2018
CSR
Corporate Responsibility
Report

GlobalWafers Co., Ltd.

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 data 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. 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 2nd CSR report released by GlobalWafers. Its reporting period and scope are as follows:

Publication time: June 2019
Reporting Period: January 1, 2018 – December 31, 2018
Previous Publication Time: June 2018

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 for the next 3 years covered in the major consideration aspects. In 2018, the GlobalWafers Chunan Plant was added, which was not included in the 2017 report.

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, SpA, Topsil GlobalWafers A/S, Topsil Semiconductors sp. z o.o, 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:
With the exclusion of Topsil Semiconductors sp. z o.o for its lack of disclosed detailed data, 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:
All staff statistics analysis covers all operation & manufacturing sites. Other performance scope is consistent with that of the environmental performance. Each responsible department is in charge of compiling its own statistics.
In future, GlobalWafers will publish an annual corporate social responsibility report with its electronic file available for downloads & browsing in the Stakeholder 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:
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Tel.: 03-577-2255 # 2280
Acting Spokesperson: Mr. Pao-Chuan Chen, Senior Manager
Tel.: 03-578-3131 #1361
Address: No. 8, Industrial East Road 2, Hsinchu Science Park, Hsinchu
E-mail：GWCIR@sas-globalwafers.com
Website：http://www.sas-globalwafers.com/pages/gw/en/index.aspx

Sustainability Performance Overview

Economic Aspect

Corporate Governance KPI

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

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

Consolidated Revenue

Unit: 100 million NTD
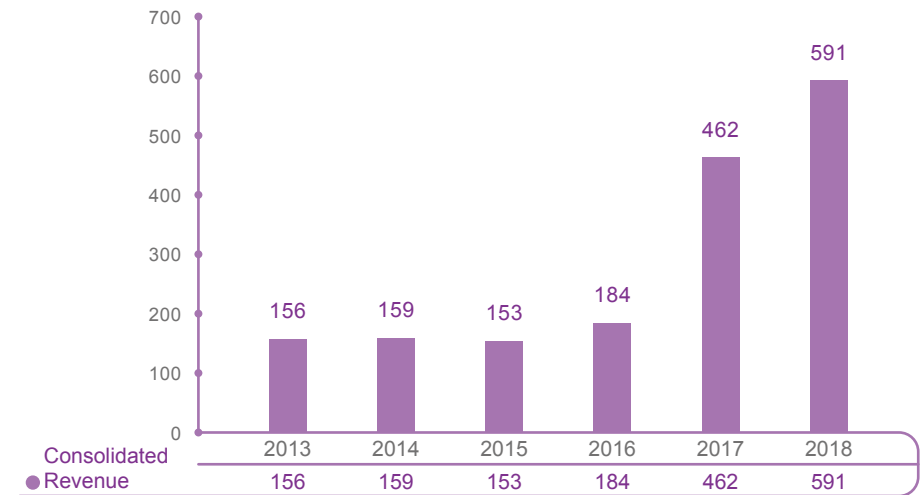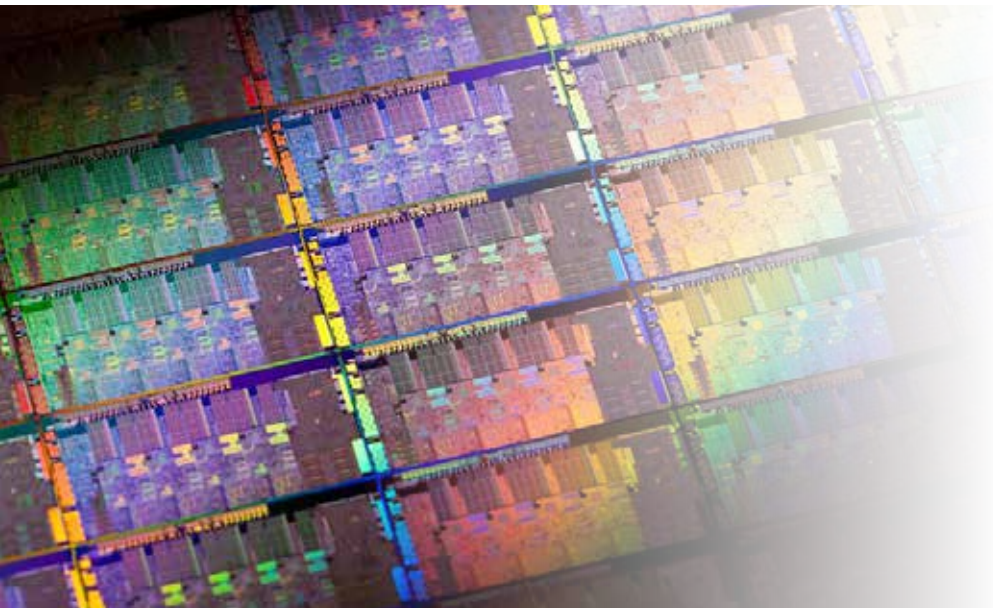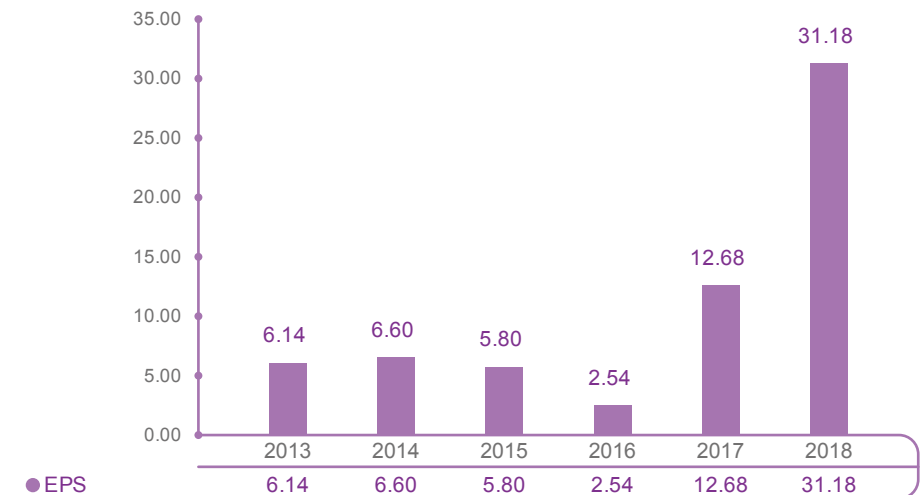
Consolidated Revenue	2013	2014	2015	2016	2017	2018
Revenue	156	159	153	184	462	591

EPS

Unit: NTD

	2013	2014	2015	2016	2017	2018
EPS	6.14	6.60	5.80	2.54	12.68	31.18

Debt To Asset Ratio

Unit: %

	2013	2014	2015	2016	2017	2018
● Debt To Asset Ratio	37	38	30	74	52	52

Return On Equity

Unit: %

	2013	2014	2015	2016	2017	2018
● Return On Equity	14.8	15.91	13.66	5.78	21.18	35.32

Return On Assets

Unit: %

	2013	2014	2015	2016	2017	2018
● Return On Assets	9.98	9.97	9.08	2.39	8.53	17.14
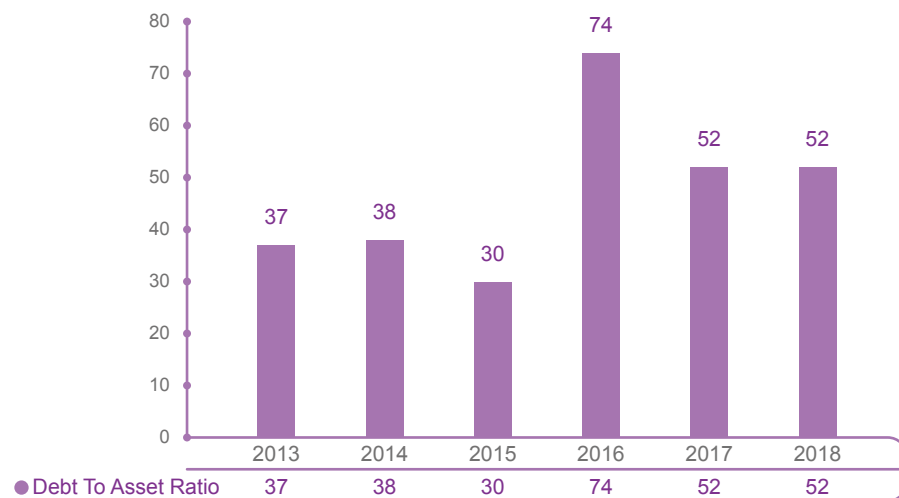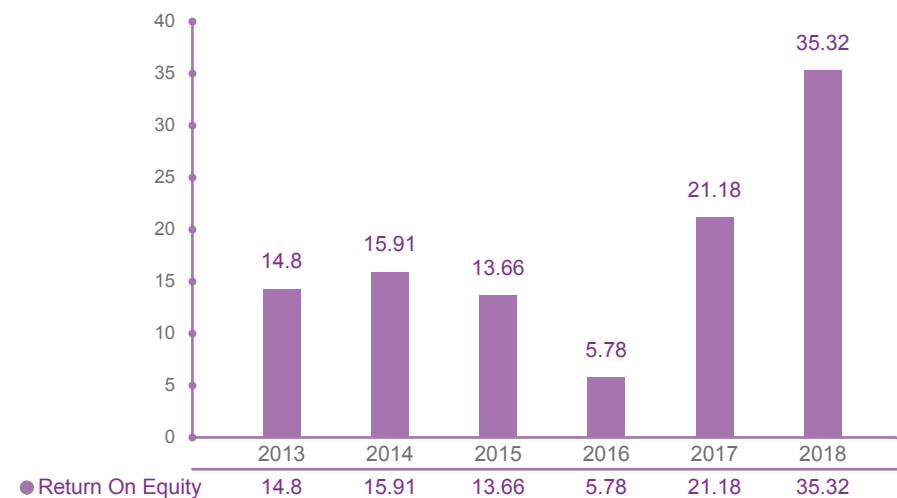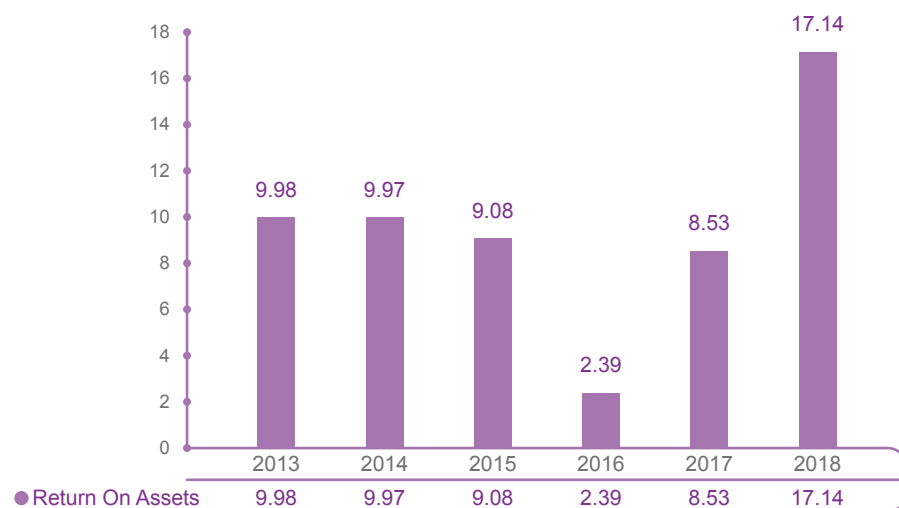
Carbon Dioxide Equivalent

Unit: ton CO_2e/yrear

573,053

519,609

499,198

| | 2016 | 2017 | 2018 |
●Carbon Dioxide Equivalent
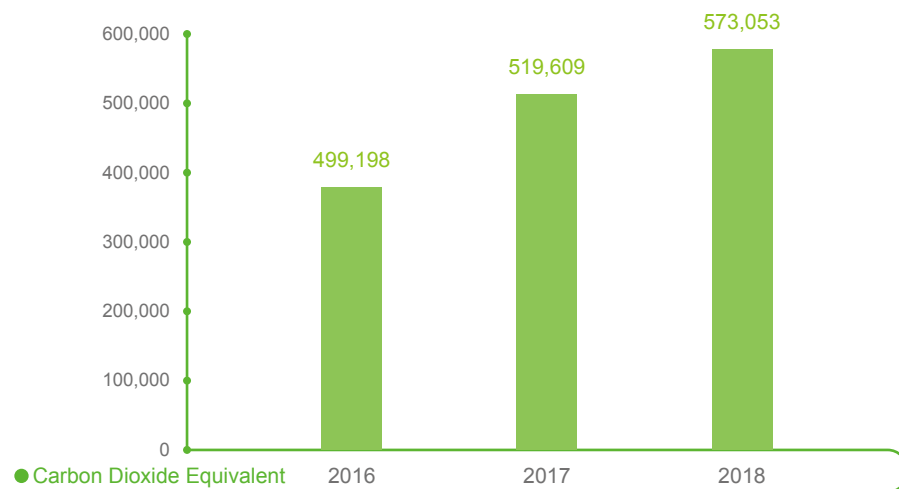
Reused Recycled Waste

Unit: Metric ton

■ Resources + Reuse ——●—— Reused Waste Rate

83.0%   83.2%   83.6%

21,294   22,517   25,217

Reused Recy 0
●Cled Waste   2016   2017   2018
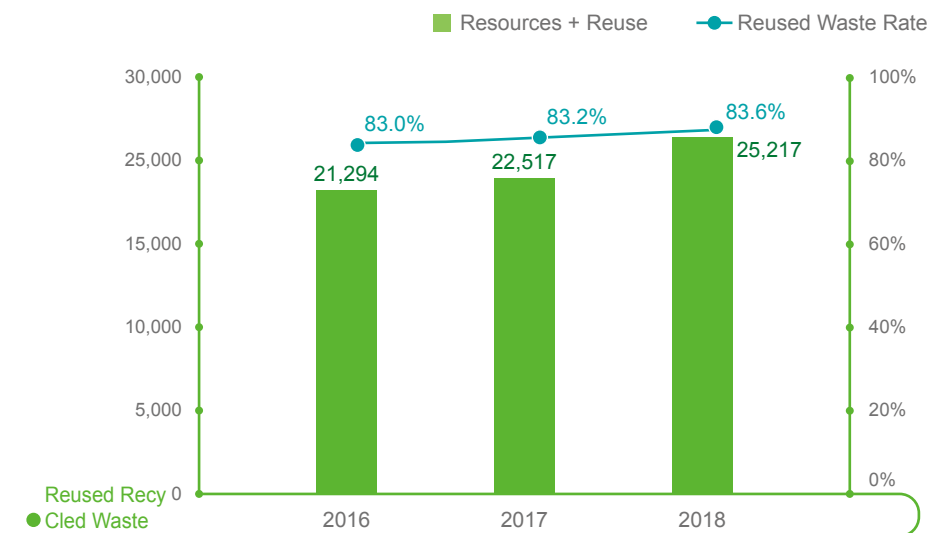
Water Recovery

Unit: Metric ton

■ Total Volume of Water Recycled ——●—— Water Recovery Rate

4,664,066

4,011,073

3,752,926

17.0%   17.6%   18.9%

●Water Recovery   2016   2017   2018

Customer Satisfaction

Legend: <60Scores 60~69Scores 70~79Scores >=80Scores

Customer Satisfaction	2016	2017	2018
<60Scores	2.7%	0.8%	4.0%
60~69Scores	6.8%	3.0%	14.0%
70~79Scores	11.0%	10.8%	2.0%
>=80Scores	79.5%	85.4%	80.0%

Disabling Frequency Rate

Disabling Frequency Rate	2016	2017	2018
	1.65	1.24	2.57

Average Training Hours Per Employee

Legend: Direct Personnel Indirect Personnel (hour)

Average Training Hours Per Employee	2016	2017	2018
Direct Personnel	18.3	22.1	20.0
Indirect Personnel	27.3	21.8	24.3

Message From The Chairperson

GlobalWafers, previously the Semiconductor Business Unit of SAS (Sino-American Silicon Products Inc) was separated into an independent company from SAS in 2011. Since the very first day of its inception, GlobalWafers has embraced a business philosophy of "Credibility, Integrity and Trust". The company utilizes its cutting-edge trail-blazing technologies to speed up new manufacturing process and next-generation new products development. Via vertical 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 2018 GlobalWafers' concrete action and performance in implementing corporate social responsibilities and displays its determination for sustainable development goals.

Year 2018 saw a rapid growth in semiconductor industry and a continuous increase in applications such as AI, high performance computing, automobiles and the IoT. The downstream companies are expanding their OEM production capacity for memory or wafers. The global market for semiconductor silicon wafers remains vibrant and the price continues to rise. Plus the 2016 acquisition of Topsil Semiconductor Materials A/S' semiconductor business in Denmark and the SunEdison Semiconductor Ltd. in the US, GlobalWafers has undergone structural reorganization and operation management

performance optimization. GlobalWafers has achieved great progress exceeding expectations, in terms of financial structure improvement and operation strengthening, which lead to spectacular revenue growth for 12 consecutive quarters and a new record-high profit performance for the entire year.

GlobalWafers Chairperson & CEO

01 The company achieved a total revenue of NTD 59.064 billion with an annual growth rate of 27.8%, reaching a new record height.

02 The consolidated revenue was NTD 17.578 billion, a drastic 1.37-fold increase from the previous year.

03 The EPS was NTD 31.18, a huge rise from the NTD 12.68 in the previous year.

04 The ROE was NTD 43.156 billion, a 26.7% increase from the previous year.

05 Awarded Triple A Country Award Taiwan 2017– Best GDR by The Asset.

06 Certificated by IATF 16949: 2016 Quality Management System Standard.

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

Besides pursuing profits, GlobalWafers is also devoted to green economy and our Hsinchu Plant passed the Cleaner Production Assessment System of the Green Factory Label in June 2018 as promulgated by the Industrial Development Bureau, MOEA, and passed the green building certification in January 2019 and the gold-level green building certification in March 2019, both issued by the Ministry of the Interior, MOEA. GlobalWafers adheres to environmental protection laws and regulations and proposes various eco-friendly improvement targets via the environmental management system and circular economy implementation, as well as executing all improvement management measures. In each aspect of the improvement process lies an opportunity for innovation and for us to identify appropriate production method and recycling system for the purpose of waste reduction and enhanced high-performance applications. Examples include the recovery and reuse of packaging materials, recovery of manufacturing waste water, recovery of waste water and condensed water, and optimized manufacturing machinery design to reduce the use of chemicals, alternative material technology integration and all kinds of electricity conservation programs. Meanwhile, we follow the environmental management system structure to actively strengthen and enhance the air pollution control, waste water pollution control and make effective use of resources, plus recovering and reusing waste to reduce waste output and lower the emission of pollutants. On the other hand, to raise production efficiency and reduce environmental pollution, we accelerate the switch from slurry wire to diamond wire sawing process. Adopting this new manufacturing process will enhance the energy-conservation and carbon reduction performance in an effort to protect the earth and strive towards the goal of green industry. By aligning the company development with environment protection, we prompt GlobalWafers to forge towards a new generation of circular economy and thereby truly becomes a company with sustainable development.

While pursuing operational performance & growth, GlobalWafers also values its employees, devoted to providing them excellent workplace, comprehensive remuneration and diverse occupational training. Our staff members are keen on sharing among themselves professional know-how, jointly create innovative technologies, pursue excelsior, value everyone's unique opinion and build open communication channels. The company's promotion system aims to create a wide and humane platform for careers, along with sound education & training systems including pre-occupational training, expertise advancement and self-improvement. In GlobalWafers, our staff members have infinite opportunities to develop their potential. In terms of charity, we encourage our staff to express love and continue to show concern for the disadvantaged groups, proactively take part in various social welfare events like blood donation and dream fulfillment projects in remote areas, disadvantaged children and charities sponsorship in a bid to facilitate the corporate citizen ideal of "Giving back to the society what we take from it".

Looking to the future, GlobalWafers will remain committed to green design and green production as the future goals. The conception of product design will be based on the primary principle of low power consumption, and the production procedures will focus on maximum reduction of waste, while continuing with close collaboration with customers and focusing on next-generation innovative products and making good use of our own comprehensive product combinations as the niche. We will not only invest extensively on our existing markets but also have a firm grip of development opportunities to pioneer new products, create more value, and in turn, give back to our customers, shareholders, employees and relevant stakeholders so as to facilitate sustainable development goals.

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 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 GlobalWafer's 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 10 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.

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			

GlobalWafers resorts to industry strategic alliance and external investment-based resources integrated benefits to upgrade the operational performance and proactively forge ahead while securing itself in a further advantageous position. It applies the conglomerate management model with maximized interest for shareholders to expand its business scope, to increased global market share and to further establish its global leading position in the sector of wafer manufacturing.

Basic Info Of Globalwafers

Company Name
GlobalWafers Co., Ltd.

Headquarters
No. 8, Industry East Road 2, Hsinchu Science Park, Hsinchu

Chairperson & CEO
Doris Hsu
Hsiu-Lan Hsu

President
Mark Lynn England

Date of Establishment
October 18, 2011

Capital
NT$4.373 billion

Countries of Operation
Taiwan, Mainland China, Japan, S. Korea, Malaysia, the US, Italy, Poland, Denmark, Singapore

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

No. of Employees*
Taiwan: 1,660; Offshore: 5,448

★Employee no. is based on the statistics on 2018.12.31.

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, Poland, 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 power components as key materials, and spares no resources on the development of SiC wafers technologies, hoping to contribute to energy conservation and carbon reduction.
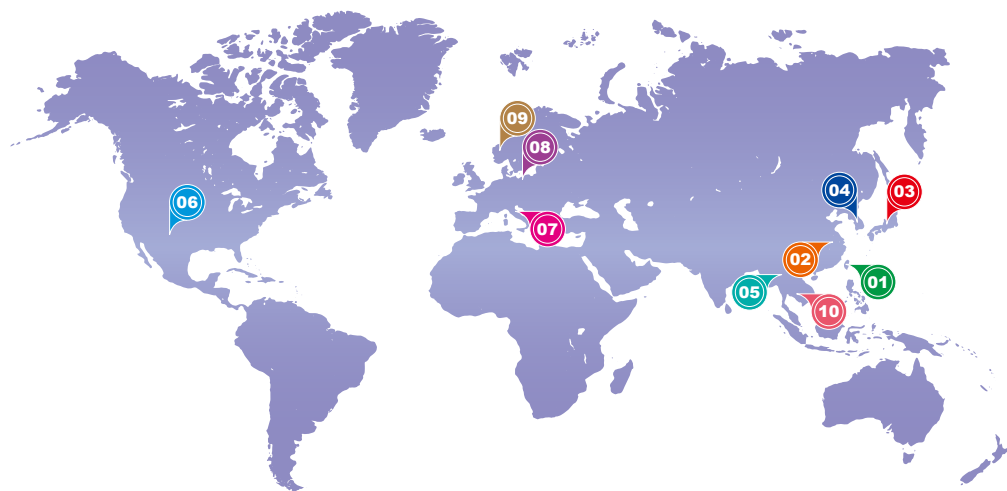
01 Taiwan
GlobalWafers Headquarters
GlobalWafers Chunan Plant
Taisil Electronic Materials Corp.

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 US
GlobiTech Incorporated.
MEMC LLC (Formerly SunEdison Semiconductor, LLC renamed)

07 Italy
MEMC Electronic Materials, SpA

08 Poland
Topsil Semiconductors sp. z o.o

09 Denmark
Topsil GlobalWafers A/S

10 Singapore
GlobalWafers Singapore Pte. Ltd. (Formerly SunEdison Semiconductor Limited renamed)

Participation In External Associations

Association/organization	Participant	Member	Member
Taiwan Semiconductor Industry Association		●	
SEMI		●	
SEMI SMG	●	●	
Japan Society of Newer Metals	●	●	Chairperson
Federation of Malaysian Manufacturers (FMM)		●	
Malaysian International Chamber of Commerce and Industry (MICCI)		●	
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		●	
Certified Hazardous Materials Manager CHMM		●	
High Power Device application and Research Alliance		●	
Chief Knowledge Officer (CKO) Exchange Meeting		●	
Allied Association for Science Park Industries		●	
Institute of Internal Auditors (IIA) Taiwan Chapter		●	
Computer Audit Association		●	
Korean Nurses Association		●	Director of the Chungnam Province
Local Emergency Planning Committee (LEPC)	●	●	Industry Representive
Gateway society of hazardous materials managers	●	●	

Company Chronology

Development Profile

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

2013 **08** ISO 14001 Certified

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

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

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

2014 **07** TS16949:2009 Quality Assurance Certificate granted

2014 **09** IPO

2015 **09** List on TPEx on September 25, 2015

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

2014 **10** Emerging Stock Listing

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

2016 **08** TOSHMS/CNS 15506:2011 Certified

2016 **08** ISO 14001:2015 Certified

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

2017 **07** IATF 16949 : 2016 Certification

2016 **12** Acquisition of SunEdison Semiconductor Limited

2017 **05** Paid-in capital increase for offshore depositary receip

2018 **06** Cleaner Production Assessment System of the Green Factory Label

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

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

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.

Awards (Revised To Be The Same As The Website)

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

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

2013/12
Certified Healthy Work Environment

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

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)

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

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

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

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

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

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

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

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

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

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, GWC 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 channel	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	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	
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 15 institutional investors conferences in 2018.	Sound finance Integrity & Ethics Risks & Crisis Management Financial performance Management strategies & financial goals Regulation compliance Business continuity planning
		Company annual repor	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 channel	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 (labor, economy, construction safety, environmental protection, products) 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 non-scheduled, 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, e.g. 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.

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 of all branch companies, besides collecting issues of concern to the employees, customers, shareholders (investors), suppliers (contractors), governmental institutes and the media. In addition, certain Corporate Social Responsibility Committee members 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		**2** Collects CSR issues of concern to stakeholders	**3** The impact of CSR issues on GlobalWafers
Has identified 6 major groups of stakeholders.		Collects 24 CSR issues.	The CSR Committee has identified 15 material issues.

Economic Aspect
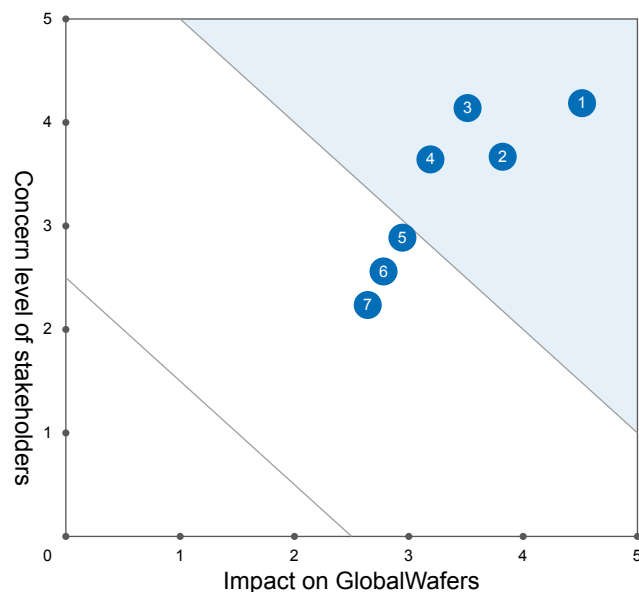
Serial no	Issues	Material
1	Regulation compliance	v
2	Sound finance	v
3	Management strategies & financial goals	v
4	Financial performance	v
5	Business Continuous Planning (BCP)	
6	Risks & Crisis Management	
7	Integrity & Ethics	

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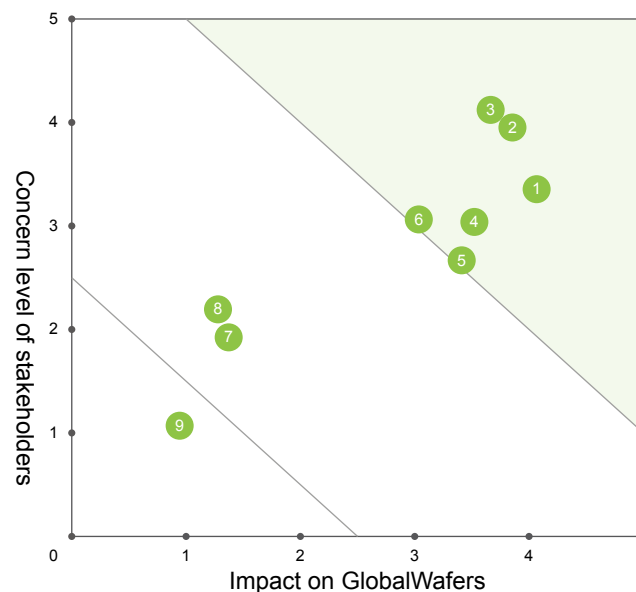
Serial no	Issues	Material
1	Greenhouse gas reduction	v
2	Reduction at the source	v
3	Pollution prevention	v
4	Waste control	v
5	Water resource management	v
6	Water pollution prevention	v
7	Air pollution control	
8	Hazardous substances control in products	
9	Chemicals control	

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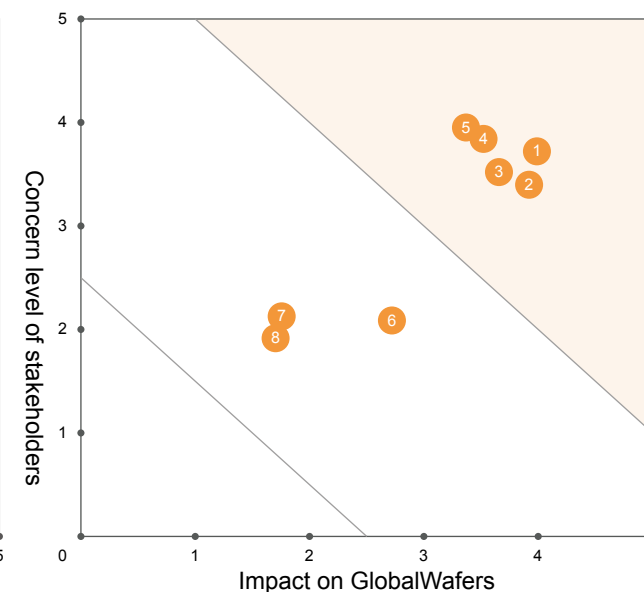
Serial no	Issues	Material
1	Occupational safety and emergency response	v
2	Human rights	v
3	Employee education & training	v
4	Product quality	v
5	Customer service &privacy	v
6	Job opportunities	
7	Labor equality, Equal pay for equal work	
8	Product price	

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 pollution prevention	○	○	○		GRI303	4.3.3 Water resource management
	Water resource management	○	○	○		GRI303 GRI306-5	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 hygiene
	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. In 2018, we 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 (Formerly SunEdison Semiconductor, LLC Renamed)
Italy: MEMC Electronic Materials, SpA
Poland: Topsil Semiconductors sp. z o.o
Denmark: Topsil GlobalWafers A/S
Singapore: GlobalWafers Singapore Pte. Ltd. (Formerly SunEdison Semiconductor Limited, Renamed)

02

Governance & Operation

Chapter 2 Governance & Operation

Material Issues

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

Regulation compliance

Management strategy & Financial goals

Sound finance

Financial performance

Significance To Globalwafers

SAS 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
• Based on the current stable outstanding management performance, securely expand the company′s operation scale via strategic alliance or acquisitions.

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, as well as becoming the world's largest silicon wafer supplier

Goals

Short-term goals

• 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.

• 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 10 countries across the globe, so as to minimize the costs.

Mid-term goals

• 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.

• 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.

Long-term Goals

• 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 needs 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 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, Procedures Governing the Acquisition and Disposal of Assets, Endorsement / Guarantee Management Guidelines, Operating Procedures Governing Loaning of Funds, Procedures Governing Derivative 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, Rules Governing the Exercise of Rights and Participation in Resolutions by Juristic Person Shareholders With Controlling Power, 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 2018 came to NT$1,650,559,000 which accounted for 2.79 % of total revenue and expenses.
- Has an invincible professional R&D team, with 90 R&D engineers in Taiwan and 124 offshore

Concrete action

- Initiating Annual Operation Plans and formulation of KPIs for each department to strengthen internal operational management and control.
- Regular convening of business and production & marketing 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.

2018 Key Performances

- ✓ The company achieved a total revenue of NTD 59.064 billion with an annual growth rate of 27.8%, reaching a new record height.

- ✓ The consolidated revenue was NTD 17.578 billion, a drastic 1.37-fold increase from the previous year

- ✓ The EPS was NTD 31.18, a huge rise from the NTD 12.68 in the previous year.

- ✓ The ROE was NTD 43.156 billion, a 26.7% increase from the previous year.

- ✓ A drastic decline of consolidated financial liabilities ratio from 20.5% to 6.1%

- ✓ Achieved a total of 82 worldwide patents

- ✓ Ranking in the top 5% of all TPEx-listed OTC companies in the corporate governance appraisal,2018

- ✓ Awarded Triple A Country Award Taiwan 2017– Best GDR by The Asset.

- ✓ Passed the Cleaner Production Assessment System of the Green Factory Label

- ✓ 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.

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

- ✓ MR. Michael Shueh, president of Taisil Electronic Materials Corp. was granted Excellent President Award from 36th Chinese Professional Management Association

2.1 Sustainable Organization

To strengthen and implement sustainable governance, GlobalWafers established a Sustainable Development Committee in April 2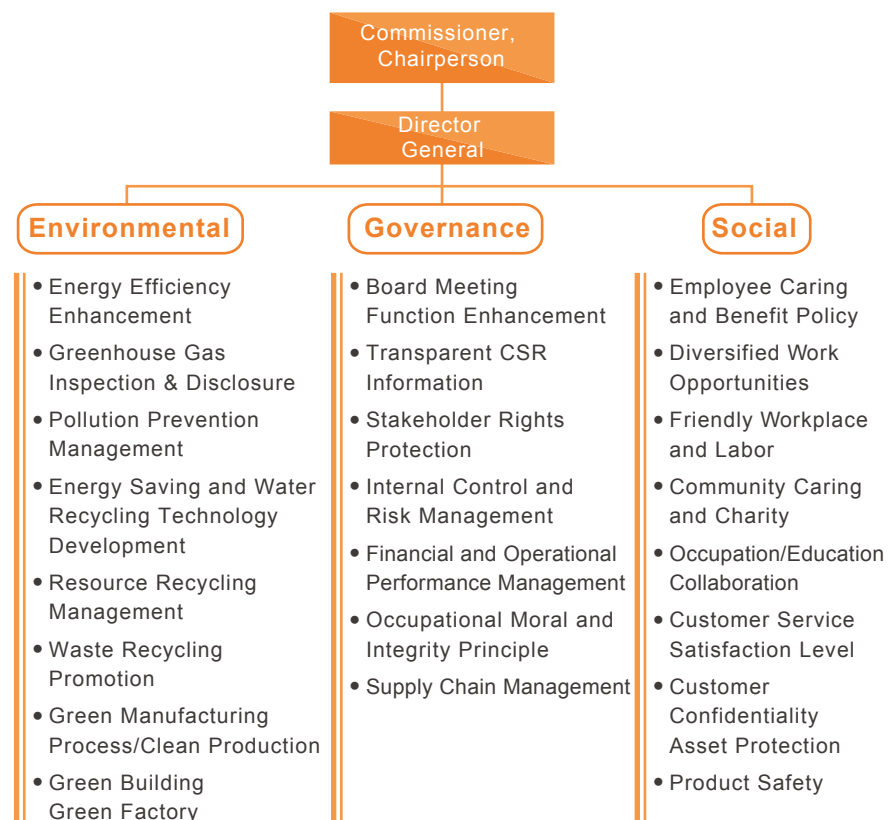017. The Chairperson serves as the Committee Chairperson and leads the company's operational organizations, the direction of sustainable development and goal formulation. There is also a director general taking charge of the relevant administration of the CSR Committee. There is also an audit office in charge of supervision and an audit committee and remuniration 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' issues of concern and expectations for the corporate governance, environmental and social aspects of GlobalWafers. Decisions would be made based on the CSR Committee discussions. The performance and goal achievement status of the CSR Committee will also be reported regularly to the board of directors.

GlobalWafers Co., Ltd.

- Board of Directors
- Audit Committee
- Internal Audit Office
- Remuneration Committee
- Chairperson / CEO
- General Manager
- Corporate Sustainable Development Committee
- Corporate Operation Organization

Corporate Sustainable Development Committee

- Commissioner, Chairperson
- Director General

Environmental
- Energy Efficiency Enhancement
- Greenhouse Gas Inspection & Disclosure
- Pollution Prevention Management
- Energy Saving and Water Recycling Technology Development
- Resource Recycling Management
- Waste Recycling Promotion
- Green Manufacturing Process/Clean Production
- Green Building Green Factory

Governance
- Board Meeting Function Enhancement
- Transparent CSR Information
- Stakeholder Rights Protection
- Internal Control and Risk Management
- Financial and Operational Performance Management
- Occupational Moral and Integrity Principle
- Supply Chain Management

Social
- Employee Caring and Benefit Policy
- Diversified Work Opportunities
- Friendly Workplace and Labor
- Community Caring and Charity
- Occupation/Education Collaboration
- Customer Service Satisfaction Level
- Customer Confidentiality Asset Protection
- Product Safety

2.2 Corporate Governance

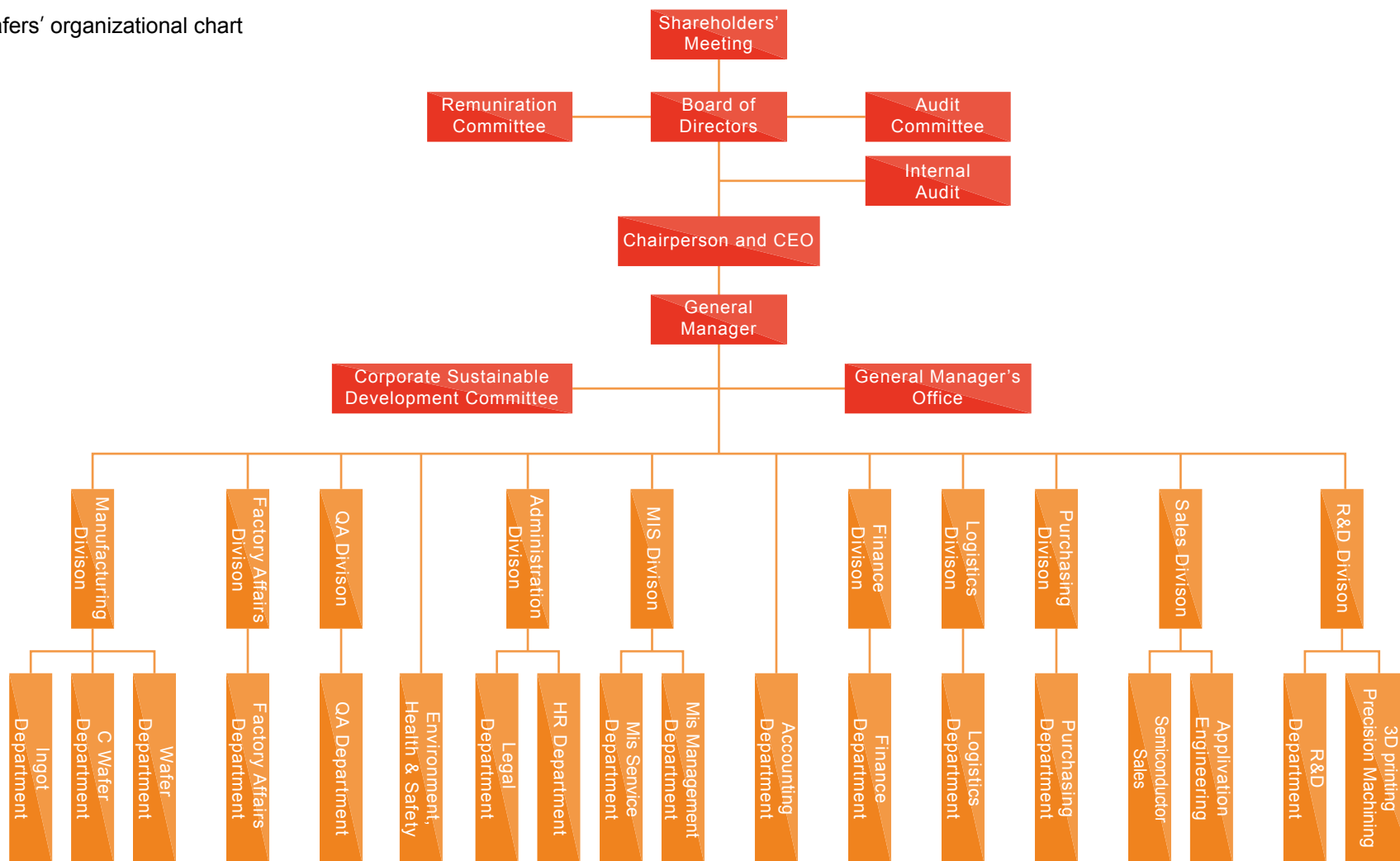GlobalWafers adheres to its corporate culture of integrity and fully implements its management vision of honesty & integrity, fairness & transparency, and social responsibility, while aiming to establish a decent corporate governance system via all ethical guidelines & policies to thoroughly fulfill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

2.2.1 Governance Structure

GlobalWafers' organizational chart

High-Level Operation Management

Enhancement of
Information Transparency

Establishment of
Excellent Senior
Governance Structure

Respect for
Stakeholder's Rights

Protection of
Shareholder's Rights

GW

Development
of Review
Committee Function

Enhancement
of Board of
Directors' Meeting
Function

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 Remuniration Committee to assist the board of directors in fulfilling its responsibilities of supervision. The organizational charter of both committees have 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 Remuniration 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 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 Key Points For The Corporate Governance Organization

The GlobalWafers board of directors consists of 7 directors of whom 3 are independent directors.

✓ (One independent director stepped down due to pass away in October 2018, whose position will be filled in the bi-election in the 2019 shareholders meeting.)

The Audit Committee and Remuniration Committee both consist of independent directors.

✓ (The vacant position of the independent director that stepped down from the Remuniration Committee is temporarily held by someone unqualified as an independent director before the bi-election in the 2019 shareholders meeting.)

✓ The organizational charter of all committees is publicly disclosed in the corporate website.

✓ Results of annual self-performance appraisals conducted by the board of directors 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. Board directors receive 6 hours of advanced training per year to enhance their professional competence and legal literacy. The responsibility of the board is to supervise and ensure the company's compliance with the laws and provide the management tea 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 7 SAS board meetings were held in 2018 with an average attendance rate of 88%. The board organization and board members' professional and educational background and attendance record are illustrated as below:

Board Composition, Professional And Educational Background And Attendance Record In 2018

Title	Name	Gender	Primary professional (educational) background	Actual no. of presence (in attendance)	No. of presence by proxy	Actual presence (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.	7	0	100%	
Director	Sino-American Silicon Products Inc. representative: M.K. Lu / 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.	7	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.	6	1	86%	
Director	Kuo-Chow, Chen	Male	Tainan Nan Ying Senior Commercial & Industrial Vocational School / Chairman of Nan Hai Corp. / Board Director of COTA Bank	7	0	100%	
Independent director	Chi-Hsiung, Cheng	Male	Business Management Department, 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.	7	0	100%	
Independent director	Chun-Yen, Chang	Male	PhD, Institute of Electronics, National Chiao Tung University / Director of MicroInfo Research Center, National Chiao Tung University / President of National Chiao Tung University / Founding President of the National Nano Device Laboratories / Senior Researcher at Bell Labs, US / Visiting Professor of Stuttgart University, Stuttgart, Germany	2	3	40%	Passed away and stepped down on October 12 2018
Independent director	Ming-Zhang, Chen	Male	Ph.D, National Business Studies from National Chengchi University / MBA Program, National Chengchi University/ Dean, Institute of Business Administration, National Chung Hsing University / President of China Productivity Center / Director, Department of Economic Affairs, Mainland Affairs Council	1	1	50%	Stepped down on June 25 2018
Independent director	Cheng-Yuan Cheng	Male	PhD, Institute of Mechanical Engineering, University of Liverpool / Dean, College of Engineer, National Taiwan University of Science and Technology / Consultant of SAS Innovative Technology R&D Center / Jointly Appointed Professor & Consultant, Foreseeing Innovative New Digiservices, Institute For Information Industry / Visiting scholar to University of Cambridge UK / Consultant & Director of Teco Group Research Institute	5	0	100%	Newly appointed on June 25 2018

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' 2018 Annual Report.

Remuniration 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 Remuniration Committee on December 12, 2014. The Committee consists of three independent directors and convenes at least twice a year. In 2018, the Committee convened a total of 3 meetings with an average attendance rate of 88%.

The Remuniration 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 Remuniration 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 Remuniration Committee, the Committee is entitled to hire lawyers, accountants or other consultants to assist the duty execution.

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

Attendance record of the 2018 CompensationRemuniration Committee's independent directors

Title	Name	Actual attendance no.	No. of presence by proxy	Actual attendance rate	
Convener	Chi-Hsiung, Cheng	3	0	100%	
Board member	Chun-Yen, Chang	2	0	100%	Passed away and stepped down on October 12 2018
Board member	Ming-Zhang, Chen	1	1	50%	Stepped down on June 25 2018
Board member	Cheng-Yuan, Cheng	1	0	100%	Newly appointed on June 25 2018

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 2018, the Committee convened a total of 6 meetings with an average attendance rate of 81%.

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 the 2018 GlobalWafers' Annual Report.

Attendance record of the Audit Committee's independent directors in 2018

Title	Name	Actual attendance no	No. of presence by proxy	Actual attendance rate	Notes
Independent director	Chi-Hsiung, Cheng	6	0	100%	
Independent director	Chun-Yen, Chang	2	2	50%	Passed away and stepped down on October 12 2018
Independent director	Ming-Zhang, Chen	1	1	50%	Stepped down on June 25 2018
Independent director	Jeng-Ywan, Jeng	4	0	100%	Newly appointed on June 25 2018

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 Value And Occupational Ethics

GlobalWafers' most important value lies in Honesty and 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 formulated relevant internal regulations such as "Ethical Corporate Management Best Practice Principles", "Code of Ethical Conduct", and "Risk Management Guidelines". All these regulations have been publicly 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 is 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 2018.

Recusal For 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.

- Formulated "Guidelines for the Handling of Reported Cases of Illegal and Unethical Conduct".

- Awell-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.

- An employee suggestion box, email box, and complaint hotline are set up and announced on the internal website to encourage 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 is 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 corruption were reported in 2018.

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

01 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

02 Annual audit scheme:
Check, via the risks 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.

03 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.

04 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.

05 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.

06 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

07 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 Taipei Exchange Listed 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.

Year	No. of penalty	Penalty of fines (NTD)	Penalty plant	Matter of violation	Correction measures
2018	1	60,000	GlobalWafers Headquarters	No agreement organization was established, no agreement was convened in the event of joint operation by primary and secondary contractors. (A violation of the Occupational Safety and Health Act)	Contractors (including primary and secondary contractors) are required to submit applications to join the agreement organization.
	1	60,000	GlobalWafers Headquarters	Laborer(s) was(were) clamped and injured while engaging in the maintenance of pneumatic pumpjack (a violation of the Occupational Safety and Health Act)	Formulate a procedure log for hot work and Interlock Bypass control so that our staff members have a standard operation procedure to follow.
	1	100,000	Taisil Electronic	Toxic chemical substances storage quantity exceeded the approved controlled quantity (a violation of the Toxic Chemical Substances Control Act)	Lower the quantity for each batch purchased to avoid the violation of the law and regulation that stipulates the daily use and storage quantity be under 500kg.
	1	10,000	Taisil Electronic	The designated environmental protection personnel did not appear for the occupational training within the deadline.	The designated personnel had since completed the training and reported to the governing authority in the Environmental Protection Bureau in Hsinchu County.

In response to varied sectors of legal compliance, GlobalWafers has formulated different policies and guidance accordingly

01 Insider trading

02 Securities regulations

03 Products & services regulations

04 Corporate governance supervision over subsidiaries

05 Data management

06 Labor & human rights regulations

07 Personal data protection

08 Environmental protection regulations

09 Occupational safety and hygiene regulations

2018 Key Legal Compliance Items

01 Securities regulations

Strict management mechanism
SAS shares are listed on Taipei Exchange (TPEx) and must abide by 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 affairs department will further analyze relevant regulations and propose accurate responsive strategies upon communicating and confirming with supervising authorities

02 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.

03 Labor & human rights regulations

Strict compliance with labor & human rights regulations
- Formulating 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.
- Valuing 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.

04 Data management

- Formulating 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 though posters and slogans, employee training and education, and signing of confidentiality agreements with employees in charge of relevant operations.

05 Corporate governance Supervision over subsidiaries

- 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.

06 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 2018

Occupational Ethics

- Ethical corporate management and code of ethical conduct
- Advocacy on Non-Competition Compensation Clause
- Employee Business Conduct Guidelines

Data Protection

- Advocacy on personal data protection
- 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 Hygiene; Environmental Protection

- Health & safety; Hazard communication of hazardous chemicals
- Hazardous Energy Source Lockout/Labelling Advocacy
- Hazardous substances control
- Personal protective equipment and occupation injury cases advocacy
- Prevention of ergonomic hazards
- Occupational violence/attack and sexual harassment prevention advocacy
- Be a vegetarian, be green, save food, and save the planet
- Hearing protection
- Mechanical prevention education
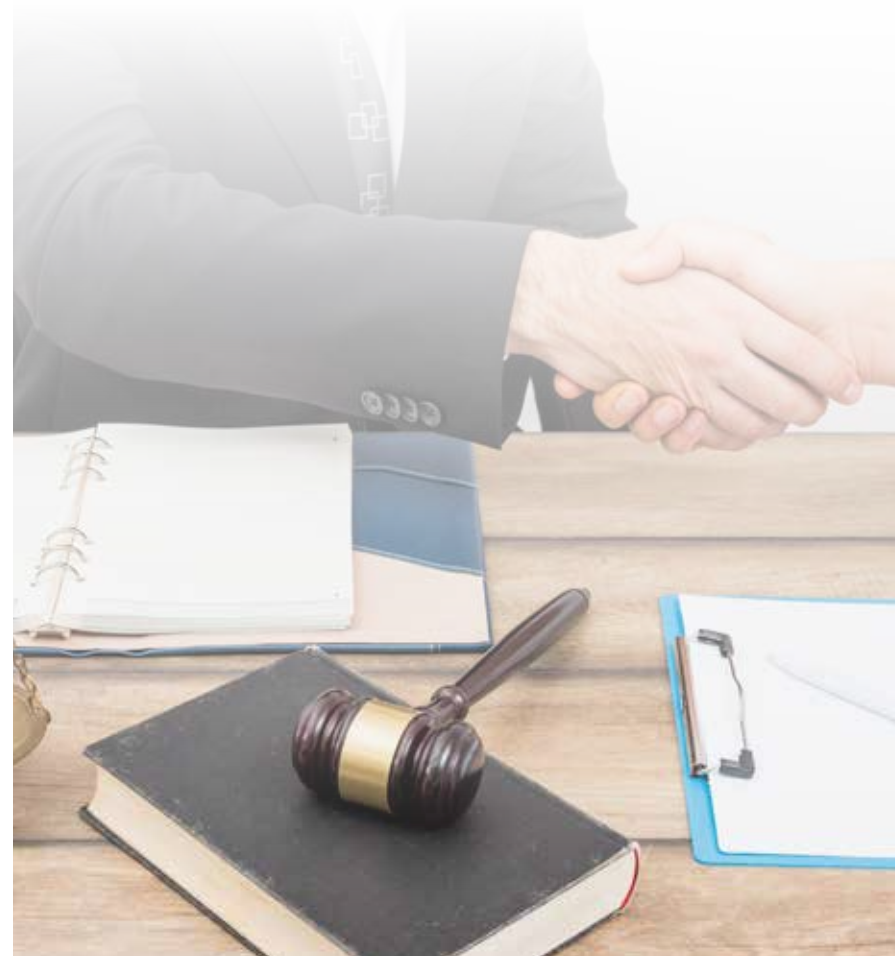
2.3 Operation Performance

The rapid growth in the semiconductor market in 2018 means the development of new production capacity and new technologies has stimulated the demand for quality silicon wafers. Given such a thriving prospect for the industry, GlobalWafers has maximized the post-acquisition production capacity & performance. With flexible adjustments and strengthen operation as a response to the vibrant sales, our home and offshore subsidiary companies have all reached their production capacity in terms of output. With concerted efforts of all staff members, GlobalWafers has repeatedly delivered great performance. Up to the end of 2018, we have achieved revenue growth for 12 consecutive quarters. The amazing feat is that we have reached a new record height in profits. In 2018, the company achieved a total revenue of NTD 59.064 billion with a growth rate of 27.8%, compared with last year. With a price increase in silicon wafers plus proactive costs control, our gross profit has risen to 38% reaching NTD22.299 billion, plus an operating income of NTD17.578 billion and an EPS of NTD 31.18.

For more details on operational performance and financial data, please refer to the 2018 GlobalWafers Consolidated Financial Statement

Financial Performance (Consolidated)
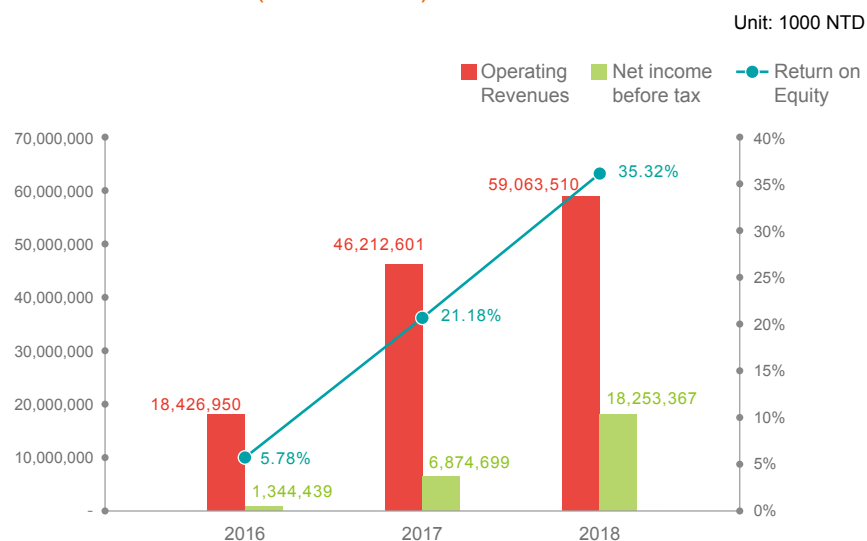
Unit: 1000 NTD

Cash Dividend
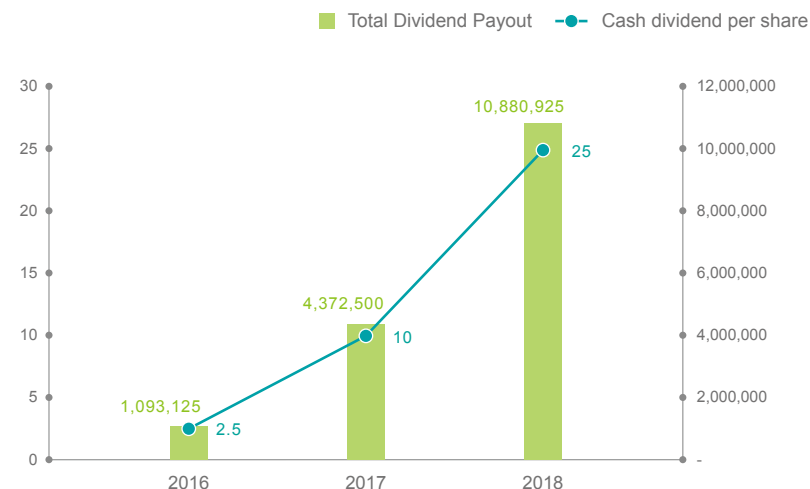
2018 Annual Economic Value Analysis

Unit: 1000 NTD

Generated direct economic value	Annual report: income	59,063,510
Distributed economic value	Operational costs	36,764,666
	Employee salaries & benefits	11,462,541
	Payment to investors	4,372,500
	Payment to the government	1,436,664
	Community resources	123

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

Product Sales

The revenue increase in 2017 was primarily due to the acquisition of Topsil and SEMI, the organizational restructure of the group and optimized operation management, plus growing demand of the global semiconductor market and the continuous price hike, hence the drastic rise of revenue compared with previous years. In 2018, the global market for semiconductor silicon wafers remained vibrant. With flexible adjustments and maximized production capacity of the newly acquired companies, GlobalWafers reached a new record height in revenue performance.

Revenue

Unit: 1000 NTD

Other	408,912	175,584	124,245
Semiconductor wafer	17,850,126	45,540,327	58,447,151
Semiconductor ingot	167,912	496,690	492,114
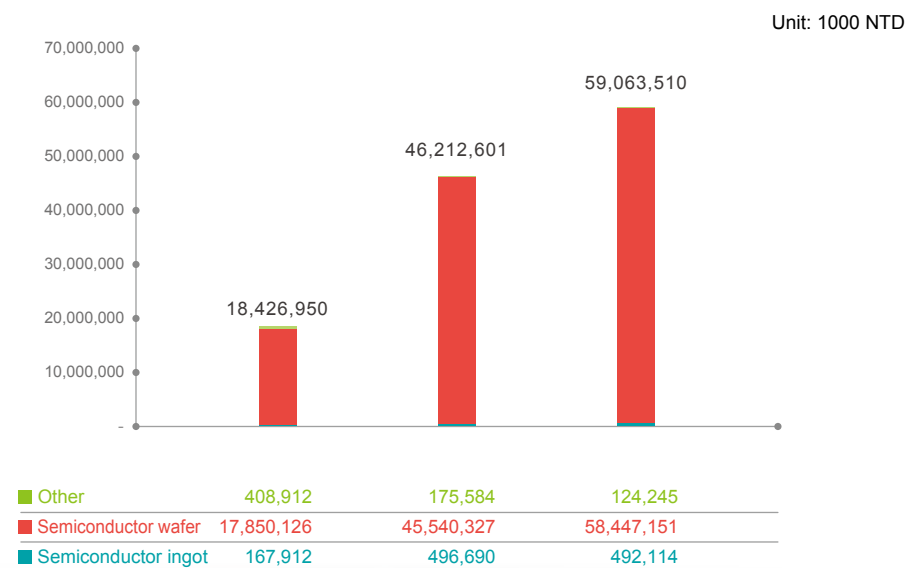
Sales Area Ratio

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

2016 — 23%, 45%, 13%, 19%
2017 — 21%, 44%, 14%, 21%
2018 — 23%, 46%, 11%, 21%

- Domestic sales
- Asia
- The Americas
- Other
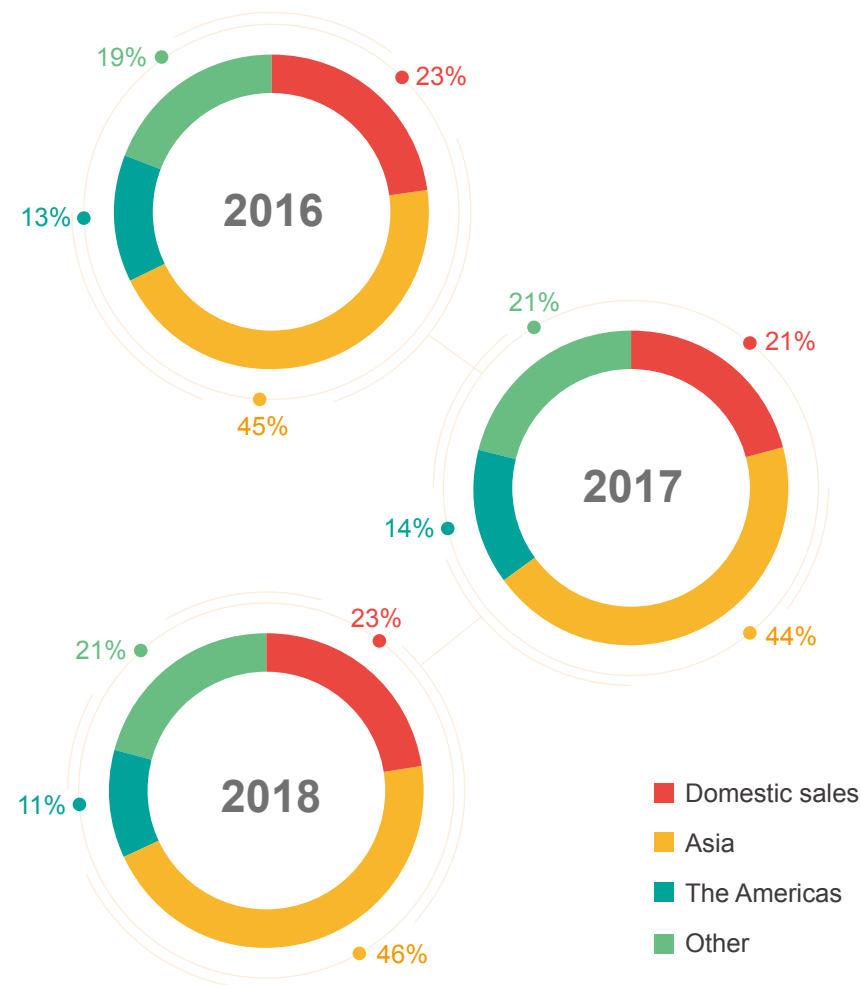
Overall Economic Environment And Industry Trends

With the global economic revival in 2017, the prospect of the semiconductor industry continued to grow in 2018. R&D innovation for all kinds of new products has stimulated the steep increase of demand and energized the rise of production output and average prices. GlobalWafers has complete product combinations and worldwide manufacturing locations, able to flexibly adjust its production capacity to satisfy customer needs, hence becoming customers' top choice. Plus worldwide sales networks and stringent costs control capabilities, GlobalWafers has made full use of the market upturn and achieved great operational performance.

Looking to the future, such high-performance computing sectors as AI, VR, AR and data centers will be leading the growth of the semiconductor market. Automotive electronics, IoT and sensor devices are also the driving engine of the semiconductor industry. GlobalWafers will be cultivating in existing markets and developing core technologies hoping to start its early deployment in this emerging Blue Ocean market so as to deliver its growth potential and create more value for the employees, customers and shareholders.
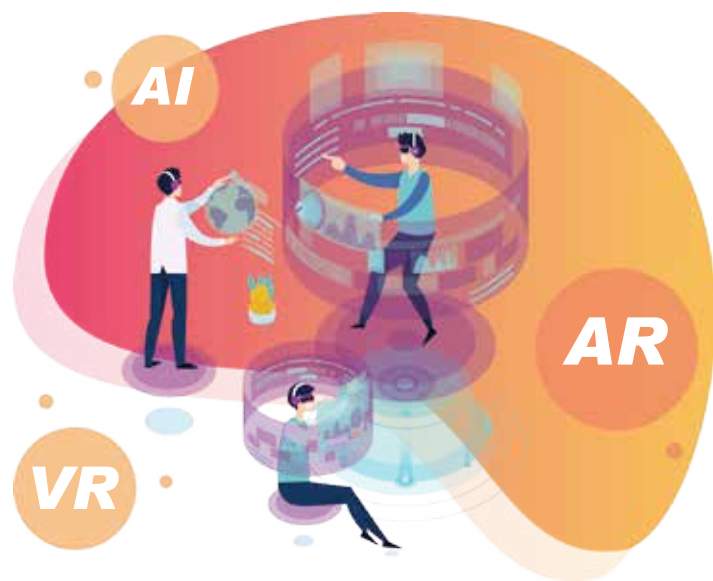
2.4 Risks Management

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 manage-ment

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.

Risks assessment   **Risk reporting and disclosure**

Risks identification   **Risks supervision**   **Response to risks**

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 Operation.

Tier-1 liability — The person in charge of each department or 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 the completeness of the risks management mechanism for the company hazards, operation, finance, strategies, legal compliance and contract compliance, while supervising relevant risks for each department

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.

	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. ▾ Develop the crystal growth automation system to increase manufacturing process stability, optimize quality and lower cost. ▾ 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	▾ Implement 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.
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.
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 hygiene	▾ 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 & hygiene education and training to prevent occupational hazards and protect labor safety and hygiene.
	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.

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 work 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 provide better quality for products, product technology and manufacturing. The goal is to provide customers with zero-defect products and services.
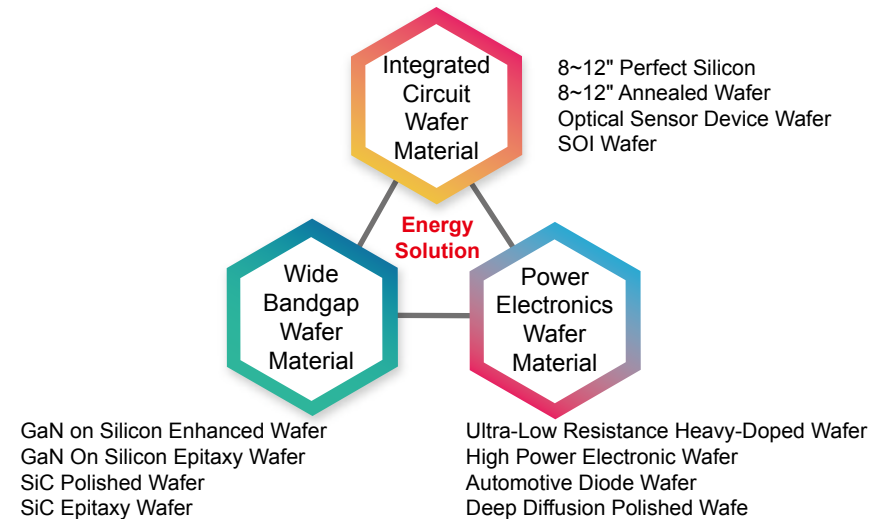
Management Mechanism

Continue to promulgate our quality control system, adhere to the TS/IATF 16949 spirits, pass the TIPS (Taiwan Intellectual Property Management System) AA-level certification, strengthen information security guidelines, prevent confidential data leakage, guarantee the rights and interests of the company and customers, monitor product quality control with complete and tight customer-oriented procedures, provide 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.

2018 Key Performances

Customer satisfaction≥80%
GlobalWafers

Obtained 82 pieces of patent certification
GlobalWafers

In the Taiwan Quality Control Circles (OCC) competition, Awarded 1 Gold Tower, 2 Silver Towers & 1 Copper Tower
GlobalWafers

3.1 Innovation Management

GlobalWafers is a professional silicon wafer supplier. Its products are used in integrated circuit device and power electronic device. Products can be classified into three major products based on product types. The following is an explanation of development directions for these three major products:

Integrated Circuit Wafer Material
8~12" Perfect Silicon
8~12" Annealed Wafer
Optical Sensor Device Wafer
SOI Wafer

Energy Solution

Wide Bandgap Wafer Material

Power Electronics Wafer Material

GaN on Silicon Enhanced Wafer
GaN On Silicon Epitaxy Wafer
SiC Polished Wafer
SiC Epitaxy Wafer

Ultra-Low Resistance Heavy-Doped Wafer
High Power Electronic Wafer
Automotive Diode Wafer
Deep Diffusion Polished Wafe

1.Integrated Circuit Wafer Materials:

Main products are 8~12" perfect silicon, 8~12" annealed wafers, optical sensor device wafers and SOI wafers. Large-size wafers are mainly utilized for integrated circuit device manufacturing. This includes 5 major categories of devices of Bipolar Digital, Memory, Micro, Logic and Analog. When manufacturing process continues to micronize and requirements on silicon wafer defects and surface cleanliness and flatness have become more stringent, crystal pulling technology (for example, amount of oxygen density and micro-defects) enhancement and wafer processing technology breakthrough during the silicon wafer manufacturing process have therefore become more important. When wire width for integrated circuit manufacturing process is becoming smaller each 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 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 is 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 10 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.
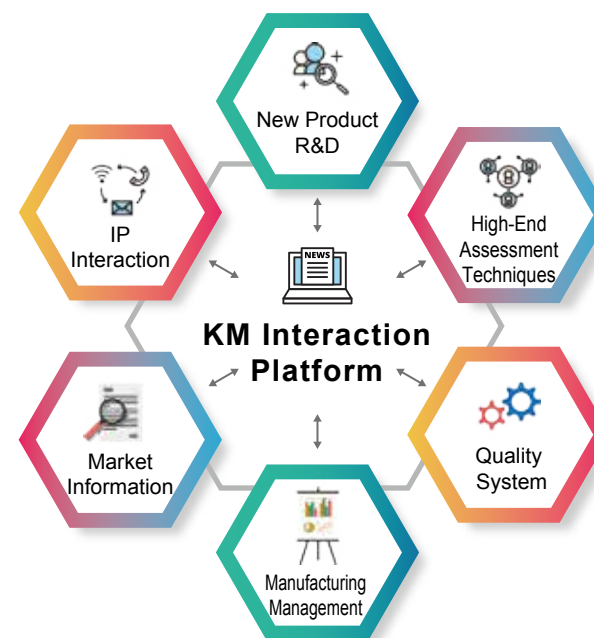
Internal Resources: KM Interaction Platform

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 assists 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.

※ Actron Technology Corp.
※ Lite-On Semiconductor Corp.
※ EPISTAR Corporation.
※ United Crystal Corporation.
※ WIN Semiconductors Corporation.

※ Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute (ITRI).
※ Institute of Optics and Electronics, Chinese Academy of Sciences.
※ Institute for Information Industry.

Strategic Alliances

Research Institutes

Research Centers + Consultant Groups

Academic Institutes

National Institutes

※ National Taiwan University.
※ National Tsing Hua University.
※ National Chiao Tung University.
※ National Central University.
※ National Cheng Kung University
※ National Taiwan University of Science and Technology.
※ National Taipei University of Technology
※ Chang Gung University

※ The Industrial Technology Foresight Research Program, Department of Industrial Technology of Ministry of Economic Affairs.
※ Technology Development Programs, Bureau of Energy, Ministry of Economic Affairs.
※ R&D Piloting Cooperation rojects between Industries and Academia at Science Parks.
※ Industry-University Cooperative Research Project, National Science Council.
※ Taiwan Intellectual Property Management, Industrial Development Bureau, Ministry of Economic Affairs

External Resources

Corporate sustainable operation and continued 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.

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 and 2018. 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 2018, we have received a total of 902 global patent certificates accumulated over the years, of which 82 certificates were obtained in 2018.

2018 global patent 82 certificates

3.2 Product Quality

In accordance with requirements from the IATF 16949 automotive quality management system, GlobalWafers has established its quality management system as well as documentation and electronization of related operation standards. It has also obtained effectiveness of a third-party verification body's certified quality management system, compliant with customer needs as well as the IATF 16949 management standard requirements. GlobalWafers' quality guideline is to provide customers with zero-defect products and services.

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.

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. They review items such as 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.

We participated in the 31st Taiwan National Quality Control Circle (QCC) competition in 2018 and was honored with one Gold Tower award, two Silver Tower awards and one Bronze Tower medals. We shall continue to improve and refine our manufacturing process technology.
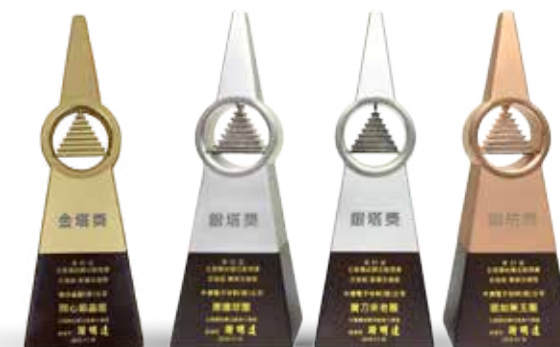
Wafer-Forging Circle Gold Tower Award

The full-cut rate for 3-inch silicon wafer dicing for automobile products rose to 100%, with a 32% increase in unit output quantity.

Edge Ball Circle Silver Tower Award

Epitaxial wafer edge removal rate was lowered from 9% to 1.25%.

Still-Going-Strong Circle Silver Tower Award

The lifespan of the band saw for ingots was increased by 27.3%.

Pretty Face Circle Bronze Tower Award

The dimple rate for the 200mm polishing machine was lowered from 2.5% to 2.14%.

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.
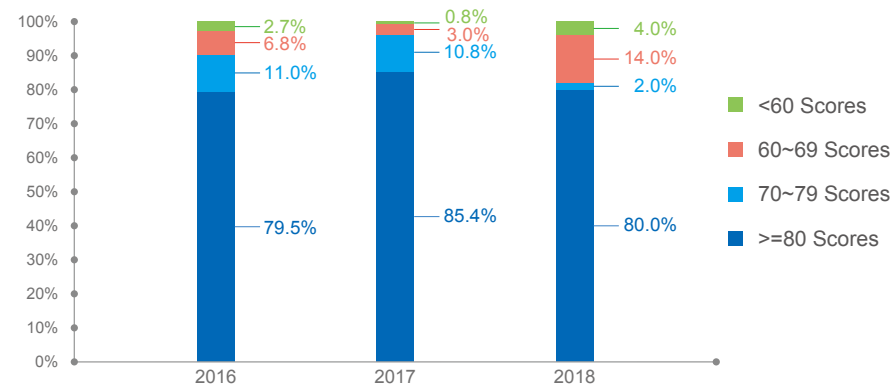
Customer Satisfaction

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.
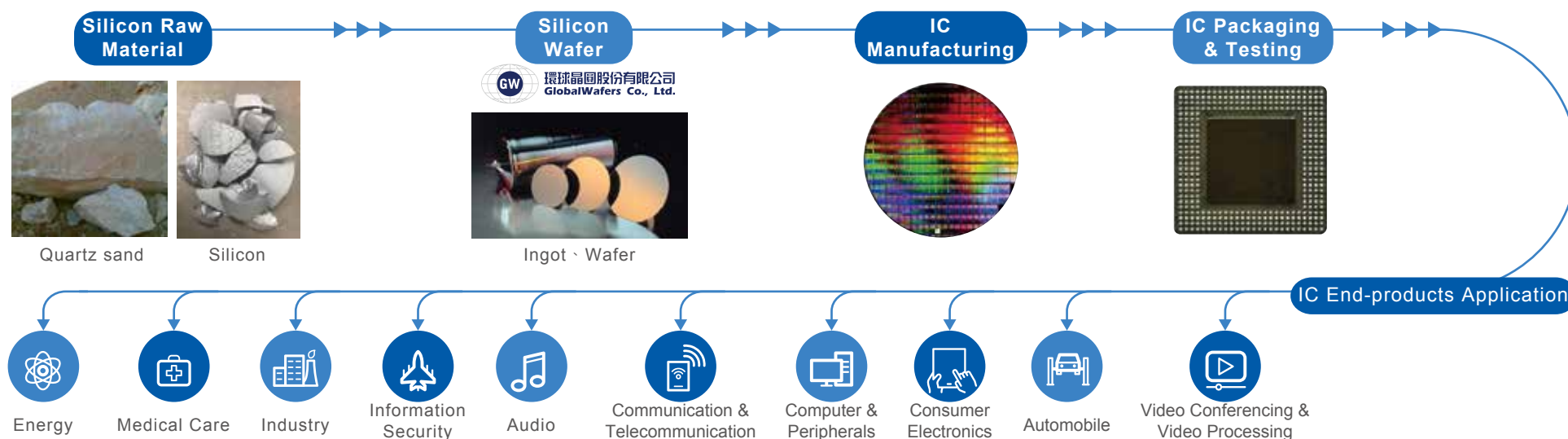
Contents for our customer satisfaction survey mainly encompass overall impression, business service, product quality and new product openness. Based on customer's feedback, GlobalWafers business team together with other colleagues will establish an improvement plan focusing on issues revealed, and further 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 92% in 2018. Overall satisfaction ≥ 80 points account for 80.0%. Further, due to the drastic increase in orders in 2018, the market demand was not fully met by the supply, hence a minor rise from the overall satisfaction <60 points. As such, in addition to pursuing advanced technology and stable quality, GlobalWafers will certainly place full efforts on overall production capacity planning so as to satisfy customer needs. We aim at the permanent goals of continuous improvements, customer satisfaction enhancement and growth with customers.

2016
- 2.7%
- 6.8%
- 11.0%
- 79.5%

2017
- 0.8%
- 3.0%
- 10.8%
- 85.4%

2018
- 4.0%
- 14.0%
- 2.0%
- 80.0%

Legend:
- <60 Scores
- 60~69 Scores
- 70~79 Scores
- >=80 Scores

3.4 Industry Supply Chain & Management

Up/Down Stream Supply Chain

Silicon Raw Material	Silicon Wafer	IC Manufacturing	IC Packaging & Testing

Quartz sand　　Silicon　　　　　　　Ingot、Wafer

IC End-products Application

Energy　Medical Care　Industry　Information Security　Audio　Communication & Telecommunication　Computer & Peripherals　Consumer Electronics　Automobile　Video Conferencing & Video Processing
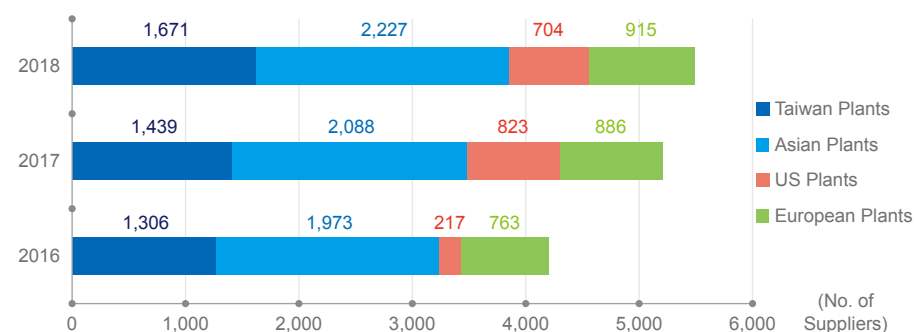
Supplier Assessment Management

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 hygiene 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 2018, local procurement accounts for the highest percentage, i.e. up to 89%, with others being 6% for countries neighboring Taiwan (Japan, Korea, China), 3% for the US, 2% for Europe and 1% for other countries.

Number Of Suppliers For Respective Factories

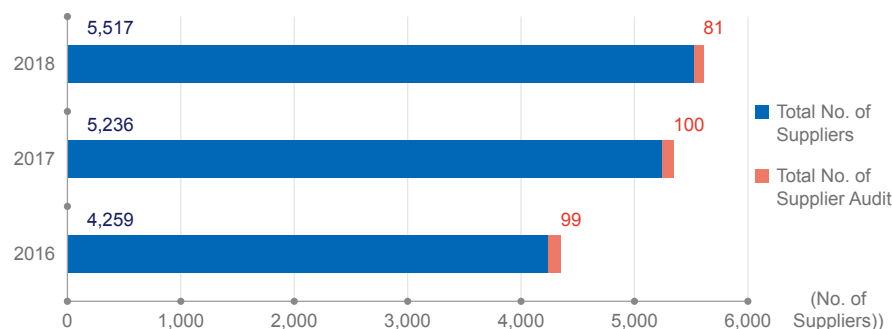|	Taiwan Plants	Asian Plants	US Plants	European Plants
2018	1,671	2,227	704	915
2017	1,439	2,088	823	886
2016	1,306	1,973	217	763

(No. of Suppliers)

Note:
1. Taiwan District: GlobalWafers Headquarters, TAISIL ELECTRONIC MATERIALS CORP. which was included into the GlobalWafers' Chunan Plant since 2018.
2. Asia District: GlobalWafers Japan, Kunshan Sino Silicon Technology Co., Ltd., MEMC Electronic Materials, Sdn Bhd., MEMC Japan Ltd., MEMC Korea Company
3. US District: GlobiTech Incorporated, MEMC LLC
4. Europe District: MEMC Electronic Materials, SpA, Topsil GlobalWafers A/S

Supplier Location Distribution For Taiwan Plants

- ■ Taiwan 89%
- ■ Japan 3%
- ■ Korea 2%
- ■ Mainland China 1%
- ■ U.S. 3%
- ■ Europe 2%
- ■ Other 0%

(11%)
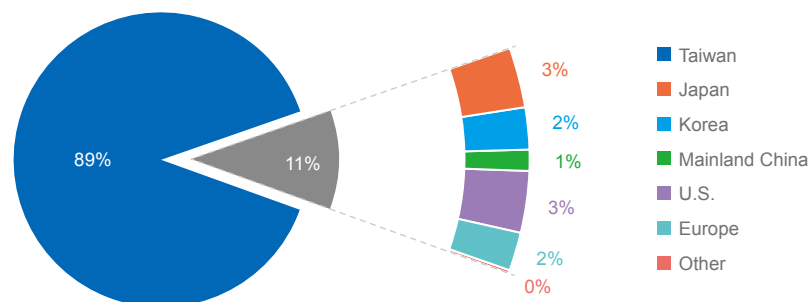
With respect to supplier on-site audit, the number of our supplier on-site audit in 2018 was approx. 2% of the total number of suppliers. Percentages for supplier on-site audit for the last 3 years are close to one another.

Number Of On-Site Audit Suppliers For Global Factories

Year	Total No. of Suppliers	Total No. of Supplier Audit
2018	5,517	81
2017	5,236	100
2016	4,259	99

(No. of Suppliers))

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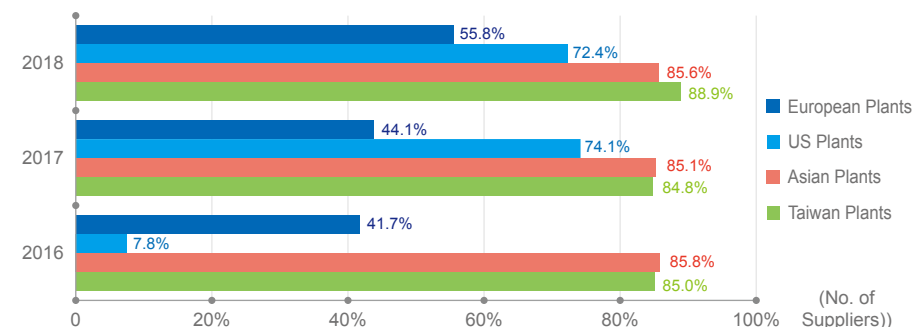
Some countries or regions have legal restrictions on chemical substance or chemical substance usage regarding raw material source or production. We comply with local corresponding laws such as RoHS and REACH regulations (restriction) in the E.U. and Toxic Substances Control Act (TSCA) in the U.S.

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 84% in a bid to implement the concept of promoting the industry's local development.

Year	European Plants	US Plants	Asian Plants	Taiwan Plants
2018	55.8%	72.4%	85.6%	88.9%
2017	44.1%	74.1%	85.1%	84.8%
2016	41.7%	7.8%	85.8%	85.0%

(No. of Suppliers))

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

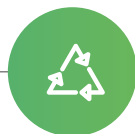Major Aspects For Consideration

Greenhouse Gas · Source Reduction · Pollution Prevention · Waste Management · Water Resources Management · Water Pollution Prevention

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 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.

Reduce · Recycle · Redesign · Reuse · **4R**

Management Mechanism

Through the promotion of 2015-edition ISO 14001 Environment Management System, GlobalWafers introduces the concept of product lifecycles, and starts from improving the manufacturing process and product design stage in order to truly achieve reduction of source raw materials. In 2018, we obtained we obtained the clean production certification and the Material Flow Cost Accounting hoping to identify improvement opportunities by checking on the production procedures for effective management.

Energy saving · Water saving · Waste reduction · Provincial resources
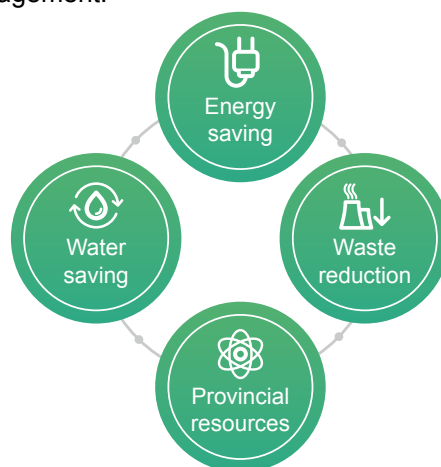
2018 Key Performances

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.

CO_2e Emissions in Taiwan
2492.3 tons-CO_2e

Water Conservation in Taiwan
181,052 metric tons

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.
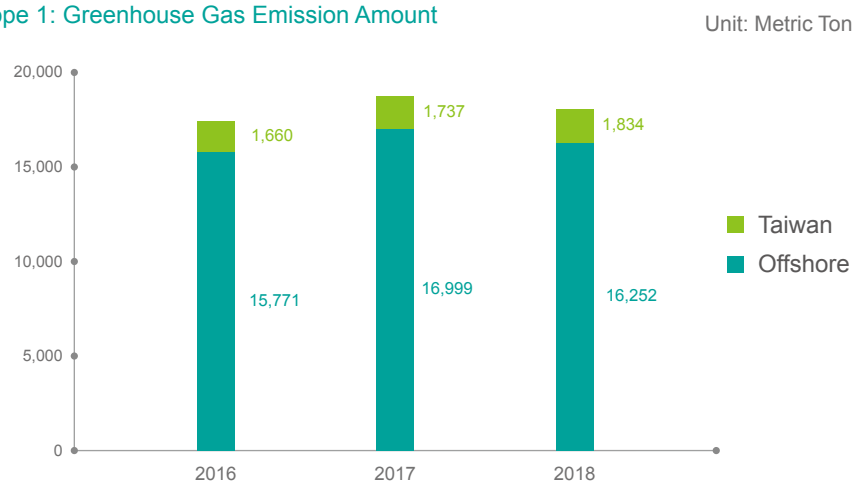
The company's operation parameter include three categories of greenhouse gas emission sources which include direct (scope 1, greenhouse gas for fuel utilization and manufacturing process utilization, fugitive emission sources of septic tank and firefighting equipment), indirect energy (scope 2, purchased energy) and other indirect (scope 3) sources. We have disclosed direct (scope 1) and indirect energy indirect (scope 2) in this report.

The total amount of GlobalWafers' greenhouse gas emission was on the rise for the past three years. This is mainly due to our acquisitions of the semiconductor business division of Topsil Semiconductor Materials A/S and SunEdison Semiconductor in 2016 as well as our newly constructed GlobalWafers Chunan Plant in 2018 and our continued expansion of production capacity. Our carbon dioxide equivalent emission in 2018 increased by 10.3% compared with 2017, which was roughly 53,000 metric tons of carbon dioxide equivalent, of which the direct emission (scope 1) accounted for 3.16% of total emission amount and indirect energy emission (scope 2), 96.84%. Our carbon dioxide equivalent emission accounts for 35.27% of total emission amount in Taiwan.

Scope 1: Greenhouse Gas Emission Amount   Unit: Metric Ton
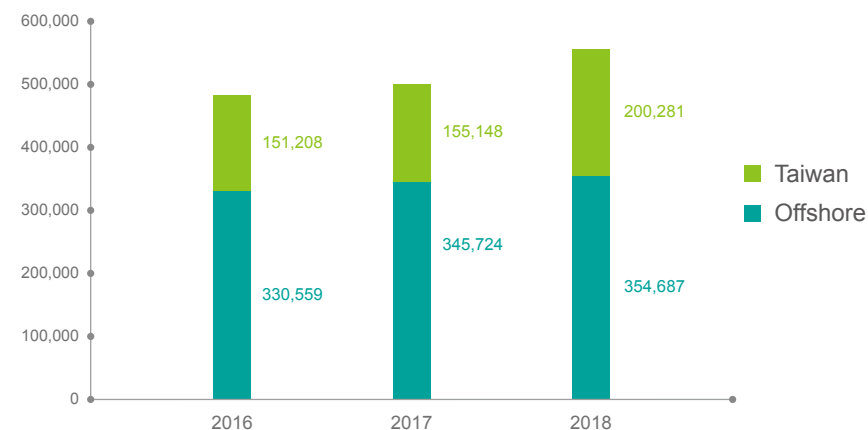
Scope 2: Greenhouse Gas Emission Amount   Unit: Metric Ton

Note:1. Taiwan District: GlobalWafers Headquarters, TAISIL ELECTRONIC MATERIALS CORP. which was included into the GlobalWafers' Chunan Plant since 2018.
2. Offshore: GlobalWafers Japan, KunShan Sino Silicon Technology Co., Ltd., MEMC Electronic Materials, SpA, 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., MEMC Japan Ltd. and 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, HAPs), Ammonia, volatile organic compounds and particulate matter pollution. In 2018, types of gas emissions exceeding 1 metric ton are Nitrogen Oxide, Ammonia and volatile organic compounds.

Other gas emissions in taiwan in 2018

Unit: Metric Ton
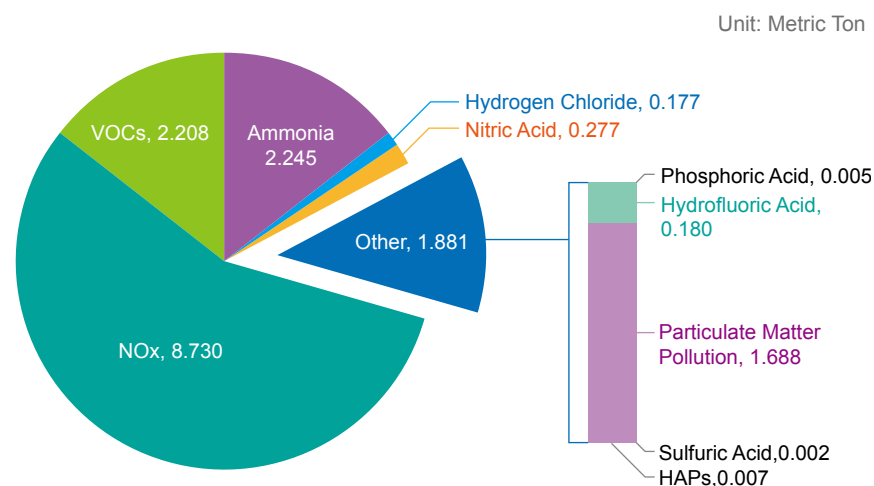
Note:1. Taiwan: GlobalWafers Headquarters, Taisil Electronic, GlobalWafers Chunan Plant
2. GlobalWafers Chunan Plant was included in the report in 2018. There are no NOx pollution matters in GlobalWafers Headquarters and Chunan Plant.
3. Annual emission amount for particulate, inorganic acid and alkaline 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, and 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, hygiene 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 2018, waste treatment amount in Taiwan was 6,739 metric tons, of which general industrial waste accounted for 98.7% and hazardous industrial waste, 1.3%. Offshore waste treatment amount is 23,435 metric tons, with general industrial waste accounting for 82% and hazardous industrial waste accounting for 18%. Of all handling methods for general industrial waste, the reutilization accounted for 77.72% as the highest percentage (for 5,171.82 metric tons), followed by physical handling, 11.1% (for 738.76 metric tons). Of all handling methods for hazardous industrial waste, the reutilization accounted for 64.11% as the highest percentage (for 54.42 metric tons), followed by physical handling, 33.96% (for 28.83 metric tons).

Industrial waste treatment in Taiwan accounts for 22.3% of the total amount for global factories. Our waste treatment amount was on the rise for the last 3 years due to our acquisition of semiconductor business group of Topsil Semiconductor Materials A/S and SunEdison Semiconductor in 2016 as well as the newly constructed GlobalWafers Chunan Plant and continued expansion of production capacity in 2018.

Industrial Waste Percentages For 2018
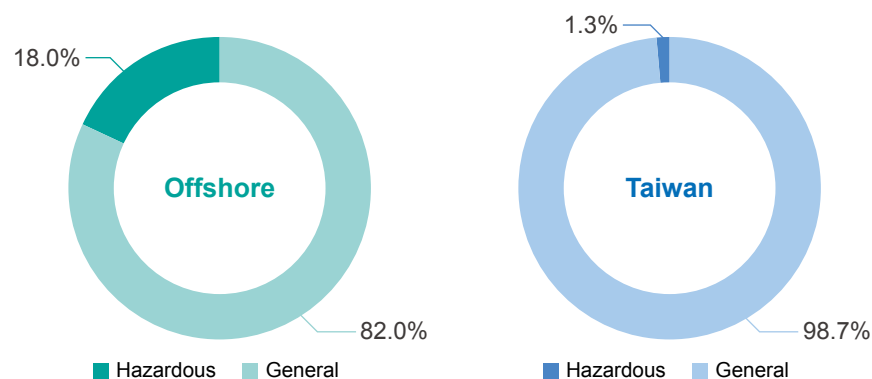
Offshore: 18.0% Hazardous, 82.0% General
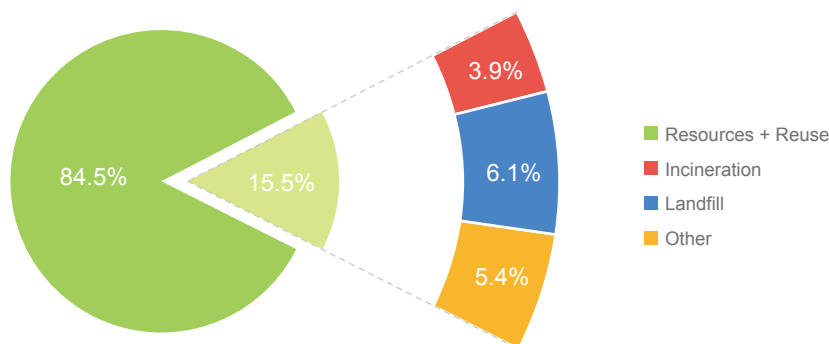
Taiwan: 1.3% Hazardous, 98.7% General

Note:
1. Taiwan: GlobalWafers Headquarters, Taisil Electronic and the newly constructed GlobalWafers Chunan Plant in 2018
2. Offshore: GlobiTech Incorporated., GlobalWafers Japan, MEMC Electronic Materials, Sdn Bhd., MEMC Electronic Materials, SpA, MEMC Japan Ltd., MEMC Korea Company, MEMC LLC, Kunshan Sino Silicon Technology Co., Ltd., Topsil GlobalWafers A/S

Industrial Waste Treatment Amount For Global Factories

Unit: Metric Ton

Hazardous: 2016: 3,437; 2017: 4,019; 2018: 4,314
General: 2016: 22,227; 2017: 23,052; 2018: 25,860

Note:
1. 2018 Factories: In addition to the factories in 2016 and 2017, there was the addition of GlobalWafers Chunan Plant
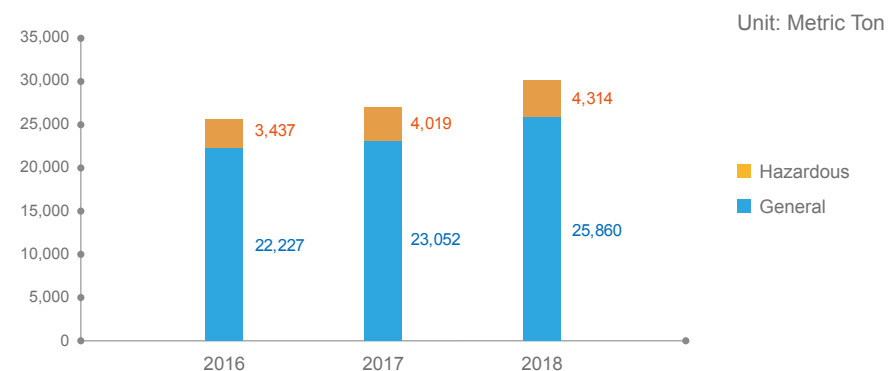
With respect to commissioned treatment on industrial waste, industrial waste adopting recycle and reuse from our global factories in 2018 accounted for 84.5% of total waste treatment amount. Other treatment measures (physical, chemical and curing treatment) accounted for 5.4%. Incineration accounted for 3.9% and landfill, 6.1%. In Taiwan, percentages for respective industrial waste treatments are 81.6% for recycle and reuse, 11.4% for other treatment measures (physical, chemical and curing treatment), 6.8% for incineration and 0.2% for landfill.

Industrial Waste Commissioned Treatment Measures For Global Factories In 2018

84.5% / 15.5%
- Resources + Reuse
- Incineration: 3.9%
- Landfill: 6.1%
- Other: 5.4%

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

Treatment Amounts For Industrial Waste Respective Treatment Measures In Global Factories

Unit: Metric Ton

Other: 2016: 2,020; 2017: 2,160; 2018: 1,613
Landfill: 2016: 660; 2017: 549; 2018: 1,833
Incineration: 2016: 1,689; 2017: 1,845; 2018: 1,173
Resources + Reuse: 2016: 21,294; 2017: 22,517; 2018: 25,217
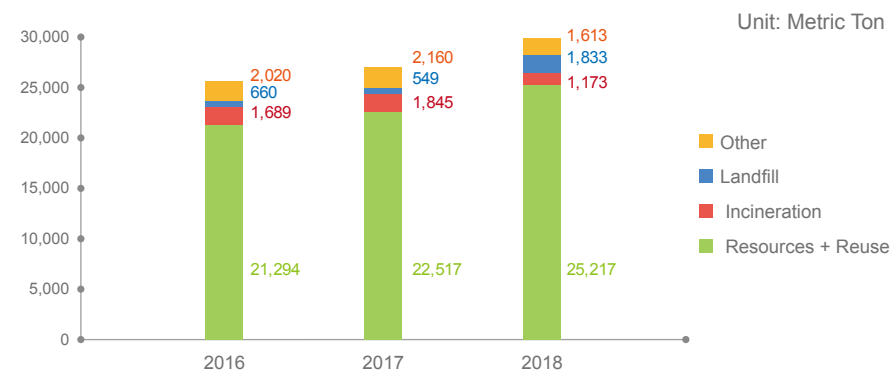
Note:Other treatment measures include physical, chemical and curing treatment.

2018 General Waste Distribution
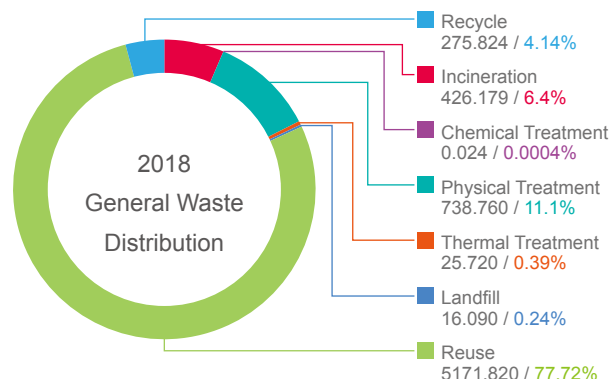
Recycle
275.824 / 4.14%

Incineration
426.179 / 6.4%

Chemical Treatment
0.024 / 0.0004%

Physical Treatment
738.760 / 11.1%

Thermal Treatment
25.720 / 0.39%

Landfill
16.090 / 0.24%

Reuse
5171.820 / 77.72%

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, GlobalWafers Chunan Plant and Taisil Electronic).

2018 Hazardous Waste Distribution

Chemical Treatment
0.45 / 0.53%

Curing Treatment
1.18 / 1.39%

Incineration
28.83 / 33.96%

Reuse
54.42 / 64.11%
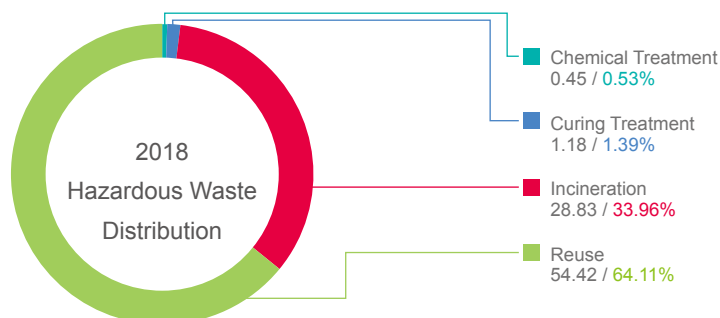
Note:
1. Data filing is submitted in accordance with the Industrial Waste Report and Management Data System by the Environmental protection Administration
2. Data on hazardous waste treatment measures is disclosed for Taiwan plants only (GlobalWafers Headquarters, GlobalWafers Chunan Plant and Taisil Electronic).

4.3 Source Reduction

4.3.1 Raw Material Re-Utilization

Through the promotion of 2015-edition 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 fluid (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 2018			
Category	Total Amount of the Year (Tons)	Total Recycled Amount of the Year (Tons)	Recycle Rate of the Year
Silicon Raw Material	2,507.29	497.73	19.85%

Re-utilization Quantity for Silicon Raw Materials

1,024 metric tons

Single Factory Re-Utilization Rate
· GlobalWafers Headquarters: 19.1%
· Taisil Electronic: 20.0%
· GlobalWafers Japan 22.9%
· MEMC Electronic Materials, SpA 12.5%
· MEMC Korea Company 22.2%
· Topsil GlobalWafers A/S 43.1%

Wafer cassette

167 metric tons

Single Factory Re-Utilization Rat
· GlobalWafers Headquarters: 33.6%
· Taisil Electronic: 11.0%
· GlobalWafers Japan: 15.5%

Re-utilization Quantity for Cutting Fluid (Supporting Agent)

924 metric tons

Single Factory Re-Utilization Rate
· GlobalWafers Headquarters: 61.2%
· Taisil Electronic: 61.25%
· MEMC Electronic Materials, SpA: 69.7%

Product Package Carton

11,268 pc

Single Factory Re-Utilization Rate
· GlobalWafers Headquarters: 13.0%

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 are GlobalWafers' current top priorities. In Taiwan, through the introduction of ISO 50001 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.

In Taiwan, in addition to the aforementioned on-going energy conservation measures, there are 9 new energy saving measures in 2018, resulting in a reduction of 2492.3 metric tons of carbon dioxide emission, an increase of 1611 metric tons worth of CO_2 emission reduction.

Energy Saving Measures In Taiwan

Category	Energy Saving Items	Calculated Energy Saving Period	Energy Saved (Year)	Carbon Emission Equivalent Saved (ton-CO_2e)	Electricity Bill Saved (NT$)
GlobalWafers Headquarters & Chunan Plant					
Air Condition Energy Saving	PE Temperature Regulation Replaced by Air-Conditioning Chilled Water Piping (to prevent chilled water energy leakage)	3/1~12/31	825.00 kWh	0.5	1,877
Machine Efficiency Enhancement	Frequency Change for Drainage Pump 7.5 HP*2	3/1~12/31	11,435 kWh	6.3	26,015
	Frequency Change for Wastewater Regulation Tank Pump 3HP*2	7/1~12/31	2,700 kWh	1.5	6,143
Machine Improvement	Grinding Equipment Production Capacity Enhancement	5/1~12/31	7,040 kWh	3.9	15,819
	Use Low Power Hot Zone	7/1~12/31	574,560 kWh	318.3	1,291,036
	CG8#6000(F9) Crystal Growth Furnace Harmonics Improvement	4/1~12/31	256,500 kWh	142.1	576,356
	CG#6000 MCZ Upgrades	4/1~12/31	145,800 kWh	80.8	327,613
	Cutting Machine Upgrades	4/1~12/31	3,656 kWh	2.0	8,215
Taisil Electronic Plant					
Machine Efficiency Enhancement	Heat of Compression Air Dry Added to Replace Existing Heated Desiccant Compressed Air Dryer	1/1~08/31	933,001 kWh	516.9	2,154,113
Air Condition Energy Saving	1st Phase Cooling Tower Old Plate Replacement and Repair	9/1~12/31	160,316 kWh	88.8	370,136
	UB Water Chiller #1 COP Improvement Project	1/1~04/30	197,648 kWh	109.5	456,330
Machine Improvement	N2 Generator Removed	8/7~12/31	1,705,378 kWh	944.8	3,937,377
	PULLER LPHZ Conversion	1/1~12/31	261,166 kWh	144.7	602,980
Energy Saving on Lighting	Traditional Light Tube Replaced by LED High Efficiency Light Tube	1/1~12/31	238,571 kWh	132.2	550,813
Taiwan Total	**Electricity**		**4,498,596 kWh**	**2,492.3**	**10,324,823.0**

Note:1.The electricity carbon emission factor is 0.554 (kg CO_2 e/kWh)
  2.The electricity bill for each factory is a weighted calculation with NT$2.275/kWh for GlobalWafers Headquarters, NT$2.247/kWh for GlobalWafers Chunan Plant, and NT$2.3088/kWh for Taisil Electronic.

Machine Improvement

The processing time is reduced by 5 minutes for each ingot, which results in an increased ingot production capacity by 13% with one additional ingot being produced for each batch

▲ Reserve Target Diameter for Rough Grinding
Diameter + 1mm

▲ TSKK is executed for 1mm removal quantity and sets the bed moving factor as 50mm/min. Exterior appearance, OK.

Cg#6000 Mcz Upgrades

MCZ Horizontal Magnetic Field Machine Efficiency Enhancement

N2 Generator Removed

Cutting Machine Upgrades

TS-205 Electric Control of the Cutting Machine and Machine Efficiency Enhancement of the Operation System

▲ TS-205 Original System   ▲ New Control System
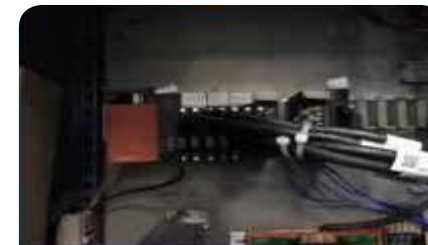
Use Low Power Hot Zone

NSE HZ 6" As <111> Power

~10%
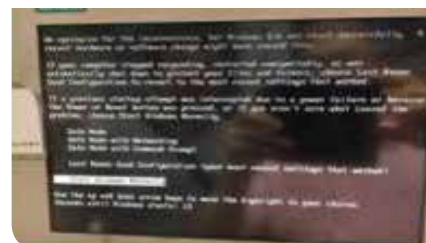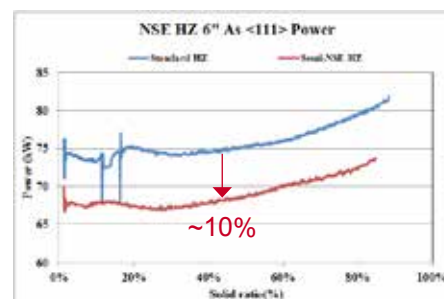
	Power (kW)
18-inch Standard Hot Zone	76
18-inch Semi-Energy-Saving Hot Zone	69

Machine Efficiency Enhancement

Frequency Replacement For Regulation Tank Pump 3Hp*2

Frequency Replacement For Drainage Tank Pump 7.5Hp

Air Condition Energy Saving

Pe Temperature Regulation Replaced By Air-Conditioning Chilled Water Piping

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 Bao San 1st and Bao San 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.

In 2018 and recent years, GlobalWafers' total water usage amount has been on the rise. The main cause for the drastic increase in total water usage amount is due to the newly constructed GlobalWafers Chunan Plant and continuous expansion of production capacity in 2018. The total water usage amount for 2018 was 24,651,213 metric tons, an increase from that in 2017 which was 1,838,014 metric tons. In Taiwan, the reused recycled water amount in 2018 was on a slight increase, that is, 2,488,153 metric tons, accounting for 53.35% of total recycled water amount.

With respect to the water resource recycling rate, the average water resource recycling rate for global factories in 2018 is 18.92%, a 1.34% increase from 17.58% in 2017. For Taiwan area, the water resource recycling rate for 2017 and 2018 were 53.3% and 56.85% respectively. Taiwan is the major water resource recycling area amongst all of our global factories.
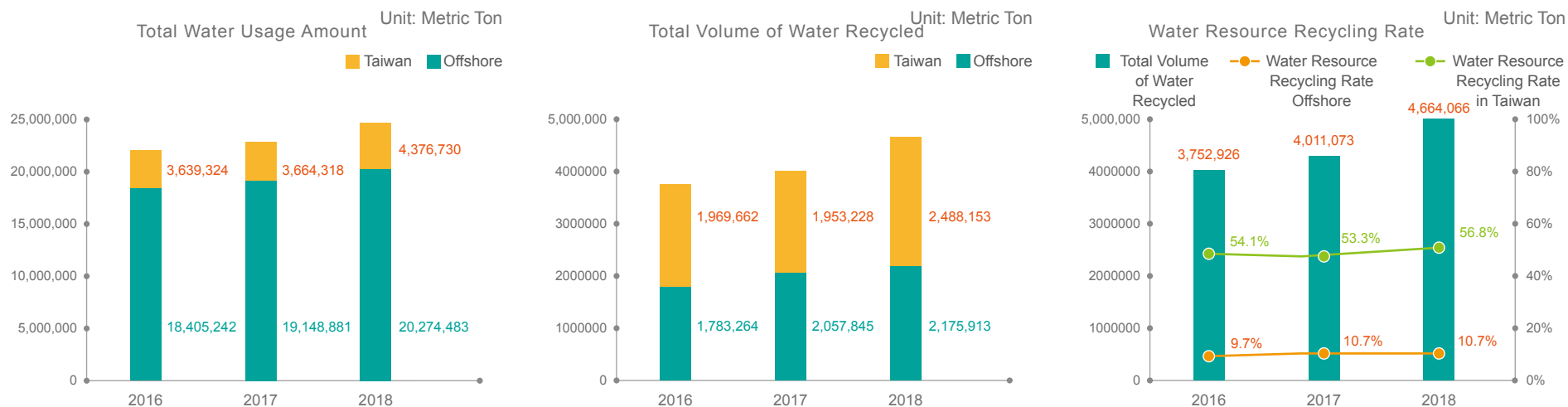
Note:
1. Taiwan: GlobalWafers Headquarters, Taisil Electronic and the newly constructed GlobalWafers Chunan Plant in 2018
2. Offshore: GlobiTech Incorporated., GlobalWafers Japan, MEMC Electronic Materials, Sdn Bhd., MEMC Electronic Materials, SpA, MEMC Japan Ltd., MEMC Korea Company, MEMC LLC, Kunshan 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. Water Recycling from Surface Grinding 2. C/T Recycled Water 3. Condensate Recycling	36,303
Taisil Electronic	1. Water Recycling Rate Enhancement . Adding Water Recycling System . Adding acid and alkaline waste water recycling system in 2018, with a reduced tap water usage amount of 600-800 tons per day and 146,000 - 219,000 tons per year. (Activated in July 2018) . The EPI waste water recycling system was expanded in 2018, with a reduced daily water consumption of 200-400 tons per day, and 73,000-146,000 tons per year. (Activated in June 2018) 2. Source Management: Daily water consumption quantity analysis is conducted and reviewed to see if there is any abnormal consumption.	144,749
Total		**181,052**

Grinding Waste

C/T Recycled Water

The EPI waste water recycling system was expanded in 2018
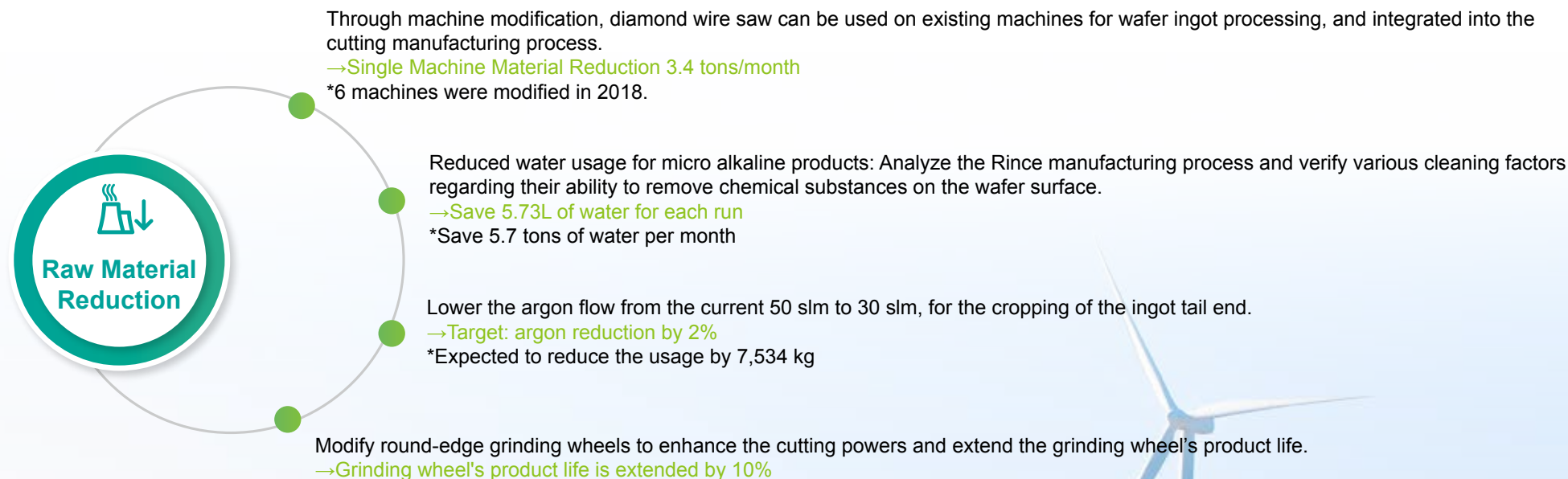

Water Recovery

The acid/alkaline waste water recycling system was added in 2018.

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:

Raw Material Reduction

Through machine modification, diamond wire saw can be used on existing machines for wafer ingot processing, and integrated into the cutting manufacturing process.
→Single Machine Material Reduction 3.4 tons/month
*6 machines were modified in 2018.

Reduced water usage for micro alkaline products: Analyze the Rince manufacturing process and verify various cleaning factors regarding their ability to remove chemical substances on the wafer surface.
→Save 5.73L of water for each run
*Save 5.7 tons of water per month

Lower the argon flow from the current 50 slm to 30 slm, for the cropping of the ingot tail end.
→Target: argon reduction by 2%
*Expected to reduce the usage by 7,534 kg

Modify round-edge grinding wheels to enhance the cutting powers and extend the grinding wheel's product life.
→Grinding wheel's product life is extended by 10%

05

Friendly Workplace

Chapter 5 Friendly Workplace

Major Aspects For Consideration

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

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 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 and conduct all kinds of training 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.

Perfect welfare system

Labor and management good interaction

Perfect corporate responsibility

Friendly workplace environment

Pay attention to colleagues opinion and sound

Management Mechanism

01 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.

02 The company promotes occupational safety and hygiene 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.

03 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.

2018 Key Performances

0 Human Rights Complaints

5.1 Employee Care

5.1.1 Human Resources

Outstanding talents are the corporate's basis in fulfilling strategic targets and key driving force for continuous development. Faced with various challenges such as rapid advancements in technology and information, plus brain drain and cross-country competition, 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. 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.
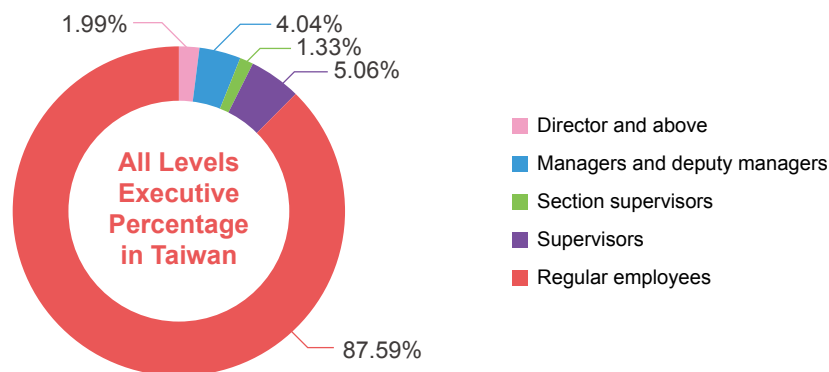
In 2018, our total number of employees is 7,108, with male employees accounting for 75.56% and female employees, 24.44%. With respect to official and non-official employees, official employees account for 92.26%, with male employee accounting for 69.43%, and female employees, 22.83%. As for employment types, unfixed term employment (regular employees) accounts for 88.97% of official employees, with male employees accounting for 68.28%, and female employees, 20.69% For work location distributions, employees in Taiwan account for 23.35%. Regarding executives in Taiwan, the total number of executives is 206, of whom male executives account for 77.18%, and female executives, 22.82%. Regarding management levels, there are 33 high-ranking executives (of departments and above), 67 managers (and deputy managers), 22 division directors, 84 section chiefs.

Man Power Structure In Global Factories

Type	Team	2018	
		Male	Female
Official / Non-official	Official (Regular Employees)	4,935	1,623
	Non-official (Contractors, Part-Time Staff)	436	114
Employment Contract	Unfixed Term (Regular Employee)	4,853	1,471
	Fixed Term (Contracted)	518	266
Location	Taiwan	1,199	461
	Offshore	4,172	1,276
Gender-Based Subtotal		5,371	1,737
Total		**7,108**	
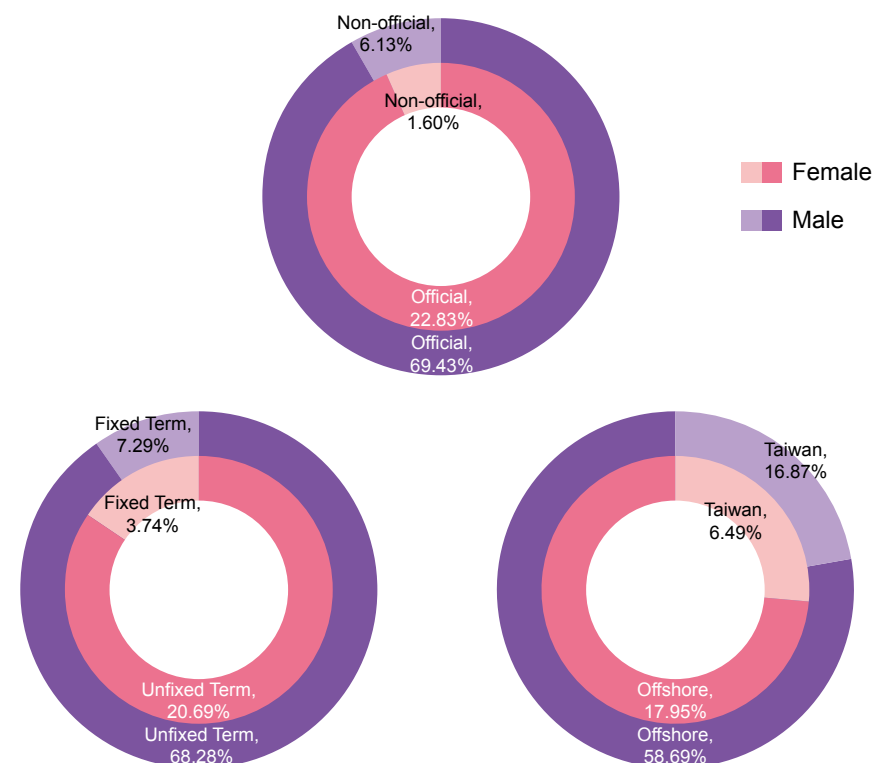
All Levels Executive Percentage In Taiwan

All Levels Executive Percentage in Taiwan

- Director and above — 1.99%
- Managers and deputy managers — 4.04%
- Section supervisors — 1.33%
- Supervisors — 5.06%
- Regular employees — 87.59%

All Levels	Male	Female	Total	Percentage
Director and above	30	2	33	1.99%
Managers and deputy managers	48	19	67	4.04%
Section Supervisors	14	8	22	1.33%
Supervisors	64	20	84	5.06%
Regular Employees	1,043	411	1,454	87.595%
Total	1,199	461	1,660	100%

Note:
1.Taiwan: GlobalWafers headquarters, GlobalWafers Chunan Plant and Taisil Electronic
2.There is no consistency for our offshore executive titles yet, therefore not included in this year's report.

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.

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. In 2018 the average salary for a full-time employee in a non-executive position is NTD1,409,000.

Note 1:"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 2: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.

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 region, 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.

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.

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 to adapt to rapid know-how changes and evolutions and to possess knowledge, techniques and capabilities that are in step with the times.

In 2018, the average number of employees in each factory receiving education training is 2,410, with 20.03 training hours for direct personnel and 24.32 training hours for indirect personnel, on average. Between 2016 and 2018, the average number of people receiving education training were on a continuous rise, indicating a stable education training plan and mechanism on our part.

Employee Education Training Statistics
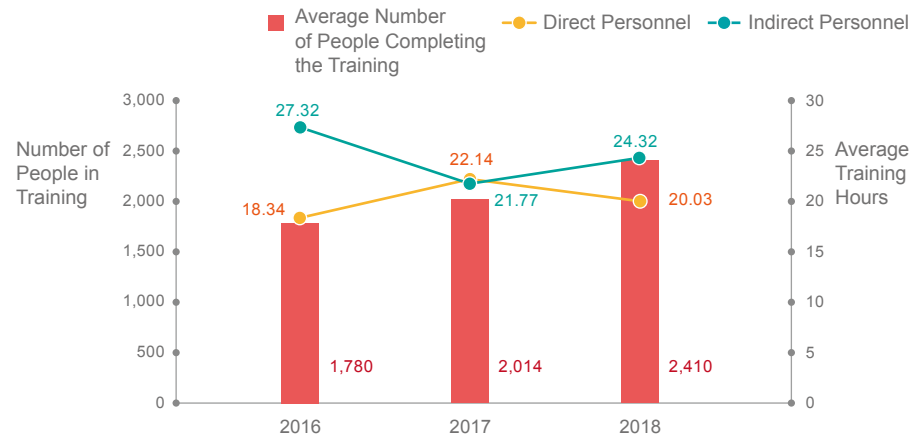
Note:
1. 2016-2017: GlobalWafers Headquarters, GlobiTech Incorporated., GlobalWafers Japan, Kunshan Sino Silicon Technology Co., Ltd., Taisil Electronics, MEMC Electronic Materials, Sdn Bhd., MEMC Electronic Materials, SpA, MEMC Japan Ltd., MEMC Korea Company, Topsil GlobalWafers A/S
2. In 2018, GlobalWafers Chunan Plant was added.
3. Direct Personnel: Operation personnel directly engaged in production related operations, including those engaged in technological tasks and team leaders in production sites.
4. 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 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 hygiene 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 2018 the number of people having received human rights education training was 5,248, with a total training hours of 15,919 and the percentage of employees having received the training being 76.36%. For existing employees, we conduct sporadic training courses to advocate and prevent against workplace violence and sexual harassment. There are 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 2018, we had a total of 1,989 employees joining the union, accounting for 28% 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.

In 2018, we joined

the union with **1,989** people.

28% of the total number of employees

Number Of People Participating In Unions

Unit: Number of People
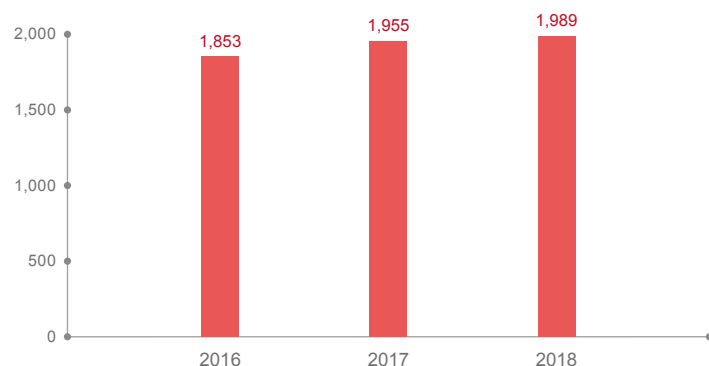
Note:
1. GlobalWafers Headquarters, GlobalWafers Chunan Plant, GlobiTech Incorporated., GlobalWafers Japan, Kunshan Sino Silicon Technology Co., Ltd., Taisil Electronic, MEMC Electronic Materials, Sdn Bhd., MEMC Electronic Materials, SpA, MEMC Japan Ltd., MEMC Korea Company, MEMC LLC, Topsil GlobalWafers A/S

5.2 Occupational Safety And Hygiene

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 hygiene regulations, it also allows all employees to participate in safety and hygiene 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 Taiwan region, we establish occupational safety and hygiene committees in respective factories. These committees are composed of management, engineering technology representative, labor representative, medical staff and safety and hygiene 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 hygiene committee meetings regularly to allow employees to participate in and supervise the execution performance of the occupational safety management system.

Occupational Safety & Hygiene Committees For Respective Factories In Taiwan Region

Category	GlobalWafers	Taisil
Committee (Number of People)	20	26
Labor Representatives (Number of People)	7	15
Labor Representatives Percentage	35%	57%

We establish various work safety and hygiene 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 and achieve the purpose of disaster prevention.

Contractor Management

Contractor management requirements are established. Contractors entering factories are required to submit 6-hour labor safety and hygiene education completion certificates or other related certificates better than this certificate. 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, contractors are required to dispatch on-site supervision staff for operation supervision and operation application units are required to implement on-site supervision management. Meanwhile, environmental safety department staff will also conduct irregular inspections to ensure operations' compliance with safety, hygiene and environmental protection requirements as well as to strengthen contractor's operation safety. In 2018, the number of contractors receiving in-plant education training was 686.

Contractor Safety, Hygiene & Environmental Protection Education & Training
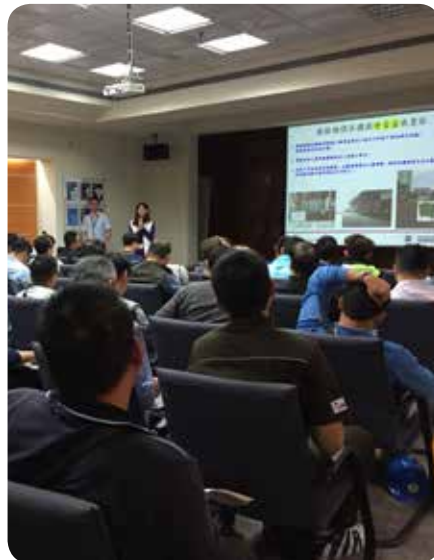
Chemicals Control

A safe material chart has been established to provide employees with enquiries on hazardous characteristics of chemical substance and related information. Hazardous substance lists are established accordingly for regular reporting to competent authority. All chemical machines are equipped with local exhaust ventilation on operations sites. Chemical substance GHS labels 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 of chemical substance exposure. In addition to supplying personal protection gear, the company also arranges snugness tests on breathing protection gears to ensure effectiveness for employees' protection gears.

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 implementation of operation environment tests, and verified 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 observation 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. In 2018, 4 automation warehouses were constructed to reduce repetitive loading/offloading on the part of operation personnel.


Automation Warehouse Construction

5.2.2 Safety Advocacy And Education & Training

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. Our safety health education training courses include related courses on hazardous substance control, personal protection gear utilization, prevention of ergonomic muscle and bone injury, dangerous machine, safety knowledge on equipment operation, prevention of limited space danger as well as hearing protection. In 2016 and 2017, the number of employees receiving safety and hygiene education training reached 4,700 per year and 7,300 people in 2018. 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 hygiene committee. This is to encourage employees to proactively enhance their safety & hygiene awareness, prompt employees into active participation and lower occurrences of occupational hazards.

The Number Of People Receiving Safety & Hygiene Education Training

Unit: Persons
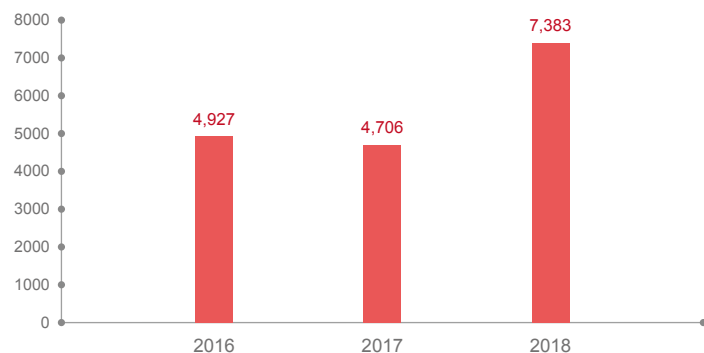
Note: Statistics Scope: GlobalWafers Headquarters, GlobalWafers Chunan Plant, Taisil Electronics

Safety And Hygiene Education Training

Taisil Electronic Internal Website ″Esh Environmental Safety & Hygiene Section″

Globalwafers Headquarters – Occupation 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 2018 included firefighting, emergency evacuation drills, emergency response equipment training (AED, CPR, fire-fighting coat and SCBA operation), and handling drills for toxic chemicals and chemical substance leakage.

Handling Drills For Toxic Chemicals And Chemical Substance Leakage

Firefighting Safety Training

Emergency Care And Treatment

Emergency Evacuation Drill: To Ensure Our Personnel Can Be Effectively Evacuated In Events Of Disasters.

Firefighting: To Strengthen Firefighting Skills To Ensure That Our Staff Members Can Put Out The Fire As Soon As It Occurs In Order To Avoid Its Aggravation.
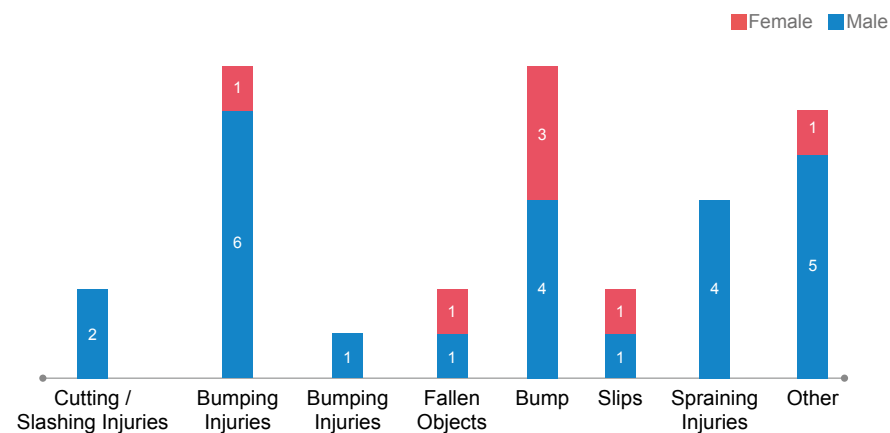

5.2.4 Disabling Injuries

Our occupational hazard statistics analysis data 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 2018, there were 5 incidents of occupational injuries in our Taiwan region and 26 incidents in offshore regions, with clamping injuries and falling over accounting for the majority of the incidents, each taking up 22.58% of all injuries. For our global factories, the disabling frequency rate was 2.57 (men: 2.57; women: 2.54), and the disabling severity rate was 67 (men: 64; women: 74). 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 were on the rise, compared with 2017. In 2018 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.

2018 Occupational Injury Categories & Statistics

Legend: ■ Female ■ Male

Category	Male	Female
Cutting / Slashing Injuries	2	
Bumping Injuries	6	1
Bumping Injuries	1	
Fallen Objects	1	1
Bump	4	3
Slips	1	1
Spraining Injuries	4	
Other	5	1

Disabling Frequency Rate (FR)

Legend:
- Taiwan: Men
- Taiwan: Women
- Offshore: Men
- Offshore: Women
- GlobalWafers

Year	Taiwan: Women	Offshore: Men	Offshore: Women	Taiwan: Men	GlobalWafers
2016	1.24	2.31	1.14		1.65
2017		1.96	0.56		1.24
2018	1.09	2.88	3.26	1.67	2.57

Absence Rate (AR)

Legend:
- Taiwan
- Offshore
- GlobalWafers

Year	Taiwan	Offshore	GlobalWafers
2016	0.63%	2.25%	1.85%
2017	0.64%	2.12%	1.73%
2018	0.89%	2.38%	1.97%

Disabling Severity Rate (SR)

Legend:
- Taiwan: Men
- Taiwan: Women
- Offshore: Men
- Offshore: Women
- GlobalWafers

Year	Taiwan: Women	Offshore: Men	Offshore: Women	Taiwan: Men	GlobalWafers
2016	9	48	2		30
2017		77	10		47
2018	3	75	110	33	67

Note:

1. Taiwan: GlobalWafers Headquarters, Taisil Electronics and the newly added GlobalWafers Chunan Plant in 2018
2. Offshore: GlobalWafers Japan, Kunshan Sino Silicon Technology Co., Ltd., MEMC Electronic Materials, Sdn Bhd., MEMC Electronic Materials, SpA, MEMC Japan Ltd., MEMC Korea Company., MEMC LLC
3. Disabling Frequency Rate (FR) = total number of disabled employees ×106 / Total work hours
4. Disabling Severity Rate (SR) = Total number of work days lost to injuries ×106 / Total work hours
5. Total work hours: mandatory work days 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.

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 employee's 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.

Healthy Workplace

Preliminary Prevention
Health Promotion & Special Protection

Secondary Prevention
Early Diagnosis & Adequate Treatmen

Tertiary Prevention
Tertiary Prevention
Restrictive Disability & Rehabilitation

- Regular Health Check
- Health Promotion Activities
- 4 Cancer Screening
- Flu Vaccination
- Provision of Health Information & Sanitation Education
- Identification and Assessment of Workplace Hazards
- Task Selection & Distribution

- Special Health Examination
- Prevention of Diseases Triggered by Irregular Workloads
- Maternity Health Protection
- Muscle/Bone Injuries Prevention
- Case Management for Metabolic Syndrome
- Injuries/Disease Treatment

- Medical Care & Referral Assistance
- Rehabilitation Assessment & Work Arrangement

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 age-specific screening of four cancers (Colorectal cancer, Cervical cancer, Mammography, Oral cancer). Personal health check report counseling activities are also provided after health checks to allow employees to understand more of their own health conditions. 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 2018 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.

Additionally, we place great emphasis on the prevention and control over epidemics. Each year, free flu vaccination is provided to factory employees. Company medical personnel is responsible for collecting related epidemic information, and conduct promotion in the company's internal website to remind employees to strengthen their personal health and increase epidemic prevention knowledge. Epidemic active report system is established to avoid expansion of epidemics and ensure the company's various operations continue to function normally.

To ensure workplace environmental safety, starting from 2018, there have been installations of 24-hour Automated External Defibrillators (AED) inside the factories and arranged for 70% 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
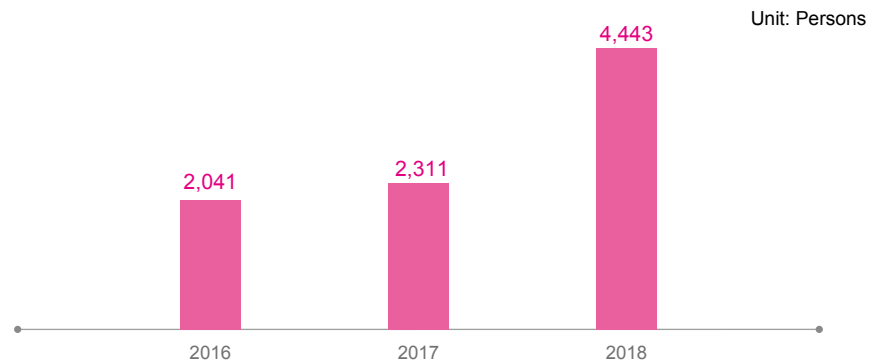
Note:Scope of Statistics - GlobalWafers Headquarters, Taisil Electronics, GlobalWafers Chunan Plant

Cpr And Aed Training Courses

Fitness Tests, Flu Vaccination, Quit Smoking Clinic

Blood donation activity

Safe Place Certification

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 2018 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

Taisil Electronics Was Honored With A Distinction Award For Its Breast Feeding Rooms In 2018 In Hsinchu.

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

News Ticker Provides Promotions On Health, Disease Prevention

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 2018

Donation Activities	Recipient Organization	Quantity
Moon Cake Donation	Shih Guang Educational & Nursing Institute, Hsinchu Hukou Hsiang Yuan Memorial Education & Nursing Institute, Chudong Haosheng Children's Home	NTD 113,000
Dream Fulfillment Projects	Yufeng Elementary School, Taoshan Elementary School	134 pieces of dream fulfillment presents
Philanthropic Activities in Winter	Taiwan Fund for Children and Families in Hsinchu, Xiuluan Elementary School in Hsinchu's Township, Dayou Elementary School in Chiayi	NTD 207,000

Moon Cake Donation

Dream Fulfillment Projects


Philanthropic Activities In Winter

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	9		◎
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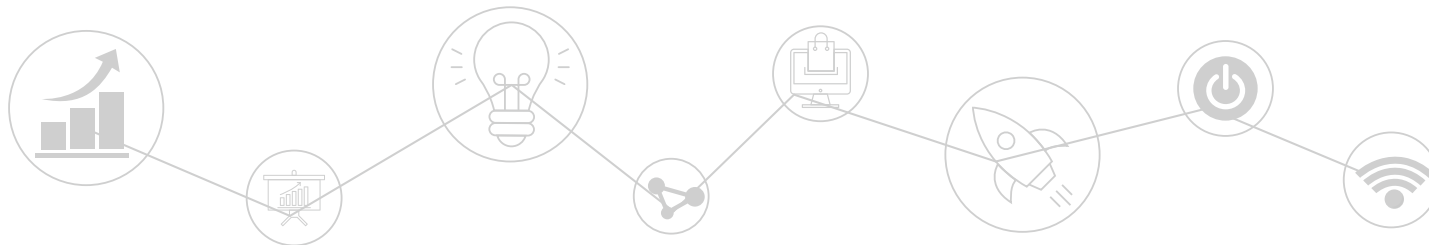
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Independent assurance statement

Scope and approach

GlobalWafers Co., Ltd. ("GWC" or the "Company") commissioned **DNV GL Business Assurance Taiwan** ("DNV GL") to undertake independent assurance of the 2018 Corporate Social Responsibility Report (the "Report") for the year ended 31 December 2018

We performed our work using DNV GL's assurance methodology VeriSustain™[1], 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 GL 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 2018 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

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

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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 data/information from multi-stakeholder engagement, covering all business verticals and supply chain partners, to identify relevant sustainability topics in the supply chain.
- Strengthening the materiality assessment process by integrating the key issues raised from all relevant management system, i.e., QMS, EMS, OHS and TIPS management system, etc.
- To improving the data reliability and accuracy, it is suggested to establish a standard process to collect data/information from daily operation and implementing verification mechanism to verify the accuracy of the data/information.

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: 10 May 2019

Chun-Nan Lin
Lead Verifier
DNV GL – Business Assurance Taiwan
Statement Number: 00005-2019-ACSR-TWN

David Hsieh
Sustainability Service Manager,
Greater China

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.
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