Corporate Management Best Practice Principles, the Procedure of Transaction with Related Parties, the Code of Ethics for Directors and Officers and the Employee Code of Conduct to avoid conflicts of interest. In addition, employee code of conduct implementation is reported to the Audit Committee. Detailed regulations and information on disclosure are available on the company website for stakeholder communication. The company has spokespersons and emails for handling enquiries and input from various stakeholders.

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2-1-2 UMC Functional Committee

Nominating Committee

The Nominating Committee comprises of independent directors to enhance the management mechanism and to improve corporate governance with the company's sustainable development. The committee reviews the selection and performance assessment of directors and executives, and supervises the issues related to corporate governance.

Effectiveness in 2019

The UMC Nominating Committee was established in December 2017. In 2019, the Committee met 2 times, reviewed and proposed the candidate list of the directors to the Board, and also reviewed the Company's achievement on corporate sustainability, climate change, corporate governance, ethical management, risk management and IP management.

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 2019

In 2019, a total of five meetings were convened; good communication channels with the company's internal auditors, independent auditors, and management were maintained.

Remuneration Committee member

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 2019

In 2019, the committee convened meetings in March, June and December. Please refer to UMC's annual report on Page 62 for the actual attendance information.

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 2019

The UMC Capital Budget Committee was established in October 2013. In 2019, the committee met 5 times, audited and approved capital budget expenses of NT \$25,894 million.

UMC

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.

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 can provide suggestion as an external perspective. In addition, the committee meets at least twice a year to review and ensure the competitive compensation.

The compensation of the president and vice president includes salaries, bonuses, severance pay and pensions, etc., which are regularly disclosed in the company's annual report every year. To ensure the stable operation and growth for the company and the pursuit of breakthrough innovation, the total compensation of the president and vice president is mainly divided into two parts, in which one is fixed and the other is variable. The fixed pay is mainly provided based on the duties and relative importance of the position and other factors. The variable pay is provided in diversified forms and is aligned with the performance result of operation strategies and goals achievement (Note). The assessment criteria of the variable pay includes financial and non-financial key performance indicators, such as profitability improvement, differentiating advanced manufacturing and development of specialty technologies, strengthen manufacturing capabilities, shorten lead-time, and improve overall quality and productivity, expand marketing and customer management, development of sustainable environment and talent cultivation, etc. 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, hoping to create harmony and prosperity between the enterprise and society.

Note: In consideration of the 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.

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In addition, in order to promote ethics, honesty and professionalism, UMC established the “Code of Conduct.” UMC believes in being an integrated organization; every employee is obligated to strive for the extension of the company’s interests within legal limits and is responsible for preventing damages or loss of the company’s interests. The violators of the integrity rules will be inflicted, in proportion to the weight of the incident, with difference punishments, including withholding of performance cash award, year-end bonus and profit sharing bonus, demotion, removal from post, and even taking any legal actions. UMC expects all employees, especially Executive Level Managers, to be responsible for management and supervision, and strictly observe the “Code of Conduct” to ensure UMC’s sustainable growth and development.

Ratio of maximum remuneration to median annual remuneration	
Taiwan	Singapore
13.6	4.86
Ratio of % increase in highest total annual remuneration to % increase in median total remuneration	
Taiwan	Singapore
Personnel with the highest total annual remuneration showed no increase in total income	0.46

2-1-3 Shareholders’ Participation of Corporate Decision

In the 2019 UMC shareholders' meeting, shareholders using electronic voting accounted for 65.0% of the company's total outstanding shares, and constituted 76.3% of shareholders present at the shareholders' meeting respectively.

All admitted bills and motions during UMC shareholder meetings are discussed and voted by meeting attendees, and resulting shareholder supports and vetoes for each bill are recorded.

Given that active shareholders pay more attention to financial performance, compensation schemes and corporate governance of the company, the sub-committee of the Board shall assist the management with such issues. The Nominating Committee will be responsible to review shareholder’s proposals and to propose responses to the Board for discussion.

2-1-4 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 internal control system, audit implementation details and annual internal 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



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2-1-5 Code of Ethics and Anti-Corruption

The purpose of this is to promote ethics, honesty and professionalism within the company and among its employees. The company believes in being an integrated organization and that the action of every employee affects its entire organization and reputation. Any employee is obligated to strive for the extension of the Company's interests within the bounds of the law, and responsible for preventing damages or loss of the Company's interests.

UMC has developed relevant principles for all directors, managers and employees to enhance company and employee knowledge of conduct and professional ethics from the top down.

UMC expects all employees to comply with the company's principles in their daily work and business execution to gain public confidence and ensure sustainable growth and development for the company. By promoting the UMC Code of Conduct (targets include company subsidiaries, joint ventures, suppliers, customers and others entities pertaining to UMC operation and development), it is hoped that joint efforts can be put into fulfilling corporate social responsibility and promoting balanced and sustainable economic, social and environmental development.

UMC encourages open communication with employees and third parties. Questions pertaining to ethics and legality of conduct or unequal treatment in the workplace may be referred to the Human Resource Office or Employee Care Office for assistance, and reports may be filed to uncover, stop and prevent major misconduct or violation of government regulations.

For relevant information, please refer to the company's website



UMC provides online self-testing and training courses to help employees clearly understand the concept of appropriate employee conduct. In addition, the employee code of conduct is posted on the company's intranet for employee reference. Employees may refer relevant questions to the Human Resource Office for inquiry and assistance in implementing the code of conduct in their daily work and tasks. In 2019, 100% of employees completed and passed the online employee code of conduct training and self-testing course. All members of the Board of Directors (the company's highest governing body) also completed the anti-corruption training course on October 30, 2019.

Through annual internal control and self-assessment, UMC has also conducted a self-review of all fab, department and subsidiary operations, including compliance with laws and regulations, awareness of professional code of conduct and risk assessment. The design and implementation of internal control systems are also adjusted to achieve self-monitoring. In addition, based on the provisions of Taiwan and in the event of risks, the Audit Division has formulated audit plans for relevant reviews, and regularly reports results and follow-up improvements to the Audit Committee and the Board of Directors.



Anti-corruption

The total number of grievances filed through the mechanism	1
The number of grievances that were addressed (or reviewed)	1
The number of grievances that were resolved	1



Environmental issues

The total number of grievances filed through the mechanism	0
The number of grievances that were addressed (or reviewed)	0
The number of grievances that were resolved	0



Social issues

The total number of grievances filed through the mechanism	0
The number of grievances that were addressed (or reviewed)	0
The number of grievances that were resolved	0

Note: No proof of corruption or bribery was found in 2019.

2-1-6 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. The company has a dedicated legal department serving as a legal platform to offer legal advice and assistance to each department. UMC and its employees are required to comply with relevant business laws and regulations. The company arranges training programs and courses on legal compliance to familiarize employees with updated regulations. Prompt updates allow employees to implement job regulations into their daily management, thereby ensuring that the company complies with the law.

UMC Training Courses for Legal Compliance



Online Courses

Employees are allowed to make inquiries at any time, to strengthen their understanding of the latest laws and regulations. In addition, online testing was implemented, requiring employees to repeat the test until a full score had been achieved, thus verifying and correcting employees' knowledge about laws and regulations. Other related online courses or tests include: Fair Trade Law (antitrust law), import and export control.



Classroom Courses

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



Seminar Courses

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



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.

Employees can obtain training course information and promotional information from the company's internal intranet site. Information updates, internal reviews, regulation amendments and implementation ensure our compliance with legal standards.

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Examples of UMC Legal Compliance:



High
Technology
Export Control

To ensure that UMC export controls meet international requirements, the company has long since implemented internal controls for review and feedback, and has simultaneously introduced the Internal Control Program (ICP) in Taiwan and Singapore. For overall control of the export process, the company requires customers to provide necessary information for a series of self-examination and screening from beginning Customer Inquiry to Order Processing to Shipping, and outlines clear control procedures to its various departments. With government certification, UMC customers can now enjoy preferential export licensing and reduce operation time.



Insider
Trading

UMC has formulated the Prevention Policies and Procedures for Managing Insider Trading, and is committed to promoting policies against insider trading. The company has designated personnel to notify directors and management team of block out dates within the next two months when trading is not allowed.



Classified
Information
Protection

UMC signed non-disclosure agreements with both its vendors and customers to require mutual protection of classified information. UMC has also set an internal system for classified information /data management so that customer information is handled by a designated unit to avoid inappropriate disclosure.



Intellectual
Property Rights

Courses on intellectual property protection laws and regulations are provided to new employees, and in 2019, a total of 285 employees were trained.



Conflict
Minerals

In compliance with the US Securities and Exchange Commission, UMC confirmed in its August 22, 2012 Conflict Minerals Regulations Disclosure that its suppliers did not supply conflict minerals to the company. At the same time, in accordance with US Securities and Exchange Commission regulations, the company also submits an annual Special Report to the Commission.



Trade Secret
Protection

In 2017, UMC was accused by Micron corporation, alleging that its business secrets were infringed. UMC has denied this in its press releases, and the matter is currently in litigation. Prior to this, every employee of the company had trained to protect business secrets during the training of newcomers. To this end, in response to the protection of business secrets, the company specifically asked employees to refresh such training. As of the end of February 2020, 7,984 people had received training courses. In addition, a new course was introduced on

basic legal and risk awareness of foreign documents to improve employees' risk management awareness of foreign documents, and then to avoid the violation of other people's business secrets. Currently, 1,109 people have received this training.



Personal Data
Protection Law

In response to Taiwan's newly issued Personal Data Protection Act, Taiwan's UMC inventoried its personal data on file and established appropriate information protection mechanisms to prevent information theft, tampering, damage, loss or disclosure. Regular education and training enhanced the basic knowledge of employees to help them understand the restrictions for handling personal data, restrictions on storing personal data, alert and reporting mechanisms.



Fair Trade
Law

In 2011, UMC formulated and announced its fair trade policy, and required employee compliance. The company also conducted education and training for its directors and employees to prevent legal violation. Every year, additional training courses will also be held for new employees who have never attended the educational training program, hoping that all employees will have a basic knowledge about the fair trade policy.

In 2019, no penalty cases with regard to violation of company governance, anti-corruption, or fair trade were observed and no cases of insider trading from the management personnel were found. For other information regarding the legal punishment of company and employees, major faults, and improvements, please refer to Page 94 of UMC's annual report.

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2-2 Innovation Management

End-user electronic products are becoming more functional, lightweight, energy saving and carbon reducing. In recent years, the incorporation of concepts such as artificial intelligence, deep learning and voice control have also influenced the direction of wafer design. Therefore, in view of factors such as functional integration, increased performance and low power consumption, chip design has become increasingly complex. Moreover, for production efficiency, semiconductor manufacturing technology must continue to miniaturize, and wafer surface area must increase in diameter. Hence, given these two major trends, the threshold for semiconductor manufacturing is increasing, and investment cost is rising rapidly. UMC continues to be involved in new research and development to strengthen corporate competitiveness and to help the company create profits.

How We Manage

- Through commitment to promoting the development of advanced production process technologies.
- By paying attention to the arrangement and distribution of patents to protect technology intellectual property rights.
- Through active independent research and development, and the establishment of proprietary technology.

Purposes

To uphold the philosophy that the customers' needs come first, and to provide silicon wafer fabrication solutions that meet market trends and customer demand.

Goals and Targets

- Effective expansion and control of costs, the development of product technologies, product structure improvement, and continued raising of profits.
- Goals for 2025:
 - Accumulate more than 14,000 patents granted worldwide.
 - Achieve 60% in eco-products.

The Mechanisms for Evaluating Effectiveness

The company-wide sustainable technology and product development plans were set. The Innovation Technology Committee will conduct a performance review annually.

Applicable Entities

- UMC and its subsidiaries HJTC and USC.
- Customers.

Future Business Opportunities in the Semiconductor Market

The four types of traditional IC products are computers, communication, consumer and automotive. Electronic products are already more compact, save more power and are interconnected. For example, notebooks and tablets have longer operating times, and cell phones can be connected to laptops and tablets via wireless networks. In addition, significant improvement in the bandwidth of broadband networks has facilitated the combination of the Internet and smart TV. Through information reading, transmission and processing, objects are linked into a large network, and the many derivative breakthrough applications will result in huge business opportunities. In the future, 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 Everything are expected to be constantly adopted and commercialized. Hence wafer manufacturing services must develop corresponding processes and silicon intellectual property as soon as possible to meet the variety of customer needs in Internet of Everything applications.



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2-2-1 Practicing the Philosophy of Sustainable Operations

Innovative Products and Technologies

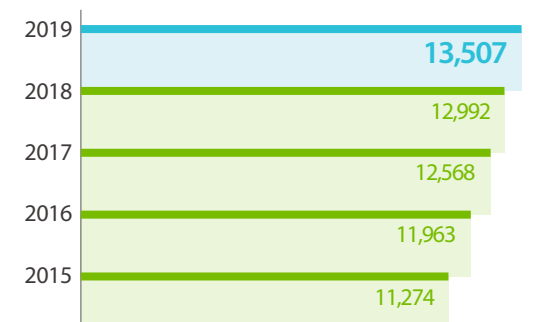
The UMC R&D team is committed to developing advanced manufacturing technology, and upholds the philosophy of offering foundry solutions that are consistent with market trends and customer needs, such as world class advanced manufacturing technology, customer support and production.

Innovative Development of Advanced Technologies

In the face of intense technological competition, besides significantly increasing its key technology capabilities, UMC is also focused on patent distribution to protect its intellectual property rights, and has seen steady growth in its number of patents.

In 2019, numerous domestic and foreign patents were awarded. To date, UMC has a total of 13,507 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.

Total Number of Patents



Successful Development of Technology or Products in 2019



14nm FinFET Plus customized process has entered mass production. In addition, UMC developed a new 14nm FinFET platform compact process (14FFC), with yield for the 128Mb SRAM on this process having reached industry competitive levels. 14FFC also passed process and product reliability verification to officially enter the pilot production stage for customer chips.



40nm ReRAM was co-developed with Panasonic and is already at risk production stage. This high performance ReRAM is fully compatible with UMC's CMOS logic process.

2019 Environmental and Social Benefit R&D Progress

In addition to continuing to develop technologies that reduce power consumption, UMC also develops processes for energy management, body sensor and medical, mobile communications, imaging sensors and displays to reduce the environmental impact of end product use, promote social communication and enable health care and safety.

22 nm Ultra-low power/Ultra-low Leakage Process Technology

UMC has developed 22nm process technology and its 28nm high performance compact low power process technology platform (HPCU+). With the same number of mask layers and compatible design criteria as 28nm, the performance of 22nm process technology has been enhanced by 10%, power consumption has been reduced by 20%, and area has been reduced by 10%. Therefore, the cost competitiveness of 22nm technology has been greatly improved to provide customers with more process options. 22nm ultra-low power/ultra-low leakage technologies are suitable for IoT, automotive electronics, industrial applications, and various wearable products that utilize analog, mixed signal, RF, and other relevant technologies. The introduction of 22nm by UMC has maximized the value of the company's 28nm process, with IP verification from 28nm directly converting to 22nm due to the use of compatible design specifications. UMC's 22nm process has been introduced to customers and has completed pilot production. Mass production is expected in 2020.



Embedded MRAM

For future market demands related to advanced IoT, automotive electronics, wearable products, and cloud applications, conventional embedded non-volatile flash memory based on eFlash is gradually showing an imbalance between cost and performance. In light of this, UMC invested in the R&D of eMRAM in 2018. For this R&D plan, UMC plans to verify a macro test chip in 2020 and expects that this technology can be incorporated into its 22nm platform in 2021 for potential customers.



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ReRAM

ReRAM is a novel NVM with a simple structure, low operation voltage, low read current, fast program/erase speed and very good reliability. The ReRAM process is fully logic compatible with fewer add-on masks and minimal extra cost. UMC started to co-develop ReRAM with Panasonic in 2017 and was already in risk production in 2019. UMC plans to make this novel NVM technology widely available.



CMOS Image Sensor (CIS) Technology

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.



Power Management Process Technology

As for the demands for various power management applications (PMIC), UMC's super high voltage (5V and 30V in coordination with 300V, 500V or 700V) processes have entered the mass production stage. This technology is suitable for special applications such as power charger, LED bulb, power amplifier, AC/DC converter, and motor driver and can meet industry demand for higher voltage and reduce the energy consumption during voltage conversion in order to save energy. As for customers with demands for highly integrated power management, UMC can provide a complete silicon IP platform compatible with the standard logic process, and various 0.5, 0.35, 0.25, 0.18, 0.11 micron and 55nm process technologies that integrate world-class, third generation low conduction resistance/high sustained voltage (5V~200V) devices that can be used for cell phone, Tablet PC, appliance, vehicle applications, etc. UMC has also begun developing a BCD+NVM technology platform, and adopted a 12-inch 55nm copper process for PMIC as a complete SoC solution for energy-saving requirements.



Display Driver IC Process Technology

The Display Driver IC market has demonstrated potential for rapid growth and possibilities in numerous applications, including smartphone, portable phone/PDA, computer screen, touch screen, Tablet PC, e-book, TV, digital camera, on-board screen, and wearable display. UMC's High Voltage Technology has led the development of various voltages to meet the specification requirements of various application markets. UMC was the first in the foundry industry to introduce a 40nm High Voltage Process, and mass production has been achieved for high-end LCD Display and high-end OLED Display markets. Meanwhile, the 28nm High Voltage Platform has entered pilot production. In addition, 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.



Micro-electromechanical Systems

With the rising popularity of MEMS sensor applications, the demand for CMOS-MEMS pure-play foundry service has also increased. For UMC's MEMS microphone process platform, in 2019, several customers taped out multiple new products using UMC's MEMS microphone reference process, and the volume continued to grow steadily.

The second generation of CMOS-MEMS gas sensors has also entered the verification phase. Regarding RFSOI process technology, its unique substrate characteristics can prevent high-frequency signal harmonic frequency distortion and reduce power loss. At present, UMC's 0.13um and 0.11um processes have been widely adopted by smart phones for mass production. UMC also started to develop 90nm and 55nm RFSOI technology platforms to catch subsequent growth momentum.



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. We apply these technologies to traditional logic processes and special technology processes (such as embedded memory). 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.

In 2019, UMC completed two new platforms in the field of microprocessors (MCUs) and developed an ultra-low power 55/40 nanometer embedded non-volatile memory (uLP eNVM) platform 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 addition, UMC has also completed two new platforms in the field of power management chips (PMIC) and developed a 0.18-micron third-generation and 55-nanometer bipolar-complementary metal oxide semiconductor-double diffusion metal oxide semiconductor (BCD) process platform.

The advanced low-power process technology that UMC has developed in recent years includes 22nm Logic technology that reduces power consumption by up to 30%, 14nm technology that reduces power consumption by 50%, and 22nm emerging embedded technology, such as resistive and magneto-resistive memory (eReRAM & eMRAM), used in the field of microprocessors. UMC will continue in the future to provide more environmentally friendly green products.

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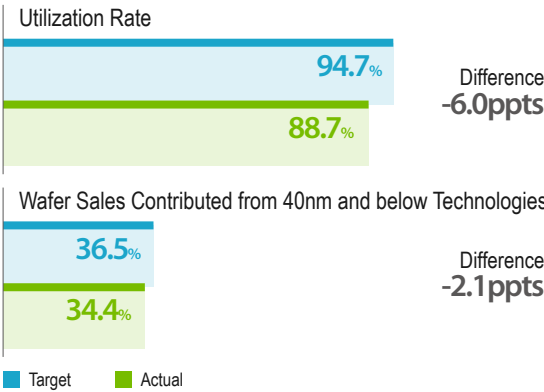
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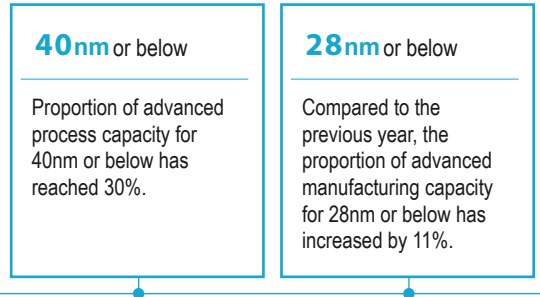
2-2-2 Business Performance

Industry Specific Key Performance Indicators in 2019



Continual Growth in Advanced Processes

In recent years, UMC has continued to invest in advanced process and R&D equipment. The benefits generated in 2019 are as follows:

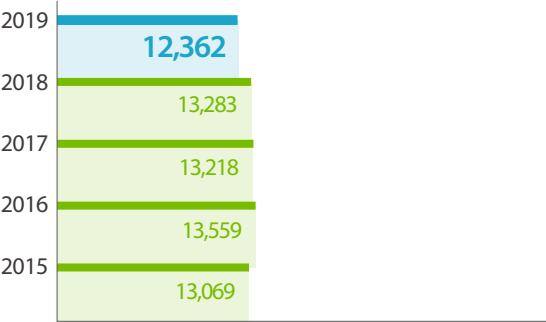


Profitability

	Return on assets	Return on equity	Pre-tax income to paid-in capital	Net profit margin	Earnings per share (NTD)
2019	3.44%	4.70%	7.77%	7.85%	0.82
2018	2.47%	3.37%	5.00%	5.32%	0.58
2017	3.21%	4.48%	8.26%	7.28%	0.79
2016	2.73%	3.75%	7.14%	6.13%	0.68

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 188 of the company's 2019 Annual Report.

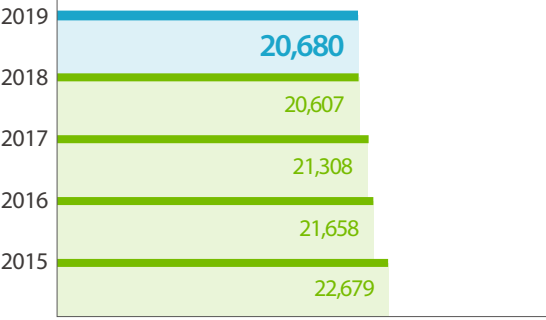
Operating Revenues (in NT\$10 millions)



Total Assets (in NT\$10 millions)



Total Equity (in NT\$10 millions)



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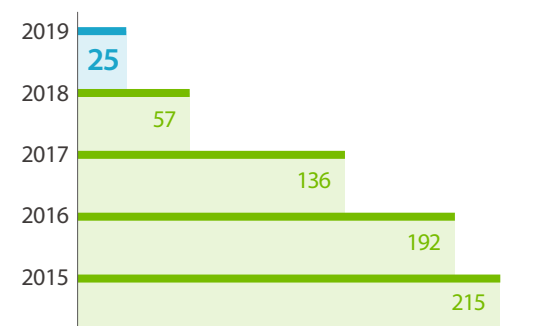
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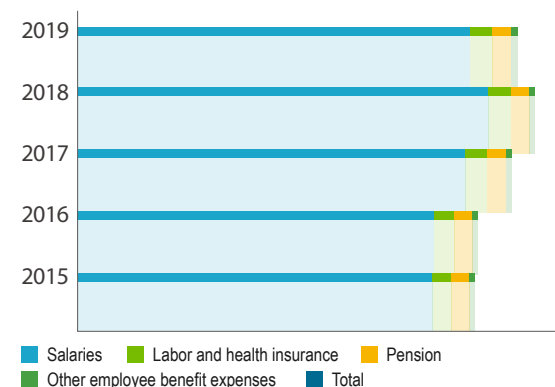


Income Tax Paid (in NT\$10 millions)



Employee Benefit Expenses (NT\$1,000)

2015	2016	2017	2018	2019
18,051,386	18,132,519	19,719,489	20,891,150	19,970,279
1,014,053	1,017,464	1,113,765	1,134,567	1,123,105
920,758	942,025	956,617	952,273	951,815
266,713	261,521	292,560	290,462	309,413
20,252,910	20,353,529	22,082,431	23,268,452	22,354,612



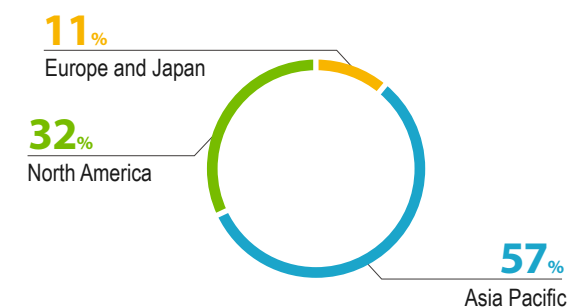
Note1: The above information is in accordance with the Executive Yuan Financial Supervisory Committee approved international financial reporting guidelines.

Note2: The above information is UMC's financial information. For consolidated information, please refer to Pages 186-188 and Page 230 of the company's 2019 Annual Report.

Marketing and Sales Overview

Being highly recognized by customers, UMC's customer base includes major vendors in different regions. Asia Pacific and North America account for most of the product sales, where respective total sales in 2019 were 57% and 32%, while Europe and Japan accounted for 11% 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 long-term stable growth.

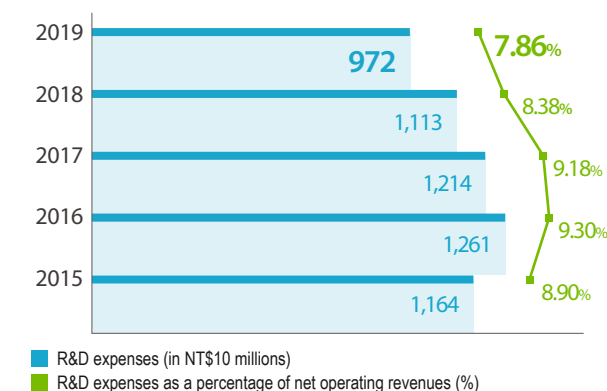
Export Ratio



2-2-3 Investment to Enhance Competitiveness

UMC's R&D team is committed to promoting the development of advanced manufacturing technology, and upholds the philosophy of foundry solutions that are consistent with market trends and customer needs, including world class advanced manufacturing technology, customer technical support and production. With the expansion of the Southern Taiwan Science Park, the company continues to employ a large number of R & D personnel, and spares no effort in recruiting and nurturing R&D talent.

R&D Expenses for the Past 5 Years



Note1: The R&D expense is in accordance with the Executive Yuan Financial Supervisory Commission approved international financial reporting guidelines.

Note2: The above information is UMC's financial information. For consolidated information, please refer to Page 122 of the company's 2019 Annual Report.

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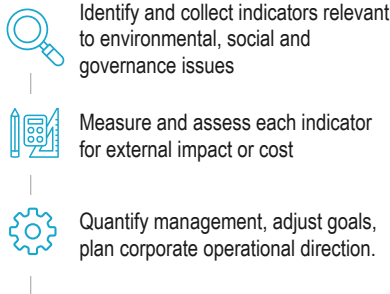
China has the world's highest domestic demand for semiconductors, and recently, the Chinese government has supported the semiconductor industry through different approaches. Since 2015, UMC and its subsidiaries have a plan to invest about US\$1.35 billion over the subsequent 5 years to better approach the market and meet the needs of local IC design industries. Capital was invested into United Semi's 12-inch fab in Xiamen according to this investment schedule to provide 28nm and 55nm wafer processing services and further the development of the Group.

Moreover, in recent years, energy conservation and carbon reduction have become important administrative goals in major advanced and developing countries to cope with energy shortage and the potential crisis of environmental changes. Therefore, UMC established the UMC New Business Investment Corp in 2009. Since then, through strategic investments, the company has channeled its existing technological talents and resources into solar energy, LED and other green industries. In addition, with the benefit of global growth in smart phone shipments and extensive construction of wireless communication stations by emerging markets, UMC continues to focus and invest in pure gallium arsenide wafer foundry service related industries. Recently, the solar energy and LED industries have undergone a round of industrial phase-out, reorganization and consolidation, but market conditions continue to slump. However, UMC will strive to increase the operational efficiency and reduce the costs of its new investments, and is committed to assisting its investment companies to grow and the parent company to profit.

2-2-4 Measurement and Evaluation of True Value

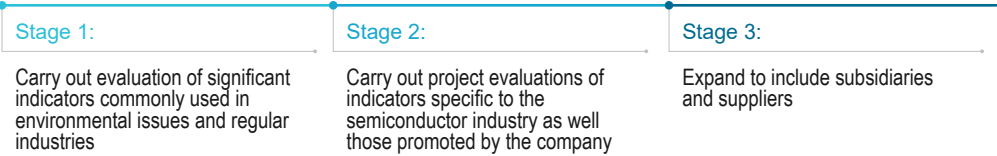
UMC considers issues of interests to stakeholders, and plans to evaluate the environmental and social externalities generated by the entire value chain in the course of operations in stages according to the types of issues and attributes. At the same time, UMC uses true value assessment methods developed 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

1. 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.



2. Aside from UMC, the scope of this evaluation includes upstream and downstream value chains; content and description of relevant indicators are shown in the table below.

Environment	Economy
<div>Greenhouse gas emissions<div>Greenhouse gas emissions of scopes 1, 2, 3</div><div>Description of External Factors<div>Carbon emissions have an additional social cost due to impact on agriculture, human health, and climate systems</div></div></div>	<div>Employee salary and benefits<div>Salary, labor and health insurance, pension, and other employee benefits</div><div>Description of External Factors<div>Salary and benefits are the labor costs incurred by the company in the process of creating economic value</div></div></div>
<div>Use of renewable energy<div>Solar generated electricity</div><div>Description of External Factors<div>Renewable energy can prevent the social costs incurred by carbon emissions</div></div></div>	<div>Public expenditures<div>Income tax paid, government subsidies related to asset acquisition</div><div>Description of External Factors<div>Public expenditures paid by companies is one of the major sources of the country's infrastructure</div></div></div>
<div>Use of water resources<div>Amount of water used</div><div>Description of External Factors<div>The extent of the lack of water resources reflects the social costs that we are required to pay</div></div></div>	<div>Work injuries and accidents<div>Direct company financial loss, financial loss of injured person, money given by the Bureau of Labor Insurance and insurance company</div><div>Description of External Factors<div>Work accidents have corresponding social costs for employees, businesses and the society</div></div></div>
<div>Recycled water<div>1. Amount of recovered condensed water and rainwater 2. Amount of recycled water in the entire fab(manufacturing process/ equipment)</div><div>Description of External Factors<div>Recycling of water can prevent the social costs of water consumption</div></div></div>	
<div>Waste material handling<div>Amount of waste materials landfilled and incinerated</div><div>Description of External Factors<div>Air pollution emissions and bad odors from landfilled or incinerated waste materials result in additional social costs</div></div></div>	<div>Upstream<div>UMC Upstream</div><div>Suppliers/ logistics companies/ equipment manufacturers</div></div> <div>UMC<div>UMC</div><div>Headquarters/ fab areas/ subsidiary business units</div></div> <div>Downstream<div>UMC Downstream</div><div>Community/ general public/ waste treatment company/ waste recycling company</div></div>

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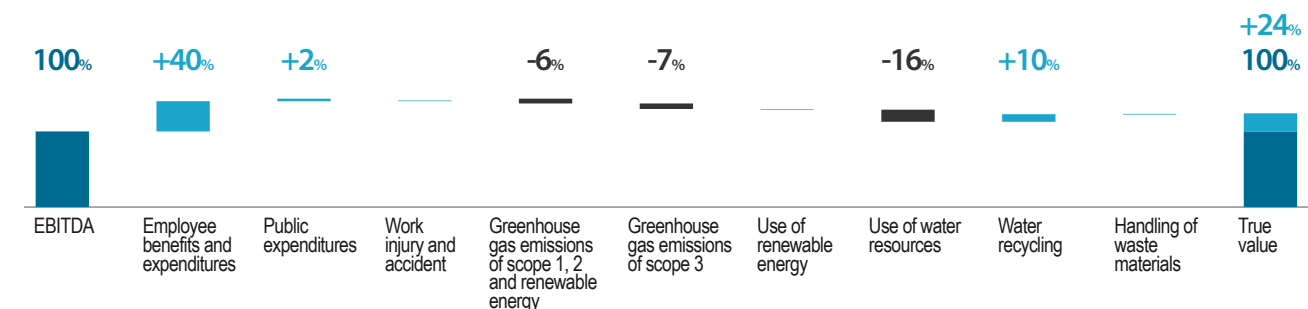
Project Implementation Outcome^{Note1}

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



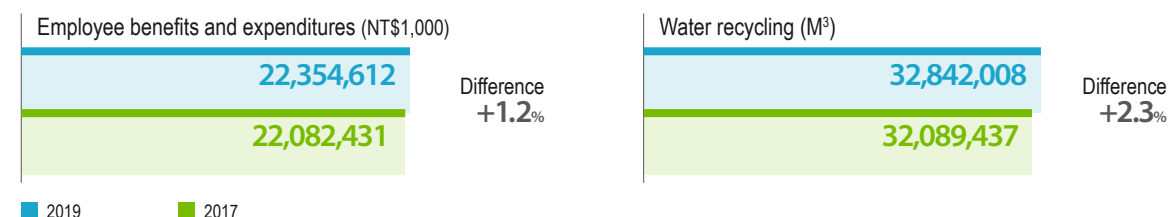
Greenhouse gas emissions and use of water resources are still the most important external costs in the overall assessment. As UMC has continued to promote a number of GHG scope 1 and scope 2 reduction plans over the years, the external cost of scope 3 is greater than the costs of scopes 1 and 2. On the other hand, the impact of the use of water resources accounts for a significant proportion, which means, in addition to reduction done at the source, efforts can be made toward water recycling to reduce the overall impact.

External Costs and Benefits Evaluation Results^{Note2&3}



The Company continues to track annual changes in major impact items. In 2019, two major positive benefit factors continued to grow while three negative impact factors continued to decrease, reducing the impact to annual production capacity by 2.9%.

Positive Benefits

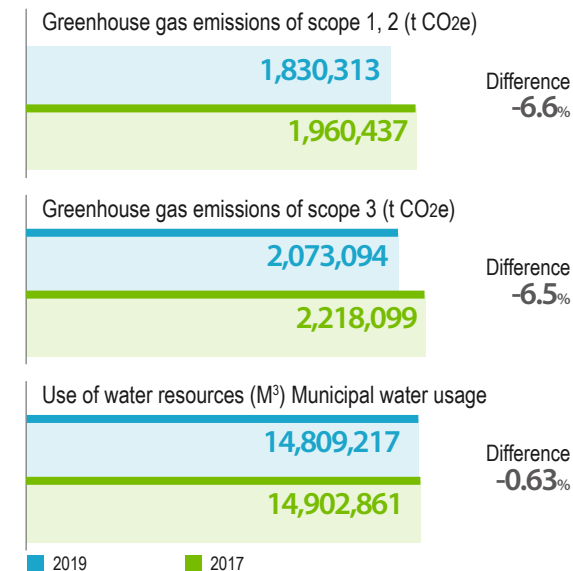


Note1: For emissions and reductions of greenhouse gases and water resources, please refer to Chapter 3-2 on Carbon Asset Management as well as Chapter 3-3 on Water Risk Management.

Note2: EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization)

Note3: The impact of public expenditure, use of renewable energy, work injury and accident and waste disposal cost is less than (+/-) 3 %

Negative Impact



Future Promotion Focus

Reduce negative impact

- Actively carry out in-fab regenerative energy installation, list solar energy system as a new fab standard design and build project, 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 2020 program, to reduce power and water consumption as well as production of waste materials by 10%.
- Promote the security mindset 4.0 program and reinforce the prevention and management of accidents.

Promote increase of positive benefits

- Through education, training and social participation, the company will expand the holding of the Eco Echo award program and support the Energy Saving Service Team as well as the Spreading the Seeds of Hope Project, creating social value.
- Promoting a circular economy – The 3R League plans to work with suppliers to Reuse, Recycle, and Reduce (waste material energy and resource reduction) and increase the value of the environmental aspect.

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2-3 Customer Service

In the spirit of UMC's philosophy of towards sustainable development, we believe sustainable economic development requires stability and growth in business performance, respect for customer feedback, customer demand, customer recognition and customer long-term support. While striving to strengthen operational performance, the company's economic growth and business sustainability is facilitated by a virtuous cycle that can only be truly created by investing and giving back to society, so that mutual benefits can be realized.

UMC is a leader in the semiconductor foundry industry. It provides advanced process technology and foundry services, and is a major wafer manufacturer for various application products in the IC industry. UMC is committed to meeting customer product demand, and emphasizes customer orientation and professional support. The company thinks from the customers' perspective, and based on their needs, provides a full range of services to achieve customer satisfaction and business sustainability.

How We Manage

- Protect customer assets .
- Provide a full range of customer service.
- Satisfy customer needs and improve product quality.

Goals and Targets

- No customer complaints about infringement of customer privacy or disclosure of confidential information.
- Scorecard scores reach the level of customer satisfaction.

The Mechanisms for Evaluating the Effectiveness

- 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.

Applicable Entities

- UMC and its subsidiaries HJTC and USC.
- Customers.

Purposes

Achieve customer satisfaction and business sustainability.

Relevant Policies

Intellectual Property (IP) Protection Policy, Information Security Policy, Quality Policy



2-3-1 Protecting Customer Assets

The UMC intellectual property (IP) protection policy is based on the following three principles:



We carefully explain the UMC policy and principles on IP protection mentioned above to demonstrate our commitment to ensuring the important IP security of our customers. UMC is fully convinced that our philosophy of operation has not only helped us and our customers achieve today's growth and prosperity, but is also the best guarantee for achieving long-term success in the future.

UMC satisfies customer needs by helping manufacturers systematically develop, design and manufacture reliable and safe products that comply with international standards. In 2014, UMC began pushing for International Organization for Standardization (ISO 15408) certification. In addition, its Fab 12A fab was awarded ISO 15408 Level EAL6 safety certification by the Germany Federal Office for Information Security, becoming the first wafer foundry in Taiwan to win such a certification and possessing manufacturing conditions that comply with the ISO 15408 Common Criteria.

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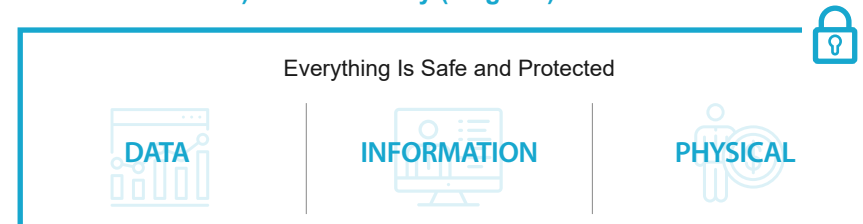
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In addition to the comprehensive increase in the security of company and customer assets, customers are not required to verify wafer fabrication safety in their future applications for product safety certification, thereby reducing their costs in time and resources, and accelerating their product entry into the market.

Protecting Customer Assets - Customer Property (physical + information + data) Confidentiality (diagram)



In addition, the IT department also received ISO 27001 certification and established a complete information security management system (ISMS). Through the process of certification, IT security policies and management procedures are implemented and employees' information security is improved. Furthermore, through regular reviews conducted on security KPIs and implementation of information security audits, UMC reduced the information security threat to the company from the technical and procedural aspects. The benefits achieved include strengthening internal security controls, enhancing the security, trust, and satisfaction of external customers' intellectual property rights, as well as reducing the customer's own repeated requests for UMC information security audits.

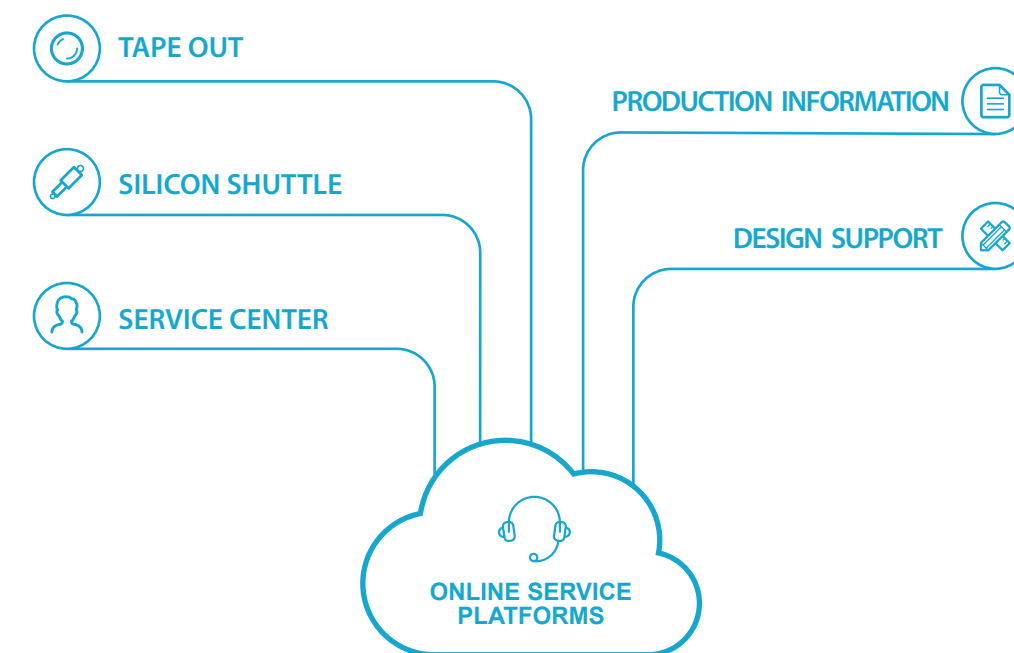
In 2018, UMC established the "Corporate Security Division," responsible for the company's information security and physical security planning and related audit matters, and working together with the "Information Technology Division" to further strengthen information security.

UMC's information security policy is based on the guiding principle: "To establish Information Security Management rules in accordance to regulations and customer's requirement, to reach a consensus that information security is everyone's responsibility through full awareness, to protect information Confidentiality, Integrity, Availability for the Company and Customer, 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-intrusion and anti-leakage through the building of multiple internal controls such as firewall, intrusion detection and antivirus systems to enhance the company's ability to defend against external attacks. Also, with the support of top management and through regular education and training programs, security operation/awareness is tightly involved and seamlessly integrated into every employee's daily work.

2-3-2 Improving Service Quality and Customer Satisfaction

Since the beginning of its operations, UMC has been committed to customer satisfaction as its duty and long-term objective. This customer-centric mentality became the core value of the company. Customer-oriented products and services are our priorities, and overall solutions for fulfilling demands are based from a customer perspective. UMC has introduced the My UMC, My HJTC (reserved for HJTC customers) and My USC (reserved for USC 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. At the same time, the website also offers an Engineering Data Analysis feature which provides an easy engineering analysis function for customers. Moreover, the Voice of Customer (VOC) instant online complaint system allows customers to request UMC products or services, or offer comments or suggestions. Designated employees are responsible for distributing the feedback and managing and responding to customers, who may make online enquiries about the progress at any time. For UMC, understanding customer needs through the VOC, and transforming these requests into practical action enhance the company's service quality and competitiveness, and ultimately achieves customer satisfaction.

Online Service Platforms Provide Real-Time Information



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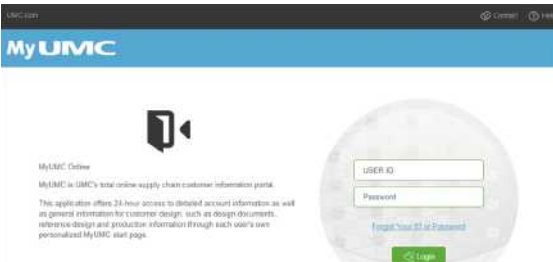
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My UMC, My HJTC and My USC instant online complaint systems for customers


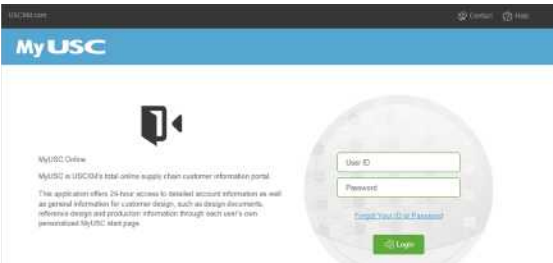
My UMC



My HJTC



My USC



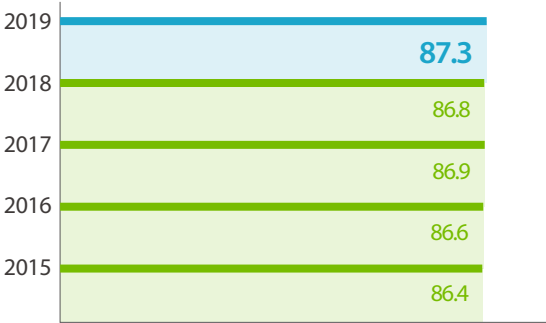
Improving Customer Satisfaction

UMC (including its subsidiaries HJTC and USC) regularly receives satisfaction ratings from those customers. Customer scorecards are distributed on an annual, semi-annual or quarterly basis. All scorecards from customers will be analyzed to identify opportunities for improvement, and UMC upholds its responsibility to make timely and effective improvements to increase customer satisfaction.

UMC's (and its subsidiaries HJTC and USC) utilization of scorecards to determine customer needs and satisfaction allows for more immediate knowledge of customer needs. In addition, UMC also responds to customer needs through meetings, and ensures that their needs receive proper attention. At the same time, the company lists product quality and timeliness as key indicators of the company's internal performance to further enhance customer satisfaction and create a win-win business.

Customer scorecard ratings show that customer satisfaction towards UMC (and its subsidiaries HJTC and USC) has been maintaining steady levels. At the same time, UMC's overall performance over the years has also received customer approval and awards, thereby indicating customer endorsement of UMC's product and service quality, and demonstrating the positive interaction and cooperation between UMC and its customers.

Customer Ratings



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2-4 Risk and Crisis Management

Sustainable development is UMC's highest priority, and robust risk management and appropriate crisis management are the major cornerstones to ensure sustainable operation. In order to reduce the negative impact and loss caused by major risk events, protect the rights and interests of stakeholders and maintain the company's image, UMC actively performs enterprise risk management, pre-crisis prevention and practice drills to facilitate timely and appropriate response capabilities for any possible crisis.

How We Manage

- Enterprise risk management includes four major areas: strategy, operation, finance and hazard, which also includes important risks of environmental, social or corporate governance issues related to company operations
- Response to new and global risks in the semiconductor industry

Purposes

- Complete enterprise risk management, and prevent major risk events to reduce the negative impact of incidents
- Actively carry out pre-crisis prevention and drills to facilitate timely and appropriate response to possible crises

Goals and Targets

- Pursue sustainable business operations.
- Provide customers with wafer manufacturing that is diverse, uninterrupted, and of good quality.

The Mechanisms for Evaluating the Effectiveness

- The company-wide management plans were set. The Enterprise Risk Management Committee will conduct a performance review quarterly.
- Pass the ISO 22301 Business Continuity Management System certification every year.

Applicable Entities

- UMC and its subsidiaries HJTC and USC.

Relevant Policies

- Enterprise Risk Management Policy
- Business Continuity Management Policy.



2-4-1 Risk Management Organization and System

Risk Management History

Before the establishment of the UMC Enterprise Risk Management Committee, the focus of risk management was hazard prevention and operational continuity management (BCM) activities. In view of the increasing international emphasis on enterprise risk management, UMC cooperated with external consulting companies to conduct a holistic enterprise risk assessment in 2016. Through interviews with high-level managers, replying to risk assessment questionnaires, and after analysis by risk management consultants, UMC was able to define the risks faced by the company, conduct risk impact analysis, and develop a risk map. In the second half of 2018, an enterprise risk management committee was established with the aim of continuously strengthening and managing major risks through continuous integration, and improvement and implementation of routines across departments. In 2019, based on the risk database established in cooperation with our 3rd party consulting company, the senior management representatives of the risk management organization reviewed and identified the risk items, then evaluated the impacts and formed risk maps. Critical risks will be managed with high priority, and corresponding response strategies will be addressed, including the emerging risks that may occur in the next 3-5 years.

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 steady operations.



Effectively Prevent and Control Enterprise Risks

Reduce corporate risk and achieve corporate goals



Comprehensive Implementation

Comprehensive risk management and implementation of operational procedures



Shape and Deepen The Risk Culture

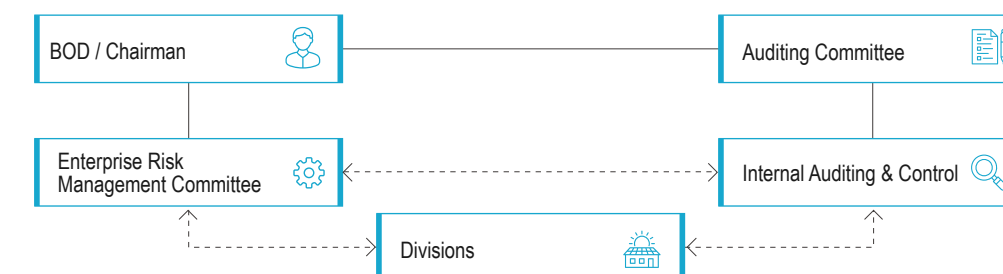
Improved risk awareness and perception



Complete Communication

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

Enterprise Risk Management Organization



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Under the guidance of the enterprise risk management policy, the Enterprise Risk Management Committee coordinates relevant departments of the company to jointly review the internal and external risks that the company faces, facilitates risk response measures for company-wide major risks, and reports regularly to the board of directors. It also incorporates internal auditing and control functions to ensure that the risks associated with operations have been effectively controlled.

Risk Management Areas and Operation Mechanism

The Enterprise Risk Management Committee consolidates risks in the areas of strategy, operation, finance and hazard, and evaluates the possibility and severity of their occurrence, defines the priority order and risk level of the risk items, and determines response actions. The committee periodically reviews possibility and severity of risks for changes over time to grasp the effectiveness of risk management plans and related control operations.

1.Risk Identification & Assessment

- Risk identification and assessment (probability/impact)
- UMC risk pool & enterprise risks prioritization

2.Risk Response Strategy & Implement

- Develop possible responses to risks
- Risk response strategy coordination/consolidation for inter-group risks
- Execute risk response actions
- Embed in internal control activities & management procedures



3.Risk Monitoring & Reporting

- Risk assessment revisit overtime
- Mitigation progress monitoring
- Summarize risk management progress for BOD review
- Internal auditing to assure internal management process effectiveness ; addressed in CSA reports

2-4-2 Risk Management and Countermeasures

UMC identifies key risks and formulates countermeasures in four areas: strategy, operation, finance, and hazard. It also includes important risks related to environmental, social, or corporate governance issues related to company operations. In addition, in terms of emerging risks, the growth of Taiwan's semiconductor industry outpaces the global average. Driven by factors such as advanced process technology, R&D, peripheral equipment and material clustering effects, UMC is optimistic about the growth potential of Taiwan's semiconductor industry. In recent years, the political or economic tension between major countries have even led to trade wars, attacks on the internet with rapid and diverse types of assaults, and the effects of climate change, etc., all of which will have an impact that cannot be ignored. 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. To understand how risk trends are evolving and to start risk response measures as early as possible, we base our planning on the Global Risk Report published by the World Economic Forum (WEF) every year. The following table lists the major and emerging risks this year and their corresponding countermeasures:

% Strategy

Tension in Political or Economic Relations between Major International Countries which Impact on The Investment and Operation of The Company's Foundry Industry

★ 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 term.

Potential impact

The impact on UMC includes revenue, delivery, and goodwill. 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 goodwill.

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 response to business uncertainty for server, automotive and industrial applications that originally enjoyed high growth, UMC also tries to expand its opportunities in 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 plans. 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 Management

Risk description

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

Potential impact

For example, political tensions across the Taiwan Straits may affect the supply and ordering of suppliers and customers; investment restrictions and regulatory changes may affect the company 's operational strategy, performance and management complexity.

Countermeasures

Based on the dependence of Chinese customers and Chinese production, 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 operating directions.

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Operation

Information Security Risk

★ Emerging Risk

Risk Description

According to the World Economic Forum Risk Report (2019), large-scale cyber attacks and data theft are ranked among the top 10 occurrence risks. Many well-known companies around the world and Taiwan have also suffered significant losses from ransomware. In this rapidly changing world, an important task for corporations requiring long-term and continuous effort is how to respond to the ever-changing environment with limited resources.

Potential impact

Cyber attacks not only expose enterprises to data leakage and extortion risks but also cause significant losses due to production system interruptions, which may affect their business reputation.

Countermeasures

- In addition to continuously strengthening defense capabilities, it is necessary for enterprises to pay equal attention to the management procedures and employees awareness. Employees should abide by security regulations (such as strict control of mobile storage devices), follow SOP operations (eg. virus scan process) and conduct "Plan-Do-Check-Act" (PDCA) cycle to continuously improve, so as to effectively prevent network security incidents. UMC complies with multiple ISO certification standards as a means of achieving risk-oriented management and inspection purpose. Related information security certification includes ISO15408, ISO22301 and ISO27001. The Company has also established corresponding risk management committees to promote standardization processes and reduce the risk of business operations. Please refer to the company website for related certification information. https://www.umc.com/en/Download/awards_and_certificates
- In 2019, we also leveraged an international professional security company's resources to help on overall security condition inspection as a trusted third party to provide verification and a basis for further improvement. The summary of the annual information security assessment is as follows: Conventional malicious programs such as attacks by viruses, Trojans, worms and external hackers will not easily damage UMC's information system.
- Finally, in view of recent reports about data leakage, virus infection, hacking events in Taiwan and the world which caused tremendous loss in operational disruption (BI, Business Interruption), UMC's strategy is to adopt cyber security insurance as a new option for partly transferring and mitigating the risk to protect the company from potential losses in the event of a cyber attack.

New M & A Fabs Cannot Create Production Synergy

Risk description

The company pursues continuous growth and provides better wafer specialist 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 difficult integration of production processes or system differences, limited reductions in manufacturing costs and expenses, differences in the corporate culture or management methods of both parties.

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 affect the company's subsequent M & A strategy.

Countermeasures

The company established a dedicated task force to ensure the smooth integration of the new M&A fab, set clear production efficiency goals, plan strong product introduction and FMEA, strengthen the integrated management of differences, and establish sufficient communication channels to achieve a production synergy smoothly.

Any Outbreak of Contagious Diseases may Materially and Adversely Affect our Staff Attendance and Operation

Risk description and potential impact

For the recent infectious disease COVID-19, it may lead to a reduction in sales activities and customer orders, a decline in factory operations and labor, difficulties in international travel and communication, and limited transnational cooperation in research and development.

Countermeasures

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

- Daily review for conditions of production impact, supply chain management, epidemic prevention strategies and action preparation, etc.
- Defined clear stages of infectious disease disaster management and prepared response measures in advance according to the situation of each stage, and launched corresponding activities in accordance with epidemic development. For example: reduce human infection and production impact ; reduce material shortages by increasing inventory, find and expedite the verification of second suppliers; reduce the operation impact of specific fabs by cross-plant products and order adjustment and transfer.

For details, please refer to 2-4-3 Business Continuity Management, 4-3 Healthy and Safe Workplace



Finance

Currency Interest Rate Risk

Risk Description

Revenue and capital expenditure in the semiconductor industry is mainly calculated in currencies other than NT, and hence fluctuates with exchange rates.

Potential impact

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

Climate Change Risk

★ Emerging Risk

Risk description

Climate change has been listed as one of top 5 risks in the World Economic Forum global risk report; Taiwan ministry of science and technology has conducted a simulation per IPCC AR-5, RCP8.5 to predict Taiwan's weather condition in the future, and the result shows that at the end of the 21th century, the temperature will increase 3.18oC; the maximum continuous no rain days will increase by 13%; the possibility of moderate/severe typhoon will increase 10%; the maximum variation of average rainfall will be up to 129.86% compared with the end of the 20th century.

Potential impact

Heavy rainfall, drought, severe typhoon, etc. are physical phenomena caused by climate change. The rising intensity and possibility of these natural disasters will lead to water shortage, damage to infrastructure, and disruption of energy supply and cause business interruption. Governments will announce strict environmental regulations to mitigate climate change. Therefore, enterprises need to invest additional costs to improve facilities and cause a knock-on effect on profitability .

Countermeasures

- Adaptation: To reduce physical impact and damage, for example, raise the foundation of new fabs by 2 meters, install flood gates for specific entrances and exits, and execute drills.
 - Mitigation: Reduce greenhouse gas emissions to relieve the phenomenon of climate change.
- Other climate change risk responses, please refer to related chapters listed as below:
- 2-4-4 Hazard Risk Control
3-1-2 Energy Resource Productivity Improvement Plan
3-2-1 Risk and Opportunities
3-3-1 Water Risk and Opportunities

Natural Catastrophes

- Please refer to 2-4-4 Hazard Risk Control

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2-4-3 Business Continuity Management

With rising global risk, UMC recognizes the issue of business continuity, which means providing uninterrupted services to strategic customers and key relationships, and upholding customer diversity, sound quality and uninterrupted foundry manufacturing as the highest mission for business continuity management. Since 2002, UMC has established the Business Continuity Plan (BCP) for its fabs, and became a leader in the industry in 2013 when the Hsinchu headquarters and Fab 12A were awarded the ISO 22301:2012 Business Continuity Management System Certificate by SGS Taiwan Ltd. Fab 12i in Singapore was verified and passed at first time in 2016. Hsinchu headquarters, Tainan Fab 12A and Singapore Fab 12i also completed the renewal of verification by BSI (British Standard Institution) to maintain the effectiveness of the certification in 2019. Under such an operation and maintenance mechanism, continuous and sophisticated evaluation ensures that in the event of a disaster or impact, the highest operational goals can be fully maintained and recovered, thereby protecting the maximum interest of customers and stakeholders. UMC was decorated for its business continuity vision by BSI in 2019, becoming the first award winner since this standard was published seven years ago, to compliment UMC on establishing a fast recovery plan from business impact following a disaster by introducing ISO 22301:2012 business continuity management system. Furthermore, UMC identified the implicit cost caused by business interruption of suppliers by second-party audit to achieve the goal of business continuity with a visionary and steady BCM strategy.

UMC Business Continuity Policy

UMC strives to provide the most competitive wafer foundry services while constantly pursuing co-development partnerships with customers. To provide customers with diversified, quality and uninterrupted foundry manufacturing service is the highest principle of the Company's business continuity management.



UMC will carry out BCM organizational operations, conduct operational impact analysis and risk assessment, and initiate its BC strategy and objective accordingly as the operating environment changes. Necessary resources are then invested for implementation, review and constant improvement.



When disasters or events impacting operations occur, UMC will follow its BC strategy and invest in resources to maintain and restore operations to the highest possible level. During incidents, the Company will also maintain open communication with customers and stakeholders and strive for their best interests.



2019 Business Continuity Management Operation Achievements

The BCM management review meeting is held annually at the end of the year or the beginning of the following year. The committee will review internal and external risks in retrospect, and explore prospective improvement plans of the BCM system. The committee chief will approve the next year's KPI to make sure that UMC's BCM system operates correctly and efficiently. For potential risks such as earthquake, fire, chemical leak, 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, the BCP drill topic simulated clean room smoke damage caused by a fire from a nearby factory. We held a workshop to simulate cross-department communication, confirm affiliation, and therefore, enhance incident response ability and corporate resilience. Furthermore, epidemic disease is included in the risk pool of business continuity management system as well. For the global COVID-19 epidemic at the end of 2019, UMC took early countermeasures to manage this threat according to BCM rules. For more information about COVID-19 disease prevention and response, please refer to chapter 4-3-1, Healthy Workplace.

System Operation Goals

2019 System Operation Goals

- No major deficiencies were found in the annual ISO 22301 BCMs third-party audit.
- Increase Furnace quartz inventory rate up to **88% for 8 inch Fabs & 98 % for Fab 12A^{Note1}**.
- Enhance the information security index by **7%^{Note2}**.

2019 System Operation Goals Achievements

- Completed BCM third party audit without major deficiencies.
- Achieved furnace quartz inventory: **90.31% of 8 inch Fabs, 98.15% of 12 inch Fabs.**
- The information security defense rate was enhanced by **5%^{Note3}**.

2020 System Operation Goals

- No major deficiency in BCM third party audit.
- Increase furnace quartz inventory to **95% for 8 inch Fabs & 99% for Fab 12A.**
- Yearly improvement rate of security defense capabilities: **100%**
- Maintain diesel safety stock level for generators: **more than 8 hours** in Hsinchu, and **12 hours** in Tainan.

Note1: Inventory rate exceeds the requirement of MBCO (Minimum Business Continuity Objective).
Note2: Score is enhanced from 3.67 to 3.93, and achieved well managed level.
Note3: All the improvement programs have been verified, and will be deployed in the end of 2020.



2019 BCP Exercise: Having a workshop to achieve cross-group communication.



2019 BCP Exercise: Head manager of the site was assigned as the commander to integrate and optimize the best solution from each group.

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2-4-4 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 engineer controls and implementation of safety regulations and norms.

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 additional requirements. "UMC is the only one in the semiconductor company equipped with a professional fire brigade". In addition to government level fire trucks and rescue equipment, all firefighters perform professional fire disaster training regularly and possess the ability to rescue.



Earthquake Protection

UMC actively plans and establishes sound disaster risk management and response procedures, and collaborates with internationally renowned structural consultants JENSEN HUGHES. 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. However, the damage was less than peer 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 Standards (SEMI-S2) for semiconductor manufacturing equipment, NFPA, and FM7-7 are the primary international standards adopted by UMC. When introducing the Equipment ESH Purchasing Specifications into its procurement activities, equipment must conform to review standards before being brought into the fab and conform to inspection after installation for effective equipment safety control.



2019 Hazard Risk Control Achievements

Improved the ability to prevent water damage in the cleanroom:

Improved Water-Stop at the floor penetration; standardized the procedure of changing aging sprinklers; anti-collision for plastic pipe; and enhanced hardware for emergency response such as using water gutter pipe when leakage occurs.



Upgraded power supply system reliability

Employed a third party expert to find improvement opportunities in Fab 8S and Fab 12A, and increased the supply resilience of the electricity system. The notable improvements included retrofitting existing single MOF in Fab 8E and Fab 8S, enhancing the stability of the entire power supply system; and early abnormality detection in electric cables through on-line partial discharge monitor.



Updated the loss control guideline in line with international standards to improve the existing risk

Reviewed the latest FM/NFPA Loss control standards, and updated the related loss control guidelines within UMC to enhance the ability of self-protection, including adding environmental sprinklers for new central scrubber, providing VESDA for stocker, reducing the amount of plastic curtain in clean room and optimizing the layout of gas detectors, etc.



Triple-Star Rating System

Since 1998, UMC has used the Triple-Star Rating System. The international insurance company AIG has been invited to conduct audits every year, thereby continuously upgrading the risk protection level to comply with UMC's commitment of Highly Protected Risk to customers and the insurance market. The ratings of all UMC fabs are kept at the highest scores except for parts of old fabs. The test items in 2019 included: sprinkler system-2 inch main drain testing, hydrant system loop testing, fire door interlock testing, etc. to verify the effectiveness of proactive and passive fire protection equipment.

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2-5 Sustainable Supply Chain Management

UMC implements responsibility and sustainability, the key factors of corporate social responsibility, through the promotion of sustainable supply chain management. The core value of UMC's sustainable supply chain is "Sustainability and Mutual-Development." UMC pursues sustainable operation by partnering with its supply chain to achieve mutual growth. In addition to improving the value of the supply chain and building an upgraded green supply chain, we care more about creating positive influence and accelerating the development of sustainable supply chain management. The promotion and implementation of sustainable supply chain is the responsibility of the Supply Chain Management Committee which is under the Corporate Sustainability Committee. UMC requires its suppliers to follow related social responsibilities.

How We Manage

- Raise cost-leading ability
- Establish sustainable supply chain ability
- Enhance supply-chain supply ability
- Build green supply chain
- Consider eco-friendliness
- No compromise with conflict minerals
- Implement sustainable risk management
- Focus on environmental issues

Goals and Targets

- Supply chain assessment/review/management fully meets RBA requirements.
- All new suppliers sign the Supplier Code of Conduct.
- Maintain conflict-free mineral procurement.
- Complete supply chain risk type of all production areas and real-time feedback system.
- Promote circular economy and encourage suppliers to do energy conservation.
- Execute Tier 2 critical supplier sustainable management.

Purposes

To protect the environment and emphasize society's obligation, labor rights, security, health and the goal of a continually developing supply chain.

The Mechanisms for Evaluating the Effectiveness

- Through the supplier evaluation mechanism of Q (quality), C (cost), D (delivery), S (service), and S (sustainability), corresponding procurement measures were implemented based on the evaluation results.
- Through the supplier's sustainability assessment mechanism, suppliers are evaluated annually. Moreover, follow-up and improvement measures for defects are implemented.
- The company-wide management plans were set. The Supplier Management Committee will conduct a performance review quarterly.

Applicable Entities

- UMC and its subsidiaries HJTC and USC.
- Supply Chain

Related Rules



Suppliers'
Strategy and
Commitment



Suppliers' Code
of Conduct

Major performance milestones

Energy saving and carbon reduction was promoted for the supply chain, with a total carbon reduction of **390,000 tons.**



100%

of raw materials purchased are non-conflict minerals.



A total of 14

overseas sustainability audits by third-party certification authorities were completed.



100%

of new suppliers signed the Employee Ethics and Supplier Code of Conduct.



More than 300

Tier-2 critical suppliers were disclosed.



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Major Performances

Item	Target in 2019	Conformity in 2019(★Compliant/★ Non-compliant)	Short term goal	Long-term Goal
Supplier Sustainability Management Capability Evaluation				
•Ethics and anti-corruption	• 100% of the newly added suppliers signed the UMC Supplier and Employee Professional Ethics Agreement.	★•In 2019, 100% of newly added suppliers signed the UMC Supplier and Employee Professional Ethics Agreement; over 3000 suppliers have already signed in total.	• 100% of the newly added suppliers signed the UMC Supplier and Employee Professional Ethics Agreement	•80% of Critical non-tier 1 (Tier 2) suppliers are to sign the supplier code of conduct – 2025
•Supply chain risk	• Continuously update for backup production fab of each supplier and risk type of all production areas. Complete dynamic warning system of the related. production areas at risk from natural disasters. • Complete 94% earthquake spare parts preparation.	★•Completed the supply chain risk databank and earthquake spare parts (quartz, fragile parts) management process for 3,765 key raw materials (covered around 100 suppliers). ★•Completed earthquake spare parts preparation for 90.3% of 8" fabs and 98.1% for 12" fabs.	• Continuously update for backup production fab of each supplier and risk type of all production areas. Complete dynamic warning system of the related. production areas at risk from natural disasters. • Complete earthquake spare parts preparation for 95% of 8" fabs, 99% of 12" fabs -- 2020	• Complete auto-trigger supplier system for regular recovery status updates through dynamic warning system -- 2020 Continuously update for risk types of all production areas -- 2020 • Complete earthquake spare parts preparation for 95% of 8" fabs, 99% of 12" fabs -- 2020
•Supplier sustainability questionnaires and assessment percentage	• Complete ESG evaluation for all kinds of suppliers who support production materials, and annual business amount over NTD 2M (one-time business is excluded). ** • New suppliers' main evaluation criteria is based on estimated procurement amount above NTD one million, and suppliers who are highly related to environmental and manpower service. • ESG evaluation for Critical non-tier 1 suppliers. • Continuously ESG evaluation of suppliers that constitute 80%of procurement for overseas subsidiaries/branches and continuous ESG evaluation for suppliers that constitute 80% of procurement.	★•Completed overall ESG evaluation; a total of 743 tier 1 suppliers, and a total of 313 non-tier 1 suppliers. ★•Totalled 191 new suppliers in 2019, and 12 suppliers have been assessed. ★•The subsidiaries are located worldwide, and they completed ESG evaluation from 80% of the procurement; a total of 324 suppliers (121 126 suppliers, HJTC 134suppliers, USC 64 suppliers).	• Complete ESG evaluation for all kinds of suppliers who support production materials, and annual business amount over NTD 2M (one-time business is excluded). ** • New suppliers' main evaluation criteria is based on estimated procurement amount above NTD one million, and suppliers who are highly related to environmental and manpower service. • ESG evaluation for Critical non-tier 1 suppliers. • Continuously ESG evaluation of suppliers that constitute 80%of procurement for overseas subsidiaries/branches and continuous ESG evaluation for suppliers that constitute 80% of procurement.	• 30% of critical non-tier 1 (Tier 2) suppliers will be managed by supply chain assessment / audit / management -- 2025
•Quantity of supplier sustainability (ESG) audit	• Complete ESG on-site audit for more than 30% of tier 1 suppliers. • Complete ESG on-site audit through third-party for more than10 worldwide suppliers. • Complete ESG on-site audit for more than 10 suppliers by overseas subsidiaries/branches	★•Completed ESG on-site audit for 238 suppliers; no suppliers failed the ESG audit. ★•A total of 14 overseas third-party audits were completed.	• Complete ESG on-site audit for more than 30% of tier 1 suppliers. • Complete ESG on-site audit through third-party for more than10 worldwide suppliers. • Complete ESG on-site audit for more than 10 suppliers by overseas subsidiaries/branches	• 30% of critical non-tier 1 (Tier 2) suppliers will be managed by supply chain assessment / audit / management -- 2025
•Continual management (BCM) audit in the quantity of suppliers	• Complete BCP on-site audit for more than 23 suppliers annually.	★•Completed audit for 25 suppliers in annual evaluation for suppliers that accounted for 95% of procurement.	• Complete the supplier BCM management promotion; performed the ongoing risk evaluation for suppliers that accounted for 95% of procurement • Conduct domestic and international audits through third-party certification authorities.	

Establishing Sustainable Supply Chain and Promoting Circular Economy

•Award outstanding suppliers	• Present outstanding Triple R league supplier award to more than 15 suppliers	★•In 2019, UMC presented the Triple R league award to a total of 18 suppliers (Outstanding result awarded to 6 suppliers, Good result awarded to 7 suppliers, Best contribution awarded to 2 suppliers ,best partnership awarded to 3 suppliers).	• Present outstanding Triple R league supplier award to more than 20 suppliers.	
•Supply Chain sustainability (ESG) promotion: Circular Economy	• Continuously promote Circular Economy projects	★•UMC Triple R league 3-year project --> In 2019, drove suppliers to achieve a 125,000 ton reduction in carbon emission, and 40.5 ton reduction in waste sludge. •Precious material waste recycling project --> Reached an accumulated NT 177M from the recycling of precious material waste in 2019. Reclaim Wafer reuse project: --> In 2019 64% of dummy wafers by using reclaimed wafers. •Oxide Slurry SS25 recycling project --> Reached an accumulated 855 ton of Oxide Slurry SS25 recycling.	• Continuously promote Circular Economy projects	• UMC Triple R league 3-year project: Target to drive suppliers to achieve a 390,000 ton reduction in carbon emissions -- 2020 • Precious material waste recycling project: Reach an accumulated NT 664M from the recycling of precious material waste -- 2025

Conflict mineral management

•Conflict mineral management	• Conflict mineral investigation report • On-site audit for more than 4 suppliers • Sustain 100% sourcing of conflict free minerals.	★•Completed the 2019 conflict mineral investigation report (no conflict minerals were found in 13 suppliers, 8 contractors and 15 affiliated companies). •Completed on-site audit for 4 suppliers, and no misconduct was found.	• Conflict mineral investigation report • On-site audit for more than 4 suppliers • Sustain 100% sourcing of conflict free minerals. • Conduct domestic and international audits of conflict mineralsuppliers, through third-party certification authorities.	• Sustain 100% sourcing of conflict free minerals.
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* New Supplier Evaluation: UMC evaluates new suppliers rigorously and cautiously. Therefore, only suppliers with estimated annual transaction value greater than 1 million NTD are considered for sustainability evaluation.

** The scope of the 2019 sustainability evaluation will be extended to all material suppliers who support production. All suppliers with annual transactions of over 2 million NTD (excluding one-time transaction suppliers) are subject to the evaluation process to implement 100% of the sustainability questionnaires. It is expected that the area of the scope covered will increase significantly to cover small and medium-sized suppliers.

** The disclosure of major performances will be based on the plant sites in Taiwan

** Critical suppliers must meet the following criteria: 1. Accounting for 80% of the total purchase amount; and 2. Single source. In 2019, a total of 154 companies met these criteria.

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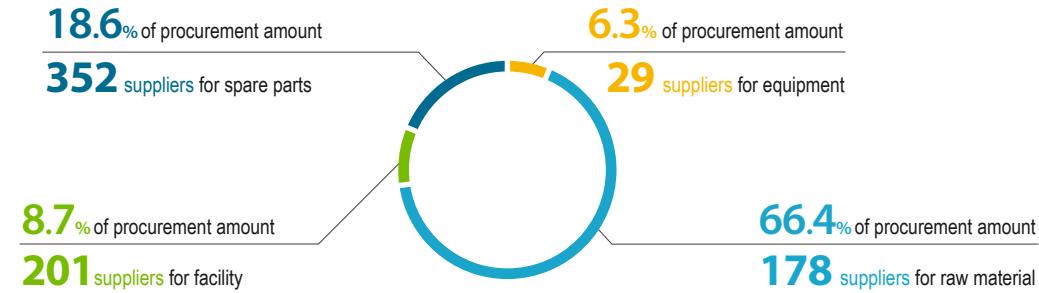
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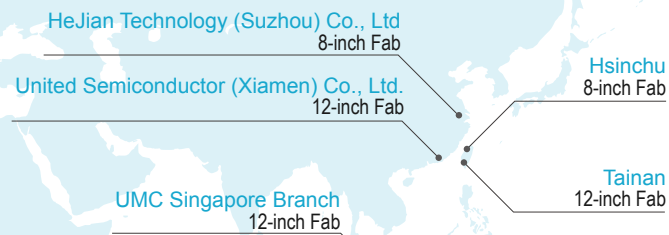
2-5-1 Localize Supply Chain and Procurement

When corporate social responsibility becomes the key to business continuity, UMC must fulfill increasing international expectations towards business standards in Taiwan. In 2019, UMC, including subsidiary HeJian Technology (Suzhou) Co. Ltd., and United Semiconductor (Xiamen) Co. Ltd., cooperated with more than 4,100 suppliers worldwide. The proportion of Tier 1 suppliers in UMC Taiwan is as follows:



Procurement localization became a key strategy adopted by UMC when looking for potential partners and suppliers. In addition to enhancing close partnerships with local suppliers, UMC hoped suppliers would provide services more efficiently, shorten delivery time and reduce carbon footprints of raw materials required through local production. UMC also provided job opportunities and promoted local socio-economic development indirectly. UMC believes that a procurement localization strategy is a key value for fulfilling corporate sustainable development and is a part of corporate social responsibility.

Major UMC production bases in Taiwan are located in Hsinchu Science Park and Tainan Science Park. Overseas locations are mainly located in Singapore (UMC Singapore Branch) and Mainland China (subsidiary He Jian Technology). In addition to HeJian Technology (Suzhou) Co., Ltd. located in the Suzhou Industrial Park, UMC's manufacturing base in China also includes United Semiconductor (Xiamen) Co., Ltd. founded in 2015. United Semiconductor Co., Ltd. is a semiconductor manufacturing company, specializing in the manufacturing of 12-inch wafers.



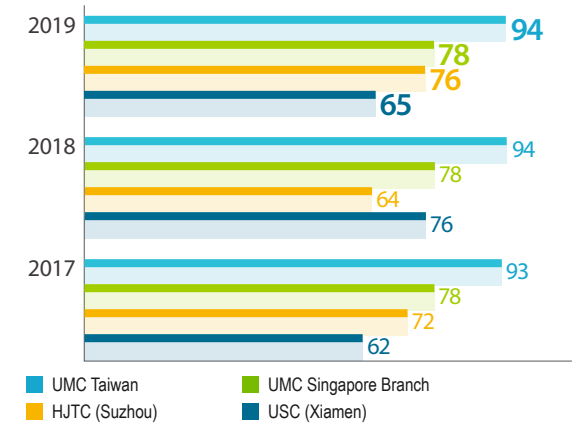
UMC applies a procurement localization strategy to all production sites.

In 2019, approximately 94% of UMC's suppliers were domestic suppliers in Taiwan. Proportion of procurement amounted to a total of 87%.

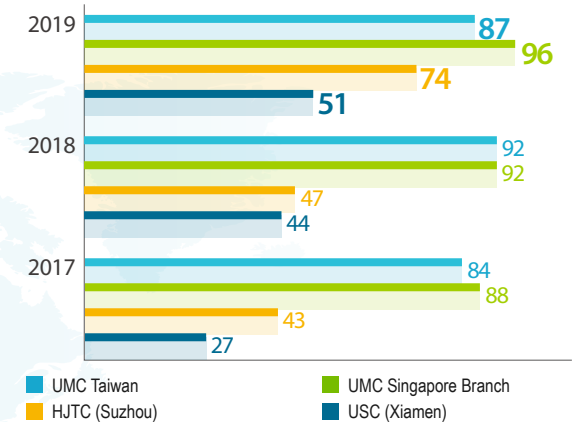
For the supply chain in Singapore, up to 78% of UMC's suppliers were domestic suppliers in 2019, accounting for 96% of procurement amount.

Among the supply chain in China, up to 76% of UMC's suppliers are domestic suppliers for HeJian Technology (Suzhou) Co., Ltd. 47% of procurement amount is domestic. Up to 65% of UMC's suppliers are domestic suppliers for United Semiconductor (Xiamen) Co., Ltd. 51% of the procurement amount is domestic.

Percentage of Domestic Suppliers (%)



Percentage of Domestic Procurement Amount (%)



Note: The data is calculated according to the location of the suppliers.

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2-5-2 Sustainable Supply Chain Management

UMC's Management Policy

-  **Raise cost-leading ability**
Integrate UMC group resources to gain the most competitive supply chain value by strategic cooperation.
-  **Establish sustainable supply chain ability**
Motivate vendors to raise performance in the aspects of economy, society and environment.
-  **Enhance supply-chain supply ability**
Continuously advise vendors about diversified supply through local sources.
-  **Building a green supply chain**
Promoting suppliers about energy conservation and carbon reduction towards a circular economy.
-  **Consider eco-friendly**
Actively implement green procurement, pursue economic benefits and consider environmental friendliness.
-  **No compromise on conflict minerals**
Ensure products and supply chain use conflict-free minerals.
-  **Implement sustainable risk management**
Focus on suppliers' energy resource use and water resources management to respond to the impact of extreme climate change on the supply chain.
-  **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's website. Please visit:

Supplier Sustainability Management Capability Evaluation

UMC upholds the supplier policy of "treating suppliers as partners and guiding suppliers for long-term cooperation" to plan a comprehensive management system for suppliers. The following four standards were adopted to regulate and guide suppliers, hoping to establish a supply chain management system with sustainable development.

New Suppliers Sustainability Assessment

Execution Criteria	Practical Practice	Result
Suppliers with estimated purchase amounts greater than NTD 1 million.	Issue sustainability assessment questionnaire on Global Vendor Data System.	To become a UMC supplier, vendors should reach the score that UMC requires, and then sign the supplier Code of Conduct and Employee Professional Ethics agreements..

4 Guidelines of Sustainability Suppliers Assessment

Execution

- Policy**
 - "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 Exposure & Measures

- Policy**
 - Using "UMC's Supplier Sustainability Assessing Mechanism" to define risk level of sustainability
- Standards**
 - Formal risk identification processes are
 - UMC issues ESG questionnaire to all major suppliers (procurement amount is over 80%), including equipment suppliers, facility suppliers, spare parts suppliers and raw material suppliers etc. annually.
 - ESG score below 80: we consider the suppliers as high-risk.
 - Supplier's flaw found under audit or purchase order is on-going, we consider these suppliers as medium risk.

Risk Management

- Policy**
 - Using "UMC's Supplier Sustainability Evaluating Mechanism" to define risk level of sustainability
- Standards**
 - Domestic Suppliers audited by UMC audit team.
 - Worldwide suppliers audited through third-party authorized by UMC (Remark A).



Counsel & Track

- Policy**
 - "UMC's Supplier Sustainability Assessing Mechanism"
- Standards**
 - Counseling during the audit.
 - Issue audit report with flaws and improvement plan.
 - Suppliers are under counseling, need to continuously observe in the following year.
 - The supplier fails to improve any flaws: UMC will reduce the business amount or even terminate the business relationship.

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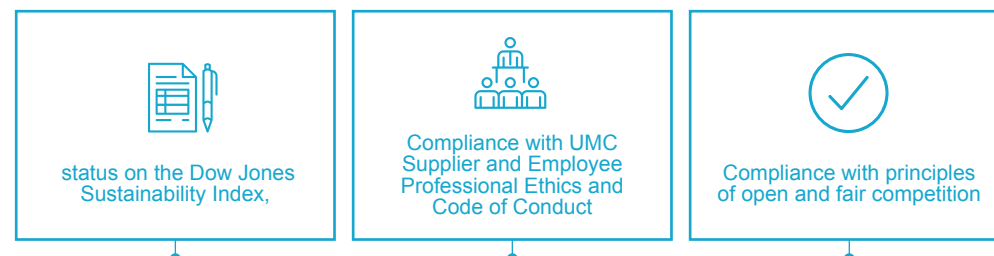
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Supplier Evaluation - New Suppliers Selection Criteria

Currently, criteria for selecting new suppliers include



UMC has always attached importance to the compliance of suppliers' employee ethics and supplier code of conduct, and adheres to the principle of open and fair competition. Prior to 2016 (including 2016), UMC focused on the Dow Jones Sustainability Index for the production of raw materials and spare parts. Beginning in 2017, we continued to include key equipment, facility, engineering and labor service suppliers as well as new suppliers. In 2018, all critical suppliers supporting production-related materials were included in the assessment.

In 2019, there were **2,390 vendors** in Taiwan, and a total of **743** were evaluated as Tier1 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. Some of the social suppliers in risk management have realized the possibility of risk management affecting the company's operations. In 2019, there were 191 new suppliers in UMC, including 12 that were evaluated by ESG (new suppliers accounted for 6.28% in 2019). UMC requires suppliers to comply with the company's requirements for labor, health and safety, the environment, business ethics and management systems, and fully comply with the laws and regulations of the countries in which they operate.

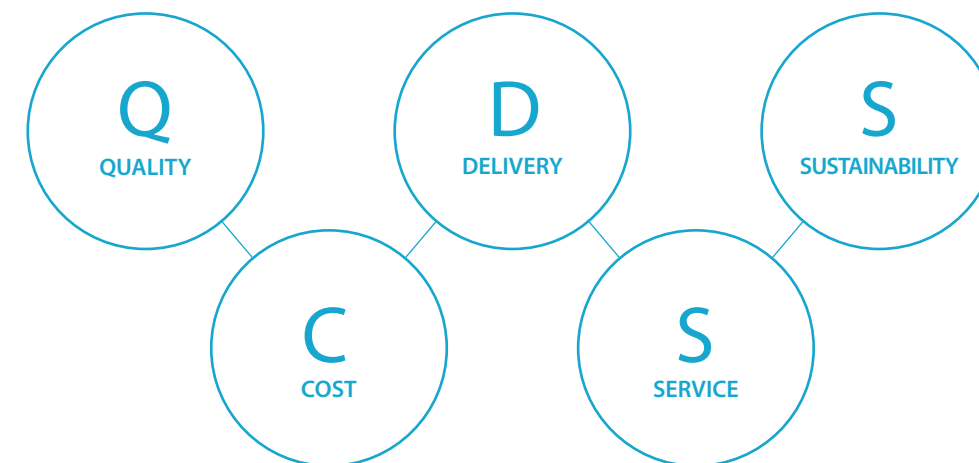
In 2019, 100% of the new suppliers have signed the abovementioned Codes of Ethics required by UMC. In 2019, UMC started to require its suppliers to disclose their tier-1 suppliers' information; a total of 313 suppliers were revealed. In 2019, UMC further required its suppliers to sign the code of ethics with their tier-1 suppliers and to conduct supply chain evaluations for joint promotion of corporate social responsibility.

Supplier Evaluation- Supplier Risk Management Evaluation

UMC attaches great importance to the sustainable management of suppliers. For the requirements 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 and evaluate the improvement and tracking of vendors.

The Supplier Assessment Mechanism is managed by Tier 1 suppliers that support production, including equipment suppliers, raw material suppliers, factory engineering suppliers, consumables and component suppliers. Each year, Q, C, D, S, S are evaluated.

Supplier Evaluation Mechanism



* The Tier 1 suppliers are those directly or indirectly related to supporting production. Suppliers can be divided by functionality into raw materials; equipment; factory service; and spare parts.

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The "Supplier Evaluation System" set the "Evaluation Level and Response Measures", and incorporated the items required for sustainability management into the evaluation criteria according to the degree of importance. Questionnaires are sent to the suppliers annually. The responses are collected and further categorized according to the characteristics and risk of the suppliers in order to improve the guiding process.

Supplier management performance was included as an indicator item in supplier evaluations conducted by UMC. UMC requires all its suppliers to sign the "Supplier and Employee Professional Ethics Agreement," asking its suppliers to strictly follow the Codes of Conduct and social responsibility related regulations. Also, suppliers should require their own suppliers, contractors and service providers to adopt the above regulations. Suppliers should assess their supply chain regularly. The extent of suppliers' obligation will be a condition when procurement strategy is conducted. 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 EICC Code of Conduct. Additional points may be provided. This incentive was provided to help guide and encourage suppliers to comply with these standards.

Level of Assessing Supplier Sustainability and Response

GOOD 90-100

- Increase procurement amount.

SATISFACTORY 80-89

- Maintain current operation, but request supplier to strengthen management mechanism.

NEEDING IMPROVEMENT 70-79

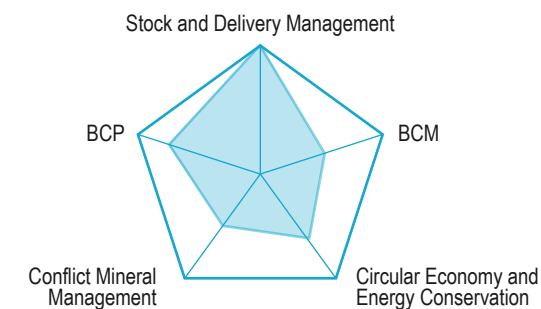
- Audit suppliers who scored less than 80 points in the current year, and counsel improvement.
- The Supply Chain Management Group should review procurement from suppliers who scored between 70-79 points for two consecutive years.

SIGNIFICANT DEFICIENCY Below 70

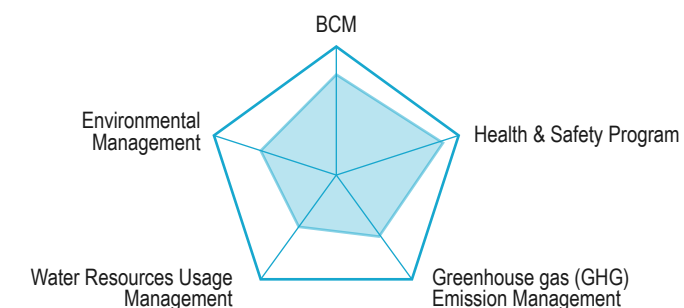
- Audit suppliers who scored below 70 points in the current year, and counsel improvement.
- The Supply Chain Management Group should discuss terminating procurement from or canceling supplier status of suppliers who scored below 70 points for two consecutive years.

Required Items for Supplier Sustainability Evaluation

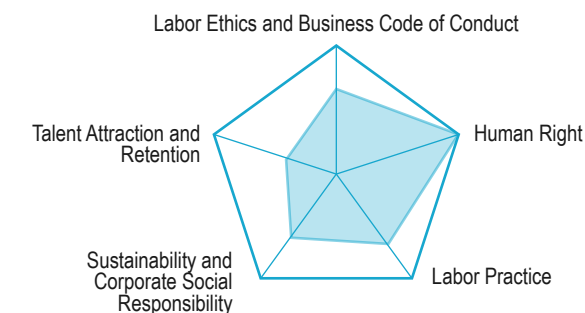
Economic



Environment



Society



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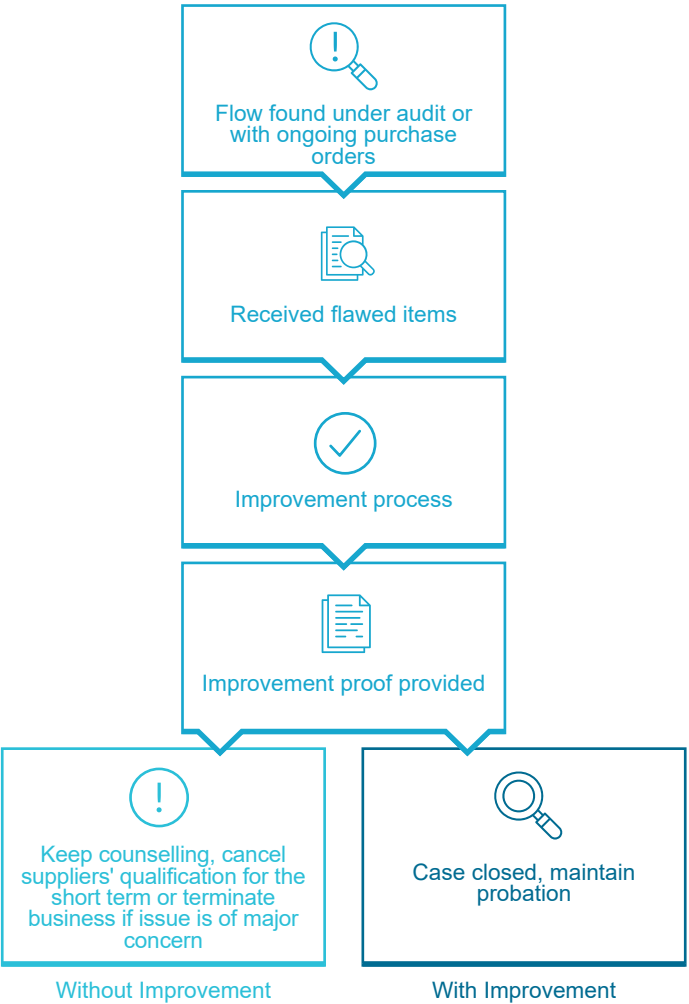
Supplier Sustainability Evaluation – On-Site Audit/Improvement Guidance and Follow-Up

UMC has a supplier lack of improvement management mechanism. According to the UMC supplier risk assessment mechanism (Note 3), the company will conduct on-site audits and propose solutions for suppliers with scores that are too low and suppliers failing to fulfill contractual obligations. Following UMC's assistance and consulting, suppliers are expected to complete improvements. If the manufacturer fails to improve, UMC will continue to provide guidance while evaluating short-term suspension of the supplier or termination based on supply chain risk. Suppliers that are still unable to improve within two years will face reduced purchasing amount, suspended purchasing or cancellation as a qualified supplier according to the degree of risk of the supplier (Note).

Sustainable Supplier's Risk Evaluation

Supplier's Risk Evaluation ESG	Frequency: Annually	Potential / Flexible Risk Evaluation	Frequency: Casually
<p>Applies to Key Supplier</p> <p>All Tier 1 suppliers supporting production related materials</p> <p>Method UMC DJSI risk evaluation questionnaire</p> <p>Target Fulfill supply chain management, focusing on sustainable business plan</p>		<p>Applies to All Suppliers</p> <p>Flaw found under audit or with ongoing purchase orders, Randomly selected 30% from Tier 1 suppliers</p> <p>Method 1.On-site audit, review flawed items 2.Request improvement proof within limit period 3.Check result of improvement and continous observation</p> <p>Target Ensure suppliers' quality, delivery, service and sustainability</p>	
High Risk Supplier Risk valuation / Audit			
<p>Applies to High-Risk Supplier</p> <p>Suppliers who failed on-site audit</p>	<p>Method On-site audit, review flawed items, Request improvement proof within time limit , Check result of improvement and continuously observe.</p>	<p>Target Fulfill supply chain management</p>	

Methods of Suppliers Failure Improvement Management



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Suppliers Sustainability Assessment - Result

In order to strengthen the capacity of the supply chain, UMC continued to guide the suppliers in establishing diversified and local supply capability, creating a sustainable supply chain for the suppliers. For more information on the guiding and training materials, please refer to "Creating a Sustainable Supply Chain" in this chapter.

In 2019, UMC Taiwan conducted an evaluation on its qualified diversified suppliers including suppliers for raw material, equipment, facility and spare parts and excluded suppliers with single transactions at UMC.

743 critical suppliers accounted for over 80% of UMC's procurement volume.



58 of them failed the evaluation in the aspects of economy, environment and society, receiving a score of less than 70 on the responding questionnaires.

In 2019, UMC conducted on-site audit for suppliers on the 2018 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 **238 suppliers** were audited. From the audit results, the suppliers on the 2019 improvement-needed list have all met UMC requirements.



The supplier evaluation system was applied to all UMC's overseas subsidiaries/branches in 2019

with a total of **324 suppliers** evaluated. Among the **17 suppliers** who have been selected for sustainability evaluation, the suppliers have all met UMC requirements.



The number of ESG evaluations (supplier questionnaire-based evaluation) conducted from 2016 to 2018 is as follows. Since 2017, UMC has extended the types of suppliers who are subject to ESG evaluation from the original raw material suppliers to equipment suppliers, facility suppliers, and consumable and component parts suppliers.

The percentage of suppliers that underwent on-site audit has increased from **26% from 2017** to **32% in 2019**. It is estimated that the percentage of suppliers audited each year will reach our goal of 30%.



In the evaluation of sustainable suppliers, UMC not only performed evaluation on sustainability items but also carried out on-site audit, guiding suppliers to correct their faults and ensuring suppliers' risk management capabilities. Furthermore, we hope to utilize the impact of the extended supply chain to continue the core value of UMC in promoting sustainable supply chain - Sustainability and Mutual-Development, triggering suppliers to voluntarily bring their own suppliers to join the group for sustainability. The number of suppliers audited in 2019 includes suppliers on the 2018 improvement-needed list. These suppliers were audited again and their shortcomings were completely resolved. 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.

Note: "Overseas subsidiaries/branches" refer to the subsidiary HeJian Technology (HJTC), the subsidiary United Semi (USC), and the UMC Singapore Branch.

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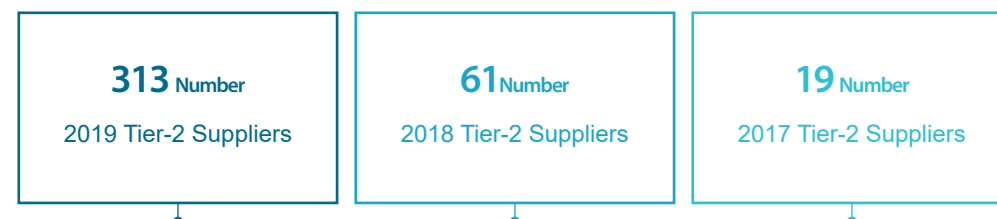
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Statistics of Suppliers' Evaluation Questionnaire and Number of on-Site Audit in the Past Three Years

UMC Taiwan	HeJian Technology (Suzhou)	United Semiconductor (Xiamen)	UMC Singapore
Number of Assessment Questionnaires in 2019			
743	134	64	126
Number of scores below 80 points in 2019			
61	0	0	0
Number of Assessment Questionnaire in 2018			
618	80	66	49
Number of scores below 80 points in 2018			
30	0	0	1
Number of Assessment Questionnaire in 2017			
573	-	-	51
Number of scores below 80 points in 2017			
6	-	-	1

UMC Taiwan	HeJian Technology (Suzhou)	United Semiconductor (Xiamen)	UMC Singapore
Number of suppliers audited on-site in 2019			
238	9	4	4
Number of suppliers with flaws in 2019			
0	0	0	0
Number of suppliers audited on-site in 2018			
198	0	1	1
Number of suppliers with flaws in 2018			
5	0	1	0
Number of suppliers audited on-site in 2017			
148	-	-	3
Number of suppliers with flaws in 2017			
6	-	-	1

Number of Tier-2 Suppliers Disclosed in the Past Three Years



Focusing on ESG evaluations, the summary is as below. UMC continues to carry out suppliers' improvement plans to make sure the suppliers' competitiveness will be raised.

Economy

• Material delivery/Inventory management

Level of safe inventory should be established, Lack of critical spare parts management

• Conflict Minerals

Lack of real-time detection of conflict mineral and alternative mechanism

• Business Continuity Management (BCM)

Partial suppliers have no financial risk assessment for Tier2 supplier, Lack of Tier2 supplier management in BCM

Environment

• Environmental management

Environmental resource inventory result and establishment of administration regulations are needed

• Safety and health management

Occupational safety and health regulations should be reviewed, cross-functional meeting is needed and communication for risk

• Greenhouse gas management

Greenhouse gas reduction and environmental issues aren't listed in occupational safety promotion meeting, and are needed

• Business Continuity Management (BCM)

Implementation of periodical business impact analysis is needed, Identify key business events and bottlenecks for resource items

Society

• Friendly workplace

Information of appeal channel for employees should be released in public

• Employee's ethics policy and regulation

Code of conduct should be implemented for complying with RBA, Internal audit should include labor-related and ethics-related issues

• Human rights compliance

SA8000 certification is needed

• Sustainability and CSR

Corporate sustainability report (such as CSR report should be released in public, Management of continuous improvement for environmental influence, employees' health and safety and ethical business practices are needed

BCP

• Emergency response plan

Emergency response plan and catastrophe-caused risk management plan should be improved, Rule of information security should be improved, to confirm confidential information is secure, Procedure of communicating with clients proactively for critical events is needed

• Business Continuity Status

BCP plan should be improved and rehearsed as needed

Action

UMC held 1 sharing event of supply chain sustainability for suppliers. Suppliers were required to fulfill ESG, RBA, and risk management. A new challenge to sustainable supply chain was introduced at the event. 1 event will be held in China in 2020.

For safety training, a total of 44 joint conferences of suppliers and contractors were held in 2019. UMC ensures that the contractor has sufficient knowledge of environmental safety.

In 2019, a total of 16 contractor-aligned meetings were held, which carried out safety management announcements and accident advocacy for each site.

Targeting specific suppliers, UMC executes ESG assessment counselling continuously

ESG/ BCP notions are communicated with suppliers by UMC's ESG assessment

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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 2018 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 2018 to accelerate the development of sustainable supply chain management.



2019 UMC Singapore Supply Chain Sustainability Communication

Strategy	Activity	Result
 Environmental, safety and health education training plan for suppliers and contractors		
<ul style="list-style-type: none"> To ensure that the contractor has sufficient knowledge of environmental safety 	<ul style="list-style-type: none"> raining for suppliers and contractors with safety work related rules 	<ul style="list-style-type: none"> Accumulated 44 training sessions held in 2019 Accumulated attendees were 3,731 in 2019 Accumulated hours for training were 8,995 in 2019
 Contractor-aligned meeting		
<ul style="list-style-type: none"> To make sure contractors are conscious of workplace safety 	<ul style="list-style-type: none"> Routine meeting for safety management announcements and accident advocacy for each site. 	<ul style="list-style-type: none"> Accumulated 16 training sessions in 2019 Accumulated attendees were 1,581 in 2019 Accumulated hours for training were 1,581 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 human-oriented sustainable conduct and co-prosperity in society Continue promoting supply chain to respond to ESG requirements Continue promoting supply chain to respond to RBA requirements Continue promoting supply chain to respond to risk management requirements New challenge to sustainable supply chain 	<ul style="list-style-type: none"> Accumulated 1 sharing session held in 2019. 39 suppliers attended, including equipment suppliers, raw materials suppliers, parts and components suppliers and facility suppliers 1 sharing session for UMC Singapore in 2019, 1 sharing session for USCXM in 2020
 Sustainable supply chain management training for buyers		
<ul style="list-style-type: none"> Promote sustainable advocacy to be carried out for routine procurement operation. To understand the trend of global business sustainable development 	<ul style="list-style-type: none"> Internal employee training curriculum: Buyer's knowledge-RBA execution, How ESG responds to DJSI requirements, Conflict mineral management, Business Continuity Planning (BCP) of supply chain management, Supply chain management of green procurement, Supplier audit experience sharing 	<ul style="list-style-type: none"> Accumulated 6 training curriculums held in 2019: rate of attainment was 100% 1 curriculum - Editing CSR report with "GRI Standards Guideline" in 2020
 Counseling local suppliers to improve		
<ul style="list-style-type: none"> Enhance suppliers' abilities and productivity; lower workplace safety accidents 	<ul style="list-style-type: none"> Modify bypass installation (Focus on: poor tool uptime) Improve inside components (Focus on: Corrosion issue) Expand production line (Focus on: capacity shortage) 	<ul style="list-style-type: none"> A total of 1 supplier was counselled in 2019 (for parts and components) 1 suppliers will be counselled in 2020(for accessory) Capacity of these suppliers increased by 5 times
 Suppliers localization / Second source implement		
<ul style="list-style-type: none"> Create local employment opportunities to promote local prosperity Lower risk of raw material shortage 	<ul style="list-style-type: none"> Expand production line in Taiwan Evaluate and select qualified suppliers 	<ul style="list-style-type: none"> A total of 19 suppliers expanded production lines in 2019; 359 job opportunities were created 2 suppliers plan to expand production lines in 2020. 67 new suppliers were implemented in 2019

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Building Green Supply Chain and Promoting Circular Economy

UMC believes that green supply chain is an important part of the implementation of the corporate sustainability blueprint. We continue to make good use of UMC's influence as a business leader 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 Major League project. In 2019, the number of suppliers participating in Triple R Major League projects has increased by 10% compared to 2018. 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 2019, the benefits of UMC's precious material waste recycling project reached a new high of 177 million NTD, and the percentage of reclaimed wafer usage to 64% from 51.7% in 2018. Moreover, the total amount of oxide slurry (Oxide Slurry S225) recycled has reached 855 tons.



2019 UMC Triple R Awards Ceremony

Target	Activity	Result
Triple R league 3-year		
Through quantifiable targets set by suppliers, to promote energy saving and circular economy execution and upgrade the green supply chain.	Suppliers set quantifiable targets; UMC checks the targets through scoring	Second-year award ceremony held in 2019 (for 2018), 18 suppliers were awarded.
	Hold sharing sessions for different sectors to exchange knowledge	39 suppliers joined in 2019, an increase of 2 suppliers over 2018.
	Hold annual award ceremony to encourage excellent suppliers	In 2019, carbon dioxide emissions were reduced by 125,000 tons (CO2e), equivalent in reduction to the effect of 477 Daan Forest Parks.
Precious material waste recycling		
Sell leftovers and scraps to reuse/recycle businesses to decrease waste and reuse resources effectively	Evaluate licensed waste disposal contractors	Sewage sludge saving was 40.5 tons in 2019.
	By systematized control of recycling, collect the waste in volume to sell to qualified contractors	For more details about UMC's Triple R League project please visit https://www.umc.com/en/Html/triple_r_league
		Target to drive suppliers to achieve a 390,000 ton reduction in carbon emissions -- 2020
Reclaimed wafer reuse		
The more UMC uses reclaimed wafers and recycles, the less likely UMC purchases dummy wafers	Authorize suppliers to process reclaimed wafers to ensure dummy wafers reach the best condition to be reused in UMC	Reached an accumulated NT 100M annually from the recycling of precious material waste since 2013
		In 2019, the benefits of UMC's precious material waste recycling projects reached a new high of 177 million NTD due to rising wafer unit price and strong NTD appreciation
		Reach an accumulated NT 100M from the recycling of precious material waste in 2020
Oxide Slurry SS25 recycling		
Reuse slurry and decrease waste water treatment	Through a slurry recycle system to collect used slurry, UMC authorized suppliers to formulate and reuse during the manufacturing process	Reach an accumulated NT 664M from the recycling of precious material waste in 2025
		Accumulated reclaimed wafer procurement quantity was 428,675 pcs in 2019
		Wafer usage was increased to 64% from 51.7% in 2019
The total amount of oxide slurry (Oxide Slurry S225) recycled reached 855 tons		

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Consider eco-friendliness with the supply chain

Propose	Activity	Result
Eco Echo award (supplier's response)		
<ul style="list-style-type: none">As a driving force for ecological environmental conservation, UMC rewards excellent conservation plans through its Eco Echo award. UMC appeals to suppliers to sponsor this project	<ul style="list-style-type: none">Select from an open audition of domestic green groups to encourage excellent conservation plans by providing cash prizesAppeal to suppliers with the same concept to sponsor this activity	<ul style="list-style-type: none">Raised NTD 3 million for the award in 20198 suppliers sponsored in 2019, including 3M, BASF, Hermes Epitek, Unimicron, Hueng Luei Process, Edwards, Faraday, Wholetech5 winners won the Eco Echo award in 2019
Green procurement		
<ul style="list-style-type: none">Targeted at green products, UMC promotes green procurement from the origin of the product to conserve resources and protect the environment	<p>Green procurement index:</p> <p>Domestic: Category no. 1 to no. 3 green-marked products, including Energy Label, Water Label, Green Building Material, Carbon Footprint Label, Carbon Label</p> <p>Foreign: green-marked products originated from countries having agreements with Taiwan, Energy Star, FSC, PEFC</p>	<ul style="list-style-type: none">An accumulated amount of NT 128 million in 2019Awarded for green procurement in 2019 (from Environmental Protection Administration, Executive Yuan)Awarded for green procurement in 2019 (from Hsinchu City government)Awarded for green procurement in 2019 (from Tainan City government)

Fulfill Social Responsibility, Develop UMC's Influence

Targets	Activity	Result
Tier 2 key supplier management		
<ul style="list-style-type: none">Key suppliers (UMC's Tier 2 suppliers) are required to sign the Supplier Code of Conduct and to be subject to supply chain management	<p>Disclosed through the e-Procurement platform (platform for suppliers):</p> <ul style="list-style-type: none">Required key suppliers (UMC's Tier 2 supplier) to sign the Supplier Code of ConductRequired key suppliers (UMC's Tier 2 suppliers) to be subject to supply chain management	<p>In 2025:</p> <ul style="list-style-type: none">80% of key suppliers (UMC's Tier 2 supplier) are required to sign the Supplier Code of Conduct30% of key suppliers (UMC's Tier 2 supplier) need to be managed by supply chain management
Support seminar of "Corporate Social Responsibility Link With Trade"		
<ul style="list-style-type: none">Promote concept of corporate social responsibility to more businesses and apply to sustainable supply chain management	<p>UMC presented in the seminar:</p> <ul style="list-style-type: none">UMC's CSR idea and promotion statusUMC's practice of sustainable supply chain management	<ul style="list-style-type: none">Attended the Mediatek "Supplier experience sharing sessions" in 2019, shared UMC's experience with different sectors

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2-5-3 Conflict Minerals Management

In its conflict minerals management, UMC has been conducting supplier evaluation and obtaining supplier signatures since 2009 to guarantee non-conflict minerals and ensure that products from suppliers are not in violation of conflict mineral guidelines. 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.



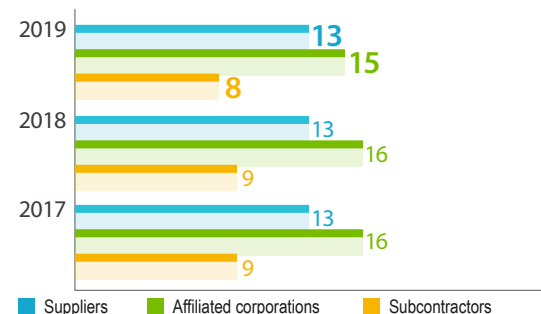
UMC Conflict Minerals Management Measures

- Establish internal investigation for the company (including subsidiaries) and investigation mechanism for suppliers.
- Establish annual periods for investigating and controlling operations.
- Establish and consolidate investigation 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 transacting with the vendor.



In 2019, UMC conducted a survey for suppliers whose products contain 3T1G. Investigations on conflict minerals were carried out for a total of 36 suppliers, including 13 suppliers, 8 contractors (suppliers providing packaging and testing services), and 15 UMC subsidiaries.

Conflict Minerals



UMC expects every business in the supply chain to uphold these principles. Clear objectives have been established with relevant guidelines and tools to help suppliers enhance the effectiveness of their efforts in improving the society and the environment. UMC also collaborated with other companies in the industry to promote various projects, encouraging employees to incorporate corporate social responsibility into procurement decisions as well as supplier management procedures. In addition, UMC also voluntarily applied to join CFSI (Conflict-Free Sourcing Initiative) in Q1 of 2016. Suppliers were also requested to actively monitor foundries and mines that were lacking relevant certification to undergo Conflict-Free Smelter Program (CFSP) or other equivalent and independent third party's audit program inspections. To ensure transparency in the entire supply chain, UMC also voluntarily performed on-site audit of 3 suppliers for their origin of supplies, making sure that the supply chain does not contain conflict mineral supplies in 2017.

In 2017, the results of the use of tin, tantalum and tungsten (3TG) in UMC's various fabs did not result in any minerals sourced from conflict areas or countries. In order to comply with the US Dodd-Frank Act and to implement corporate social responsibility, UMC added a "conflict-free mineral" label on its product packaging to declare that its products did not using conflict minerals, effective from April 1, 2018. Other sites (USCXM/HeJjian/Fab 12i) will be announced separately. UMC issued an official statement on the My UMC website on March 1, 2018. In 2019, UMC made plans to begin in 2020 to conduct domestic and international audits of conflict mineral suppliers, through third-party certification authorities.

2-5-4 Responsible Business Alliance and UMC Supplier & Employee Professional Ethics Agreement

UMC has followed the Code of Conduct - Responsible Business Alliance, RBA Version 6.0 since 2017. Besides self-evaluation, UMC also requested its suppliers to comply with RBA regulations via the Supplier & Employee Professional Ethics Agreement. The purpose of the Agreement is not only to allow suppliers to understand clearly UMC's requirements regarding code of conduct, but also to deliver the message that suppliers should obey RBA as well as local laws. Furthermore, the agreement also ensures that the operation of suppliers and their upstream partners must comply with the intention and spirit of the RBA.

For further information about RBA, please refer to



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about RBA,

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3-2 Carbon Asset Management

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3-5 Green Product

Renewable energy generation

UMC has completed the installation of a 4,335 kWp solar energy system, which is expected to generate up to 2.8 million kWh of electricity each year. The installation capacity is the highest among Taiwan's wafer fab industry.

**2.8
Million KWH**

Waste recycling

The amount of reused waste was 33,296 metric tons, which is a gain of more than NT\$ 40 million from recycled resources.

91%

Recycled water usage

In Singapore, UMC's use of recycled water (Newater) reached 3.24million tons, accounting for 94% of Fab 12i's total water use of 3.43 million tons, thus reducing the impact on local water resources.

**3.24
Million tons**

Certification

All UMC fabs have passed the ISO 14064-1 greenhouse gas emissions certification, the ISO 14001 environmental management certification, and the QC 080000 Hazardous Substance Process Management Certification.

100%

Reduction in units of fluorinated greenhouse gas emissions

Achieved the objective for reducing emissions by 61%. Reductions in fluorinated greenhouse gas emissions were equivalent to 996,000 tons of CO₂e.

61%

Environmental incidents or fines

In 2019 there were no environmental incidents or fines.

0

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Major Material Environmental Issues

There were three major categories of material environmental issues in 2019: (1) Climate strategy and action (2) Water and wastewater management (3) Waste and resource utilization efficiency

Indicator	2019 Goal	Compliance for 2019	2020 Goal	Long-Term Goal
Climate strategy and action				
Greenhouse Gas Emissions	Reduce fluorinated greenhouse gas emission intensity by >51%.	★ Fluorinated greenhouse gas emission intensity was reduced by 61%.	Reduce fluorinated greenhouse gas emission intensity by >61%.	Goals for 2025 <ul style="list-style-type: none">30% absolute reduction of fluorinated greenhouse gas emissions compared to 2010.Reduce fluorinated greenhouse gas emissions per unit of product by 55%.Reduce total greenhouse gas emissions per unit of product by 5% compared to 2010.
Electricity consumption	Promote Green 2020 Reduction Plan to reduce electricity consumption of each unit by 8%.	★ Additional reduction of 49,540 MWh of electricity consumption for the year, reaching the annual targeted goal	Promote Green 2020 Reduction Plan to reduce electricity consumption volume of each unit by 10%.	Goals for 2025 <ul style="list-style-type: none">Reduce electricity consumption per unit of product by 15% compared to 2015.
Water and wastewater management				
Water consumption	Promote Green 2020 Reduction Plan to reduce water consumption of each unit by 8%.	★ Additional reduction of 187,000 tons of water consumption for the year, reaching the annual targeted goal.	Promote Green 2020 Reduction Plan to reduce water consumption of each unit by 10%.	Goals for 2025 <ul style="list-style-type: none">Reduce water consumption per unit of product by 15% compared to 2015.
Water Recycling	To make our overall fab recycling rates and process water recycling rates superior to science park control standards.	★ Despite the various operation schedules of UMC's fabs, the water recovery rate still outperformed the standard regulated by the Science Park. Annual total recovery amounts reached 32.84 million tons of water.	To keep our overall fab recycling rates and process water recycling rates superior to science park control standards.	Continue to keep our overall fab recycling rates and process water recycling rates superior to science park control standards.
Compliance with regulations	0 cases of environmental regulation violation.	★ No cases of environmental regulation violation.	Maintaining 0 cases of environmental regulation violations.	Maintaining 0 cases of environmental regulation violations.
Waste and resource utilization efficiency				
Waste generation	Promote Green 2020 Reduction Plan to reduce waste production volume of each unit by 8%.	★ Additional reduction of 705 tons of waste generation for the year, reaching the annual targeted goal.	Promote Green 2020 Reduction Plan to reduce waste production volume of each unit by 10%.	Goals for 2025 <ul style="list-style-type: none">Reduce waste per unit of product by 25% compared to 2015.
Proper waste disposal	<ul style="list-style-type: none">Landfill rate of less than 1%.Greater than 98% recycling for liquid waste.100% resource recycling for acid-base liquid waste.	<ul style="list-style-type: none">Landfill rate was 0.5%.Recycling rate for liquid waste was 98%.Recycling rate for acid-base liquid waste was 100%.	<ul style="list-style-type: none">Landfill rate of less than 1%.Greater than 98% recycling for liquid waste.100% resource recycling for acid-base liquid waste.	Continue to maintain our goals. <ul style="list-style-type: none">Landfill rate of less than 1%.Greater than 98% recycling for liquid waste.100% resource recycling for acid-base liquid waste.
Compliance with regulations	0 cases of environmental regulation violation.	★ No cases of environmental regulation violation.	Maintaining 0 cases of environmental regulation violations.	Maintaining 0 cases of environmental regulation violations.

Note1: The various annual indicators are included in the company's and Corporate Sustainability Committee's KPI (Key Performance Indicator) and policy development, integrated with major company policies, and continually reviewed and improved.
Note2: Green 2020 Reduction Plan uses 2015 as the base year. The calculation was conducted by using the statistical data of 2015 as the basis.
Note3: The target scope for waste disposal are the fabs in Taiwan. Currently, the fab in Singapore is limited by local regulations and the local processing plant, and targets cannot be set according to Taiwan's fabs.

★ Compliant
★ Non-compliant

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Environmental Information

The summary information disclosed in this section includes UMC Headquarters and wafer fabs in Taiwan and Singapore.

 Number of sites that are certified by the ISO 14001 environmental management standards: **8**

 Percentage of the company's total worksites that are certified by the ISO 14001 environmental management standards: **100%**

Input Wafer		352 tons
	Energy	
	Total Energy Consumption	2,728 1000MWh
	Electricity	2,534 1000MWh
	Renewable Energy	2.75 1000MWh
	Natural Gas	191 1000MWh
	Fuel	
	Natural Gas	28,067 1000m³
	Diesel	0.08 1000m³
	Coal	0.00 1000ton
	Water	
	Total Water Usage	48,479 1000m³
	Total Water Intake	15,637 1000m³
	Surface Freshwater	0 1000m³
	Underground Water	0 1000m³
	Salt Water	0 1000m³
	Tap water	14,809 1000m³
	Rain/Condensate Water	827 1000m³
	Purified Water	17,400 1000m³
	Water consumed per unit of production	79.2 m³/wafer-m²

Output Wafer		334 tons
	Greenhouse Gas Emissions	
	Scope 1 /Direct Greenhouse Gas Emissions	513 1000 ton CO2e
	Scope 2 /Indirect Greenhouse Gas Emissions	1,318 1000 ton CO2e
	Scope 3 Greenhouse Gas Emissions	2,073 1000 ton CO2e
	Scope 1 /Direct Carbon Dioxide (CO2) Emissions	39.4 1000 ton CO2
	Scope 1 /Direct methane (CH4) emissions	0.5 1000 ton CO2e
	Scope 1 /Direct nitrous oxide (N2O) emissions	163.1 1000 ton CO2e
	Scope 1 /Direct hydrofluorocarbon (HFC) emissions	29.5 1000 ton CO2e
	Scope 1 /Direct perfluorocarbon (PFC) Emissions	193.3 1000 ton CO2e
	Scope 1 /Direct sulfur hexafluoride (SF6) emissions	66.3 1000 ton CO2e
	Other Air Pollutant Emissions	
	Nitrogen Oxide (NOx)	60.6 ton
	Sulphur Oxides (SOx)	2 Kg
	Volatile Organic Compounds (VOCs)	43.36 ton
	Ozone-Depleting Substances (ODSs)	0 ton
	Waste Water	
	Total Waste Water Discharge	10,788 1000 m³
	Chemical Oxygen Demand (COD)	1.50 1000 ton
	Water	
	Total Recycled Water	32,842 1000 m³
	Waste Generation	
	Total Waste	36.78 1000 ton
	Hazardous Waste	21.03 1000 ton
	Recycling Waste	33.30 1000 ton
	Landfill Waste	1.48 1000 ton
	Spills of hazardous materials	
	Number of spills	0
	Amount of spills	0 ton

Environmental-related costs and benefits in the past four years

unit: million	2016	2017	2018	2019
Capital expenditure	1,099	762	540	434
Operating expense	1,082	1,148	1,317	1,225
Environmental protection fine	0	0	0	0
Cost saving	504.2	438.5	448.9	449.2

Note1: Cost saving mainly calculates the benefits generated through the implementation of management measures for water, electricity, waste, natural gas, and greenhouse gases.
Note2: The number of environmental protection violations and fines in each year is zero.

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3-1 CLEAN PRODUCTION

Currently, environmental issues are a major issue of business sustainability among stakeholders. To alleviate ecological deterioration, reduce the greenhouse effect and slow global warming, UMC's environmental protection policies aim to minimize the consumption of resources and create minimum waste. Therefore, the company continues to enhance its technology, self-regulate and introduce high-performance pollution control technology and equipment to achieve environmental symbiosis, shared prosperity and sustainable global development.

How We Manage

- Introduce management systems and accreditations that are environmentally relevant
- Endorse construction of green factories and buildings
- Advocate for resource productivity enhancement initiatives
- Bring in and develop environmentally-friendly technology, reinforce source reduction of waste and pollution prevention
- Promote environmental education

Goals and Targets

- Obtain relevant environmental management accreditation for all fabs, maximizing utilization of resources
- Continue to reduce negative impact of production on the ecological environment, maintaining zero environmental accidents
- Increase employees' knowledge of environmental protection and "green living"

Purposes

- Minimize resource and energy consumption in product lifecycle

The Mechanisms for Evaluating the Effectiveness

- Company-wide environmental protection management plans were set, with performance reviewed annually by the Environment Committee.
- The Environment Committee reviews the needs and expectations of stakeholders quarterly.
- Pass the ISO 14001 environmental management system certification every year.

Relevant policy



Environmental
Protection
Policy

Applicable Entities

UMC and its subsidiaries HJTC and USC

To realize the company's commitment to environmental sustainability, we continue to bring in various management systems and accreditation that are relevant to the environment. We also reduce implementation risks through standardization and promote the introduction of cleaner production and green buildings to reduce negative impact to the environment.

Environmental Management System



ISO 14001: 2015
Environmental Management System

Range: Entire UMC and its subsidiaries HJTC and USC

Business Continuity Management System



ISO 22301: 2012
Business Continuity Management System

Range: UMC Headquarters, Fab 12A and Fab 12i

Greenhouse Gas Emissions Verification



ISO 14064-1: 2006
Greenhouse Gas Emissions Verification

Range: Entire UMC and its subsidiary HJTC

Green Product Certifications



IECQ HSPM QC 080000: 2017

Range: Entire UMC and its subsidiaries HJTC and USC



Sony Green Partner

Range: Entire UMC and its subsidiaries HJTC and USC



Environmental Production Declaration

Range: UMC Fab 12A and Fab 8A



ISO 14047: 2018
Carbon Footprint Verification on Integrated Circuit Wafers

Range: UMC Fab 12A, Fab 8A and Fab8E



ISO 14046: 2014
Water Footprint Verification on Integrated Circuit Wafers

Range: UMC fabs in Taiwan



ISO 14051: 2011
Material Flow Cost Accounting Verification

Range: UMC Fab 8A

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3-1-1 Green Factories and Buildings

Using past promotional experience and success of its departments in source reduction, recycling and reuse, UMC employs outside green building and ecology experts and collaborates with relevant academic programs to plan and construct green buildings that are consistent with the US LEED and domestic EEWH standards. In 2010, the company participated in the Green Factory Promotion Alliance, which integrates industrial, governmental and academic forces, to help the government formulate a green building and clean production evaluation system for developing Green Factory standards for Taiwan. In 2012, the company's new fab in Tainan Science Park and Fab 8A in Hsinchu Science Park, which is more than 17 years old, were awarded the 1st Green Factory logo by the Industrial Development Bureau. Moreover, Fab 8A was the first 8-inch foundry fab in the nation to receive the award.

UMC Future Plans for Green Building and Green Fab

Designs for new fabs will adhere to green building, green factory and smart building principles.

Existing fabs will undergo green building and green factory assessments, and green design and construction will be gradually incorporated.

Status of UMC's fabs



LEED of the United States

Gold Level

- Fab 12A P3&4
- Fab 12A P5&6
- USC



Smart Architecture of Industrial Development Bureau, Ministry of Economic Affairs

Diamond Level

- Fab 12A P5&6
- Fab 12A P5&6 Office Building



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

Gold

- Fab 12A P3&4

Diamond Level

- Fab 12A P5&6

Qualified Level

- Fab 8A
- Fab 8F
- Fab 8S



Green Factory of Industrial Development Bureau, Ministry of Economic Affairs

- Fab 12A P3&4
- Fab 8A
- Fab 8S



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

- All 200mm fabs and Fab 12A in Taiwan^{Note}

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

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.

Digitization and visualization of the overall energy utilization in the fab

This allows the operator to immediately know 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 the 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 paperless 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 greatly improve system stability.



The Industry 4.0 Team

The Industry 4.0 Team, located in the fab, abandoned the traditional constant temperature supply approach. Instead, they installed several IoT sensors to capture the operation parameters. By using the huge operation database generated by the "Chilled water system optimization energy saving control program" and through the help of machine variation analysis as well as the machine learning algorithms, the major impacting factors and leading indicators were found. Furthermore, by repeatedly exploring the correlations and weights between the parameters, the efficiency problem derived from complicated issues such as equipment aging non-linear system, which cannot be solved by the traditional approach, was successfully overcome. This enables each chilled water unit to dynamically adjust to the optimal state according to the external climate or on-site loading conditions, allowing the energy saving efficiency to increase by 3%, which is equivalent to saving 12.232 GWh of electricity.



Fab12A

Fab 12A won the "2019 Energy Saving Leadership Award" - Gold Award



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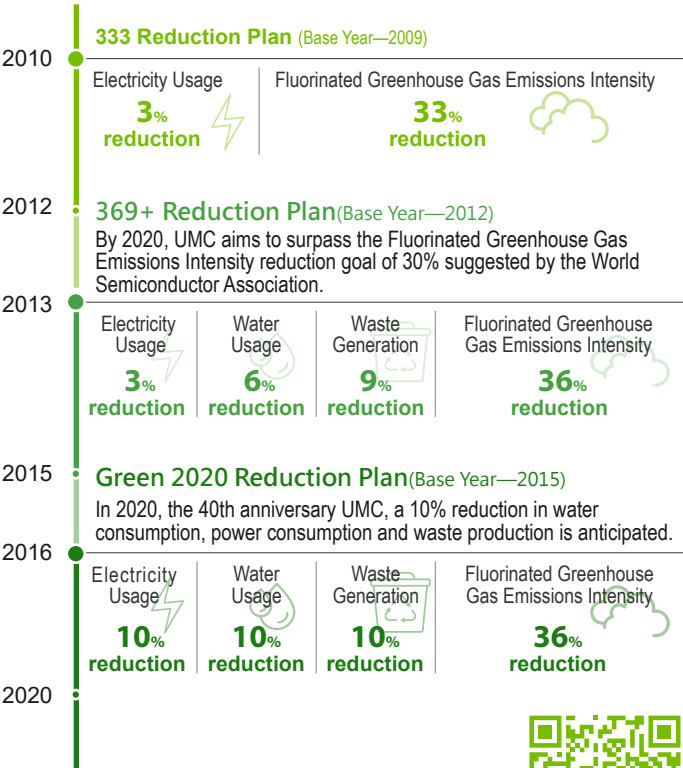
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3-1-2 Energy Resource Productivity Improvement Plan

To improve energy resource productivity and reduce greenhouse gas emissions, UMC recently promoted various reduction measures and set targets for each stage.

UMC Energy Resource Improvement Status



Note1: The base year for the 369+ and Green 2020 plans to reduce the intensity of fluorinated greenhouse gases is 2010.

Note2: For the Green 2020 reduction plan, please refer to:



Status of UMC's "Green 2020 Reduction Plan"

Electricity Usage

Cumulative 8% reduction

Annual goal achieved

Reduction Measures

- Improve energy efficiency
- Improve air conditioning system
- Improve lighting system

Water Usage

Cumulative 8% reduction

Annual goal achieved

Reduction Measures

- W-SOL drain reclaim to Cu CMP system
- Increase performance of CMP reclaim
- Cu SOVT-4 set LRP drain water recycle to DIR 30%

Waste Generation

Cumulative 8% reduction

Annual goal achieved

Reduction Measures

- 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)
- Sludge reduction (expanding the drying equipment and source reduction for fluorine-containing chemicals)
- Reduction of waste solvent (reducing the water content of IPA liquid waste, and extending life time)

Note: The reduction goal of 2019 is determined based on the statistical data of 2015.

2019 Results

	Water consumption reduction	Power consumption reduction	Waste reduction
Economic benefits	Savings of NT\$ 4.67 million	Savings of NT\$ 113.9 million	Savings of NT\$ 3.19 million
Environmental benefits	Additional water savings: 187,000 tons	Additional power savings: 49,540 MWh -25,372 tons of CO2e	Additional waste reduction: 705 tons

Note1: In 2019, the Company's subsidiary HJTC reduced power by an additional 5,947 MWh, and the subsidiary USC reduced power by an additional 8,227 MWh.

Note2: In 2019, the Company's subsidiary HJTC reduced water by an additional 60,100 tons.

Note3: In 2019, the Company's subsidiary HJTC and USC reduced waste by an additional 655 tons.

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3-1-3 Air Pollution Control

UMC air pollution control strategies involve using high-performance equipment to treat exhaust gas from rational 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.

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.

Volatile organic compounds

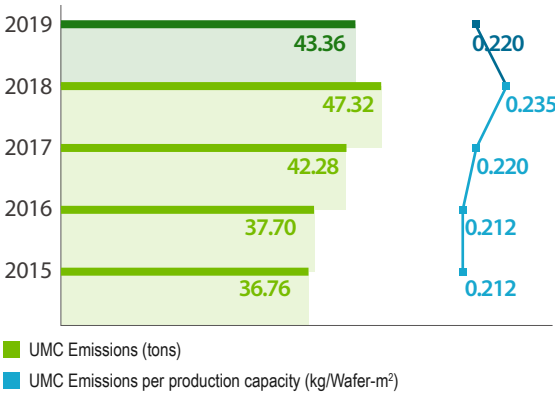
Volatile organic compounds exhaust (Solvent Exhaust) is treated using VOC Zeolite carousel wheels, which treat and release gases using low temperature adsorption and high temperature desorption.



Total Hydrocarbon Reduction

In 2019, the efficiency of UMC's volatile organic compounds (VOC) treatment was maintained at an average of 94.93%, which exceeded the 90% legal standard. Total emission of hydrocarbon pollutants was 43.36 tons / year, which was a reduction of 811.4 tons / year. The emission per production capacity was 0.220 kg/wafer-m².

UMC Volatile Organic Compounds Emissions



Note1: In 2019, the emission for HJTC was 4.6 tons / year
Note2: In 2019, the emission for USC was 3.757 tons / year

Other Air Pollutant Emissions

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 in 2019 are listed in the table below.

Emissions in 2019

SOx (kg)		
UMC 2	HJTC 702	USC 42
NOx (ton)		
UMC 60.6	HJTC 2.94	USC 21.9

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3-1-4 Promoting the “Green” Concept

UMC carries out activities during Environmental Protection Season every year to promote the “Green” concept of environmental protection within the organization. The 2019 UMC Environmental Protection Season continued to conduct various types of environmental protection related activities based on the theme of “Green Life,” promoting employees' awareness in environmental protection and integrating it into their daily life.

The Food Forest Carnival that combined environmental sustainability and caring for socially vulnerable groups was held on April 27, 2019, which was during the week of “Earth Day.” In addition to practicing the concept of environmental protection, UMC also made the commitment that it will provide agricultural harvests involved in the Food Forest Carnival activities as food to National Hsinchu Special School, hoping to do its best for socially vulnerable groups. During the event, UMC also announced that its Eco Echo Award to promote ecological conservation had entered the fourth year, and the reward for the year was still maintained at 3 million NTD. In addition, UMC also created the “Youth Environmental Action Award” to provide opportunities for young people to speak out for environmental issues, protecting the local ecology together under the initiatives of UMC.



The harvests of the Food Forest activities were donated to National Hsinchu Special School, and new seedlings were planted to symbolize the sustainability of the Food Forest activities

Summary and Achievements of Various Activities Held during UMC's Environmental Protection Season in Taiwan

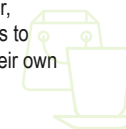
The Earth Day Event: The Food Forest Carnival

The Earth Day event allowed everyone to participate in the food forest conservation work. During the event, UMC also made the commitment that it will provide the agricultural harvests involved in the Food Forest Carnival activities as food to National Hsinchu Special School, hoping to do its best for socially vulnerable groups. In addition, in line with the theme of “Green Life” for the UMC Environmental Protection Season, we invited environmentally friendly vendors to set up stalls, hoping not only to promote their products, but to make an impact on consumers for practicing personal sustainable life actions. **About 380 people attended the event, and 28 vendors participated in the green market.**



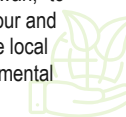
Coffee Cup Reduction Activity

The survey found that coffee related products are one of the products that have been purchased by most of our employees. However, drinking one cup of coffee per day also implies the generation of one disposable waste product per day. To encourage our employees to reduce the generation of disposable waste, UMC held an activity to encourage employees to buy coffee (or other beverages) with their own cup; those who use their own cup to buy coffee or other drinks may have the chance to win a cup holding bag. **A total of 4,524 people participated in the event.**



Ecology Tour: Hsinchu Science Park-Zhubei Food Forest Tainan Science Park-The Butterfly Conservation Society of Taiwan

UMC collaborated with the Wutong Foundation and the winner of the 3rd Eco Echo Award, the “Butterfly Conservation Society of Taiwan,” to hold an ecology tour in Zhubei Food Forest and Tong-An Elementary School in Changhua County. Through a professional ecology tour and the introduction of the winning project of the Eco Echo Award, employees participating in the event had the chance to learn about the local ecology and the environmental protection concept of the winning project, thereby raising the awareness of our employees in environmental protection. **A total of 103 people participated in the event.**



Environmental Protection Seminar: Cotton Cultivation's Environmental Effects

A speaker from Azure Canvas Organic Cotton was invited to share the impact of cotton cultivation on the environment and ecology, allowing employees to understand the impact of wearing clothes on the environment, and enabling us to think about what we can do when buying daily products. **A total of 63 people participated in the event.**



Purchase of Water Bamboo

UMC collaborated with the winner of the Eco Echo Award to promote the environmental-friendly grown organic water bamboo, inviting our employees to protect the ecological environment by supporting organic farming. **A total of about 1,092 pounds of water bamboo were purchased.**



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Environmental Education Promotion Project

To enhance the company's concept of sustainable operation and sustainable development, in addition to organizing environmental protection promotion activities during the Environmental Protection Season, UMC also promoted environmental ethics education to improve employees' environmental protection awareness and implement environmentally friendly policies. Every employee within the company must complete a 4-hour general environmental education course every year. The course curriculum includes popular environmental topics such as garbage classification (sorting), plastic reduction, and resource utilization. Both physical and online courses are available to promote environmental education, delivering the basic environmental protection ideas to each of UMC's employees.

Environmental Education Promotion Results

The requirement of general environmental education for each person is 4 hours per year, and the duration of each course is half an hour. According to the data, the total training time of environmental education conducted in 2019 is 61,268 hours, which suggests that on average, each person completed 4.2 hours of training.

2019 Q1

- 2019 Q1 Corporate Sustainability Newsletter Reading
- Environmental Education Q1 Training Topic: Waste Classification

2019 Q2

- 2019 Q2 Corporate Sustainability Newsletter Reading
- Environmental Education Q2 Training Topic: Introduction to Wetlands

2019 Q3

- 2019 Q3 Corporate Sustainability Newsletter Reading
- Environmental Education Q3 Training Topic: Understand Earthquake Disaster Prevention, Management and Recovery from the Perspective of Environmental Education

2019 Q4

- 2019 Q4 Corporate Sustainability Newsletter Reading
- Environmental Education Q4 Training Topic: Meet Sea Turtles and Reduce Plastics
- Environmental Education Optional Training Topic: Water Shortage and Water Saving

Implementation Outcome of the Winning Projects of the 3rd Eco Echo Award

During the implementation of the 2019 Eco Echo Award projects, UMC collaborated with the organizers of each project as well as the employees of UMC to pay attention to related issues and to make an impact on protecting Taiwan's local ecology.

Each project was completed successfully, and more than 5,000 people participated in the activities related to the Eco Echo Award projects.

Seeding the seabed to protect the ocean.

(Ocean Citizen Alliance)



The "Ocean Citizens Alliance" planted more than 600 corals in the Tongliang area of the northernmost part of the Penghu inland sea, hoping to preserve the habitat and maintain biodiversity by restoring coral, and sustaining the ecology of the Penghu inland sea. In order to use the approach with the least impact on the environment to get closer to coral fields for observation and investigation, more than 20 volunteers who have been engaged in long-term water activities were specially trained. In addition, local environmental education was promoted to ensure environmental conservation continuity. A total of 10 courses relating to coral reef conservation were conducted in Penghu primary and secondary schools, with a total of 239 students attending the courses to understand the importance of coral reefs to marine and fishery resources and support coral reef conservation activities. Through the implementation of these courses, all primary and secondary school students in Penghu can understand the importance of coral reefs to marine and fishery resources, leading them to support coral reef conservation activities.

More than 600 corals were planted, more than 20 volunteers were trained, and 10 environmental education courses were conducted, with a total of **239** students attending the courses.



Coral planting activity

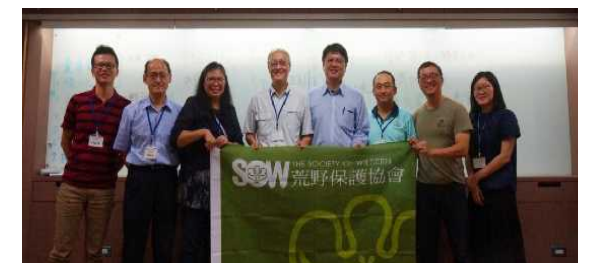
A four-part conservation, survey, environmental education and promotion program in Taiwan.

(Society of Wilderness)



To understand the current status of Mortonagrion hirosei, and to protect this precious and rare species of dragonfly, the Society of Wilderness started from the following three aspects: basic information, environmental education and conservation strategy. In 2019, a total of 31 field surveys were carried out and 151 people were involved to complete the investigation of the Tamsui River Basin. In addition, assessment for the potential habitat of the Mortonagrion hirosei in Taiwan was conducted to provide basic information and reference for the conservation work. A training workshop was conducted to train 9 new members of the investigation team for carrying out nymph investigation work. A dragonfly observation class was held, allowing the public to learn more about dragonflies. A total of 24 people attended the class. The "Four-Spot Midget Conservation Strategy Forum" was held by inviting 7 scholars and representatives from the public sector, and a total of 23 participants attended to discuss the current status, problems and future trends of conservation actions for Mortonagrion hirosei.

9 new members of the investigation team were trained, **31** Tamsui River Basin surveys were conducted, and the "Mortonagrion hirosei Conservation Strategy Forum" was held.



Mortonagrion hirosei Conservation Strategy Forum

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The butterfly voyage - butterfly migration project

(The Butterfly Conservation Society
of Taiwan)



Taiwan's butterflies are diverse in varieties. The Tong-An Elementary School in Fenyuan Township, Changhua County is situated in the location where the Taiwan butterfly migrates, making the school an excellent place to witness the diversity of Taiwan butterflies. Therefore, the Butterfly Conservation Society of Taiwan collaborated with Tong-An Elementary School to transform the school into a friendly relay station for the migration of butterflies. The Butterfly Conservation Society also trained the students as little butterfly investigators, protecting this migration site together with the local residents. A total of 26 students in the Tong-An Elementary School participated in the training; 27 training sessions were held in 2019; a total of 280 butterfly food and nectar plants in 20 different varieties were planted in March. In addition, from March to November 2019, the butterflies in the Tongan Elementary School campus and its surroundings were investigated. A total of 72 species and 1,249 butterflies were surveyed; 72 butterflies were investigated by mark-release-recapture approach, including *Euploea tulliolus koxinga*, *Euploea mulciber barsine*, *Euploea sylvester swinhoei*, etc.

26 little butterfly investigators were trained, **27** environmental education courses were conducted, 280 butterfly food and nectar plants were planted and 72 species of **1,249** butterflies were investigated by mark-release-recapture approach.



Little butterfly investigator training

Shen-Ao's Trunk Rock and Peregrine Falcon Protection Project

(Keelung Wild Bird Society)



In order to preserve the special natural resources in the Shen-Ao area, the Keelung Wild Bird Society carried out related environmental education, enabling more people to cherish the excellent gifts that nature has bestowed to the Shen-Ao area. A total of 40 indoor and outdoor environmental education promotion courses were conducted, with nearly 5,000 people attending the courses. To assist local communities and residents to become guardians of Shen-Ao's trunk rock and peregrine falcon, a total of 46 seed teachers were trained to guard the site and habitats in shifts every weekend, offering related touring and guiding sessions. A total of 105 sessions were conducted.

40 indoor and outdoor environmental education promotion courses were conducted, with nearly **5,000** people attending the courses. **46** seed teachers were trained to guard the site and habitats in shifts during weekends, offering a total of 105 touring and guiding sessions.



Trunk rock and peregrine falcon protection activity

Protecting mother land crabs under the moonlight--- Kaohsiung coastal land crab survey and education project.

(Wetlands Taiwan)



In order to increase the public's awareness and actions on coastal wetlands and avoid the disappearance of land crabs in certain areas, two major tasks, the "Northern Kaohsiung River Estuary Land Crab Survey" and the "Land Crab Education Promotion Activities" of this Project were implemented. In the "Northern Kaohsiung Estuary Land Crab Survey," 3 habitat surveys, 7 night time surveys, and 2 observations on the habitat plantations in the coastal areas of Northern Kaohsiung (Dian-Bao River, Er-Ren River, Agongdian River) were conducted, with a total of 111 people participating in the event; 428 land crabs were recorded; among which 147 of them were oviparous crabs. The "Land Crab Education Promotion Activities" enhanced the involvement of the public through multiple ways. During this task, 1 land crab conservation education program was made, 4 sessions of land crab education promotion seminars were held, and a total of 136 people attended; 2 sessions of land crab conservation volunteer worker training courses were conducted to train a total of 30 volunteers; 5 sessions of nighttime crab observation activities were carried out, with a total of 208 people attending the event. 2 sessions of green crab conservation education promotion were conducted, with a total of 112 people attending the event. It is hoped that through the implementation of this project, the reflection on the relationship between human and crab as well as environmental conservation can be triggered.

In the "Northern Kaohsiung River Estuary Land Crab Survey," 428 land crabs were recorded. In addition, four major "Land Crab Education Promotion Activities," including land crab education promotion seminars, land crab conservation volunteer worker training, night time observation activities, and conservation education promotion, were conducted, with a total of **486** people participating in the events.



Night time land crab observation activity

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Projects of the 4th Eco Echo Award

In addition to the existing "Large Ecological Conservation Project," the 4th Eco Echo Award in 2019 also included the "Youth Environmental Action Award," hoping to provide young people with the opportunity to freely speak out for the environment on related issues. There were 5 winners of the "Large Ecological Conservation Project," with a total of more than 90,000 online votes, while 2 winners were selected for the "Youth Environmental Action Award," i.e. the "Alishan Butterfly Dream" from Fu Jen Catholic High School and the "Mountain & River Addiction" from National Chutung Senior High School.

Expanding the impact:



MEDIA



SUPPLIER



VOLUNTEER



EMPLOYEE



Adding the "Youth Environmental Action Award"

Guide young people to speak out freely for the environment on related issues and encourage more students to participate in environmental protection related activities.



The Eco Echo Award exclusive LINE stickers

The LINE stickers-Chubby Green and his ecological friends were created to raise people's awareness on ecological conservation.



Supporting partners



3M Taiwan



Edwards



BASF Taiwan



Hermes Epitek



Unimicon



Hueng Luei
Process Industry



Faraday



Wholetech System



Prize

The prize of the Award is maintained at 3 million NTD, which enables more outstanding ecological conservation projects to be realized.



For more information on
the Eco Echo Award,
please visit our website

Winning Teams and Projects



Taiwan Ocean Conservation and Fisheries
Sustainability Foundation - "Clown Fish Arriving
Home to Bitou Cape Park"



Raptor Research Group of Taiwan - "Glass Trap:
Investigation of Wild Birds Being Killed by Flying
into Windows in the Northern Area and Friendly
Bird Glass Education Promotion Program"



Society of Wilderness - "Shuanglianpi
Endangered Plant In-Situ Conservation and
Education Promotion"



Wetlands Taiwan - "Firefly Habitat Construction in
Jhouzai Wetland and Education Promotion
Project"



Ocean Citizen Alliance - "Coral Field Planting
Project for Children"

Projects of the Youth Environmental Action Award



Youth Environmental Action Award / Team led by Ting-Yu Chen from Fu Jen Catholic High School -
"Alishan Butterfly Dream"



Youth Environmental Action Award / Team led by Shu-Yu Chang from National Chutung Senior High
School - "Mountain & River Addiction"



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3-2 Carbon Asset Management

Energy use not only consumes the earth's resources, but also produces carbon dioxide that causes greenhouse gas emissions. In recent years, the earth's temperature rise has caused the melting of polar ice, rising sea level and decreasing land area. The frequency and intensity of abnormal climate changes such as changing ocean current patterns, changing rainfall patterns, floods, droughts and storms have increased. These climate changes caused by global warming have directly or indirectly impacted natural ecosystems. In the face of global climate change and dramatic changes in the ecological environment, UMC has been actively drafting environmental protection goals in various stages in recent years to respond to energy and greenhouse gas management issues. The company has set specific implementation plans and gradually promoted them.

How We Manage

- Low-carbon design process
- Energy efficiency optimization
- Complete carbon footprint inventory for all fabs
- Investing in green technology industry
- Installing high efficiency fluorinated greenhouse gas abatement capabilities in new tools
- Adopting green building standard for new buildings
- Carbon partnerships with customers and suppliers

Goals and Targets

- Improve efficiency in energy use, reduce electricity consumption per unit of product by 10% in 2020 and by 15% in 2025 (with 2015 as the base year).
- Implementation of the Fluorinated Greenhouse Gas Reduction Program, emissions intensity reduction by 36% in 2020 and by 55% in 2025 (with 2010 as the base year).
- Reduce total greenhouse gas emissions per unit of product by 5% in 2025 (with 2010 as the base year).

Purposes

- Climate change mitigation and adaptation

The Mechanisms for Evaluating the Effectiveness

- The company-wide greenhouse gas reduction and energy saving plans were set. The Environment Committee will conduct a performance review annually.
- The Environment Committee reviews the needs and expectations of stakeholders quarterly.
- Internal and external audits will be conducted regularly.
- Pass the ISO 14001 environmental management system certification every year.

Relevant Policies



UMC Climate
Change Policy



Environmental
Protection Policy

Applicable Entities

- UMC and its subsidiaries HJTC and USC
- UMC's supply chain

3-2-1 Risks and Opportunities

UMC is actively attuned to the risks and new impact that climate change may bring under global climate change and the transition 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, respectively. 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 contribution. Finally, the sustainable development and climate resilience of UMC will be disclosed by referring to the frame of TCFD (Task Forced on Climate-related Financial Disclosures).

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TCFD Disclosure Framework and UMC Management

Governance

- The Enterprise Risk Management Committee of UMC coordinates each risk team to collect and evaluate operation-related risks of the whole company including climate change.
- UMC reports to the Board of Directors on the "climate change" related promotion plan and goals through the Corporate Sustainability Committee every year.
- The Corporate Sustainability Committee of UMC performs reviews and guidance quarterly on the implementation status of monitor-related promotion plans.

Risk Management

- UMC executed the risk assessment based on IPCC-AR5 defined threats caused by climate change (including extreme heat, drought, torrential rain, and severe typhoon) on Asia in the end of the 21th century. for the related procedures, please refer to the right figure.
- With the participation of related departments in the climate change risk and opportunity assessment workshop, UMC developed the adaptation and mitigation strategies of top 3 risks. The overall results will be reported to President Chien of CS committee for approval and then disclosed on related reports and questionnaires.
- Countermeasures for climate change will be connected with annual KPI/key projects and reviewed in the ERM committee periodically to achieve management objectives.

Strategy

- According to UMC Climate Change Risk and Opportunity Assessment Methodology, the short term is defined as in 5 years; the mid/long term is defined as 6 to 20 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 a guide for promoting the overall plan.
- UMC analyzed the impact on operation of climate change risk and opportunity assessment results based on the frame of TCFD.
- UMC selected the RCP8.5^{Note1} (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 and product design by 2022.



UMC Climate Change Risk and Opportunity Assessment Procedure

1.Collection of climate scenario data

Collection and updating of weather simulation data form IPCC-AR5 and physically hazardous threats caused by climate change identified by the Taiwan government down scaled to a simulation report.



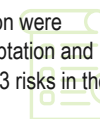
2.Development of UMC climate change risk assessment tool

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



3.Climate Change Risk Assessment Workshop^{Note2}

Related departments such as FOC, TD, CM, OS, and so on were invited to analyze UMC's risks under climate change. Adaptation and mitigation strategies were developed according to the top 3 risks in the short term and mid/long term from the identification.



4.Approval for the Results

The overall results will be summarized to the company president for approval and then disclosed on related reports/questionnaires.



5.Continuous Monitoring

Countermeasures for climate change risks will be connected with annual KPI/Key projects and reviewed in the ERM committee periodically.



Note1: The climate change scenarios in IPCC-AR5 are defined as 4 types, including RCP2.6, RCP4.5, RCP6.0, RCP8.5, which mean the radiative forcing values in the year 2100 are 2.6 W/m², 4.5 W/m², 6 W/m², and 8.5 W/m² respectively. The RCP2.6 is scenario based on global warming mitigation, and the RCP8.5 is the worst scenario.

Note2: Collection and updating of climate change scenarios are executed according to the release frequency of IPCC reports and government down scaled simulated data. It will be updated and executed in 3 to 5 years.

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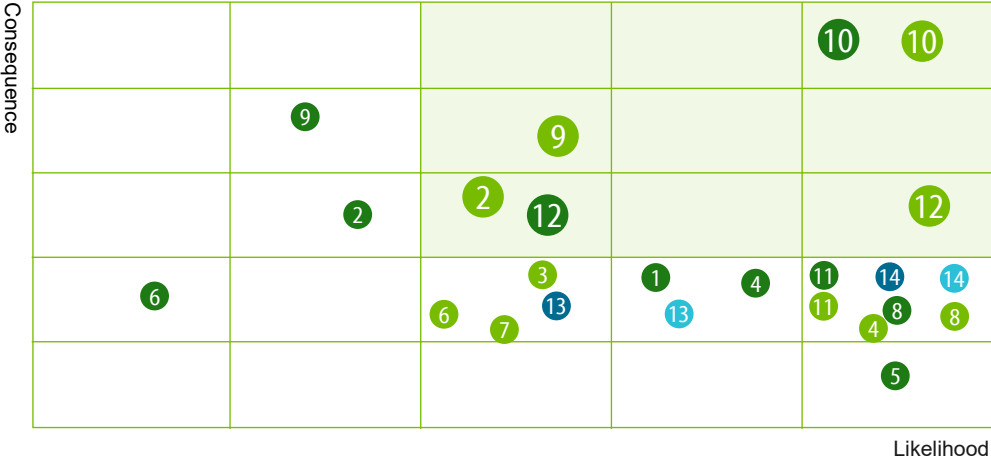
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UMC Climate Change Risk and Opportunity Matrix



Short term (in 5 years)

- 1 Delay of shipment caused by torrential rain
- 2 Supplier disruption caused by torrential rain/intensified typhoon
- 4 Water shortage influences production
- 5 Over pumping of groundwater causes land subsidence and has an impact on fab safety
- 6 Emerging market grows slowly
- 8 Typhoon influences water supply
- 9 Power outage caused by intensified typhoon
- 10 Energy policy leads to increasing of electricity price and imposing of carbon tax
- 11 Increasing pressure in green investment
- 12 Increasing loading in air conditioning caused by global warming
- 13 Increasing demand for low carbon product
- 14 Increasing demand for disaster-resistance IOT

Mid/long term (6~20 years)

- 2 Supplier disruption caused by torrential rain/intensified typhoon
- 3 Regional green development policy restricts enterprise's development
- 4 Water shortage influences production.
- 6 Emerging market grows slowly
- 7 Increasing of cost in water usage
- 8 Typhoon influences water supply
- 9 Power outage caused by intensified typhoon
- 10 Energy policy leads to increasing of electricity price and imposing of carbon tax
- 11 Increasing pressure in green investment
- 12 Increasing loading in air conditioning caused by global warming
- 13 Increasing demand for low carbon product
- 14 Increasing demand for disaster-resistance IOT

■ The words in orange indicate the top three risks
■ The words in blue indicate opportunities

The results of UMC climate change top 3 risks and opportunities in short and mid/long terms are analyzed according to the TCFD shown below:

Risk	UMC's Response	Risk Aspect
Policy and Legal		Transition
<ul style="list-style-type: none">Energy policy leads to increasing of electricity price and imposing of carbon tax	<ul style="list-style-type: none">Evaluation of self-installing renewable energy, energy storage or other alternative plan in advance to reduce the impact of official announcement of regulationApply for carbon credits projectParticipate in governmental greenhouse gas reduction planSet greenhouse gas reduction plan	
Technology		Transition
<ul style="list-style-type: none">Increasing pressure in green investment	<ul style="list-style-type: none">Participate in the governmental voluntary greenhouse gas reduction planSet electricity-saving planEvaluation of self-installing renewable energy or other alternative planParticipate in governmental association forum, and provide practical experience and adviceSet water-saving plan	
Short-Term		Physical
<ul style="list-style-type: none">Typhoon influences water supply	<ul style="list-style-type: none">Pay more attention on water quality and adjust operation conditionReservoirs have been set in each plant, continue to enhance the control ability and flexibility of water storageContinuous monitoring of government's capability in cross-regional water allocation.	
Long-Term		Physical
<ul style="list-style-type: none">Increased loading for air conditioning caused by global warming	<ul style="list-style-type: none">Introduce green building design:<ul style="list-style-type: none">1. Implement energy-saving in building envelope to reduce the building temperature.2. Plant vegetation to increase greening amount and to mitigate the urban heat island effect.	
<ul style="list-style-type: none">Power outage caused by intensified typhoon	<ul style="list-style-type: none">Regularly execute load operation in generator to ensure function effectivenessSet safety stock level of generator dieselEquipped critical production tools with UPS to reduce the risk of voltage drop.	
Climate-related Opportunities	UMC's Response	
Product/ Service		Opportunity
<ul style="list-style-type: none">Increasing demand for low carbon productIncreasing demand for IOT of disaster resistance	<ul style="list-style-type: none">Continuously developing low power technologies is UMC's strategy for climate change. After evaluating the market demand and our technology advantages, we identified the top 3 opportunities including 7 green technologies^{Note3} for the future. They can be classified as RF & Power and Logic Related, which can reduce power consumption by 10%-50%, reduce carbon emission by about 3.4M tonCO2e/year, and create potential double digit CAGR (Compound Annual Growth Rate) in 2022.	

Note3: The definition of UMC green technology: Reduce resource consumption and environmental pollution during the development process, and the product application can present the characteristics of energy-saving, waste-reduction, durability and being environmentally friendly.

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Other Opportunities

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, markets and reputation.



Respond to government-promoted policies to reduce and increase the operational efficiency of tools, equipment and fabs as a whole.

In addition to promoting the voluntary Green 2020 program to conserve energy and reduce carbon emissions, UMC also participates in the Industrial Development Bureau's voluntary greenhouse gas reduction information platform to exchange innovative practices with the industry.



Layout green energy industry and add business models.

In addition to investing in the green energy industry, UMC has applied to change its to include advising and consultation services for energy and energy conservation technologies to further expand operation and increase profit source.

Install solar power systems and apply for renewable energy certification.

In addition to continuous energy efficiency improvement, UMC also responds actively to governmental renewable energy policies by implementing renewable energy in its fabs. The company has also listed solar power systems as a standard design in new fab construction.



Obtain energy conservation, high efficiency and low carbon patents.

To date, UMC has a total of 13,507 patents that provide UMC's manufacturing process with comprehensive and powerful barriers to protect its intellectual property. These patents contain multiple items related to energy-saving, high-efficiency, low carbon patents. UMC has also significantly increased the patent quality of its key technologies to stay competitive. We continue to strengthen customer service and our competitive advantage, while generating profits for the corporation.



Fulfill corporate social responsibility, cooperate with governments, the public and global operating partners to realize the commitment to environmental sustainability.

Currently, UMC is actively cooperating with suppliers to promote the 3R League Project and the Green Awards initiative for resource recovery, reuse and reduction. The company also conducts external promotions in GHG reduction and ecological conservation.

In addition to meeting customer requirements for product manufacturing, UMC also participates in the initiatives of industrial unions and associations. By offering its practical industrial experience and feedback, UMC hopes to facilitate the development of sound and feasible policies and regulations by the government and relevant institutions.

Carbon Disclosure and Communication

Apart from representing the TSIA (Taiwan Semiconductor Industry Association) in the discussion meeting of the WSC (World Semiconductor Conference) every year, UMC also actively participates in various types of domestic and international discussions and exchanges, sharing experiences in carbon management. UMC has been invited to participate in the carbon disclosure project of the international CDP organization since 2006, now going strong for 14 consecutive years. Furthermore, it has worked on the disclosure of the above-mentioned results on carbon risks and opportunities and management-related information to the public. In 2019, UMC also reached Leadership Level in the international CDP climate change disclosure, the highest score achieved by domestic companies in the foundry industry.

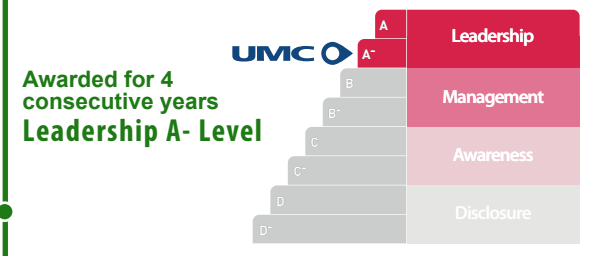
Carbon Assets and Carbon Trading

From 2013 to 2014, UMC supported the EPA early reduction project and acquired a carbon reduction allowance of 3.02 million tons. In 2014, a 2 million ton carbon trading deal was signed with Dragon Steel. 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 Environmental Protection Administration and published on Taiwan's Greenhouse Gas Registry (platform). UMC also applied for the GHG Offset Project to reserve carbon assets in 2019 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 1.5 million tons in 10 years.

Yearly Progress in CDP Evaluation

- 2013 ● First Taiwanese Company Listed both on CDP's Climate Performance Leadership Index and Climate Disclosure Leadership Index. **91A**
- 2014 ● Awarded the highest Carbon Disclosure Score among Taiwan semiconductor companies. **96B**
- 2015 ● Awarded the highest ranking for Carbon Performance Band among all Taiwanese enterprises. **99A-**
- 2016 ●



Internal Carbon Pricing

UMC has a state-of-the-art 12-inch 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 draft of the Renewable Energy Development Act that stipulate fines for 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 greenhouse gas reduction plan. The measures for the use of clean energy include the reduction of raw materials, setting of high-efficiency greenhouse gas 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 carbon reduction measures. Bonus incentives are available to business units and individuals which have achieved good results in reducing carbon emissions.

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3-2-2 Greenhouse Gas Inventory

Every year, the company's greenhouse gas emissions and energy use are checked according to the requirements of the ISO14064-1:2006 in order to grasp the current status. The results are used to verify the reduction performance, and a third party is commissioned to conduct external verification.

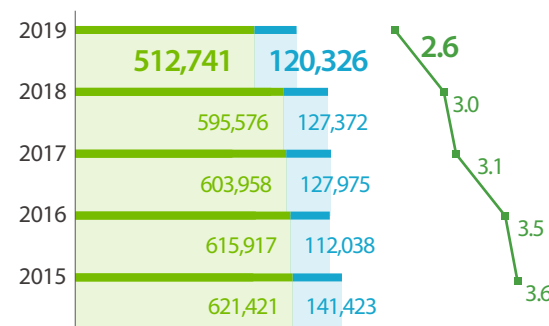
The current situation is based on the promotion status of the reduction plan, and 2009 is regarded as the base year for the company's overall greenhouse gas emissions. The company's greenhouse gas emissions are checked every year to fully grasp the current status of greenhouse gas use, which can then be used to verify the reduction performance.

In accordance with inventory guidelines defined by domestic and international organizations such as the ISO14064-1:2006 and GHG Protocol, UMC established its greenhouse gas inventory standard mechanism. The company regularly inventories the greenhouse gas emissions of all its fabs each year to fully determine the status of its greenhouse gases and verify the effectiveness of their reduction.

Note: The base year's greenhouse gas emission is 1,623,036 tCO₂e

Scope 1

Direct GHG Emission and Emissions per Wafer Area



■ UMC Emissions (ton CO₂e) ■ HJTC Emissions (ton CO₂e)
■ UMC Emissions per production capacity (t CO₂e/Wafer-m²)

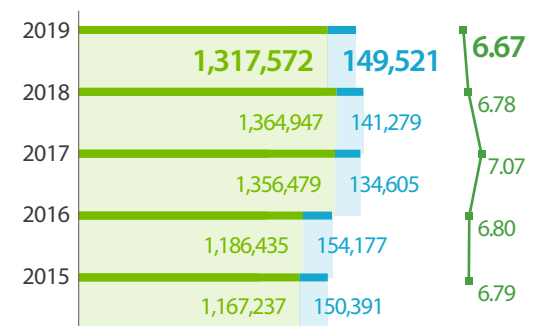
Note1: In 2019, the overall emissions per wafer area for UMC and its subsidiary HJTC were 2.81 t CO₂e/Wafer-m².

Note2: In 2019, the total emissions of UMC's subsidiary USC were 29,468 tCO₂e; data has not been verified by a third party.

Note3: GWP mainly used the IPCC's fourth assessment report in 2007, and the greenhouse gas emissions referred to version 6.0.4 of the EPA Greenhouse Gas Emissions Factor Management Table

Scope 2

Indirect GHG Emissions and Emissions per Wafer Area



■ UMC Emissions (ton CO₂e) ■ HJTC Emissions (ton CO₂e)
■ UMC Emissions per production capacity (t CO₂e/Wafer-m²)

Note1: In 2019, the overall emissions per wafer area for UMC and its subsidiary HJTC were 6.51 t CO₂e/Wafer-m².

Note2: In 2019, the total emissions of UMC's subsidiary USC were 202,116 tCO₂e; data has not been verified by a third party.

Note3: CO₂ emissions are estimated based on the latest local power factor available in the year; Taiwan: 0.533 KgCO₂e / KWh; Singapore: 0.4188 KgCO₂e / KWh

Scope 3 Other Indirect Greenhouse Gas Emissions

UMC referred carbon footprint calculation methods and technical documents provided by WRI and WBCSD for inventory checks, in order to estimate scope 3 GHG emissions listed in the following. UMC also passed DNV GL verification, making us the first semiconductor company in Taiwan to complete scope 3 GHG emission verification.

	2019	2018	YoY
Purchased goods and services	632,853	651,388	-2.8%
Upstream (cradle-to-gate) emissions of 85% (by weight) of purchased goods			
Fuel-and-energy-related activities	396,613	303,390	+30.7%
Upstream emissions of purchased fuels (diesel and NG) and electricity			
Upstream transportation and distribution	179,643	205,697	-12.7%
Transportation of 85% (by weight) of purchased goods			
Waste generated in operations	1,885	726	+159.6%
Transportation and disposal or treatment of waste.			
Business travel	1,079	728	+48.2%
Transportation of employees for business-related activities			
Employee commuting	10,310	14,515	-29.0%
Transportation of employees (in vehicles operated by the Company and employees)			
Downstream transportation and distribution	2,970	3,202	-7.2%
Transportation of products sold by the Company			
Downstream leased assets	0	0	-
Operation of assets owned by the Company (There were no cases during the reporting period.)			
Investments	563,012	544,478	+3.4%
Operation of investments: Wavetek Microelectronics Corporation, NexPower Technology Corp., and HeJian Technology(Suzhou) Co., Ltd., United Semiconductor			
Capital goods	284,729	243,649	+16.9%
Upstream (cradle-to-gate) emissions of 85% (by weight) of purchased goods			
Total	2,073,094	1,967,773	+5.4%

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3-2-3 Greenhouse Gas Reduction

Results of UMC's carbon footprint and greenhouse gas inventory found that carbon emissions from manufacturing is the primary source of carbon footprint, and that the main sources of the process emission are fluorinated greenhouse gases (F-GHGs) and electricity, which account for about 90% of UMC overall greenhouse gas emissions. Therefore, F-GHGs and electricity reduction are UMC's priority.

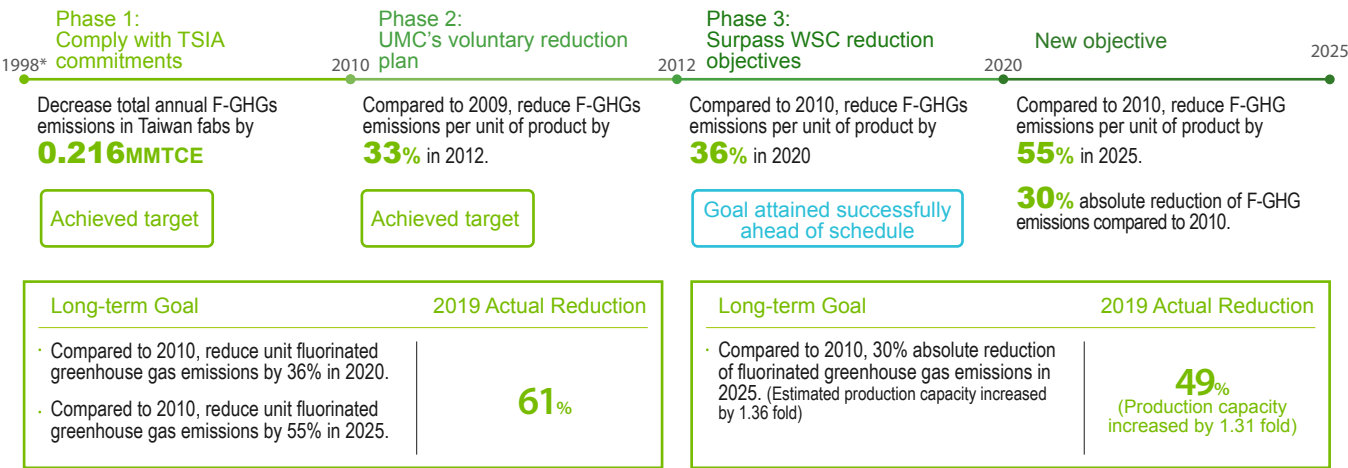
UMC's Primary Sources of Greenhouse Gas Emissions



Fluorinated Greenhouse Gas Reduction

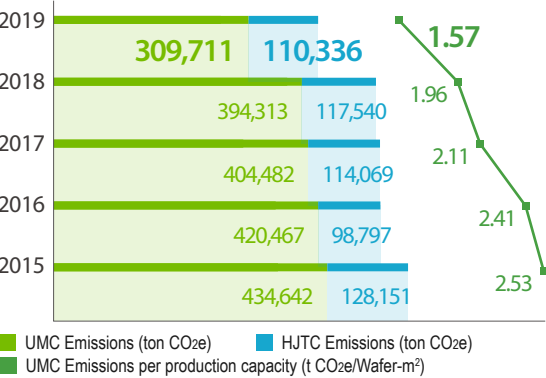
In addition to carbon reduction each year, UMC established the Fluorinated Greenhouse Gas Reduction Taskforce in 1999 to promote greenhouse gas reduction. Moreover, the company set greenhouse gas reduction goals for the various phases of the program, and currently, the reduction program is in Stage 3. UMC shall continue to implement F-GHGs reduction projects. F-GHGs reduction in 2019 reached 0.996 million tons, which was a 61% reduction compared to 2010. Such results showed that UMC managed to achieve Phase 3 objectives ahead of schedule. UMC has already attained the reduction goal for 2020, which is 30% lower than 2010 levels, as stipulated by the World Semiconductor Council. At this stage, UMC has integrated with international trends and has cooperated with national policies to formulate reduction goals for 2025.

Reduction Plans and Objectives for Each Phase for F-GHGs



Note: In 2019, the scope-1 GHG emissions per unit of product were down about 50% compared to 2010.

Fluorinated Greenhouse Gas Emissions



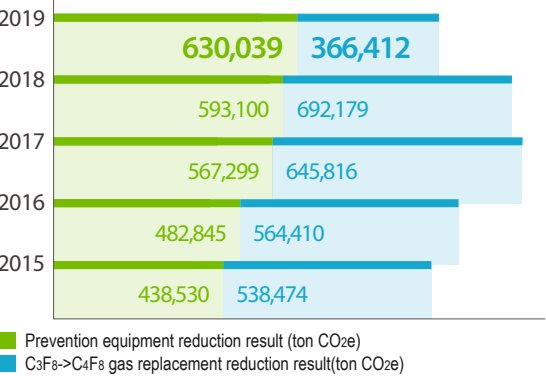
Note1: In 2019, the overall emissions per wafer area for UMC and its subsidiary HJTC was 1.86 t CO₂e/Wafer-m².

Note2: In 2019, the total emissions of UMC's subsidiary USC was 2,672 tCO₂e; data has not been verified by a third party.

Fluorinated greenhouse gas emissions per production capacity (Kg/ton)



F-GHGs Reduction Results



Note1: The area to promote the emission preventive (reduction) equipment includes all fabs. The reduction efficiency was calculated based on the difference between greenhouse gas emissions before and after the treatment by the emission preventive (reduction) equipment.

Note2: The area to promote C₃F₈/C₄F₈ gas replacement includes all 8" fabs. The reduction efficiency was calculated based on the difference of greenhouse gas warming potential and the difference of equipment utilization rate.

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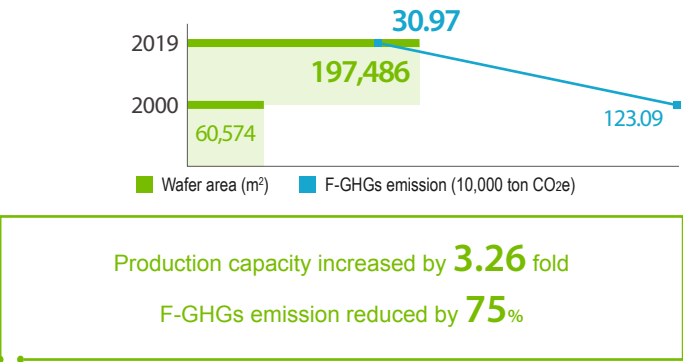
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UMC's overall production capacity and F-GHGs
emission in 2000 and 2019



F-GHGs Reduction Practice

- All new equipment shall be installed with a high performance local scrubber for N2O and F-GHGs.
- All new CVD equipment in new facilities shall utilize NF3 gases.

F-GHGs reduction in 12-inch fabs

All UMC's 12-inch fabs, including Fab 12A ,Fab 12A's new phases, Fab 12i and the fab of subsidiary USC have adhered to UMC's F-GHGs reduction practices. Based on the Institute of Electrical and Electronics Engineers (IEEE) 1680.1: 2018 standard, **the total F-GHGs reduction rate for entire fabs has exceeded the required 75%.**

Energy Management

Currently, to conserve energy, UMC is targeting electricity and natural gas, and promotes the implementation of energy management in its offices and public areas with promotional activities, education and training to cultivate a mindset and habit of energy conservation and greenhouse gas emission reduction among its employees.

Vision	Enhance energy efficiency to minimize impact on the earth as a result of energy use.	
Organization	Through the CS Committee's company-wide carbon reduction goals and development plans, coordinate/ integrate departmental energy saving and carbon reduction strategies and programs. Hold regular committee meetings to review the implementation outcome, and continue to introduce energy conservation technologies and implement energy efficiency improvement programs in relevant facilities.	
Measures	Fab 8A introduced ISO 50001:2011 management system standards with systematic procedures and PDCA-based continuous improvement approaches. This model was promoted in other fab sites as well.	
Goal	<ul style="list-style-type: none">Electricity consumption reduction goal: Reduce electricity consumption per unit of product by 10% in 2020 and by 15% in 2025Natural gas consumption reduction goal: A reduction of 5.5% in 2019	
Results	<ul style="list-style-type: none">Reduced electricity consumption by 2.09% in 2019Natural gas reduction by 6.2% in 2019	

Note1: Using 2015 as the base year

Energy Conservation
Major Energy Conservation Measures in 2019

Electricity	Implementing Fab	
Change online UPS to offline UPS	Fab12A,Fab12i,Fab8A,Fab8D, Fab8E,HJTC	
Illumination energy saving	Fab12A,Fab12AII,Fab12i,Fab8A, Fab8S,HJTC,USC	
Make-up Air Unit energy conservation	Fab12A,Fab8S,USC	
Compressed gas reduction and energy saving	Fab12A,Fab12A II,Fab12i,Fab8A, Fab8D,Fab8E,Fab8F,Fab8S,HJTC,USC	
Cold water system energy conservation	Fab12A,Fab12A II,Fab12i,Fab8A, Fab8D,Fab8F,Fab8S,USC	
Process cooling water energy conservation	Fab12A,Fab12i,Fab8A,Fab8D,Fab8E, Fab8F	
Production machine energy conservation	Fab12A,Fab12A II,Fab12i,Fab8A, Fab8D,Fab8E,Fab8F,Fab8S,HJTC,USC	
Energy saving measures for water treatment systems	Fab12A,Fab12A II,Fab12i, Fab8S	

Natural gas	Implementing Fab	
Add high temperature heat pumps	Fab12A,Fab8A	
L/S TPU modifies to ULF	Fab12A	
L/S Zenith modify to CT type	Fab12A	
Reduce RO 90 °C hot water consumption	HJTC	

	Total energy conservation in 2019	CO2 emission reduction equivalent
 Electricity	49,540 MWh	25,372 ton
 Natural gas	15,585 MWh	3,147 ton

Note1: CO2 emissions are calculated using the latest local electricity coefficient. Taiwan: 0.533 KgCO2e/KWh ; Singapore: 0.4188 KgCO2e/KWh
Note2: The information above does not include energy savings for HJTC and USC.
Note3: For newly added improvements, performance was only calculated for 12 months.
Note4: 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 caloric value from the various local fabs are also incorporated into the carbon emission calculation.

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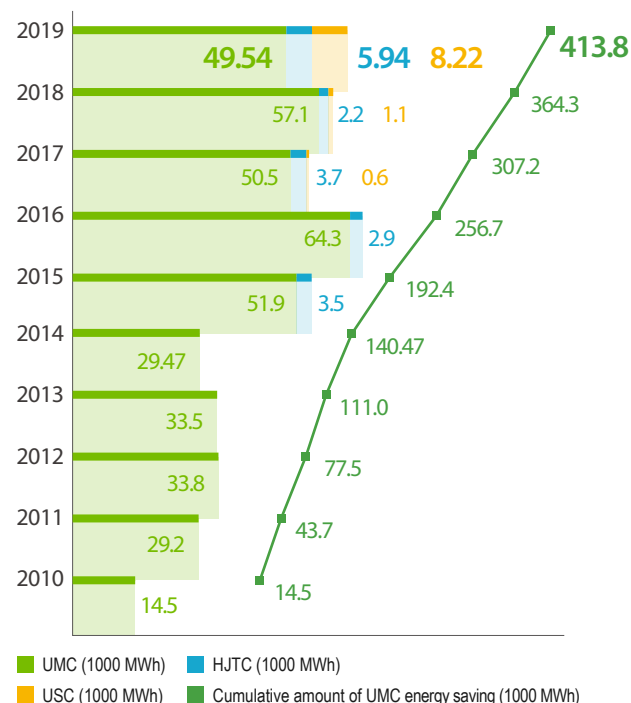
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Electricity Savings over the Years



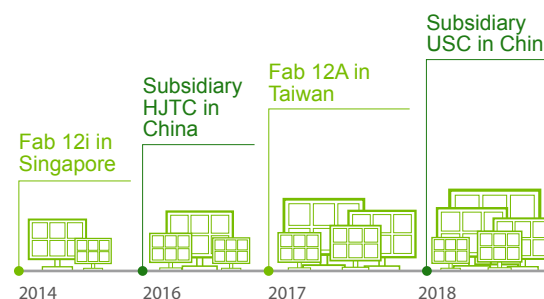
Promotion of Renewable Energy

Aside from UMC's ongoing energy efficiency improvement efforts, we are also actively setting up renewable energy sources in the fab, and with solar energy systems as a new fab standard design and construction project.

UMC has completed the installation of the 4,335 KWp solar energy system, which is expected to generate up to 2.8 million KWh of electricity each year. The installation capacity is the highest among Taiwan's wafer industry, thereby fully demonstrating UMC's commitment to green energy and full support for clean energy.

In October 2018, UMC's two solar power generators in Fab 12A, installed in cooperation with the government's renewable energy policy, were reviewed and approved by government and third-party power survey agencies. UMC continues to pursue renewable energy certifications, and obtained 347 such certifications in 2019.

Newly Installed Solar Energy System in Recent Years



Solar Energy Output in Recent Years

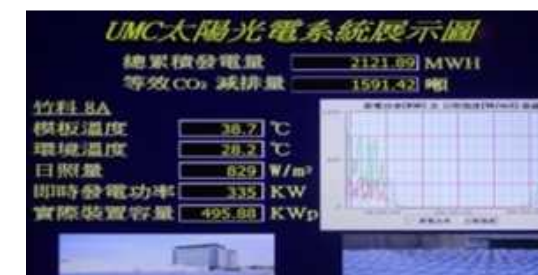
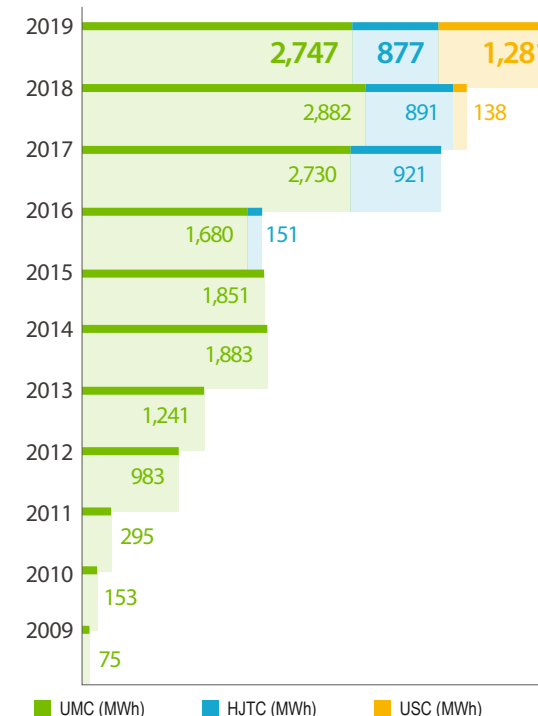


Photo of Solar Energy System

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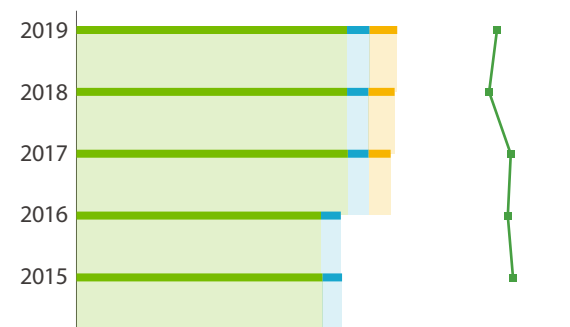
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Electricity Consumption in the Past 5 Years

	2015	2016	2017	2018	2019
UMC Electricity consumption (MWh)	2,305,685	2,290,119	2,541,762	2,534,456	2,533,770
HJTC Electricity consumption (MWh)	182,090	186,084	195,199	201,504	212,505
USC Electricity consumption (MWh)	-	-	205,865	244,203	258,217
UMC Electricity consumption per production capacity (MWh /Wafer-m ²)	13.32	13.16	13.25	12.59	12.83

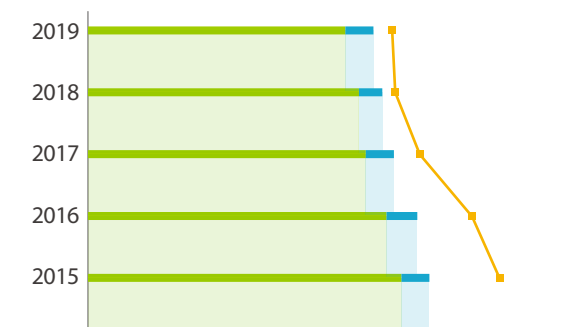


■ UMC Electricity consumption (MWh) ■ USC Electricity consumption (MWh)
■ HJTC Electricity consumption (MWh)
■ UMC Electricity consumption per production capacity (MWh /Wafer-m²)

Note: In 2019, the overall energy intensity for UMC and its subsidiary HJTC +USC was 12.67MWh /Wafer-m².

Natural Gas Consumption in the Past 5 Years

	2015	2016	2017	2018	2019
UMC Natural gas consumption (MWh)	232,677	221,602	206,235	201,124	191,034
HJTC Natural gas consumption (MWh)	20,746	22,841	17,133	17,340	20,841
UMC Natural gas consumption per production capacity (MWh /Wafer-m ²)	1.34	1.25	1.08	1.00	0.99



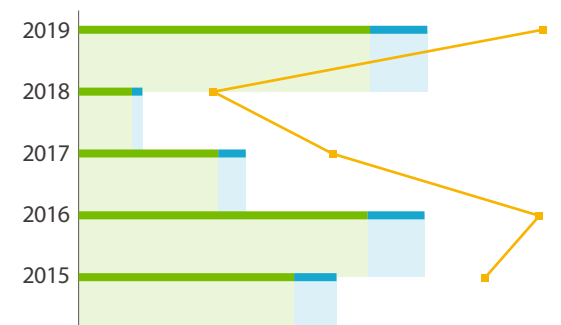
■ UMC Natural gas consumption (MWh)
■ HJTC Natural gas consumption (MWh)
■ UMC Natural gas consumption per production capacity (MWh /Wafer-m²)

Note 1: In 2019, the overall energy intensity for UMC and its subsidiary HJTC was 0.95 MWh /Wafer-m².

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

Natural Gas Savings over the Years

	2015	2016	2017	2018	2019
Saving performance (MWh)	11,652	15,628	7,552	2,882	15,585
CO ₂ reduced (tons)	2,292	3,074	1,485	567	3,147
Conservation (%)	5.33	6.17	2.98	1.14	6.15



■ Saving performance (MWh) ■ CO₂ reduced (tons) ■ Conservation (%)

Energy Conservation Plans for 2020

Energy saving plans shall cover about 350 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 goals for 2020 are 35,900 MWh, which would be equivalent to carbon dioxide emission reductions of about 19,135 t CO₂e.

UMC shall continue to promote heat recycling and energy saving projects for high temperature heat pumps, which are expected to reduce natural gas consumption by 5,708 MWh, equivalent to carbon dioxide emission reductions of about 1,122 t CO₂e.



Frequency conversion air compressor



Cooling tower replacement



High temperature chiller



Air conditioning unit energy conservation

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3-3 Water Risk Management

Recent climate changes have led to severe fluctuations in precipitation with more frequent floods and droughts. External stakeholders are also increasingly concerned about issues related to water resources. To respond to complex water resource issues on a timely basis and effectively integrate prevention steps, consumption reduction, contingency response, and other management concepts, UMC has successfully completed water risk factor identification and response measures. The UMC Water Resource Management Policy and Commitment was announced in 2015 to serve as our highest guiding principles for water resource management.

How We Manage

- Introduce a water risk management system
- Develop and utilize diverse water sources
- Use active management indicators to promote water conservation
- Cooperate with supply chains to reduce water footprint
- Provide open and transparent water information
- Widely promote water education

Goals and Targets

Improve water efficiency; reduce water consumption per unit of product by 10% in 2020, by 15% in 2025. (With 2015 as the base year)

Purposes

Maximize water efficiency, increase ability of valuable downstream chains to withstand water risk, and promote the importance of water resources and conservation.

The Mechanisms for Evaluating the Effectiveness

- The company-wide water-saving plans were set. The Environment Committee will conduct a performance review annually.
- The Environment Committee reviews the needs and expectations of stakeholders quarterly.
- Pass the ISO 14001 environmental management system certification every year.

Relevant Policies



UMC Water Management Policy








Environmental Protection Policy

Applicable Entities

UMC and its subsidiaries HJTC and USC

3-3-1 Water Risks and Opportunities

Identifying Water Risk Factors and Response

Risk Dimension	UMC Response	Risk Aspect
 Policy and Legal	<ul style="list-style-type: none">• Regulations and control for wastewater quality / water discharge quantity• Water charges	Transitional <ul style="list-style-type: none">• Participate in government, unions and association seminars to share practical experience and advice• Implement wastewater source diversion to enhance quality of wastewater• Continue to assess new wastewater treatment technology• Upgrade production efficiency to reduce water consumption and improve water recovery
 Technology/ Market	<ul style="list-style-type: none">• Commitment for new technology investment• Consumers, customers, investors and other parties of interest require companies to provide green products and expand their influence through the supply chain to indirectly eliminate excessive water-consuming commodities.	Transitional <ul style="list-style-type: none">• Promote analysis and certification of environmental impact on product lifecycle as well as promote source reduction. (UMC has passed water footprint certification and continues to promote water saving projects)
 Reputation	<ul style="list-style-type: none">• Changes in customer preferences• Bad reputation brings about negative feedback	Transitional <ul style="list-style-type: none">• Will continue to proceed according to UMC's current direction for water risk response (No significant risk)
 Short-Term	<ul style="list-style-type: none">• The intensity and frequency of natural disasters caused by typhoons may prevent employees from going to work, may cause damage to fab facilities, and may disrupt energy and raw materials supply.• Change of water source resulting in the change of water quality.	Physical <ul style="list-style-type: none">• Improve flood potential and risk assessments• Promoting business continuity management system• Globalize fabs and supply chain• Assess suppliers' water risk• Water quality risk assessment was conducted
 Long-Term	<ul style="list-style-type: none">• Rising sea level from global warming may lead to inland flooding, resulting in reduced clean water sources, water shortages and abnormal infrastructure damage to fab facilities.	Physical <ul style="list-style-type: none">• Reduce pressure of water demand by increasing water recovery and reuse• Use limited water resources efficiently• Evaluate and introduce new water sources• Water Risk Management Tool Development• Incorporate location considerations into future site selection• Establish a water contingency plan

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

Resource efficiency

- Promote voluntary water-saving plans every year to reduce water consumption and decrease waste water discharge, improving water utilization efficiency and ensuring the stability of water resources.
- Due to effective water resources management, monitoring system and contingency plans, UMC has higher tolerability to extreme precipitation and drought than other industries.



Water source

- UMC has developed and utilized a wide variety of water sources. In addition to increasing the recovery and reuse of water in fabs, UMC also utilizes rainwater, condensate water and recycled water.
- Water management plans and diversified water sources will reduce UMC's dependence on water-stressed areas.



Product / Service / Market / Reputation

- Provide technology and consulting services, exchange and cooperate with government units, peers and foreign partners to enhance community relations
- In addition to acting as a representative of industry associations to communicate with government agencies and provide advice on water resources management, UMC also participated in the water-saving counseling activities for businesses in Science Parks, serving as a committee to provide industrial consulting services.
- UMC actively cooperates with suppliers to promote the "Triple R League" for water, energy and resource recovery, reuse and reduction.
- The UMC Energy Saving Service Team helps community groups such as schools and social welfare organizations by providing water conservation and water sanitation technical consultation and engineering improvement services.

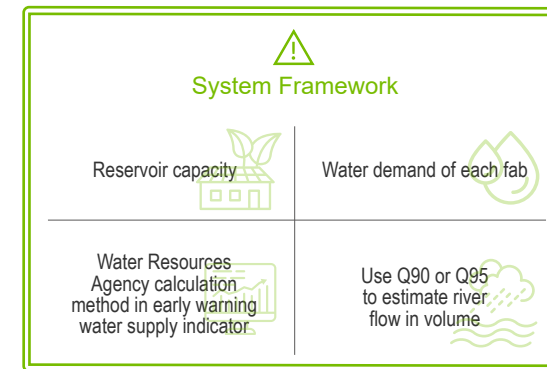


Water Disclosure and Communication

Since 2017, UMC has been invited to participate in the water disclosure project of the international CDP organization to further disclose the identification results of the above water risks and opportunities, and has received the rating of above Management Level for three consecutive years. An A- rating was received in 2017; B rating was received in 2018 and 2019.

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, National Taiwan University in 2015~2016 to develop the "Water Shortage Warning and Decision Support System for UMC's Fabs in Hsinchu Science Park and Southern Science Industrial Park." A seasonal (3 months) water shortage warning system was established to simulate the warning system used in the Water Resources Agency, MOEA. In addition, the seasonal broadcasting data from the Central Weather Bureau was incorporated into the system to offer water supply predictions. With this tool, UMC's fabs will know in advance about any possible water shortages. By combining with UMC's water shortage response measures, operation risk can be significantly reduced.



Water Resources Sharing and Social Participation

In addition to internal water resource assessment and management and active promotion of water conservation, UMC also serves as a representative in industrial unions/associations. The company cooperates with the government and industrial peers in water resources communication and exchange counseling through the following mechanisms:



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.

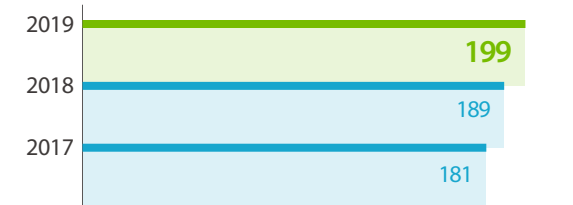


Establish a communication platform meeting with the Water Resources Agency to meet future water supply and demand.

Exchange and Counseling with Industry Peers

UMC has participated annually in water conservation coaching within the Science Park since 2002. As of 2019, the program has conducted a total of 199 cases and coached more than 80 companies, sharing the company's valuable experience in water conservation with industry peers to reduce the demand for water resources. For example, in 2019, the potential quantity of water saved after coaching was 340,000 tons/year. In 2018, UMC carried out water conservation coaching and tracked the performance of 8 companies, realizing savings of 39,000 tons of water.

Accumulated water-saving counseling cases



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3-3-2 Fab Water Source

UMC uses water risk assessment tools developed by the World Resources Institute (WRI), and cooperates with Taiwan's water resource distribution to identify the current proportion of fabs located on water scarce regions and further develop water risk management strategies.

UMC's Main Water Source for Each Fab

Water Scarcity ^{Note1} -Low	Water Scarcity-Moderate=>Low ^{Note2}
Hsinchu Science Park Fab8A, Fab8D, Fab8E, Fab8F, Fab8S Water Source Baoshan Reservoir, Baoshan II Reservoir, Longen Dam In addition to the existing water supply, the Shimen Reservoir and Yonghe Mountain Reservoir provide support mechanisms. Each year before the dry season, the Water Resources Agency convenes meetings to discuss the coming water risk to minimize the risk of water shortage.	Singapore Fab12i Water Source Singapore Newater reclaimed water Newater reclaims and treats public waste water for reuse, and hence has a more stable source of water supply with lower risk.
China Suzhou Subsidiary HJTC Water Source The main water sources for Suzhou's Taihu Lake are the Suixi in Tianmu Mountain in Zhejiang Province, and Jingxi in Yili Mountain in Jiangsu Province Taihu Lake has a water storage capacity of 2.72 billion tons, and is an abundant water source that provides stable water supply.	Water Scarcity- Moderate-High Tainan Science Park Fab12A, Fab12A II Water Source Nanhua Dam, Zengwen Dam Water is mainly supplied by the Nanhua Reservoir. Between November and May of the following year is the annual dry season, and the Water Resources Agency regularly reviews risks and schedules water supplies when necessary.
China Xiamen Subsidiary USC 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 a stable water supply.	

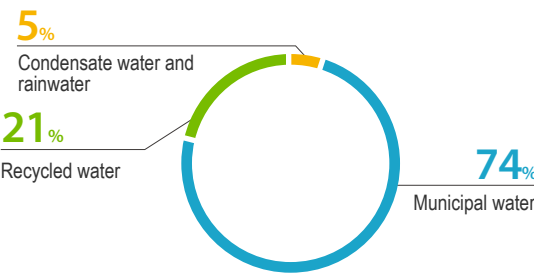
Note1: The WRI (Water Resource Institute) Aqueduct Tool is used to assess water risk. <http://www.wri.org/our-work/project/aqueduct/aqueduct-atlas>
Note2: The WRI (Water Resource Institute) Aqueduct Tool is used to confirm that Singapore is categorized as moderate water scarcity. Analysis shows Fab 12i plant derives 94% of its total water from Newater's recycled water, so water risk has been modified to low level.

Using Recycled Water

When Fab 12i in Singapore was being built, recycled water (Newater) was introduced in the production of 12-inch wafers (non-livelihood water). The fab used more stable recycled water (Newater), and increased its HF treatment system for discharge quality of fluoride ion< 15ppm, at same time strengthening the classification management of the source of the machine, and controlled sulfates to <1000ppm. On the other hand, the status of using recycled water has been evaluated in UMC's Taiwan fabs in areas where water resources are relatively depleted.

In 2019, the company's use of recycled water reached 3.24 million tons, accounting for 94% of Fab 12i's total water use of 3.43 million tons. 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.

Total water withdrawal of UMC is broken down below:



Review and analysis showed that UMC and Subsidiary fabs use less than 5% of the water in their respective regions, and hence have no significant impact on water resources.

UMC	Regional water consumption ^{Note 1}	UMC water consumption ^{Note 2}	Impact of UMC consumption
Hsinchu Science Park	0.54 million tons/day	16,400 tons/day	3.03%
Tainan Science Park	0.82 million tons/day	15,100 tons/day ^{Note3}	1.84%
Singapore	0.45 million tons/day	9,000 tons/day	2.0%
HJTC			
China	1.1 million tons/day	6,000 tons/day	0.55%
USC			
China	1.72 million tons/day	5,100 tons/day	0.29%

Note1: Fabs in Hsinchu Science Park, Tainan Science Park, China Suzhou: provided by water company.
Singapore fab: Based on PUB website information.
Note2: Water meter readings are recorded daily, and based on average monthly water usage, annual water consumption is calculated.
Note3: UMC's TSP (Tainan Science Park) site is located in a water-stressed area. Its water consumption accounts for 37.3% of UMC's total water consumption.

Water Quality Risk Control

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 an inspection instrument which is connected to SPC in order to ensure the quality of the water.

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3-3-3 Water Conservation During Manufacturing

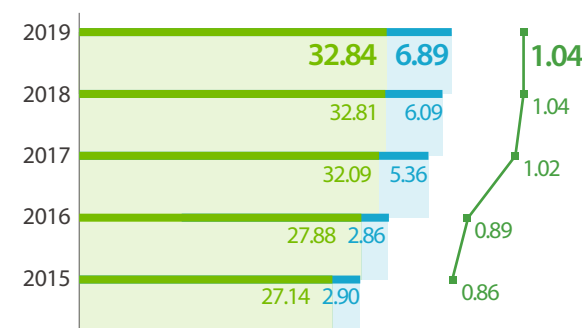
UMC's first principle of water consumption is designing a water conservation process, followed by recovering water for reuse and implementing highly efficient water management. To effectively reduce water resource consumption, all three principles must be integrated. In addition to conserving water, the company also actively participates in the Science Park Administration's water management indicator formulation and annual manufacturer water conservation counseling and technology exchanges. To ensure a secure water supply, the company also participates in the Water Resources Agency's water shortage contingency measures for water source stabilization and eutrophication. Impacted by global climate change, UMC strives to promote energy conservation and carbon reduction activities, and includes them in its management policy. Hence water conservation and improvement activities are ongoing to provide further opportunities for company growth.

Percentage and Total Volume of Water Recycled and Reused

According to the continuous improvement of the new Green 2020 water-saving plan, the water saving capacity was 187,000 tons in 2019 (accounting for 1.3% of municipal water usage in 2019), which is equivalent to saving benefits of NTD 4.67 million for that year. For subsidiary HJTC, water saving capacity was at 60,100 tons in 2019, translating to benefits of approximately RMB 22,600, accounting for 1.5% of municipal water usage in 2019.

As shown in the diagram below, in 2019, UMC company-wide recovered water **totaled 32.84 million tons, which is equivalent to conserving 1.04 of Baoshan II Reservoir**^{Note2}

UMC and its Subsidiaries HTJC/USC Water Conservation in the Last 5 Years.



■ UMC Recovered Water Amount (Mm³)
■ HJTC+USC Recovered Water Amount (Mm³)
■ UMC Recovered Water Amount, measured by the capacity of Baoshan II Reservoir

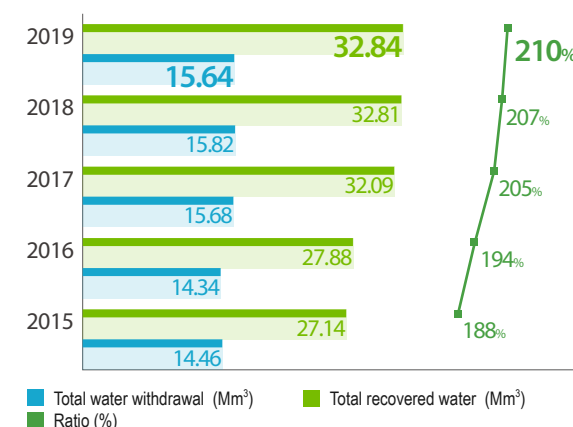
Note1: In 2019, total recycled water of UMC, including its subsidiary HJTC and USC was equivalent to conserving 1.26 of Baoshan II Reservoir.

Note2: In 2019, HJTC and USC overall recovered water amounted to 6.89 million tons, which was equivalent to 0.22 of Baoshan II Reservoir.

Note3: Baoshan II Reservoir is the main water source for the Science Park. Its full water storage capacity is 31,471,800 tons (Source: Ministry of Economic Affairs Water Resources Agency January 2020 Water Storage Report).

Due to its past promotion of water conservation, reduction and recycling measures, and its high recovery rate in the manufacturing process, UMC's current water recovery has exceeded the newly increased total water withdrawal. Total water recovery and reuse could reach more than 200% of water withdrawal.

Percentage of Water Recovery and Reuse to Total Water Withdrawal



Note1: Amount of recovered water is calculated using cumulative flow meter or floating flow meter.

Note2: Total water withdrawal includes municipal water + condensate water and rainwater.

Municipal water: Water meter readings are recorded daily, and based on average monthly water usage, annual water amount is calculated.

Condensate water and rainwater: Annual water amount is calculated using flow meters and estimates.

Note3: The information above includes Fab 12A's second plant (Fab 12A II) since 2017.

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New Improvement Measures and Outcomes in 2019

W-SOL drain reclaim to Cu CMP system	
Implementing Fab: Fab12A	Amount of Conserved Water (tons): 19,783
Increase performance of CMP reclaim	
Implementing Fab: Fab 12A II	Amount of Conserved Water (tons): 18,250
Cu SOVT-4 set LRP drain water recycle to DIR 30%	
Implementing Fab: Fab 12i	Amount of Conserved Water (tons): 11,275
Improve filter cleaning process of CMP recycle system	
Implementing Fab: USC	Amount of Conserved Water (tons): 3,276
Recycle conductivity sensor sampling water of 50% & 35% DI reclaim water	
Implementing Fab: Fab 12A II	Amount of Conserved Water (tons): 2,004
Replace the water used in the scrubber with CMP reclaim water	
Implementing Fab: Fab12A	Amount of Conserved Water (tons): 730

Note: Only 12 months of performance are included for the new improvement items. Only outcomes from 2019 are included in multi-year plans.

Improvement Activity Photos



Increase performance of CMP reclamation

**Fab 8F received the Hsinchu Science Park
Excellent Water-Saving Award**

It is a great honor to receive the 2019 Hsinchu Science Park Excellent Water-Saving Award, demonstrating that our continuous efforts in water resource recovery have been recognized. We will continue to uphold the spirit of CSR in the future and make contributions to the sustainable development of the environment.



Sharing from Staff (Division Director/Jing-Xun Huang)

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Total Water Withdrawal

UMC strives to improve its water conservation and increase its water efficiency and value, and reduce the environmental impact on water sources, reduce water consumption replenishment, and use municipal water as the primary source, supplemented by condensate water and rainwater.

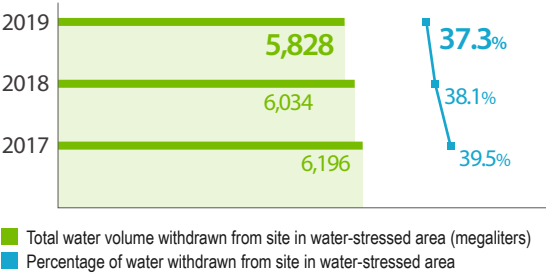
In 2019, total water usage in UMC amounted to **15.6 million tons**, which included public water, condensate water and rainwater.

A breakdown of total water withdrawal of UMC from 2017 to 2019

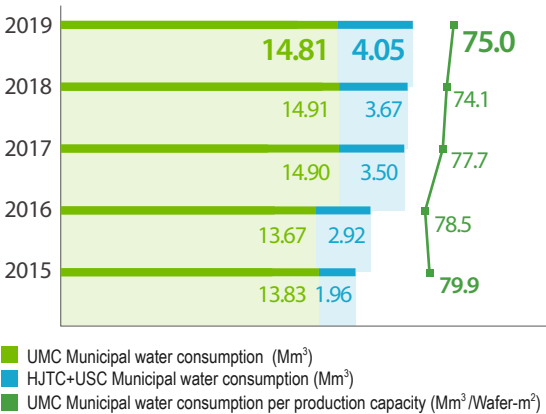
Water withdrawal by source					
Surface water + Groundwater + Seawater + Produced water (total)					
2017		2018		2019	
0	0	0	0	0	0
Condensate water and Rainwater (total)					
2017		2018		2019	
782	269	911	322	828	305
Third-party water (total)					
2017		2018		2019	
14,903	5,927	14,907	5,712	14,809	5,523
Total water withdrawal					
2017		2018		2019	
15,685	6,196	15,818	6,034	15,637	5,828

Note: The source of third-party water all came from surface water which was municipal water provided by a water company. The third-party water was also freshwater (≤1,000 mg/L Total Dissolved Solids).

Percentage of water withdrawn from site in water-stressed area



Municipal water consumption of UMC and its Subsidiaries HJTC/USC in the Last 5 Years.



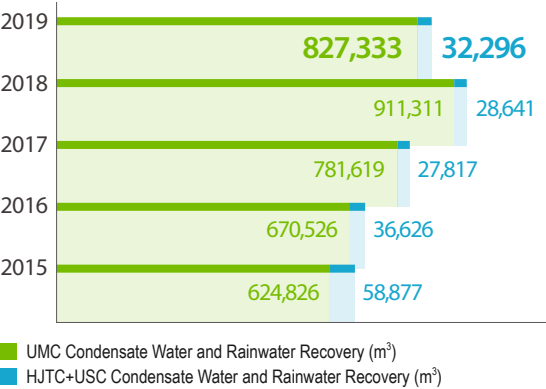
Note1: In 2019, the overall municipal water consumption per wafer area for UMC and its subsidiaries HJTC/USC was 79.6 m³/Wafer-m².

Note2: Water meter readings are recorded daily, and based on average monthly water usage, annual water amount is calculated.

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. If efficiency can be improved, the environmental impact on water sources can be reduced.

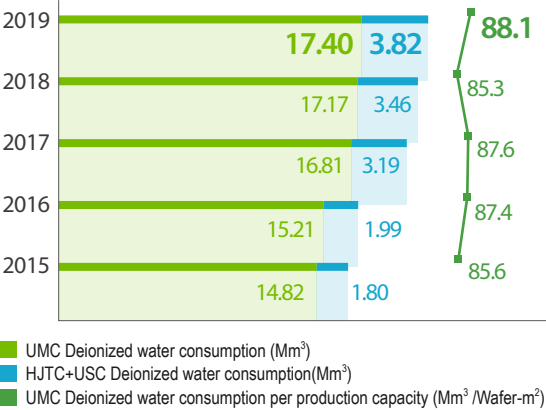
Condensate Water and Rainwater Recovery of UMC and its Subsidiaries HJTC/USC in the Last 5 Years.



Note 1: The information above includes Fab 12A's second plant (Fab 12A II) since 2017.

Note 2: Annual water amount is calculated using flow meters and estimates.

Deionized Water Consumption of UMC and its Subsidiaries HJTC/USC in the Last 5 Years.



Note 1: The information above includes Fab 12A's second plant (Fab 12A II) since 2017.

Note 2: In 2019, the overall deionized water consumption per wafer area for UMC and its subsidiaries HJTC/USC was 89.5 m³/Wafer-m².

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Water Consumption

UMC and its Subsidiaries HJTC/USC Water Withdrawal and Consumption in 2019

Total water withdrawal	Water consumption	(megaliters)
UMC		
All areas		
15,637		4,849
Areas with water stress (Fabs in Tainan Science Park)		
5,828		2,127
HJTC		
2,228		295
USC		
1,860		448

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

The total water withdrawal and water consumption of facilities in areas with water stress in 2019. (Fabs in Tainan Science Park)

 Process related Facilities	 Living related Facilities	 Total	(megaliters)
Water withdrawal			
Surface water + Groundwater + Seawater + Produced water (total)			
0	0	0	
Third-party water (total)			
5,288	235	5,523	
Condensate water and Rainwater (total)			
305	0	305	
Water consumption			
Total water consumption			
2014	113	2,127	

Company-wide Recovery Rate and Process Recovery Rate

Despite the various operation schedules of UMC's fabs, the water recovery rate still outperformed the standard regulated by the Science Park

Standard		Actual	
Company-wide Recovery Rate		Manufacturing Recovery Rate	
Fab8A			
>=70%	76.2%	>=70%	79.9%
Fab8D			
>=70%	79.0%	>=70%	86.0%
Fab8E			
>=70%	81.7%	>=85%	88.2%
Fab8F			
>=70%	81.6%	>=85%	86.4%
Fab8S			
>=70%	77.1%	>=85%	88.6%
Fab12A			
>=70%	77.5%	>=85%	86.4%
Fab 12A II			
>=70%	83.3%	>=85%	86.6%
Fab12i			
NA	65.7%	NA	71.8%
HJTC			
NA	61.1%	NA	55.7%
USC			
65% commitment to environmental impact assessment	72.7%	NA	70.6%

Note: When no local standard is available (NA), fabs will be installed with basic recycling equipment.

Water Conservation Improvement for 2020

Modify rejection rate of brine water reuse

Implementing Fab: USC/Fab8S

Planned Amount of Conserved Water (ton): **25,620**

Improve loading of waste HF treatment system by reverse membrane

Implementing Fab: Fab 8F

Planned Amount of Conserved Water (ton): **10,980**

Modify Lin Der system water consumption

Implementing Fab: USC (Fab 12X)

Planned Amount of Conserved Water (ton): **10,120**

Increase conductivity of supply in local scrubber system

Implementing Fab: Fab 12A II

Planned Amount of Conserved Water (ton): **7,686**

Change water for LDI system of regeneration & back wash in the winter season

Implementing Fab: Fab 8D

Planned Amount of Conserved Water (ton): **7,564**

Reduce system regeneration water from LSR tool suitable consumption

Implementing Fab: HJTC

Planned Amount of Conserved Water (ton): **5,490**

Reduce acid & ALK scrubber water consumption

Implementing Fab: Fab 12A

Planned Amount of Conserved Water (ton): **1,464**

Increase pH control range of 35% DI water reclamation system

Implementing Fab: Fab 12A II

Planned Amount of Conserved Water (ton): **918**

Total

Planned Amount of Conserved Water (ton): **69,842**

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3-3-4 Water Pollution Control

Among process reduction, waste diversion and categorization, the priority in UMC's water pollution control strategies are 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 the different companies to reaffirm the quality of discharged water.

Wastewater Treatment

To fulfill our corporate social responsibilities, 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.

Nitrogen wastewater treatment techniques' setup status of each fab

Fab 8A/ Fab 8D/ HJTC	Fab8F/Fab8S	Fab12A	Fab 12A II / USC
Setup Year 2006 、 2018	Setup Year 2017	Setup Year 2016	Setup Year 2016
Technologies Stripping + Sulfate scrubber	Technologies Electrolysis	Technologies Thin film separation + sulfate scrubber	Technologies Catalyst dissociation
Final product Ammonium sulfate	Final product Nitrogen gas & Hydrogen gas	Final product Ammonium sulfate	Final product Nitrogen gas

UMC and its subsidiaries HJTC/USC Wastewater Discharge

UMC and its subsidiaries HJTC/USC				Combined Waste Water Treatment			
Location	Site	Discharge Amount (10,000 tons/day) ^{Note 1}	Impact (%)	Treatment Department	Current Treatment Amount (10,000 tons/day) ^{Note 2}	Re-use	Discharged into drainage area
Hsinchu Science Park	Fab8A/Fab8D/ Fab8E/Fab8F/ Fab8S	1.18	11%	Hsinchu Science Park Administration sewage treatment plant	10.7	--	Ke-Ya River
Tainan Science Park	Fab12A/ Fab12AII	1.01	10.9%	Tainan Science Park Administration sewage treatment plant	9.25	--	Yanshuei River
Singapore	Fab12i	0.76	0.95%	Public Utilities Board(PUB)	80	Industrial re-use	South China Sea
China Suzhou	HJTC	0.53	0.59%	Suzhou Industrial Park, Hua Yan Water Ltd.	90	--	Wusong River
China Xiamen	USC	0.39	7.8%	Xiamen City, Xiang-an (Ma Xin) sewage treatment plant	5	--	Dongkeng Bay

Note 1: Hsinchu Science Park fabs, Tainan Science Park fabs, HJTC and USC: Water meter readings are recorded daily, and based on average monthly water usage, annual water consumption is calculated.Singapore fab: Based on daily record & accumulation

Note 2: Hsinchu Science Park fabs, Tainan Science Park fabs: Ministry of Science and Technology Statistics and Data BankSingapore fab: Based on PUB website information.HJTC: Suzhou Industrial Park, Hua Yan Water Ltd. sewage treatment plant .USC: Xiamen City, Xiang-an (Ma Xin) sewage treatment plant

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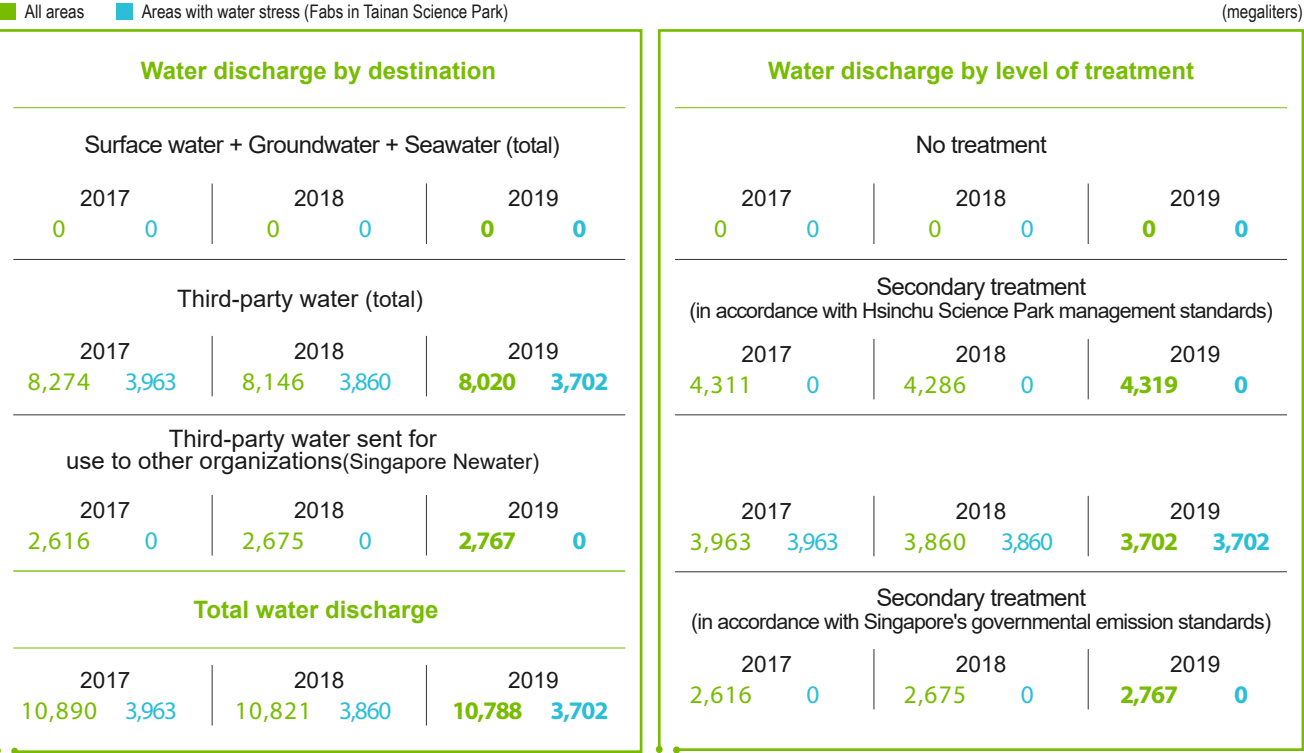
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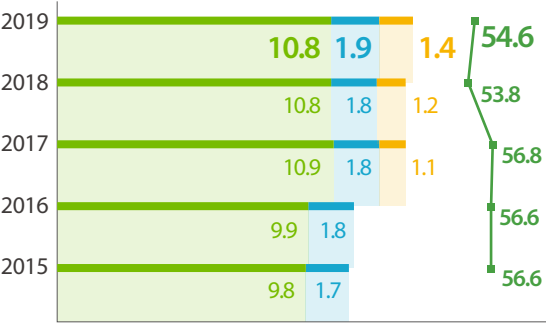


A breakdown of the water discharge of UMC from 2017 to 2019 (megaliters)



Note1: Wastewater from each of UMC fab is pre-treated before being discharged into local wastewater treatment plants. No wastewater is directly discharged into receiving water bodies.
Note2: Singapore's Newater uses wastewater from UMC's Fab 12i as source water.
Note3: The wastewater discharged by UMC is not fresh water (≤1,000 mg/L Total Dissolved Solids)

Wastewater Amount of UMC and Its Subsidiaries
HJTC/USC in the Last 5 Years.



■ UMC Wastewater amount (Mm³) ■ HJTC Wastewater amount (Mm³)
■ UMC Wastewater amount (Mm³)
■ UMC Wastewater amount per production capacity (Mm³ /Wafer-m²)

Note: In 2019, the overall wastewater amount per wafer area for UMC and its subsidiaries HJTC /USC was 59.6 m³/Wafer-m²

Ammonia Wastewater Improvement

In responding to the addition of new wastewater pollutants, namely ammonia and Tetramethylammonium Hydroxide (TMAH), for regulation by the Science Industrial Park Administration Bureau, UMC from 2013 to 2015 has promoted the reduction of ammonia and source materials containing TMAH developer in Hsinchu and Tainan fab areas. In 2019, each fab continued to implement the target items of various projects. Based on the amount used in 2012, the reduction rate was more than 50%. UMC's fabs in Southern Science Industrial Park installed ammonia wastewater treatment system in 2015. As a result, the ammonia concentration in discharged water passed the sewage pollutant regulating standard of the Science Industrial Park.

Project Benefits:



Economic Benefit

Annual operating cost is reduced by about NT\$48 million in cost of nitrogen raw materials. After 2019, 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% to 63%.

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3-4 Waste Management

The problem of waste has become a heavy burden on the environment in recent years. It also poses a threat to the environmental hygiene of our daily lives, and it represents huge costs to enterprise, government, and society in general in terms of clean-up treatment. If not managed properly, as soon as there are costs to pay for damage arising from environmental pollution, the costs of recovery are even greater. To deal with waste management issues, UMC has been vigorously planning implementation programs of various orientations in recent years which are progressively being promoted.

How We Manage

- Promote process technology improvement and source management measures to reduce raw material use and waste output
- Collaborate with global operating partners to recycle resources for waste recycling and reuse
- Introduction and development of environmentally friendly technologies, reinforcement of pollution prevention capabilities
- Auditing and guidance of waste management companies

Goals and Targets

- UMC
 - Implementing the Green 2020 project to reduce waste generation per unit of product by 10% in 2020 (with 2015 as the base year).
 - Maintaining zero environmental accidents and pollution
- UMC Taiwan
 - Landfill rate of less than 1%
 - Greater than 98% recycling for liquid waste
 - 100% resource recycling for acid-base liquid waste

Purposes

- Promoting the circular economy to maximize resource efficiency
- Reducing the impact and harm of production on the ecological environment

The Mechanisms for Evaluating the Effectiveness

- The company-wide waste reduction plans were set. The Environment Committee will conduct a performance review annually.
- The Environment Committee reviews the needs and expectations of stakeholders quarterly.
- Internal and external audits will be conducted regularly.
- Pass the ISO 14001 environmental management system certification every year.

Relevant Policy



Environmental
Protection Policy

Applicable Entities

- UMC and its subsidiaries HJTC and USC
- Waste clearance, disposal and reuse organizations

3-4-1 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 2019, UMC's total waste output was 36,777 metric tons (not including routine office waste), and waste output per unit production capacity was 186 kg / m², which is a reduction of 3.5% compared to 2018.

In 2019, UMC's overall production of hazardous waste amounted to 21,025 metric tons, and the per unit production capacity of hazardous waste output was 106 kg/m², representing a decrease of 6.7% from 2018.

In 2019, UMC's reduction plans and measures resulted in a total waste reduction of 705 metric tons, as shown in the table below



2019 Waste Reduction Measures and Performances

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)	303 tons	
Reduction of waste solvent (reducing the water content of IPA liquid waste, and extending life time)	86 tons	
Sludge reduction (expanding the drying equipment and source reduction for fluorine-containing chemicals)	299 tons	
Reduction of others (extending the lifetime of chemicals, empty barrels, spare parts, filter, etc.)	17 tons	
Total amount of reduction	705 tons	

Note: In 2019, total waste reduction of UMC, including its subsidiaries HJTC and USC was 1,360 metric tons.

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With regard to waste reduction in the Green 2020 Reduction Plan, the waste production volume per unit of all UMC's 8" fabs (including HJTC) was 102.7 kg/m², which is a reduction of 17.1% compared with 2015 (123.9 kg/m²). The waste production volume per unit of all UMC's 12" fabs was 228.6 kg/m², which is a reduction of 22.6% compared with 2015 (295.2 kg/m²).

Waste reduction measures expected to be promoted in 2020



Continuous reduction of IPA and NMP sources to reduce waste solvent output



Replacing the acid-base neutralizing agent in the wastewater treatment plant with waste sulfuric acid, reducing the amount of waste sulfuric acid generated



Extending the time for replacing waste sulfuric acid, reducing the amount of waste sulfuric acid generated



Optimize ammonia nitrogen treatment system to reduce ammonium sulfate production

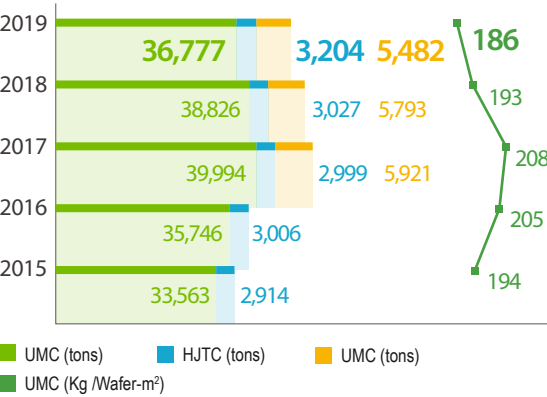


Extend the life of spare parts to reduce scrap output



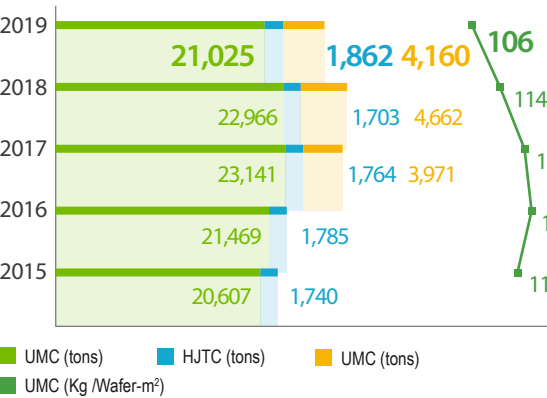
Changing the supply of the raw materials to reduce the production of empty barrels

2015-2019 Total Waste Generation



Note1: In 2019, the overall waste generation per wafer area of UMC and its subsidiaries HJTC/ USC was 192 Kg / Wafer-m²
Note2: The information above includes Fab 12A's second plant (Fab 12A II) since 2017

2015-2019 Hazardous Waste Generation



Note1: In 2019, the overall hazardous waste generation per wafer area of UMC and its subsidiaries HJTC/ USC was 114 Kg / Wafer-m²
Note2: The information above includes Fab 12A's second plant (Fab 12A II) since 2017

General Solid Waste Output Status

	2015	2016	2017	2018	2019
Volume of general solid waste generated	9,129	9,021	9,323	8,562	7,957
Volume of general solid waste reused/recycled/sold ^{Note1}	6,547	6,784	7,079	6,586	6,266
Volume of general solid waste disposed ^{Note2}	2,582	2,237	2,244	1,976	1,691

Note1: Waste treatment process uses material recovery or energy recovery
Note2: Waste treatment includes landfill or incineration, in which incineration does not include energy recovery

Non-valuable hazardous waste output status

	2015	2016	2017	2018	2019
Volume of hazardous waste generated	20,607	21,469	23,141	22,966	21,025
Volume of hazardous waste sold ^{Notes1&2}	4,848	4,944	5,5155	5,488	5,522
Volume of non-valuable hazardous waste generated	15,759	16,526	17,626	17,479	15,503

Note1: High-purity waste is sold to a waste treatment facility to refine into industrial-grade raw materials
Note2: Handled by material reutilization

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3-4-2 Promotion of the Circular Economy

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.



In 2019, UMC, including its subsidiary HJTC and USC, 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 **6,757 metric tons**, and also reduced our purchases of industrial-grade sulfuric acid by approximately **7,036 metric tons**. The total economic benefit was **NT\$47.17 million**.



The amount of off-site waste recycled by UMC in 2019 was **33,296 metric tons**, and waste re-usage for the year reached **91%**. Hazardous waste reused amounted to **19,900 metric tons**, a hazardous waste re-usage rate of **95%**. Revenue from the recycling of renewable resources in 2019 (fabs in Taiwan) was approximately NT\$40 million.

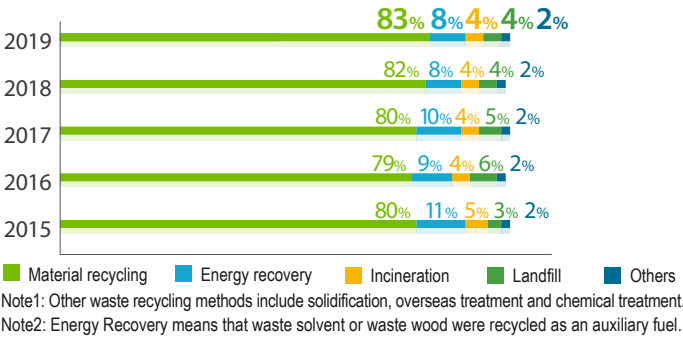
Basel Convention hazardous wastes definition: All UMC waste is treated domestically.

In the future, UMC will continue to actively collaborate with waste management companies/raw material suppliers to research and develop new waste recycling methods and goals.

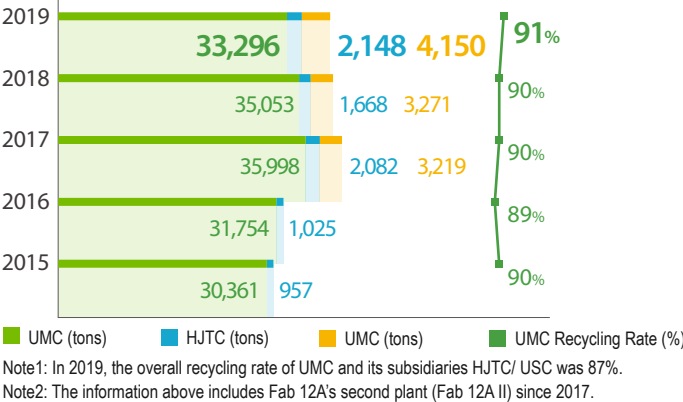
List of major waste recycling resource in 2019

	Receptacle: Cleaned by recyclers for re-use
	Solvent: Converted to chemical grade raw material through distillation / extraction by chemical factories
	Sulfuric Acid: Collected by recyclers and diluted into industrial grade sulfuric acid, or re-made into poly aluminum chloride or sulfate.
	Calcium fluoride sludge: 1. Supply to cement companies as cement additive.2. Collected by recyclers and made into artificial fluorite for use as solvent by steel mills.
	Copper sulfate: Collected by recycler and used electrolysis to recover copper, which is re-made into copper plates, copper sulfide or copper sulfate.
	Phosphate: Collected by recyclers and re-made into industrial grade phosphoric acid or biological nutrients.
	Mixed Hardware: Collected by recyclers to extract the heavy metals or recover other metals.
	Photo Mask: Collected by recyclers, cleaned to remove patterns, and renewed as photo masks or made into optical materials.
	Lead Acid Battery: Collected by waste disposal vendors to recover raw lead and waste plastic materials.
	Recycling Category: Scrap paper, scrap aluminum, aluminum foil, plastic bottles and scrap plastics are collected by recyclers for re-use.
	Resin: Collected by recyclers, classified and cleaned and used as second grade resin for ion exchange.
	Fluorescent Lamp: Collected by recyclers for reusable fluorescent powder and metals.
	Wood: Recycled as raw material for wood products
	Waste solvent: Collected by the supplier to be remade into coating thinners or banana oil mixtures.
	Ammonium sulfate: Collected by the supplier to be remade into industrial grade ammonium sulfate that could be used as welding flux, leather goods, electroplating solutions, and dyes.

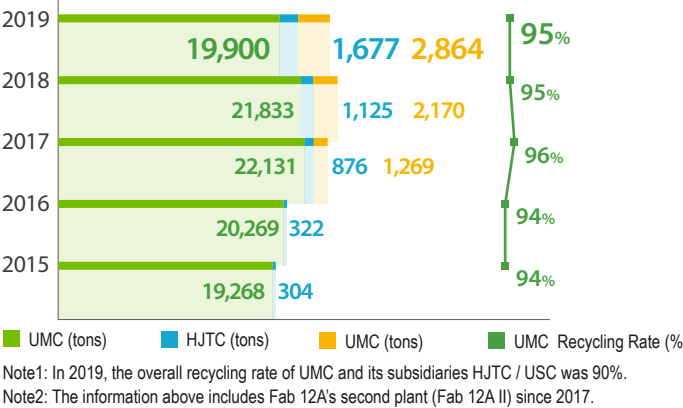
UMC Waste Recycling Trend



2015-2019 Recycling Status



2015-2019 Hazardous Material Recycling Status



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3-4-3 Proper Waste Disposal

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 evaluation result, the company determines whether to maintain cooperation or increase the frequency of audits. The table below shows the results of the audit and subsequent follow-up:

In 2019, UMC completed an audit of 76 waste manufacturers. Audit results show that all vendors rated Excellent or above.



Outstanding	90 points or more
<ul style="list-style-type: none"> • Maintain cooperation • Audit once every 2 years 	
Excellent	80-89 points
<ul style="list-style-type: none"> • Maintain cooperation • Audit once every year 	
Satisfactory	70-79 points
<ul style="list-style-type: none"> • Maintain cooperation (list as a substitute vendor) • Audit once every year 	
Inadequate	60-69 points
<ul style="list-style-type: none"> • List as under observation. Increase audit if improvement is made within given time; otherwise, terminate contract. • Audit once every 6 months 	
Unsatisfactory	60 points or less
<ul style="list-style-type: none"> • Replace immediately 	

Collaborated with peers among the industry, and participated in the evaluation program for high-tech industrial waste cleaning company

Suppliers offering waste processing and recycling services were encouraged to retain proper records for the overall process for final accountability of waste processing and recycling procedures. These records could then be provided to source customers or government agencies to conduct effective inspection and prevent any case of intentional violations or environmental pollution. In 2016, UMC participated in TSIA and TTLA "High-Tech Industry Waste Cleaning Supplier Assessment Project" and shared the results of the assessment. Those suppliers with outstanding performance were announced on the Industry Association website.

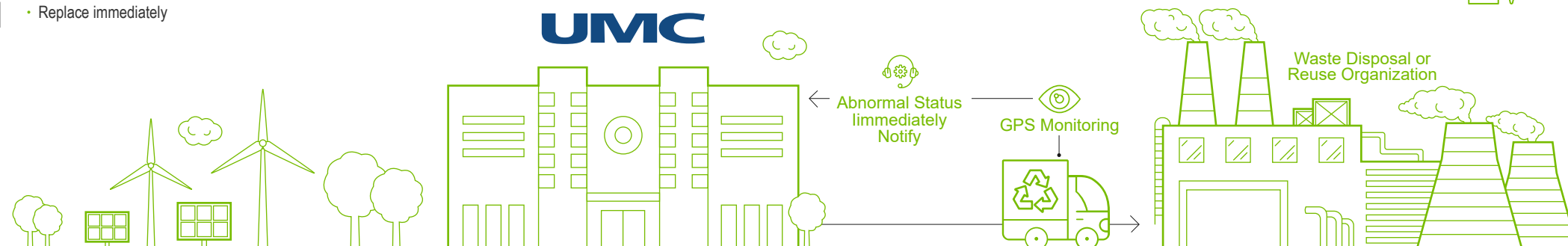
- 2016 In 2016, UMC participated in TSIA and TTLA "High-Tech Industry Waste Cleaning Supplier Assessment Project"
- 2017 In 2017, UMC signed the "Self-Regulated Convention on High-Tech Industrial Waste Cleanup and Reuse" initiated by TSIA
- 2018 In 2018, UMC participated in the "Industrial Waste Cleanup Company Evaluation Team" organized by TSIA, TTLA and TOSIA, and ITRI served as a 3rd party consultant to conduct evaluation and certification together with the source manufacturers
- 2019 In cooperation with the visit of TSIA in 2019, it is confirmed that UMC's waste management operations complied with the Self-Regulation Convention

Established the UMC Waste Removal and Transportation GPS virtual vehicle fleet monitoring system

UMC has reinforced the management and control of commissioned waste disposal processes to ensure that waste is properly delivered to the relevant disposal or reuse organizations. We cooperated with a GPS system manufacturer to develop UMC's waste disposal and transportation GPS virtual vehicle fleet monitoring 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 advantages of this system are as follows:

- 100% monitoring of all removal and transportation trucks replacement of traditional manual vehicle checks.
- Real-time monitoring during removal and transportation, with immediate notification of abnormalities superior to current regulatory GPS systems, in which the production end is only able to query tracking after the event.
- Daily checking, so that when there are abnormalities the company is required to explain the reasons this lets the waste management company know that the production source end is being monitored at any time and reduces the probability of illegal activities.



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3-5 Green Product

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. In addition to reducing resource consumption and unnecessary pollution during the production process, we have gone one step further to acquire green factory certification to be a good green role model.

How We Manage

- In addition to complying with all applicable laws, regulations and standards, we have applied even higher standards for ourselves with the priority of replacing hazardous substances.
- We will promote green purchasing with proper management of hazardous substances within the production process starting from the source.
- Independent Green Chemical Product Research and Development
- Our process designs are heading towards slim and compact sizes to reduce material consumption, yet they also feature high performance and low power consumption.
- We will promote reduction of greenhouse gas emissions, saving of energy and resources, and reduction of waste generated during the production process.
- We will promote the recycling and reuse of raw materials and product packaging materials.

Goals and Targets

Continuously promote the plan of hazardous substance replacement, energy reduction and environmental impact assessment.

Purposes

Providing green products that are hazardous substance free with low environmental impact

The Mechanisms for Evaluating the Effectiveness

- The company-wide chemical substitution and product research and development plans were set. The Green Manufacturing Committee and Innovation Technology Committee will conduct a performance review annually.
- Pass the verification of QC080000 Hazardous Substance Process Management System every year.
- Acknowledge that the product can meet the regulations and customers' needs.

Relevant Policies



Hazardous
substance free
policy



Environmental
Protection Policy

Applicable Entities

- UMC and its subsidiaries HJTC and USC

Green product considerations at each stage

Implementation plan

Implementation in 2019



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.
- The ratio of using reclaimed wafers for dummy wafers is 64%.
- The recycled slurry for reutilization reached 855 tons.
- The use of fluorine-free and recyclable chemicals in the chemical cleaning process of advanced processes to achieve the goal of environmental friendliness and reduce amount of fluorine-containing chemical solvents by 10 tons per year.



Direct operations, production & manufacturing

- Promote clean production, reduce the use of hazardous substances.
- The Green 2020 Reduction Plan was promoted to reduce water consumption, electricity consumption and waste generation.
(Please refer to the Clean Production Section for more details on performances and achievements)



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.
- In 2019, the recyclable package materials used reached 64,410 kgs.
- 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.



Use phase - operation and servicing/maintenance

- Develop environmentally friendly, low power consumption advanced process technologies.
- The ultra-low power 55/40 nanometer embedded memory (uLP eNVM) platform and the 0.18 micron third-generation and 55 nanometer bipolar-complementary metal oxide semiconductor-double diffusion metal oxide semiconductor (BCD) process platform were developed.



End of life management

- Maintain the uniformity of ICs and products and avoid composite materials for recycling and disposal.
- UMC is a wafer foundry and not an end product manufacturing company. Wafers are mainly made of silicon.

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3-5-1 Hazardous Substance Management

Through the QC 080000 Hazardous Substance Management System, UMC ensures that its products not only comply with the EU list of controlled substances (such as the EU RoHS) and global chemical regulations and standards, but also meet customer needs. Several years ago, UMC established the inter-departmental Hazardous Substances Process Management committee (HSPM committee) to enhance the effectiveness of green product management.

Hazardous Substance Free Policy

By instilling employee awareness and ensuring control and technological upgrades in design and production, the company produces Hazardous Substances Free Control products that meet regulations and customer demands, thereby fulfilling its duty as a global citizen to protect the environment and human health and safety.

Hazardous Substance Free Goals

- No products were disposed of as a result of regulation violation or customer demand.
- Zero VOC and zero violation.

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)

Implementation in UMC

- Able to comply with the requirements

Halogen-free Requirement

Implementation in UMC

- Able to comply with the requirements

EU Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals. (EU REACH)

Implementation in UMC

- Able to comply with the requirements

EU Waste of electrical and electronic equipment (WEEE)

Implementation in UMC

- 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

Implementation in UMC

- UMC led the industry to achieve the elimination of PFOS, PFOA and PFOA-related chemicals.
- Began to pay attention to PFBS since 2018, to keep up with international environmental protection regulations, and collected data on PFBS-related raw materials and alternative chemicals.

UMC Hazardous Substances Management



Dedicated to
green supply
chain
promotion



Impartial third
party laboratory
regularly tests
products for
hazardous
substance
content



About 400
controlled
chemical
substances
listed



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



Constructed a
system for
evaluating raw
materials



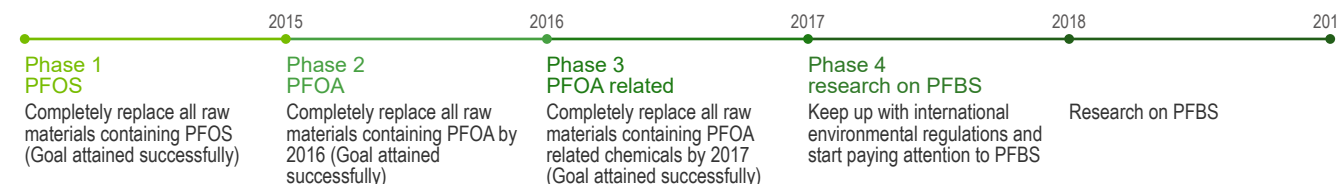
Hazardous
Substances
Process
Management
committee



Established a
procedure for
procuring
green raw
materials

Hazardous Substance Replacement Plan

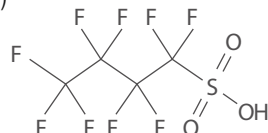
Usage reduction project and objectives for PFOS, PFOA, and PFOA related chemicals



In response to domestic and international concerns regarding persistent organic pollutants (POPs) such as PFOS, PFOA, PFOA related substances, etc., an autonomous replacement plan was reached in December 2017. We remain up-to-date on international environmental regulations and have started paying attention to PFBS as well.

Perfluorobutanesulfonic acid (PFBS)

- PFBS is a chemical compound with a four carbon fluorocarbon chain and a sulfonic acid functional group. As an anion it functions as a stable fluorosurfactant because of the strength of carbon-fluorine bonds.
- PFBS has a half-life of a little over one month in people, much shorter than PFOS with 5.4 years. PFBS is persistent in the environment. Studies have not yet been specifically conducted to determine safety in humans.
- Scientific evidence shows that it may have serious impacts on human health and the environment, including environmental persistence, high mobility in water and soil, long-distance transmission, moderate bioaccumulation in humans and high difficulty in rehabilitation. On January 16, 2020, PFBS and its salts were added to the REACH Regulation Candidate List of Substances of Very High Concern (SVHCs)



Green Chemical Product R&D Program

Many of the special cleaning chemicals required for semiconductor manufacturing processes are designed and imported from large foreign companies. Due to the restrictions of trade secrets, it is difficult for users to understand the whole picture, and this leads to a degree of difficulty whether to reduce the usage amount or to recycle. Plus, these cleaning chemicals contain more than a few harmful substances; the impact they have on the environment and safety is in dire need of improvement. Therefore, several years ago, UMC started to work on a series of green chemical research and development programs. Given the premise of environmental friendliness, we have directly designed new green chemical products to replace these imported chemical products, thus achieving not only consumption reduction, recycling and reuse, and environmental friendliness, but also strong R&D capability.

After years of hard work, we have finally obtained excellent results. UMC was successful in developing a completely new type of green chemical in 2018 and 2019 by using a biodegradable and friendly chemical substance, which not only saves on consumption, but also greatly reduces harmful substances, thereby achieving the goal of being environmentally friendly. This new green chemical product has also officially come into production lines in Fab 12A, and has been applied to 14nm production processes, reducing 10 tons of Perfluoroalkyl substance (PFASs) chemical solvents per year. In 2020, UMC will complete the third green chemical development program.

In the future, UMC will continue to develop green chemical research and development programs, researching and developing new green chemicals in new processes to achieve the goals of consumption reduction, recycling and reuse, and environmental friendliness.



Green chemical development sample in 2019

Develop a halogen-free cleaner to replace conventional halogen cleaner



UMC won the 1st Green Chemical Application and Innovation Award

"Minimize usage, use the best, use the safest, and environmental protection" is UMC's philosophy towards chemical management. In 2019, UMC implemented the introduction of low environment and health impact green chemicals and a comprehensive chemical hazard identification and management process. Such practice won the 1st Green Chemical Application and Innovation Award issued by the Toxic and Chemical Substance Bureau of the Environmental Protection Administration, Executive Yuan.



A UMC representative received award from the Minister of Environmental Protection Administration

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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. We apply these technologies to traditional logic processes and special technology processes (such as embedded memory). 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.

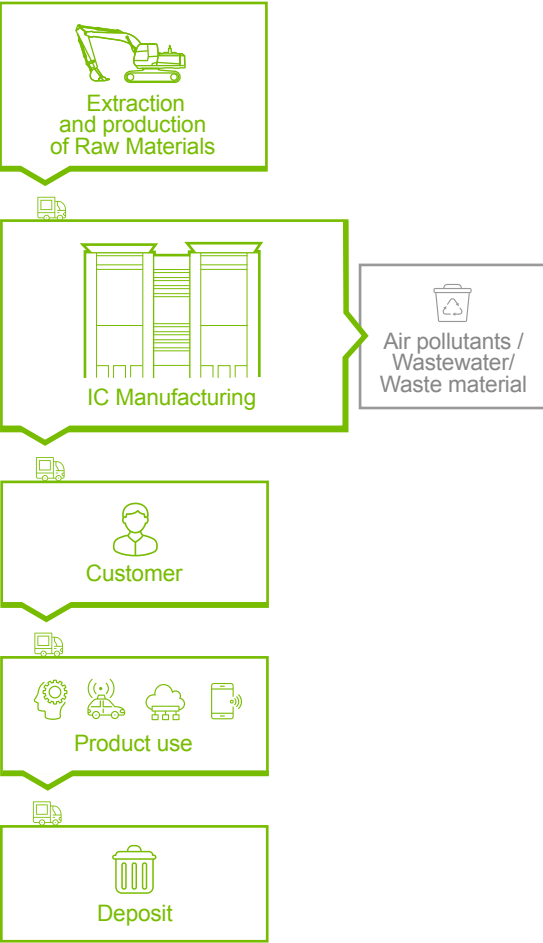
In 2019, UMC completed two new platforms in the field of microprocessors (MCUs) and developed an ultra-low power 55/40 nanometer embedded non-volatile memory (uLP eNVM) platform to respond to the future Internet of Things (IoT), Wearable Devices, Cloud Applications, and Automotive Electronics. These technologies are expected to be effectively provided to innovative green and energy-saving product applications. In addition, UMC has also completed two new platforms in the field of power management chips (PMIC) and developed a 0.18-micron third-generation and 55-nanometer bipolar-complementary metal oxide semiconductor-double diffusion metal oxide semiconductor (BCD) process platform.

The advanced low-power process technology that UMC has developed in recent years includes 22nm Logic technology that reduces power consumption by up to 30%, 14nm technology that reduces power consumption by 50%, and 22nm emerging embedded technology, such as resistive and magneto-resistive memory (eReRAM & eMRAM), used in the field of microprocessors. UMC will continue in the future to provide more environmentally friendly green products.

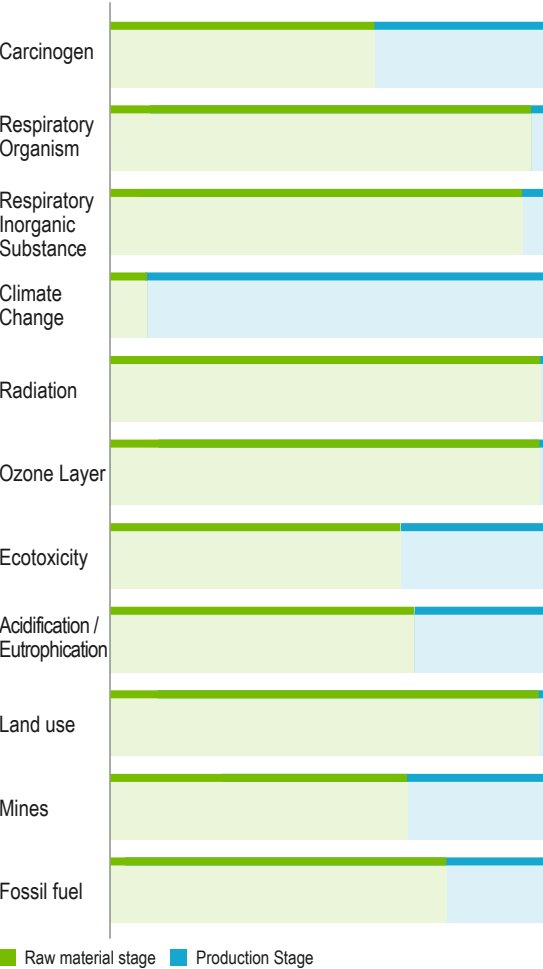
3-5-2 Product Environmental Impact Assessment

Since 2005, UMC has fully implemented LCA in all its fabs. Comprehensive cradle-to-gate (UMC shipment) inventoried items include energy, raw materials and environmental pollutant emissions. Using the Simapro software, results of the entire supply chain and manufacturing inventory are analyzed for environmental impact. Attention is maintained on the environmental impact of the company's products, and improvements in management of the environmental management system are made accordingly. The results of the 2019 UMC Environmental Impact Assessment include 11 indicators of carcinogen, respiratory organism, respiratory inorganic substance, climate change, radiation, ozone layer, ecotoxicity, acidification/eutrophication, land use, mines, and fossil fuel. Among them, the climate change indicator in which the environmental impact at the production stage is greater than the raw material stage. This will serve as the reference for constant improvement of the environmental management system of our company.

Diagram of Semiconductor Product Lifecycle Concept



Results of 2019 Environmental Impact Assessment (8-inch representative fab)



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Carbon Footprint

As an upstream industry, providing customers with quality environmentally friendly products that comply with environmental protection regulations has always been one of the most important UMC operational philosophies. UMC strives to implement a comprehensive carbon management plan. In addition to its internal greenhouse gas emissions inventory and verification, the company also promotes the carbon footprint inventory program.



In 2009, we delivered the world's first certified carbon footprint wafer product.



UMC participated in the EU Seventh Framework Programme (FP7) from 2011 to 2014 and worked with both private industries and academia to research and develop approaches and tools for a Simplified Life Cycle Assessment (SLCA) system, allowing our customers to quickly and conveniently predict product carbon footprints.



Since 2011, UMC has carried out a comprehensive carbon footprint inventory throughout the company and conducted verifications on representative fabs (verifications were conducted for Fab 12A in 2019).

Comparison of Greenhouse Gas Reduction and Carbon Footprint Reduction

Comparing the carbon footprint of each fab in various stages of the greenhouse gas reduction plan promoted by the fabs of UMC in Taiwan over the years, it can be found that the carbon footprint of each UMC fab in 2019 and 2011 shows a downward trend. The carbon footprint of each fab was reduced in the range of **17% to 47%**.



Blue Water

Refers to surface water and groundwater.



Water Footprint

UMC recognized the importance of water as a natural resource very early on. Water resources are particularly important in Taiwan due to its mountainous topography, heavy rainfall along the mountain slopes, dense population, and extensive industrial and commercial developments. UMC complies with the Business Water Footprint Accounting standards developed by Water Footprint Network, an international NGO. In 2010, we completed business water footprint verification for our 8-inch and 12-inch wafer fabs and identified that water usage during direct processing was greater than that of the indirect supply chain. Blue water and gray water were the sources of water used. In 2015, UMC began working with our suppliers to complete ISO 14046: Water Footprint Assessments of various products manufactured by UMC plants. In 2019, the water footprint inventory was launched throughout the company in accordance with the new standard, and third-party verification was implemented in the representative fab, Fab 12A.

The result of 2019 inventory

Water usage /
wastewater generation of UMC was

90%



while suppliers
were responsible for

10%

Future directives

- Continue to improve water usage efficiency (WUE) within the fabs, and reduce both water usage / wastewater generation to directly reduce water footprint of our products.
- Work with suppliers to improve overall WUE of the entire supply chain to achieve joint water conservation and protect our planet.



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Holistic health management program

Created a safe working environment, and protected health and work-life balance of employees.

100%

Satisfaction with health promotion activities

To implement a total of 18 health promotion projects in 2019. The total number of people served was 64,055 and the overall satisfaction rate was 95%.

95%

Communication meetings were completed

By the end of 2019, a total of 134 sessions of company-wide forums, fab communication meetings, secretary forums, newcomers' forum, labor-management conferences, and benefits committee meetings were conducted.

100%

Labor disputes

Actively promoted harmonious labor relations to reduce the likelihood of labor conflict. In 2019 there were no cases of labor dispute.

0

Reduction in workplace accidents

*16 fewer accidents compared to the reference basis (the year of 2011) and achieved a savings of NT\$ 46.56 million in potential asset losses.

*In 2019, the disabling injury frequency rate was 0.23, and disabling severity rate was 2, which were much lower than the semiconductor industry average.

59%




Beneficiaries

In 2019, UMC invested a total of 18,223 hours in terms of volunteer work, with more than 31,398 beneficiaries.

31,398
number

Major Material Social Issues

There were three major categories of material social issues in 2019: (1) Talent attraction and retention (2) Employee safety and health (3) Human capital development

Indicator	2019 Goal	Compliance for 2019	2020 Goal	Long-Term Goal
 Talent attraction and retention				
Organizational identity and cohesion.	<ul style="list-style-type: none">Strengthen employee activity and cohesion. Introduce employee engagement survey. The coverage rate in the first year of the survey was 70%.	★ Achieved 80.8% coverage in employee engagement surveys.	<ul style="list-style-type: none">Strengthen company cohesion and identity.75% coverage in employee engagement surveys.	Goals for 2025 <ul style="list-style-type: none">80% coverage in employee engagement surveys.
Strengthen diversity of communication mechanisms to ensure harmonious labor relations.	<ul style="list-style-type: none">100% achievement in communication.Feedback closure rate for employee opinions: 100%.	★ Annual targeted goal was reached. Each health occupational index was implemented.	<ul style="list-style-type: none">Maintaining an open and transparent communication channel to promote employer-employee harmony.100% achievement in communication.Feedback closure rate for employee opinions: 100%.	<ul style="list-style-type: none">Maintaining 100% achievement in communication.Maintaining 100% feedback closure rate for employee opinions.
Ensure compliance with the spirit and standards of international human rights.	<ul style="list-style-type: none">Full implementation of the Labor Standards Act and compliance with the RBA Code of Conduct to ensure adherence to the spirit of international human rights standards.100% achievement rate in RBA labor/code of conduct training.< 5 on the annual RBA labor / ethics risk index.	★ A dedicated RBA organization has continued to support the spirit and conventions for human rights. Results of quarterly reviews showed zero incidents of ethical violations. ★ 100% achievement in RBA labor/code of conduct training. ★ In 2019, the RBA labor /ethics risk index was less than 5.	<ul style="list-style-type: none">Ensure compliance with the spirit and standards of international human rights.100% achievement in RBA labor/code of conduct training.Promote RBA spirit to subsidiaries.	Continue to review compliance with relevant labor laws each quarter. <ul style="list-style-type: none">Each fab completes and scores more than 90 points on the Responsible Business Alliance Code of Conduct assessment survey.Establish an internal audit mechanism. Complete audit and make improvements on schedule.
 Employee safety and health				
Number of incidents company-wide	<ul style="list-style-type: none">0 major or serious incidents≤ 11 minor incidents	★ 0 major or serious incidents 11 minor incidents across the company	<ul style="list-style-type: none">0 major or serious incidents≤ 9 minor incidents	Goals for 2025 <ul style="list-style-type: none">0 major or serious incidentsReduce number of incidents by 88% compared to 2011
Disabling Frequency Rate (FR) Disabling Severity Rate (SR)	<ul style="list-style-type: none">Perform better than the 3-year average Disabling Frequency Rate (FR) for semiconductor manufacturing.Perform better than the 3-year average Disabling Severity Rate (SR) for semiconductor manufacturing.	★ UMC's Disabling Frequency Rate (FR) was 0.23, which is far below the 3-year average of the semiconductor industry (0.54). UMC's Severity Rate (SR) was 2, which is far below the 3-year average of the semiconductor industry (9).	<ul style="list-style-type: none">Perform better than the 3-year average Disabling Frequency Rate (FR) for semiconductor manufacturing.Perform better than the 3-year average Disabling Severity Rate (SR) for semiconductor manufacturing.	Goals for 2025 <ul style="list-style-type: none">Perform better than the 3-year averageDisabling Frequency Rate (FR) and Disabling Severity Rate (SR) for semiconductor manufacturing and reduce by 25% compared to 2020 goal.
 Human capital development				
Training for professionals with potential Quality improvement and innovation team (QIT) independent goal achievement rate by each Fab/Division.	<ul style="list-style-type: none">94.5% completion rate in annual training programs.Achievement rate >90% for goals independently set by each Fab/Division	★ Achieved 93% completion rate in annual training programs.(Organizational changes to the Education and Training Committee and the newly established units affected the overall completion rate. Improvement will be made by strengthening training of new organization members, as well as by establishing guidance and monitoring mechanisms.) ★ Achieved 108.2% achievement rate for goals independently set by each Fab/Division.	<ul style="list-style-type: none">95% completion rate in annual training programs.Achievement rate >90% for goals independently set by each Fab/Division.	Goals for 2025 <ul style="list-style-type: none">100% completion rate in annual training programs.Maintaining achievement rate >90% for goals independently set by each Fab/Division.
Knowledge Management (KM)	<ul style="list-style-type: none">90% achievement in reading penetration.70% achievement in writing penetration.20% achievement in three-star KM document*.	★ Achieved 91.3% in reading penetration. ★ Achieved 72% in writing penetration. ★ Achieved 24.1% in three-star KM document*.	<ul style="list-style-type: none">90% achievement in reading penetration.70% achievement in writing penetration.23% achievement in three-star KM document*.	Goals for 2025 <ul style="list-style-type: none">Achieve upper-middle level in KM reading rate, writing penetration rate and 3-star KM document ratio.

Note1: Three-star KM document: Refers to KM document with large contribution and approved for inter-department sharing.

Note2: The various annual indicators are included in the company's and Corporate Sustainability Committee's KPI (Key Performance Indicator) and policy development, integrated with major company policies, and continually reviewed and improved.

★ Compliant

★ Non-compliant

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4-1 Labor Rights

With the trend towards globalization, companies should not only protect the basic employment and labor rights of workers, but also strengthen labor-employer relationships with diverse employees to avoid differential treatment. UMC supports and respects relevant international labor rights regulations, and promotes relevant international human rights standards through cooperation with suppliers and customers, in hopes of creating a harmonious and prosperous working environment for the entire supply chain, while enhancing corporate competitiveness and promoting economic development.

How We Manage



- The RBA committee was established to formulate relevant policies and performance targets, follow up on implemented projects, and conduct regular assessment and review.
- Labor-employer communication and complaint channels were established. In addition, work engagement surveys were conducted to understand the needs of employees.
- RBA compliance surveys and on-site audits were conducted for suppliers.

Goals and Targets



- Goals for 2020
 - Each fab completes and scores more than 90 points on the Responsible Business Alliance Code of Conduct assessment survey.
 - 70% coverage in employee engagement surveys.
 - Continue to ensure fair treatment of employees and compliance with laws and regulations.
- Goals for 2025
 - Each fab completes and scores more than 90 points on the Responsible Business Alliance Code of Conduct assessment survey.
 - 80% coverage in employee engagement surveys.
 - Continue to ensure fair treatment of employees and compliance with laws and regulations.

Purposes



- Follow laws and international standards to protect employees' rights.
- Ensure that the establishment and implementation of various systems have no differential treatment in regards to gender, race, religion, political position, marital status, etc.
- Ensure the employment and labor rights of employees are protected, creating a harmonious and prosperous operation to enhance the competitiveness of UMC.

The Mechanisms for Evaluating the Effectiveness



The company-wide management plans were set. The RBA Committee will conduct a performance review annually.

Applicable Entities



- UMC and its subsidiaries HJTC and USC.
- Suppliers.

Relevant policy



UMC Human Rights
Policy

4-1-1 Human Rights

UMC supports and respects the standards of international labor rights, and in light of this spirit, UMC has developed the UMC Code of Conduct. All employees are expected to comply with this code in their daily tasks and operations to ensure the sustainable growth and development of the Company. Subsidiaries, joint ventures, suppliers, customers and other entities with operational and development partnerships with UMC are expected to jointly fulfill their corporate social responsibilities and promote economic, social, environmental and ecological balance and sustainable development.

UMC Code of Conduct follows:

- Responsible Business Alliance, RBA
- International Labor Office Tripartite Declaration of Principles
- The OECD Guidelines for Multinational Enterprises
- UN Universal Declaration of Human Rights
- The UN Global Compact



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Human Rights Promotion

UMC and its China subsidiaries, including HJTC and USC, place great emphasis on promoting RBA labor and business ethics policies. Through the company employee handbook and regular employee compliance inspections, the core content of labor, ethics and integrity, child labor, labor relations, forced labor, working hours and non-discrimination principles are emphasized. To protect labor rights and ensure that each employee receives fair, humane treatment and respect, the "Complaints and Disciplinary Measures for Workplace Sexual Harassment Prevention" is compiled to provide a complaint channel and safeguard the rights and interests of female employees. In 2019, 100% of employees had a total of 9,677.5 hours of training in human rights.

In addition to protecting basic labor rights, UMC implements major operational changes in accordance with relevant regulations such as Taiwan's Labor Standards Act, Singapore's Employment Act and China's Labor Contract Law.

UMC's Focus in Core Human Rights Issues and Management

1.Risk Identification Process

Risk identification is performed annually according to the following process.



2. Identification Method

The risk identification in the following table is evaluated through a risk matrix. Based on the probability and severity of the occurrence, the CSR unit is invited to suggest committee members and officers to help complete this risk assessment.

High (3)	Medium (3)	High (6)	High (9)
Medium (2)	Low (2)	Medium (4)	High (6)
Low (1)	Low (1)	Low (2)	Medium (3)
	Almost impossible (1)	Possible (2)	Almost certain (3)

Note: Risk (R) = severity of risk impact (Impact) * probability of risk occurrence (Likelihood); 3 points or fewer is low risk; above 3 points (included) to 5 points is medium risk; 6 points and above is high risk

3. Risk Identification Diagram

High (3)	Moral integrity	Talent development	
Medium (2)	Equality Conflict minerals Child labor Forced labor Employee-employer relation	Anti-discrimination Working hour	
Low (1)		Forced labor Working environment	
	Almost impossible (1)	Possible (2)	Almost certain (3)

4.Implemented Fab Sites

Human rights mitigation measures and remediation measures are implemented in 10 fab sites in Taiwan & Singapore.

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5. Human Rights Issue Management Form

Core issue (Identification explanation)	Impact assessment and mitigation measures	2019 management goals	Actual achievements in 2019	2020 management goal setting
 Foreign employees and Female employees				
<div><div><div>○</div>Equality (Possibility 2, Consequence 1)</div><div><div>✓</div>Anti-discrimination (Possibility 2, Consequence 2)</div><div><div>○</div>Forced labor (Possibility 1, Consequence 2)</div></div>	<div><div><div>•</div>The RBA Committee set up in the Human Rights Committee to regularly review human rights related issues</div><div><div>•</div>Check and evaluate through internal audits, management procedures for prohibiting forced labor and various appeal channels</div></div>	<div><div><div>•</div>Maintain new recruits of RBA labor/ethics and the annual online training rate at 100%</div><div><div>•</div>UMC fabs complete RBA and SAQ, and the SAQ evaluation receives a score of more than 90 points</div><div><div>•</div>Promote and implement internal control procedures, and reveal the non-discrimination principle in the UMC personnel recruitment process</div><div><div>•</div>Through the management procedures for prohibiting forced labor, supervise all procedures during the recruitment to ensure that they meet the required standards, establishing a forced labor zero tolerance policy</div></div>	<div><div><div>•</div>New recruits of RBA labor/ethics; the annual online training rate reached 100%</div><div><div>•</div>UMC fabs completed RBA and SAQ, and the SAQ evaluation received a score of more than 90 points</div><div><div>•</div>The quarterly reminder in UMC's homepage was completed</div><div><div>•</div>Signing of the labor contract for new recruits reached 100%</div></div>	<div><div><div>•</div>Maintain new recruits of RBA labor/ethics and the annual online training rate at 100%</div><div><div>•</div>UMC fabs complete RBA and SAQ, and the SAQ evaluation receives a score of more than 90 points</div></div>
 Suppliers				
<div><div><div>○</div>Conflict minerals (Almost impossible 1, Medium 2)</div><div><div>○</div>Child labor (Almost impossible 1, Medium 2)</div><div><div>○</div>Forced labor (Almost impossible 1, Medium 2)</div><div><div>✓</div>Working hours (Possible 2, Medium 2)</div><div><div>○</div>Work environment (Possible 2, Low 1)</div></div>	<div><div><div>•</div>Conduct a questionnaire survey on RBA compliance and on-site audits for suppliers</div></div>	<div><div><div>•</div>Increase the number of on-site audits for suppliers by 10%</div><div><div>•</div>Require Tier-2 suppliers to comply with RBA guidelines</div></div>	<div><div><div>•</div>The investigation of conflict minerals in the supply chain was 100% completed</div><div><div>•</div>It is 100% sure that no child labor is employed by the suppliers.</div><div><div>•</div>100% of suppliers were required to establish complete working rules based on RBA.</div><div><div>•</div>The audit of high-risk suppliers was 100% completed</div></div>	<div><div><div>•</div>Require Tier-2 key suppliers to sign employee code of ethics</div><div><div>•</div>Require Tier-2 suppliers to comply with RBA guidelines</div></div>
 Clients				
<div><div><div>Privacy (Almost impossible 1, High 3)</div></div></div>	<div><div><div>•</div>Regularly obtain satisfaction ratings provided by customers</div></div>	<div><div><div>•</div>All employees, collaboration partners, and customers are required to sign a confidentiality contract for mutual protection of confidential information.</div><div><div>•</div>UMC internally sets confidential information/data management regulations, and customer information is handled by the responsible unit.</div></div>	<div><div><div>•</div>All collaboration partners and customers have to sign the confidentiality contract for mutual protection of confidential information.</div><div><div>•</div>Confidential information/data management regulations and practical management practices have been established, and customer information is handled by the responsible unit.</div></div>	<div><div><div>•</div>All employees, collaboration partners, and customers are required to sign a confidentiality contract for mutual protection of confidential information.</div><div><div>•</div>UMC internally sets confidential information/data management regulations, and customer information is handled by the responsible unit</div></div>
 Key talent				
<div><div><div>⚠</div>Talent development (Almost certain 3, Medium 2)</div></div>	<div><div><div>•</div>To avoid the loss of talent due to external poaching, it is necessary to grasp the reasons for the potential change of specific personnel and strengthen the organizational commitment for the employees</div><div><div>•</div>Reduce the lack of competitiveness of key talent, launch talent development programs and provide effective talent retention tools.</div></div>	<div><div><div>•</div>Provide good salary and compensation package to strengthen the retention of key talent and professional managers</div><div><div>•</div>Strengthen the communication channel to enhance the organizational commitment for the employees</div></div>	<div><div><div>•</div>Offered care about the current situation to understand the potential problems and provided the required assistance. Paid attention to external compensation, as a consideration for designing UMC's compensation package.</div><div><div>•</div>Improved cohesiveness within departments by organizing team activities, promoted the company's current benefit system, and strengthened the communication channels.</div></div>	<div><div><div>•</div>Optimize the survey of employee engagement, provide organizational atmosphere analysis and improvement strategies.</div><div><div>•</div>For high-level talent development and know-how transfer, formulate high-level talent cultivation and development plans as well as an implementation mechanism.</div><div><div>•</div>Improve the management mechanism for performance evaluation to objectively and reasonably assess the performance of employees, and therefore provide feedback and guidance.</div><div><div>•</div>Implement an achievement-oriented incentive mechanism to ensure that rewards are linked to performance, therefore strengthening pay differentiation and increasing long-term incentive rewards.</div></div>

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Core issue (Identification explanation)	Impact assessment and mitigation measures	2019 management goals	Actual achievements in 2019	2020 management goal setting
Entire workforce				
Working hours (Possible 2, Medium 2)	<ul style="list-style-type: none">Actively construct a perfect working hour management mechanism and system	<ul style="list-style-type: none">Continue to strengthen the management of working hours, regularly check and offer care for employees.	<ul style="list-style-type: none">Promoted the management of overtime working hours during the secretaries' meeting and the employee-employer meetingStrengthened the overtime management system to promote communication and planning for the needs of overtime.Actively reminded supervisors to offer care for employees in their vacation planning every month.	<ul style="list-style-type: none">Actively construct a perfect working hour management mechanism and system
Residents Aborigines				
	<ul style="list-style-type: none">The plant sites are located in designated industrial parks; there are no residential communities around the plant sites; therefore, caring for the nearby community is not applicable			

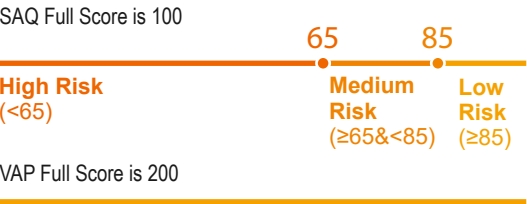
For relevant information, please refer to the UMC Code of Conduct on the company website: https://www.umc.com/en/Html/UMC_code_of_conduct

Risk identification: High Medium Low

RBA Compliance

To ensure a safe working environment and the basic labor rights of supply chain enterprises in the global electronics industry, UMC established the RBA Committee in 2013 to address issues pertaining to labor, health and safety, environment, ethics and management systems. The RBA Committee defines the tasks, authority and responsibilities of its members, develops relevant policies and performance goals, follows up on implementation, and conducts regular assessments and reviews. The committee also initiates annual review of internal systems to ensure compliance with the latest RBA guidelines and thorough implementation of the Code of Conduct for the electronics industry. Furthermore, through the RBA-Online official website, further risk assessments of fabs are conducted to avoid potential risks. In 2019, the SAQ scores of each fab were above 90, indicating low risk. In addition to the internal self-inspection mechanism, UMC also accepts Validated Assessment Process (VAP) by a third party RBA commissioned by customers. Through the perspective of an external audit, further improvement for the management system can be identified. In 2018, Fab 12A and Fab 12i completed VAP with perfect scores of 200 to obtain certification from RBA.

Risk Assessment



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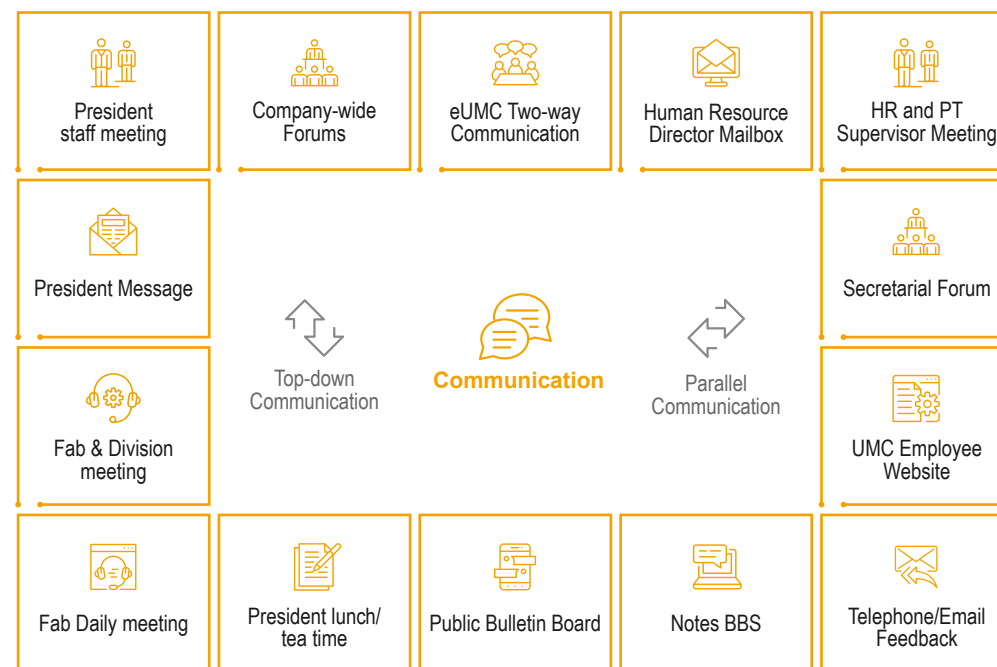
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4-1-2 Employer-employee Communication

Channels of Communication

Employee compensation and welfare have always been a top priority of UMC. UMC takes an active role in the training of skilled professionals, fulfilling labor laws, protecting the rights and interests of UMC employees, and building a transparent and enjoyable work environment. Communication channels such as employer-employee meetings, departmental meetings, conferences (management conferences and colleague conferences) as well as mail boxes were employed to achieve the goals of providing extensive communication channels to effectively solve any problem that may arise. The employees' rights to freedom of association shall be based upon those prescribed by local laws. UMC respects the rights of employees to choose whether or not to exercise rights without intervention or interference. HeJian Technology Company (HJTC) also established a comprehensive and diverse selection of communication channels in order to respond immediately, properly and positively to employee requests.

Important UMC Communication and Complaint Channels



Number and Frequency of Communication Channels

Item	Quantity	Details	Notes
UMC			
Company-wide conferences	<ul style="list-style-type: none"> • 2017-4 • 2018-4 • 2019-4 	Interactive videoconference for 7 sites spanning multiple countries and regions hosted by the president himself, allowing UMC colleagues and external parties to review the latest company policies, directives, and performance.	Once every quarter. Implemented after the investor conference.
UMC			
Fab and Departmental communication meetings (including Singapore)	<ul style="list-style-type: none"> • 2017-69 • 2018-69 • 2019-58 	Share overall operational performance as well as developmental highlights of the plants and departments with all employees.	Held every 6 months by each fab and department.
Secretary Conference	<ul style="list-style-type: none"> • 2017-8 • 2018-8 • 2019-8 	The Human Resource (HR) department shall collect key topics and discuss them with the Secretariat. The Secretariat shall then discuss key issues of the meeting with fellow employees to achieve bidirectional communication.	Hsinchu Science Park / Southern Taiwan Science Park Secretariat Conference (4 times each).
Employer-employee meeting	<ul style="list-style-type: none"> • 2017-36 • 2018-36 • 2019-36 	The HR department shall delegate colleagues and employees familiar with relevant regulations to organize and assemble a multi-departmental and multi-functional inquiry team. The team shall follow-up on specified meeting topics and facilitate subsequent improvements for building harmonious employer-employee relationships.	Once every quarter; held in 9 fabs.
Welfare committee meeting	<ul style="list-style-type: none"> • 2017-4 • 2018-4 • 2019-4 	The employee welfare activities as well as the usage of welfare funds shall be described to the welfare committee member delegated by each plant / site in the meeting every quarter.	Once per quarter.
HeJian Technology (HJTC)			
Employee conference	<ul style="list-style-type: none"> • 2017-2 • 2018-12 • 2019-12 	Any problems encountered by the employee such as questions during work or challenges in the work place may be raised in the meeting. The supervisor or responsible owner shall provide an answer for the employee.	Once every month.
Union-employee conference	<ul style="list-style-type: none"> • 2017-12 • 2018-12 • 2019-12 	Communication and discussions with union members on employee welfare and employer-employee topics.	2 times per year.
Newcomers forum	<ul style="list-style-type: none"> • 2017-7 • 2018-7 • 2019-N/A <small>Note</small> 	One month after new employees are hired, a Newcomers Forum is held by the president to increase communication and interaction among new employees.	Once every month.

Note: The event was not held in 2019; it will be held simultaneously with the 2020 event.

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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, BBS message boards, IT information service mailbox, industrial safety mailbox, all kinds of forums, and UMC's website so that the various communication channels in the various operational bases can be integrated into a single platform for effective communication and promoting harmonious employer-employee relations. To protect the human rights of fellow employees, UMC also takes measures to protect the identity of employees who raised complaints or were affected by various issues to ensure the freedom and confidentiality of employees who submitted petitions. Among the various communication channels, the e-Suggestion feedback platform is most frequently used, and in 2019, 278 employee comments were received with 100% of the feedback responded to and closed.



"UMCWe Website" is an external website (internet) platform freely accessible to employees. Through this interactive communication platform, families, prospective employees, integrated benefits, associations and participating businesses are linked to strengthen the interaction between the organization and employees.

Employee Work Engagement, Satisfaction and Activity Cohesion Surveys

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 has analyzed employee satisfaction. However, in line with international trends, UMC has decided to collaborate with experts and consultants and introduced the Employee Work Engagement Survey at the end of 2018. The survey was administered to all UMC employees in Taiwan and Singapore, and targeted coverage rate was set at 70%. The survey outcome was reported in early 2019. Results indicate a coverage rate of 80.8%, and an employee work engagement rate of 75.1%. The survey will be conducted at least once every two years. The survey is scheduled to be conducted again at the end of 2020. The target coverage rate for 2020 is increased to 80%. Based on the survey outcome report, actual employee needs and willingness to remain are better understood.

Description of Work Engagement Survey

This questionnaire contains 5 major categories measuring 9 dimensions of job satisfaction and 1 dimension of employee commitment, totaling 64 question items.



Work Content

Work environment **4** The work itself **8**



Work Condition

Job remuneration and reward **7** Assessment and promotion **4** Learning and growth **4**



Work Relationship

Cooperation with colleagues **5** Relationship with leadership **8**



Organizational Factors

Company culture **5** Company management **5**



Employee Work Engagement

Employee Commitment **15**

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Work engagement survey outcome

2018 Survey Coverage Rate

Target 70% Actual 80.8%



2018 Work Engagement Index

Overall 75.1 Male 75.6 Female 74.5



Note 1: This data is the index for all employees in Taiwan + Singapore
Note 2: The survey activity in 2019 is based on the work engagement statistics of employees in 2018
Note 3: The issued population is the number of full-time employees in Taiwan + Singapore during the survey in 2019

The results of the survey in 2019 are divided into two parts. In terms of company-wide satisfaction, we find that work, operation environment and corporate culture were low in scores. We have adjusted the work and the operation environment accordingly, including the organizational aspect: organization manpower and personnel loading inspection, process operation procedure simplification and optimization, and the corporate aspect: strengthening the concept of corporate culture through questionnaires. In addition, for the overall results of company-wide work engagement, we have implemented improvements for indicator function units and diagnosis for departments with problems, and conducted re-allocation and design for specific positions.

Furthermore, surveys utilized by UMC can be largely divided into regular surveys, project-focused surveys, or targeted surveys designed for specific issues. The current survey system employed by UMC is relatively diverse and targets different goals and objectives. Specialized survey systems were employed to ensure that authentic responses from the employees could be collected to initiate effective improvements.

Category of Surveys



Regular

HR satisfaction surveys & work engagement surveys (at least once every two years), health check-up satisfaction survey



Project-focused

Team cohesion project satisfaction survey, communication (and communication platform) satisfaction survey, and organizational climate surveys designed and implemented for targeted organizations.

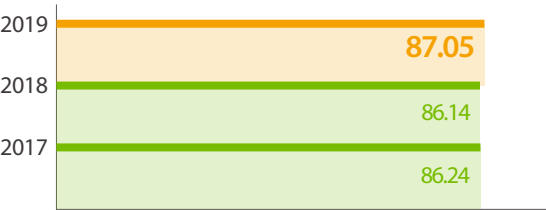


Specific events

Event / topic-based surveys: Family Day, Parent-Child Day, and Art Season satisfaction surveys, activity cohesion surveys, training and development satisfaction surveys, and plant site affairs satisfaction surveys designed for various administrative and supporting services.

Collection and responses to various survey feedback will help management identify areas that require improvements in order to effectively resolve employee problems. HR satisfaction surveys were also used in project investigations that cover the aspects of employee hiring, remuneration and welfare, employee relations, plant site services and safety, HR services, training and development, logistics and commercial services. Semi-open questionnaires were used to collect survey responses from the entire employee population. Questionnaire items included quantified assessments as well as open-ended Q&A where employees can provide their own responses. Establishing a diverse selection of communication channels will help UMC to ensure the rights of employees to express their own opinions while ensuring the successful communication of internal feedback and opinions. Employees may also select their preferred mode of communication to express their views and ideas, thereby achieving the ultimate objective of communication.

Implementation of HR Satisfaction Survey (Taiwan)



Survey Items

Education and training, work environment, salary and benefits, employee performance, communication mechanism, career development, administrative services.



Note: Overall employee satisfaction is based on employee response to the open-ended questionnaire items on overall employee satisfaction (1-100 points). The overall average is calculated by dividing total scores with the number of respondents.

Family Day Activity Satisfaction and Cohesion Index Surveys (Taiwan)

Overall average score for activity satisfaction					
2017		2018		2019	
87.61	86.39	89.79	87.18	85.74	83.33
Activity cohesion index					
2017		2018		2019	
87.73	86.57	91.94	89.43	86.43	84.72
2017		2018		2019	
87.27		90.78		85.56	

Note: Activity Satisfaction and Cohesion Index are calculated by surveying the annual Family Day, which has the highest employee participation and is the most representative.

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Comprehensive Appeal and Employee Support Systems and Channels

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. Employees are allowed to independently decide whether or not to exercise employee rights prescribed by statutory regulations. UMC does not intervene or interfere with the employees' freedom of association.

Appeal systems and channels provided by UMC include:



Appeal channels for employees of every rank and case



Report of sexual harassment and unfair treatment:
#31995 / 31995@umc.com



CHO E-mail
Send an email report directly to CHO



CSR E-mail
csr@umc.com



Employee Relationship (ER Service) Hotline
12885



Whistleblower Hot Lines
03-5782258 Extension 31425



Information Security and Confidentiality Protection Complaint
Infosec@umc.com



Fraud and Ethics Violation Report Box
Whistleblower@umc.com (This e-mail box will automatically forward messages to ADT Division Director, HR Division Director, IPLA Director, and Audit Committee.)

External reporting hotline
0800-024-399 (toll free number)

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 134 formal and large scale conferences were held in 2019 to effectively communicate key topics on UMC businesses. The diverse and comprehensive selection of UMC's communication systems were used to effectively assess the employee's voice and handle employee issues. Although Taiwan's laws stipulated the rights of employees to freely organize themselves into unions, no requests to organize unions have been received by UMC as a result of the aforementioned measures. However, unions have been established in HJTC. Conferences, departmental meetings, and opinion mail boxes were also used as a means to communicate with fellow employees. UMC did not receive any formal charges related to labor affairs in 2019.

Since 2019, 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.

Statistics on the Number of Grievances Received by UMC



Human Rights Issues



Labor Affairs

The total number of grievances filed through the mechanism

2017	2018	2019	2017	2018	2019
6	7	4	22	14	20

The number of grievances that were addressed

2017	2018	2019	2017	2018	2019
6	7	4	22	14	20

The number of grievances that were reviewed

2017	2018	2019	2017	2018	2019
5	5	4	11	14	20

The number of grievances that were officially undergoing judiciary proceedings

2017	2018	2019	2017	2018	2019
0	0	0	0	0	0

The number of grievances that were resolved

2017	2018	2019	2017	2018	2019
6	6	5	21	14	20

Note: The total number of human rights grievances resolved in 2019 (5 cases), including 1 case that was processed in 2018 and closed in 2019.

Scope of human rights: includes issues such as sexual harassment, illegal violations, and forced labor.

Scope of labor affairs: includes issues such as hourly wage & salary, occupational safety, educational training and promotion/benefits.

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4-2 Recruitment and Cultivation

In an age of rapidly evolving trends, competition in the technology industry has become unprecedentedly fierce. Recruiting and cultivating outstanding talent has become an important consideration in improving corporate competitiveness. UMC defines the competency bases of various occupational levels in accordance with its training and development models. At the same time, through the integration and application of Company resources, we make no distinction with respect to the gender of our employees but rather provide a comprehensive and diversified learning environment based on job category, thereby utilizing thorough and sound education and training to achieve the goal of recruiting and cultivating professional expertise.

How We Manage

- Provision of excellent working environment and competitive overall salaries and benefits.
- Formulation of a complete education and training system and organization providing comprehensive and diverse learning environments.
- Carrying out industry-academia cooperation programs and campus talent cultivation.

Goals and Targets

- Goals for 2020
 - 95% completion rate in annual training programs.
 - Provide comprehensive training programs to attract and retain talent. Achieve retention rate of 91.3% for medium and high performing talent.
 - Improve quality and quantity of human resources supply, develop market competitiveness of talent, and achieve talent fit rate of 80%.
 - 100% completion rate in improvement programs for low-performing employees.
- Goals for 2025
 - 100% completion rate in annual training programs.
 - Provide comprehensive training programs to attract and retain talent. Achieve retention rate of 91.5% for medium and high performing talent.
 - Improve quality and quantity of human resources supply, develop market competitiveness of talent, and achieve talent fit rate of 85%.
 - 100% completion rate in improvement programs for low-performing employees.

Purposes

- Attracting, retaining, and motivating outstanding employees.
- Carrying out a full range of course training that improves the skills and expertise of employees and dovetails with employee career planning.
- Raising the quality and effectiveness of training, cultivating talent that meets the developmental needs of the organization, thereby ensuring the sustainable growth of the Company.

The Mechanisms for Evaluating the Effectiveness

The company-wide management plans were set. The Human Rights and Social Participation Committee will conduct a performance review annually.

Applicable Entities

UMC and its subsidiaries HJTC and USC.

4-2-1 Human Resource

Human Resource Distribution

By the end of 2019, the total number of formal employees at UMC, including China subsidiaries HJTC and USC was 17,719. This figure included 1,959 supervisors, 8,632 engineers, 529 managers, 6,596 technicians, and 3 administrators. The working population within the company can be divided into 2 categories by type of employment, namely formal employees (98.9%) and non-formal employees, which include contract personnel as well as dispatched personnel delegated by external vendors to provide services at UMC (1.1%). Formal employees can be further subdivided according to the type of their contracts, namely non-regular contracts (95.4%) and periodic contracts (about 4.6%) (NOTE: periodic contracts refer to labor contracts for foreign technicians). Non-formal employees include contract personnel (55.2%) and dispatched personnel delegated by external vendors to provide services in UMC (44.8%). Non-formal positions were offered to temporarily stand in 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 73.0% of employees work in the primary business location in Taiwan. For age distribution, 68.2% of the total employee population in the company was between 30 and 50 years of age. The overall average age was 36.3 years old.

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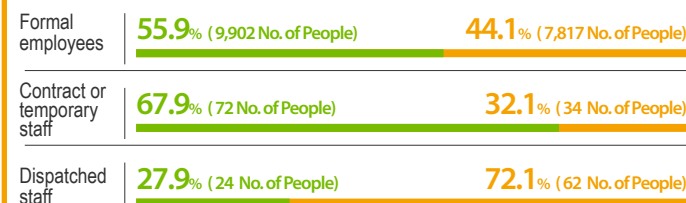
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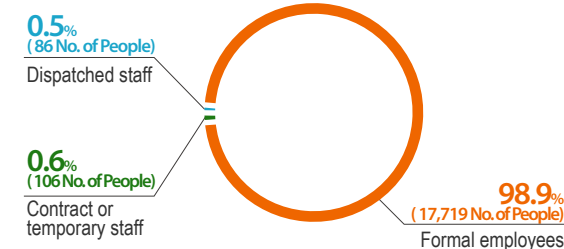
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Male Female

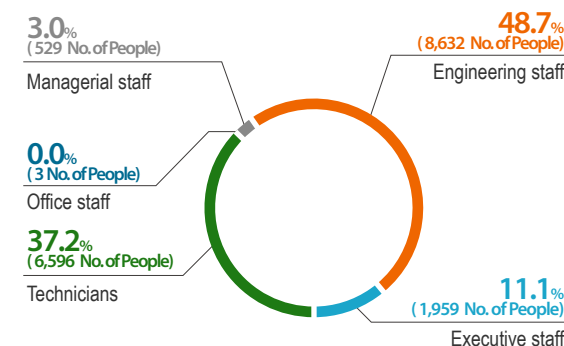
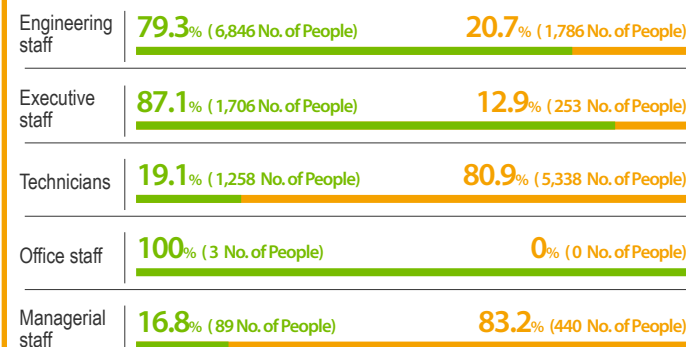
Total Employees - Type of employment



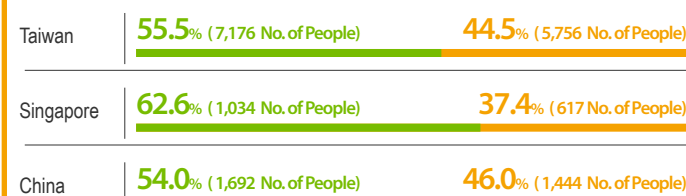
Total



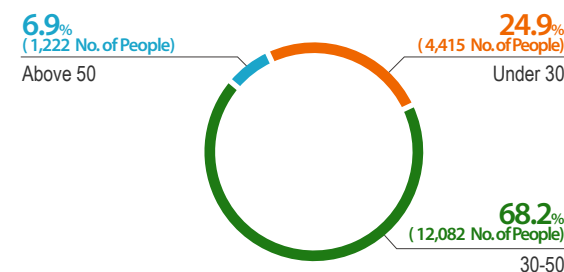
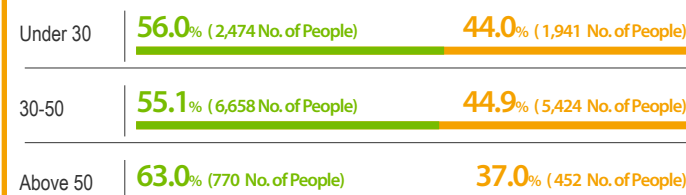
Formal Employees - Job Category



Formal Employees - Job Site

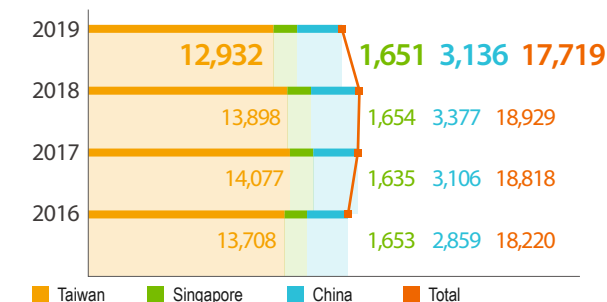


Formal Employees - Age



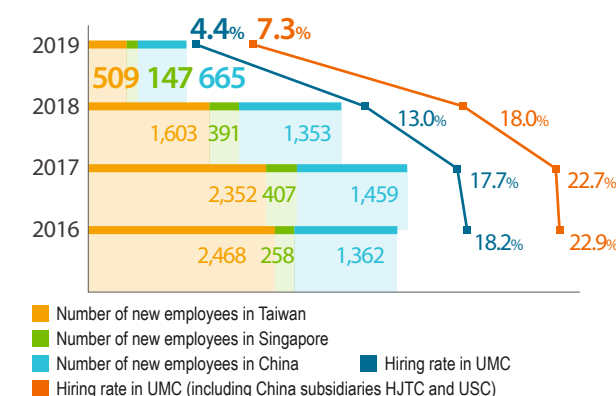
Note 1: Ratio of male and female is calculated by the same type, while the total ratio is calculated by type.

The trend of total formal employees in UMC including China subsidiaries HJTC and USC during 2016-2019



New Employees

In 2019, the company hired a total of 1,321 new employees. The gender, region and age distributions are shown below:



Note: Annual employee hiring rate refers to the total number of newly hired employees divide by the average number of existing employees (sum of employees in December of the previous year and at the end of each month in the current year divided by 13).

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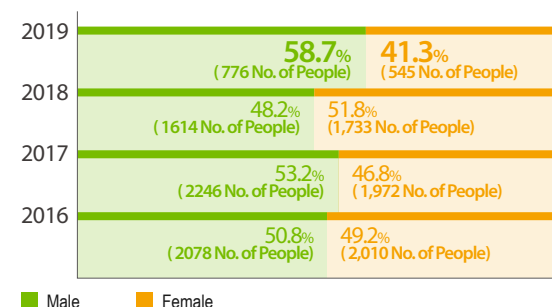
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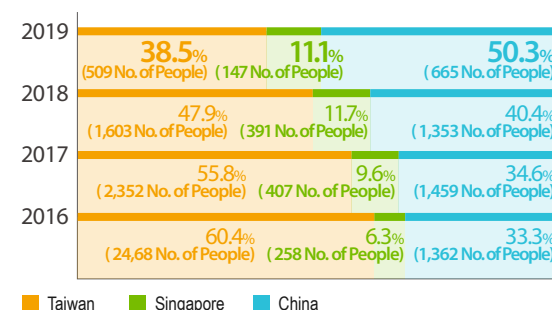
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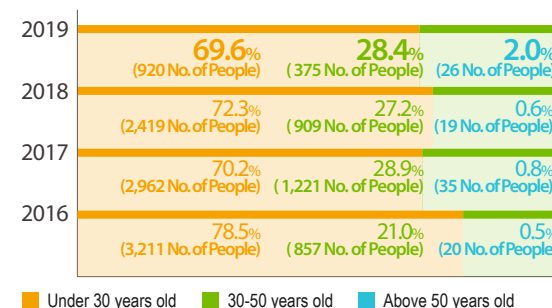
New Formal Employees-Gender



New Formal Employees-Region



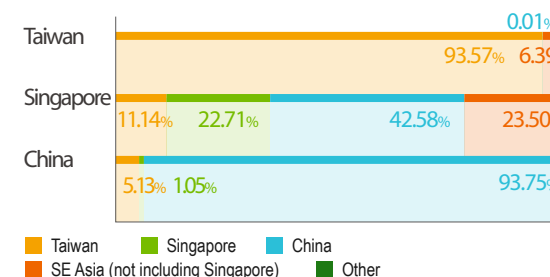
New Formal Employees-Age



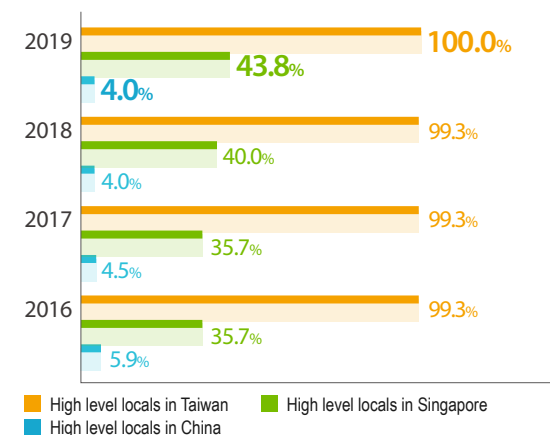
Local Employment

To fulfill social responsibility and create sufficient jobs for local residents, the staff at UMC headquarters in Taiwan comprised of 93.6% local employees as of 2019, and among these, 100.0% of the high level management is locally hired. Since Singapore is ethnically diverse, 22.7% of the employees and 43.8% of high level management are locally hired, while in the semiconductor wafer fab in China, 93.8% of the staff and 4.0% of the high level management are locally hired.

Formal Employee-Country



Proportion of locally hired high level managers in 2016-2019

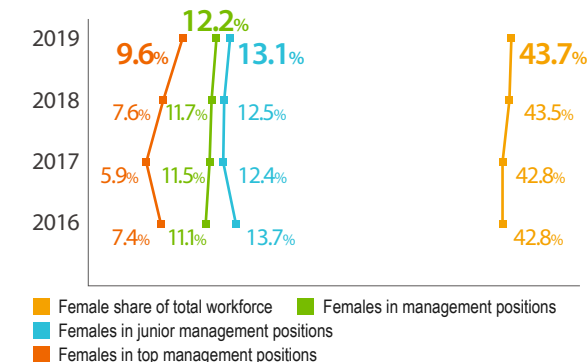


Note1: High level directors are defined as Level 1 directors (including deputy directors) and above.

Note2: Locally hired refers to employees who are nationals of the main operating location/region.

Female Workers in UMC

All percentage of females in management positions increased in 2019 compared with the previous year, mainly because UMC also pays attention to female workers' promotion and development. In view of the characteristics of the semiconductor industry, there are more male managers and professional engineers in UMC. Meanwhile, managerial staff and technicians are mainly females.

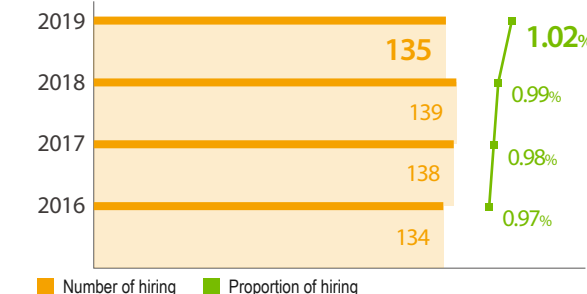


Note: Junior management positions include first line manager; top management positions include two levels away from the president.

Employment of People with Disabilities

UMC's headquarters in Taiwan 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 2019, UMC headquarters in Taiwan employed a total of 135 employees with disabilities. In terms of Taiwan's hiring laws, UMC hired a higher number of disabled employees than legally required. In the future, the company will continue to actively evaluate its internal job expansion and strive towards the continued hiring of qualified employees regardless of any disabilities.

UMC Headquarters in Taiwan Disability Hiring



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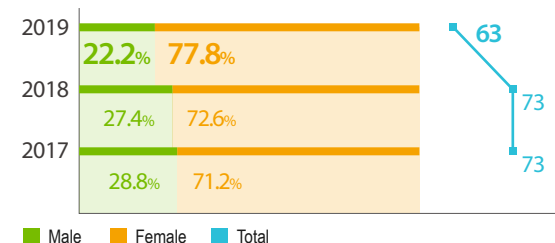
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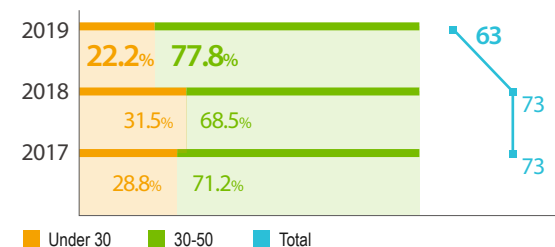
Hiring of Aboriginal Workers

UMC respects the unique culture of minorities and gives aboriginal employees a ceremonial leave for eight hours a year which could be flexibly used as their own holiday. By the end of 2019, UMC's headquarters in Taiwan had a total of 63 aboriginal employees. In terms of gender, 22.2% are males and 77.8% are females. In terms of age, 22.2% are under 30 years old and 77.8% are 30-50 years old.

Hiring of Aborigines-Gender

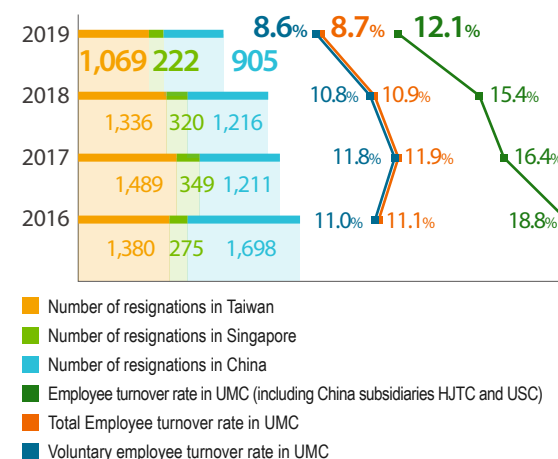


Hiring of Aborigines-Age



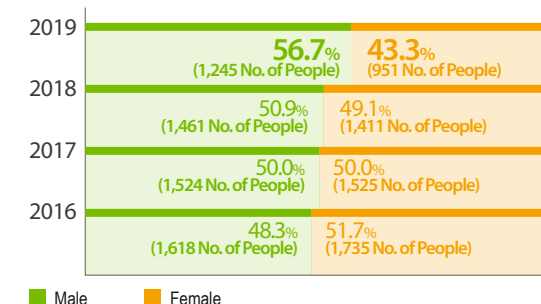
Employee Turnover Rate and Internal Transfer Rate

In 2013, the HJTC semiconductor wafer fab in China was joined as a subsidiary of UMC. In 2015, United Semiconductor in China was joined as a subsidiary of UMC. From 2016-2019, UMC, including China subsidiaries HJTC and USC, had an employee turnover rate of 15.7% due to the higher turnover rate of direct labor in China (UMC turnover rate was 10.6%). 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 contact with employees who have resigned, and opportunities are provided for those who wish to return to their employment. Besides these measures, UMC has an internal transfer program to encourage employees to take challenges and grow their developmental skills. There are more job rotation opportunities due to a re-organization in 2018 and 2019. Internal transfer rate increased gradually from 38.6% to 83.0% from 2016 to 2019. The program will keep running to reduce turnover rate and target 10.5% in 2020 and 9.8% in 2025.

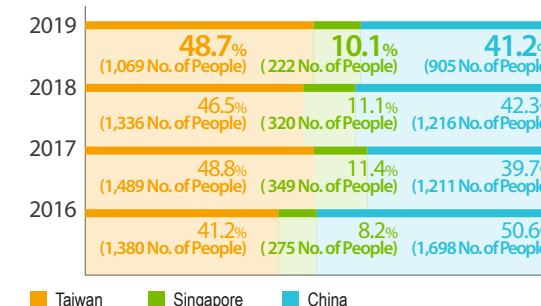


Note: Annual employee turnover rate refers to the total number of employees who resigned divided by the average number of existing employees (sum of employees in December of the previous year and at the end of each month in the current year divided by 13).

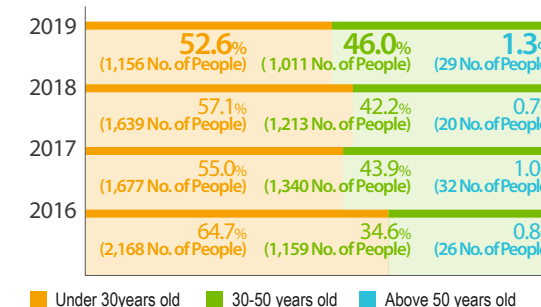
Formal Employee Resignation-Gender



Formal Employee Resignation-Region



Formal Employee Resignation-Age



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Parenting Leave

In 2019, a total of 303 female employees applied for maternity leave in UMC (including China subsidiaries HJTC and USC). Of these, 98% returned to their original positions after their leave while those who did not return voluntarily resigned to take care of family needs. In addition, 459 male employees applied for paternity leave in accordance to the Act of Gender Equality in Employment, and of these, 99.3% returned to their original positions after their leave.

In Taiwan, according to the Act of Gender Equality in Employment, employees may apply for parenting leave without pay. When their contract expired in 2019, a total of 123 female employees returned to their positions, indicating a return rate of 68.3% after parental leave. 19 male employees returned to their positions, indicating a return rate of 42.1% after parental leave. The work situation of those who returned after parenting leave was observed, while those who did not return after their unpaid parenting leave expired had continuing family needs that required them to voluntarily resign. From 2018-2019, 92.9% of female employees and 63.6% of male employees that took unpaid parenting leave returned to work.

2019 Maternity Leave	Female	Male	Total
2019 Application rate for maternity/paternity leave (A)	303	459	762
2019 Return after maternity/paternity leave (B)	297	456	753
2019 Return rate after maternity (B/A)	98.0%	99.3%	98.8%

Note: Maternity Leave includes Taiwan, Singapore, and China.

2019 Parenting Leave	Female	Male	Total
2019 The total eligible number for parenting leave (A)	729	1,136	1,865
2019 The actual number of parenting leave (B)	148	22	170
2019 Application rate for parenting leave (B/A)	20.3%	1.9%	9.1%
2019 The total number of end of contract for parenting leave (C)	123	19	142
2019 The total number of returning from parenting leave (D)	84	8	92
2019 Return rate after parenting leave (D/C)	68.3%	42.1%	64.8%
2018 The total number of returning from parenting leave (E)	99	22	121
2018 One year retention rate after return from parenting leave (F)	92	14	106
2018 The number of returning from parenting leave and retention rate (F/E)	92.9%	63.6%	87.6%

Note: Parenting leave is a labor right of Taiwanese Act of Gender Equality in Employment. Employees in Singapore and China are not eligible for parenting leave.

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4-2-2 Compensation and Benefits

UMC has always regarded its employees as an important asset, and hopes that by providing a competitive overall compensation and benefit package, excellent talent will be attracted to join the UMC team and work together to achieve operational goals and contribute to UMC profits.

Compensation and Benefit Policy

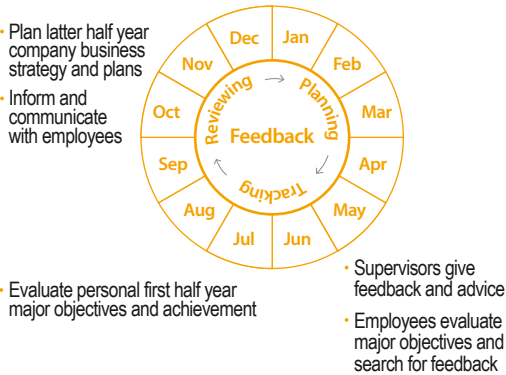
UMC's employee compensation is based on educational level, performance and market value. Employees are not subjected to differential treatment because of gender, race, religion, political position or marital status. UMC employees worldwide enjoy the compensation and benefits which are in line with or superior than all applicable local laws and regulations which include minimum wage, overtime, social insurances, pension regulation 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 every year. 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 have to go through an improvement plan that focuses on a few critical points to improve their efficiency.

Performance Management

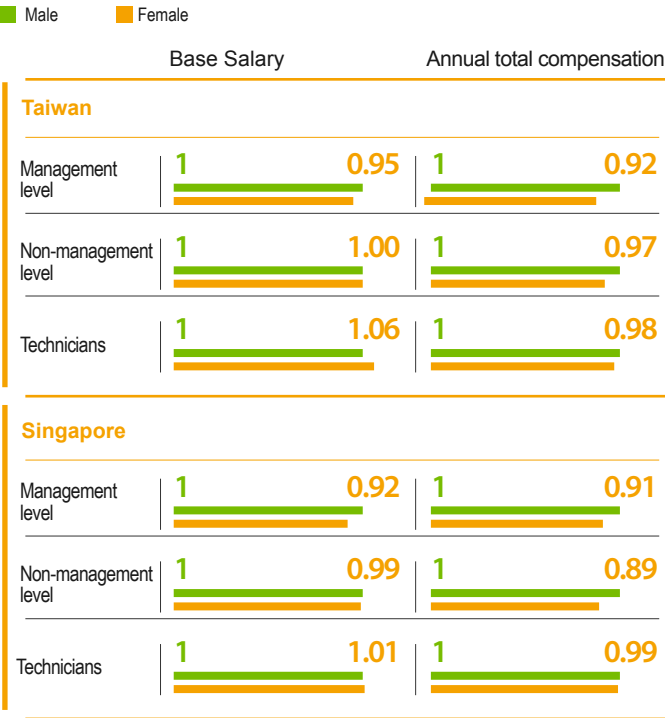
- Evaluate personal annual major objectives and achievement
- Plan personal major objectives (Future annual work plan)



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, keep and motivate outstanding employees. The Company 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 2019, UMC's full-time employees for non- executive positions in Taiwan were 13,580 people, with an average salary of NT\$ 1,099,000 and a median salary of NT\$ 971,000. The above statistics are calculated according to the specifications of the Taiwan Stock Exchange and checked by certified public accountants. The complete information will be disclosed to the MOPS (Market Observation Post System), and UMC's average salary for non-executive full-time employees was about four times higher than Taiwan's minimum wage.

Note: Please refer to the Company Constitution for the Employee Remuneration System

Basic Salary and Annual total compensation for Male and Female Employees



Note 1: The data Non-management level is calculated on the basis of the engineer category.

Note 2: Technicians shall be calculated on the basis of the local technicians.

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Leave policy is superior to the Labor Standards Acts

UMC offers a comprehensive and superior leave policy.

Since 2017, the Taiwan Labor Standards Act was revised and the number of national holidays reduced from 19 days to 12 days. However, in 2019, UMC continues to offer an additional 7 days as supplemental holidays. Taiwan employees enjoy the additional leaves, and there are gentle reminders regularly to encourage employees to enjoy their leave time to achieve a better work-life balance. Annual paid leaves issued for contract employees are based upon the requirements of the Labor Standards Act. UMC encourages fellow employees to actively contribute towards public charity, and has established the UMC Science and Culture Foundation. Employees can make use of volunteer leave and participate in the company's charity activities during working hours.



In February of 2020, when the pneumonia epidemic (COVID-19) spread worldwide, UMC announced that under the consideration for employee caring and maintaining workplace safety, it would provide "paid leave" to UMC employees whether the leave is due to work or private reasons, as long as it is in line with the company's active management measures for epidemic prevention, allowing the employees to rest at home. In addition, for cancelled travel itineraries caused by the company's travel and epidemic prevention policy, a maximum of NT\$ 5,000 per person and a maximum of NT\$ 20,000 per household will be provided to subsidize any losses by the employees. It is hoped that with the joint efforts of everyone, we can ensure workplace safety and good health for our employees.



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 instead gives full-pay for the said employees.



To provide support to fellow employees, UMC offers funeral leave welfare that is superior to that prescribed by 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.



Overseas semiconductor foundry plants, such as the China subsidiaries HJTC and USC, are also provided with paid annual leave that is superior to those prescribed in the local Regulations of Paid Annual Leave of Employees. UMC Singapore provides newly hired employees with 14 days of leave in their first year which is better welfare 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 by the proportion of their length of services.

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 fellow employees chose to include their spouse and family members into UMC's group insurance to provide their family an additional layer of protection with more economical expenses. UMC also provides an insurance company service office inside the company, allowing 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 regular employees in Taiwan participate the relevant pension plans. Following the old pension system under the Labor Standards Law, the employer is required to deduct at least 2% of a worker's total monthly wage and set aside this amount as a reserve fund for said worker's pension payments. In addition, at the end of each year, a review of pension allocation will be conducted to estimate the amount of pension that will be paid by those eligible for retirement by December 31 of the following year to ensure that the balance of the special account is sufficient to pay. For the provision of post-retirement welfare and expenses, please refer to previous annual reports released by UMC.

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. For the provision of post-retirement welfare and expenses, please refer to previous annual reports released by UMC.

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 Lifetime Membership," which offers a selection of healthful and interesting activities for retirement living.

In order to facilitate retired or terminated employees to access help resources, UMC provides exit interviews to ensure they can grant appropriate care and clear channels to obtain assistance smoothly. In addition, the company provides severance pay for dismissed employees in accordance with local laws and regulations, and provides related employment service channel information as well.

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4-2-3 Education and Training

UMC Comprehensive Learning Environment

At UMC, education and training is not limited to classroom instruction or promotion of training courses. Through the integration and use of company resources, employees are provided with a full learning environment.



Continued Improvement & Innovation Team

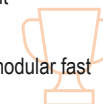
To achieve departmental goals, fulfill Company policies and strengthen daily management, the UMC conducted team-based continued improvement activities, the team included Quality Control Cycle (QCC), Quality Improvement Team (QIT) and Project Management (PM). 258 improvement teams were established in 2017, 331 teams in 2018 and 293 teams in 2019.

UMC has won awards in the Taiwan Continuous Improvement (formerly known as National Quality Control Circle) competition organized by the Ministry of Economic Affairs for 16 consecutive years. This year, 116 companies participated and formed a total of 201 teams. UMC performed outstanding in 2019, with a total of 6 gold and 2 silver awards, which was the most of any company participating. The 8 total awards were also a record high for UMC, demonstrating the company's continued efforts to promote its core business being able to successfully coexist with sustainable development. It is expected that through continued improvement activities, colleagues will be able to improve their problem solving capabilities, enhance their innovation and self-breakthrough and strengthen teamwork capabilities. The total benefit is estimated to be NT\$ 3.29 billion, which also confirms the company's determination and effectiveness in promoting continuous improvement activities. In line with the concept of sustainable management, in recent years the company has promoted smart manufacturing through Industry 4.0, combined with advanced methods such as big data analysis, continuously improving operational efficiency, strengthening competitive advantages, and providing customers with faster and better services. In essence, the continued progress in productivity, product yield and customer satisfaction is best embodied by UMC's continuous investment in innovation, production and efficiency, and material planning and management.

The winning teams of this year's Golden Tower Award and Silver Tower Award and their titles are as follows:

Golden Tower Award

- **Material Planning and Warehousing Management Division Power Circle**
Towards Intelligent Management--Building Valuable Asset Dry Pump Intelligent Management System
- **Tainan Science Park (TSP) Fab Key Circle**
Reduce Wafer Inspection Labor Time
- **Tainan Science Park (TSP) Fab Process Integration Division Charge Circle**
28HK Performance Breakthrough--Building a New HPC_LL Platform with High Speed and Low Leakage
- **Singapore Fab Teamwork Circle**
Reduce the Production Cycle of High-Level Defect Inspection Machine
- **Singapore Fab Pioneer Circle**
Enhance the Comprehensive Productivity of KSCAN Equipment
- **Mask Engineering Service Division Shield Circle**
Challenge mask layout production error rate 0ppm-develop a modular fast and accurate layout and defense system



Silver Tower Award

- **Tainan Science Park (TSP) Fab Sound Circle**
Improve mask delivery efficiency
- **Tainan Science Park (TSP) Fab Advance Circle**
Improve the production capacity of the H-process shallow trench deposition equipment






UMC won the "Taiwan Continuous Improvement Activity" competition for 16 consecutive years

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Knowledge Management (KM)

To promote knowledge management, retain UMC's core knowledge and cultivate a knowledge sharing team and learning environment, the company has established a knowledge bank sharing platform. Taking into account both knowledge and confidentiality protection, accessibility control is implemented according to the level of confidentiality. Knowledge documents are categorized as one star, two stars, three stars or four stars according to their level of comprehensiveness and contribution. Based on the current foundation of knowledge document reading and writing in each fab and division of UMC, a knowledge document re-application mechanism was further promoted to guide UMC employees to voluntarily apply their valuable experience to their own work, thereby improving work efficiency and operation performance. In addition, in order to encourage each fab and division of UMC to develop its implementation characteristic for knowledge management (KM), the "KM Implementation characteristic" is included as one of the evaluation criteria for the Best Implementation Fab and Division Award. The winners of the Best Implementation Fab and Division Award will be invited to share their experience, promoting other fabs and divisions of UMC to implement knowledge management.

KM Related data Over the Years

	2017	2018	2019
 Read Rate (%)	90%	91.8%	91.3%
 Writing Penetration Rate (%)	73%	73%	72%
 Re-use Expected Efficiency (NT\$)	1,382,320,000	725,470,000	902,380,000

Note 1: Reading rate (%) is the rate of colleagues reading KM files.
Note 2: Writing Penetration Rate (%) is the rate of colleagues writing KM files.
Note 3: Re-use Expected Efficiency (NT\$) is to encourage colleagues to apply the KM file they read to their work, and show the benefits.

UMC 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 ROI (Return On Investment) as the highest level of training results. It is used as a measure of the effectiveness of all training activities, so that training keeps improving and achieves talent development and retention.



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 of the company. 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 conferences to review training operations every quarter.

To encourage colleagues to serve as lecturers, the committee conducts selection activities of outstanding company-wide instructors each September. Through the improvement of the Education and Training Committee system, we will implement the company's principles and talent training to achieve effective company training system compliance.

In terms of professional training, we offer 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.

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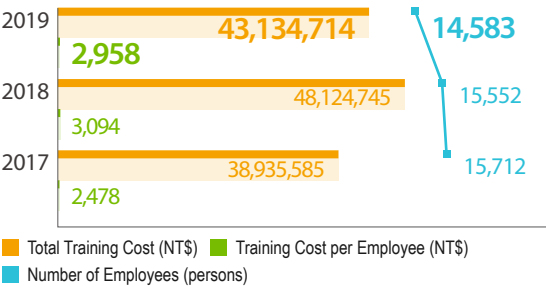
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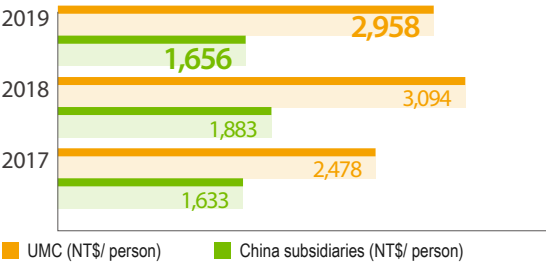
In 2019, UMC and China subsidiaries (HJTC and USC) organized 7,723 training courses, with a total number of 176,370 participants. The total cost of training was NT\$ 48,327,362, and satisfaction level with the various courses was more than 96%, gradually increasing with each year. Due to the number of new employees in 2019 being slightly lower than in previous years, the total number of training courses and participants are different from those in the past.

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

Average Employee Training Cost
(The figures in the table below do not include China subsidiaries)

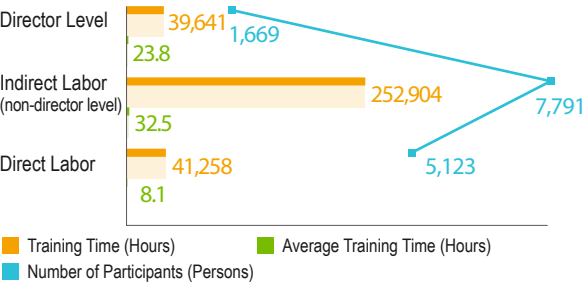


Average Employee Training Expense

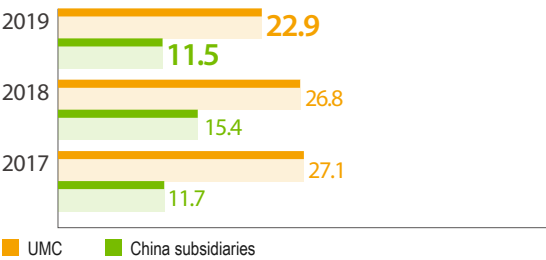


In terms of average education and training hours for the various job levels, comprehensive education and training are provided for different categories of job responsibilities and levels of employees. In 2019, the total number of training (persons) hours was up to 333,803 hours.

UMC Average Training Hours for Various Job Levels
(The figures in the table below do not include China subsidiaries)



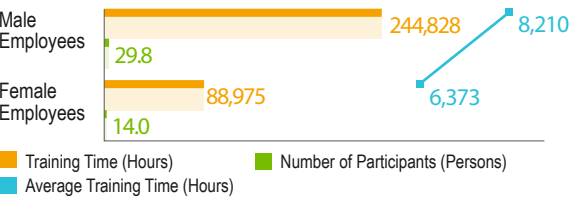
Average Employee Training Hours



(The figures above were UMC and China subsidiaries: HJTC and USC)

For gender issues, 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 women so their training would be largely focused upon technical courses such as machine operation. Hence, average training hours for female employees in UMC are slightly shorter than that of male employees.

Average Gender Equality Training Time
(The figures in the table below do not include China subsidiaries)



Other types of courses for continuing personnel cultivation and training are based on company guidelines and operational plans.

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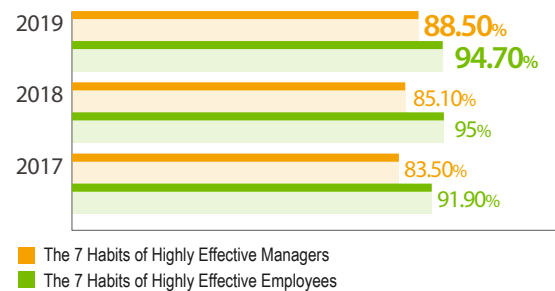
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Management Competence Training - Development Plans for Supervisors of Various Levels.

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. To design the 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.

Furthermore, to fulfill the company's core values, the philosophy and spirit of "accountability" is thoroughly instilled. UMC first introduced the course titled "The 7 Habits of Highly Effective Managers" in 2011. In 2012, this course was further expanded to include "The 7 Habits of Highly Effective Employees." Course contents are constantly promoted and established so that the 7 Effective Habits have become a common language between UMC managers and employees. From 2016 to 2019, the overall training completion rate improved steadily and the standard was maintained. In 2018, a new version of the 7 Effective Habits posters was printed and posted in all department offices to promote. Course contents are constantly promoted in 2019. Descriptions of the courses are as follows.

2017-2019 completion rates for "The 7 Habits of Highly Effective Managers" and "The 7 Habits of Highly Effective Employees" courses



The quarterly Leadership e-paper is published with [Seven Habits Column], to hold the internal lecturer gathering, and encourage divisions to keep promoting and deepening the concepts of Seven Habits.

Special Column of 7 Habits in Leadership e-paper

The quarterly Leadership e-paper is published with [Seven Habits Column], encouraging colleagues to read and internalize the 7-Habits concepts, and apply them to work.



7-Habits internal lecturer gathering

The internal lecturers enhance teaching methods through sharing with each other.

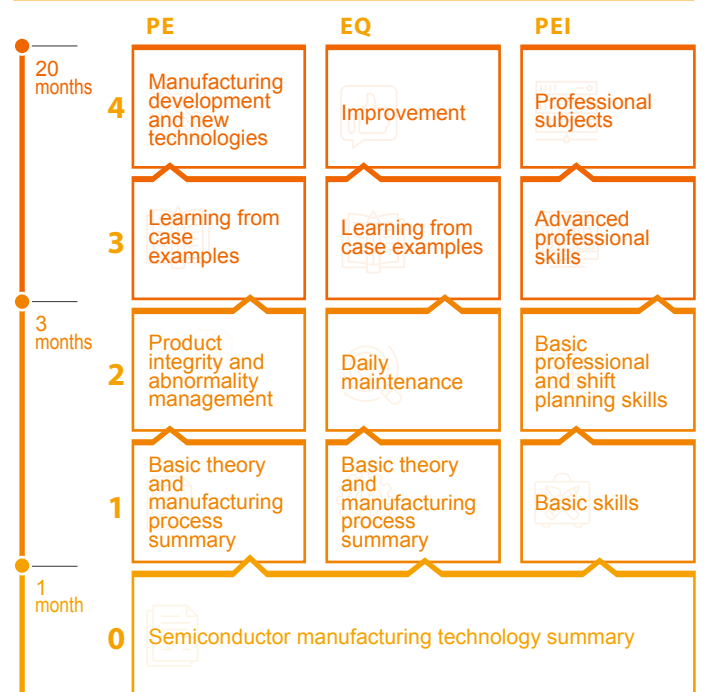


Technical Training for Engineers

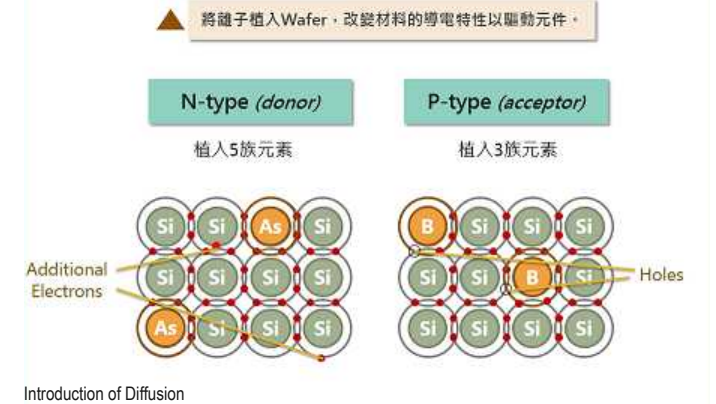
UMC fully realizes that outstanding technicians are the key to enhancing advanced technology and sustaining a company's growth. Therefore, based on the professional needs and competency inventory of the various engineering departments, technical training curriculum are planned, and through a solid system of technical training, the overall professional standard of our engineers and quality of engineering manufacturing are enhanced.

Based on the job need of each employee, learning maps are formulated. Through the control and statistics mechanism in the training system, the training courses and hours required by each employee are ensured for specific training effectiveness. To provide more learning resources for each employee, blended professional courses were designed in 2018. New versions of online courses were also created in 2019, with 7 self-made courses completed that provided more interactive learning resources for employees.

Time | Level | Function Category



離子佈植的目的



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Assessment System

UMC is a world-class corporation, and in line with international trends, has established a basic and rigorous system for both qualitative and quantitative skills assessment. In terms of strengthening English ability, demand for quality manufacturing, and increasing the professional knowledge of engineers, both internal and external evaluations such as TOEIC English assessment, Technical Skill Inventory and Statistical Process Control (SPC) are used to effectively evaluate the required core competencies of employees and increase production quality to meet and satisfy various customer needs worldwide. For example, in the 3-6-9 SPC Principle, those who fail assessments are not allowed to operate machinery, and are affected in other matters such as promotion. In 2019, the Taiwan completion rate for the SPC training was 99%, and the completion rate for Singapore was also 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
3-4 Completion of task through telephone instruction
5-6 Independent operation
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 Test (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

Corporate Culture Orientation Program for New Employees

To help new employees quickly integrate and shorten learning time, the learning organization particularly emphasizes new employee training to highlight the goals of "Recruit Talent, Cultivate Talent, Retain Talent" in education and training. In particular, "the involvement and support of department directors is the only way to motivate successful education and training." Each director is committed to enhancing the employment and development of new employees, and through the comprehensive UMC new employee training program supplemented by a mentor system, new employees quickly acquire professional skills and develop an appropriate work attitude. In addition to completing required courses, new employees also participate in the orientation program for new employees. The program integrates the organizational characteristic of team building, namely capability and agility. Classes pertaining to company vision, strategies and competitiveness are personally taught by high level executives, and workplace stress management and positive thinking courses are also provided to help new employees quickly integrate into the corporate culture. In 2019, 5 sessions of the new employee orientation program were conducted, and a total of 217 new employees completed training. (The above figures refer to indirect labor in Taiwan, and include formal employees and dispatched staff).



Team Building

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Convenient e-Learning Platform

In addition to the various professional skills and management courses, UMC has set up an e-Learning platform to provide employees with a convenient and easy environment for spontaneous learning. Information channels allow for convenient lesson preview and review, and together with effective and diverse in-class learning, the cultivation of knowledge and skills is steady and in-depth, thereby sustaining learning interest and exploration of new knowledge.



Introduction for Newly Hired Staff

To help newly hired employees quickly settle into UMC's environment, gain familiarity in corporate policy and regulations, and shorten learning time, senior personnel or supervisors are appointed as employee mentors when newly hired staff report to their posts. Training is given directly at the job posting to achieve effective on-the-job training (OJT). These instructions also cover routine activities and various specialized fields. A Newly Hired Staff Instructor System was established throughout the entire company. This system includes a training schedule, discussion forms with various supervisors, and feedback surveys. Instructors must complete all instruction procedures within 3 months after newly hired employees report to their post.

Training for Diverse Cultures

Since employees from different countries are employed, training courses have been provided using different languages to help employees quickly settle into the UMC culture and gain familiarity of corporate policy and systems. Additionally, cultural descriptions and festivities are also regularly provided when celebrating traditional Chinese holidays to help foreign employees enjoy local festivities. To improve linguistic skills of foreign employees, routine language courses are offered at UMC, along with regular language skills tests and bonus policies.

Transition Assistance Program for Employees who are Retiring or Leaving

To ensure good channels for assistance, the Company interviews employees who are retiring or leaving employment to provide appropriate care and specific channels to facilitate assistance. In addition, the Company provides laid-off employees with severance pay and employment service information in accordance with the Labor Standard Acts.

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4-2-4 Cultivating Prospective Talents

To fulfill the ideal of promoting semiconductor research and technology development, and strengthening UMC's global competitiveness by providing the company with a source of outstanding and high quality talent, UMC is committed to maintaining forward-looking collegiate relationships. In 2019, UMC focused on two major orientations in its collegiate relationships: (1) Positioning outstanding R&D talent, and (2) In-depth development of talent from technical colleges. In addition, university-industry collaboration and prospective talent programs are two major directions of development.

UMC continued to strengthen business-education partnerships in 2019. In addition to existing practical programs for semiconductor technologies in key institutions, UMC also implemented a collaboration project 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, practical collaborations, and exhibits of semiconductor products were scheduled, with more than 2,151 individuals participating in paper discussions in 2019. These measures enhanced academia's support and recognition of UMC and provided a comprehensive demonstration of a successful business-education partnership.

In terms of campus talent cultivation, the Prospective Talent Program (PTP) has been expanded to increase the cultivation of talent on campuses. Since 2013, a total of 4,435 candidates have been recruited, of which 865 are still in school. In 2018, Advanced Intelligent Elite Development Program (AIED) was launched, with 2,409 students having participated in this program, 749 as 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, the program effectively connects 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.

UMC launched UMC Camp Activity in 2019, inviting PTP members to join. Through camp activities and interaction with UMC Mentors, students could gain awareness and insight toward the semiconductor industry.



UMC Camp Activity



2019PTP Awards Ceremony Group Photo



2019 AIED Awards Ceremony Group Photo

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UMC Prospective Talent Program methods

Summer Interns Program

In 2019, a total of 21 interns were recruited. The program continues to select high-quality talent to intern at major departments in domestic and overseas UMC facilities. The interns are guided by designated instructors so that through actual practice and involvement in existing UMC projects, they can experience workplace culture. At the same time, this program effectively allows for closer interaction between prospective collegiate talent and UMC teams, thereby enabling mutual learning and growth through these close exchanges.



Prospective Talent Program

Exclusively designated for students, this program offers forums, internships and corporate mentoring to help students gain awareness and sensitivity toward the semiconductor industry. In addition, participation in UMC benefit events allows students to visit the fabs and provides opportunities to advance their understanding of UMC's global operations, corporate culture and a healthy workplace.

PTP: Since 2013, a total of 4,435 candidates have been recruited, of which 865 are still in school.
AIED: 2,409 students has participated this program, 749 as AIED members



Campus Career Discussion / Coaching Program

UMC has conducted career planning seminars and career coaching programs in its recent collaboration with key schools. Based on professional insight of future trends and career instructors' assessment of student characteristics and knowledge, career plans are recommended to help students find suitable career paths. With National Cheng Kung University as an example, 8 career coaching programs have already been implemented. Each batch has over 200 participants from the university and the program still continues to this day. In addition, practical resume writing advice is offered to help new graduates highlight and market themselves, and capture the attention of companies and executives.



Target Schools Visited

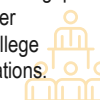
In 2019, about 822 faculty and students from target schools visited UMC so that students could gain an early understanding of the semiconductor industry work environment. Interaction and exchanges with employees also allow students to better understand the direction of their future learning and employability.



Furthering vocational and technological universities - Industry-university collaboration for engineers

UMC Mentors

UMC collaborates with vocational and technological universities by providing lecturers to share their practical knowledge to reduce the gap between academic and practice. The program also offers career counseling seminars for many vocational and technological college students and provides them with career planning recommendations.



Senior Intern Program

This program offers 1-year internships for students going into their senior year in collaborating colleges. In addition to facilitating the absorption of theoretical knowledge, the program trains students in actual industrial settings, thereby increasing their competitiveness. From 2013-2019, 205 interns were accepted.



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Experience Sharing

PTP Member &2019 Overseas intern
Ying-Ting Chung

If you want to do an internship, which one will you choose?

UMC really gives you the opportunity to fulfill your wishes, depending on whether you have the courage to pursue it. I am very grateful to UMC for giving me this opportunity.

Academically, everyone will have a common background. In terms of the industry, we also have common unknown. From the internship, you can see the operation of a group and the teamwork involved when working with others. Next, you will learn the cooperation between groups. Furthermore, you will also see our collaboration with customers as well as the personnel in the production line, understanding how a company operates.

During the internship, food, clothing and transportation assistance is provided. UMC also has excellent courses, lectures, gyms, and cinemas; everything will be new to you. You can learn or explore on holidays. You can also make good friends and explore together with them just like I did.

As a freshman, I am lucky to have participated in my summer internship at UMC Singapore and have the chance to meet everyone there, including the basketball team on the 7th floor. I want to thank my five best friends from the internship, and especially HR for taking care of us.



Current UMC Employee & 2018 Equipment Intern
Chuan-Wei Lee

I always felt lucky to be able to enter UMC. I knew about the company when they posted recruitment information for equipment interns on the school website. I was curious so I checked it out. My first impression of UMC was that the benefits offered were very good, and it is a big company. After that, the teacher also said in the class that working for UMC is a very honorable experience; therefore, UMC became my goal. Later, I realized that UMC was going I to hold an internship briefing session at school, and I immediately applied. I was then interviewed and got the offer; everything went well. During my time at UMC, I met many senior employees who were enthusiastic to help me. The supervisor was also very kind. Everyone treated me like a younger brother. I thought that the life of an engineer would be boring, but it turns out that they are all very kind and friendly. I felt like we were in a big family. Everyone helps and cooperates with each other, which is much better than what I had imagined. I appreciate the supervisors and senior managers of the department for their help and teaching this year. Now that I have become an official member of UMC, I will continue to do my best and work hard to serve the company.



Current UMC employee & 2018 Equipment Intern
You-Xuan Chen

I am very fortunate that I came to UMC for an internship, which gave me the opportunity to get in touch with the semiconductor industry during my student years. It is a very rare experience for me.

In terms of work, colleagues in the group are very cohesive, and any work will be divided and conducted cooperatively. Everyone will help each other to reduce personal burdens. In terms of learning, the supervisors and seniors in the group are very patient and tolerant. They will help you to strengthen your knowledge step by step rather than rushing you to learn.

I would like to thank UMC for giving me this opportunity and providing me with various learning resources and training, making me more competent on the skills that I need in the future.



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4-3 Healthy and Safe Workplace

Healthy employees are the most important asset to help companies profit. We are convinced that "Only with the input of employees will UMC be able to thrive, and with the help of happy employees, will it be possible to achieve UMC's sustainable development." UMC deeply cultivates three major directions: shaping a safe working environment, protecting employees' health and working life balance, and protecting the physical and mental health of employees and their families.



4-3-1 Healthy Workplace

Comprehensive Health Care Program

UMC believes that healthy employees are an important cornerstone for the success of the company and pays close attention to the physical and mental health of its workers and their families. Its "Comprehensive Health Care Program" continued to broaden in 2019. To ensure employee health and prevent occupational diseases, the 2019 Health Service Management Plan was formulated according to the Enforcement Rules of the Occupational Safety and Health Act and the 2018 Fab Health Management Plan Effectiveness and Review.

Moreover, these activities and measures create a high-quality workplace and foster a spirit of camaraderie among the workers. UMC continues to work towards making the work environment safe, protecting the health of its workers, and furthering work-life balance.

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. Efforts for promoting Healthy Workplace concepts were aimed at improving support and recognition from employees and external agencies as well as encouraging the recruitment and retention of skilled professionals to achieve the final goal of enhancing personal and corporate performance.

Comprehensive Health Care Program



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Stress-free Workplace: Focusing on Work Environment Safety

In 2019, UMC continued its efforts to build a safe and stress-free work environment and was 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 work place 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 contract stipulates that employee overtime must be voluntary, and the Company stipulates that excessive work hours are not permitted. 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 contract stipulates that employee overtime must be voluntary, and the Company stipulates that excessive work hours are not permitted.

Overwork Prevention Items

Health Examination

- In 2019, surveys were conducted for employees with high risk of cardiovascular diseases and overwork. Based on the results of the health examination and questionnaire survey conducted in 2019, we have selected the group with high risks and discussed their conditions with on-site doctors to implement relevant measures, ensuring the health of our employees. In addition, interviews with doctors were also offered to employees selected for the case, providing them with proper health education. The subsequent health management and monitoring work were also carried out by nurses. In 2019, there were 41 employees with high risk of illness that might be triggered by abnormal workload. However, such risks were unrelated to the jobs of these employees and their interviews with doctors have been completed. The completion rate of evaluation performed by doctors reached 100%, and nurses continued to offer regular care and health education as well as guidance to these employees.



Control of Work Hours

- 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. A reminder is simultaneously sent to the supervisor and employee so that reasonable human resource and work arrangements can be made.
- Since 2010, monthly reminders are sent to employees who have unused vacation hours, and supervisors are urged to schedule leave for their subordinates.
- In 2019, 7 days of special flexible vacation time continue to be given beyond the requirements of the Labor Standards Act.



Questionnaire

- Based on the outcome of the overwork questionnaire, psychological stress questionnaire and other surveys, initiative is taken to address employee physical and mental health.
- Frequency of implementation: At least once a year, the questionnaire results will be filled out again according to the situation of the case.
- Employees fill in the psychological stress questionnaire as needed according to the type of work (travel management, night work, etc.)



Soft Advocacy

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



Outcome Description

- In 2019, 12,105 employees in UMC fabs in Taiwan received health checkups and completed a workload survey.
- In 2019, improvement measures were conducted for employees selected for the case based on their health examination results. In 2019, 95% of our employees attended health examinations. Compared with the abnormal items of the health examination conducted in 2018, the improvement rate reached 92%.



Measures for a Safe Workplace

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 leave.



Measures for nighttime 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.



Assistance for pregnant women and special needs

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



Flextime for work and vacation to balance work and family

- Work flextime, and employees of less than 1 year are offered special leave or vacation flextime.
- In accordance with the Act of Gender Equality in Employment, both female and male employees may apply for unpaid parental leave without duress.



Comprehensive mechanism for sexual harassment prevention

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



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.

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Healthy Workplace: Safeguarding Employee Physical and Mental Health

Employee Health Promotion

To ensure that employees receive the variety of health services provided by the health team from the Company's Health Center, various channels are used. These include medical staff consultations, referrals, questionnaires, risk assessments for middle aged and older executives, health checkup items superior to standard ones, out-of-pocket checkup items with partnering hospitals, and injury management procedure for employees and outsourced personnel. A health information portal is made available to all workers to safeguard their health. The range of health services provided includes:



Health checkup

New employee physical examination, annual health checkup and special occupation health checkup.



Health management

Follow-up on reports showing abnormal findings, management for special cases, maternal protection, middle and high-risk employee care and on-site physician consultation services.



Health promotion

Analyze epidemiological and health checkup data of all employees, provide relevant cancer screening for women, stool screening for colorectal cancer, abdominal ultrasound examination, breast ultrasound, Pap smear, tobacco hazard prevention and control, weight loss activities, physical fitness tests, influenza vaccination, epidemic prevention and education, mental health education and numerous other out-of-pocket exams.

Employees are the most valuable of company assets. Therefore it is very important for the Health Center to promote the prevention, early detection and early treatment of diseases. Every year, health promoting and occupational safety and health plans are formulated, and the implementation and effectiveness tracked using a Gantt chart. The goal is to strengthen employee health awareness and promote health, and subsequently prevent occupational disease and improve health to enhance well-being and quality of life. By achieving such health goals, employee work confidence and productivity can be enhanced, thereby creating a win-win outcome.

Health promotion is a process of cultivating self-growth, facilitating individual autonomy over personal health and improving health. It is a primary prevention in preventive medicine, which focuses on positive and active health. It is a healthy belief model that changes the health behaviors, habits, attitudes and beliefs of individuals, and increases their correct health knowledge and health self-efficacy, thereby motivating them to make healthy decisions and actions.

To help employees access these services, employees are educated through various media, such as the Safety Committee, the Occupational Safety Committee meeting, secretarial forums, e-news, posters and website platform. Employees are also kept informed of all activities, such as lectures, health checkups, testing, healthcare, self-weight management, first aid training and mental health services.

In addition, to strengthen correct health perspective and knowledge in employees, activity participation plays a vital role. Therefore, quiz competitions and incentives are designed to attract employee participation in health promoting activities and achieve the ultimate goal of a healthy lifestyle.

The health promotion plan of the 2019 "Health Diary" includes various physical and mental pressure relief, disease prevention seminars, various cancer and health examinations, occupational disease prevention, vision care, consultation activities, etc.



As a benchmark company, UMC shoulders the important responsibility of national science and technology development in a highly competitive and rapidly changing industrial environment. While pursuing profit, we also deeply believe that "only through the dedication of employees can UMC sustain development, and only happy and healthy employees can create UMC vitality." According to the Enforcement Rules of the Occupational Safety and Health Act and the 2018 Fab Health Management Plan Effectiveness and Review, UMC formulated the 2019 Stable Profit at No Loss Health Investment Self-Management Plan as the key focus for the year. As many as 26 projects were planned, including annual health promoting events, themed lectures, annual health checkups, various tests, stress management and consultation activities. Different themes and educational focus in each quarter, such as maternal protection, healthy weight, stress management and improving unfavorable test outcomes, coupled with the abnormal workload and over-fatigue prevention in the Occupational Safety and Health Act, are implemented to protect employee health. In 2018, Fab 8A, Fab 8S and the Fab 12A acquired the healthy workplace certification. Furthermore, Fab 8D, Fab 8E, Fab 8F, and Fab 12A II completed the healthy workplace voluntary certification and applied for extension in 2019.

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Results of Health Promotion Activities in 2019

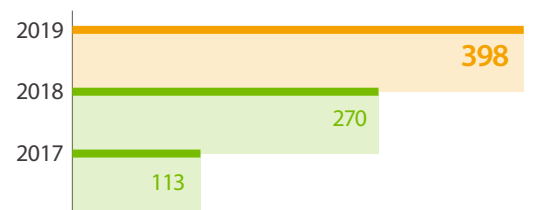
Activity Objective	Important Results
Q1.My pressure relief diary	
Aroma relief, hypnotic relaxation. Allow employees to adjust themselves while faced with stress, which helps to solve their physical and mental problems caused by stress.	Self-hypnosis pressure relief seminars, aromatherapy self-relaxation. A total of 1,337 people participated in the event, with an average overall satisfaction score of 92%.
Q2.My happiness diary	
Women and children's Day theme, pregnancy and good news sharing, parenting article sharing, women cancer prevention and health killer seminar, cancer examination for women.	A total of 4,424 people participated in the health care seminars , parenting articles, and three-in-one cancer examination for women, with an average overall satisfaction score of 95.6%.
Q3.My slim diary	
Fight against overweight, finding the perfect body. Promote the 10,000-step walking challenge, voluntary weight loss seminars, and exercise to release pressure and strengthen the body's immunity system.	A total of 482 people participated in the weight loss exercise and seminars to reduce a total weight of 353.4 kg, with an average overall satisfaction score of 97%.
Q4.Improve the abnormal items of health examination for groups with 3 highs (high blood pressure, high blood sugar and high cholesterol)My downshifting diary	
Fight against illness, maintain a healthy life. Encourage people with high blood pressure to take their blood pressure measurements regularly, and promote personal health passbook for self-caring, improving people's awareness to health problems caused by high blood pressure, and uphold the philosophy of early diagnosis and early treatment to reduce the occurrence of chronic diseases for employees.	A total of 3,766 people participated in the blood pressure master contest and the health passbook event, with an average overall satisfaction score of 95.9%.

Employee Assistance Program · EAP

(1) Collaborated with Taiwan Lifeline International to provide employees with free counseling services.

In 2003, 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 a privacy protection mechanism, help was 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. Through consultation, the problem of reduced work efficiency due to mental and emotional causes can be eliminated, creating a win-win situation for UMC and its employees. If there are any special needs, UMC's professional consulting team will provide additional assistance. In 2019, a total of 398 people received assistance in dealing with their problems that were related to psychological issues.

Number of employees receiving assistance in 2017-2019



(2) Active Prevention and Outreach:

Psychological education and training for the Employee Relations Department, Human Resource Service (Account) Department and supervisors.

Established the Employee Relations Department and Human Resource Service (Account) Department.

The Human Resource Department has established the Employee Relations Department and Employee Human Resource Service (Account) Department to actively reach out to employees and intervene in case of abnormal situations.

[Employee Care Seed Training]: Continued to plan and organize education and training courses in "Employee Psychological Care--Assistance, Management and Practice for the Manager" to enhance the sensitivity of supervisors toward the psychological condition of employees.

The company integrated a mechanism for employee care.

In recent years, we have been diligently integrating and reconstructing the mechanism to help employees return to their job after recovering from physical or mental illness or injury. With cooperation between professionals and relevant departments, methods and supporting measures, employees are provided with a more worry-free workplace where they are given attentive care and necessary assistance.

(3) Relaxation Platform

The company's internal website has a support platform offering employees diverse channels for relieving stress and providing counseling and information, such as Call IN I Hear You, Hot Let's Talk, Reassurance e-Newsletter, Relaxation Shopping, and Discovery of the Heart.

From time to time, meditative articles, book and movie reviews, and essays are posted to help employees relax during their free time so that they can calmly deal with the challenges from work, interpersonal relationships, parenting and family life. In addition, employees can perform self-evaluation on the platform to know instantly their physical and mental stress conditions. In 2019, we continued to optimize the health center platform to provide employees with services such as activity registration, health information, relaxation corner, self-assessments and health activities.



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Expanding Health Concepts, Outreach to Employee Dependents

UMC conducts annual health examinations, and offers check-up items that exceed government regulations. UMC also has a Health Self-Management Program that is tailored for employees. Professionals are designated to follow-up with employees with health abnormalities, including arranging for regular follow-up appointments and providing health education information. Comprehensive records of employee health indicators are kept, and health examination results are categorized and managed for healthcare follow-up. To help employees manage their health history, the Company's eHR system was integrated in 2010 to construct an electronic health examination management platform and database where employees can assess their health examination results and compare their health history. The system also provides relevant health education materials for employees to learn to self-manage their health. As of 2018, UMC's information divisions integrated their existing systems to establish a new Healthcare System exclusively for employees. Employees can immediately check their health checkup report and medical staff consultation information online. The new system improved the medical team's daily care list to 100% and care rate to create a comprehensive healthy workplace.

Employees who are special operations inspectors are assigned for case management and tracking. In addition, health promotion activities targeting common health abnormalities are organized to provide care and safeguard employee health. UMC also hires on-site doctors to provide health consulting services for employees. Preventive services such as special examinations and out-of-pocket vaccinations are also offered to help employees take initiative in creating a healthy lifestyle. Moreover, UMC also safeguards the health of employees' families and organizes annual health examinations and massage services for them. Such health care services for both employees and their household create a win-win situation of a harmonious society and family. In 2019, a total of 12,105 employees received medical examinations, and satisfaction was 96.32%. Moreover, family members of employees can go to the medical institutions which we have collaborated with to perform health examination. To provide convenient and hospital-quality services for employee families, hospital checkups were made available for families. The program was well received and will continue to be implemented.



Note: Satisfaction rate was determined through a five-point scale questionnaire (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, and very dissatisfied). It is calculated by dividing the number of people who checked satisfied or above by the total number of respondents.

Maternity Health Protection

UMC places great importance on motherly care and breastfeeding, and has implemented extensive measures to provide breastfeeding mothers with a safe and comfortable environment. Breast pumping rooms were also established in various fabs. UMC's Fab 8A, Fab 8E, Fab 8F and HQ acquired the "Certificate of Compliance for the Establishment and Management of Breastfeeding Room" in 2016 with a validation period of one year. In 2017, the "Certificate of Friendly Breastfeeding Room in Hsinchu" was also obtained, with a validation period of three years to August 2020. In 2020, we will monitor announcements and apply for the renewal of the "Certificate of Friendly Breastfeeding Room in Hsinchu."

Establishment of a company-wide maternity protection notification platform: Employees during pregnancy, after giving birth and during breastfeeding can visit the system to fill out relevant forms online. After receiving the notification, the health center will offer the caring needed to ensure the protection of occupational health.

Occupational Disease Prevention

UMC attaches great importance to the prevention of occupational diseases, ensuring the physical and mental health of employees. We are committed to implementing practices that achieve safety first and a reassuring workplace in order to strengthen the prevention of occupational diseases, take care of the health of employees with occupational diseases, and ensure their rights. The targets of protection include all of our employees and the employees of contractors and suppliers. In addition, protection platforms such as the "Occupational Disease Notification System" and the "Emergency Accident First Aid Notification System" were set up to quickly grasp the status of any incident. As for the contractors, besides establishing contractor training and hazard notification practices, the health management regulations of the health center also apply to the employees of contractors, hoping to take care of all workers in the workplace. So far, there no occupational diseases or deaths have occurred within the company. We will continue to take care of the health of our employees as our first priority and do our best in health management and disease prevention.

In addition, health examinations and analysis of the examination results are conducted by the Risk Management and Environmental Protection Department of the company for employees who perform hazardous operations every year. Based on the results, hazardous health protection plans are formulated to ensure that workers can have a good working environment, preventing the occurrence of occupational diseases that not only will affect individuals and but also their families, and even result in social losses.

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Occupational environment may be hazardous and may impact human health. Common occupational diseases due to work are as follows:

Chemical hazards
Can cause liver disease, cancer, and nervous system, skin, hematopoietic system, respiratory system, lung, and reproductive system diseases.

Physical hazards
Such as hearing loss caused by noise, heat stroke or heat exhaustion caused by high temperature operations, hematopoietic function failure or infertility caused by ionizing radiation, etc.

Biological hazards
Such as having contact with people with tuberculosis and influenza.

Human hazards
Occupational musculoskeletal diseases.

Psychological and social hazards
Occupational cardiovascular diseases, occupational mental or psychological problems, post-traumatic stress syndrome of major stress, are more likely to cause circulatory system problems.

In responding to the prevention of occupational diseases, UMC has implemented the following practices

Provide protective equipment such as gloves or protective clothing, and equipment for isolating the source of noise, reducing noise exposure time, such as earplugs, earmuffs, and other soundproofing equipment.

For the designed route in the workplace, avoid repeated operation in a long period of time and mediate work pressure.

Encourage employees to take vacations and exercise appropriately.

Under the protection of several management practices, no occupational diseases were found for UMC and non-UMC employees. UMC will uphold the belief that employees are the most important asset of the company and continue to protect the health of our employees.

For the prevention of occupational diseases, regardless of UMC employees or employees of the contractors, they are all included in the health protection program. The followings are practices implemented by UMC:

Risk management, environment and safety department
Conduct working environment monitoring and build the list of workers for management annually.

Annual health examination at the health center includes

- Analysis of biological test result, such blood, urine, noise tests, and psychological questionnaire test result.
- Establishment of multi-level management approach.

Doctor's diagnosis
Doctor will take into consideration the working conditions, process, environment, exposure, clinical history, evidence for the cause of the disease, and timing to determine the causal relationship between occupational disease and work.

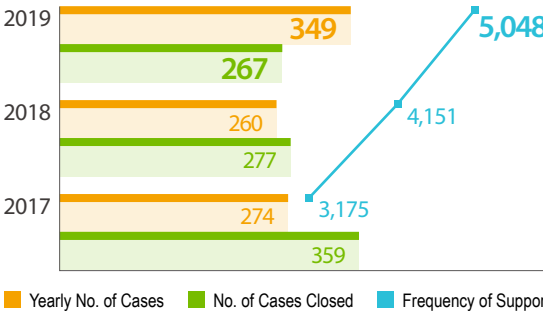
The cause of occupational disease is complicated and often interacts with the cause of non-occupational disease. The identification of occupational disease is eventually determined by the doctor based on various aspects.

Injury and Illness Care

Employee physical and psychological well-being and those involved in traffic incidents are followed up by telephone and e-mail contacts from a nurse from the health center, and appointments with house doctors are arranged if necessary. Continuing care and psychological support is provided to help employees return to work as soon as possible, and psychological support is strengthened for unclosed cases year by year.

Return to work after rehabilitating from physical injuries and mental illnesses: A care mechanism for physical injury and mental illness and the process for returning to work after rehabilitation was established. With the joint efforts of on-site doctors, nurses, department supervisors, as well as the personnel from human resources, legal affairs, and other departments, assessments on work return/re-allocation were accordingly conducted to allow those with physical injuries or mental illnesses to return to the workplace through job re-assignment.

Number of injury and illness cases and frequency of support provided in 2017-2019



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Establishing a Comprehensive Healthy Workplace

The UMC Health Center implemented a total of 18 health promotion projects in 2019. The total number of people served was 64,055 and the overall satisfaction rate was 95%. According to the number of people participating in the health promotion activities at health centers from 2017-2019, various activities such as the annual medical examination and massages by the visually impaired showed high participation levels, indicating that workers have more health awareness and are making it more of a priority. These efforts have also been widely acknowledged by the general public. In 2018, Global Views Monthly awarded UMC the Vision Model Award for the Electronics Group for UMC's CSR Survey. Moreover, all UMC fabs obtained the "self-certified health promotion badge" from the Health Promotion Administration, Ministry of Health and Welfare. These recognitions represent UMC's efforts in creating a healthy workplace for everyone.

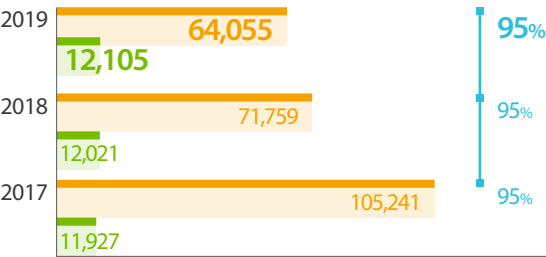
The Healthy Workplace Voluntary Certification Mark applied in 2019 for Fab 8D, Fab 8E, Fab 8F and Fab 12A II (3 years of validation period to 2022) .



The Healthy Workplace Voluntary Certification Mark applied in 2017 for Fab 8A, Fab 8S and Fab 12A was renewed in 2018 (3 years of validation period to 2021) .



Key Results of Health Promotion Activities from 2017-2019



- Number of individuals served in health promotion activities
- Number of individuals subject to yearly health examinations
- Total satisfaction for health promotion activities

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

Note 2: Satisfaction was calculated after rounding.

Note 3: Number of individuals served in yearly health examinations only included general health examinations.

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Dedication to Public Charity and Social Responsibility

UMC is also dedicated to charity activities, and introduced massage services provided by those with visual impairments in both Hsinchu Science Park (HSP) and Southern Taiwan Science Park (STSP). These services not only provide employment opportunities for the disabled, but also professional massage services to help ease discomfort and improve physical and mental health of fellow employees. UMC employees also support blood donation drives held multiple times every year, helping to save the lives of other people. In 2019, UMC organized a total of 16 blood drives which had more than 1,024 employee participants, collecting and donating about 1,609 bags of blood.











UMC- Epidemic Prevention Column

At the beginning of 2020, when COVID-19 started to spread globally, the epidemic-prevention teams among enterprises also urgently held related meetings and initiated plans, ensuring that companies could operate smoothly and that their employees were safe and healthy. The aim of these meetings and plans is to prevent any impact and damage brought about by the epidemic to our country, companies and employees.

In terms of the epidemic-prevention measures, UMC's epidemic-prevention team not only takes the company's operation into consideration, but also considers the aspect of human resources and the health center. The epidemic-prevention team also follows the management guideline provided by the CDC (Taiwan Centers for Disease Control) to implement practices such as installing infrared thermometers, prohibiting those with a fever to enter the office, filling out a health declaration form, increasing the frequency to carry out environmental disinfection and air conditioning filter replacement, providing alcohol for disinfection in public spaces and wearing masks, taking temperature measurements and wearing masks before getting on the shuttle buses, maintaining social distance, canceling group meals, providing individual meal boxes and eating at one's own desk, making announcements and providing epidemic-prevention information on the TV wall of the company, etc. In addition, UMC also has policies that are superior to those of other companies, which are described as follows:



Epidemic Prevention Poster

<p>Before the New Year, we ordered more than 300 forehead thermometers from the manufacturer, and provided them to our employees from various departments for body temperature measurements at required places such as the entrance of offices. The Procurement Department also purchased medical masks and UV disinfection lamps for epidemic prevention when needed.</p> 	<p>For employees whose relatives and friends have been notified by the CDC that quarantine is required and that they have been in contact with these relatives and friends for more than 15 minutes without any protective measures, UMC will provide them paid leave, allowing them to stay at home for quarantine and to monitor their body temperature and symptoms. Such epidemic-prevention policy is stricter than that recommended by the government.</p> 	<p>Employees who need to be at home for quarantine after being notified by the company will have their employee identification card locked, ensuring that they cannot enter the office and avoiding any loopholes to epidemic prevention. Once the health center confirms that there are no relevant symptoms, the security unit will then be notified to unlock the employees' identification card, allowing them to enter their offices.</p> 	<p>The mobile phone app-based platform was provided by the Information Engineering Department, allowing employees to use their mobile phones to report their body temperatures and carry out health surveys. The questions appropriately use both Chinese and English according to the latest epidemic development and announcements and are provided to every employee of the company. The relevant epidemic prevention team can check at any time the results of the survey and respond to those who have experienced abnormal conditions. They can immediately confirm the abnormal body conditions of any employee and their TOCC (Note), effectively ensuring the health of our employees.</p> 
<p>The faucets and toilets in washrooms were changed to motion-activated faucets and toilets, avoiding the touching of handles by users and reducing the risk of contamination.</p> 	<p>In addition, according to the 14 + 7 days of voluntary body temperature management announced by the government, we have treated the seven days of voluntary body temperature management as home quarantine, requiring those needed to stay at home for 21 days.</p> 	<p>We provided subsidy to employees, their spouses and children for the cancellation of their trips abroad within a certain period of time.</p> 	<p>Regardless of whether the family members have travel or contact history, employees with family members who have been screened by a doctor for COVID-19 need to wait for the test report; after being confirmed by the doctor that there is no risk, the employees may come to work.</p> <p>TOCC: Travel history, Occupation, Contact history and Cluster</p> 

Note : TOCC : Travel history, Occupation, Contact history and Cluster

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LOHAS Workplace: Emphasis on Work-Life Balance

UMC believes that employees are its most important asset, and that having healthy and happy employees is key to high productivity in a corporation. In addition to providing a safe and healthy working environment, an employee oriented LOHAS workplace that integrates benefits, vitality and public service is created. Through diverse activities, creativity and vitality are nurtured in the work and lives of employees.

Site Events for Building Team Identities

In cooperation with UMC's anniversary celebration in 2019, the three most popular team activities, including Football Darts, Speed Pioneers and Flying Spiders were held to bring competition between fabs. It is hoped that positive competition between different fab sites will help build employee identity and cohesiveness, reduce opposition to new internal measures, and create high performing and effective teams.

UMC Inter-fab team competition



Family Cohesion

UMC emphasizes work-life balance, and in addition to focusing on employees, UMC also reaches out to their families. UMC arranges activities within specific themes which are appropriate for employees and their families to participate in. To make the Family Day event more diverse, following the 2018 Family Day event which was held in an amusement park, the 2019 Family Day event took place at the fab site. The theme of the event was based on heightened employee identification and family activities. By combining a Mobile LED Stage Truck, popular in recent years, with various fun activities and arrangements, Family Day activities were successfully organized to effectively consolidate employee cohesiveness and strengthen family recognition. A monthly movie is selected by employees for family movie time where movies are shown in the fab after work, and art festivals are held that are open to employee families. UMC hopes to support employees as well as their families to relieve employee stress and ensure their physical and mental health. At the same time, employee families may also become involved with UMC, get to know UMC and continue to support the employees in their diligent contributions toward the company.

2019 UMC Family Day Activity



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Club Activities

- UMC clubs can generally be classified into 6 types, namely ball games, sports, public service, music and dance, arts, and business investment.
- Through the club assessment system, clubs with excellent performance receive subsidies for their operating expenses.

2019 Performance

- **27clubs** (Taiwan)
- **2,247** club members ^{Note}
- 2 rounds of selection - a total of **15** excellent social groups will be provided with support in each round.

Social Group Photographs



Note: Does not include one-time or temporary club members

Diversity of employee activities

- Organized regular Easy Travel, Family Day, and Art Festival.
- Family Day Activity was held in 2019.
- Routine screening and playing of popular movies every month

UMC recreational facilities and services (UMC Center/UMC Park/UMC Hill)

- Quality Recreation Center in Hsinchu for employees and their families.
- Dormitory in Tainan with integrated recreational facilities.
- Each site (8E, 8F, 8S, 12A) provides fitness equipment for employees.

2019 Performance

- Recreation Center in Hsinchu : **110,000** visitors in 2019
- The UMC recreation center serves **over 320 people per day**.

UMC Recreational Facilities



Hsinchu Science Park UMC Activity Center



Tainan Science Park UMC Activity Center



5-star gym



Multi-purpose basketball and badminton court

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Art and Culture Activities

In terms of arts and culture activities, UMC's "2019 UMC Art Fest" was the company's most important arts and culture event of the year. From July to August 2019, the three major themes of "Performance Art," "Creation Art," and "Appreciation Art" were planned to bring art into the daily life of our employees, launching a series of art activities. For large artistic performances, Taiwan's high-quality symphony orchestras and dance groups that had performed in the National Theater and Concert Hall were invited to present their novel performances. Well-known writers, performing artists, and travel experts were invited to share their exciting experience. In addition, film and painting appreciation as well as DIY courses were offered, allowing our employees to experience the beauty of art, bringing diverse artistic elements into the company and shaping the workplace into an artistic environment. Not only does this enhance the quality of life, but it also achieves the ideal of "Work-Life Balance."

Events planned for 2019 were designed to highlight the core value of Customer (and Employee) Focus upheld by UMC. Activities were also based upon UMC Extreme Art organized in previous years. 2019 UMC Extreme Art included a total of 13 art events which were attended by about 2,121 individuals. The choice of activities were based upon recommendations from fellow employees and proved to be both enriching and well-received by the entire company.



4-3-2 Safe Work Environment

Any form of safety or health risk may result in serious economic and social losses for the company, compromising its competitiveness. Consequently, UMC aims for zero disaster and is committed to the company's steady development while making safety a priority.

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 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 respective 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 law; its number of employee representatives is greater than the number of director representatives. The company's subsidiaries HJTC and USC have both established a safety and health committee that meets every quarter.

Safety and Health Management Focus

The Company's safety and health management framework is based on the management spirit of ISO 45001 (an ISO standard for management systems of occupational health and safety). The Plan-Do-Check-Action framework is incorporated into the health and safety management system for activities, products and services of the company's fabs in Taiwan and branch in Singapore. The same health and safety management system is also instituted in the company's subsidiaries, HJTC and USC.



The ISO 45001
Certificate is
available on UMC's
website

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The following lists the focus of UMC. Creating a Corporate Culture of Occupational Safety for Everyone

Any safety and health risks could result in major economic or reputational loss for a company, and undermine its competitiveness. UMC builds its safety and health management on inherent safety, and actively establishes a corporate culture of mutual assistance to create "work safety for everyone." It is hoped that the result of safety and health management promotion can be reflected in the operating outcome.

In 2019, UMC continued to promote a "safety first" culture, with the co-president personally pledging: "Safety first. Safety is above production." Senior executives were invited to sign the environmental safety and health policies and commitments to build consensus, and second-level fab supervisors are required to increase weekly on-site management to reinforce workers' safety knowledge and awareness. Third level supervisors are required to focus on the integrity and compliance of high-impact operations procedures / regulations through smart monitoring approaches such as closed-circuit television (CCTV) and issue early warning and correction to non-complying employees. These measures are instituted to incorporate Safety First into every item of production, construction and operation to ensure that employees do not neglect safety for speed. The ultimate goal is for employees to be Safe at Work, Return Home Happy and continue to reduce disabling injury frequency rate (FR) and Disabling Injury Severity Rate (SR).

Hazard Identification and Risk Assessment

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



Hazardous workplace assessment

UMC's 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 activities 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.

Hazard Notification

To prevent accidents, UMC uses routine inspection systems to detect anomalies early, 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 according by occupational safety personnel. Improvement tracking is performed by the computer system. In case of any immediate workplace danger, workers can call the emergency contact person to notify the occupational safety personnel. Without jeopardizing the safety of other employees, workers can stop their operations and retreat to a safe place, and will not be penalized by the company.

High-risk Job and Occupational Disease Management

Local regulations in Taiwan, mainland China and Singapore stipulate that employees in identified high risk equipment and factory operations, such as those exposed to noise, ionizing radiation, dust, organic solvents, and specific chemical substances must undergo special health check-ups and health management based on a health check grading system. In 2019, the outcome of a required special health check showed no Level 4 work related cases.

UMC provides health check-up items and check-up targets above and beyond those stipulated to fulfill the company's responsibility toward its employees. Through a comprehensive health risk grading management system and early discovery in high-risk groups, the two-pronged approach of improvement at the source and health care at the end has created a healthier and more comfortable working environment.

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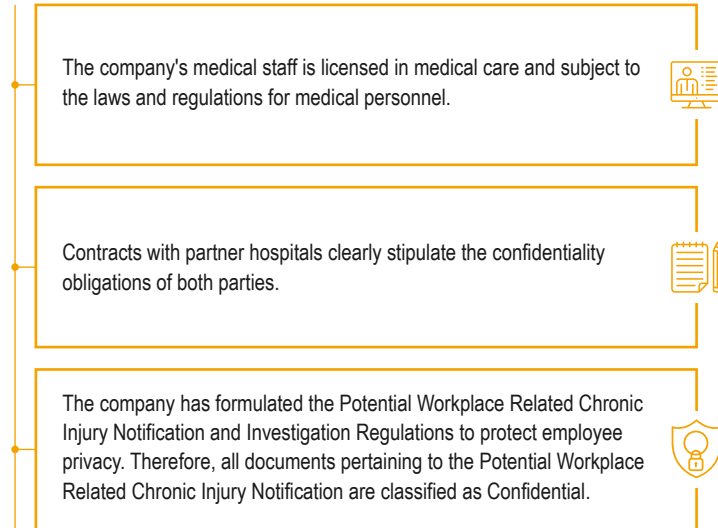
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An occupational health care mechanism is developed for employees ill from suspected work-related problems. A health care team comprising of labor health physicians, the Health Development Section of the Human Resources Division and the Risk Management and Health and Safety Department is formed to determine the cause and propose improvement measures. There were a total of 5 such cases from 2014 to 2019 (no new cases in 2019).

UMC is committed to protecting employee health, and has also established 3 lines of defense to protect the confidentiality of personal health-related information:



UMC encourages workers to effectively and promptly report suspected workplace related illness so that relevant departments can take immediate improvement and preventive measures against occupational diseases. Such employees will not be subjected to any favorable or unfavorable treatment.

Consultation and Communication with Employees

UMC values employee communication and participation. The safety and health labor representatives approach in Taiwan's Occupational Safety and Health Act authorizes employees to select labor representatives approved by the labor-management meeting. The representatives may participate in quarterly Occupationally Safety Committee meetings, revision of work safety and health codes, investigation of incidents, monitoring of operations environment, and decisions on safety and health issues. Penalties for employee violations and the procedure for nominating labor representatives are jointly discussed in labor-management meetings. Any safety and health related issues are also discussed in the labor-management meetings to achieve consensus.

The company also actively communicates with other non-employee workers. In addition to assessing qualified contractors and formulating the Environmental Safety and Health Contract for contractors to sign, the contract provides contractors with information pertaining to their working environment, hazard factors and relevant safety and health regulations. All incoming construction workers are also required to receive UMC's Environmental Safety and Health Education and Training for Contractors and all incoming contractors are required to complete the Contractor Workplace Hazard Notification and Agreement Meeting.

Moreover, a comprehensive e-application system for construction has been installed for effective control of construction applications and management before, during and after a project. In addition to assigning on-site overseers and conducting a daily toolbox talk, contractors are also required to have their responsible departments conduct on-site supervision and their occupational safety personnel conduct inspection from time to time during the construction to ensure that all operations are in compliance with safety regulations.

Safety and Health Education and Training

To enhance worker safety awareness and prevent disasters, UMC provides ongoing education, training and promotion to employees. By cultivating their emergency response ability and safety knowledge, and strengthening their competence, accidents from unsafe behavior are reduced. The company includes contingency response, required certifications, safety and health management system maintenance, special operations safety, and overseers into annual training plans. In addition to planned training courses, other education and training are arranged according to specific incidents or major failings. Taking 2019 as an example, in order to strengthen workers' high-risk chemical response and awareness, and at the same time to learn the lessons from other companies' accidents, "TMAH (Tetramethylammonium Hydroxide) and HF (Hydrofluoric acid) courses" were added. Accumulating throughout the year (including the aforementioned intensive courses), a total of 2,099 environmental safety and health courses were conducted, and 82,225 participants were trained. An E-learning course is also provided so that workers can acquire safety and health knowledge without being limited by the course schedule of physical classes.

UMC sets annual education and training plans according to key needs. Overall consideration is given to general training and specific issues pertaining to occupational hazards, dangerous activities, or dangerous situations.

At the same time, in the event of accidents and outside incidents, announcements or lectures are immediately arranged to help employees understand their rights and protect themselves. Lectures on safety management and the role of supervisors are also conducted to help supervisors understand their responsibility for employee safety. Hence the foundation of the education and training is to jointly improve safety.

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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/improvement, a computer system for accident notification and investigation has been installed to achieve instant transmission and storage of accident information. After each accident, based on the accident cause and improvement measures proposed by the fab in which the accident occurred, in-plant inspections are conducted in all fabs to prevent a recurrence.

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 Occurrence

General assessment of the accident based on 8 dimensions

 Personnel injury	 Impact on production	 Property loss	 Chemical related accident
 Scope of impact of gas substance	 Fire	 Scope of impact of liquid substance	 Behavioral dimension

Further assessment of each dimension. Categorize the accident according to scores and assign a level.

Abnormal	False Alarm	Minor	Severe	Major
Less than 10 points	10 points or above	20 points or above	60 points or above	100 points or above

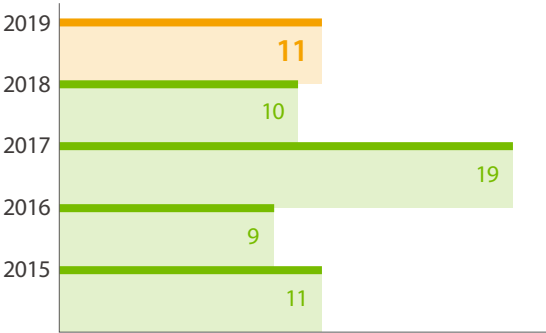
Accident Management

UMC remains committed to reducing the number of industrial accidents. In 2019, the goal was to reduce the number of accidents by 15% (compared with 2018), and reduce the number minor accidents to ≤ 11 . To effectively achieve the accident management objectives, the main focus is Safety First. At the beginning of the year, each fab proposes a prevention plan to prevent slips, trips, falls and chemical exposures.

In 2019, the reduction goal was achieved, with 11 minor accidents.

Analysis of 11 accidents in 2019, walking injuries: 3, mechanical injuries: 2, fire alarms: 2, chemical injuries: 1, chemical leaks: 1, scalds: 1, water leaks: 1. According to the statistical results of the company's injury accidents from 2015 to 2019, it is found that "slips, trips, falls" and "chemical exposures" are the two main causes. In addition, considering the trend of increased mechanical injury in 2019 and the risk of injury, UMC will continue to promote "Safety First" in 2020, with "mechanical safety," "walking safety," and "chemical safety" as the three major accident prevention themes, and continue to promote 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 zero accident.

Accident Cases from 2015 to 2019

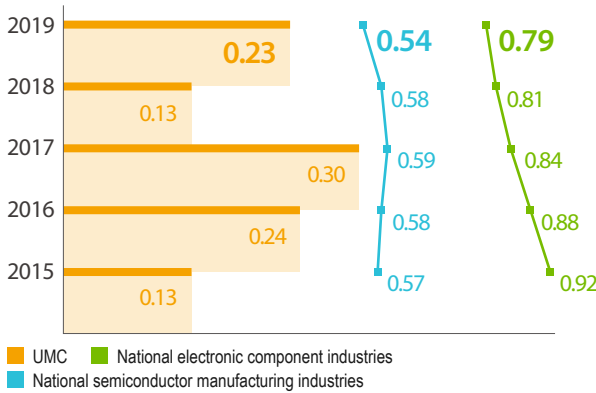


Note: UMC scores and classifies accidents according to injuries cause by people, production impact, financial loss and involvement of chemical substances, range of impact, fire, or problems due to employee behavior. Not all accidents result in human injury.

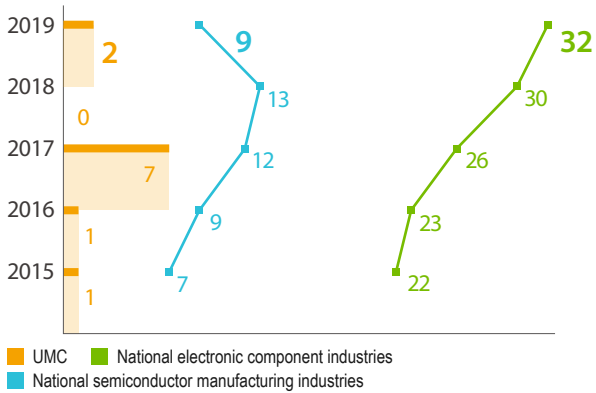
Occupational Disaster Management

In 2019, UMC's Disabling Frequency Rate (FR) was 0.23 and Severity Rate (SR) was 2, which are far below the 3-year average of the semiconductor industry (according to data provided by the Department of Statistics of the Ministry of Labor). UMC will continue to promote disaster reduction programs and move towards zero disasters.

Disabling Frequency Rate (FR)



Disabling Severity Rate (SR)



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	No. of people	Total No. of work hours	No. of people with disabling injuries	No. of lost days due to disability	No. of reportable injuries	No. of work related deaths	Occupational Disease Rate (ODR)	Injury Rate (IR)	Lost Day Rate (LDR)
Taiwan									
UMC Employees	13,413	26,482,600	6	65	13	0	0	0.09	0.49
Non-employee Workers	1,537	4,488,672	1	3	2	0	0	0.08	0.13
Singapore									
UMC Employees	1,719	3,733,719	1	2	1	0	0	0.05	0.10
Non-employee Workers	427	1,245,544	0	0	0	0	0	0	0
China (HJTC)									
Subsidiary HJTC Employees	2,091	4,081,943	0	0	0	0	0	0	0
Non-employee workers	147	427,992	1	2	1	0	0	0.46	0.93
China (USC)									
Subsidiary USC Employees	1,047	2,226,512	0	0	0	0	0	0	0
Non-employee workers	674	1,966,792	0	0	0	0	0	0	0

Note1: There were no third party illnesses, injuries, disabilities or deaths caused by UMC operations.

Note2: There were no third party illnesses, injuries, disabilities or deaths caused by HJTC operations.

Note3: There were no third party illnesses, injuries, disabilities or deaths caused by USC operations.

Definition of Terms:

- Non-employee workers: Refers to non-employees whose work and/or workplace is controlled 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
- Work Hours: Refers to the actual number of work hours put in by current employees or non-employees. The number of hours worked by non-employee workers is calculated at eight hours per person per day.
- Number of people with disabling injuries: Refers to the number of deaths, permanent disability, permanent total or partial disability or temporary total disability due to occupational injuries.
- Number of lost days due to disability: Refers to the total number of days lost as the result of injury from a single accident. Calculated as the number of days when the injured person is temporarily (or permanently) unable to resume work, but excludes the day of injury or the day when work is resumed. Includes 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.
- Number of reportable injuries: Refers to the number of work related injuries that resulted in death, job loss, impairment or transfer, emergency treatment or more, loss of consciousness, or major diagnosis by a physician.
- FR = Number of people with disabling injuries x1,000,000 / Total number of work hours [per million work hours].
- SR = Number of lost day due to disability x1,000,000 / Total number of work hours [per million work hours].
- ODR = Total number of occupational diseases x 200,000 / Total number of work hours [per 200,000 work hours].
- IR = Number of reportable injuries x 200,000 / Total number of work hours [per 200,000 work hours].
- LDR = Number of lost days due to disabling injuries x 200,000 / Total number of work hours [per 200,000 work hours].



Other Prevention Measures and Safety and Health Impact Pertinent to Company Operations, Products or Services.

Through procurement management and management of changes, 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 abnormal supply due to safety and health incidents.



Change Management

To avoid safety and health risks and environmental impact from changes in personnel, machinery, materials, methods and environment, UMC has established management measures for 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.



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4-4-1 Community Service Participation

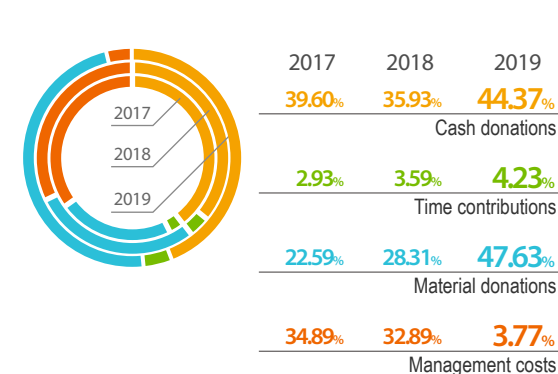
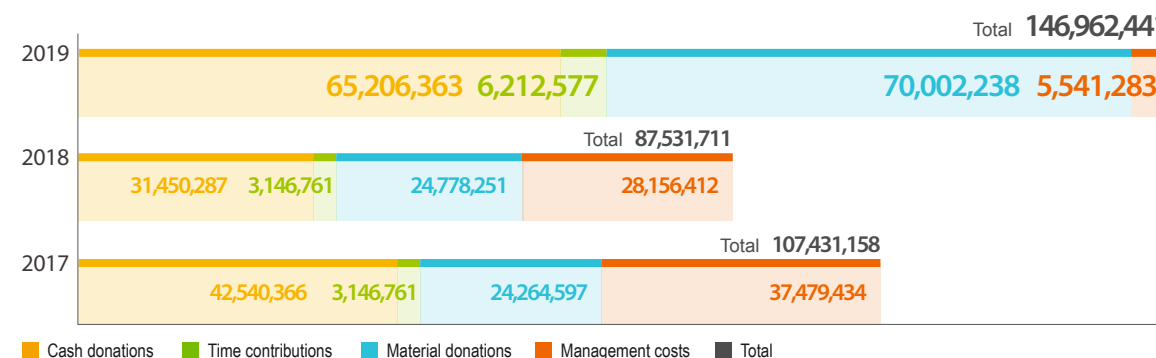
"People orientation, co-existence with the environment and shared social prosperity" are the most important elements of UMC's vision in sustainability policies. UMC upholds the spirit of social co-prosperity and shall contribute its influence to combine the strength of employees towards social development. Under the leadership of UMC Science and Culture Foundation, more and more employees have started to take notice of the importance of community services, and have begun to take an active role in volunteer activities which initiated positive development within UMC. Our growing positive influence would help external agencies recognize UMC while providing assistance to more of those who need help, generating a growing positive feedback cycle that expands from within.

LBG Model

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 carefully recorded to evaluate the positive benefits brought about by these investments. Outputs of community services include reductions in cost, 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.

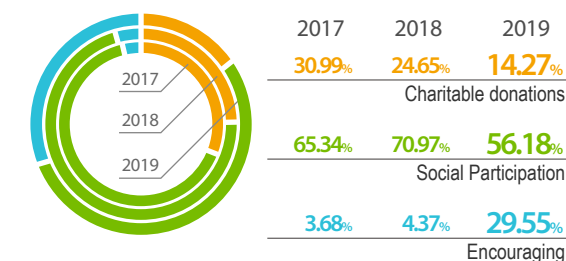
Category and Sums of Community Service Investments from 2017 to 2019

Unit: NT\$



Proportion of Community Service Investments from 2017 to 2019

Unit: NT\$



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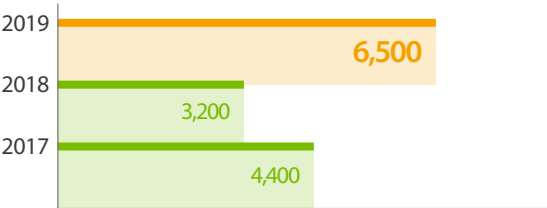
Appendix



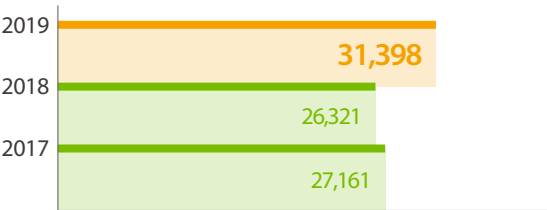
In addition to the Spreading the Seeds of Hope Project that was initiated in 2005, UMC also mobilized other agencies such as the UMC Science and Culture Foundation, UMC LOHAS Education Foundation, UMC Fire Brigade, and employee societies and clubs in 2019, using their different skills to target and identify the best means of investing in community services. In 2019, UMC employees provided a total of 18,223.5 volunteer hours. Charitable donations and the number of beneficiaries also grew significantly and the latter grew to over 31,398 individuals. These results demonstrate continued growth of human resources and kindness of UMC volunteers offering services to the needy throughout Taiwan.

UMC Community Service Participation and Number of Beneficiaries

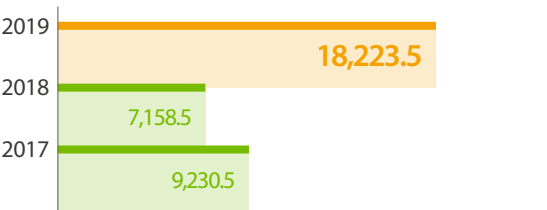
Charitable Donations Note 1 (Unit: NT\$ 10 thousand)



No. of Beneficiaries



Total Employee Volunteer Hours Note 2



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

Note 2: Includes volunteer leave and holiday service hours.

UMC Community Service Department

The UMC Science and Culture Foundation and the UMC LOHAS Education Foundation are UMC's two major foundations. In addition, UMC has also instituted the UMC Fire Brigade. All social involvement and actions are mutually supporting, forming the major force behind UMC's social citizenship in caring for the disadvantaged. Through the integration of UMC resources, employees contribute diligently to society to create a more secure and warmer community.

In 2019, more and more societies and clubs in UMC took the initiative to be a part of community services, including musical groups such as and Ukulele Club, UMC Drum Club, music aficionado Club sports clubs such as the Running Club and Tai Chi Club, and service clubs such as Candlelight Club and Energy Conservation Club. The efforts of these groups are growing to become a positive and significant force in promoting community services.

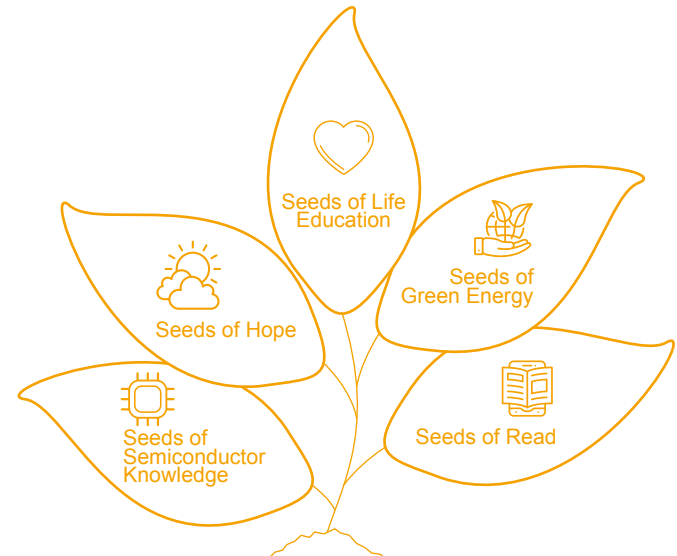
Four Major Social Welfare Groups in UMC

- 1996 UMC Science and Culture Foundation
 - Develop education for the disadvantaged - "Spreading the Seeds of Hope Project"
 - Life education - "Love Storyteller Club"
 - Parent Child Education - sponsorship for Whatever Makes Sense for Voice of IC Teacher Hung Lan
- 1999 UMC Fire Brigade
 - Assist in industrial park and community disaster rescue
 - Promote fire safety in elementary schools
- 2009 UMC LOHAS Education Foundation
 - Promote sports – Open the UMC Park Activity Center to disadvantaged groups
 - Provide UMC tours to university students
 - Education for the disadvantaged – Provide basic literacy skill training for new residents (foreign spouses) and expatriates
- 2016 UMC Energy Saving Service Team
 - Provide energy-saving and safety diagnosis of places, or provide relevant engineering and technical consultation to disadvantaged social welfare institutions

Community Service Project - "Spreading the Seeds of Hope"

UMC has long paid attention to the growing young people in Taiwan and is committed to enhancing the education of school children from disadvantaged families. We have continued implementing the "Spreading the Seeds of Hope" educational assistance program for school children from disadvantaged families and hope that corporate strength can be used to remedy the imbalance in educational resources. Since 2005, the company has allocated NT\$170 million to tutoring programs for school children from disadvantaged families, and with the support of UMC, more than 6,300 school children have continued in their studies, thereby fulfilling the mission of "Spreading the Seeds of Hope."

In 2019, in addition to investing in the "Spreading the Seeds of Hope" educational assistance project for disadvantaged school children, the program also focused on cultivating "Life Education," "Reading Promotion," "Green Energy" and "Basic Science and Technology Talent" to promote a new wave of nurturing that is founded on spiritual, learning, environmental and basic technological perspectives. In addition, the company also realizes that corporate social responsibility cannot be fulfilled only by the company itself, but should involve the joint efforts of employees. It is only through practical personal involvement that individual efforts can unite into a significant strength that becomes a new momentum for Taiwan's growth.



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UMC Community Service Participation and Number of Beneficiaries

Activities	2019 Activity Performance	Impact
🌱 Seeds of Hope - Taiwan Multi-Empowerment Education Program for Youth		
<ul style="list-style-type: none">• After-school tutoring• Reading education• Character education• Long-term caring• Organizing festival activities	<ul style="list-style-type: none">• 3,590 hours of service were provided by the National University of Tainan UMC After-School Tutoring Center• 3,716 hours of service were provided by the Hsinchu UMC Shengxin After-School Tutoring Center to the Nantou Karate Association• Sponsored the Nantou Karate Association• Sponsored Teenager Performing Arts League• Sponsored Taiwan Fund for Children and Families• Sponsored Program the World Association	<ul style="list-style-type: none">• With the help of students and social volunteers from National Tsing Hua University, National Chiao Tung University, and National University of Tainan, correct concepts were provided to guide students, discouraging them from deviant behaviors, helping them to rise above poverty through good education, and enhancing their own competitiveness through self-learning.• Sponsored the Nantou Karate Association. Through karate training, students with disadvantages found confidence and saw their own strength.
💚 Seeds of Volunteer - Promoting Life Education		
<ul style="list-style-type: none">• Organized the UMC Volunteer Club• Organized volunteer training courses or sharing sessions• Paid regular visits to a juvenile rectification school, Chengjheng High School, and at-risk youth in rural areas• UMC Story Tellers Club	<ul style="list-style-type: none">• A total of 2 caring activities were provided to Erhlin Happy Christian Homes, and 32 volunteers participated in the activities with 350 people having benefited from the event.• Four volunteer training sessions were held with about 200 people attending the sessions, and 10 sharing seminars with a total of 355 people attending the event.• Sponsored the “Art of Reasoning” program of the IC Broadcasting Co. hosted by Professor Daisy L. Hung• Offered counseling services to students of Chengjheng High School twice a month. A total of 20 2-hour counseling sessions were provided.• UMC employees organized a troupe to write together the script for the play, the “Dream Team,” and carried out the performance to promote life education.	<ul style="list-style-type: none">• We pay regular visits and offered care to youth in rural areas, conveying correct life education and allowing them to understand the true meaning of life and growth.• Every year, we pay attention to new education issues in Taiwan, and introduce excellent resources and teachers, allowing UMC employees, their family members and social volunteers to attend free courses and participate in social welfare.• We sponsored the “Art of Reasoning” program of the IC Broadcasting Co. to show our concern in parent-child education, allowing more people to learn new ideas through broadcasting.• Interacting with youths living in the House of Miracle to build a correct system of values.• It has been ten years since we offered services to students of Chengjheng High School. Through learning new knowledge, we interacted with students from the juvenile rectification school.• We have held 69 performances since 2010, with a total of 20,000 audiences.
📖 Seeds of Reading - Promoting the “Reading for All” activity		
<ul style="list-style-type: none">• Reading seminar• Reading promotion	<ul style="list-style-type: none">• Storytelling volunteers provided services to students in rural areas.• Sponsored the Mandarin Daily News to promote the delivery of reading and education to people living in mountainous areas.• 4 reading activities were held for elementary schools in rural areas; about 100 people attended the event	<ul style="list-style-type: none">• Students enjoyed the fun of reading through our activities.• We support the education of reading activities organized by the Mandarin Daily News every year, which has influenced students of 33 classes from 29 schools in rural areas.
🌿 Seeds of Environmentally friendly Green Energy - Environmental protection education promotion and green energy technology talent cultivation		
<ul style="list-style-type: none">• Conduct environmental protection related activities	<ul style="list-style-type: none">• Promoted the concept of environmental (earth) friendly through seminars and green markets.• Launched the Eco Echo Award in 2016 and continued to hold the event.	<ul style="list-style-type: none">• Guided employees and students attending the classes to understand the importance of environmental protection, promoting the concept of environmental protection to more people, and allowing environmental protection to become everyone's responsibility and way of life.
💡 Seeds of Semiconductor Knowledge - Cultivating High Technology Talents in Taiwan		
<ul style="list-style-type: none">• Industry-academia classes for the semiconductor industry• Creative R&D projects• Other business-education partnerships• Campus Cultivation Project	<ul style="list-style-type: none">• Industry jointly run by the company and 3 universities.• Initiated multiple R&D projects in multiple universities and secured relevant patents.• Opened industry-academia classes attended by total of 462students.	<ul style="list-style-type: none">• Cultivated future talent in the semiconductor industry so that young students could achieve in-depth understanding of semiconductor-related knowledge and technology during their school years.

Cultivation and Training of
Professionals with Management
Potential

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 donations 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 2019, a sum of NT\$ 3 million was invested into the award.

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4-4-2 Promotion of UMC Volunteer Culture

While focusing upon business growth, UMC is also actively contributing towards community work and social participation. To encourage fellow employees to participate in community service, employees are allowed to apply for official leave and partake in various volunteer services. Under the guidance of the UMC Science and Culture Foundation, the spirit of voluntarism in UMC has begun to spread beyond volunteer teams to include the entire employee population. In 2019, our community service clubs provided a total of 76 outreach activities to disadvantage groups. Active donations and participation in community services by UMC employees demonstrate their initiative, kindness, and selfless contributions as well as the importance that UMC places upon building a volunteer culture.

To provide employees with greater freedom, UMC not only encouraged employees to participate in various community work and social activities, but also employed comprehensive social group assessment systems to encourage company societies to engage in charity work as well. Societies that attained excellent results were provided with additional funding to support both social group activities as well as community participation.

During annual scheduling of events, social groups would be invited to provide support according to the nature and purpose of the event. Many activities were made possible through the assistance and participation of social group members, and these measures help create an inseparable link among community work, corporate-wide event planning and social groups to encourage employees to engage in social work.

The following provides details of the events performed by various societies within UMC:

Services provided by various societies in 2019

Services

Candlelight Club	Sessions held: 73
<ul style="list-style-type: none">• Beneficiaries: Underprivileged students, Underprivileged senior citizens, Environmental protection• Volunteer services: Offering companionship at the House of Miracles, Services provided at Ren'ai Children's Home, Services in remote villages, Initiating love charity drives, Charity sales activities jointly held with the foundation• Partners: Saint Joseph Social Service Center, Eden Social Welfare Foundation, World Vision International, Saint Joseph Social Welfare Foundation, Joyce Meredith McMillan Social Welfare Foundation, Erhlin Happy Christian Homes	
Energy Saving Service Team	Sessions held: 37
<ul style="list-style-type: none">• Beneficiaries: Underprivileged students• Volunteer services: To assist social welfare agencies with energy conservation and carbon reduction.• Partners: Guanxi Hua-Kuang Mentally Challenged Center, Hsinchu Intellectual Disability Welfare Association, National Hsinchu Special School, Good Shepherd Social Welfare Foundation, Nan Jeon University of Science and Technology, Deguang Catholic Senior High School, Delan Special Education School	

Music groups

Ukelele Club	Sessions held: 11
<ul style="list-style-type: none">• Beneficiaries: Underprivileged students• Volunteer services: Services for children living in remote areas, Ukulele instructions for children living in remote areas, Charity performances• Partners: Youth At-Risk Ministry in Catholic Hsinchu Diocese, Saint Joseph Social Welfare Foundation, Regeneration Etude	
Music lover club	Sessions held: 4
<ul style="list-style-type: none">• Beneficiaries: Disadvantaged school children• Volunteer services: Actively involved in community activities, Supporting charity activities of the Foundation, Involved in charity work through music• Partners: Southern Taiwan Science Park Caring Month activities	
UMC HSP drum club	Sessions held: 3
<ul style="list-style-type: none">• Beneficiaries: Disadvantaged school children• Volunteer services: Charity performance• Partners: Catholic Social Service Center, Saint Joseph Social Welfare Foundation	

Sports clubs

Tai Chi Club	Sessions held: 2
<ul style="list-style-type: none">• Beneficiaries: Underprivileged senior citizens• Volunteer services: Donation and care activities at a senior home center• Partners: Hua-Kuang Social Welfare Foundation, Changan Nursing Home	

Service Reflection

Ling-Zhu Chen, member of the UMC Taichi Club

The welfare institutions in Hsinchu County lack funds and resources due to unstable donations and uncertain economy. For this reason, the UMC Taichi Club launched the charity activity, "Love in Huaguang and Love in Changan," calling on members of the club and employees to voluntarily donate money and resources (a total of NT\$39,000), and helping mentally challenged and disabled groups as well as those who have lost their financial support, (Changan Nursing Home, Hua-Kuang Mentally Challenged Center) and also those who suffer from dementia.

In addition to providing a healthy habit to the employees, the Taichi Club of UMC also undertakes the corporate social responsibility of the company, continuing to take care for disadvantaged groups in the society, delivering our love and enthusiasm to groups in need, and wishing them peace, health, and happiness. We will continue to work hard and are looking forward to meeting them again!



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4-4-3 UMC Science and Culture Foundation

The Foundation has long cared for the education of young people in Taiwan, nurturing young people, and supporting them. As the trend of the world changes, we respect the rich and diverse ethnic culture and recognize that every life is unique.

Through charity sponsorship, we supported the Mandarin Daily News to deliver newspapers to the mountains and encourage children to read. In 2005, we started the after-school tutoring program to help take care of the children after their classes. This program is a public welfare platform that connects social volunteers and college students to provide services with actions. We continued to support the cultivation of young karate students in Taiwan for more than ten years. To encourage young people to learn through different ways of thinking, we also offered assistance to the Teenager Performing Arts League, using drama education to guide high school students in gaining an understanding about society.

In addition to the above, we also encourage our employees to visit schools and act as storytelling and reading volunteers, and conduct training courses from time to time to corporate and social volunteers in order to enhance their competencies. In response to the changes in different eras, we collaborate with different public welfare groups to create social prosperity and every possibility for a better world.

Other community services by the Foundation are listed below:



Spreading the Seeds of Hope

The "Spreading the Seeds of Hope—Educational Assistance for Children from Disadvantaged Families" program was launched during UMC's 25th Anniversary Celebration to commit corporate resources to improve the education of school children from disadvantaged families. The program offers tutoring to school children from disadvantaged families in Hsinchu and Tainan.

Outcome

Provided a total of **1,560 hours** of remedial classes to **217 students** in Tainan & Hsinchu in 2019. UMC employees provided a total of **7,306 volunteer hours**.



UMC Love storyteller club

After the 2009 Typhoon Morakot Disaster, UMC sent 600 people to help clean up disaster areas in Pingtung. In the days following the disaster, employees formed the "UMC Love Storyteller Club" to harness their strength, and gave musical performances in Pingtung, Hsinchu, Tainan and other areas.

Outcome

Gave **69 performances** in 10 years. Through the performances, life education messages were delivered to a total audience of **more than 20,000 people**.



Storytelling volunteers

Encouraged employees to become storytellers and lead reading activities in Bao Shih elementary school in Hsinchu County. Through a diversity of themes and mediums, extra-curricular cultural materials are used to motivate reading in children.

Outcome

A total of **24 sessions** were conducted, totaling about **400 participants**



UMC Drum Club

In July 2013, UMC's former CEO Po-Wen Yen mobilized employees in Hsinchu and Southern Taiwan to form the Drum Club to reciprocate to society through the theme of "Make Friends Through Drums, Move Through Love." In addition, the personal involvement of the CEO helped motivate a spirit of volunteerism.

Outcome

A total of **40 moving** charity performances were given to **25,000 audience members** in 7 years.



IC Voice—"Be Reasonable" program by Teacher Hong Lan

UMC sponsors the IC Voice radio program, "Be Reasonable" by Teacher Hong Lan to promote correct educational perspectives.

Outcome

The sponsored program is in **its 11th year** since it began in 2009.

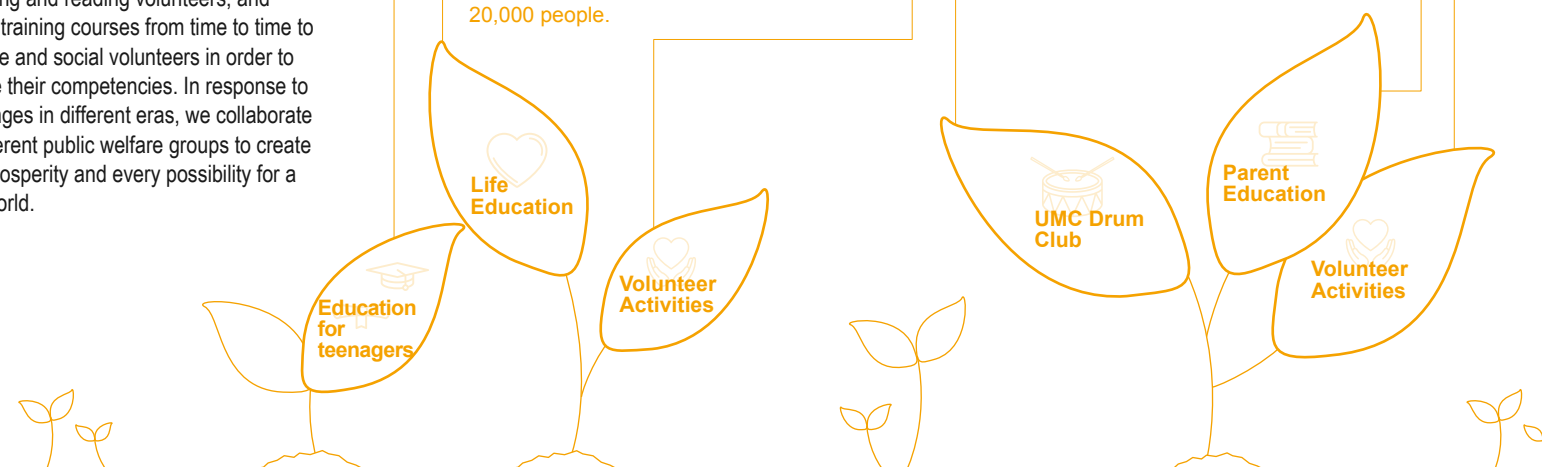


Letter Writing Volunteers

The Children and Families Fund adopted school children on behalf of the Foundation. In addition, employees volunteered to write letters to the adopted children to reach out and give encouragement. Such a simple friendship links the chain of love and hope.

Outcome

A total of **110 children** were adopted through the Children and Families Fund.



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4-4-4 Serving the Community with Core Professional Skills

UMC Fire Brigade

UMC established a high-tech fire brigade in April 1999, which has been in service for more than 20 years. During this period, UMC has sponsored firefighters from several county and city fire stations by sending them with the team members of the UMC Fire Brigade to train abroad (to countries such as the United States, Singapore, Austria, etc.), learning advanced firefighting drills.

Subsequently, an advanced fire scene simulation training facility was introduced to domestic firefighting circles, allowing all firefighters in Taiwan not only to learn higher-level firefighting skills, but to also receive safe firefighting training before the actual fire occurs. This improves fire scene awareness for training personnel, reducing unnecessary casualties and benefiting all public and private firefighting and emergency response units in Taiwan.



For more information
please visit

The UMC Fire Brigade is not only responsible for the safety and emergency rescue tasks of the company's fabs, but also continues to strengthen the professional skills in disaster relief, protecting the safety of UMC facilities as well as providing assistance to neighboring factories and communities in responding to accidents. The UMC high-tech fire brigade was involved in the public safety joint defense mechanism of the science park, which won the national industrial safety award, and also closely collaborates with the county and city fire departments. It has organized disaster prevention and rescue exercises in the Science Park Bureau, Environmental Protection Bureau and Fire Department, and has been invited to participate in joint disaster relief for a long period of time, and has experience in emergency response and disaster relief for nearby communities. In 2019, the UMC Fire Brigade was invited to sign a memorandum of cooperation with the Tainan City Fire Department to share resources with the municipal government, offering mutual support for regional joint defense, enhancing the capability of fire rescue, and supporting disaster relief in Tainan to reduce losses due to disasters.

Signing a memorandum of cooperation with the Tainan City Fire Department



In addition to regularly held basic training, the UMC Fire Brigade will also invite relevant suppliers to provide gas and chemical leakage response training and continue to improve its training for skills and strategies; hence, it has earned a positive reputation among domestic industries in work safety and environmental protection. In 2019, the Tainan City Fire Department conducted joint training with the UMC Fire Brigade in the fab area. The Environmental Protection Foundation of the Tainan Science Park also invited the UMC Fire Brigade to provide training on poisonous chemical related disasters for the work safety and environmental protection members of the Tainan Science Park. In addition, the Department of Occupation Safety and Health of Chia Nan University of Pharmacy and Science visited UMC, and the UMC Fire Brigade introduced their work and equipment involved in the factory area. Visiting teachers and students were invited to participate in the actual firefighting operations, deepening their experience about the job. The Science Park Bureau also invited the UMC Fire Brigade to share their experience on the practical cases of chemical disasters and the related contingency measures for the work safety and environmental protection personnel in the Science Park.

Tainan City Fire Department conducted joint training in the fab area



Training courses for Tainan Science Park's Environmental Protection Foundation



Students from Chia Nan University of Pharmacy and Science visiting UMC



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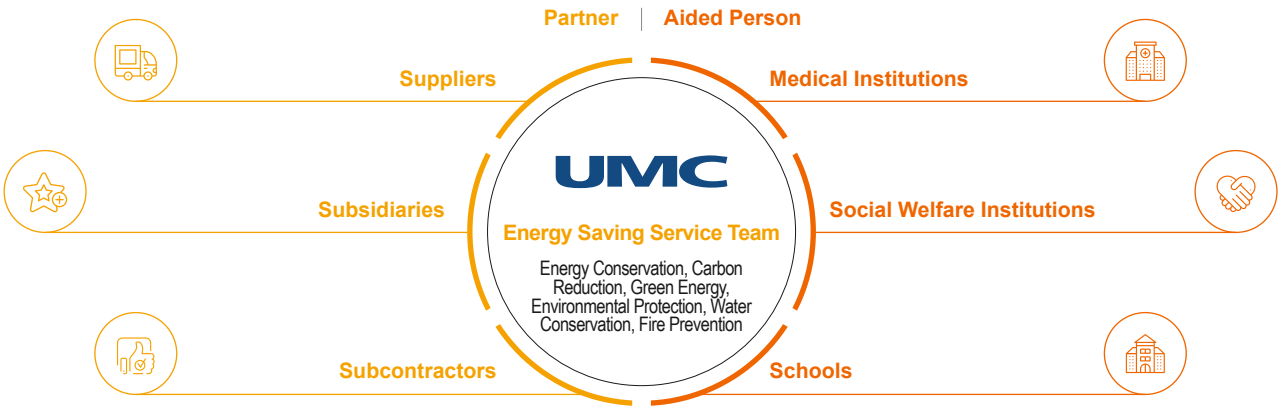
- 4-1 Labor Rights
- 4-2 Recruitment and Cultivation
- 4-3 Healthy and Safe Workplace
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UMC Energy Saving Service Team

The “Energy Saving Service Team” was established in 2016. With the parent company as the core platform, UMC works together with the “value chain” (subsidiaries, suppliers, and subcontractors). As of 2019, it has provided assistance to dozens of social welfare organizations for the disadvantaged, hoping to make them sustainable for a better society and to help these organizations conserve energy and reduce carbon emissions. The services include energy conservation and safety counseling, technical information on energy resources and engineering improvement so that disadvantaged populations may also enjoy living a life of energy conservation and carbon reduction.

In order to expand its services, the UMC “Southern Taiwan Science Park (STSP) Energy Saving Service Team” was established in March 2019, hoping to duplicate the services offered to UMC fabs in the Tainan Science Park. Through step-by-step guidance, the experience can be passed on to the UMC fabs in the Tainan Science Park, spreading UMC’s social responsibility to every corner in Taiwan and allowing enterprises, employees and the society to prosper together.



UMC "Southern Taiwan Science Park (STSP) Energy Saving Service Team"

UMC Energy Saving Service Team’s Solutions to Issues



United Nations Sustainable
Development Goals (SDGs)



Good Health and
Well-being

Provided fire prevention and home safety
counseling; promoted care quality.



Educational
Quality

Assisted with improving the teaching environment
and educational quality.



Clean Water and
Sanitation

- Provided water management technology to improve
water conservation and water sanitation.
- Assisted with maintenance to improve
environmental comfort and health.



Affordable and
Clean Energy

- Provided energy-saving technology to improve the
efficiency of resource use.
- Integrated the resources of the Group to provide
green energy technology (solar energy, LED).



The Paris Agreement

Help mitigate climate
change

Shared energy-saving experience and introduced
green energy environmental technology to help
welfare institutions reduce energy consumption and
greenhouse gas emissions.

Assist with adaptation to
climate change

Exchanged energy-saving knowledge to increase
resource management capabilities. Assisted with
improving engineering hardware or energy
management tools to enhance adaptability to
environmental changes.



Domestic Assessment for Aging, Disability, and Hearing
Impaired

Improve the work quality
of social welfare
providers

Provided energy-saving counseling to welfare
institutions to promote sustainable operations so
that the money saved may be used for workplace
improvement and service capability of the workers.

Improve the living
environment of care
recipients

Provided infrastructure counseling and
improvement (water, electricity, fire prevention) to
improve the living environment of care recipients
and ensure fire safety.

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Public Benefit Assessment

Looking at the contributions made by the volunteers of the Energy Saving Service Team from 2016 through 2019 in terms of manpower, time, and infrastructure, UMC estimates that the overall economic value generated in the society and the environment reached NT\$10 million, while CO₂ emissions were reduced by approximately 1,670 tons.

Implementation Results of the UMC Energy Saving Service Team

Investment		Output	
	873,500 NT\$		16,841,664 NT\$
Labor Cost		Economic benefit	
	2,164,711 NT\$		-1,670 Tons of CO ₂
Construction Cost		Environmental and social benefits	
	3,038,211 NT\$		16,841,664 NT\$
Total		Total	

Statistical Scope: Service Involvement and Output of the Energy Conservation Service Team from 2016 to 2019

Labor cost: Cost of volunteer participation (NT\$500 / hour).

Construction cost: Cost of improving hardware.

Economic benefit: Cost of energy saved in operations.



Helping Hsinchu Intellectual Disability Welfare Association to carry out energy-saving diagnosis and improvement



Helping National Hsinchu Special School to carry out energy-saving diagnosis and improvement



Helping Good Shepherd Social Welfare Foundation to carry out energy-saving diagnosis and improvement



Helping Nan Jeon University of Science and Technology to inspect its firefighting system



Helping Deguang Catholic Senior High School to carry out energy-saving diagnosis and improvement



Helping St. Theresa Opportunity Center to carry out energy-saving diagnosis and improvement

Good Shepherd Social Welfare Foundation

In 1987, Good Shepherd Social Welfare Foundation came to Taiwan due to the trafficking of girls, which started the rescue and protection services of Good Shepherd. Along the way, Good Shepherd has helped a lot of people and established three service bases in Hsinchu, taking care of abused women and children who are in need for 24 years. These women and children have experienced domestic violence, loss of relatives or caregivers, and homelessness, encountering a stormy life. The Good Shepherd Social Welfare Foundation is like a big umbrella which provides a shelter for those who are in need of recovery from physical and mental trauma. The Foundation also trained these women and children to be independent, so that they are well prepared for a new life in the future!

Sadly, over the years, the residential buildings of Good Shepherd Social Welfare Foundation have gradually deteriorated, leading to excessive power consumption due to problems such as water leakage or electrical appliances that cannot be effectively used. We would like to thank the Energy Saving Service Team that visited the residential buildings of the Good Shepherd Social Welfare Foundation in Hsinchu (Girls' Halfway House and Counseling Center for Children that have Witnessed Violence) to carry out safety and power inspections. The UMC Energy Saving Service Team is a group of volunteers with expertise in water, electricity, air conditioning and fire protection. Some volunteers also utilize their own resources, connecting with known maintenance engineers to provide repair services as well as energy-saving suggestions for organizations.

We are grateful to the UMC Energy Saving Service Team for the dedication of serving the Good Shepherd Social Welfare Foundation in Hsinchu. Together we can help more women and children who are being abused or have been abused. Owing to the help of the UMC Energy Saving Service Team, Good Shepherd Social Welfare Foundation is not alone!



Sister "Jing-Lian Tang" (left), CEO of the Catholic Good Shepherd Social Welfare Foundation, and "Yi-Fang Chen" (right), Director of the Good Shepherd in Hsinchu Region

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Appendix I: Joint Ventures and Subsidiaries

The ventures of the company and its affiliated enterprises include wafer manufacturing, electronics, optoelectronics industry, investment, insurance and trading industries. In 2019, revenue contribution from UMC's wafer fabrication accounted for the vast majority of the Company's total sales revenue, with the remainder generated from New Business Development division's solar energy ventures.

This report is based on the results of the differentiation between each of Chapter One's substantive sustainability issues, and provides the following separate descriptions based on the category of the subsidiary company and the nature of its industry.

The two sales and production projects of HeJian Technology (Suzhou) Co., Ltd. and United Semiconductor (Xiamen) Co., Ltd. are both integrated circuit manufacturing and sales subsidiaries of UMC, and their relevant information is disclosed together with information on UMC in each chapter.



United Semiconductor Japan Co., Ltd. (USJC), a subsidiary of UMC which is also specialized in integrated circuit manufacturing and sales, was incorporated in October 2019. We plan to disclose the information for USJC after 2020 together with UMC's information in the various sections.



The two manufacturing category subsidiary companies of Wavetek and NexPower have promoted management of various sustainable issues in accordance with the UMC Code of Conduct. In 2019, there were no significant fines for violating relevant laws and regulations for either company, nor was there any forced labor, human rights complaints or incidents of corruption. Please refer to the following websites for relevant environmental management system certification promotion circumstances.

- (1) Wavetek: <http://www.wtkmicro.com/en-global>
- (2) NexPower: <http://www.nexpw.com/?culture=en-US>
- (3) For information on the economic performance and financial affairs of each subsidiary and for information on other subsidiaries, please refer to the relevant information on affiliated enterprise organizations on page 170 of our 2019 Annual Report.

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10 Principles	Related CSR Report Section	Page(s)
Human Rights		
Businesses should support and respect the protection of internationally proclaimed human rights.	4-1 Labor Rights	p100
Make sure that they are not complicit in human rights abuses.	2-5 Sustainable Supply Chain Management 4-1 Labor Rights	p47 p100
Labor		
Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	4-1 Labor Rights	p100
The elimination of all forms of forced and compulsory labor.	4-1 Labor Rights	p100
The effective abolition of child labor.	4-1 Labor Rights	p100
The elimination of discrimination in respect of employment and occupation.	4-1 Labor Rights	p100
Environment		
Businesses should support a precautionary approach to environmental challenges.	3 Environmentally Friendly Management	p60
Undertake initiatives to promote greater environmental responsibility.	3 Environmentally Friendly Management	p60
Encourage the development and diffusion of environmentally friendly technologies.	2-2 Innovation Management 3-5 Green Product	p32 p93
Anti-Corruption		
Businesses should work against corruption in all its forms, including extortion and bribery.	2-1-5 Code of Ethics and Anti-Corruption	p30

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 Organizational profile				
102-1 Name of the organization	About UMC	p6		●
102-2 Activities, brands, products, and services	About UMC	p6		●
102-3 Location of headquarters	About UMC	p6		●
102-4 Location of operations	About UMC	p6		●
102-5 Ownership and legal form	About UMC	p6		●
102-6 Markets served	About UMC	p6		●
102-7 Scale of the organization	About UMC 2-2-2 Business Performance	p6 p35	For more information, please refer to the 2019 Annual Report (page 139).	●
102-8 Information on employees and other workers	4-2-1 Human Resource	p108		●
102-9 Supply chain	2-5 Sustainable Supply Chain Management	p47		●
102-10 Significant changes to the organization and its supply chain	About UMC 2-5 Sustainable Supply Chain Management	p6 p47	In October 2019, UMC acquired all the equity of USJC, a company based in Japan.	●
102-11 Precautionary Principle or approach	2-1-4 Internal Audit 2-2 Innovation Management 2-4 Risk and Crisis Management	p29 p32 p42		●
102-12 External initiatives	2-5-3 Conflict Minerals Management 3-2-1 Risks and Opportunities 4-1-1 Human Rights	p59 p71 p100		●
102-13 Membership of associations	About UMC	p6		●
 Strategy				
102-14 Statement from senior decision-maker	Corporate Sustainability Committee Chairman Message	p1		●
102-15 Key impacts, risks, and opportunities	1-2-2 Procedure for Defining Report Content 2-2 Innovation Management 2-4 Risk and Crisis Management 3-2-1 Risks and Opportunities 3-3-1 Water Risks and Opportunities	p13 p32 p42 p71 p80		●
 Ethics and integrity				
102-16 Values, principles, standards, and norms of behavior	2-1-5 Code of Ethics and Anti-Corruption 2-5-2 Sustainable Supply Chain Management	p30 p50		●
102-17 Mechanisms for advice and concerns about ethics	2-1-5 Code of Ethics and Anti-Corruption	p30		●

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 Governance				
102-18 Governance structure	1-1 Sustainable Development Strategy and Organization 2-1-1 Board of Directors	p9 p26		●
102-19 Delegating authority	1-1 Sustainable Development Strategy and Organization	p9		●
102-20 Executive-level responsibility for economic, environmental, and social topics	1-1 Sustainable Development Strategy and Organization	p9		●
102-21 Consulting stakeholders on economic, environmental, and social topics	1-1 Sustainable Development Strategy and Organization 1-2-1 Mechanisms for Stakeholder Communication	p9 p13		●
102-22 Composition of the highest governance body and its committees	2-1-1 Board of Directors	p26		●
102-23 Chair of the highest governance body	2-1-1 Board of Directors	p26		●
102-24 Nominating and selecting the highest governance body	2-1-1 Board of Directors	p26		●
102-25 Conflicts of interest	2-1-1 Board of Directors	p26		●
102-26 Role of highest governance body in setting purpose, values, and strategy	1-1 Sustainable Development Strategy and Organization	p9		●
102-27 Collective knowledge of highest governance body	2-1-1 Board of Directors	p26		●
102-28 Evaluating the highest governance body's performance	1-1 Sustainable Development Strategy and Organization 2-1-1 Board of Directors 2-1-2 UMC Functional Committee	p9 p26 p28		●
102-29 Identifying and managing economic, environmental, and social impacts	1-1 Sustainable Development Strategy and Organization	p9		●
102-30 Effectiveness of risk management processes	1-1 Sustainable Development Strategy and Organization	p9		●
102-31 Review of economic, environmental, and social topics	1-1 Sustainable Development Strategy and Organization	p9		●
102-32 Highest governance body's role in sustainability reporting	1-1 Sustainable Development Strategy and Organization About This Report	p9 p2		●
102-33 Communicating critical concerns	1-1 Sustainable Development Strategy and Organization	p9		●
102-34 Nature and total number of critical concerns	1-1 Sustainable Development Strategy and Organization	p9		●
102-35 Remuneration policies	2-1-2 UMC Functional Committee	p28		●
102-36 Process for determining remuneration	2-1-2 UMC Functional Committee	p28		●
102-37 Stakeholders' involvement in remuneration	2-1-2 UMC Functional Committee 4-2-2 Compensation and Benefits	p28 p113		●
102-38 Annual total compensation ratio	2-1-2 UMC Functional Committee	p28		●
102-39 Percentage increase in annual total compensation ratio	2-1-2 UMC Functional Committee	p28		●
 Stakeholder engagement				
102-40 List of stakeholder groups	1-2 Communication with Stakeholders	p13		●
102-41 Collective bargaining agreements	4-1 Labor Rights	p100	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	1-2 Communication with Stakeholders	p13		●
102-43 Approach to stakeholder engagement	1-2 Communication with Stakeholders	p13		●
102-44 Key topics and concerns raised	1-2 Communication with Stakeholders	p13		●

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	Location	Page number/or URL	Notes/Omissions	External Assurance
 Reporting practice				
102-45 Entities included in the consolidated financial statements	About UMC Appendix I: Joint Ventures and Subsidiaries	p6 p147		●
102-46 Defining report content and topic Boundaries	1-2-2 Procedure for Defining Report Content	p13		●
102-47 List of material topics	1-2-2 Procedure for Defining Report Content	p13		●
102-48 Restatements of information			Information update: The total number of patents reported in 2018 was 112,991. However, the actually number is 112,992, which was corrected.	●
102-49 Changes in reporting	About This Report 1-2-2 Procedure for Defining Report Content	p2 p13		●
102-50 Reporting period	About This Report	p2		●
102-51 Date of most recent report	About This Report	p2		●
102-52 Reporting cycle	About This Report	p2		●
102-53 Contact point for questions regarding the report	About This Report	p2		●
102-54 Claims of reporting in accordance with the GRI Standards	About This Report	p2		●
102-55 GRI content index	Appendix III: GRI Content Index	p148		●
102-56 External assurance	About This Report	p2	Appendix V: Assurance Statement	●

Material Topic

	Location	Page number/or URL	Notes/Omissions	External Assurance
 201 Economic Performance Management Approach: 2-2 Innovation Management p32				
201-1 Direct economic value generated and distributed	About UMC 2-2-2 Business Performance 4-2-2 Compensation and Benefits	p6 p35 p113	For more information, please refer to the 2019 Annual Report (page 151).	●
201-2 Financial implications and other risks and opportunities due to climate change	2-2-4 Measurement and Evaluation of True Value 3-2-1 Risks and Opportunities	p37 p71		●
201-3 Defined benefit plan obligations and other retirement plans	4-2-2 Compensation and Benefits	p113		●
201-4 Financial assistance received from government			For more information, please refer to the 2019 Annual Report (pages 250).	●
 202 Market Presence Management Approach: 4-2 Recruitment and Cultivation p108				
202-1 Ratios of standard entry level wage by gender compared to local minimum wage	4-2-2 Compensation and Benefits	p113		
202-2 Proportion of senior management hired from the local community	4-2-1 Human Resource	p108		
 204 Procurement Practices Management Approach: 2-5 Sustainable Supply Chain Management p47				
204-1 Proportion of spending on local suppliers	2-5-1 Localize Supply Chain and Procurement	p49		●

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 205 Anti-corruption	Management Approach: 2-1 Company Governance	p25		
205-1 Operations assessed for risks related to corruption	2-1-5 Code of Ethics and Anti-Corruption 4-1-1 Human Rights	p30 p100		●
205-2 Communication and training about anti-corruption policies and procedures	2-1-5 Code of Ethics and Anti-Corruption 4-1-1 Human Rights	p30 p100		●
205-3 Confirmed incidents of corruption and actions taken	2-1-5 Code of Ethics and Anti-Corruption	p30		●
 302 Energy	Management Approach: 3-2 Carbon Asset Management	p71		
302-1 Energy consumption within the organization	3-2-2 Greenhouse Gas Inventory	p75		●
302-2 Energy consumption outside of the organization	3-2-2 Greenhouse Gas Inventory	p75		●
302-3 Energy intensity	3-2-3 Greenhouse Gas Reduction	p76		●
302-4 Reduction of energy consumption	3-2-3 Greenhouse Gas Reduction	p76		●
302-5 Reductions in energy requirements of products and services	2-2-3 Investment to Enhance Competitiveness 3-2-1 Risks and Opportunities 3-2-3 Greenhouse Gas Reduction 3-5 Green Product	p36 p71 p76 p93		●
 303 Water and Effluents (GRI Standards_2018)	Management Approach: 3-3 Water Risk Management	p80		
303-1 Interactions with water as a shared resource	3-3-1 Water Risks and Opportunities	p80		●
303-2 Management of water discharge-related impacts	3-3-4 Water Pollution Control	p87		●
303-3 Water withdrawal	3-3-2 Fab Water Source 3-3-3 Water Conservation During Manufacturing	p82 p83		●
303-4 Water discharge	3-3-4 Water Pollution Control	p87		●
303-5 Water consumption	3-3-3 Water Conservation During Manufacturing	p83		●
 305 Emissions	Management Approach: 3-1 Clean Production 3-2 Carbon Asset Management	p63 p71		
305-1 Direct (Scope 1) GHG emissions	3-2-2 Greenhouse Gas Inventory	p75		●
305-2 Energy indirect (Scope 2) GHG emissions	3-2-2 Greenhouse Gas Inventory	p75		●
305-3 Other indirect (Scope 3) GHG emissions	3-2-2 Greenhouse Gas Inventory	p75		●
305-4 GHG emissions intensity	3-2-2 Greenhouse Gas Inventory	p75		●
305-5 Reduction of GHG emissions	3-2-2 Greenhouse Gas Inventory	p75		●
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	3-1-3 Air Pollution Control	p66		●

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 306 Effluents and Waste	Management Approach: 3-3 Water Risk Management 3-4 Waste Management	p80 p89		
306-1 Water discharge by quality and destination	3-3-4 Water Pollution Control	p87		●
306-2 Waste by type and disposal method	3-4-1 Source Reduction 3-4-2 Promotion of the Circular Economy	p89 p91		●
306-3 Significant spills			No spills occurred during the reporting period.	●
306-4 Transport of hazardous waste	3-4-1 Source Reduction 3-4-2 Promotion of the Circular Economy	p89 p91		●
306-5 Water bodies affected by water discharges and/or runoff	3-3-4 Water Pollution Control	p87		●
 307 Environmental Compliance	Management Approach: 3-1 Clean Production 2-1 Company Governance	p63 p25		
307-1 Non-compliance with environmental laws and regulations	2-1-6 Legal Compliance	p30	No non-compliance events concerning environmental laws and regulations occurred during the reporting period.	●
 308 Supplier Environmental Assessment	Management Approach: 2-5 Sustainable Supply Chain Management	p47		
308-1 New suppliers that were screened using environmental criteria	2-5-2 Sustainable Supply Chain Management	p50		●
308-2 Negative environmental impacts in the supply chain and actions taken	2-5-2 Sustainable Supply Chain Management	p50		●
 401 Employment	Management Approach: 4-2 Recruitment and Cultivation	p108		
401-1 New employee hires and employee turnover	4-2-1 Human Resource	p108		●
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	4-2-2 Compensation and Benefits	p113		●
401-3 Parental leave	4-2-2 Compensation and Benefits	p113		●
 402 Labor/Management Relations	Management Approach: 4-1 Labor Rights	p100		
402-1 Minimum notice periods regarding operational changes	4-1-1 Human Rights	p100		●
 403 Occupational Health and Safety (GRI Standards_2018)	Management Approach: 4-3-2 Safe Work Environment	p134		
403-1 Occupational health and safety management system	4-3-2 Safe Work Environment	p134		●
403-2 Hazard identification, risk assessment, and incident investigation	4-3-2 Safe Work Environment	p134		●
403-3 Occupational health services	4-3-2 Safe Work Environment	p134		●
403-4 Worker participation, consultation, and communication on occupational health and safety	4-3-2 Safe Work Environment	p134		●
403-5 Worker training on occupational health and safety	4-3-2 Safe Work Environment	p134		●
403-6 Promotion of worker health	4-3-2 Safe Work Environment	p134		●
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	4-3-2 Safe Work Environment	p134		●
403-8 Workers covered by an occupational health and safety management system	4-3-2 Safe Work Environment	p134		●
403-9 Work-related injuries	4-3-2 Safe Work Environment	p134		●
403-10 Work-related ill health	4-3-1 Healthy Workplace 4-3-2 Safe Work Environment	p124 p134	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 of the Healthy Workplace chapter.	●

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 404 Training and Education	Management Approach: 4-2 Recruitment and Cultivation	p108		
404-1 Average hours of training per year per employee	4-2-3 Education and Training	p115		●
404-2 Programs for upgrading employee skills and transition assistance programs	4-2-3 Education and Training	p115		●
404-3 Percentage of employees receiving regular performance and career development reviews	4-2-3 Education and Training	p115		●
 405 Diversity and Equal Opportunity	Management Approach: 4-2 Recruitment and Cultivation	p108		
405-1 Diversity of governance bodies and employees	4-2-1 Human Resource	p108		●
405-2 Ratio of basic salary and remuneration of women to men	4-2-2 Compensation and Benefits	p113		●
 406 Non-discrimination	Management Approach: 4-1 Labor Rights	p100		
406-1 Incidents of discrimination and corrective actions taken	4-1-1 Human Rights	p100	None for discriminatory incidents.	●
 407 Freedom of Association and Collective Bargaining	Management Approach: 4-1 Labor Rights	p100		
407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	4-1-1 Human Rights	p100		●
 408 Child Labor	Management Approach: 4-1 Labor Rights	p100		
408-1 Operations and suppliers at significant risk for incidents of child labor	4-1-1 Human Rights	p100		●
 409 Forced or Compulsory Labor	Management Approach: 4-1 Labor Rights	p100		
409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	4-1-1 Human Rights	p100		●
 412 Human Rights Assessment	Management Approach: 4-1 Labor Rights	p100		
412-1 Operations that have been subject to human rights reviews or impact assessments	4-1-1 Human Rights	p100		●
412-2 Employee training on human rights policies or procedures	4-1-1 Human Rights	p100		●
412-3 Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening			No significant investment agreements and contracts were signed during the reporting period.	●
 414 Supplier Social Assessment	Management Approach: 2-5 Sustainable Supply Chain Management	p47		
414-1 New suppliers that were screened using social criteria	2-5-2 Sustainable Supply Chain Management	p50		●
414-2 Negative social impacts in the supply chain and actions taken	2-5-2 Sustainable Supply Chain Management	p50		●
 418 Customer Privacy	Management Approach: 2-3 Customer Service	p39		
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	2-3-1 Protecting Customer Assets	p39	There were no cases during the reporting period.	●
 419 Socioeconomic Compliance	Management Approach: 2-1 Company Governance	p25		
419-1 Non-compliance with laws and regulations in the social and economic area	2-1-6 Legal Compliance	p30		●
 Others: Innovation Management	Management Approach: 2-2 Innovative Management	p32		
Innovative new products and technologies	2-2 Innovative Management	p32		●

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Appendix IV: ISO 26000 Index

	Core Subjects and Issues	Related CSR Report Section	Page(s)
Organizational governance	Decision-making processes and structures	SustainableDevelopment Strategy and Organization 2-1 Corporate Governance	p9 p25
Human rights	Due diligence	2-5 Sustainable Supply Chain Management 4-1-1 Human Rights	p47 p100
	Human rights risk situations	2-5 Sustainable Supply Chain Management 4-1-1 Human Rights	p47 p100
	Avoidance of complicity	2-1 Company Governance 4-1-1 Human Rights	p25 p100
	Resolving grievances	2-1-5 Code of Ethics and Anti-Corruption 4-1-1 Human Rights 4-1-2 Employer-employee Communication	p30 p100 p104
	Discrimination and vulnerable groups	4-1-1 Human Rights 4-4 Community Service	p100 p139
	Civil and political rights	4-1-1 Human Rights	p100
	Economic, social and cultural rights	4-4 Community Service	p139
	Fundamental principles and rights at work	4-1 Labor Rights	p100
Labor practices	Employment and employment relationships	4-2 Recruitment and Cultivation	p108
	Conditions of work and social protection	4-1-1 Human Rights 4-3 Healthy and Safe Workplace	p100 p124
	Social dialogue	1-2 Communication with the Stakeholders 4-1-2 Employer-employee Communication	p13 p104
	Health and safety at work	4-3-1 Healthy Workplace 4-3-2 Safe Work Environment	p124 p134
	Human development and training in the workplace	4-2-3 Education and Training	p115
The environment	Prevention of pollution	3-1 Clean Production 3-2-3 Greenhouse Gas Reduction 3-3-4 Water Pollution Control 3-4-3 Proper Waste Disposal	p63 p76 p87 p92
	Sustainable resource use	3-1 Clean Production 3-2-3 Greenhouse Gas Reduction 3-3-3 Water Conservation During Manufacturing 3-4-2 Promotion of the Circular Economy	p63 p76 p83 p91
	Climate change mitigation and adaptation	3-2 Carbon Asset Management 3-3 Water Risk Management	p71 p80
	Protection of the environment, biodiversity and restoration of natural habitats	3-1-4 Promoting the "Green" Concept	p67

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	Core Subjects and Issues	Related CSR Report Section	Page(s)
Fair operating practices	Anti-corruption	2-1-5 Code of Ethics and Anti-Corruption	p30
	Responsible political involvement	UMC did not provide any political donations in the reporting year.	
	Fair competition	4-1-1 Human Rights	p100
	Promoting social responsibility in the value chain	2-5 Sustainable Supply Chain Management	p47
	Respect for property rights	2-1-6 Legal Compliance	p30
Consumer issues	Fair marketing, factual and unbiased information and fair contractual practices	2-1 Corporate Governance	p25
	Protecting consumers' health and safety	3-5 Green Product	p93
	Sustainable consumption	2-5 Sustainable Supply Chain Management 2-5-3 Conflict Minerals Management	p47 p59
	Consumer service, support, and complaint and dispute resolution	2-3 Customer Service	p39
	Consumer data protection and privacy	2-3 Customer Service	p39
	Access to essential services	2-3 Customer Service	p39
	Education and awareness	2-3 Customer Service	p39
Community involvement and development	Community involvement	4-4 Community Service	p139
	Education and culture	4-2-4 Cultivating Prospective Talents 4-4-1 Community Service Participation	p121 p139
	Employment creation and skills development	2-2 Innovation Management 4-2 Recruitment and Cultivation 4-2-4 Cultivating Prospective Talents	p32 p108 p121
	Technology development and access	2-2 Innovation Management	p32
	Wealth and income creation	4-4 Community Service	p139
	Health	4-4 Community Service 4-4-2 Promotion of UMC Volunteer Culture	p139 p142
	Social investment	4-4 Community Service	p139

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ASSURANCE STATEMENT

SGS TAIWAN LTD.'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE UNITED MICROELECTRONICS CORPORATION'S CORPORATE SOCIAL RESPONSIBILITY REPORT FOR 2019

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 2019 (hereinafter referred to as CSR 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. 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.

The information in the UMC's CSR Report of 2019 and its presentation are the responsibility of the management of UMC. SGS has not been involved in the preparation of any of the material included in UMC's CSR Report of 2019.

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.

The SGS protocols are based upon internationally recognized guidance, including the Principles contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) 101: Foundation 2016 for accuracy and reliability and the guidance on levels of assurance contained within the AA1000 series of standards and guidance for Assurance Providers.

This report has been assured using our protocols for:

- ☑ 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 (2008) Type 2 evaluation of the report content and supporting management systems against the AA1000 Accountability Principles (2008); 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.

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. 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 information and data contained within UMC's CSR Report of 2019 verified is accurate, reliable and provides a fair and balanced representation of UMC sustainability activities in 01/01/2019 to 12/31/2019.

The assurance team is of the opinion that the Report can be used by the Reporting Organisation's Stakeholders. We believe that the organisation has chosen an appropriate level of assurance for this stage in their reporting. In our opinion, the contents of the report meet the requirements of GRI Standards in accordance with Comprehensive Option and AA1000 Assurance Standard (2008) Type 2, High level assurance.

AA1000 ACCOUNTABILITY PRINCIPLES (2008) CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

Inclusivity

UMC has demonstrated a good commitment to stakeholder inclusivity and stakeholder engagement. A variety of engagement efforts such as survey and communication to employees, customers, investors, suppliers, CSR experts, and other stakeholders are implemented to underpin the organization's understanding of stakeholder concerns. UMC has implemented high-level engagement of collaboration to undertake a joint project - UMC Eco Echo Award to promote the stakeholders to participate in the sustainability issues enthusiastically.

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.

Responsiveness

The report includes coverage given to stakeholder engagement and channels for stakeholder feedback.

GLOBAL REPORTING INITIATIVE REPORTING STANDARDS CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

The report, UMC's CSR Report of 2019, 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. For future reporting, the detailed evaluation of the effectiveness of the management approach may be further enhanced (103-3). Furthermore, more disclosures of risks and opportunities posed by climate change, such as the costs of actions taken to manage the risk or opportunity, are expected (201-2).

Signed:

For and on behalf of SGS Taiwan Ltd.

David Huang
Senior Director
Taipei, Taiwan
26 May, 2020
WWW.SGS.COM



AA1000
Licensed Assurance Provider
000-B



CORPORATE SOCIAL RESPONSIBILITY REPORT



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Corporate Social Responsibility Report: <http://www.umc.com/English/CSR/b.asp>