GlobalWafers Co., Ltd.

2019

Corporate Social Responsibility Report

目錄 Contents

About This Report

Report Axis

GlobalWafers Co., Ltd. (hereinafter referred to as GlobalWafers) is a professional silicon wafer supplier and manufactures products for integrated circuit and power electronics applications. In response to global climate change and the latest development trends in corporate social responsibilities (CSR), GlobalWafers has taken the initiative to compile a CSR report. Based on long-term in- depth interactions with local communities and engagement with stakeholders, GlobalWafers discloses in the report relevant information on material issues regarding the four aspects of corporate governance, economy, environment, and society, as well as execution & improvement results, in addition to presenting the future vision and goals in terms of sustainable development.

Report Editing And Final Draft

GlobalWafers compiles and organizes relevant information and edits this report through the following procedures.

- Planning, Compiling and Organizing

  Principal members of the CSR task force (comprising the President's Office and the Health and Safety Management Department) are in charge of the overall planning, information compilation & organization, communication & integration, and editing & revisions.

- Editing Procedures, Review and Final Draft

  After members of the Corporate Sustainable Development Committee have collected all relevant information and written the report and have the da ta in the report verified by the heads of all departments, it is then submitted to the Chairperson (Chairperson of the Corporate Sustainable Development Committee) for review, then finalized for publishing.

Reporting Standards

The contents and structure of this report primarily follow the core indicators outlined in the Sustainability Reporting Guidelines released by the Global Reporting Initiative (GRI). Additionally, this report also conforms to the Rules Governing the Preparation and Filing of Corporate Social Responsibility Reports by TWSE Listed Companies and TCFD (Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures). Key issues of concern to stakeholders are disclosed and responded to in relevant chapters based on materiality analysis results.

Report Boundaries And Reporting Period

This is the 3rd CSR report released by GlobalWafers. Its reporting period and scope are as follows:

Publication Time: June 2020

Reporting Period: January 1, 2019 to December 31, 2019

Previous Publication Time: June 2019

Reporting Scope:

Regarding operation & manufacturing sites, the data collection is currently not completed for some of GlobalWafers' operation sites, resulting in the lack of disclosure of performance data for some of the sites covered in the major consideration aspects in this annual report. In 2018, we established a data collection mechanism hoping to include all disclosed performance data for all operation sites fo r the next 3 years covered in the major consideration aspects.

Reporting Scope as Illustrated From The Following Performances:

Economic performance:

Covers all operation & manufacturing sites including GlobalWafers Headquarters, GlobalWafers Chunan Plant, TAISIL Electronic Materials Corp., GlobalWafers Japan Co. Ltd., MEMC Japan Ltd., MEMC Korea Company, Kunshan Sino Silicon Technology Co. Ltd., MEMC Electronic Materials Sdn. Bhd., GlobiTech Incorporated. MEMC LLC, MEMC Electronic Materials S.p.A, Topsil GlobalWafers A/S, GlobalWafers Singapore Pte. Ltd. All financial data are audited and certified by KPMG in accordance with International Financial Reporting Standards (IFRS) and calculated in NT dollars.

Environmental Performance:

Except Singapore office, all other operation & manufacturing sites are all included into the reporting scope of environmental performance. All responsible departments are in charge of compiling their own statistics. Only that certain data for offshore sites are yet completed, and the disclosure scope will be noted in the statistics information in this report.

Social Performance:

Staff statistics analysis covers all operation & manufacturing sites including Singapore office. Other performance scope is consistent with that of the environmental performance. Each responsible department is in charge of compiling its own statistics.

GlobalWafers will publish an annual corporate social responsibility report with its electronic file available for downloads & browsing in the Stakeholders Engagement on GlobalWafers' website.

Report Assurance

In order to ensure the report's conformity to the GRI Standards and to enhance the transparency and credibility of GlobalWafers' sustainability related information, the GlobalWafers Corporate Sustainable Development Committee has passed a resolution to commission an independent third- party certification body to verify the report. The report has since been verified by DNV GL Business Assurance Co., Ltd. to comply with the requirements of GRI Standards core options and the moderate level assurance requirements of DNV GL VeriSustain Protocol. For more details on the verification statement, please refer to the Appendix.

Contact

Should you have any comments or suggestions regarding this report, please feel free to contact us in one of the following ways:

GlobalWafers Co., Ltd.

Contact Person: Spokesperson Mr. Wei-Wen Chen, Vice President

Tel.: 03-577-2255 # 2280

Acting Spokesperson: Mr. Pao-Chuan Chen, Manager

Tel.: 03-578-3131 # 1361

Address: No. 8. Industrial East Road 2, Science Park, Hsinchu, Taiwan

E-mail: GWCIR@sas-globalwafers.com

Website: http://www.sas-globalwafers.com/pages/gw/tw/index.aspx

Sustainability Performance Overview

Aspects	Material Topics	2020 Goals	2020 of Goal Achievements
Economic Aspect	Corporate governance	• Maintain within the top 5% among all listed OTC companies	--
	Ethics & integrity / Anti-corruption	• No unethical or dishonest incidents	--
	Operational performance	• Sustained profit • Maintaining a sound financial structure	--
	Legal compliance	• Complete inventory and improvement in accordance with the internal regulations of all departments in Taiwan	--
Environmental Aspect	Energy resources consumption and reduction Greenhouse gas emission	• Plant power conservation rate >1% • Reduction on greenhouse gas emission > 1%	--
	Pollution prevention	• Unusual incident reported to competent authority ≦ 1	--
	Waste control	• Reduction on waste output >2%	--
Social Aspect	Employee education & training	• Growth in attendance rate of annual training courses ≧ 3%	--
	Friendly workplace (including issues like occupational safety and health, occupational health)	• No occurrence of occupational injuries • 0 major occupational disasters • 0 disputes related to human rights • Minimize expenses on labor dispute • CPR training participants ≧ 50% • 100% of new recruits completed education training on prevention against workplace violence and sexual harassment within 30 days of arrival	--
	Product quality and customer satisfaction	• Continuously improve quality, focus on product R&D to improve customer satisfaction	--

Economics Aspect

Corporate Governance KPI

IInformation disclosure and corporate governance appraisal and rating of TWSE listed companies

Ranking in the top ***5%*** of all listed OTC companies in the 6th corporate governance appraisal 2019

Ranking in the top ***5%*** of all listed OTC companies in the 5th corporate governance appraisal 2018

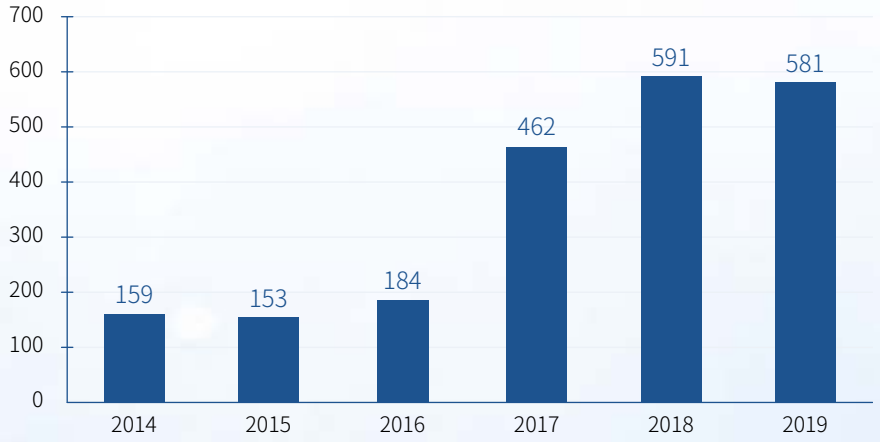
Ranking in the top ***20%*** of all listed OTC companies in the 4th corporate governance appraisal 2017

Ranking in the top ***20%*** of all listed OTC companies in the 3rd corporate governance appraisal 2016

Economy KPI

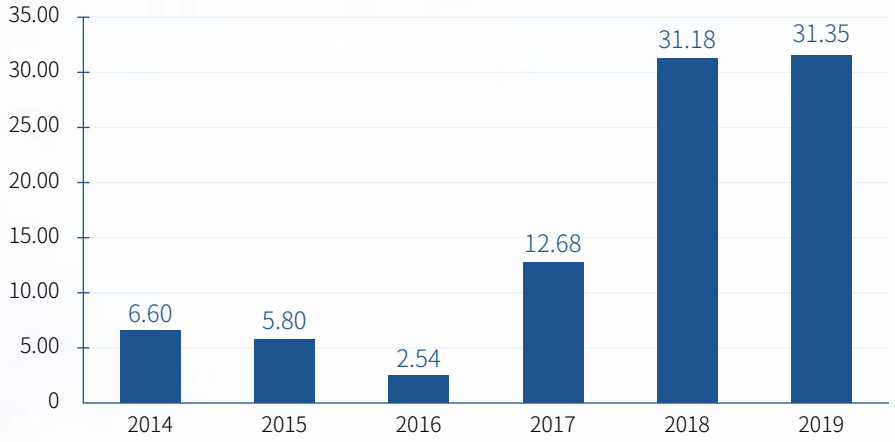
Consolidated Revenue

Unit: 100 million NTD



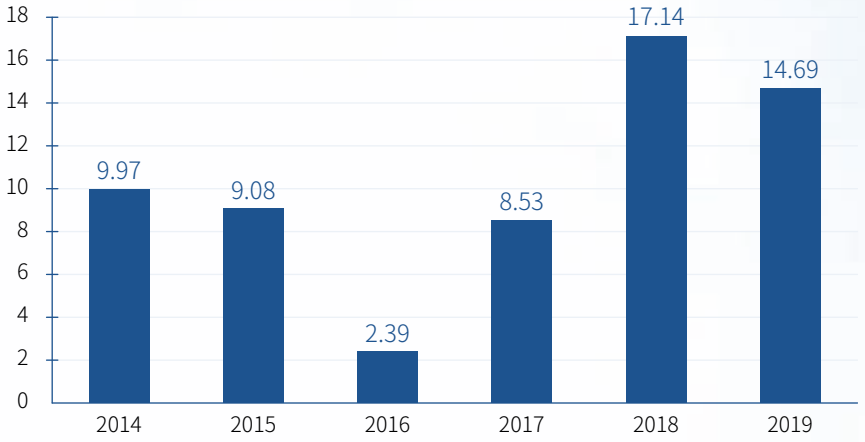
EPS

Unit: NTD



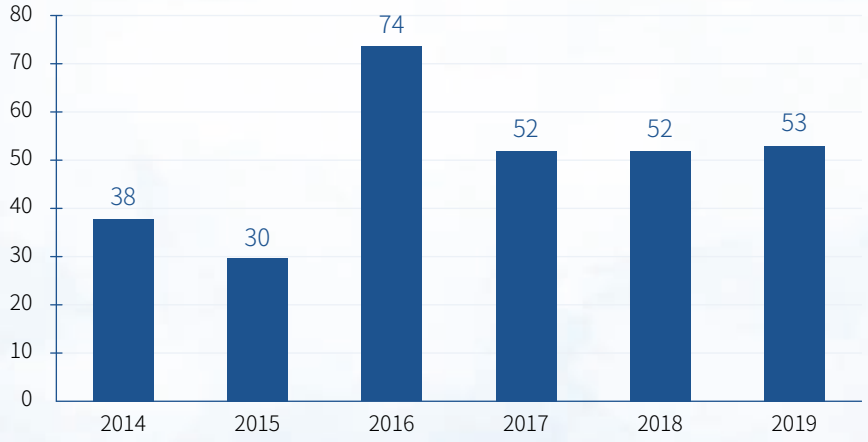
Return On Assets

Unit: %



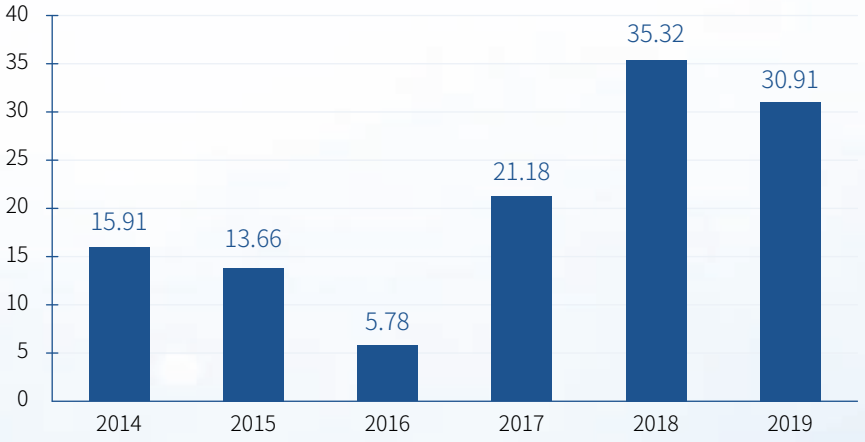
Debt To Asset Ratio

Unit: %



Return On Equity

Unit: %

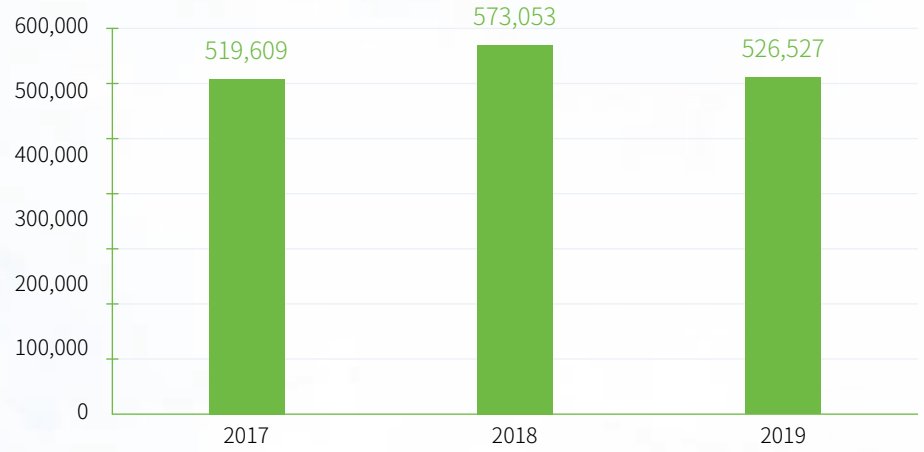


Environmental Aspect

Environmental KPI

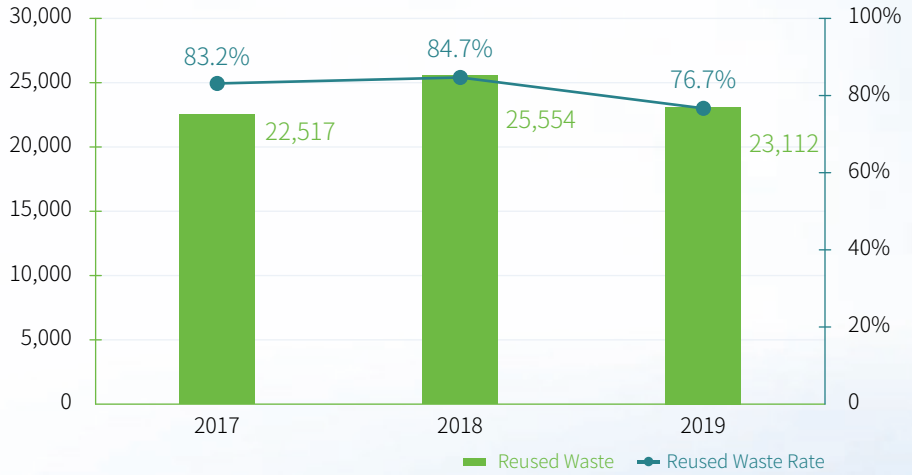
Carbon Dioxide Equivalent

Unit:ton CO2e/yrear



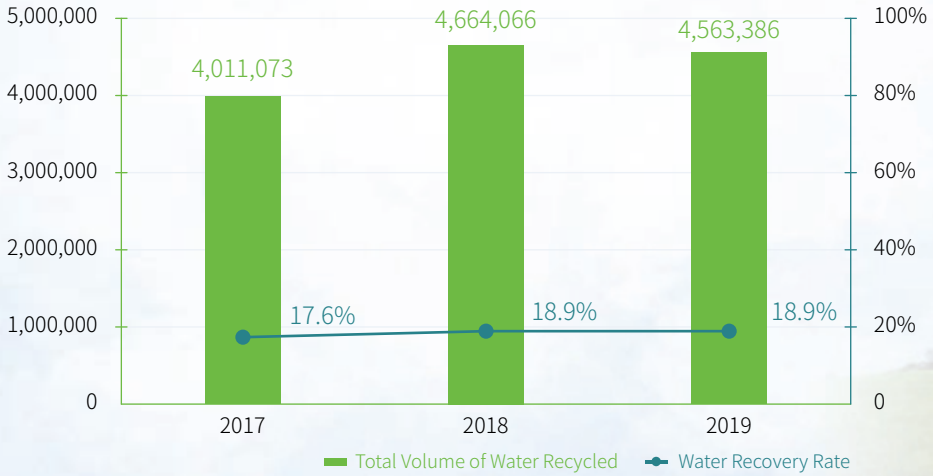
Reused Recycled Waste

Unit:Metric tons



Water Recovery

Unit:Metric tons

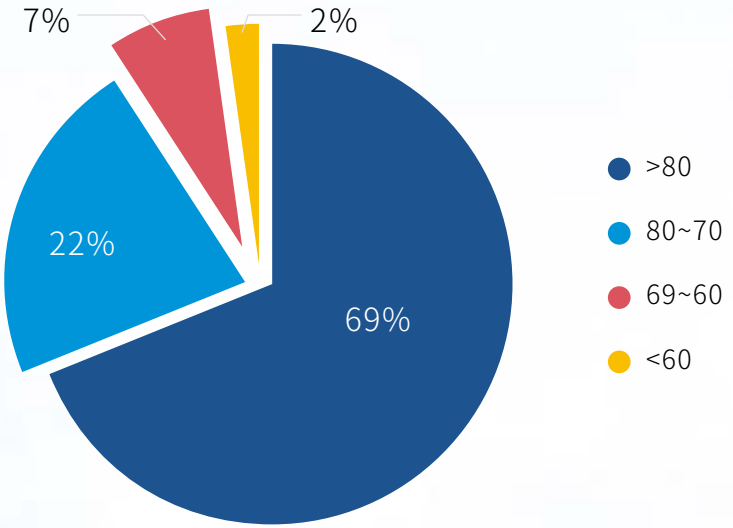


Social Aspect

Social KPI

Customer Satisfaction

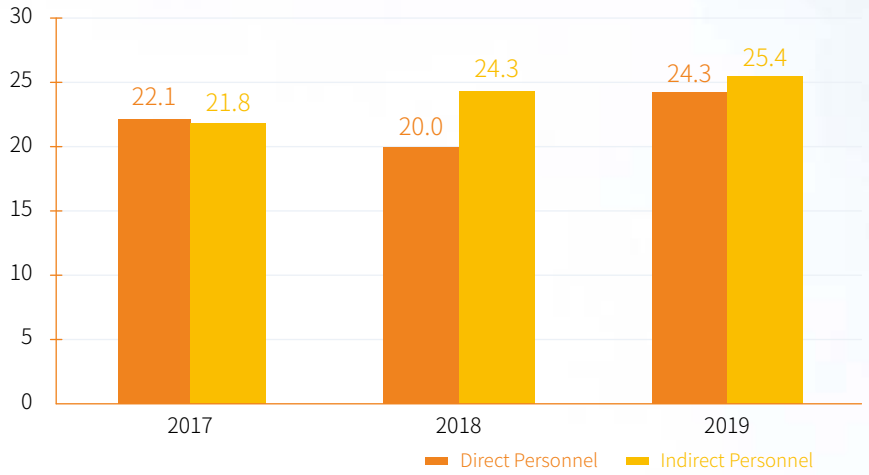
Unit: %



Year	>80%	80%~70%	69%~60%	<60%
2019	69%	22%	7%	2%
2018	50%	29%	13%	8%
2017	55%	27%	14%	4%
2016	74%	18%	6%	2%

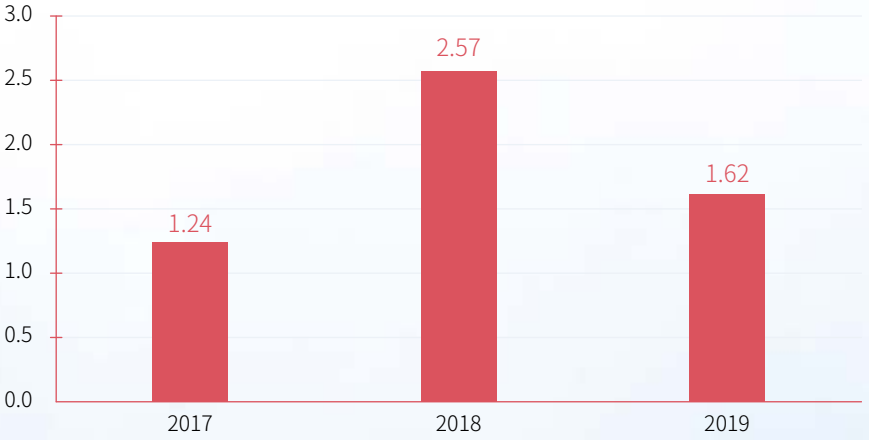
Average Training Hours Per Employee

Unit: hour



Disabling Frequency Rate

Unit:(FR)



Message From The Chairperson

GlobalWafers utilizes its cutting-edge trail-blazing technologies to speed up new manufacturing process and next-generation new products development since its separation into an independent company from SAS in 2011. Via vertical and horizontal integration of the company resources to drastically increase operating performance, GlobalWafers hopes to create greater values for investors, customers, and employees. Meanwhile, in order to support the global Sustainable Development Goals (SDGs), GlobalWafers has taken the initiative to compile a Corporate Social Report that was certified by an international third party and contains full disclosure of 2019 GlobalWafers' concrete action and performance in implementing corporate social responsibilities and displays its determination for sustainable development goals.

Looking back at 2019, due to the double impact of the trade tension and geopolitics, number of uncertain factors has increased. While the global economic environment was experiencing a changing situation and we have seen the slowdown in the demands of the semiconductor industry, GlobalWafers still presented a spectacular performance in 2019. In addition to the second highest annual revenue in history, we have also achieved the following a chievements:

In response to global energy conservation and carbon reduction and in compliance with eco-friendly trends, GlobalWafers has adopted various improvement measures to meet the green specifications in both hardware and software aspects. In terms of the software part, GlobalWafers Hsinchu Plant passed the Cleaner Production Assessment System of the Green Factory Label as promulgated by the Industrial Development Bureau, MOEA in June 2018; and in terms of the hardware part, GlobalWafers was granted with the Green Building certification in January 2019 and the Green Building certification with Golden Medal in March 2019, both issued by the Ministry of the Interior, MOEA. In October of 2019, GlobalWafers was even awarded with the Green Factory certification by the Industrial Development Bureau, successfully fulfilling its corporate social responsibility as well as receiving recognition for its contribution in clean production.

GlobalWafers' subsidiaries around the world are also committed to energy conservation and carbon reduction. Energy consumption was greatly reduced through active improvement of the production process, enhancement in output rate and yield, and optimization of in-plant production equipment. With regard to production process, the Company also did its best to reduce and recycle the wastes in the production process. GlobalWafers will continue to aim for the goals of green design and green products and dedicate in sustainable development while pursuing corporate profits, and faithfully play the role as a global citizen.

01 The company achieved a total revenue of NTD 58.094 billion, a 1.64% decrease from the previous year, but still reached a new second highest record.

02 The consolidated revenue was NTD 17.9 billion, a 1.8% increase from the previous year.

03 The EPS was NTD 31.35, which maintained the similar level as that of the previous year with NTD 31.18.

04 Shareholder equity was NTD 45.073 billion, a 4.4% increase from the previous year.

05 The Company was granted with Green Building certification with Golden Medal.

06 The Company was awarded with Green Factory Label Certificate issued by the Industrial Development Bureau.

07 The Company was in the top 5% of all listed OTC companies ranking in the 5th corporate governance appraisal.

08 The Company won the SGS ISO 45001 Plus Award.

09 The Company was awarded with two Gold Tower Awards of “2019 Taiwan Continuous Improvement Competition” by Corporate Synergy Development Center.

GlobalWafer
Chairperson and CEO
徐秀蘭

About GlobalWafers

Company Profile

Established in October 18, 2011 and headquartered in Hsinchu Taiwan, GlobalWafers Co., Ltd. (hereinafter referred to as GlobalWafers) specializes in 3” to 12” silicon wafer manufacturing. Product applications have extended through logic, memory, power management, automotive, IT and MEMS. It is the world's third largest semiconductor silicon wafer supplier and the largest non-Japanese semiconductor silicon wafer supplier. GlobalWafers, previously the Semiconductor Business Unit of Sino-American Silicon Products Inc (hereinafter referred to as SAS) was separated into an independent company from SAS in 2011.

In 2012, GlobalWafers acquired the subsidiary, Covalent Silicon Corporation, the silicon wafer business of Covalent Materials Corporation, ranked 6th globally at that time; and in 2016 GlobalWafers successfully acquired Topsil Semiconductor Materials A/S (hereinafter abbreviated as Topsil) and SunEdison Semiconductor Limited (hereinafter abbreviated as SunEdison) in Denmark and US has since become the world's third largest wafer supplier. GlobalWafers' product range has also crossed from CZ into large-sized epitaxial wafers, polished wafers, silicon on insulator wafer and float zone (FZ) semiconductor wafers. Combined with GlobalWafers' top-notch operation model and market niche and SunEdison's global bases and R&D capabilities, GlobalWafers has thus built a further integrated product line with a total of 16 operation & manufacturing bases that are strategically dispersed across 9 countries in Asia, Europe, and the America. GlobalWafers has an absolutely comprehensive product combination to accelerate the development of new technologies and new products and to continue its focus on serving customers so as to create more value for customers, shareholders, and staff members.

GlobalWafers has enhanced its business performance, proactively moved forward, and stood firmly at a better favorable position through the benefits of resource integration exerted from industrial strategic alliance and external re-investment. In addition, it expands its business domain by the corporate management model of maximizing shareholders' equity, continues to cultivate existing core technologies, further implements product diversification and corporate diversification business, and actively enhances the global market share in order to further achieve the global leading position in the field of silicon wafer manufacturing.

Product Portfolio	Wafer Diameter (Inches)				End-applications			
	<6”	6”	8”	12”				
Annealed Wafer			✓	✓	Memory	LCD Driver	Analog/Logic IC	
EPI Wafer (Epitaxial)	✓	✓	✓	✓	Power Device	Automobile	MPU/MCU	CMOS Image Sensor
PolishedWafer	✓	✓	✓	✓	Communication	Power Device	Analog/Logic IC	Memory
Diffused Wafer	✓	✓			Automobile	Electricity	Aerospace	
Non-polished Wafer	✓	✓			Discrete Device			
FZ Wafer (Float Zone)	✓	✓	✓		Medical Equipment	Wind Turbine	High Speed Rail	Automobile
SOIWafer (Silicon on Insulator)	✓	✓	✓	✓	High Voltage Power	MEMS SensorCMOS	CMOS	RF Device Photonics
SiCWafer (Silicon Carbide)	✓	✓			Automobile	High Voltage Power	High Speed Rail	Wind Turbine
GaN/Si, GaN/SiC (Gallium Nitride)	✓	✓	✓		Solar Inverter	Power Supplies	RF Power	

Basic Info Of GlobalWafers

Company Name
GlobalWafers Co., Ltd.

Date of Establishment
October 18, 2011

Capital
NT$4.373 billion

Main Product and Technology
3-inch to 12-inch Silicon Wafer

No. of employees*
Taiwan: 1,590; Offshore: 5,139

Headquarters
No. 8. Industrial East Road 2, Science Park, Hsinchu, Taiwan

Chairperson & CEO
Doris Hsu (Hsiu-Lan Hsu)

President
Mark Lynn England

Countries of Operation
Taiwan, China, Japan, South Korea, Malaysia, USA, Italy, Denmark, Singapore

*The no. of employees is based the statistics on 2019.12.31

Operation & Manufacturing Bases

Headquartered in Taiwan's Hsinchu, GlobalWafers Co., Ltd. has branches across the globe including Taiwan, Mainland China , Japan, S. Korea, Malaysia, the US. , Italy, Denmark, and Singapore. Currently, our products are mainly sold to Asia, Europe, and the Americas. GlobalWafers has long been devoted to the efficiency enhancement of key materials of power components, and spares no resources on the development of SiC wafers, hoping to contribute to energy conservation and carbon reduction.

01 Taiwan
GlobalWafers Headquarters
GlobalWafers Chunan Plant
Taisil Electronic Materials Corp.

02 Mainland China
Kunshan Sino Silicon Technology Co., Ltd.

03 Japan
GlobalWafers Japan Co., Ltd.
MEMC Japan Ltd.

04 South Korea
MEMC Korea Company

05 Malaysia
MEMC Electronic Materials, Sdn. Bhd.

06 The United States
GlobiTech Incorporated. MEMC LLC

07 Italy
MEMC Electronic Materials S.p.A

08 Denmark
Topsil GlobalWafers A/S

09 Singapore
GlobalWafers Singapore Pte. Ltd.

Note: To increase operational efficiency, the operations in Poland Plant were ceased in 2019.

Participation in External Associations

Association / Organization	Participant	Member	Member
Taiwan Semiconductor Industry Association (TSIA)		●	
SEMI		●	
SEMI SMG	●	●	
Japan Society of Newer Metals		●	
Federation of Malaysian Manufacturers (FMM)		●	
Malaysian Employers Federation (MEF)		●	
National Institute of Occupational Safety & Health (NIOSH)		●	
Local Industrial Association		●	
The Korea Chamber of Commerce & Industry		●	
Korea Environmental Preservation Association		●	
Korea Industrial Safety Association		●	
Korea Chemicals Management Association		●	
Korea Fire Safety Association		●	
Local Industrial Park Association		●	
Industrial Environmental Management Association		●	
Occupational Safety and Health Association		●	
Industrial Water Management Association		●	
Industrial Wastewater Management Association		●	
Fire Safety Association		●	
High Power Device application and Research Alliance		●	
Allied Association for Science Park Industries		●	
Institute of Internal Auditors (IIA)-Taiwan Chapter		●	
Computer Audit Association		●	
Korean Nurses Association		●	Director (Chungnam Province)
Local Emergency Planning Committee (LEPC)		●	
Sherman Safety Leaders Forum		●	
Gateway society of hazardous materials managers		●	

Company Chronology

Development Profile

2011 10 Establishment of GlobalWafers Co., Ltd. (carved out from SAS semiconductor business unit)

2012 04 Acquired all the semiconductor silicon wafer related business in the subsidiaries of the Japanese Covalent Materials Corp.

2013 08 ISO 14001 Certified

2013 12 Taiwan Intellectual Property Management System (TIPS) Certificate approved

2013 12 2013 Occupational Health initial mark certified by Ministry of Health and Welfare

2014 07 TS16949:2009 Quality Assurance Certificate granted

2014 09 IPO

2014 10 Emerging Stock Listing

2015 09 List on TPEx on September 25, 2015

2016 07 The acquisition for the semiconductor business of Topsil Semiconductor Materials A/S in Denmark ("Topsil")

2016 08 Occupational Safety and Health System OHSAS 18001: 2007 certificated

2016 08 TOSHMS/CNS 15506:2011 Certified

2016 08 ISO 14001:2015 Certified

2016 12 Acquisition of SunEdison Semiconductor Limited

2017 04 Ranking in the top 20% of all listed OTC companies in the 3rd corporate governance appraisal by Securities and Futures Institute

2017 05 Handle of paid-in capital increase and distribution of new stocks; Participate in the distribution of offshore depositary receipt

2017 07 IATF 16949: 2016 Certification

2018 04 Ranking in the top 20% of all listed OTC companies in the 4th corporate governance appraisal by Securities and Futures Institute

2018 06 Cleaner Production Assessment System of the Green Factory Label

2018 07 Passed Year 2017 Science Park R&D Intensive Industry-Academia Cooperation Project. Development of excellent dynamic and high breakdown voltage performance by using 6 inch E-mode GaN on Novel SOI HEMT technology

2019 05 Ranking in the top 5% of all listed OTC companies in the 5th corporate governance appraisal by Securities and Futures Institute

2019 10 Awarded with Green Factory Label Certificate issued by the Industrial Development Bureau

2019 11 SGS ISO 45001 Plus Award

Awards (Revised To Be The Same As The Website)

2011/12
Granted Taiwanese Entrepreneur President Excellence Award」from 29th Chinese Professional Management Association.

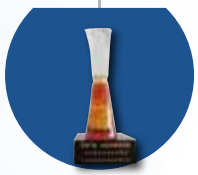
2013/12
Certified Healthy Work Environment

2016/08
TOSHMS/CNS 15506: 2011 Certified
(see the folder for the original picture file)
ISO 14001: 2015 Certified
Occupational Safety and Health System OHSAS 18001:2007 certificated (see the folder for the original picture file)

2017/07
Certificated by IATF 16949:2016
(see the folder for the original picture file)

2017/12
2017 MAPECT Taiwan granted Most Representative Award & Best Offshore Acquisition Award to GWC's acquisition of SunEdison Semiconductor

2012/09
2012 Parent company Sino-American Silicon’ s Covalent acquisition is granted 2012 Most Representative Award by MAPECT Taiwan

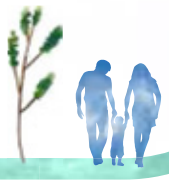


2016/06
Recognized for excellent performance in energy conservation by Bureau of Energy, MOEA

2017/05
The Outstanding Cooperation Supplier Award' From (HHGrace)

2017/06
The Front End Direct Materials Supplier of the Year Award from ON Semiconductor

2017/12
VP Chungwei Lee awarded certificate of appreciation from SEMI SMG



2018/06
Passed the Cleaner Production Assessment System of the Green Factory Label

2018/12
“Granted Excellent President Award” from 36th Chinese Professional Management Association

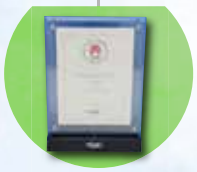
2019/01
Won the 2019 Technology Industry Happy Enterprise Award

2019/07
Won the Best Quality Award from Shanghai Huahong Grace Semiconductor (HHGrace)

2019/11
SGS ISO 45001 Plus Award

2019/12
Subsidiary of GlobalWafers, Taisil Electronic Materials Corp., was awarded with Gold Tower Award of “2019 Taiwan Continuous Improvement Competition” by Corporate Synergy Development Center

2018/01
GlobalWafers Awarded Triple A Country Award Taiwan 2017 – Best GDR by The Asset



2018/11
Awarded 1 Gold Tower, 2 Silver Towers & 1 Copper Tower from Corporate Synergy Development Center on the 31th QCC competition

2019/05
Passed the Green Building Certification and the Gold-Level Green Building Certification

2019/05
Ranking in the top 5% of all listed OTC companies in the 5th corporate governance appraisal by Securities and Futures Institute

2019/10
Awarded with Green Factory Label Certification by Industrial Development Bureau

2019/12
Awarded with Gold Tower Award of “2019 Taiwan Continuous Improvement Competition” by Corporate Synergy Development Center

01 Stakeholder Engagement & Analysis

Chapter 1 Stakeholder Engagement & Analysis

1.1 Stakeholders Identification

Identifying and communicating stakeholder is at the core of corporate social responsibility. Based on operational characteristics and cross-departmental discussion, GlobalWafers has identified its shareholders that include staff members, customers, shareholders (investors) and suppliers (contractors), governmental departments (Science Park Bureau, Environmental Protection Bureau, Environmental Protection Administration, Energy Conversation Bureau, Ministry of Labor and so on) and the media.

1.2 Stakeholder Communication And Response

GlobalWafers has established all kinds of communication channels in its daily operations to maintain inter-communication with stakeholders. A mailbox and a customer service hotline for external communication have also been set up on the company website to collect opinions of our primary stakeholders related to our management & activities, i.e. investors, customers, media and so on.

Primary stakeholders	Significance to GlobalWafers	Communication chance	Communication frequency	Issues of concern
Customers	Company's main source of revenue.	Operation meetings	Non-scheduled	Product price Customer service Product quality Hazardous substances management Business continuity planning
		Annual customer satisfaction survey	Once a year	
		Customer audit	Non-scheduled	
		Appeal/complaints telephone or email	Non-scheduled	
Employees/ Labor Union	Employees are the company's most important assets. Only by taking good care of the employees will both parties grow in sync with each other..	Internal website and emails	Non-scheduled	Occupational safety Human rights Emergency & Contingency Job opportunities Equal pay between men and women
		Company notice board	Non-scheduled	
		Labor-management consultation meetings (Taiwan)	Four meetings per year	
		Complaint boxes or hotlines	Non-scheduled	
		Performance appraisal interviews	Once a year	
		All organizational meetings	Non-scheduled	
		Labor Union Meeting	Non-scheduled	
Shareholders / Investors	All shareholders are the company's investors. The company will handle all disclosed information with fairness as the principle.	Shareholders meeting, institutional investors conference, domestic investment institute seminars and face-to-face communication meetings.	A total of 17 institutional investors conferences in 2019.	Sound finance Integrity & Ethics Risks & Crisis Management Financial performance Management strategies & financial goals Regulation compliance Business continuity planning
		Company annual report	Once a year	
		News announcement on company websites and the Market Observation Post System	Non-scheduled	
		Collecting and replying to messages via telephone or emails	Non-scheduled	

Primary stakeholders	Significance to GlobalWafers	Communication chance	Communication frequency	Issues of concern
Suppliers/ Contractors	Are the company's partners and need to maintain the same ideals as ours in order to provide services in line with our needs.	Operation meetings	Non-scheduled	Integrity & Ethics Management strategies & financial goals Reduction at the source
		On-site audit	Non-scheduled	
		Collecting and replying to messages via telephone or emails	Non-scheduled	
Governmental institutes	We need to main an open and pleasant communication relationship to express our determination of complying with regulations	Correspondence of official documents, meetings (public hearings or conferences)	Non-scheduled	Water resource management Water pollution prevention Chemicals control Waste control Pollution prevention Reduction at the source Regulation compliance Greenhouse gas reduction
		By communicating and meeting with associations or unions	Non-scheduled	
The media	We establish a contact channel with the media and provide nonscheduled, correct, fair and objective industry and corporate news.	Releasing news We sporadically receive interviews by the media and provide industry news.	We release an average of 2 to 3 pieces of news for each quarter.	Greenhouse gas reduction Financial performance Regulation compliance

1.3 Identification and Analysis of Material Issues

GlobalWafers is open to accommodate all kinds of opinions and reference the sustainability report guidelines by the Global Reporting Initiative (GRI) which outlines the principles for defining the report content – the stakeholders' inclusiveness. GlobalWafers has identified the stakeholders and illustrated how to respond to their reasonable expectations and interests; Sustainability context: The report will disclose how GlobalWafers has been making improvements or diminishing damage regarding the local, regional and global economic, environmental and societal status, development and trends; Importance: The report will reflect GlobalWafers' distinct impact on the economy, environment and society, along with assessment and strategies that will substantially affect stakeholders; Completeness: Material issues and their boundaries covered in the report will sufficiently reflect GlobalWafers' distinct impact on the economy, environment and society, while allowing stakeholders to assess the performance of GlobalWafers during the reporting period.

Principles for defining the report quality – Accuracy: The information in the report has been sufficiently prepared and comprehensive allowing stakeholders to assess the performance of GlobalWafers; Balance: The information in the report reflects the positive and negative aspects of GlobalWafers' performance, allowing all parties to make reasonable assessment on the overall performance of GlobalWafers; Clarity: GlobalWafers presents the report in such a manner that it is easily accessible and comprehensible to the stakeholders; Comparability: GlobalWafers applies a consistent standard in screening, organizing and reporting the information. Ways of expressing the information make it possible for stakeholders to analyze the long-term performance of GlobalWafers and compare & analyze it with other organizations; Reliability: In compiling this report, GlobalWafers uses information and procedures that can be examined, collected, recorded, compiled, analyzed and disclosed in such a manner that can establish information quality and materiality; Timeliness: GlobalWafers gives periodic reports and provides timely information for stakeholders to make decisions.

The identification of GlobalWafers' material issues is based on the interaction experience and communication records among the stakeholders and the president office, marketing division, procurement division, administrative division and relevant divisions for external affairs, besides collecting issues of concern to the employees, customers, shareholders (investors), suppliers (contractors), governmental institutes and the media. In addition, Corporate Social Responsibility Committee members shall conduct internal meetings to identify the importance of each issue of concern based on these two aspects: Concern Level of Stakeholders and Impact on GlobalWafers. A materiality matrix is thereby drawn considering its economic aspect, environmental aspect, and social aspect. Issues with high concern and high impact are thus listed as material issues. We will disclose in this report the management guideline for the material issues. Other issues not yet reaching major impact will be disclosed as a summery or not disclosed in this report.

1 Stakeholders engagement

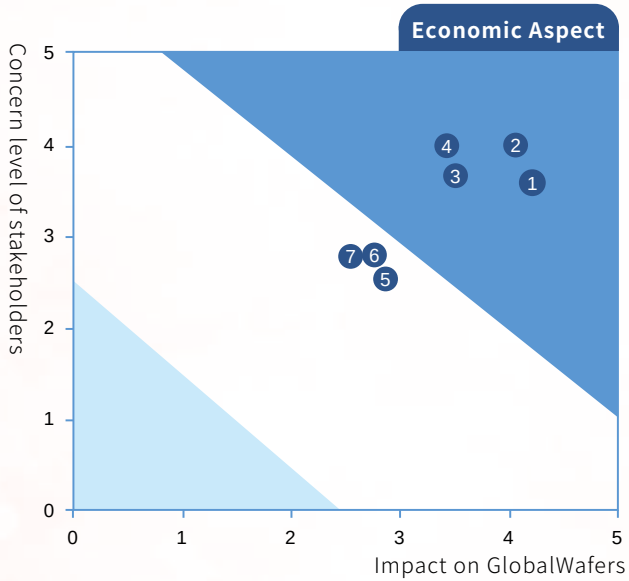
Has identified 6 major groups of stakeholders.

2 Collects CSR issues of concern to stakeholders

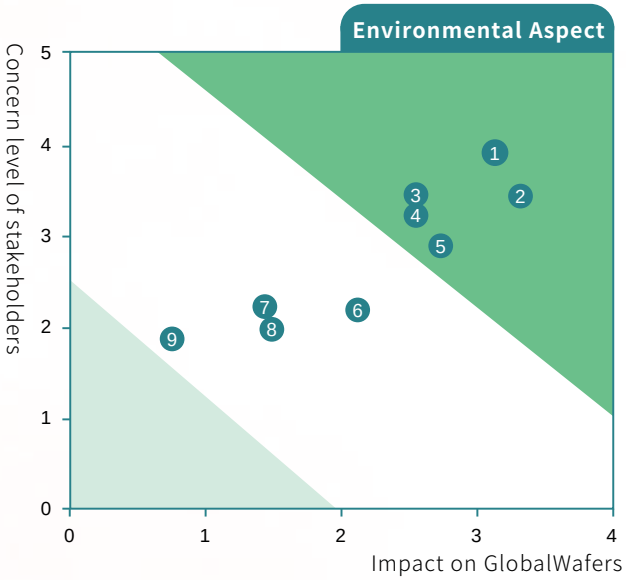
Collects 24 CSR issues.

3 The impact of CSR issues on GlobalWafers

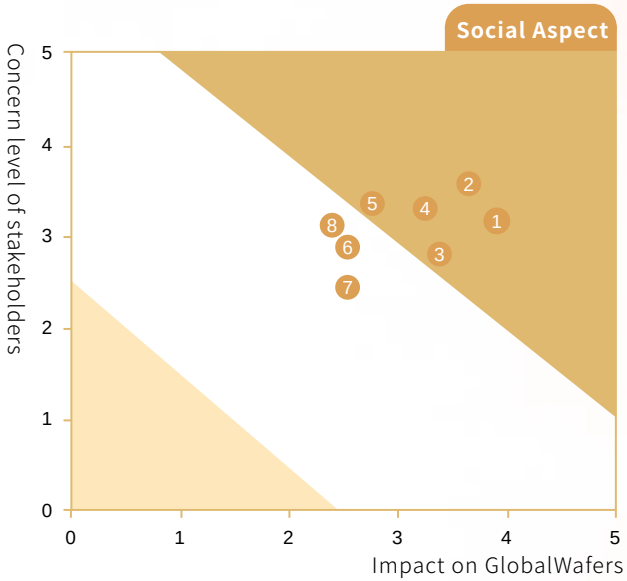
The CSR Committee has identified 14 material issues.



Serial No.	Issues	Material
1	Regulation compliance	V
2	Sound finance	V
3	Management strategies & financial goals	V
4	Financial performance	V
5	Risks & crisis management	
6	Business continuous planning (BCP)	
7	Integrity & ethics	



Serial No.	Issues	Material
1	Greenhouse gas reduction	V
2	Reduction at the source	V
3	Water resource management	V
4	Pollution prevention	V
5	Waste control	V
6	Water pollution prevention	
7	Chemicals control	
8	Air pollution control	
9	Hazardous substances control in products	



Serial No.	Issues	Material
1	Human rights	V
2	Customer service & privacy	V
3	Employee education & training	V
4	Product quality	V
5	Occupational safety and emergency response	V
6	Product price	
7	Labor equality, equal pay for equal work	
8	Job opportunities	

The Boundary And Scope Of Material Issues

Material topics		Company's internal boundary			Company's external boundary	Corresponding GRI standards	Corresponding chapters
		GlobalWafers	Taisil Electronic	Offshore branch companies	Suppliers		
Economic Aspect	Regulation compliance	○	○	○		GRI307 GRI419	2.2.4 Regulation compliance
	Management strategies & financial goals	○	○	○		GRI201	2.3 Operation performance
	Financial performance and sound finance	○	○	○		GRI201	2.3 Operation performance
Environmental Aspect	Source Reduction and Pollution Prevention	○	○			GRI301 GRI302 GRI303	4.3 Source Reduction 4.4 Pollution prevention
	Water resource management	○	○	○		GRI303	4.3.3 Water resource management
	Waste control	○	○	○		GRI306	4.2 Waste management
	Greenhouse gas reduction	○	○	○		GRI305	4.1 Greenhouse gas
Social Aspect	Occupational safety and emergency response	○	○	○	○	GRI403	5.2 Occupational safety and Health
	Customer service, privacy and product quality	○	○	○		GRI102-43	3.1 Innovation management 3.2 Product quality 3.3 Customer service
	Human rights	○	○	○		GRI406 GRI102-41	5.1.4 Human rights
	Employee education & training	○	○			GRI404	5.2.2 Safety advocacy and education & training

Note:

1. Regarding operation & manufacturing sites, the data collection is currently not completed for some of GlobalWafers' operation sites, resulting in the lack of disclosure of performance data for some of the sites covered in the major consideration aspects in this annual report. We have established a data collection mechanism hoping to include all disclosed performance data for all operation sites for the next 3 years covered in the major consideration aspects.
2. Internal boundary:
   Taiwan: GlobalWafers headquarters, GlobalWafers Chunan Plant, Taisil Electronic Materials Corp.
   Mainland China: Kunshan Sino Silicon Technology Co., Ltd.
   Japan: GlobalWafers Japan Co. Ltd., MEMC Japan Ltd.
   South Korea: MEMC Korea Company
   Malaysia: MEMC Electronic Materials Sdn. Bhd.
   US: GlobiTech Incorporated.、MEMC LLC
   Italy: MEMC Electronic Materials S.p.A
   Denmark: Topsil GlobalWafers A/S
   Singapore: GlobalWafers Singapore Pte. Ltd.

02 Governance & Operation

Chapter 2 Governance & Operation

Material Issues

Regulation compliance, Sound finance, Management strategy & Financial goals, Financial performance.

Significance to GlobalWafers

GlobalWafers complies with the principles of integrity, professionalism, teamwork, and innovation. We put an emphasis on integrity, aligning with the spirit of being friendly, focused, proactive and professional, stimulating individual creativity and exhibiting the company's unique culture by way of team cohesiveness, continuous innovation in technology and management. We take active steps in implementing corporate social responsibility and create our unique values to obtain the trust of our investors, customers, and employees and to forge ahead towards sustainable operation goals.

Management Mechanism

Policies

- Sustainable growth.
- Centralize resources, consolidate the operation performance of newly acquired business, minimize costs, and maximize profits.
- Expand company scale via strategic alliance, merge or acquisition on the foundation of solid and outstanding performance.

Commitment

- The Group's high-end leading technology is deployed to develop chips matching next generation product utilization. Development shall move towards large size advanced manufacturing process, heavily doped crystal growth and power semiconductor epitaxy technology, GlobalWafers aims to become the world's largest silicon wafer supplier.

Goals

Short-term goal

- Combine technologies, resources, and various possibilities within the group to optimize the bottlenecks of each plant and maximize product capacity, deepen the multinational technology integration platform, and comprehensively improve quality and customer satisfaction to meet market demand.
- Stabilize the supply of key raw materials and parts to ensure good production quality and on-time delivery, so that the production line runs smoothly.

Mid-term goal

- Strengthen the operation performance of all businesses, continue with the cross-region integration of the production technology, procurement, production capacity and marketing in 16 operation & production sites in 9 countries across the globe, so as to minimize the costs.
- Proactively deploy our advanced manufacturing process for niche applications, accelerate the development energy for new technologies and new products, and strengthen patents deployment.
- Develop high-efficiency niche products with core technology capabilities to enhance added value.
- Actively sign long-term plans with key partners to solidify the foundation of cooperation.

Long-term Goal

- The Group's high-end leading technology is deployed to develop chips matching next generation product utilization. Development shall move towards large size advanced manufacturing process, heavily doped crystal growth and power semiconductor epitaxy technology, as well as becoming the world's largest silicon wafer supplier.
- Accelerate the development of next-generation application products such as GaN and SiC, and actively expand the new blue ocean.
- Have a firm grasp of market trends and industry pulse and adjust business strategies in a timely manner, continue to develop potential products in various application areas and carry out patent protection measures to strengthen our own competitiveness.
- Strengthen R&D links with downstream customers, develop high-efficiency niche products with core technology capabilities, and actively reduce manufacturing costs to increase profit margins.
- Seeking a strategic alliance between technology and sales to develop the R&D and materials need of designing company's new products.
- To establish an excellent company governance mechanism to achieve the goal of sustainable operation growth.

System

External system

- Compliance with such external regulations such as the Company Act, Securities and Exchange Act, Business Mergers and Acquisitions Act, Guidelines for Online Filing of Public Information by Public Companies, Fair Trade Act, and Labor Standards Act.

Internal system

- Establishment of an internal control system, Articles of Incorporation, Acquisition or Disposal of Assets Procedure, Procedures for Endorsement and Guarantee, Procedures for Lending Funds to Other Parties, Policies and Procedures for Financial Derivatives Transactions, Corporate Governance Best Practice Principles, Corporate Social Responsibility Best Practice Principles, Ethical Corporate Management Best Practice Principles, Risk Management Guidelines, Code of Ethical Conduct, Guidelines for the Handling of Reported Cases of Illegal and Unethical Conduct, Operating Procedures for the Handling of Material Internal Information, Management Procedures for the Prevention of Insider Trading, Guidelines for the Reporting of Public Information, Management Guidelines for Liability Commitments and Contingencies, Operating Procedures for Transactions between Conglomerates, Specific Companies, and Related Parties, Rules Governing Supervision and Management of Financial and Business Matters Between Affiliated Enterprises, and Management Guidelines for Long- and Short-Term Investments.

Resources

- The R&D investment in 2019 came to NT$1,710,801 thousand which accounted for 2.94 % of total revenue and expenses.
- Professional R&D team, with 101 R&D engineers in Taiwan and 113 offshore.

Specific action

- Initiating Annual Operation Plans and formulation of KPIs for each department to strengthen internal operational management and control.
- Regular convening of management and operation & sales meetings to review goal achievement status and propose improvement & response strategies.
- Establishing an incentive system for improvement proposals to boost process research and product quality betterment.
- Formulating appropriate measuring methods upon identifying potential risk factors by each department; risk measurement including risk analysis and assessment.
- Implementing a legal affairs mechanism and internal audits to facilitate our determination for sustainable development.

2019 Key Performances

- The company achieved a total revenue of NTD **58.094** billion with an annual growth rate of -1.64%, maintaining the same level as last year
- The consolidated revenue was NTD **17.9** billion, a **1.8%** increase from the previous year
- The EPS was NTD **31.35**, the same high level as the previous year's the NTD **31.18**
- The shareholder equity was NTD **45.073** billion, a **4.4%** increase from the previous year
- Consolidated financial liabilities ratio increased slightly from **6.1%** to **10.2%**
- As of 2019, the cumulative number of valid patents in the GlobalWafers Group in previous years reached **1,301**
- Granted with Green Building certification with **Golden Medal**
- Won the 2019 Technology Industry **Happy Enterprise Award**
- Ranked in the **Top 5%** of all OTC listed companies in the 5th corporate governance appraisal by Securities and Futures Institute
- Won **the Best Quality Award** from Shanghai Huahong Grace Semiconductor (HHGrace)
- Awarded with **Green Factory Label Certificate** issued by the Industrial Development Bureau
- **SGS ISO 45001 Plus Award**
- Awarded with Gold Tower Award of **"2019 Taiwan Continuous Improvement Competition"** by Corporate Synergy Development Center
- Subsidiary of GlobalWafers, Taisil Electronic Materials Corp., was awarded with Gold Tower Award of **"2019 Taiwan Continuous Improvement Competition"** by Corporate Synergy Development Center

2.1 Sustainable Organization

To strengthen and implement sustainable governance, GlobalWafers established a Corporate Sustainable Development Committee in 2017. The Chairperson serves as the Committee Chairperson and leads the company's operational organizations, the direction of sustainable development and goal formulation. There is also a director general taking charge of the relevant administration of this Committee. There is also an audit office in charge of supervision and an audit committee and remuneration committee to enhance the competency of the board of directors and to strengthen the company governance.

GlobalWafers' board of directors has passed the "Corporate Social Responsibility Policies" and "Corporate Social Responsibility Best Practice Principles" as a gesture to declare to stakeholders the formidable determination of our highest management body in the implementation of sustainable corporate development. We hope to have influence on the industry for extended participation and awareness and for concerted efforts towards a sustainable society. Regarding execution, to implement the ESG activities in the three aspects of environment, society, and governance, the Committee is further divided into three task forces, namely, the environmental, governance, and social sections. The above task forces consist of specialized committee members and department executives in charge of the formulation of strategies and management directions, as well as issue-based cross-department integration and execution & implementation, while conducting reviews and continuous improvements on implementation effectiveness. Regarding their corresponding stakeholders, the task forces aim to seek various communication and engagement channels to understand stakeholders' issue of concern and expectations for the corporate governance, environmental and social aspects of GlobalWafers. Decisions would be made based on the Corporate Sustainable Development Committee discussions. The performance and goal achievement status of the Committee will also be reported regularly to the board of directors.

GlobalWafers Co., Ltd

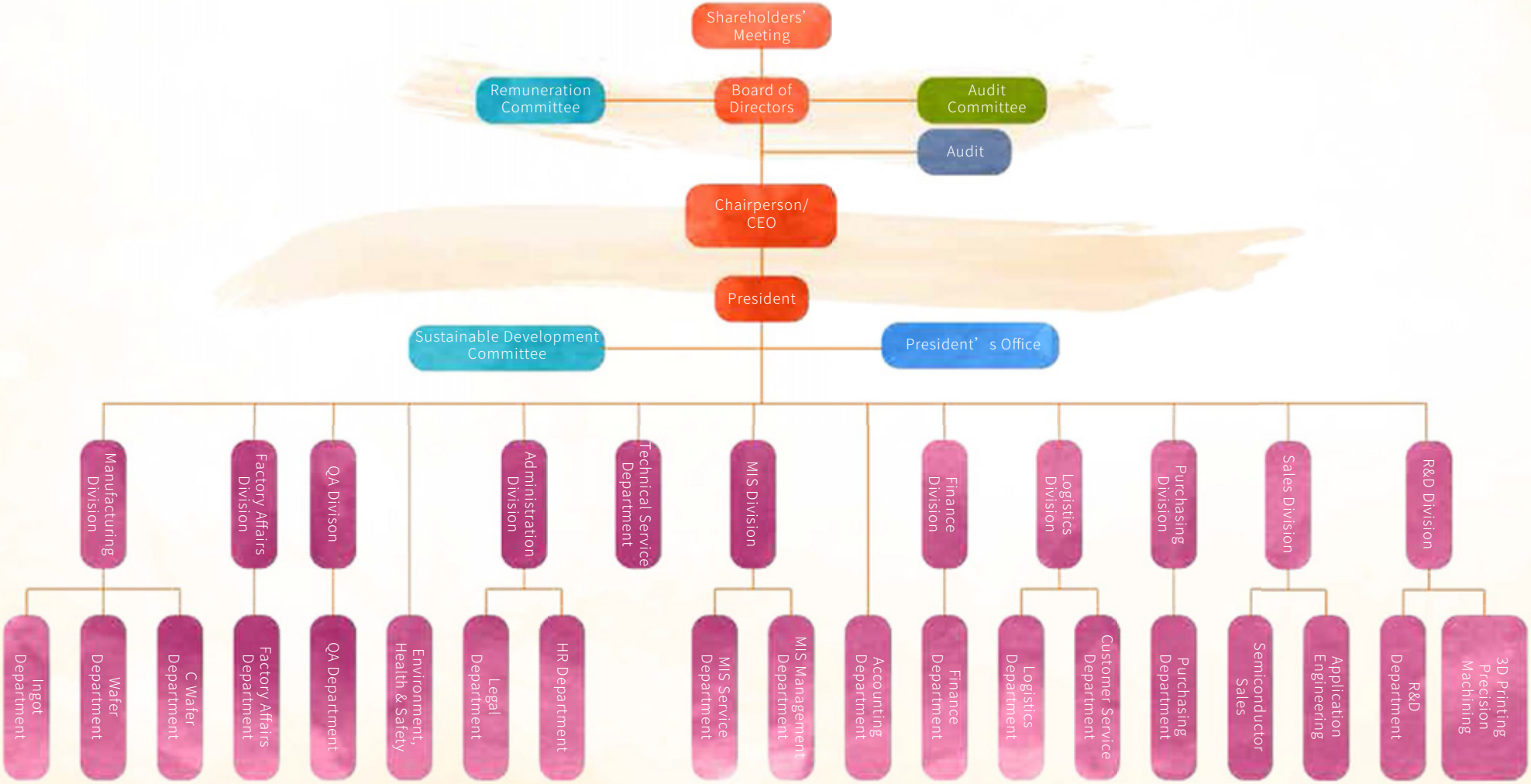
Corporate Sustainable Development Committee

2.2 Corporate Governance

GlobalWafers adheres to its corporate culture of integrity and fully implements its management vision of honesty & integrity, fairness & transparency, and social responsibility, while aiming to establish a decent corporate governance system via all ethical guidelines & policies to thoroughly fulfill our sustainable operation goals.

2.2.1 Governance Structure

GlobalWafers' Organizational Chart



Advanced Management

GlobalWafers adheres to principles of integrity, holds the shareholders' rights and interests in high regard and believes that an efficient board of directors is the basis of excellent corporate governance. GlobalWafers has established an effective corporate governance structure where the board of directors authorizes the establishment of an Audit Committee and a Remuneration Committee to assist the board of directors in fulfilling its responsibilities of supervision. The organizational charter of both committees has been approved by the board of directors, and the committees report regularly to the board of directors regarding their activities and decisions. GlobalWafers' Audit Committee and Remuneration Committee consist entirely of independent directors.

GlobalWafers has established a sound corporate governance structure to achieve continuous improvements and excelsior via its internal audit and control systems so as to thoroughly fulfill corporate governance. Looking to the future, GlobalWafers will still adhere to principles of integrity and continue with its corporate governance blueprint, while strengthening its company competency so as to enhance its operation performance, facilitate corporate social responsibility and proactively forge ahead towards being a benchmark enterprise.

Summary of Corporate Governance Organization Highlights

- The GlobalWafers board of directors consists of 7 directors of whom 3 are independent directors.
  (One of the independent directors resigned in October 2019 and the vacancy will be supplemented by election during 2020 shareholders' meeting.)
- The Audit Committee and Remuneration Committee both consist of independent directors.
  (Due to the vacancy of an independent director, the vacancy will be temporarily filled by a member who is not an independent director before the supplementary election during 2020 shareholders' meeting)
- Set up chief corporate governance officer to increase support for directors and improve board effectiveness
- The organizational charters of all committees are publicly disclosed in the corporate website.
- Results of annual self-performance appraisals conducted by the board of directors and all committees are publicly disclosed on the corporate website.

Board of Directors

To establish an excellent system for the thorough implementation of corporate governance with sound supervision function and strengthened management capabilities, the board of directors consists of 7 directors, elected for a term of three years and each armed with profound knowledge and expertise, namely, in professional technologies, business management, finance and strategy management. Consecutive terms are permitted by election. The board convenes at least once per quarter. At least 6 hours of refresher courses are arranged annually for directors (at least 12 hours of refresher courses for new directors) to enhance their professional competence and legal literacy and chief corporate governance officer is set up to increase support for directors and enhance board effectiveness. The responsibility of the board is to supervise and ensure the company's compliance with the laws and provide the management team with strategies and guidance, as well as evaluating the performance of the management team so as to prompt the company to achieve the operational goals and enhance the management performance.

A total of 8 GlobalWafers board meetings were held in 2019 with an average attendance rate of 96%. The board organization and board members' professional and educational background and attendance record are illustrated as below:

2019 Board of Directors' Major Education (experiences) and Attendance

Title	Name	Gender	Primary professional (educational) background	Actual no. of presence (in attendance)	No. of presence by proxy	Actual resence (attendance) rate(%)	Notes
Chairperson	Doris Hsu / Hsiu-Lan Hsu	Female	MA in Computer Science from University of Illinois / Executive Vice President of Sino-American Silicon Products Inc.	8	0	100%	
Director	Sino-American Silicon Products Inc. representative: Ming-Kuang Lu	Male	Successful completion of the advanced MBA Training Program for Entrepreneurs offered by National Chengchi University / President of Lite-On Semiconductor Corp. / Lite-On Power Semi and Vice President of Silitek Corp.	8	0	100%	
Director	Sino-American Silicon Products Inc. representative: Tang-Liang Yao	Male	MA Degree from the Graduate Institute of Management at Tamkang University / Assistant Vice President of the Manufacturing Division of Lite-On Power Semi / President of Sino-American Silicon Products Inc.	7	1	88%	
Director	Kuo-Chow, Chen	Male	Tainan Nan Ying Senior Commercial & Industrial Vocational School / Chairman of Nan Hai Corp. / Board Director of COTA Bank	8	0	100%	
Independent director	Chi-Hsiung, Cheng	Male	Master of Business Management, Chinese Culture University / Deputy division chief of Yulon Motor / Yue Audit Director of Sheng Industrial Co., Ltd. / Cost Director of Yueki Industrial Co., Ltd. / Administration Manager of Rica Auto Parts Co., Ltd / Finance Division Director of Wafer Works Corp.	8	0	100%	
Independent director	Jeng-Ywan Jeng	Male	PhD, Institute of Mechanical Engineering, University of Liverpool / Dean, College of Engineer, National Taiwan University of Science and Technology	7	1	88%	
Independent director	Kuang-Lei Young	Male	PhD in Electrical Engineering and Computer Science, University of California, Berkeley/Director of YiTu Technology/R&D manager of Taiwan Semiconductor Manufacturing/Engineering manager of Shida integrated circuit/Deputy R&D manager of Winbond Electronics Corp./Senior technician of Hewlett-Packard Company/Researcher at Lincoln Laboratory, USA	1	1	100%	Newly appointed on June 25, 2019 and resigned on October 25 of the same year

For information regarding directors' remuneration and GlobalWafers' directors taking joint positions from other companies and resolutions of the board of directors, please refer to GlobalWafers' 2019 Annual Report.

The Remuneration Committee

For the purpose of corporate governance implementation and a sound system for the board of directors (including independent directors) and managers' salaries and remuneration, GlobalWafers established the Remuneration Committee on December 12, 2014. The Committee consists of three independent directors and convenes at least twice a year. In 2019, the Committee convened a total of 2 meetings with an average attendance rate of 100%.

The Remuneration Committee aims to assist the board of directors in executing and reviewing the company's overall remuneration and benefits policies, system, standards and structure, as well as assessing the goal fulfillment performance of the directors and managers, regularly reviewing the organizational charter of the Remuneration Committee and proposing and submitting suggestions to the board of directors for discussion.

In line with the guideline as outlined by the organizational charter of the Remuneration Committee, the Committee is entitled to hire lawyers, accountants, or other consultants to assist the duty execution.

For the organizational charter of the Remuneration Committee, please refer to GlobalWafers corporate website.

Attendance record of the 2019 Remuneration Committee's independent directors

Title	Name	Actual attendance	Number of delegate attendance	Actual attendance (%)	Notes
Chairman	Chi-Hsiung Cheng	2	2	100%	
Member	Jeng-Ywan Jeng	2	2	100%	
Member	Kuang-Lei, Young	2	2	100%	Started on June 25, 2019 and resigned on October 25 of the same year
Member	Hsien-Chin Chiu	0	0	Not applicable	Assumes the office on November 7, 2019

The Audit Committee

To strengthen the internal supervision mechanism in corporate governance, GlobalWafers established the Audit Committee on March 19, 2015 which consists of three independent directors and convenes at least once per quarter. In 2019, the Committee convened a total of 8 meetings with an average attendance rate of 100%.

The Audit Committee aims to assist the board of directors in fulfilling its primary goal of supervision regarding the following matters

- Adequate expression of the corporate financial statements
- Selection (dismissal) of certification accountants and their capability, credentials, independence, and performance
- Effective implementation of internal company control
- Company compliance with laws and regulations
- Control and management of the company's potential or existing risks

In accordance with regulations as outlined in the committee's organizational charter, the Audit Committee members are entitled to conduct any suitable audits and investigation within the confinement of their responsibilities, while having direct contact channels with GlobalWafers' internal audit personnel, certification accountants and other relevant personnel. The committee is also entitled to hire lawyers, accountants, or other consultants to assist the duty execution.

For the organizational charter of the Audit Committee, please refer to GlobalWafers' website.

For major resolutions of the Audit Committee, please refer to 2019 GlobalWafers' Annual Report.

Attendance record of the Audit Committee's independent directors in 2019

Title	Name	Actual attendance	Number of delegate attendance	Actual attendance (%)	Notes
Independent director	Chi-Hsiung Cheng	8	0	100%	
Independent director	Jeng-Ywan Jeng	8	0	100%	
Independent director	Kuang-Lei, Young	1	0	100%	Started on 25 June 2019 and resigned on 25 October of the same year

2.2.2 Ethics & Integrity

To implement ethical corporate management, GlobalWafers has formulated integrity-based internal regulations to be observed by all staff members.

Core Values and Professional Ethics

GlobalWafers' most important value lies in Integrity. To create an environment conducive to ethical corporate management, GlobalWafers has formulated relevant guidelines and a communication mechanism to be observed by all directors, managers, and staff members. Integrity risks are minimized through a rigorous management mechanism and effective controls in order to fulfill the vision of generating value and benefits for customers, shareholders, and stakeholders.

GlobalWafers has promulgated relevant internal regulations such as "Ethical Corporate Management Best Practice Principles", "Code of Ethical Conduct", and "Risk Management Guidelines". All these regulations have been officially announced on the corporate website and internal website for referencing by employees at any time. Employees are given training & education on ethical management policies to ensure full understanding of and compliance with these regulations, as well as effective implementation in their daily operations. The goal is to enhance the quality of conduct and occupational ethics of all staff members.

GlobalWafers is firmly committed to anti-corruption and active prevention of unethical conduct. In addition to the signing of "IPR and Confidentiality Agreements" with all employees. The "Ethical Corporate Management Best Practice Principles" clearly stipulate that staff members, during the process of engaging in commercial activities, shall not directly or indirectly offer, promise, request or accept any improper benefits or commit unethical acts including breach of ethics, illegal acts, or breach of fiduciary duty for purposes of acquiring or maintaining benefits.

Reporting Channel and Informant Protection

To ensure the implementation of ethical management, GlobalWafers has formulated "Guidelines for the Handling of Reported Cases of Illegal and Unethical Conduct". A well-defined disciplinary and appeal system for violations of the ethical corporate management rules was established. An employee suggestion box, email box and complaint hotline are set up and announced on the internal website to encourage GlobalWafers' internal and external personnel to report unethical or improper behaviors. The identity of the informant and the reported content will remain strictly confidential. The HR departments are in charge of verification and follow-up handling. Disciplinary measures will be imposed based on the severity of the offense if infractions of ethical management regulations are verified. The President Office & the Legal Department are responsible for the implementation of ethical corporate management policies and the formulation, monitoring and execution of prevention plans. The implementation status is reported to the board of directors on an annual basis. No instances of complaints and corruption were reported in 2019.

Avoid Conflicts of Interest

GlobalWafers has clearly stipulated in its "Procedures for Ethical Management and Guidelines for Conduct" that when a director, manager, or other stakeholder who attends board meetings or a juristic person that he/she represents is an interested party in relation to an agenda item, the director/manager/stakeholder shall state the important aspects of the interested party relationship at the respective meeting. When the relationship is likely to prejudice the interest of this company, the said director/manager/stakeholder shall not participate in discussion or voting on that agenda item and shall recuse himself or herself from the discussion or the voting on the item. The said director/manager/stakeholder will not exercise voting rights as proxy for another director. Board directors should also be self-disciplined and not offer inappropriate support to each other. When conducting company business, should GlobalWafers' employees discover that they have their personal interest conflicting with that of the juristic person they represent or may allow themselves or their spouse, parents, children or their stakeholders to receive improper interest. They should report such matters to their direct supervisor and GlobalWafers' department in charge. The supervisor should provide fitting guidance accordingly.

2.2.3 Implementing Internal Audits

Primarily Goal for The Set-Up

To check and evaluate whether the company's internal control system is sound, reasonable, and effective, and to assist the promulgation of the internal control system and implement audits and submit reports to the appropriate management level

Key Areas for Execution

1. Internal control system: Assist managers designing a fitting internal control mechanism and hold "self-assessment practice" for the internal control system, which intends for all departments to evaluate the execution status of their own internal control for the purpose of self-examination.
2. Annual audit scheme: Check via the risk assessment & planning for the annual audit scheme, on the company's various operation procedures generated as a response to business activities; propose suggestions based on the audits execution to ensure the effectiveness of the internal control.
3. Verify project-specific audits: Target the potential risks (including embezzlement and corruption) as suggested by various department high-ranking executives and conduct project-specific verification and propose suggestions accordingly so as to enhance the soundness of the internal control.
4. Communicate audit findings: Communicate with the audited department based on audit findings regarding how to improve; continue with follow-up tracking of the improvement status to implement the execution of improvement practice.
5. Report the audit operation: Report the auditing results to the Audit Committee and board of directors, convey the weakness of the internal control and obtain instruction to improve the supervision effectiveness for enhanced corporate governance.
6. Auditing operation on subsidiary companies: Formulate the key areas for the auditing department in the subsidiary companies; examine the auditing report of all subsidiary companies; track the reviewing results.
7. Learn from auditing experience: Share with the group our auditing experience or cases that occurred in various areas; review or mend the management system of the said company based on the above experience for the sake of risks prevention.

Since GlobalWafers was listed in Taipei Exchange on September 25, 2015, it has been accepting the auditing of guiding securities companies and accounts, as well as the supervision of governmental institutes. According to the risks assessment of the internal control system executed by the company's risks management department and the auditing results revealed by the Auditing office, there has been no occurrence of severe abnormality and corruption.

For relevant content on internal audits, please refer to the internal audit organization and operation on GlobalWafers' website.

2.2.4 Regulation Compliance

To ensure the implementation of ethical management, GlobalWafers complies with laws and regulations in the formulation of relevant policies and guidelines, while its offshore subsidiary companies also have to absolutely comply with the legal requirements of each country. The board of directors leads by example and urges the management team to conduct continuous education & training and advocacy to strictly require all staff members to comply accordingly.

Based on this, GlobalWafers and its subsidiaries have no penalty cases in 2019.

In addition, GlobalWafers assists various departments by the law compliance section, and in accordance with the regulations to be followed by different departments, the relevant internal measures are formulated, and appropriate educational training is provided

2019 Key Legal Compliance Items：

Securities regulation

Strict management mechanism
GlobalWafers is listed on Taipei Exchange (TPEx) and complied with Securities and Exchange Act of R.O.C. and relevant laws and policies

▲The President Office has established excellent communication channels with relevant supervising authorities and constantly monitors the latest legal developments. The Office is also responsible for searches of the latest legal announcements and changes. Upon identifying the latest developments, the Office will notify relevant departments to take responsive measures as required

▲With regard to questions submitted by relevant departments, the Legal Compliance Department will further analyze relevant regulations and propose accurate responsive strategies upon communicating and confirming with supervising authorities

Products & services laws and regulations

▲Collect legal requirements in countries where goods are received or sent and counties designated by customers to ensure that the procured products, procedures, and services comply with the legal requirements of the country in question.

▲The source of raw materials complies with local corresponding laws and regulations, e.g. the EU RoHS directive, REACH (restriction) and TSCA in the US.

▲There are no occurrences of our products being prohibited by governing authorities from selling in any specific markets

Labor & human rights regulations

Strict compliance with labor & human rights regulations

▲Formulate work systems and management guidelines that meet or exceed the requirements set forth in labor laws and regulations; developing excellent working conditions and communication mechanisms; building positive labor-management relations characterized by pleasant interactions amongst staff members.

▲Value employee salaries and benefits; proactively cultivate talents; implement labor laws; ensure employees' rights. Regarding major policy changes, remuneration & benefits, leave system changes that impact the rights of our employees, employees will be notified, prior to implementation, via labor-management meetings, electronic newsletters, or announcements on the HR notice board to ensure employees' rights.

▲We conduct on new recruits 0.5hr or 1hr of relevant human rights education & training, set up relevant procedures and complaints hotline for workplace violence prevention and sexual harassment prevention in order to provide the employees a clear channel for complaints and communication channel.

Data management

▲Formulate employment contracts and Business Confidentialities and IPR agreements, Code of Ethical Conduct, Handling Procedures for Intellectual Property Disputes, and Confidentiality Agreements.

▲Management mechanism: Education on the importance of intellectual property and business secrets through posters and slogans, employee training and education, and signing of confidentiality agreements with employees in charge of relevant operations.

Corporate governance

▲Major policies and documents: Ethical Corporate Management Best Practice Principle, Code of Ethical Conduct; Guidelines for the Handling of Reported Cases of Illegal, Unethical and Dishonest Conduct

▲Management mechanism: Relevant contents are incorporated into education for current employees and orientation training for newly inducted employees to ensure compliance by all employees with said code of conduct in the performance of duties.

Environmental OSH laws and regulations

▲Major policies and documents: Identification and management of environmental, energy management, and OSH related laws and other relevant requirements.

▲Management mechanism: Monthly review of conformity to the latest amendments of relevant environmental, energy management, and OSH related laws and other relevant requirements; regular assessment of conformity to applicable legal requirements.

Legal Compliance Courses and Education

With the regular launch of strengthened legal training courses, the company intends for the staff members to understand the important laws and regulations and to further enhance their formidable commitment to abide by the occupational ethics and confinements. Not only are promotional posters posted within the plant, but the policy guidance on legal compliance is also provided on the internal website or facilitated through the regulation advocacy activities of the following themed courses, so as to substantiate our staff members' understanding of all legal compliance.

Courses In 2019

Legal Compliance

- Legal compliance meeting

Business Ethics

- Insider trading law generalizations understanding of the law on honest management

Data protection

- Advocacy on personal data protection and EU GDPR Focus on Intellectual property concept/Company confidential data management guidelines
- Business secrets regulations and development trends
- Advocacy on information security and malicious emails prevention
- Company confidential information management guidelines

Occupational Safety and Health; Environmental Protection

- Health & safety; Hazard communication of hazardous chemicals
- Occupational safety and health case explanation
- Ambulance Emergency Response Measures and Chemical Splash Course
- CPR + AED education and training
- Occupational violence/attack and sexual harassment prevention advocacy
- Personal protective equipment and occupation injury cases advocacy
- Prevention of human musculoskeletal injuries
- Mechanical prevention education
- Hearing protection

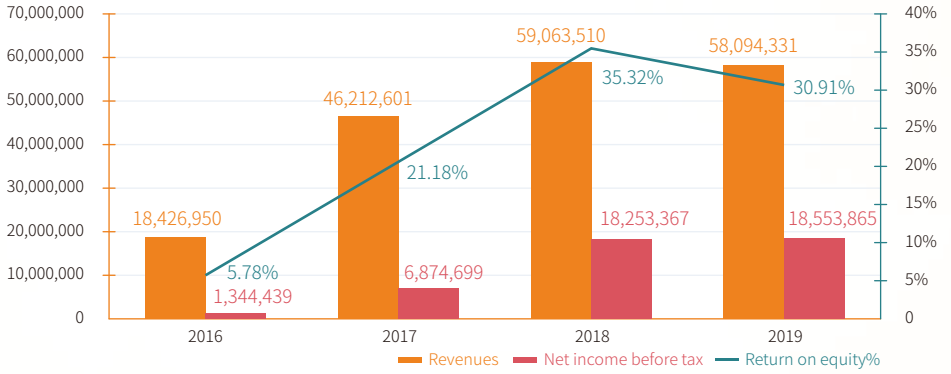
2.3 Operation Performance

Looking back on 2019, the dual effect of international trade and geopolitics led to increased uncertainties, turbulence in global markets and a slowdown in demand of the semiconductor industry, but GlobalWafers still managed to have positive growth in the face of adversity. The consolidated revenue of GlobalWafers in 2019 was NTD 58.094 billion, a slight decrease of 1.6% compared with 2018 and made the second highest record. Its gross profit, operating income, net income after tax, net income attributed to shareholders of the parent company and earnings per share have gone over the top and made the best performance since establishment!

For more details on operational performance and financial data, please refer to 2019 GlobalWafers Consolidated Financial Statement.

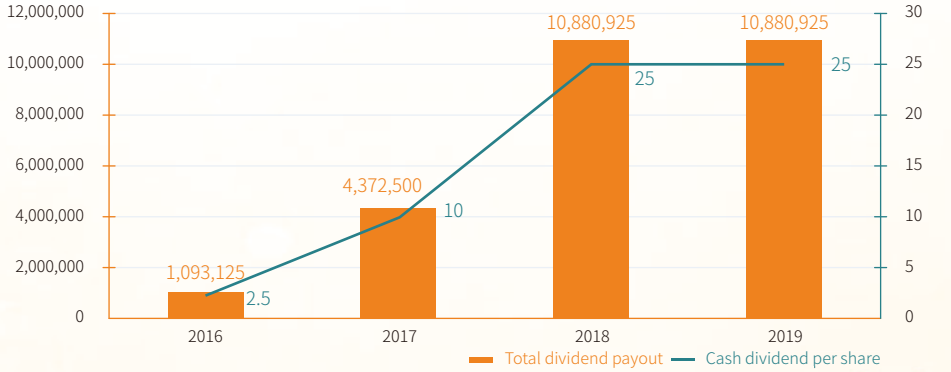
Financial Performance (Consolidated)

Unit: 1000 NTD



Cash Dividend

Unit: 1000 NTD



2019 Annual Economic Value Analysis

Unit: 1000 NTD

Generated direct economic value	Annual report - income	58,094,331
Distributed economic value	Operational costs	35,247,610
	Employee salaries & benefits	11,723,863
	Payment to investors	10,880,925
	Payment to the government	2,699,695
	Community resources	186

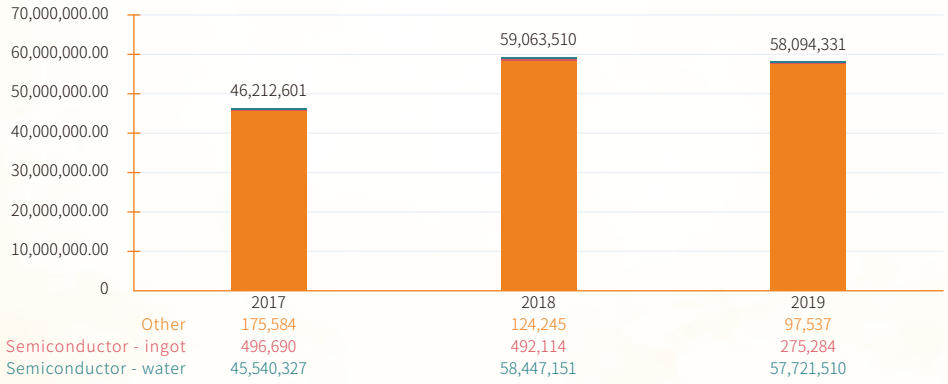
Note: Payment to the government and community data are sourced from Taiwan companies (GlobalWafers Headquarters, GlobalWafers Chunan Plant, Taisil Electronic)

Product Sales

GlobalWafers set a new highest record from the strong market demand in 2018. In the first-half of 2019, high amount of inventory at the client end, low demand in memory market and the impact of trade war and regional political tension shrank the overall semiconductor market. However, in the second-half of 2019, GlobalWafers managed to set the second highest record of revenue by its stable business strategies along with inventory closeout and gradual market rebound.

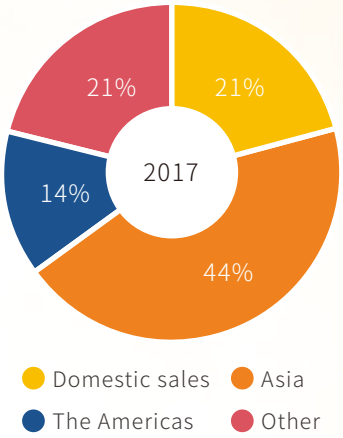
Revenue

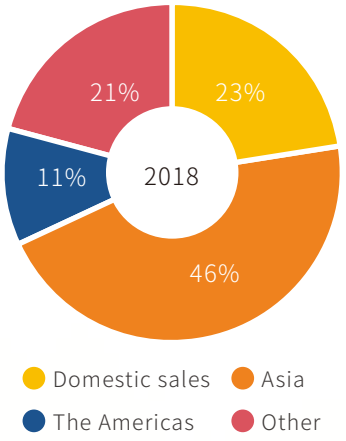
Unit: 1000 NTD

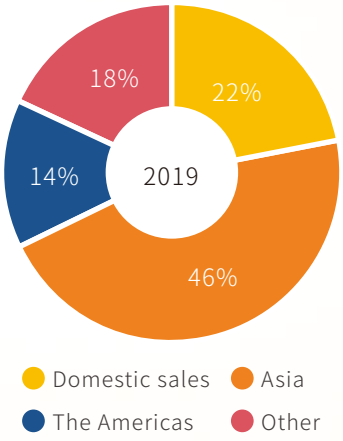


Sales Distribution by Region(%)

Since the acquisitions of Topsil and SunEdison in 2016, GlobalWafers has successfully obtained their existing customer orders and worldwide sales networks, thereby reaching a stable and balanced distribution in revenue, with the Asia region being the majority including a domestic sales ratio of over 60%, followed by the Americas.







Overall Economic, Environment and Industry Trends

Looking back at 2019, the dual effect of trade tension and geopolitics has led to increased uncertainties. Global economic environment has experienced frequent turbulence. The demands in semiconductor industry have slowed down. GlobalWafers still provided products to satisfy customers' needs stably and flexibly with diversified and complete product service, conquered market adversity and presented a stellar record of second highest revenue in history.

Observing the prosperity of global silicon wafer industry in 2020, we can see that inventory at the client end have been consumed from the highest during the middle of the year. Substantially, this has reflected that prosperity in semiconductor industry has gradually recovered. Moreover, the accelerated deployment of 5G and the sequential launch of new terminal products with various new technologies applied in cell phones, VR, game console, AI, IoT, automotive electronics are expected to drive demands recovery of global semiconductor chips. However, whether the spread of coronavirus can be effectively controlled is still uncertain. Hence, it is hard to estimate its impact on global macroeconomy and individual industry. GlobalWafers will continue to make use of its operating sites all around the world to get hold of the situation instantly and face the issues carefully.

2.4 Risks Management

In response to the rapidly changing management environments and to ensure the company's stable management and sustainable development, GlobalWafers has stipulated in 2015 risks management policies and risks management guidelines. The three major objectives of the risks management system stimulation:

◎ Proactively engage in all businesses to enhance the quality and quantity of income, within the limits of acceptable risks standards

◎ Strengthen the width and depth of risks control and management and respond, when necessary, with negative listings regarding standardized and key principles

◎ Thoroughly facilitate systems, computer operation and disciplines to ensure the compliance with risks control and management

GlobalWafers' risks management procedure includes risks identification, risks assessment, risks supervision, risks reporting and disclosure, and response to risks. With this risks-management procedure, we aim to effectively implement and facilitate the company's risks management strategies.

GlobalWafers has stipulated an assessment method for risks management for the referencing of risks management. Regarding quantifiable risks, we adopt rather stringent statistics analysis and technique for analysis management and manage such quantifiable risks with a progressive method. With risks that cannot be easily quantified, we assess them with a qualitative method, i.e. with linguistic description to express the possibility and impact of a risk occurrence. Relevant operation and risks management information is also disclosed in the company annual report and company website.

GlobalWafers' execution of risks management follows the three-tier risks management system for division of labor and operations.

GlobalWafers has established an effective risks management mechanism to assess and supervise its ability of withstanding risks and status of risks sustained, and to determine risks-responsive strategies and the compliance status of risks management procedures. Identified ESG risks and opportunities are as illustrated below.

Tier-1 liability

- The person in charge of each departmentor business operation is the risk liability holder for the said operation and should comply with internal guidelines in business operation as the preliminary unit for risks discovery. assessment and control.

Tier-2 liability

- The chief of each department is responsible for the risks management of their relevant business, as well as tracking, reviewing whether all operation details are compliant with laws and regulations.

Tier-3 liability

- The President Office shall examine thecompleteness of the risks management mechanism for the company hazards, operation, finance, strategies, legal compliance and contract compliance, while supervising relevant risks for each department.

Identified risks	Strategies of turning risks into opportunities
Economic Aspect	
All risks involving management and investment	◆ Proactively establish a comprehensive up-, middle- and down-stream integrated supply chain to expand the operation scale and to disperse operation risks via multi-angled management strategies. ◆ Establish an automatic feedback production and manufacturing analysis system to improve process stability, optimize quality and reduce costs. ◆ Continue to cultivate in the advanced technology R&D, commit to enhanced performance of key materials for power components so as to widen the gap from the competitors. ◆ Invest in the development of key technologies for GaN RF components as a response to the market demand for IoT and G5 mobile telecommunication.
Risks of corporate governance	◆ IImplement corporate governance policies, stipulate relevant governance guidelines, punishment and appeal systems, facilitate corporate social responsibility to demonstrate GlobalWafers' promise and determination in pursuing sustainable operation.

Identified risks	Strategies of turning risks into opportunities
Environmental aspect	
Climate change risks	The management is conducted in two major aspects: mitigation and regulation ◆ Promulgate the ISO50001 energy management system to supervise the equipment for major energy use and plan energy action improvement plan. ◆ Promote green products and green production to reduce energy consumption. ◆ Promulgate water conservation measures. ◆ Strengthen the company's withholding capacity for extreme climate conditions (drought, floods, snow storms). ◆ Conduct energy management and enhance energy consumption efficiency as a response to increased energy costs (e.g. rising electricity bills, carbon tax, energy tax).
Risks for environmental protection	◆ Install the pollutant emission supervision system; devote to pollutant reduction. ◆ Strength the risk control for turning waste into resources and reuse; use regenerated raw materials as much as possible.

Identified risks	Strategies of turning risks into opportunities
Social aspect	
Challenges for relationship maintenance and communication with internal & external stakeholders	◆ Strengthen the Stakeholder Engagement on the company website; build a communication channel with our stakeholders so as to understand and respond to issues of concern to all stakeholders..
Risks for occupational safety and health	◆ Conduct hazard identification and risks assessment, plus risk reduction measures; stipulate relevant management procedures and handling guidelines; implement emergency response drills on a regular basis. ◆ The company conducts regular safety & health education and training to prevent occupational hazards and protect labor safety and health.
Risks for labor health	◆ Regarding particularly operation prone to health hazards, special physical check-ups are offered to employees that are newly recruited or undergo job changes. Annual special health check-ups are conducted, as well as the execution of labor operation environment supervision. ◆ To strengthen employees' health awareness, we promulgate sporadic employee health management and health promotional events in which to share info on major illnesses or health allowing our employees access to all-round health info.
Risks for labor-management relationships	◆ Labor-management communication: Our company values the rights and interests of our employees. Prior to major changes in policies, notification is given to impacted employees via labor-management meetings, electronic newsletters or HR announcement, so as to ensure the employees' rights and interests. ◆ Interviews with new recruits: With interviews, we can more directly understand how the employees are getting on in the company, shorten the time it takes for new recruits to get used to the work, and reduce labor-related risks. ◆ Employee complaints channel: Install designated personnel for handling employee opinions, handle problems raised by employees in a timely manner, reduce labor-management conflicts.

Climate Change Risks and Opportunities

In December 2015, nearly 200 countries emphasized on the response to threats brought by climate change through “Paris Agreement”. Reduction of greenhouse gas emission has become the key issues for global economic development. In June 2017, Financial Stability Board (FSB) announced “The Task Force on Climate-Related Financial Disclosures” (TCFD). Hence, we complied with the structure recommended by TCFD, including four core elements, governance, strategies, risk management, indicators, and goals to disclose relevant information of climate change.

Structure for Disclosing Climate-Related Financial Information

Members of the GlobalWafers Corporate Sustainable Development Committee collect risks and opportunities related to climate change, and integrate with the issues concerned by stakeholders. The representatives of each team in the Corporate Sustainable Development Committee then identify and score them. In the annual meeting of Corporate Sustainable Development Committee, they will report the identification results. Finally, relevant members and teams will propose management measures and goals based on the risks (major topics) and report the results to the board of directors.

Climate-Related Risks and Opportunities

Types	Climate-related risks	Potential financial impact
Transformation risk	Policies and regulations Responsibility for the disclosure of greenhouse gas emissions. Current and revised energy regulations.	Increased operating costs Policy changes result in existing asset write-off and early scrapping.
	Technology Investment and transformation of new/low-carbon technologies.	Capital investment in technology development. Expenditure on research and development of new and alternative technologies.
	Market Preferences and changes in customer behavior. Increase the costs for raw materials and waste disposal.	Changes in consumer preferences lead to a decline in demand for goods and services. Revenue mix and source changes. Increased input costs
	Reputation Industrial stigma	Decline in demand for goods/services
Physical risk	Immediate Increased frequency and severity of extreme weather events (typhoons, heavy rainfall). Long term Rising average temperatures	Loss or interruption of production capacity Increased operating costs Lower sales/output lead to lower revenues.

Type	Climate-related opportunities	Potential financial impact
Resource efficiency	Recycling Reducing the use of water resources.	Reduce operating costs
Energy sources	Use new technology	Reduce operating costs
Products and services	Research and innovation of products and services. Diversified business activities	Improve competitive position to reflect changes in consumer preferences.
Market	Making good use of public sector incentives.	Work with the public sector to enter new markets and raise revenue. Reduce operating costs
Resilience	Energy planning and energy conservation measures. Resource substitution and diversity.	Reduce operating costs

Countermeasures and goals

- Regularly track greenhouse gas emission trends of plants on a regular basis each year.
- Regard the regulatory aspect, continuously track regulations identify regulatory changes and make responses.
- Promote energy-saving measures, develop low-carbon and renewable energy.
  - Investment in replacing old equipment in the factory with new ones.
  - The use of advanced emission reduction technology to expand the substantial carbon reduction benefits.
  - Continuously formulate energy conservation measures; the annual energy conservation rate of each plant shall be at least 1% per year.
- Management of energy and resource use and waste disposal.
  - Recycle residual silicon ingots for use in the furnace.
  - Recycle the business waste, cutting oil.
  - Recycle packaging materials and wafer cassette.
  - Transform lapping waste, grinding slurry waste to secondary materials in glass industry.
  - Replace the media from chemical degumming to hot water in the project of slicing/ lactate hot water degumming.
- Research, develop, and optimize products and services.
  - Optimize silicon wafer process by transforming from line cutting (Slurry) to diamond utting (DW) to increase productivity and significantly reduce load use and the output of waste cutting oil (mud).
- Reputation
  - Guide the industry to enhance green competitiveness and green corporate image with the promotion of green factory label system.

03 Innovation And Service

Chapter 3 Innovation And Service

Major Aspects for Consideration

Product quality, customer service and privacy

Significance to GlobalWafers

GlobalWafers adheres to sustainable operation ideals and continuously works for customer satisfaction and customer information security, in addition to maintaining operational performance with stable growth. We start with customer demand and hope to develop innovative services in line with GlobalWafers' corporate ethics. Much like our quality policies, GlobalWafers is committed to continuous improvements and pursues excellence to provide excellent quality, technology and comprehensive services and enhance product quality and company's competitiveness. Meanwhile, GlobalWafers grows with customers, pursues excellence with employees, creates values for shareholders and seeks sustainable management with our customers in order to provide better quality for products, product technology and manufacturing. The goal is to provide customers with zero-defect products and services.

Management Mechanism

GlobalWafers continues to promulgate our quality control system, adhere to the TS/IATF 16949 spirits, proactively devotes into quality management activities, embraces comprehensive continuous improvement, advances production technologies to enhance product quality.

1. GlobalWafers established QIT (Quality Improvement Team) at each plant, which is composed by the members from each functional division. Members of QIT has devoted in the research of production process and the improvement on product quality. They are required to submit performance report every half a year, arranged QIT performance presentation evaluation meeting in which the review items includes innovation, cost effectiveness, exquisite production, product competitiveness, customer satisfaction, analysis, review and improvement on customer complaints, production process achieved quality indicators, etc.

2. To integrate and inspire the intelligence and experiences of all levels of employees in GlobalWafers, we specifically established "Proposal Improvement Committee" for reviewing all the improvement opinions, innovation, and scheme beneficial to the Company which had been submitted. By constant improvement and advancement, the Company can achieve nearly perfect status and enhance Company's product image and competitiveness.

We have passed the TIPS (Taiwan Intellectual Property Management System) AA-level certification, strengthened information security guidelines, prevented confidential data leakage, guaranteed the rights and interests of the company and customers, monitor product quality control with complete and tight customer-oriented procedures and provided product manufacturing services that satisfy customer demands. Meanwhile, we think from customers' perspectives, emphasize customer-oriented services backed by professional technology, hoping to provide services that meet or exceed customers' expectations.

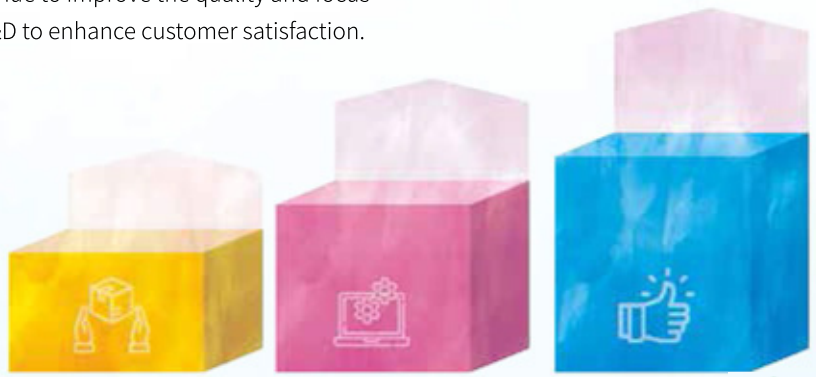
2019 Key Performances

01 GlobalWafers obtained effective patents up to 1,301

02 Won 2 golden awards in Taiwan national quality control competition

Future Goals

Continue to improve the quality and focus on R&D to enhance customer satisfaction.



3.1 Innovation Management

Regarding the next few years, the growth momentum of GlobalWafers will not only be contributed by the new plant in South Korea and SOI expansion in US plant, we will also replace old equipments with new ones in the plant located in Hsinchu Science Park stage 2 area, devoting in 12-inch silicon wafers for advanced production process and expand R&D center to develop advanced compound semiconductor materials including SiC. Taking silicon carbide with good dispersion property, it can be applied in 5G, high power semiconductors, high frequency high voltage automotive semiconductors. In the future, the ratio of automotive semiconductors will enhance greatly. Moreover, these products will show effects in 2021 and become the new growth momentum of GlobalWafers.

In terms of product and R&D, GlobalWafers has greatly enhanced the advanced semiconductor wafer production capability and technologies exclusive for advanced production process; accelerated SiC wafers and SISiC required for new technologies, such as 5G, power electronics and electronic vehicles; expanded the organization and R&D power for Taiwan Wafer R&D Center; devoted in domestic green energy development; and increased the ratio of green energy in semiconductor wafer production process. Products can be classified into three major products based on product types. The following is roadmap for these three major products:

環球晶圓產品發展方向

1. Integrated Circuit Wafer Materials

Main products are 8~12" perfect silicon, 8~12" annealed wafers, wafers for optical device / sensor application and SOI wafers. Large diameter wafers are mainly utilized for integrated circuit device manufacturing. This includes 5 major categories of devices of Bipolar Digital, Memory, Micro device, Logic and Analog device. When gate length continues to micronize and requirements on silicon wafer defects and surface cleanliness and flatness have become more stringent, crystal pulling technology (for example, oxygen concentration in silicon and micro-defects) improvement and wafer processing technology breakthrough during the silicon wafer manufacturing process have therefore become more important. When gate length for integrated circuit manufacturing process is becoming smaller day by day, quality requirement on silicon wafers is also becoming more stringent. In the field of integrated circuit wafer material, GlobalWafers shall continue to develop wafers compliant with advanced integrated circuit manufacturing process requirements while providing customers with the best services and options.

2. Power Electronic Wafer Material:

Wafers for power electronic devices application include low resistance heavily doped wafers, high power electronic wafers, automotive diode wafers and deep diffusion polished wafers. These products are used in the field of silicon-based power semiconductor. During the period from 1994 to 2014, compound annual growth rate (CAGR) for global power transistors was 6.2%. The 2015 IC Insights report predicted that with the propulsion from the steady growth in automobile, consumer electronics, portable devices, industry, and wireless communication markets, CAGR for power transistors sales between 2014 and 2019 was expected to hit 5.3%. (Source: Power Transistors Seen Stabilizing and Setting Record Sales in 2015), with global revenue reaching US$17.1 billion dollars. The sales for power electronic devices, diode devices, and other discrete devices grew by 11% in 2018 due to shortage for two consecutive years. The above is expected to increase by 4% in 2019. Equipment demand/ supply is expected to reach a balance in the 2nd half of 2019. Between 2018 and 2023, CAGR for the above sales is expected to grow by 3% (Data source: http://www.icinsights.com/services/osd-report/report-contents/). The global demand for power semiconductor will continue to grow, and GlobalWafers possesses a leading position in this field and shall continue its in-depth cultivation of development for relevant products and technologies.

3. Wide Bandgap Wafer Material:

Wide bandgap power device comes with many advantages which include features of high electric breakdown field, high saturated electron drift velocity and superior heat dissipation. These features make wide bandgap device more suitable for applications in high power, high frequency, and high temperature environments. Utilization of wide bandgap power device can lower energy consumption during conducting and switching, and the power consumption for the system's overall operation can be reduced by half. Additionally, given the features of lowered energy consumption and excellent heat dissipation, volume and weight for the system using wide bandgap power devices can be reduced dramatically. Currently, new materials such as SiC, GaN and Ga2O3 are being regarded as materials for next-generation power semiconductor. GlobalWafers has invested in the research of developing GaN and SiC wafers. Currently, the company is already providing customers with silicon wafer substrates, which is exclusive for GaN on silicon, and GaN on silicon Epitaxy wafers for their device design and development. Developments for SiC polished wafers and Epitaxy wafers shall continue. For these two new materials with explosive growth, we shall continue to invest in development resources. In future, GlobalWafers will be able to provide various types of wafers for energy applications and total solutions for customers.

Research Resources

Product development takes time, manpower and resources. It takes resources and support from numerous parties for a product development to come to fruition. For small companies with insufficient resources, how to utilize small resources is prerequisite to creating maximum benefits.

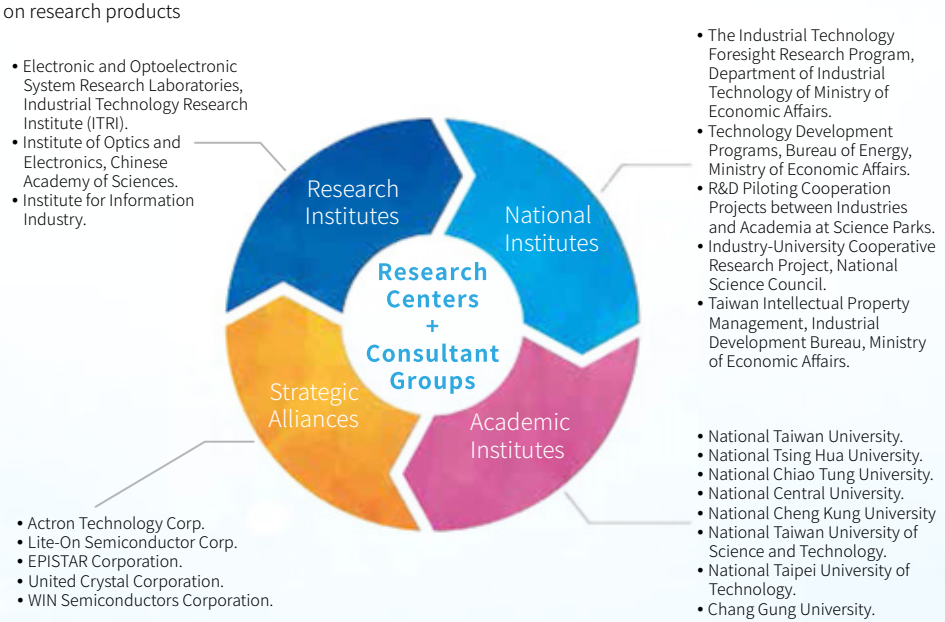
Internal Resources

GlobalWafers has a total of 16 worldwide operation & manufacturing bases spreading across 9 countries with customers from Asia, Europe, the Americas. Faced with globalized competition, grasping information, and sharing resources sharing will be conducive to more efficient and accurate strategies. Therefore, GlobalWafers has established inter-factory KM interaction platform which enables interaction amongst factories by communicating/sharing information and technologies. On this interaction platform, resources and supports can all be obtained for technology issues, market information and product development, manufacturing management, quality management and IP patent related activities faced by respective factories. In the meantime, enhancement for respective factories' capability is facilitated accordingly through internal competition mechanism established by this interaction platform.

Internal Resources-KM Interaction Platform

External Resources

Taiwan has excellent academic resources and has accumulated large amounts of profound knowledge regarding fundamental researches and scientific applications. Infusion of academic research energy through academia-industry collaboration can supplement the company's technology insufficiency in the product development process. On the other hand, Taiwan has a complete ICT industry chain. Through up- and down-stream integrated operation, we are able to facilitate mass production during the product development stage. Furthermore, to facilitate industry upgrades and practical application of academic researches, governmental bodies provide extremely huge research funds each year to subsidize academia-industry collaboration on new products and new technologies development. Since 2015, the Taiwanese government has started the guidance program promoting industry upgrades & innovation platform and assisted industries in undergoing structural via four major development strategies (enhancing product value, supplementing critical supply chain, developing systems and incubating emerging industries). GlobalWafers headquarters utilizes external resources through academia-industry collaborations with academic institutes, commissioned researches with research agencies, as well as implementing national projects via subsidy application to national institutes and conducting strategy alliances with industry players. External research consultant groups composed of these external resources work together to solve technological issues arising out of the product development process and conduct verification on research products



Sustainable operation and profits are every enterprise' expectation. However, century-old enterprises may vanish too when faced with global competition and technology evolution and loses it driving force for progressive operation. A company will go with the tides and continue to grow and make profits if its operation strategies are aligned with the development of the trends. With respect to research strategies, it is necessary to continue with in-depth cultivation on core technologies and core competitiveness, supplemented with technology trends and market information as the development direction. The company can thus achieve the goals of sustainable operation via integrated internal and external resources and maximum benefits through minimum investment, plus sound management of intellectual property protection and utilization.

Research Strategies and Company Business

Intellectual Property Management Guidelines

In 2013 GlobalWafers' intellectual property management system adopts the Taiwan intellectual property management system and has passed the TIPS (Taiwan Intellectual Property Management System) basic certification and continued to pass advanced certifications in 2014 and 2015, as well as AA-level certification in 2016. Continued to pass the AA-level certification in 2017, 2018 and 2019. With the promotion of TIPS, we have established intellectual property goals, provide employees with intellectual property rights education and training, and enhance information security guidelines. In so doing, we strengthen our patent deployment, reduce infringement risks, and prevent confidential information leakage, so as to protect the rights and interests of the company and our customers. In the era of technology-based competition, intellectual property rights are a niche instrument in the competition of next-generation product development. GlobalWafers has aggressively promoted patent deployment and planning in the fields of various critical technologies and accelerated the development of our own core technologies. As of 2019, we have received 225 effective patent certificates. By adding up other overseas subsidiaries, the corporate group has a total of 1301 effective patent certificates accumulated over the years (as of the end of 2019).

The corporate group has a total of 1301 effective patent certificates accumulated over the years (as of the end of 2019)

3.2 Product Quality

GlobalWafers is committed to continuous improvements and pursues excellence to provide excellent quality, technology and comprehensive services and enhance product quality and company's competitiveness. Moreover, GlobalWafers grows with customers, pursues excellence with employees, creates values for shareholders and sought sustainable management with our customers.

To ensure effective implementation of the company's operation strategy direction, the company's "quality policy" contents are published in accordance with the company's annual plan and goals to serve as all employees' creed. We are committed to comprehensive continuous improvement in order to achieve utmost excellent quality, technology, and production to provide customers with zero-defect products and services

Enhancement of Company Improvement Culture

GlobalWafers respective factories are aggressively engaged in quality management activities for full-scale compliance with continued improvement as well as modified manufacturing process technology in order to enhance product quality. The Quality Improvement Team (QIT) has been established in respective factories and is composed of members from respective departments. QIT members are dedicated for extensive periods of time to manufacturing process research and product quality improvement. The improvement outcomes include innovation, new heights creation, cost effectiveness, lean production, product competitiveness, customer satisfaction, customer complaint cause analysis and improvement review, quality indicator for manufacturing process, and so on. Through continuous refinement and improvement, we aim for perfection in order to enhance the company's product image and competitiveness. We aim at zero-defect as our permanent goal and continue to improve and grow with our customers in order to become their No. 1 choice.

GlobalWafers attended "Taiwan Continuous Improvement Competition" in 2019 and won the golden tower award for both self-enhancement group - self-improvement and self-enhancement group – project improvement. We will continue to improve and excel our production technologies.

Wafering team Golden Tower Award

Achieving 122.6% of 16B lapping capacity ramp-up target.

Diamond WA-WA-Warp Golden Tower Award

Improving 25% warp performance of silicon wafers by Dianmind Wire Saw

3.3 Customer Service

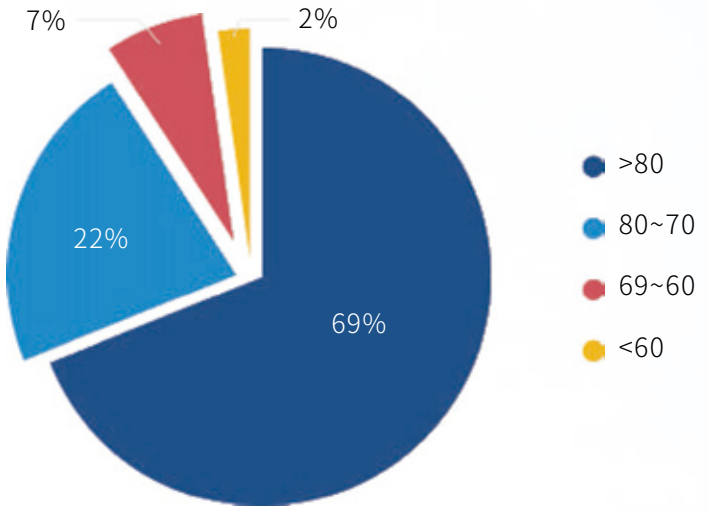
Customers are GlobalWafers' valuable assets. They are also the company's important partners along the way to growth. In addition to maintaining operation performance, enhancing the company's core value and pursuing advanced technology and stable quality, we also provide comprehensive customer service and maintain good collaboration relationship with customers hoping that all parties can grow and prosper together, enjoy sustainable operation and achieve social and economic values.

Customer Satisfaction

GlobalWafers has become the world's 3rd largest semiconductor wafer manufacturer. What contributes to this achievement is customer's recognition and support. Therefore, customer service has always been central to GlobalWafers' work. In order to enhance customer relationship, improve service quality and facilitate technology innovation, we conduct customer satisfaction survey each year focusing on top 20 profitable customers and potential key customers through questionnaire distribution or telephone interviews for the purpose of accessing and grasping customers' needs. Issues that need to be improved are located through survey results, and improvements will be continued in order to achieve customer satisfaction as the ultimate goal.

Contents for our customer satisfaction survey mainly encompass overall impression, business service, product quality and new product openness. Based on customer's feedback, GlobalWafers business team together with other colleagues will establish an improvement plan focusing on issues revealed, and further conduct in-depth discussion with customers in order to complete the customer satisfaction survey process.

With concerted efforts from various company teams, customer satisfaction survey recovery rate reached 88% in 2019. Overall satisfaction ≥ 80 points account for 69% Compared to that of 2018, 50%, overall satisfaction ≥ 80 points has shown significant enhancement. This shows that we have listened to customers' voice and our efforts in pursuit of advanced technologies and stable quality have gradually recognized by our customers. We aim at the permanent goals of continuous improvements, customer satisfaction enhancement and growth with customers.

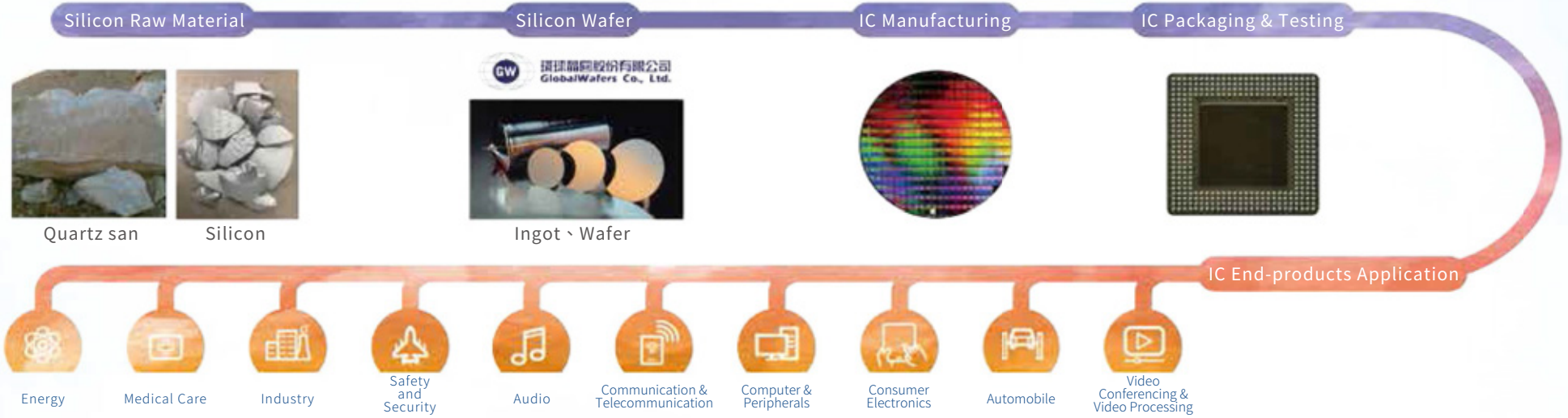


Year	>80%	80%~70%	69%~60%	<60%
2019	69%	22%	7%	2%
2018	50%	29%	13%	8%
2017	55%	27%	14%	4%
2016	74%	18%	6%	2%

Note: The satisfaction was a total of the score in the customer questionnaire. The statistics of the scores in the past three years only calculate the total score of single items. Hence, we referenced the wrong data before and had made the adjustment this year.

3.4 Industry Supply Chain & Management

Up/Down Stream Supply Chain

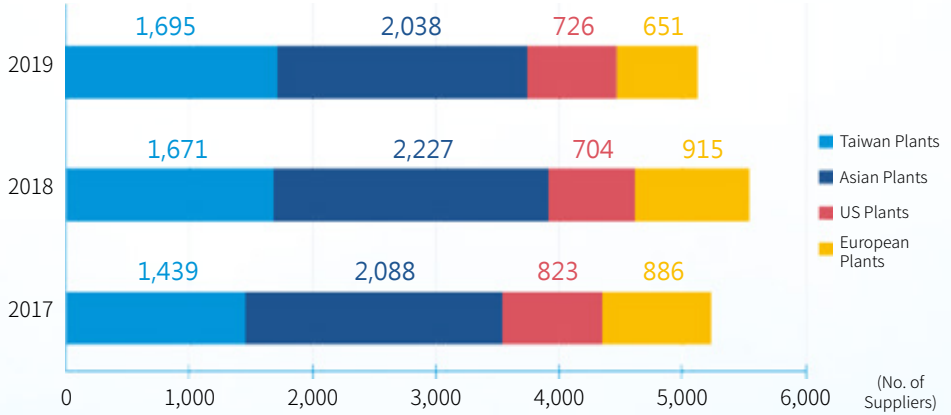


Supplier Assessment Management

Through appropriate supplier assessment operation, qualified suppliers are carefully defined and selected. Close work relationship and feedback system are also established accordingly to ensure raw material, finished product, half-finished product, fixture and tools, technology service and other labor services all comply with quality, environment, safety, and health requirements. Our qualified suppliers all need to comply with integrity operation principles, with no dishonest behavior records for our suppliers. Each year, we have a supplier assessment team composed of our quality assurance, R&D and other related departments. This team conducts supplier factory audits and document reviews, and interviews suppliers' management and employees to uncover out issues and rectify accordingly. Related audit records are maintained for inspection.

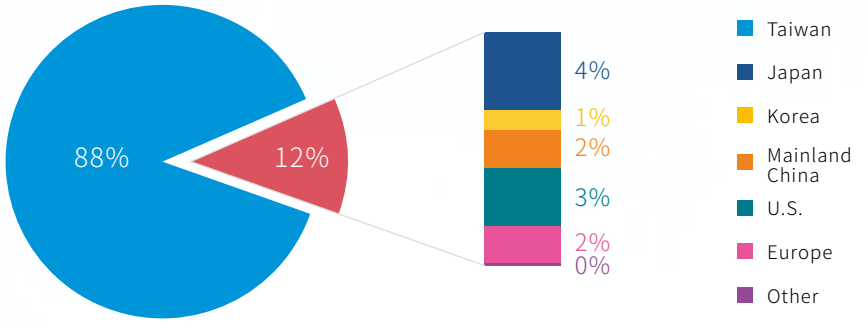
The total number of suppliers for our global respective factories has been on the rise for the last 3 years. For plants in Taiwan, the number of suppliers for the last 3 years accounts for roughly 30 percent of the total number of suppliers for global factories, with no pronounced percentage change, i.e. stability in suppler numbers. As for the distribution of supplier locations for Taiwan plants in 2019, local procurement accounts for the highest percentage, i.e. up to 88%, with others being 7% for countries neighboring Taiwan (Japan, Korea, China), 3% for the US, 2% for Europe and the rest for other countries.

Number of Suppliers for Respective Factories

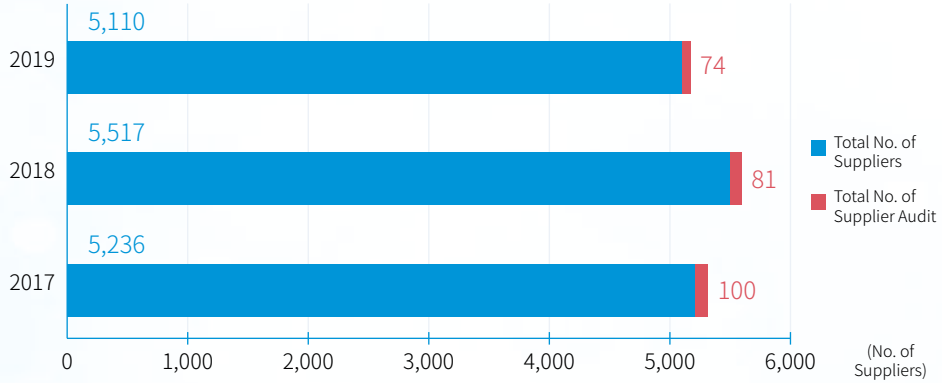


Note: 1.Taiwan: GlobalWafers Headquarters & Chunan Plant – Taisil Electronic
2.Asia: GlobalWafers Japan Co. Ltd., Kunshan Sino Silicon Technology Co., Ltd, - MEMC Electronic Materials Sdn. Bhd., MEMC Japan Ltd., MEMC Korea Company
3.US: GlobiTech Incorporated., - MEMC LLC
4.Europe: MEMC Electronic Materials S.p.A, Topsil GlobalWafers A/S

Supplier Location Distribution for Taiwan Plants



Number of On-Site Audit Suppliers for Global Factories



With respect to supplier on-site audit, the number of our supplier on-site audit in 2019 was approx. 1.5% of the total number of suppliers. Percentages for supplier on-site audit for the last 3 years are close to one another.

Regulation Requirements

GlobalWafers regularly collects regulation requirements from countries as place of receipt, countries as place of delivery as well as countries as destinations designated by customers to ensure product purchased, procedures and services all comply with laws and regulations requirements applied by countries where subjects are located. Additionally, when customers request regulatory special control over specific products, we will ensure this special control is implemented and maintained. The same applies to suppliers.

Some countries or regions have legal restrictions on chemical substance or chemical substance usage regarding raw material source or production. We comply with local corresponding laws such as RoHS and REACH regulations (restriction) in the E.U. and Toxic Substances Control Act (TSCA) in the U.S.

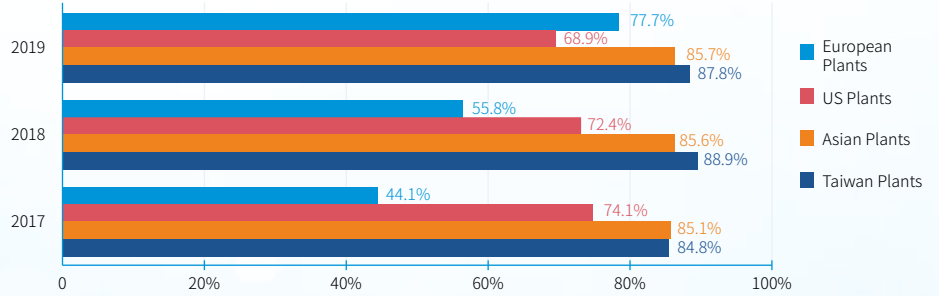
To ensure the company's quality management system continues to comply with requirements from customer and applied regulation, we regularly implement reviews over compliance with related information and regulations and make a list of the company's stakeholders and issues of their concern. We also continue to work with the Conflict-Free Minerals Plan and request suppliers to conduct reasonable due diligence on supply chain to ensure that materials provided to us by supplier are conflict-free, for the purpose of meeting requirements from customers and regulations.

The British government passed the Modern Slavery Act 2015 in October 2015. Enterprises that have an annual revenue of up to GBR 36 million with operation activities in the U.K. territory must comply with this Act. Our operation activities in respective countries comply with all local laws which include various acts preventing human trafficking and slavery systems. GlobalWafers will never tolerate any behavior of modern slavery system, and insists all its commercial transactions, business relationships and supply chain activities comply with moral requirements, upholding integrity as its highest principle.

Local Procurement

GlobalWafers' procurements are roughly categorized into equipment, parts & components, raw material, factory matter and automation equipment. Respective factories conduct their own procurement. We aim at localized supply chain as our goal which can increase supply flexibility and reduce unnecessary costs and supply chain carbon emission, promote green industry development, and create local employment opportunities. GlobalWafers' major manufacturing bases are in Taiwan and Asia. We consider enhancing local industry development as a critical part of corporate social responsibility. Our local procurement rate in Taiwan and Asia for the last 3 years reached above 86% in a bid to implement the concept of promoting the industry's local development.

Local Procurement at Global Plants

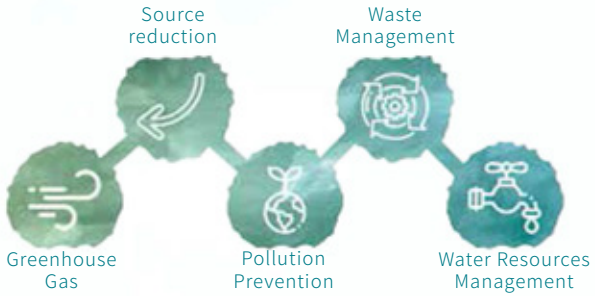


Note:1. Local Procurement: The Factory and its supplier are located in the same country.
2. Local procurement percentage is calculated by dividing the number of local procurement by the supplier number.

04 Sustainable Environment

Chapter 4 Sustainable Environment

Major Aspects for Consideration



Significance to GlobalWafers

Under the policy of "Circular Economy" which is promoted aggressively by the government, GlobalWafers is aware that the economic and technological development shall also consider the importance of environmental protection and considers that corporates have the responsibility to share impacts on the environment. As such, GlobalWafers fulfills facilitation on resources recycling in line with the "Circular economic" vision. In addition to the three Rs (Reduce, Reuse, Recycle), we focus more on the 4th R (Redesign), which ensures pre-planning of recycling effects of reduction, reuse and re-application for the product/manufacturing process during its design stage, while continues to enhance pollution prevention technological capability. Self-monitoring is also required in order to achieve the vision of a sustainable environment.

Management Mechanism

GlobalWafers has introduced the concepts of life cycle by promoting the environment management system ISO 14001 and energy management system ISO 50001. Life cycle starts from the improvement on processing process and product design, then it leads to truly reducing the source of raw materials, improving energy management performance by introducing the energy management system and enhancing energy utilization efficiency to reach carbon reduction effects. In addition, the plant continues to promote Material Flow Cost Analysis (MFCA) to find out improvement opportunities through the inventory of production process in order to achieve the effectiveness in management.

2019 Key Performances

With respect to prevention of air pollution and water pollution, the company also works with the promulgation of the environment management system. Each year, goals for energy conservation, water conservation, waste reduction and resource saving are established in order to lower energy resource consumption while achieving results of reducing greenhouse gas emission. With respect to waste management, traditional cleaning and disposal are transferred into the concept of effective resource management in order to reduce waste generation. Meanwhile, audit management on waste clearance companies is enhanced to ensure that waste is disposed in an appropriate manner. For regulation compliance, GlobalWafers insists on legal operations and conducts compliance assessment focusing on internal/external environment related issues. Preventive rectification measures will be taken immediately in the event of discoveries of regulatory risks, and policy fulfillment will be ensured through comprehensive management and vigilant operation and maintenance.

CO2e Emissions in Taiwan
3,438.4 tons-CO2e

Water Conservation in Taiwan
223,102 metric tons

Future Goals

- **Energy conservation rate>1%**
- **Reduction on greenhouse gas emission >1%**
- **Unusual incidents reported to the competent authority≦1**
- **Reduction on wastes>2%**

4.1 Greenhouse Gas

Faced with global warming and environmental changes in recent years and in response to greenhouse gas reduction work requirements prescribed in the “United Nations Framework Convention on Climate Change” and the “Paris Agreement”, or as part of this global village, governments of various countries have gradually launched concrete action plans to curb greenhouse gas emission. In the meantime, the international community's measures on greenhouse gas management have gradually expanded downwards from the national level negotiation to the corporate level through multi-national supply chain requirements, which have directly influenced enterprises' management activities. Low Carbon Economy has now become the mainstream for current economies and investments.

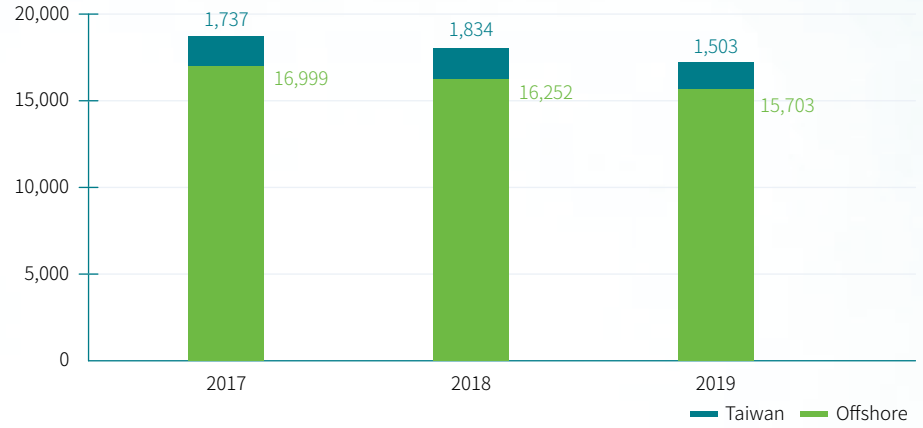
Out of concern for global climate change and to make good use of energy resources and fulfill its corporate responsibility, GlobalWafers is determined to comply with international organizations' ISO 14064-1 standard requirements on greenhouse gas management and systematically promulgate the establishment of greenhouse gas emission checking and listing in all manufacturing departments for future references regarding the formulation of improvement and management plans.

The company's operation parameter include three categories of greenhouse gas emission sources which include direct (scope 1, greenhouse gas for fuel utilization and manufacturing process utilization, fugitive emission sources of septic tank and firefighting equipment), indirect energy (scope 2, purchased energy) and other indirect (scope 3) sources. We have disclosed direct (scope 1) and indirect energy indirect (scope 2) in this report. The gas types included in the calculation are carbon dioxide, methane, nitrous oxide, hydrofluorocarbon, sulfur hexafluoride. The emission coefficients used are from IPCC 4th evaluation report (2007).

The total greenhouse gas emission of GlobalWafers in 2019 is 526,000 tons, which mainly came from electricity emission (scope 2) and was greatly reduced, compared to 2018. This is because GlobalWafers has continued to conduct management and improvement on the user-end of the energy in each factory internally in order to achieve carbon reduction effect. Our carbon dioxide equivalent emission in 2019 decreased by 8.1% compared with 2018, which is a reduction of 46,000 tons of carbon dioxide equivalent. where direct emission (scope 1) of carbon dioxide equivalent accounted for 3.27% of total emission amount and indirect energy emission (scope 2) accounted for 96.73%. Our carbon dioxide equivalent emission accounts for 33.24% of total emission amount in Taiwan. In 2019, GlobalWafers' plants in Taiwan decreased 3,432.2 tons of carbon dioxide equivalent in 2019 by adopting energy-saving management plan.

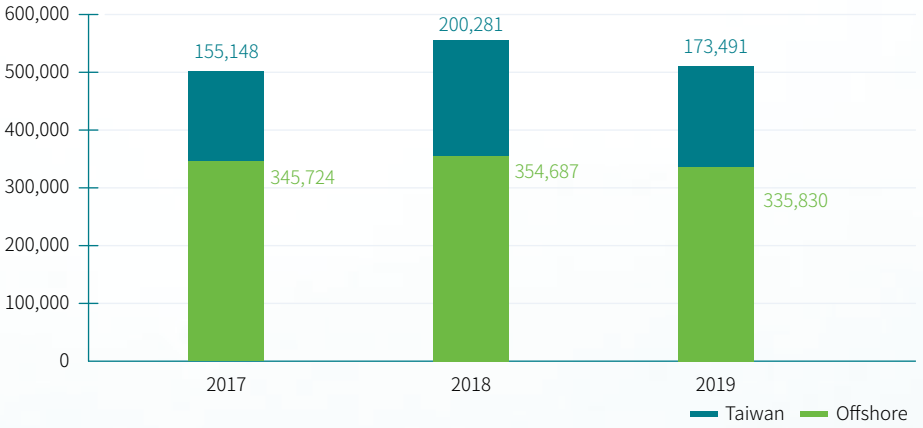
Scope 1: Greenhouse Gas Emission Amount

Unit: Metric Ton



Scope 2: Greenhouse Gas Emission Amount

Unit: Metric Ton



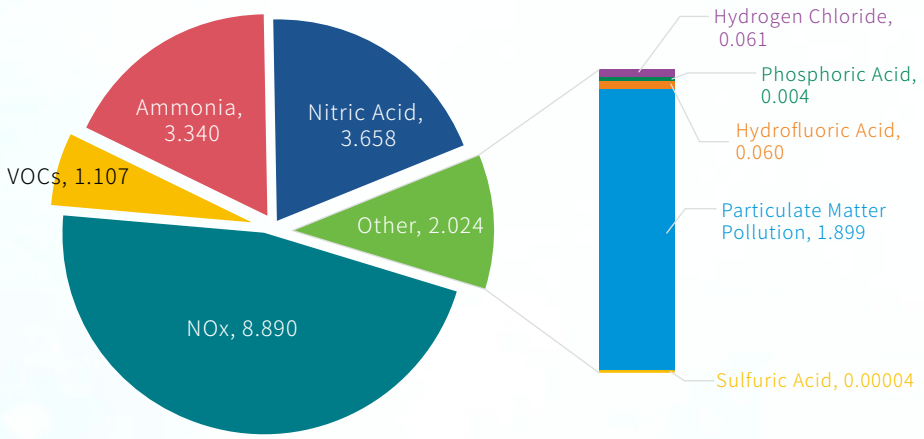
Note:1. Taiwan: GlobalWafers Headquarters & Chunan Plant – Taisil Electronic
2. Offshore: GlobalWafers Japan Co. Ltd., KunShan Sino Silicon Technology Co., Ltd., MEMC Electronic Materials S.p.A, MEMC Korea Company, MEMC LLC, MEMC Japan Ltd. Other factories are unable to provide data and are therefore not included in the scope of statistics. Factories not being disclosed hereto are GlobiTech Incorporated, MEMC Electronic Materials Sdn. Bhd., Topsil GlobalWafers A/S.
3. Carbon dioxide equivalent emissions are calculated based on emission factors issued by countries where each factory is located.

Other Significant Gases

Regular pollution emission materials in Taiwan include Nitrogen Oxide, Acid Waste Gas (Hydrogen Chloride, Nitric Acid, Phosphoric Acid, Hydrofluoric Acid), Ammonia, volatile organic compounds, and particulate matter pollution. In 2019, types of gas emissions exceeding 1 metric ton are Nitrogen Oxide, Nitric Acid, Ammonia, and volatile organic compounds.

Other gas emissions in Taiwan in 2019

Unit: Metric Ton



Note:1. Taiwan: GlobalWafers Headquarters & Chunan Plant, Taisil Electronic
2. There are no NOx pollution matters in GlobalWafers Headquarters and Chunan Plant.
3. Annual emission amount for particulate, inorganic acid and alkaline is assessed based on third-party certified laboratory test report statistics. Annual emission amount for volatile organic compounds is assessed based on the air pollution fee.
4. Regular pollution source emission matter is disclosed in accordance with the regular pollution source operation permit.

4.2 Waste Management

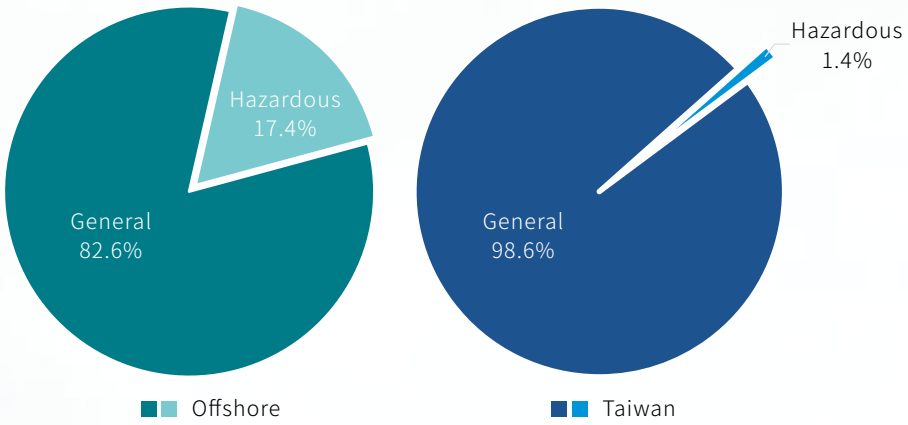
GlobalWafers' waste management emphasizes source reduction, manufacturing process improvement and source reduction in order to reduce waste generated. Meanwhile, recycling, re-use and re-utilization are implemented within factories to reduce amount for newly purchased raw materials while lowering amount of wastes generated. Finally, the company implements commissioned clearance (including incineration, landfill and physical treatment). Currently, all wastes in our respective factories are treated through commissioned clean-up. There are no cases of multi- national (offshore) waste treatment. There is no detection of major violation on the part of waste clearance contractors for the last 3 years. Also, it has established review mechanism regarding the compliance of waste treatment companies to regulations in order to determine whether both parties shall cooperate. No occurrence of major leakage incidents or offshore hazardous waste treatment in our plants.

In Taiwan, our waste generated goes through waste clearance and handling in accordance with waste clearance related regulations to comply with the most basic requirements from laws and regulations. Prior to commissioning the waste treatment, collection by categories and storage management are implemented within the plants. After appropriate and legal waste clearance and handling contractors are selected based on the features of waste, the waste is thus handed over to the contractors for handling, clearance and reporting where the waste is shipped all in accordance with environmental protection regulations. For the purpose of effective control over where wastes are shipped and to ensure that wastes have been carefully treated, audits are arranged to be implemented on waste contractors each year based on the content of their work (clearance, handling, reutilization). As for clearance institutes, we emphasize on factory access control. For handling/ reutilization institutes, audit is conducted on materials of their storage facility, treatment facility, treatment capability, operation of pollution prevention equipment, on-site safety, health and firefighting management as well as company operation condition. Audit results then are categorized into grades to determine whether later collaboration will be continued, or the audit frequency should be enhanced.

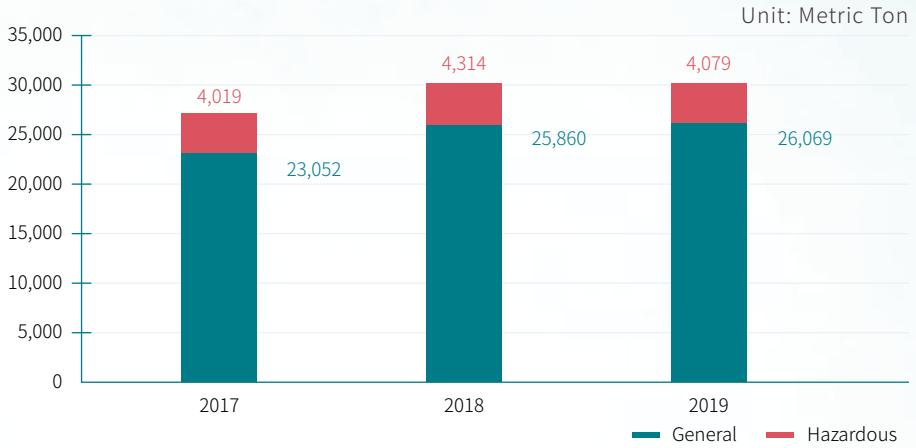
In 2019, waste treatment amount in Taiwan was 7,293 metric tons, of which general industrial waste accounted for 98.6% and hazardous industrial waste, 1.4%. Offshore waste treatment amount is 22,855 metric tons, with general industrial waste accounting for 82.6% and hazardous industrial waste accounting for 17.4%. Of all handling methods for general industrial waste, the reutilization accounted for 76.53% as the highest percentage (for 5,503.64 metric tons), followed by physical handling, 9.19% (for 661.19 metric tons). Of all handling methods for hazardous industrial waste, the reutilization accounted for 64.81% as the highest percentage (for 65.784 metric tons), followed by physical handling, 23.43% (for 23.78 metric tons).

Industrial waste treatment in Taiwan accounts for 24.19% of the total amount for global factories. Our waste treatment amount was on the rise for the last 3 years due to continuous increase in production capacity.

Industrial Waste Percentages in 2019



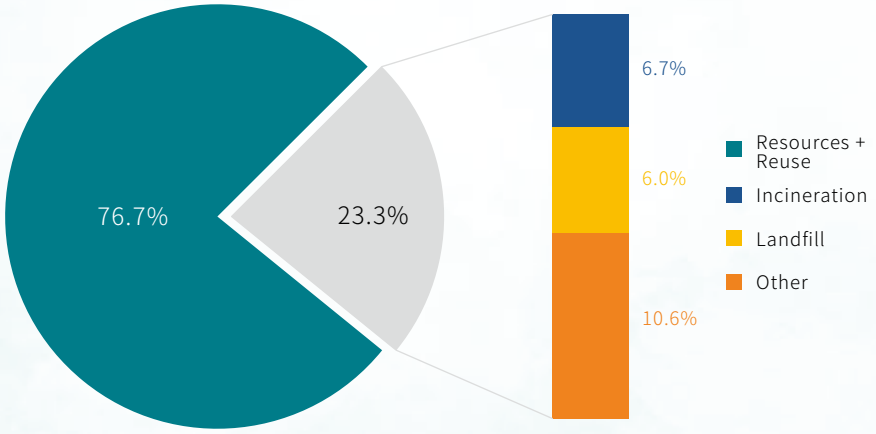
Industrial Waste Treatment Amount for Global Factories



Note:1. Taiwan: Taiwan: GlobalWafers Headquarters & Chunan Plant – Taisil Electronic
2. Offshore: GlobiTech Incorporated., GlobalWafers Japan Co. Ltd., MEMC Electronic Materials Sdn. Bhd., MEMC Electronic Materials S.p.A, MEMC Japan Ltd., MEMC Korea Company, MEMC LLC, Kunshan Sino Silicon Technology Co., Topsil GlobalWafers A/S

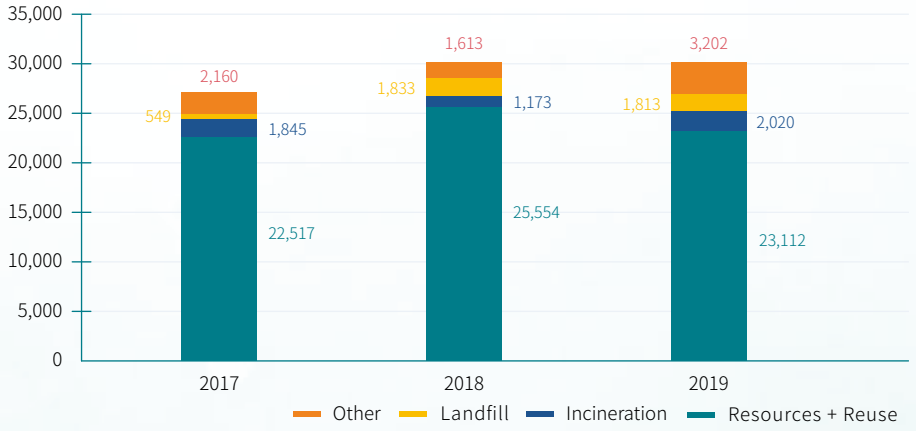
With respect to commissioned treatment on industrial waste, the industrial waste adopted recycle and reuse measures in our global factories in 2019 accounted for 76.7% of total waste treatment amount. Other treatment measures (physical, chemical, and curing treatment) accounted for 10.6%. Incineration accounted for 6.7% and landfill, 6.0%. In Taiwan, percentages for respective industrial waste treatments are 79.6% for recycle and reuse, 14.4% for other treatment measures (physical, chemical, and curing treatment), 6.0% for incineration and 0.1% for landfill.

Industrial Waste Commissioned Treatment Measures for Global Factories in 2019



Note: Other treatment measures include physical, chemical, and curing treatment.

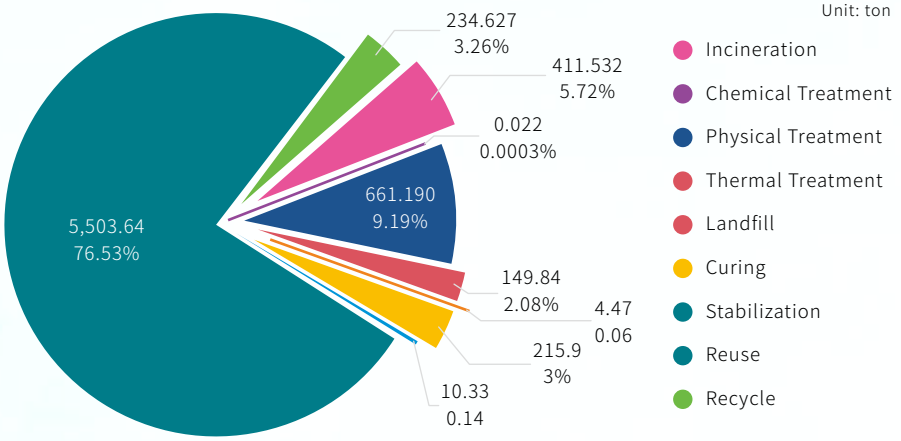
Treatment Amounts for Industrial Waste Respective Treatment Measures In Global Factories



Note: Other treatment measures include physical, chemical, and curing treatment.

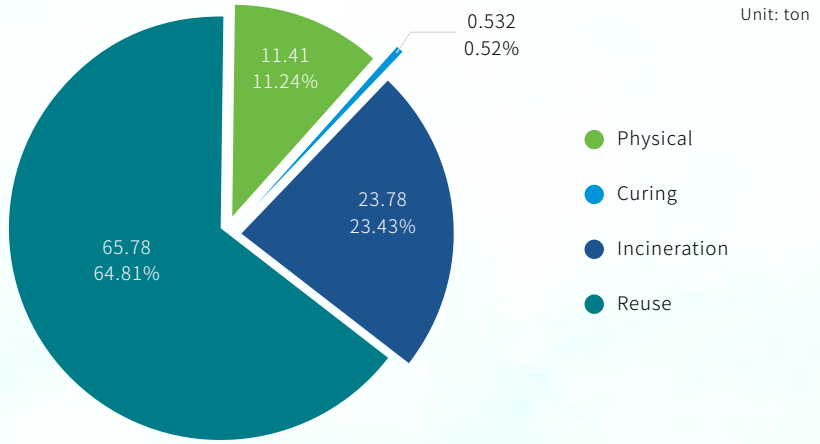
Treatment Amounts for Industrial Waste Respective Treatment Measures In Taiwan

2019 General Waste Distribution



Note:1. Data filing is submitted in accordance with the Industrial Waste Report and Management Data System by the Environmental protection Administration
2. Data on general waste treatment measures is disclosed for Taiwan plants only (GlobalWafers Headquarters & Chunan Plant – Taisil Electronic).

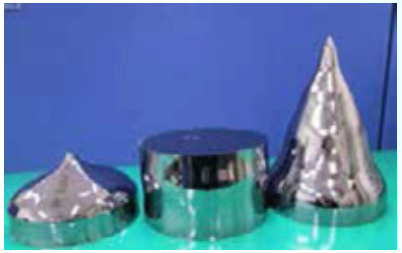
2019 Hazardous Waste Distribution



Note:1. Data filing is submitted in accordance with the Industrial Waste Report and Management Data System by the Environmental protection Administration.
2. Data on hazardous waste treatment measures is disclosed for Taiwan plants only (GlobalWafers Headquarters & Chunan Plant – Taisil Electronic).

4.3 Source Reduction

4.3.1 Raw Material Re-Utilization



Through the promotion of ISO 14001 environment management system, GlobalWafers introduces the concept of product lifecycle, and reduces raw material consumption and wastes generated for the purpose of achieving the goal of sustainable operation and environmental protection. Based on different manufacturing processes, our respective factories utilize as much recycled raw materials as possible. Recycled raw materials utilized by our respective global factories include silicon raw materials, cutting flint (supporting agent), product package carton and wafer cassette.

GlobalWafers relies mainly on silicon as its main raw materials for production. During the crystal growth stage, we use the tailings recycled within the plants as much as possible to save the procurement costs and to reduce the waste outputs.

Recycled Raw Material Re-utilization in 2019 (Taiwan)

Category	Total Amount of the Year (Tons)	Total Recycled Amount of the Year (Tons)	Recycle Rate of the Year
Silicon Raw Material	2,420.63	494.54	20.43%

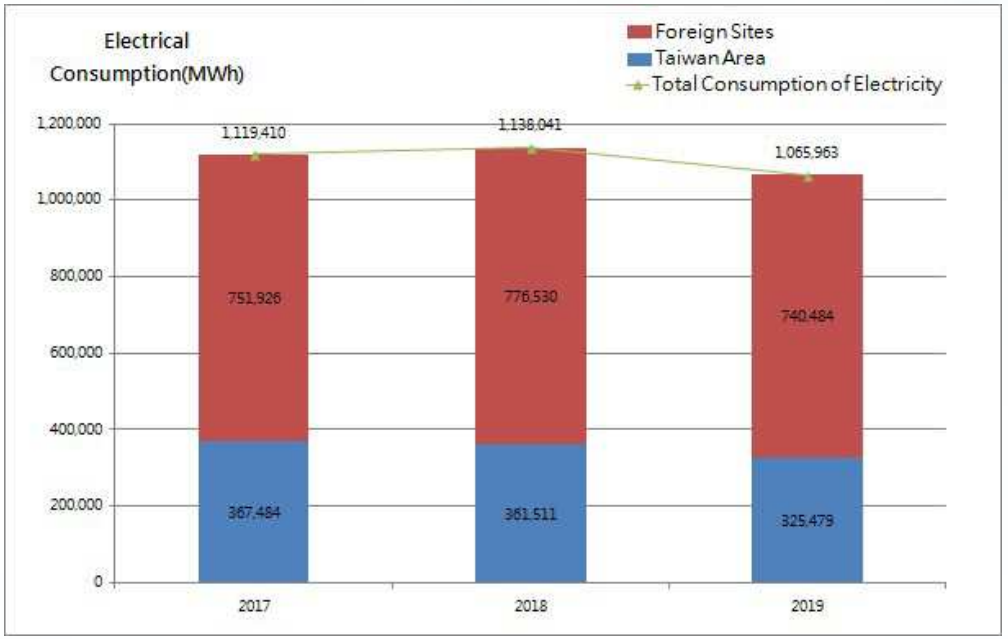
Re-utilization Quantity for Silicon Raw Materials	Wafer cassette	Re-utilization Quantity for Cutting Fluid (Supporting Agent)	Product Package Carton
1,004 metric tons	362.12 metric tons	1,120 metric tons	8,619 pc
Single Factory Re-Utilization Rate	**Single Factory Re-Utilization Rate**	**Single Factory Re-Utilization Rate**	**Single Factory Re-Utilization Rate**
• GlobalWafers Headquarters 22.02% • Taisil Electronic 19.71% • GlobalWafers Japan Co. Ltd., 25.3% • MEMC Electronic Materials S.p.A 16.3% • MEMC Korea Company 18.2% • Topsil GlobalWafers A/S 43.1%	• GlobalWafers Headquarters 66.5% • Taisil Electronic 13.25% • GlobalWafers Japan Co. Ltd., 18.43%	• GlobalWafers Headquarters 36.25% • Taisil Electronic 59.98% • MEMC Electronic Materials S.p.A. 79.98% • MEMC Electronic Materials Sdn. Bhd. 68.92%	• GlobalWafers Headquarters 6.88%

4.3.2 Energy Management

As stated in the previous chapter about organization inspection results on our greenhouse gas emission, the main resource for GlobalWafers' greenhouse gas emission is electricity. Therefore, reduction in electricity utilization as enhancement of energy efficiency is GlobalWafers' current top priority. In Taiwan, through the introduction of ISO 5000 energy management system, we monitor and measure significant energy utilization equipment, establish improvement action plan and conduct regular tracking on performance of improvement measures in order to achieve the goals of continued improvement, energy saving and carbon reduction. We also expect to facilitate corporate innovation power, lower environmental ecology footprints for various products and services and enhance corporate image and competitiveness through our concerns over environmental protection and sustainable issues.

GlobalWafers' total amount of used electricity from all sites in 2019 was 1065.963 MWh, a decrease of about 72MWh from the previous year. In Taiwan, in addition to the aforementioned on-going energy conservation measures, there were 11 new energy saving measures in 2019, resulting in an electricity reduction of 6,450,929 kWh from all the energy-saving items in the year and a reduction of 3438.4 metric tons of carbon dioxide emission and giving an increase of 946.1 metric tons worth of CO2 emission reduction.

GlobalWafers' total amount of used electricity from all sitese



Note: 1. Taiwan Area: GlobalWafers Co., Ltd. Headquarter, Chunan Plant and Taisil Electronic Materials Corporatione
2. Foreign Sites: GlobalWafers Japan Co., Ltd., Kunshan Sino Silcon Technology Co., Ltd.,MEMC Electronic Materials S.p.A、MEMC Korea Company、MEMC LLC、MEMC Japan Ltd.、GlobiTech Incorporated.、MEMC Electronic Materials Sdn Bhd.、Topsil GlobalWafers A/S

Energy Saving Measures in Taiwan

Category	Energy Saving Items	Calculated Energy Saving Period	Energy Saved (Year)	Carbon Emission Equivalent Saved (ton-CO2e)	Electricity Bill Saved (NT$)
GlobalWafers Headquarters & Chunan Plant					
Air condition energy saving	PE Temperature Regulation Replaced by Office and Hallway Chilled Water Piping	05/01~12/31	11,592 kWh	6.2	**26,940**
Machine efficiency enhancement	Replacing the old freezing dryer to a new one	03/01~12/31	12,558 kWh	6.7	**29,185**
	Replacing the aluminum fan blade to FRP energy conservation fan blade in the cooling tower	01/01~12/31	71,765 kWh	38.3	**173,600**
	Replacing the variable frequency ice machine in AC1+AC2	01/01~12/31	1,297,730 kWh	691.7	**3,015,925**
Machine improvement	Semi-energy conservation heat field	01/01~11/30	542,640 kWh	289.2	**1,312,646**
	Improve the harmonic wave of crystal growth furnace	01/01~03/31	85,500 kWh	45.6	**206,825**
	CG#6000 MCZ upgrade	01/01~03/31	48,600 kWh	25.9	**117,563**
	Improvement on the no-heat renewable attached dryer	01/01~12/31	90,797 kWh	45.4	**219,638**
	Temperature regulation project for polishing machine	10/01~12/31	7,360 kWh	3.9	**17,105**

Taisil Electronic Plant					
Air condition energy saving	First-stage replacement of fins and renovation on cooling water tower	01/01~08/31	319,316 kWh	170.2	**742,410**
Machine improvement	Puller Main pump Power Saving	06/10~12/31	117,014 kWh	62.4	**272,058**
	Puller Aux pump power saving	06/10~12/31	673,530 kWh	**359**	**1,565,957**
	EBINB01 exchanges HID lamps to LED lamps at	09/01~12/31	1,539 kWh	0.8	**3,578**
	Using new type of ASM fan frequency converter	12/05~12/31	24 kWh	**0**	**56**
	Using fixed frequency for ASM fan	12/05~12/31	22,267 kWh	11.9	**51,771**
	Removing N2 producer	01/01~08/06	2,558,065 kWh	1,363.4	**5,947,501**
	2019-PULLER LPHZ Conversion	01/01~12/31	379,376 kWh	202.2	**882,049**
Energy saving on lighting	2019 annual energy saving on lighting project	01/01~12/31	211,256 kWh	112.6	**491,170**
Taiwan Total	Electricity		6,450,929 kWh	3,438.4	**15,049,037**

Note:1. The electricity carbon emission factor is 0.533 (kg CO2 e/kWh).
2. The electricity bill for each factory is a weighted calculation with NT$2.324/kWh for GlobalWafers Headquarters, NT$2.419/kWh for GlobalWafers Chunan Plant, and NT$2.325/kWh for Taisil Electronic.

Machine Improvement

Temperature regulation project for polishing machine

Using new type of ASM fan frequency converter

Machine Efficiency Enhancement

Replacing the old freezing dryer for a new one

Replacing the aluminum fan blade to FRP energy conservation fan blade in the cooling tower

Air Condition Energy Saving

PE temperature regulation replaced by office and hallway chilled water piping

Replacement of fins and renovation on cooling water tower

Replacing the variable frequency ice machine in AC1+AC2

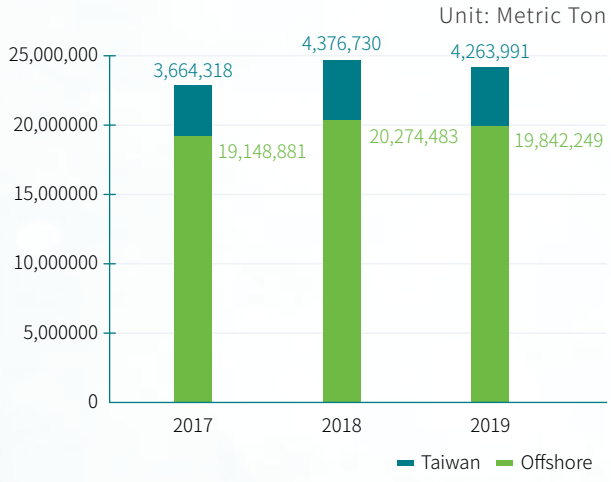
4.3.3 Water Resources Management

Issues regarding global climate change problem in recent years have led to extreme rainfalls, which also highlights the critical importance of water resources management. GlobalWafers' water in Taiwan comes from running water supplied by Taiwan Water Corporation. A small part of the water comes from air-conditioner condensates. The company does not use underground water. Therefore, there are no problems of underground water overutilization, land subsidence or sabotage to the environment ecology. With respect to water resources, water supply sources are Baoshan 1st and Baoshan 2nd water plants, whose sources of water are not categorized into national or international nature protection areas. The water body does not come from sensitive areas (which are considered by specialists to be of a relative space, special function, rare, threatened, and endangered system or to contain certain endangered species). As for water consumption conservation, GlobalWafers is dedicated to reusing recovered water as a response to the risks of water shortage risks due to global climate change.

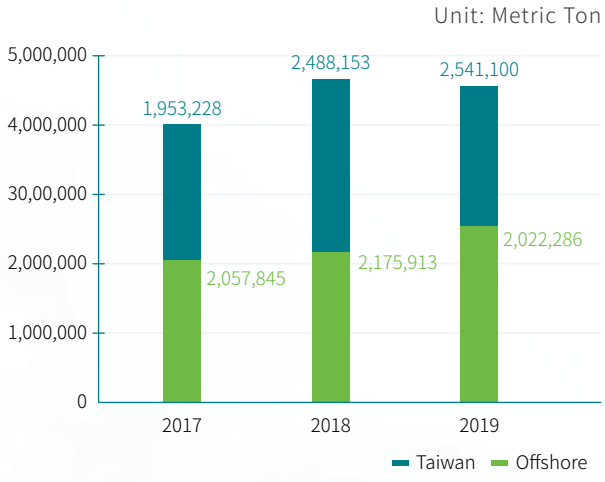
GlobalWafers' total water usage amount in 2019 has slightly decreased compared to 2018. The total water usage amount for 2019 was 24,106,240 metric tons, a decrease from that in 2018 which was 544,973 metric tons. In terms of reused recycled water part, the global reused recycled water amount in 2019 has slightly decreased where in Taiwan, the global reused recycled water amount 2,541,100 metric tons is accounted for 55.68% of total recycled water amount.

With respect to the water resource recycling rate, the average water resource recycling rate for global factories in 2019 was 18.93%, a slight increase from 18.92% in 2018. For Taiwan area, the water resource recycling rate for 2018 and 2019 were 56.85% and 59.59% respectively. Taiwan is the major water resource recycling area amongst all of our global factories.

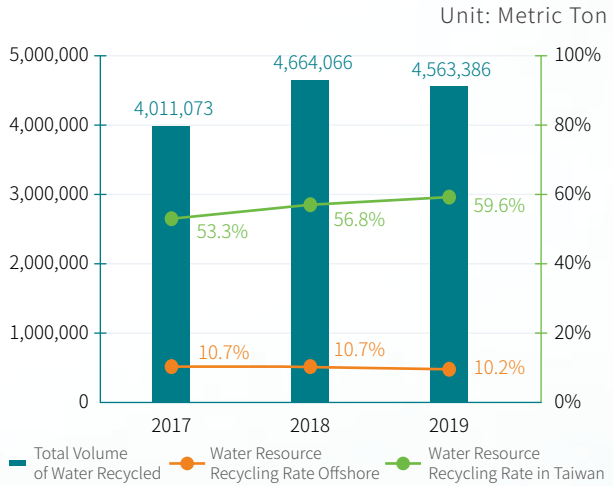
Total Water Usage Amount



Total Volume of Water Recycled



Water Resource Recycling Rate



Note:1. Taiwan: Taiwan: GlobalWafers Headquarters & Chunan Plant, Taisil Electronic
2. Offshore: GlobiTech Incorporated., GlobalWafers Japan Co. Ltd., MEMC Electronic Materials Sdn. Bhd., MEMC Electronic Materials S.p.A, MEMC Japan Ltd., MEMC Korea Company, MEMC LLC, Kunshan Sino Silicon Technology Co., Ltd., Topsil GlobalWafers A/S
3. Water Resource Recycling Rate = Volume of recycled process water ÷ Total volume of water withdrawn

GlobalWafers' management concept procedures for water conservation measures in Taiwan's plants are mainly conducted through the factory operation system and the manufacturing process equipment, while the recovery system efficiency for manufacturing process wastewater continues to be enhanced. We regularly hold internal meetings to discuss over water saving improvements. The company also promotes water consumption saving so that our entire staff has water saving as a consensus. In recent years, we have been promoting and operating on the following water saving measures:

Achievements from Water Saving Measures In Taiwan

Factory	Measures	Water Saving Amount (metric tons/year)
GlobalWafers Chunan Plant	1. Improvement on Water Recycling from Surface Grinding 2. Optimization on the recycle and reuse equipment for the condensed water on air conditioning	30,293
Taisil Electronic	1. Water Recycling Rate Enhancement ◆ Adjust the water balance on the water recycle system established in 2018. ◆ The water recycle system established in 2018 has reached 337,558 tons/year for water recycle in 2019, which was 192,809 tons more compared to that of 2018, 144,749 tons/year. On average, the daily city water reduced is 528 tons/day. 2. Source Management: Daily water consumption quantity analysis is conducted and reviewed to see if there is any abnormal consumption.	192,809
Total		223,102

Water Recycling from Surface Grinding

Acid/alkaline waste water recycling system

EPI waste water recycling system

4.4 Pollution Prevention

We aggressively promote green product and green production, and reduce raw material consumption through manufacturing process and technology enhancement. We not only reduce pollution discharge at the source, we also lower operation costs, reduce resource consumption and mitigate impact to environment. We also request our up- and down-stream suppliers that their products and components delivered to GlobalWafers shall comply with requirements of related international regulations on not using conflict minerals and prevention of materials hazardous to environment for the purpose of ensuring products' compliance with directives of RoHS, WEEE, REACH, ErP and Batteries.

Research teams and related departments of our respective factories are constantly engaged in innovation, improvement and assessment of feasible technology for friendly environment, verify feasibility through simulations and tests, and introduce technology into production process in order to fulfill responsibilities of sustainable operation and environmental protection. Take GlobalWafers Headquarters in Taiwan for example:

Pollution Prevention

- ▲ With the no use area on the two sides of the single grinding wheel, all the no use area can all be transformed into effective processing grinding wheel area in order to enhance the lifetime of a single grinding wheel and reduce the number of materials regularly thrown away.
- ▲ Recycle and reuse the graphite from scrapped furnace as the graphite tube material can not only save the costs but also make a circulation use for the graphite elements originally to be thrown away to achieve waste reduction effect.
- ▲ Dry pump + cyclone dust collector waste reduction system – The oxides burned during the crystal growth process can be blown by N2 to be collected. By greatly reducing oxide entering the pump, the pump efficiency can be enhanced, and the waste oil can be reduced.
- ▲ Arsenic pump waste oil recycle and reuse - using the centrifuge to separate oil and sludge so that the filtered clean oil can be recycled and reused.

05 Friendly Workplace

Chapter 5 Friendly Workplace

Major Aspects for Consideration

Safe Environment (Emergency Response) Human Rights, Staff Education & Training

Significance to GlobalWafers

Our employees are one of the key factors to GlobalWafers' growth and sustainable operation. We provide competitive remuneration and a comprehensive benefits system and jointly devote in developing professional talent selection system with which to attract more outstanding talents to join us. We value our employees' voices and opinions so as to establish a pleasant labor-management communication. We comply with regulations in our formulation of various management guidelines. We are devoted to creating a friendly workplace, conducting all kinds of training, and building safety and growth-valued culture to ensure the occupational safety of our employees. We respect our employees' willingness, never force, or mandate their labor provision. We value employees' career development, concerned about their work-life balance. We facilitate our corporate responsibility, create, and provide local residents more job opportunities.

Management Mechanism

1. The company holds regular labor/management meetings and provides various communication channels and report mechanism in order to effectively understand employees' opinions and resolve their problems.
2. The company promotes occupational safety and health management system, safety education training and safety culture activities. We enhance employees' safety awareness, strengthen their professional literacy and discipline in order to reduce accident rate effectively and safeguard employees' occupational safety.
3. Emergency response team training and emergency escape evacuation drills are conducted regularly to enhance in-factory disaster rescue skills as well as employees' knowledge and familiarity on work environments and escape routes for the purpose of minimize possible personal injury, property loss and impact to environment incurred from accident.

2019 Key Performances

0 Human Rights Complaints

Future Goals

1. Establish integrated smart robot inventory system to reduce employees' risks of musculoskeletal injuries
2. No Increase of number of occupational injury incidents
3. 0 Major occupational disaster
4. 0 Relevant disputes to human rights
5. Minimize Expenditure for disputes between the labor and the capital
6. Number of participants in CPR training achieved ≧ 50%
7. 100% achievement in the completion of educational training on prevention against workplace violence and sexual harassment within 30 days upon arrival of new recruits

5.1 Employee Care

5.1.1 Human Resources

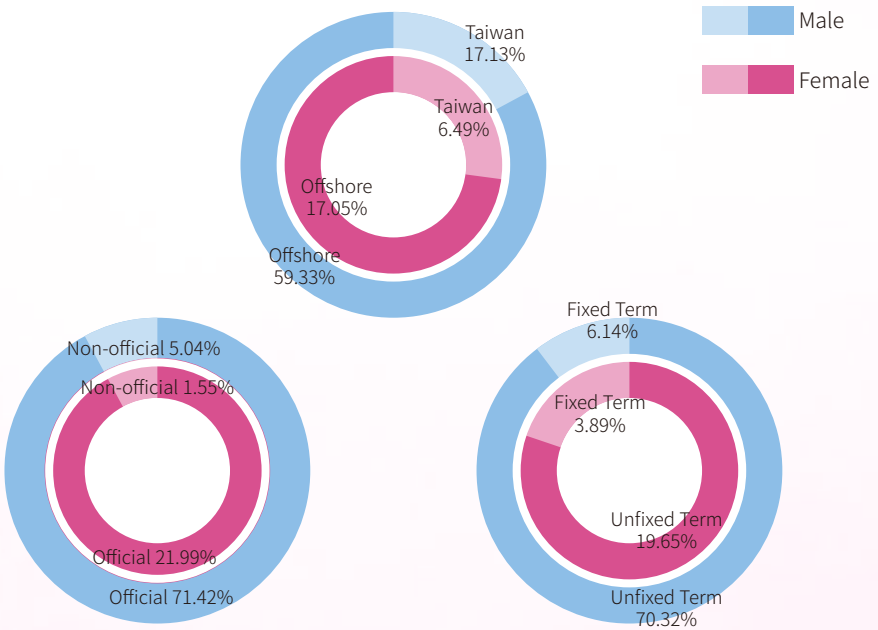
Outstanding talents with common concepts are the corporate's important basis in going towards excellency and key role to facilitate GlobalWafers' sustainable development. Faced with hard challenges from competitors, talents competition and rapid advancements in technology and information, we have enhanced efforts on the selection, cultivation, employment, retention and promotion of talents so as to strengthen talents and optimize manpower quality & structure as a response to fierce global competition. As a cross-country enterprise, we respect workplace diversity. There are no varied types of differential treatments or discrimination under any circumstances. We insist on integrity-based operational principles and establish various human resource management guidelines. Our talent recruit policy also indicates that talent employment shall go through public recruitment and employee recommendation, and talents shall only be employed after passing interviews, and standards for recruitment, duty assignment and remuneration all comply with regulations and requirements. Through public and fair talent recruitment channels, we continue to recruit talents who have good communication, coordination, and learning ability in respective locations. In Taiwan, we attract a wide variety of talents through government large scale recruitment activities. We also select appropriate persons for cultivation and training through adaptive tests and selection interviews to join us for collective growth.

In 2019, our total number of employees was 6,729, with male employees accounted for 76.46% and female employees, 23.54%. With respect to official and non-official employees, official employees accounted for 93.42%, with male employee accounted for 71.42%, and female employees, 21.99%. As for employment types, unfixed term employment (regular employees) accounted for 89.97% of official employees, with male employees accounted for 70.32%, and female employees, 19.65% For work location distributions, employees in Taiwan accounted for 23.63%. Regarding executives in Taiwan, the total number of executives was 216, of whom male executives account for 75.93%, and female executives, 24.07%. Regarding management levels, there are 38 high-ranking executives (of departments and above), 71 managers (and deputy managers), 24 division directors, 83 section chiefs.

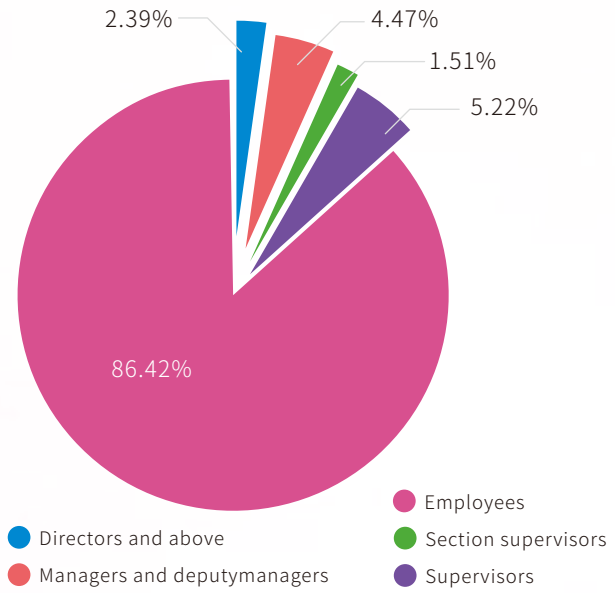
Manpower Structure in Global Factories

Type	Team	2019	
		Male	Female
Official/Non-official	Official (Regular Employees)	4,806	1,480
	Non-official (Contractors, Part-Time Staff)	339	104
Employment Contract	Unfixed Term (Regular Employee)	4,732	1,322
	Fixed Term (Contracted)	413	262
Location	Taiwan	1,153	437
	Offshore	3,992	1,147
Gender-Based Subtotal		5,145	1,584
Total		6,729	

Manpower Structure in Global Factories



All Levels Executive Percentage in Taiwan



All Levels	Male	Female	Total	Percentage
Director and above	35	3	38	2.39%
Managers and deputy managers	50	21	71	4.47%
Section Supervisors	17	7	24	1.51%
Supervisors	62	21	83	5.22%
Regular Employees	989	385	1,374	86.42%
Total	1,153	437	1,590	100%

Note: The table disclosed all levels executive percentage in Taiwan GlobalWafers headquarters, GlobalWafers Chunan Plant and Taisil Electronic. There is no consistency for our offshore executive titles yet, therefore not included in the report.

In Taiwan, the new recruits in 2019 were 115. Broken down by gender, male new recruits accounted for 4.34% of total workforce, and female new recruits, 2.89%. Broken down by age, new recruits aged between 30 and 50 made up 3.84%, followed by those aged under 30, accounting for 3.27%. By end of 2019, the number of new recruits remaining in service was 81. In addition, when employees submit their resignation letter, the HR department would schedule an exit interview to understand reasons for the resignation. This also enables the HR department to provide active assistance in adjustments and detailed explanations with regard to work contents, personal characteristics, and identified problems to achieve the goal of talent retention.

2019 New Recruits Statistical Analysis

Year	2017				2018				2019			
Age	Male (no. of people)	Percentage	Female (no. of people)	Percentage	Male (no. of people)	Percentage	Female (no. of people)	Percentage	Male (no. of people)	Percentage	Female (no. of people)	Percentage
<Age 30	134	8.46%	37	2.34%	45	2.71%	17	1.02%	24	1.51%	28	1.76%
Age 30~50	110	6.94%	32	2.02%	98	5.90%	36	2.17%	44	2.77%	17	1.07%
Age 50 and above	5	0.32%	0	0.00%	5	0.30%	0	0.00%	1	0.06%	1	0.06%
Total	249	15.72%	69	4.36%	148	8.92%	53	3.19%	69	4.34%	46	2.89%

2019 Resigning Employees Statistical Analysis

Year	2017				2018				2019			
Age	Male (no. of people)	Percentage	Female (no. of people)	Percentage	Male (no. of people)	Percentage	Female (no. of people)	Percentage	Male (no. of people)	Percentage	Female (no. of people)	Percentage
<Age 30	47	2.97%	23	1.45%	55	3.31%	14	0.84%	48	3.02%	22	1.38%
Age 30~50	58	3.66%	34	2.15%	52	3.13%	22	1.33%	64	4.03%	39	2.45%
Age 50 and above	9	0.57%	0	0.00%	9	0.54%	7	0.42%	3	0.19%	3	0.19%
Total	114	7.20	57	3.60%	116	6.99%	43	2.59%	115	7.23%	64	4.03%

Note: The percentage of new recruits and resigning employees is measured against the total workforce at the end of the said year.

5.1.2 Remuneration and Benefits

Employees are a critical force in corporate growth and success. We provide competitive remuneration and benefits to attract and retain talents from all areas, as well as offering substantial rewards for our employees' hard work and contributions to the company.

To stimulate employees' potential and allow them to develop their talents and grow together with the company, we not only enhance remuneration and benefit measures but also commit to providing a talent development system and friendly workplace, hoping that our employees will feel being taken care of by the company, and in turn there will be an enhanced sense of cohesion amongst the employees and identification with the company. In addition, the Company created proactive growth culture in order to become the work environment yearned by professional workers.

Each year, we make proper adjustments to employees' base salary through remuneration investigation, survey of market salary levels, and references from overall economic indicators and consumer price index. Meanwhile, to maintain equality, standards for setting employee salary are all based on judgments conducted on work related criteria such as duty, years of service and professional capacity in order to ensure equal pay for equal work and avoid discrimination or differential treatments based on gender, age or other conditions.

No. of full-time employees, average salary, and median salary of the personnel with positions not as managerial officers in 2019

Item		2018	2019	Deviation from the preceding year
Personnel with positions not as managerial officers	No. of full-time employees (no. of people)	576	601	4.3%
	Average salary (NT$1,000)	1,409	1,489	5.7%
	Median salary (NT$1,000)	NA	1,460	NA

Note 1: "Full-time Employees" refer to those whose work hours reach the regular number as required by the company or by the law. In cases of non-regulated work hours, the average weekly work hours exceed 35 hours.

Note 2: "Positions not as managerial officers" refers to all employees except those with positions as managerial officers or part-time employees and those satisfied to be exempted from the statistics. "Executive Positions" refer to company managers in accordance with the application scope of "Managers" as defined by governing authorities: presidents and their equivalents, vice presidents and their equivalents, assistant managers and their equivalents, financial department directors, accounting department directors and other position holders entitled to manage company affairs and sign on behalf of the company Consistent with the boundaries of the internal reporting personnel (managers) and annual report disclosure (as managers) at shareholders meetings.

Note 3: "Salary" refers to the employees' remuneration of the year, which adopted calculation basis as the duties occurred, including regular salary (basic wage and the fixed allowance and bonus paid monthly), overtime salary (regardless of tax or no tax) and non-regular salary (allowance, bonus, employees' remuneration which are not distributed on a monthly basis, etc.).

Note 4: The aforementioned no. of employees adopted the statistical concepts of weighted average (average no. of employees each month) and covered Hsinchu and Chunan plant of GlobalWafers in Taiwan.

Connection Between Appraisal and Remuneration

We conduct performance review on all employees each year. Focused on employees' commitment to work, duty and responsibility as well as level of contribution, we make salary adjustment under considerations of future development possibility and market salary levels, and offer encouragement cash reward and bonus based on performance results to ensure employees' remuneration and development combine with the company's finance and performance, and encourage employees' continuous dedication and innovation on their duties.

Comprehensive Benefits System

Here in Taiwan, we offer related benefits of labor insurance and health insurance, labor pension and group insurance, employee meal allowance, annual travel subsidy, employee health exam, cash gift for three major festivals and birthday, subsidy for wedding, funeral and celebration events, club activity subsidy and commuting bus, to help employee maintaining their work-life balance.

Pension System

We appropriate pension funds in accordance with the laws in countries where our operations are located. In Taiwan, we follow "Labor Standards Act" and "Labor Pension Act" in establishing labor retirement guidelines. We have also set up labor pension reserve supervision committee and appropriate sufficient amount of labor pension each month to allow laborers to apply for pension and to safeguard employees' rights.

Rewards to Excellent Employees

The company has established various rewards schemes to encourage proactive and outstanding workers e.g. outstanding achievements reward, project submission reward and patent reward. Taiwan also holds an excellent employee selection campaign each year where model laborers are selected and publicly praised, so as to shape a more positive and proactive corporate culture and realize the commitment to continuous improvement.

5.1.3 Talent Cultivation

Each year we establish annual education training program based on our operation strategies and short/mid/long term goals and consider talent cultivation and technology inheritance as our task focus. We strengthen our talent database in order to keep track of the talent dynamics and development direction in the group. We host various types of training courses, academia-industry collaboration and research projects, in order for our staff members to stay tuned to real-time global political and economic trends and status, technology updates, while supplementing the training with job substitutes, job rotation and on-the-job training to strengthen different professional capacity of our employees. We provide diverse training resources for our company and staff members, which include 5 major items in the training system, occupational education training for new recruits, professional occupational education training, occupational training on general education management, education training on smart financial and health and safe management training. These training resources provide employees with appropriate training courses during different development stage of careers so as to adapt to rapid know-how changes and evolutions and to possess knowledge, techniques and capabilities that are in step with the times.

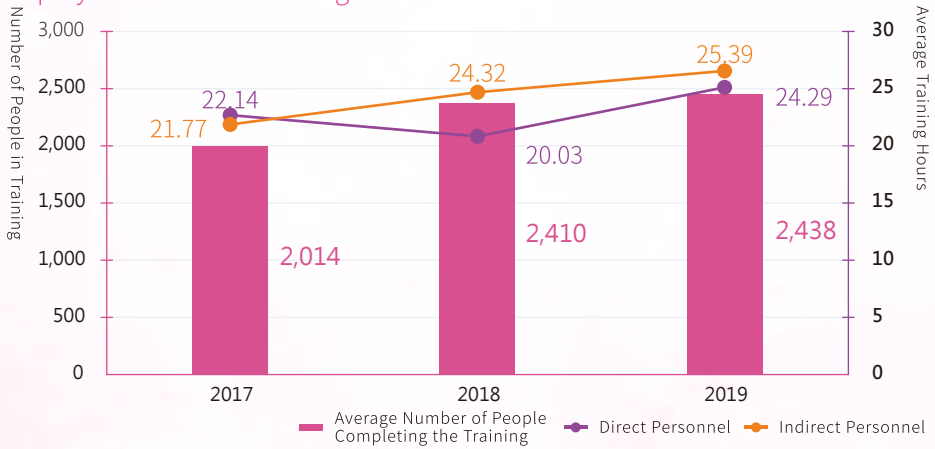
GlobalWafers provides comprehensive diversified learning environment

Comprehensive learning environment

In 2019, the average number of employees in each factory receiving education training was 2,438, with 24.29 training hours for direct personnel and 25.39 training hours for indirect personnel, on average. Between 2017 and 2019, the average number of people receiving education training was on a continuous rise, indicating a stable education training plan and mechanism on our part. In 2019,total of employee learning and development was 72,217 hours.

	2017	2018	2019
Total number of employees	6,905	7,108	6,729
Total number of traininghours	75,133	79,462	72,217

Employee Education Training Statistics



Note:1. The statistics in the table covered GlobalWafers headquarters & Chunan plant, GlobiTech Incorporated., GlobalWafers Japan Co. Ltd., Kunshan Sino Silicon Technology Co., Ltd., Taisil Electronics, MEMC Electronic Materials Sdn. Bhd., MEMC Electronic Materials S.p.A, MEMC Japan Ltd., MEMC Korea Company, Topsil GlobalWafers A/S

2. Direct Personnel: Operation personnel directly engaged in production related operations, including those engaged in technological tasks and team leaders in production sites.
3. Indirect Personnel: Personnel not directly engaged in production related tasks, including management, product design staff, accounting staff, procurement staff, engineers and so on.

5.1.4 Human Rights

GlobalWafers has always valued employees' rights and interests regardless of their levels and complied with related human rights regulations from respective countries. We continue to work hard towards the goal of zero human rights complaints and we' re convinced that a clear communication channel and report system will safeguard employees' rights and interests. Regarding the company's internal updates like important policies, remuneration & benefits, and leave system changes, the employees will be notified via labor-management meetings, electronic newsletters, or HR announcements, prior to execution, so as to safeguard the employees' rights and interests.

In Taiwan, we regularly convene labor-management meetings and have communication channels like employee opinion boxes, an occupational safety and health committee, supervision committee meetings for former-edition pension reserve funds in order for our employees to express their views and opinions freely and for both the labor and the management to conduct bilateral and effective communication to achieve win-win goals for both parties. To workplace violence and sexual harassment, we in Taiwan specifically establish relevant guidelines and report contact to serve as employees' report channel and communication platform to prevent against workplace violence and sexual harassment.

In most of our operation sites, we implement human rights education training on new recruits. In 2019 the number of people having received human rights education training was 5,264, with a total of 15,300 training hours and the percentage of employees having received the training being 78.23%. For existing employees, we conduct sporadic training courses to advocate and prevent against workplace violence and sexual harassment. There is no occurrence or report of human rights violation incidents (including forced labor, child labor, discrimination, harassment, or violation against freedom of association) for the past three years. Our target is to continue to aim for zero human rights complaints.

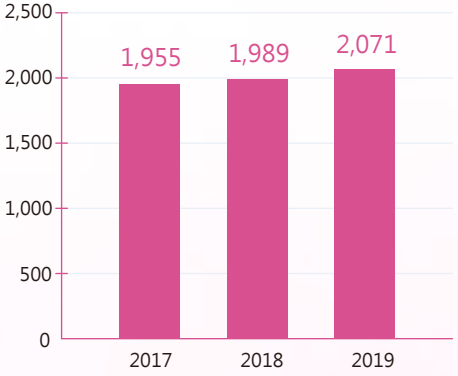
Union

In 2019, we had a total of 2,071 employees joining the union, accounting for 30.8% of all employees. There is no union established in our Taiwan companies. Operation sites with union established are in Asia (Japan, South Korea), Europe and the U.S.

Note:1. GlobalWafers headquarters, GlobalWafers Chunan plant, GlobiTech Incorporated., GlobalWafers Japan Co. Ltd., Kunshan Sino Silicon Technology Co., Ltd., Taisil Electronic, MEMC Electronic Materials Sdn. Bhd., MEMC Electronic Materials S.p.A, MEMC Japan Ltd., MEMC Korea Company, MEMC LLC, Topsil GlobalWafers A/S

Number of People Participating in Unions

Unit: Number of People



5.2 Occupational Safety and Health

5.2.1 Safe Environment

GlobalWafers aims at the goal of providing a safe, healthy, and comfortable work environment. In order to establish a safe work environment, the company not only complies with local safety and health regulations, it also allows all employees to participate in safety and health management activities through review, audit, communication, and education training. Appropriate and timely modification measures are taken, and improvements are conducted continuously for the purpose of protecting life, safety and health of employees, contract workers and relevant third parties, while creating a sustainable operation environment. Take Taiwan region for example. We introduced the Occupational Health and Safety Assessment System (OHSAS 18001) With the system's management mechanism (P → D → C → A), we have reached the goal of continuous improvement, eliminate hazardous factors in work environments and lower hazard risks accordingly. Each year, the company implements internal audit to review management system fulfillment, and commissions third party verification unit for system external verification and review in order to ensure management system effectiveness. In addition, in response to the issuance of ISO 45001:2018, the Company planned ISO 45001 transfer plan. All plants in Taiwan have obtained ISO 45001 certificate.

In Taiwan, we establish occupational safety and health committees in respective factories. These committees are composed of management, engineering technology representative, labor representative, medical staff and safety and health personnel. Percentage for labor representatives is higher than that as required by laws, accounting for more than 1/3 of all committee members. Each quarter, the company holds occupational safety and health committee meetings regularly to allow employees to participate in and supervise the execution performance of the occupational safety management system.

Occupational Safety & Health Committees for Respective Factories in Taiwan Region

Category	GlobalWafers	Taisil
Committee (Number of People)	20	32
Labor Representatives (Number of People)	7	19
Labor Representative Percentage	35%	59%

We establish various work safety and health management procedures for employees to comply with accordingly in order to lower operation risks and provide employees with a safe operation environment.

Special Hazardous Operation Control

For operation items with high potential risks such as special operations of elevating, hot work operations, restricted spaces, hanging operation and disrupted firefighting, related operation controls have been established and mandatory related safety measures protection and inspection are in place. Employees shall submit application prior to implementation of special operations and shall conduct operation safety inspection in advance to ensure operation safety. In addition, with daily patrol system for earlier anomaly discovery, we can prevent the potential hazards in the operation environment, strengthen health and safety of the operation environment in order to prevent accidents from happening and to achieve the purpose of disaster prevention.

Contractor Management

To avoid the risks of personnel dangers or equipment loss resulted from the relevant operation activities conducted by the contractor, the Company has established contractor management requirements. Contractors entering factories are required to submit 6-hour labor safety and health education completion certificates or other related certificates better than this certificate and casualty insurance information to ensure that the contracting operators are equipped with sufficient environment health and safety knowledge and can have safe protection. Next, operations are categorized into average operations and special hazardous operations (high risk operations of hot work operations, restricted space operations, hanging operations and elevated work operations) for control over operation application and risks. During operation period, in additional to the requirement of dispatching on-site supervision staff for operation supervision for contractors, responsible person for the construction is also required to implement on-site supervision management. Meanwhile, health and safety management personnel will also conduct irregular inspections to ensure operations' compliance with safety, health, and environmental protection requirements as well as to strengthen contractors' operation safety.

Contractor Safety, Health & Environmental Protection Education & Training

Contractors' negotiation organization meeting

Chemicals Control

The Company has established safe material chart and updated the correct current safety datasheet instantly through regular tracking and active information provision from the chemical substance suppliers to provide employees with enquiries on hazardous characteristics of chemical substance and related information. Health and safety management unit gets hold of the risks and management measures for the chemical substances in the plant with the Chemical Control Banding (CCB) based on the safety data sheet information provided by the chemical substance supplier and regularly reported the chemicals to the competent authority in accordance with relevant regulations. All chemical machines are equipped with local exhaust ventilation on operations sites. Chemical substance GHS labels in both Chinese and English are placed on machines and Safety Data Sheet (SDS) is in place on operation zone to ensure employees' full understanding on chemical substance storage, hazards, and prevention measures during their operations. Highly flammable chemical substances shall be stored in safety cabinets and explosion proof cabinets after use in order to lower risks could be brought by the chemical substances. In addition to supplying personal protection gear according to the differences and features of the operation zone, the company also arranges colleagues to conduct snugness tests on breathing protection gears to ensure effectiveness for employees' protection gears.

Chemical substance GHS labels and Safety Data Sheet (SDS)

Snugness Tests on Breathing Protection Gears

Monitoring of Operation Environment

As required by “Rules Governing Implementation of Labor Operation Environment Monitoring”, qualified miner health technicians and operation monitoring institutes are commissioned to regularly research operation monitoring plan and qualified operation monitoring institutes are commissioned to implement operation environment tests. Meanwhile, by referring to relevant provisions in “Regulations Governing Evaluation and Classification on Hazardous Chemicals”, risk classification management was conducted on the chemicals with health risk hazards according to “Standards of Permissible Exposure Limits at Job Site” and satisfied national standard CNS 15030 classification. Then with the angle superior than the requirement in the regulation, the Company attempts to understand the hazard exposure of colleagues in the work environment, publicly discloses the operation environment supervision results on the physical bulletin board in the Company and verifies if test results comply with regulatory requirements. Modifications will be implemented immediately in the event of irregularity so as to provide employees with a friendly operation environment.



Ergonomic Engineering Improvements

To prevent ergonomic hazards and to avoid repetitive muscle bone injuries or illnesses, ergonomic hazards prevention plan is established, and muscle bone injury questionnaires are distributed in a full scale to conduct investigation. Suspected hazardous cases of high/middle risks are screened out accordingly. Occupational health management personnel will conduct operation site evaluation and occupational medical doctor will conduct interview and offer guidance accordingly. Recommendations will be presented for improvements based on assessment results. This has effectively lowered employees' risk of muscle bone injuries. Meanwhile, education training and advocacy on muscle bone injury prevention were also implemented.

Work Ergonomic Injuries On-line Training

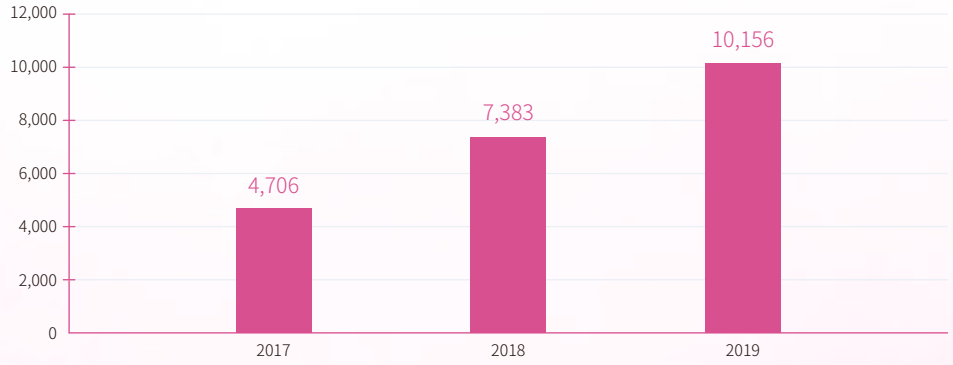
5.2.2 Safety Advocacy and Education & Training

To enhance the health and safety awareness in our workers and prevention against emergencies, we regularly implement labor safety health education training to new and existing employees. In the meantime, through measures of the company's internal website, e-mail and bulletin, we deliver safety and health knowledge for work environments, implant safety culture concept to base line employees and establish employees' safety consciousness in order to lower occupational disaster risks. Meanwhile, we implement education training, provide appropriate safety protection equipment and conduct health management for the employees conducting special operations that could danger their health, such as noises, organic solvent operation, specific chemical substance operation. In addition, the Company has regularly held health and safety education training courses, such as falling over, tripping over, slipping (STF), utilization and management of hazardous chemicals, personal protection equipment for operation, mechanical protection, ergonomic musculoskeletal injury prevention, etc. As for fire safety, the Company has also regularly held relevant fire prevention drills so as to enhance necessary fire prevention concepts. In 2017 and 2018, the number of employees receiving safety and health education training reached 4,700 and 7,300 people per year, respectively, and 10,000 people in 2019. This indicates our dedication to actions delivering employee safety consciousness.

Additionally, for the purpose of building comfortable and safe work environments, GlobalWafers Headquarters in recent years has been promulgating occupational safety proposal competitions. Awards are given based on proposal content and weighted scores. Winners are applauded and presented with cash rewards as token of encouragement at the quarterly safety and health committee. This is to encourage employees to proactively enhance their safety & health awareness, prompt employees into active participation and lower occurrences of occupational hazards.

The Number of People Receiving Safety & Health Education Training

Units: Persons

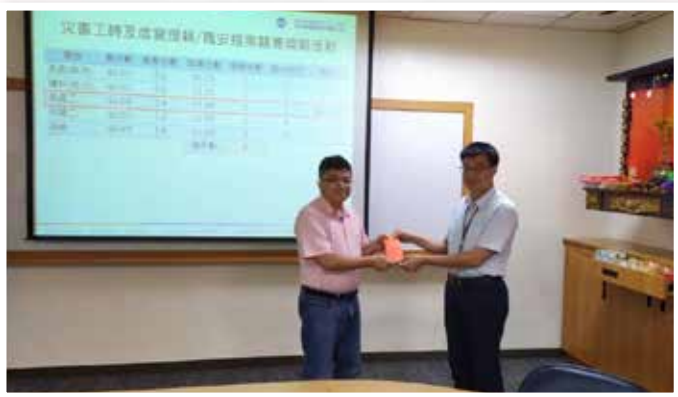


Note: Statistics Scope – GlobalWafers Headquarters, GlobalWafers Chunan Plant, Taisil Electronics

Safety and Health Education Training




GlobalWafers Headquarters - Occupational Safety Proposal Campaign



5.2.3 Emergency Response

Our emergency response management aims for the ability to handle in-factory emergencies in a timely manner and prevent them from further aggravation. To ensure accurate and effective response strategies upon occurrences of urgent abnormal incidents, and minimize possible personnel injuries, casualties and impact on the environment caused by accidents, we conduct emergency response team training and emergency evacuation drills each year for the purpose of enhancing our capabilities for factory disaster rescue as well as employees' knowledge and familiarity over their work environments and escape routes. Our emergency response training conducted in 2019 included emergency response equipment training (fire-fighting coat, chemical protection coat and SCBA operation), handling drills for chemical substance leakage in the clean room, handling drills for toxic chemicals and chemical substance leakage, earthquake drill, first-aid training, emergency evacuation drills.

Education training for the operation and utilization of emergency response equipment




Chemical substance in the cleanroom – Handling drill for ammonia leak



Chemical substance in the plant office – Handling drill for hydrofluoric acid leak and first-aid



Toxic chemical substance in the chemical warehouse – Handling drill for potassium dichromate leak



Earthquake drill



Handling training for first aid and transportation for injuries



Emergency evacuation drill



Operation drill for fire extinguishing

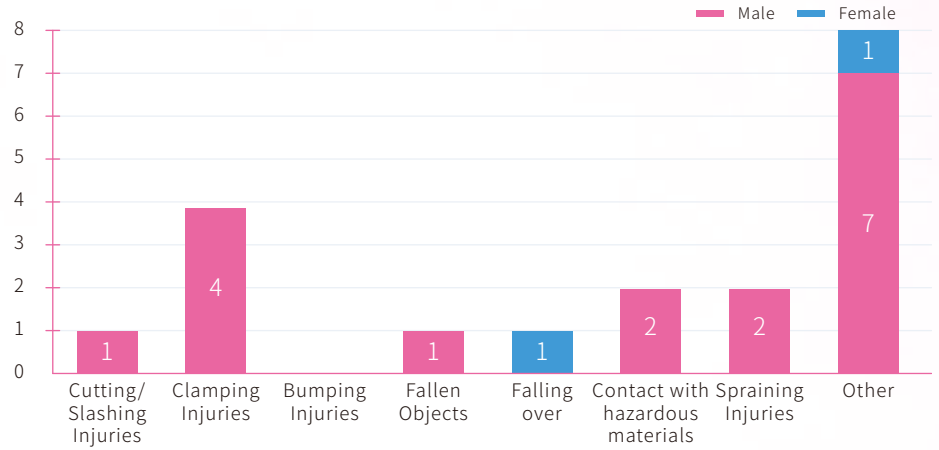
5.2.4 Disabling Injuries

Our occupational hazard statistics analyses are generated based on disability injuries statistics indicator published by the Ministry of Labors and GRI. One million work hours being the base line, our statistics are mainly based on the Disabling Frequency Rate, (FR), Disabling Severity Rate (SR), Occupational Disease Rate(ODR) and Absence Rate(AR) (with disabling injury statistics excluding traffic accidents outside factories).

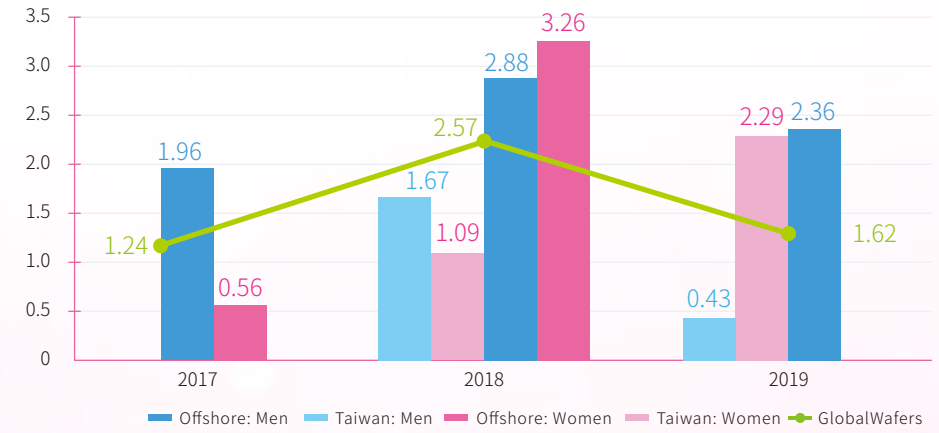
In 2019, there were 3 incidents of occupational injuries in our Taiwan region and 16 incidents in offshore regions, with clamping injuries accounting for the majority of the incidents, taking up 21.05% of all injuries while other types taking up 42.11%. For our global factories, the disabling frequency rate was 1.62 (men: 1.87; women: 0.76), and the disabling severity rate was 47 (men: 60; women: 2). There was no occurrence of occupational diseases or casualties. According to occupational hazard statistics for the last 3 years, the disabling frequency rate and the disabling severity rate declined as compared with 2018. compared with 2018. In 2019, there was no occurrence of occupational injuries on the part of our operation contractors in Taiwan and offshore factories.

We shall utilize occupational hazards statistics analysis results as an important basis for improvements in order to reduce injury occurrence rate and mitigate injury severity while marching towards the goal of zero hazards. Measures for improvements are strengthening personnel training for new recruits and those undergoing job changes, periodic case promotion, formulating relevant operation safety procedures and enhancing audits to ensure training implementation.

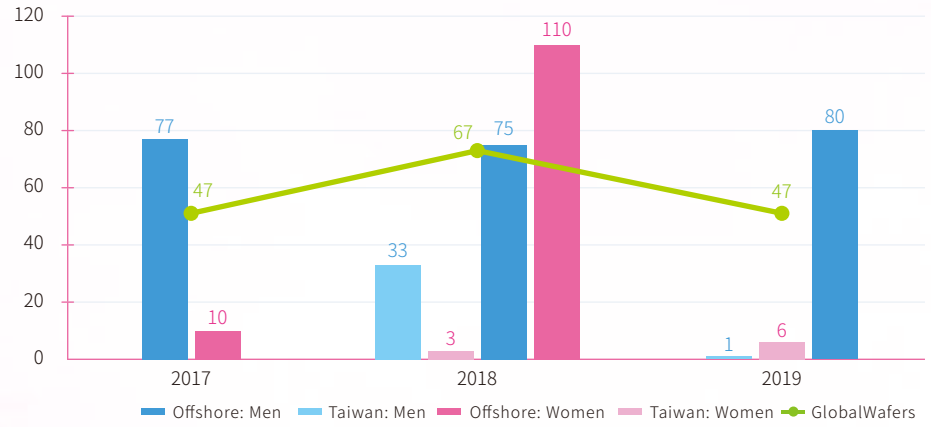
2019 Occupational Injury Categories & Statistics



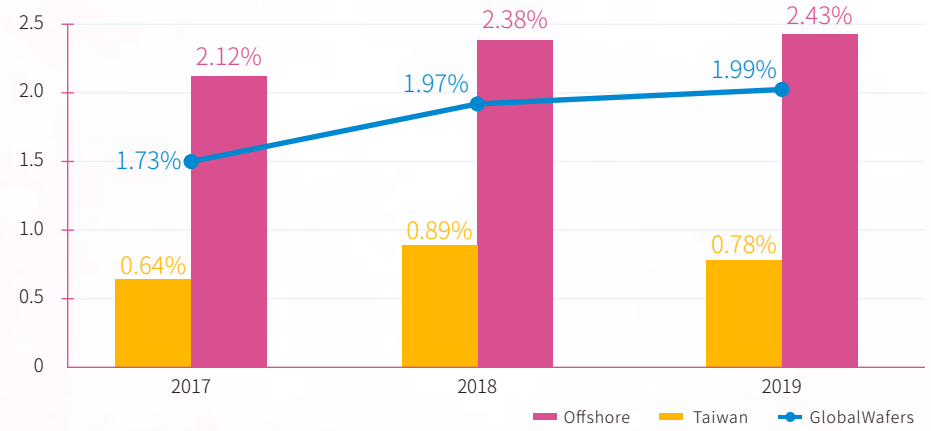
Disabling Frequency Rate (FR)



Disabling Severity Rate (SR)



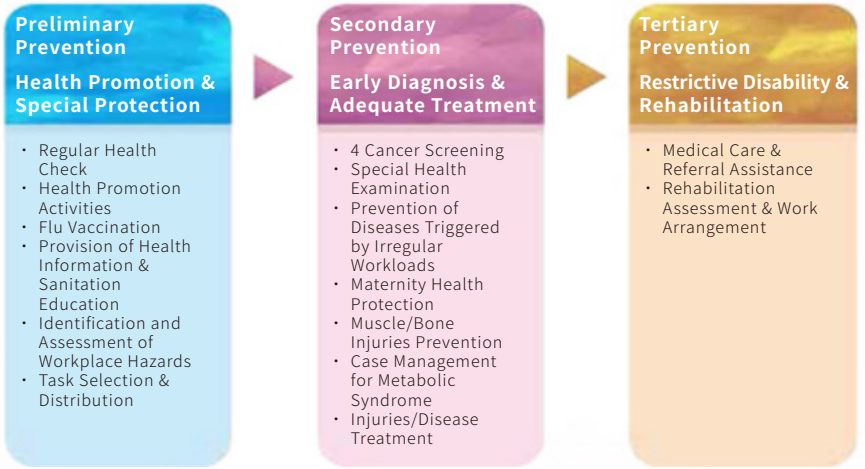
Absence Rate (AR)



Note:1. Taiwan: GlobalWafers Headquarters & Chunan plant, Taisil Electronics
2. Offshore: GlobalWafers Japan Co. Ltd., Kunshan Sino Silicon Technology Co., Ltd., MEMC Electronic Materials Sdn. Bhd., MEMC Electronic Materials S.p.A, MEMC Japan Ltd., MEMC Korea Company.
3. Disabling Frequency Rate (FR) = total number of disabled employees × 106 / Total work hours
4. Disabling Severity Rate (SR) = Total number of workdays lost to injuries × 106 / Total work hours
5. Total work hours: mandatory workdays in respective factories × mandatory work hours × total number of employees for that factory
6. Absence rate (AR) = Total days of absence / Total working days × 100%
7. Definition of Absence: Employee leaves his/her duty due to loss of labor capability. This includes sick leave (and menstruation leave), personal leave and occupational injury leave but excludes approved vacation, maternity leave, paternity leave and bereavement leave.
8. In the note of 2018 CSR report, MEMC LLC was included in the offshore. After confirmed, the FR/SR/AR chart for 2018 did not include MEMC LLC. Hence, the explanation was given here in the note.

5.2.5 Healthy Workplace

Employees are GlobalWafers' most valuable assets. We are dedicated to building a safe and comfortable work environment and we consider employees' health as the critical element for enterprises marching towards success and sustainable development. Take Taiwan region for example, we install medical rooms in factories and equip them with designated nurses and contract professional medical doctors. With application of public health 3-tier and 5-level prevention concept, we plan for complete health exam and hold related health promotion activities to provide employees with emergency caring, health caring and implementation of special protection, and allow all employees to receive comprehensive health care while preventing occurrence of occupation related injuries and diseases.



Health Checks

We regularly conduct health checks in accordance with regulations. In addition to average check items, we also implement special hazardous operation health checks and provide free cancer screening for employees during the annual employee health check. In addition, we also collaborate with employee clinic in Hsinchu Science Park to hold free low-dose lung CT screening activities to provide our colleagues with comprehensive cancer screening. Personal health check report counseling activities are also provided after health checks to allow employees to understand more of their own health conditions. Afterwards, company medical personnel will conduct statistics analysis on health check results and implement graded management accordingly in order to facilitate tracking as a follow-up to health checks.

Health Promotion

Company's medical personnel conduct statistics analysis in accordance with health check results and plan themed health promotion activities, health seminars and in-factory doctor consultations. Meanwhile, medical treatment and health promotion services from the Hsinchu Science Park Clinic are combined to promote preventive medicine and disease prevention and treatment in order to enhance employees' health awareness. Contents for health promotion launched in 2019 included various seminars and activities of weight loss and body fitness, four cancer screening and lung cancer screening, flu vaccination, bone densitometry and eye care. This provides employees with accurate health knowledge and concepts. Charity blood donation activities were also held regularly to encourage employees to donate blood for public causes and presentation of spirits dedicated to charity.

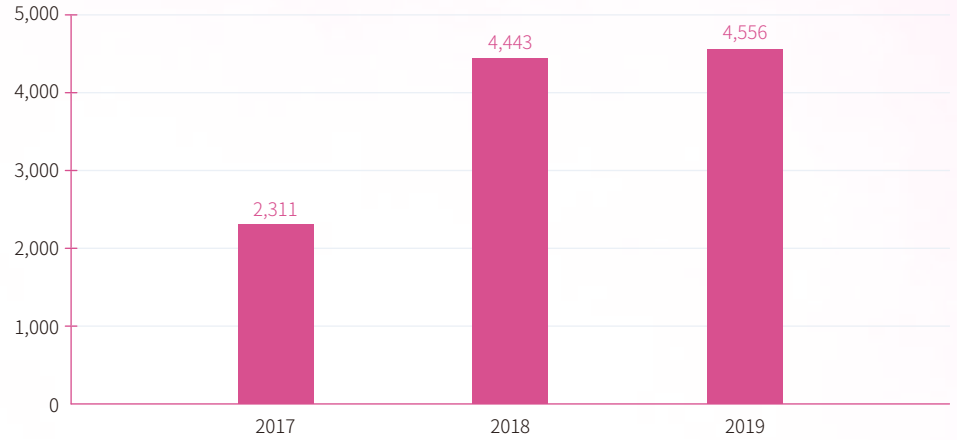
We put extensive attention on the control and management of epidemic infectious disease, establish a complete disease prevention system and stipulate an active report system for infectious disease to maintain various normal business operations. Moreover, we provide employees with prompt epidemic information regarding the foreign and domestic epidemic situation irregularly and also announce them on our internal website in order to remind our colleagues to enhance personal sanction and knowledge for disease prevention. We hold free flu vaccination activities in the plant each year to enhance flu immunity of employees. Furthermore, for our colleagues going on business trips, we provide them with “disease prevention bag for business trip” for them to carry with them at all times; and meanwhile, we provide them with the outbreak situation of the their trip destination and the health care promotion for disease prevention to ensure that colleagues on business trips are free from disease threats.

In 2019, we were even honored with the certificate “Disease Prevention Envoys” from Taiwan Immunization Vision and Strategy.

To ensure workplace environmental safety, the Company has installed 24-hour Automated External Defibrillators (AED) inside the factories and arranged for factory employees to attend CPR + AED education training so as to equip them with basic first-aid capabilities which can thus be applied on the site of incidents in a bid to construct a workplace conducive to employees health and safety. We are honored with the special safe workplace certification of safe workplace by the Ministry of Health and Welfare.

Number of Participants in Health Promotion

Unit: Persons



Note: Scope of Statistics – GlobalWafers Headquarters, Taisil Electrochemical, GlobalWafers Chunan Plant

CPR and AED Training Courses

Fitness Tests, Flu Vaccination, Anti-Cancer Health Care Seminar, Health Promotion Seminar

Blood donation activity



Special Protection Health Management

Special Operations

Each year, special hazards health checks are arranged for new and existing employees. Check items, which are arranged in accordance with employees' task characteristics, include noise, ionizing radiation, Dimethylformamide, n-Hexane, Manganese and inorganic compound, fine dust, Chromium, Mercury, and inorganic compound. For employees with health check results higher than class two (included) of management classification, professional medical doctor will conduct assessment under references from operation environment test report and employee's health check results over the years, and personal health guidance and duty allocation recommendations will be provided accordingly. With respect to 2019 special operation inspection results, there were no abnormal cases pertaining to occupational factors.

Maternity Health Protection

To avoid female employee's exposure to health hazardous operation sites, we establish maternal health protection plan. Maternal health risk assessment is implemented in accordance with the plan. Tier management and operation adjustment are conducted after professional medical doctor's integrated assessment to ensure that female employees with pregnancy or with less than one year after giving birth are not engaged in operations which may affect fetus development, pregnancy or mother and baby's health during lactation period. Designated parking spaces, breastfeeding rooms and benevolence badges are provided to pregnant employees to create a friendly workplace for career mothers.

Designated Parking Spaces for Pregnant Employees, Benevolence Badges


Breastfeeding Room

Prevention of Diseases Triggered by Irregular Workloads

To prevent diseases triggered by work shifts, nighttime work, long work hours and other irregular workloads, we establish plans to prevent diseases triggered by work overloads. Summarized analysis is conducted based on all employees' health examination data, work hours, and overwork questionnaire results. Tier management is implemented and high-risk groups are listed accordingly. Via interviews with company's medical doctors and health guidance and adoption of preventive measures, we lower risks of triggered diseases and ensure employees' mental and physical health.

Health Information & Health Promotion Platform

- E-bulletin is established to post health information for employee's reference.
- Health e website allows employee to sign in for participation in health promotion activities.
- Various health promotion activity information and health knowledge are delivered through internal mailbox.
- Electronic News Ticker Provides Promotions on Health, Disease Prevention

E-Bulletin Updates Health Information Sporadically

New Health Knowledge Bulletin, News Ticker Provides Promotions on Health, Disease

5.3 Social Participation

GlobalWafers encourages employees to share their love, make contributions, interact with the society, care about disadvantaged groups, and fulfill corporate social responsibility. In Taiwan, we proactively participate in various social philanthropic activities such as dream fulfillment projects in remote areas and sponsoring disadvantaged children and charities so as to fulfill this vision as a corporate citizen: “Give back to the society what you take from it”.

Feedback and Participation In 2019

Donation Activities	Recipient Organization	Quantity
Donation during Moon Festival	Hsinchu Hao Sheng Kindergarten, Hsinchu Xiangyuan Nursing Home, Shih Guang Educational & Nursing Institute, Huaguang Intelligent Development Center	NT$ 58,000
2019Food Drive	Hsinchu Xiuluan Elementary School, Chiayi Dayou elementary school	NT$ 275,500
Philanthropic Activities in rural areas during winter	Shi Lei Elementary School	NT$ 57,600 (including living materials)
Warm Winter Garden arty	Taiwan Fund for Children and Families in Hsinchu	NT$ 20,000/A batch of second-hand materials/school fair ticket
Huashan New Year inner Event	Huashan Foundation	NT$ 123,200
Blood donation activity	Blood donation center	Total donated blood 139,750 cc

Outtake of Welfare Activities

Donation during Moon Festival

Philanthropic Activities in Rural Areas During Winter

School Fair of Fund for Children and Families & Salesian

Food Drive

Annex

GRI Guideline Index

Index No. (Core Selection*)	Description	Corresponding Chapters	Page No.	Note/Reasons For Non-Disclosure	External Guarantee / Assurance
Organizational Profile					
102-1 ✳	Organization Name	About GlobalWafers	08		◎
102-2 ✳	Activity, Brand, Product And Service	About GlobalWafers	08		◎
102-3 ✳	Headquarters Location	About GlobalWafers	08		◎
102-4 ✳	Operation Site	About GlobalWafers	08		◎
102-5 ✳	Nature of Ownership And Legal Form	About GlobalWafers	08		◎
102-6 ✳	Markets Served	About GlobalWafers	08		◎
102-7 ✳	Organization Scope	About GlobalWafers 2.3 Operation Performance	08 28		◎
102-8 ✳	Employees And Other Works' Data	5.1 Employee Care	54		◎
102-9 ✳	Supply Chain	3.4 Industry Supply Chain & Management	40		◎
102-10 ✳	Organization And Major Changes in Supply Chain	About GlobalWafers	08		◎
102-11 ✳	Precaution Principles Or Guidelines	2.4 Risk Management	30		◎
102-12 ✳	External Advocacy	—	-	Not Attending Relevant Advocacy	◎
102-13 ✳	Association Membership Status	About GlobalWafers	08		◎
Strategies					
102-14 ✳	Decision Maker Disclaimers	Message From The Chairperson	07		◎
102-15 ✳	Key Impact, Risks And Opportunities	2.4 Risk Management	30		◎
Ethics And Integrity					
102-16 ✳	Values, Principles, Standards And Conduct Guidelines	2.2.2 Ethics & Integrity	25		◎
102-17 ✳	Ethics-Related Suggestions And Matters Of Concern Mechanism	2.2.2 Ethics & Integrity	25		◎
Governance					
102-18 ✳	Governance Structure	2.1 Sustainable Organization 2.2.1 Governance Structure	21 22		◎

Annex

Index No. (Core Selection*)	Description	Corresponding Chapters	Page No.	Note/Reasons For Non-Disclosure	External Guarantee / Assurance
Stakeholders Communication					
102-40 ✳	Stakeholders Group	1.1 Stakeholders Identification	14		◎
102-41 ✳	Group Agreement	—	-	There Are Currently No Union Organizations In Our Taiwan Region, Hence No Employees Having Signed Group Agreements.	◎
102-42 ✳	Identification And Selection Of Stakeholders	1.1 Stakeholders Identification	14		◎
102-43 ✳	Guidelines For Communication With Stakeholders	1.2 Stakeholder Engagement And Response	14		◎
102-44 ✳	Identified Material Aspects And Boundaries	1.3 Identification And Analysis Of Material Issues	15		◎
Report Profile					
102-45 ✳	Content In Consolidated Financial Report	About This Report	01		◎
102-46 ✳	Defining Report Content And Topic Boundaries	1.3 Identification And Analysis Of Material Issues	15		◎
102-47 ✳	Listing Of Materials Aspects	1.3 Identification And Analysis Of Material Issues	15		◎
102-48 ✳	Information Re-Compiling	3.3 Customer Satisfaction	39	Item data was referenced incorrectly for the past 3 years. This year, we made some adjustments and added a note under the figures.	◎
102-49 ✳	Report Change	About GlobalWafers	08	To enhance operation efficiency, the operation of Poland Plant was stopped in 2019.	◎
102-50 ✳	Reporting Period	About This Report	08		◎
102-51 ✳	Date of The Previous Report	About This Report	08		◎
102-52 ✳	Reporting Cycle	About This Report	08		◎
102-53 ✳	Contact Person Able To Answer Questions Regarding The Report	About This Report	08		◎
102-54 ✳	Announcement Of Compliance With GRI Report Principles	About This Report	08		◎
102-55 ✳	GRI Guideline Index	GRI Guideline Index	69		◎
102-56 ✳	External Guarantee/Assurance	Verification Disclaimer	74		◎◎

Annex

Index No. (Core Selection*)	Description	Corresponding Chapters	Page No.	Note/Reasons For Non-Disclosure	External Guarantee / Assurance
Category: Economy					
Economic Performance (Major Aspect — Financial Performance, Sound Finance, Management Strategies and Financial Goals)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 2 Governance And Operation	15 19		◎
201-1	Direct Economic Value Generated And Distributed By Organizations	2.3 Operation Performance	28		◎
201-2	The Financial Impact, Other Risks And Opportunities That Climate Change Caused On Organizational Activities	2.4 Risk Management	30	Other Risks Caused By Climate Change On Organizational Activities Are Illustrated, But Its Financial Impact Is Not Yet Calculated.	◎
Anti-Corruption					
205-2	Communication And Training Regarding Anti-Corruption Policies And Procedures	2.2.2 Ethics & Integrity	25		◎
205-3	Confirmed Incidents Of Corruption And Action Taken	2.2.2 Ethics & Integrity	25	No Occurrence Of Corruption Incidents	◎
Category: Environment					
Materials (Major Aspect – Source Reduction, Waste Management)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 4 Sustainable Environment	15 43		◎
301-2	Renewable Materials Used	4.3.1 Raw Material Re-Utilization	47		◎
301-3	Recycled Products And Their Packing Materials	4.3.1 Raw Material Re-Utilization	47		◎
Energy (Major Aspect – Pollution Prevention)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 4 Sustainable Environment	15 43		◎
302-4	Reduce Energy Consumption	4.3.2 Energy Management	48		◎
Water (Major Aspect – Water Resource Management)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 4 Sustainable Environment	15 43		◎
303-1	Total Volume Water Withdrawal By Source	4.3.3 Water Resources Management	50		◎
303-2	Water Sources Distinctly Affected By Water Withdrawal	4.3.3 Water Resources Management	50		◎
303-3	Total Volume Of Water Recycled And Reused	4.3.3 Water Resources Management	50		◎

Annex

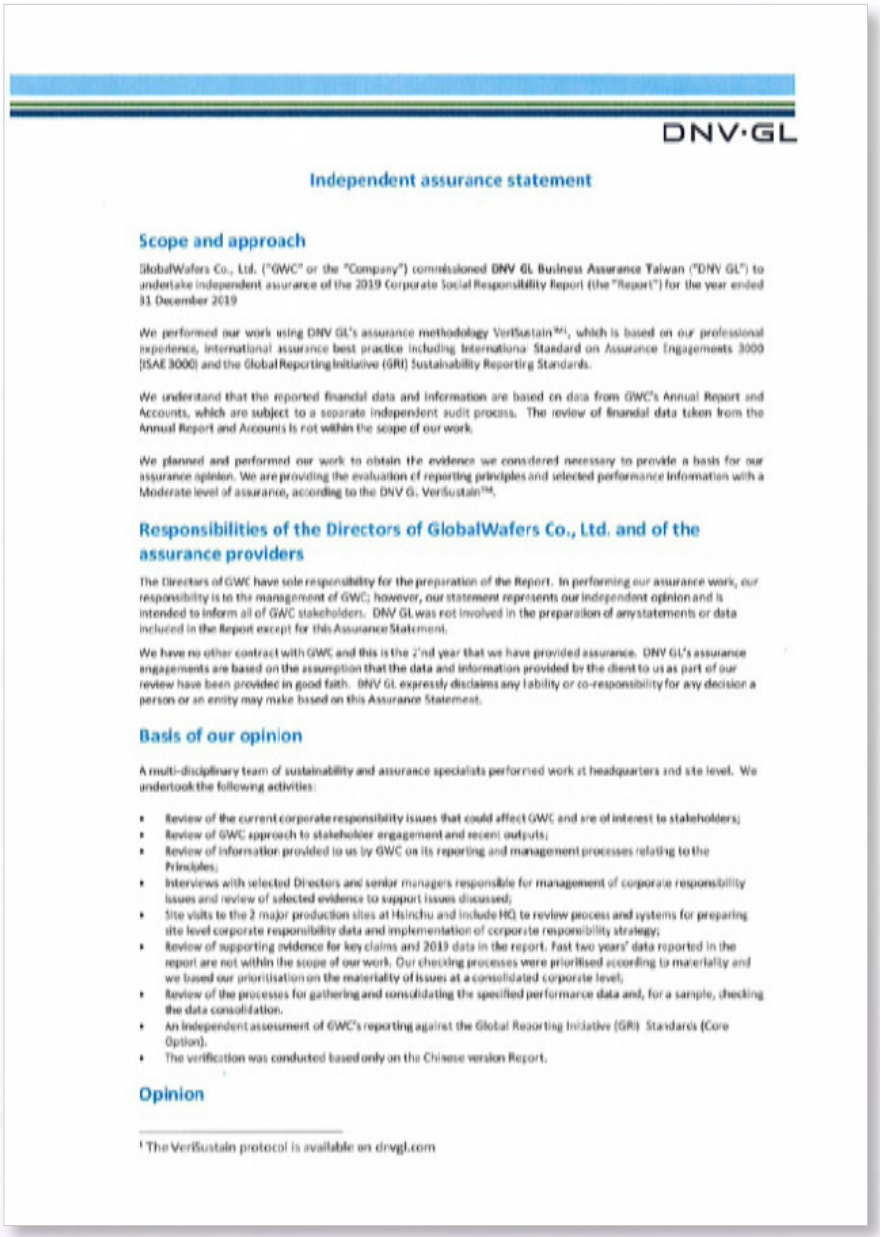
Index No. (Core Selection*)	Description	Corresponding Chapters	Page No.	Note/Reasons For Non-Disclosure	External Guarantee / Assurance
Emission (Major Aspect – Greenhouse Gas Reduction)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 4 Sustainable Environment	15 43		◎
305-1	Direct (Scope 1) Greenhouse Gas Emission	4.1 Greenhouse Gas	44		◎
305-2	Indirect Energy (Scope 2) Greenhouse Gas Emission	4.1 Greenhouse Gas	44		◎
305-5	Reduced Greenhouse Gas Emission	4.1 Greenhouse Gas	44		◎
305-7	Nox, Sox And Other Major Gas Emissions	4.1 Greenhouse Gas	44		◎
Waste Water And Objects					
306-2	Waste Classification By Types And Disposal Methods	4.2 Waste Management	45		◎
306-3	Severe Spills	4.2 Waste Management	45		◎
306-4	Waste Transportation	4.2 Waste Management	45		◎
Legal Compliance Regarding Environmental Protection (Major Aspect – Legal Compliance)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 2 Governance And Operation	15 43		◎
307-1	Environmental Protection Regulation Violation	2.2.4 Legal Compliance	27		◎
Category: Society					
Labor-Management Relationship					
401-1	New Recruits and Resigned Employees	5.1 Talent Recruit and Human Resources	54		◎
401-2	Benefits Provided To Full-Time Employees (Excluding Temporary And Part-Time Employees)	5.1.2 Remuneration And Benefits	56		◎
Occupational Health And Safety (Major Aspect – Occupational Safety and Emergency Response)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 5 Friendly Workplace	15 53		◎
403-1	Representatives Of Occupational Safety & Health Committees	5.2.1 Safe Environment	58		◎
403-2	Injury Types; Rates Of Injury, Occupational Diseases, Lost Days, And Absenteeism, And Total Number Of Work-Related Fatalities	5.2.4 Disabling Injuries	63		◎

Annex

Index No. (Core Selection*)	Description	Corresponding Chapters	Page No.	Note/Reasons For Non-Disclosure	External Guarantee / Assurance
Training And Education (Major Aspect – Employee Education Training)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 5 Friendly Workplace	15 53		◎
404-1	Average Hours Of Training Received By Each Employee Per Year	5.1.3 Talent Cultivation	56	Non-Gender Specific Percentage Data	◎
404-3	Percentage Of Employees Regularly Receiving Performance And Professional Development Appraisal	5.1.2 Remuneration And Benefits	56	No Percentage Data Available	◎
Employee Diversity And Equal Opportunities					
405-1	Governing Department And Employee Diversity	2.2.1 Governance Structure 5.1.1 Human Resources	22 54		◎
Non-Discrimination					
406-1	Discrimination Incidents And Improvement Action Taken	5.1.4 Human Rights	57	No Occurrence Of Discrimination Incidents	◎
Human Rights Assessment (Major Aspect – Human Rights)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 5 Friendly Workplace	15 53		◎
412-2	Employee Training On Human Rights Policies Or Procedures	5.1.4 Human Rights	57		◎
Customer Privacy					
418-1	Complaints Verified To Have Violated Customer Privacy Or Lost Customer Data	3.1 Innovation Management	35	No Complaints Regarding Customer Privacy Violation Or Customer Data Loss	◎
Compliance With Social Economic Regulations (Material Aspect – Legal Compliance)					
103	Management Guideline	1.3 Identification And Analysis Of Material Issues Chapter 2 Governance And Operation	15 19		◎
419-1	Laws And Regulations Violating Social And Economic Spheres	2.2.4 Regulation Compliance	27		◎

Annex

Independent Assurance Statement



DNV·GL

Independent assurance statement

Scope and approach

GlobalWafers Co., Ltd. ("GWC" or the "Company") commissioned **DNV GL Business Assurance Taiwan** ("DNV GL") to undertake independent assurance of the 2019 Corporate Social Responsibility Report (the "Report") for the year ended 31 December 2019

We performed our work using DNV GL's assurance methodology VeriSustain[M1], which is based on our professional experience, international assurance best practice including International Standard on Assurance Engagements 3000 (ISAE 3000) and the Global Reporting Initiative (GRI) Sustainability Reporting Standards.

We understand that the reported financial data and information are based on data from GWC's Annual Report and Accounts, which are subject to a separate independent audit process. The review of financial data taken from the Annual Report and Accounts is not within the scope of our work.

We planned and performed our work to obtain the evidence we considered necessary to provide a basis for our assurance opinion. We are providing the evaluation of reporting principles and selected performance information with a Moderate level of assurance, according to the DNV G. VeriSustain™.

Responsibilities of the Directors of GlobalWafers Co., Ltd. and of the assurance providers

The Directors of GWC have sole responsibility for the preparation of the Report. In performing our assurance work, our responsibility is to the management of GWC; however, our statement represents our independent opinion and is intended to inform all of GWC stakeholders. DNV GL was not involved in the preparation of any statements or data included in the Report except for this Assurance Statement.

We have no other contract with GWC and this is the 2'nd year that we have provided assurance. DNV GL's assurance engagements are based on the assumption that the data and information provided by the client to us as part of our review have been provided in good faith. DNV GL expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Assurance Statement.

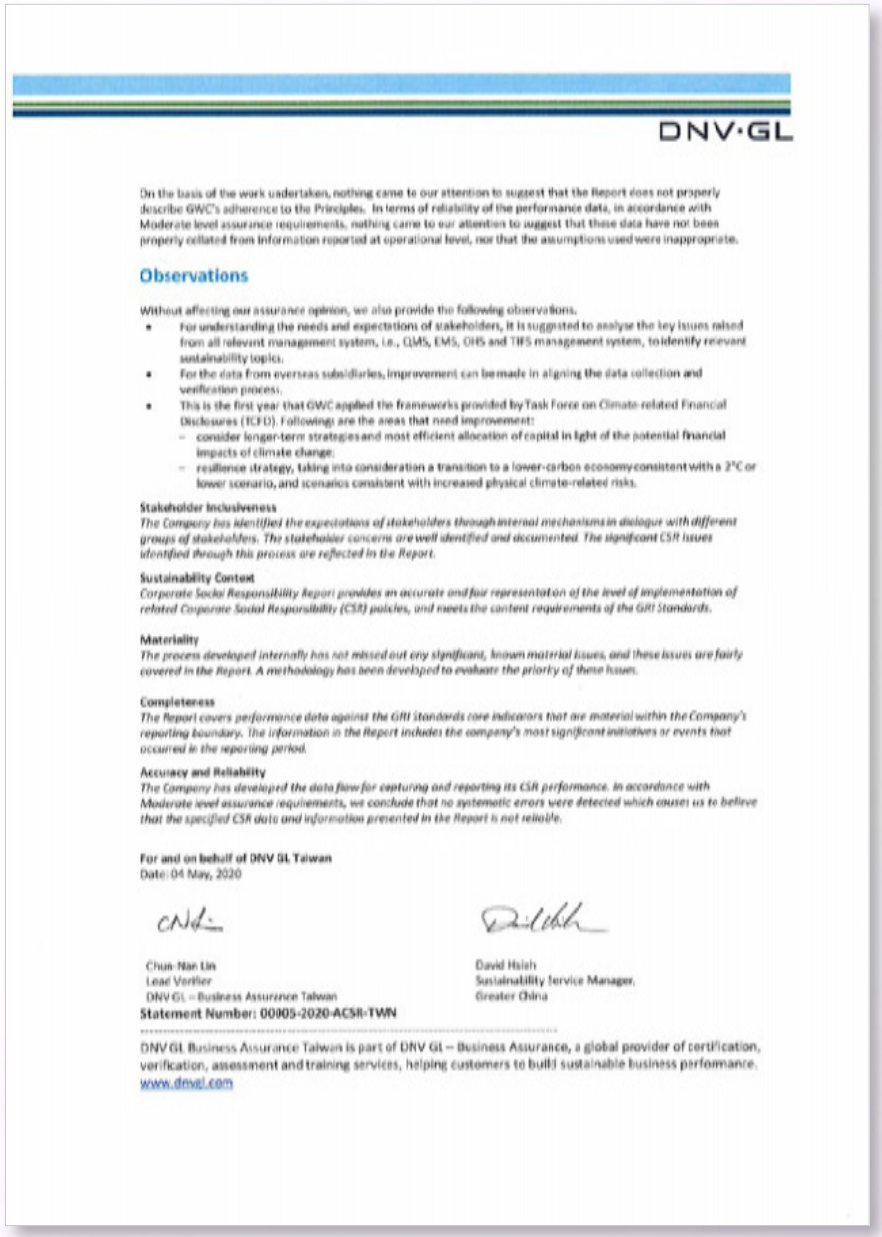
Basis of our opinion

A multi-disciplinary team of sustainability and assurance specialists performed work at headquarters and site level. We undertook the following activities:

- Review of the current corporate responsibility issues that could affect GWC and are of interest to stakeholders;
- Review of GWC approach to stakeholder engagement and recent outputs;
- Review of information provided to us by GWC on its reporting and management processes relating to the Principles;
- Interviews with selected Directors and senior managers responsible for management of corporate responsibility issues and review of selected evidence to support issues discussed;
- Site visits to the 2 major production sites at Hsinchu and include HQ to review process and systems for preparing site level corporate responsibility data and implementation of corporate responsibility strategy;
- Review of supporting evidence for key claims and 2019 data in the report. Past two years' data reported in the report are not within the scope of our work. Our checking processes were prioritised according to materiality and we based our prioritisation on the materiality of issues at a consolidated corporate level;
- Review of the processes for gathering and consolidating the specified performance data and, for a sample, checking the data consolidation.
- An independent assessment of GWC's reporting against the Global Reporting Initiative (GRI) Standards (Core Option).
- The verification was conducted based only on the Chinese version Report.

Opinion

[1] The VeriSustain protocol is available on dnvgl.com



DNV·GL

On the basis of the work undertaken, nothing came to our attention to suggest that the Report does not properly describe GWC's adherence to the Principles. In terms of reliability of the performance data, in accordance with Moderate level assurance requirements, nothing came to our attention to suggest that these data have not been properly collated from information reported at operational level, nor that the assumptions used were inappropriate.

Observations

Without affecting our assurance opinion, we also provide the following observations.

- For understanding the needs and expectations of stakeholders, it is suggested to analyse the key issues raised from all relevant management system, i.e., QMS, EMS, OHS and TIFS management system, to identify relevant sustainability topics.
- For the data from overseas subsidiaries, improvement can be made in aligning the data collection and verification process.
- This is the first year that GWC applied the frameworks provided by Task Force on Climate-related Financial Disclosures (TCFD). Followings are the areas that need improvement:
  - consider longer-term strategies and most efficient allocation of capital in light of the potential financial impacts of climate change;
  - resilience strategy, taking into consideration a transition to a lower-carbon economy consistent with a 2°C or lower scenario, and scenarios consistent with increased physical climate-related risks.

Stakeholder Inclusiveness
The Company has identified the expectations of stakeholders through internal mechanisms in dialogue with different groups of stakeholders. The stakeholder concerns are well identified and documented. The significant CSR issues identified through this process are reflected in the Report.

Sustainability Context
Corporate Social Responsibility Report provides an accurate and fair representation of the level of implementation of related Corporate Social Responsibility (CSR) policies, and meets the content requirements of the GRI Standards.

Materiality
The process developed internally has not missed out any significant, known material issues, and these issues are fairly covered in the Report. A methodology has been developed to evaluate the priority of these issues.

Completeness
The Report covers performance data against the GRI Standards core indicators that are material within the Company's reporting boundary. The information in the Report includes the company's most significant initiatives or events that occurred in the reporting period.

Accuracy and Reliability
The Company has developed the data flow for capturing and reporting its CSR performance. In accordance with Moderate level assurance requirements, we conclude that no systematic errors were detected which causes us to believe that the specified CSR data and information presented in the Report is not reliable.

For and on behalf of DNV GL Taiwan
Date: 04 May, 2020

Chun-Nan Lin
Lead Verifier
DNV GL – Business Assurance Taiwan

David Hsieh
Sustainability Service Manager,
Greater China

Statement Number: 00005-2020-ACSR-TWN

DNV GL Business Assurance Taiwan is part of DNV GL – Business Assurance, a global provider of certification, verification, assessment and training services, helping customers to build sustainable business performance. www.dnvgl.com

GlobalWafers Co., Ltd.

No. 8, Industrial East Road 2, Hsinchu Science Park, Hsinchu
TEL : +886-3-577-2255
FAX : +886-3-578-1706 / +886-3-579-0405