**TSMC 2009 Corporate
Social Responsibility Report**

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OVERVIEW

As a good corporate citizen, TSMC has always fully committed itself to its corporate social responsibilities. In 2009, we were honored to be included in the Dow Jones Sustainability Index for the ninth consecutive year.

In this year's Corporate Social Responsibility Report, we continue to share our efforts in strengthening employee and supplier relations, corporate governance, business ethics, social contribution, and environmental protection. These are cornerstones of TSMC's business and our commitment to sustainable development.

Report Scope and Profile

This report contains information related to all TSMC fabs located in Taiwan, as well as the Environmental Safety and Health (ESH) performance of our two wholly-owned manufacturing subsidiaries, TSMC (China) and WaferTech in the United States. Financial figures in this report are expressed in NT dollars unless otherwise specified. ESH performance is expressed in commonly accepted benchmarks.

We publish this report annually, and the previous report was published in August 2009. This report is compiled based on the Global Reporting Initiative (GRI) G3 framework; a table is attached at the end of this report for the readers' reference. We self-declare that this report complies with GRI Application Level A+. This report is published in both English and Chinese and is available on TSMC's corporate website.

Report Assurance

The British Standard Institution (BSI) reviewed this report against the AccountAbility AA 1000 Assurance Standard and the GRI G3 guideline on materiality, inclusivity and responsiveness. BSI's Report Assurance Statement can be found at the end of this report.
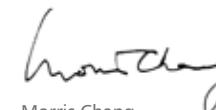
LETTER FROM
THE CHAIRMAN AND CEO

In the past 20 or 30 years, Taiwan has demonstrated significant progress in modernization, globalization, economic growth, and political development, and the technology industry has played a major role in speeding up these positive changes. By its nature, the technology industry is modern and global, and has made considerable contributions to the progress in Taiwan's society. TSMC is an important part of the technology industry, and as we look to the future, we not only aim to maintain our leadership in worldwide competition and promote Taiwan's globalization and economic growth, we will continue to carry out our corporate social responsibility and do our utmost to be good corporate citizens.

Our 10 principles for practicing corporate social responsibility are important standards for continuing to support positive change in society:

1. We insist on honesty and integrity. We are honest to our shareholders, employees, and to the public alike.
2. We respect the rule of law and always obey the law.
3. We abhor cronyism. We do not seek favoritism from the government or any government official, and we do not bribe.
4. We practice good corporate governance, and balance the interests of shareholders, employees, and all stakeholders in the company.
5. We do not engage in politics.
6. We provide good job opportunities with a safe, comfortable, and intellectually challenging environment to give our employees both physical comfort and mental stimulation.

7. We contribute our part in controlling climate change and place great importance on protection of the environment.
8. We emphasize and reward innovation, and manage the risks that innovation may bring.
9. We invest in green businesses such as LED lighting and solar power to contribute to a greener world.
10. We support educational and cultural activities, and provide long-term care to communities.

TSMC fulfills its social responsibilities to all stakeholders. As we carry out the principles above, customers will trust us more because of our honesty and integrity, respect for the law, and good corporate governance. Investors will be more willing to invest over the long term because of our clear core values, and employees will feel closer to the company as they identify with our values. Carrying out TSMC's social responsibilities brings us greater competitive advantage, creates greater value for shareholders, and benefits all of our stakeholders.

Morris Chang,
Chairman and CEO

CORPORATE PROFILE

TSMC is the world's largest dedicated semiconductor foundry, providing the industry's leading process technologies and the foundry sector's largest portfolio of process-proven libraries, IP, design tools, and reference flows. TSMC's leading industry position is based on a trinity of key differentiating strengths: technology leadership, manufacturing excellence, and customer partnership. Revenue for 2009 totaled NT$295.74 billion, net income was NT$89.22 billion, and earnings per share was NT$3.44.

2.1 An Introduction to TSMC

TSMC is the world's largest pure-play semiconductor foundry. Founded on February 21, 1987 and headquartered in Hsinchu, Taiwan, TSMC pioneered the business model of focusing solely on manufacturing customers' semiconductor designs. As a pure-play semiconductor foundry, the Company does not design, manufacture, or market semiconductor products under its own brand name, ensuring that TSMC does not compete directly with its customers.

With a diverse global customer base, TSMC-manufactured microchips are used in a broad variety of applications that cover various segments of the computer, communications and consumer electronics markets.

Total capacity of the manufacturing facilities managed by TSMC, including subsidiaries and joint ventures, totaled 10.3 million 8-inch equivalent wafers in 2009. In Taiwan, TSMC operates two advanced 12-inch wafer fabs, four 8-inch wafer fabs, and one 6-inch wafer fab. TSMC also manages two 8-inch fabs at wholly owned subsidiaries: WaferTech in the United States and TSMC (China) Company Limited. In addition, TSMC obtains 8-inch wafer capacity from other companies in which the Company has an equity interest.

TSMC provides customer service through its account management and engineering services offices in North America, Europe, Japan, China, South Korea, and India. The Company employed more than 24,000 people worldwide as of the end of 2009.

TSMC continued to lead the foundry segment of the semiconductor industry in advanced process technologies. Already the first foundry to provide 65nm and 40nm production

capacity, TSMC also announced it will deliver 28nm as a full node technology, and, in 2009, unveiled 28HPL (High-k metal gate with low power) to enrich its 28nm offering. In addition to general-purpose logic process technology, TSMC supports the wide-ranging needs of its customers with embedded non-volatile memory, embedded DRAM, mixed signal/RF, high voltage, CMOS image sensor, color filter, MEMS, and silicon germanium technologies. In December 2009, TSMC also announced the industry's first automotive process qualification specification and automotive service package in the China market. TSMC Fab 10 in Shanghai, along with multiple fabs in Taiwan, is capable of supporting the automotive service package.

In addition, to manage TSMC's long-term strategic growth opportunities, TSMC plans to invest in solid state lighting and solar power related industries.

The Company is listed on the Taiwan Stock Exchange (TWSE) under ticker number 2330, and its American Depositary Shares trade on the New York Stock Exchange (NYSE) under the symbol "TSM".

2.2 Market/Business Summary

2.2.1 TSMC Achievements

In 2009, TSMC maintained its leading position in the pure-play foundry segment of the global semiconductor industry, with an estimated market segment share of 51%. TSMC achieved this result amid fierce competition from both established players and relatively new entrants to the business.

Leadership in advanced process technologies is a key factor in TSMC's strong market position. In 2009, 67% of TSMC's wafer revenue came from manufacturing processes with geometries of $0.13\mu m$ and below. A critical milestone was reached in September 2008, when TSMC shipped its five

hundred thousandth 65nm 12-inch wafer. Moreover, TSMC also achieved volume production of the 45/40nm process as well as development of the leading-edge 28nm process, both foundry firsts. As of the fourth quarter of 2009, 39% of TSMC's wafer revenue came from 65nm processes and below.

In addition to advanced technologies, TSMC also offers innovative services in line with its unwavering focus on customer partnership. Among the many innovative services unveiled in 2009 was automotive process qualification specification and automotive service packaging, tapping the growth momentum of automotive electronics. TSMC also launched foundry's first integrated sign-off flow, mixed signal/radio frequency (RF) reference design kit and interoperable process design kit, which enriched the Open Innovation Platform™ to facilitate timely innovation among the semiconductor design community.

TSMC continued to advance the semiconductor roadmap in 2009. Examples of technologies the Company developed or rolled out include:

- 28nm low power technology with functional static random access memory (SRAM)
- 40nm technology for low power and radio frequency (RF)
- 55nm low power technology
- 65nm multi-time programmable non-volatile memory technology
- $0.11\mu m$ hybrid general performance technology
- $0.11\mu m$ high voltage process for small panel single chip drivers
- $0.13\mu m$ slim platform for analog and power management System-on-Chip (SoC) applications
- $0.15\mu m$ high voltage process for large panel source drivers

In addition, TSMC further strengthened its comprehensive development of specialty technologies in 2009, including 90/65nm embedded flash, 90/65nm CMOS image sensor and

$0.13\mu m$ analog technologies. In 2009, TSMC also revealed a foundry-first 3D Micro-Electro-Mechanical Systems (MEMS) platform for the integration of CMOS and motion sensors. These specialty technologies are key differentiators from our competitors and provide customers more value.

2.2.2 Market Overview

It is estimated that the semiconductor market in 2009 reached US$226 billion in revenue, a 9% decrease compared to 2008. According to IC Insights, total foundry, a manufacturing sub-segment of the semiconductor industry, generated total revenues of US$22 billion in 2009, -11% year-on-year. Revenues from pure-play foundries such as TSMC reached US$19 billion, or 8% of total semiconductor industry revenue, and TSMC's total revenue was US$9 billion. In 2009, the largest geographic market (based on location of customers' corporation headquarters) for pure-play foundry services, North America, accounted for 61% of overall pure-play foundry revenue. The second largest geographic market was Asia Pacific (excluding Japan), which accounted for 27% of pure-play foundry revenue in 2009. European-based customers accounted for 9%, and orders from companies based in Japan contributed 3%.

2.2.3 Industry Outlook, Opportunities and Threats

Industry Demand and Supply Outlook

2009 was a challenging year for the semiconductor industry, which experienced a decline of 9% year-over-year (YoY). After a sharp market decline in the final quarter of 2008, foundry sales bottomed out in the first quarter of 2009. Driven by better-than-expected demand and supply chain inventory replenishment, foundry sales recovered significantly throughout the rest of 2009. According to IC Insights, pure-play foundry sales declined by -10% in 2009 compared to 2008.

IC Insights forecasts pure-play foundry sales to grow at 24% YoY in 2010. As for the longer term, with an improving global economic outlook, increasing semiconductor content in electronics devices and increasing IDM outsourcing, pure-play foundry sales are expected to display an 14% compound annual growth rate (CAGR) from 2009 through 2014, higher than the 11% CAGR for total IC industry.

As the upstream supplier in the semiconductor supply chain, the foundry segment is tightly correlated with the market health of the 3Cs: computer, communications and consumer.

● **Computer**

The computer sector posted an impressive year despite the economic downturn, with a positive unit shipment growth of 3%. The consumer PC segment showed stronger momentum, offsetting the weak corporate PC segment. Lower cost PCs (e.g., netbooks) and new usage models, such as telecom carrier bundled promotions with netbooks, also helped to lift the PC market. Market momentum was especially strong in China and the US.

Moving into 2010, it is expected that corporate PC upgrades, together with the launch of the new Microsoft Windows 7 Operating System, will help drive the market while consumer PC continues to maintain its growth momentum. New applications and form factors such as touch screen, thin-and-light PC, "smartbooks", and "virtualization" will also help spur PC sales.

In terms of IC product design, the requirements of lower power and higher performance for key components in computers, such as CPU, GPU, Chipset, and others, will drive near-term demand for advanced process technologies such as 40nm and 28nm.

● **Communications**

The communications sector, particularly the handset segment, declined by 4% in unit shipments in 2009 from 2008. However, the growing number of new subscribers in emerging countries such as China and India has helped to offset the sales drop in developed countries. In the meantime, high-end smartphones, which have much higher semiconductor content, have been a bright spot in the overall handset market.

The growing popularity of 3G cellular phones will add positive momentum to the market. Smartphones with increasing performance, lower power and more intelligent applications will continue to propel the buying momentum of new handsets in the coming 2010.

Low power IC design is a must-have feature in the handset segment. System on Chip (SoC) designs and the hunger for higher performance to run complicated software will also speed up the migration to advanced process technologies in which TSMC is already the leader.

● **Consumer**

Aggregated digital consumer electronics device unit shipments resulted in 1% YoY growth in 2009, despite the economic downturn. Government (e.g., China and Japan) incentive programs, analog-to-digital TV transition in the US and EU, and "stay-at-home" economics drove demand during the economic downturn. Sharp average selling price (ASP) declines for consumer products, such as LCD TVs and Blu-ray DVDs also spurred buying sentiment.

Moving into 2010, new products with attractive features may stimulate sales of consumer products. Analog-to-digital broadcast transition in certain countries and the continuous drop in ASP will continue to be the catalysts driving sales of products like DTVs, STBs and Blu-ray DVDs.

Increasing innovations in the digital consumer sector have encouraged new usage models, such as motion recognition for game consoles and internet-enabled home appliances. Besides the need for advanced technologies, "More Than Moore" technologies such as CIS, High-voltage drivers and MEMS are becoming prominent requirements. With its comprehensive technology portfolio, TSMC will be able to capitalize on these trends.

Supply Chain

The electronics industry comprises a long and complex supply chain, the elements of which are highly dependent and correlated with each other. At the upstream IC manufacturing stage, it is important for IC vendors to have sufficient and flexible supply to support the dynamic market situation. IC foundry vendors are playing an important role to ensure the health of the supply chain. As a leader in the IC foundry services segment, TSMC provides leading technologies and large-scale capacity to complement the innovations created along the downstream chain.

2.2.4 TSMC Position, Differentiation and Strategy
Position

As the leader in the pure-play foundry segment of the semiconductor manufacturing industry, TSMC commanded a 48% share of this segment in 2009, with total consolidated revenue of US$9 billion. In terms of geographic distribution of wafer revenue, 69% came from companies headquartered in North America, 15% from the Asia Pacific region, excluding China and Japan, 10% from Europe, 3% from China and 3% from Japan. In terms of end product application, 28% of total wafer revenue came from the computer sector, 41% from communications, 16% from consumer products, and 15% from other categories, such as industrial products.

Differentiation

TSMC's leadership position is based on a trinity of key differentiating strengths: technology leadership, manufacturing excellence, and customer partnership. As a technology leader, TSMC has consistently been the first pure-play foundry to develop the next generation of leading-edge technologies. As a manufacturing leader, TSMC is renowned for its yield management, and offers best-in-class support services to expedite time-to-market and time-to-volume. And, in customer partnership, TSMC works closely with its customers on end-to-end collaboration to optimize design and manufacturing efficiencies. Going forward, TSMC will continue building on this trinity of strengths to provide the best overall value to its customers.

Strategy

TSMC is confident its differentiating strengths will enable it to leverage the attractive growth opportunities in the foundry sector going forward. TSMC works constantly to ensure that these strengths are maintained and improved. For example, TSMC is intensively working on the leading-edge 28nm and 20nm processes to maintain its technology leadership position. Numerous efforts are also underway to ensure manufacturing excellence, such as continuing enhancement of Design-For-Manufacturing (DFM) support services to increase yield and efficiency. TSMC also expanded its Open Innovation Platform™ initiative, a set of ecosystem interfaces and collaborative components initiated and supported by TSMC that efficiently empowers innovation throughout the supply chain to enhance timely innovation. Finally, TSMC conducted throughout the year customer reviews and surveys to better understand customer needs and wants, and accordingly may adjust its offerings in response, thereby strengthening its partnership with customers.

To address the challenges of falling wafer prices and fiercer competition from other semiconductor manufacturing companies, TSMC persists in strengthening its core competitiveness, and properly deploys its short-term and long-term technology and business development plans in order to hold ROI and growth.

● **Short-term business development plan**

1) To substantially ramp up the business and sustain market segment share of advanced technologies with further investment in capacity.

2) To maintain market segment share of mainstream technology by expanding business into new customers and market segments with off-the-shelf technologies.

3) To grow business with IDMs by deepening the partnership on technology development and business model arrangement.

● **Long-term business development plan**

1) To continue developing the leading edge technologies consistent with Moore's law.

2) To broaden "More Than Moore" business contribution by further developing derivative technologies.

3) To further expand TSMC's business and service infrastructure into emerging and developing markets.

4) To explore and establish new businesses to a significant level within the next 5 years, such as solar photovoltaic and solid state lighting.

2.3 Financial Highlights

At the start of 2009, we managed the sharp business downturn that gripped the global economy, and then enhanced our core strengths by committing more resources into technology innovations, recruiting talents, and expanding our production capacity to meet customers' needs. Now the global economy is on its gradual recovery course and the outlook for semiconductor industry in 2010 appears robust, TSMC is in a stronger position to compete.

The steep downturn in the global semiconductor industry in 4Q'08 and 1Q'09 was followed by a recovery the rate of which was unprecedented in the history of the foundry segment. At the start of the slump, management moved with speed to minimize the negative financial impact. Later on, when demand fast recovered, we demonstrated remarkable agility in quickly ramping up production capacity and capturing the pursuant recovery. In the process, the Company lowered its breakeven utilization rate and maintained profitability throughout the downturn.

TSMC is now headed forward on a course to capture greater share within the dedicated foundry segment through continued development of the leading-edge process technology nodes, while aggressively broadening the Company's business portfolio into derivative technologies across all legacy technology nodes.

Total consolidated revenue for 2009 was NT$ 295.74 billion, an 11.2 percent decrease compared with NT$333.16 billion in 2008. Net income decreased 10.7 percent to NT$89.22 billion from NT$99.93 billion, while diluted earnings per share decreased 9.6 percent to NT$3.44 compared with NT$3.81 a year earlier. In US dollars, TSMC's 2009 revenue was US$9 billion and net income was US$2.71 billion, compared with revenue of US$10.61 billion and net income of US$3.18 billion in 2008.

For 2008 earning distribution, TSMC paid dividends of NT$3.0 in cash and 0.5 percent in stock (5 shares for every 1,000 owned) per common share in 2009.

Income before Taxes and Provision for Taxes

Unit: NT$ in billions
- ■ Income before Taxes
- ■ Provision for Taxes

Year	Income before Taxes	Provision for Taxes
2007	122	12
2008	111	11
2009	95	6
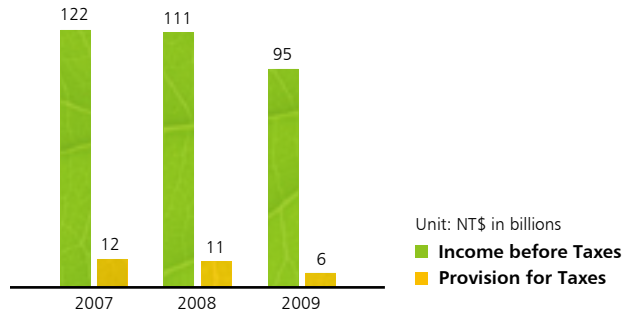
Capital and R&D Expenditures

Unit: NT$ in billions
- ■ Capital Expenditures
- ■ R&D Expenditures

Year	Capital Expenditures	R&D Expenditures
2007	84	18
2008	59	21
2009	88	22

Assets and Capitalization — Year End

Unit: NT$ in billions except EPS
- ■ Total Assets
- ■ Shareholder's Equity
- ■ Diluted Earnings per Share

Year	Total Assets	Shareholder's Equity	Diluted Earnings per Share
2007	571	491	4.04
2008	559	480	3.81
2009	595	499	3.44

Dividends Distribution — Year of Earning

Unit: NT$
- ■ Cash Dividends
- ■ Stock Dividends

Year	Cash Dividends	Stock Dividends
2007	3.00	0.05
2008	3.00	0.05
2009	3.00	0

Market Capitalization — Year End

Unit: NT$ in billions

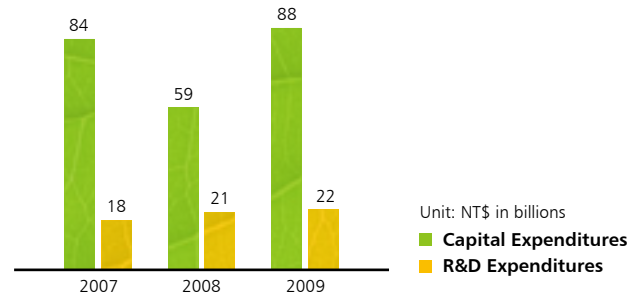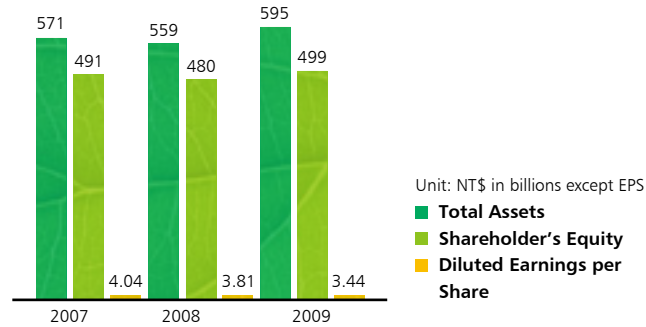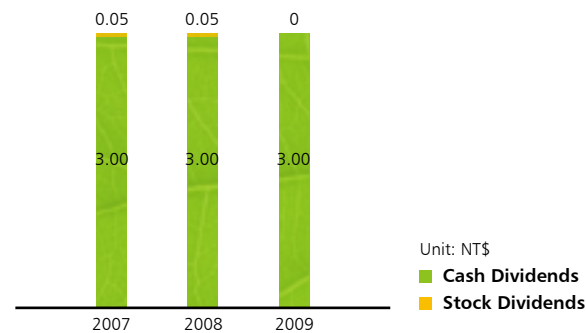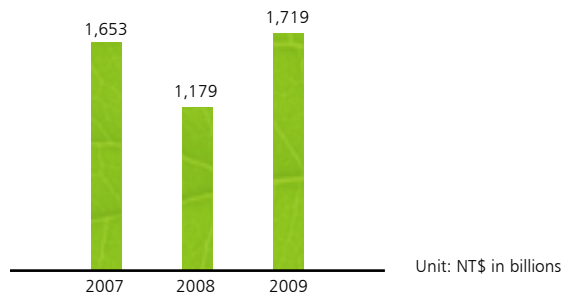| Year	Market Capitalization
2007	1,653
2008	1,179
2009	1,719

Revenue and Net Income

Unit: NT$ in billions
- ■ Revenue
- ■ Net Income (shareholders of the parent)

Year	Revenue	Net Income
2007	323	109
2008	333	100
2009	296	89
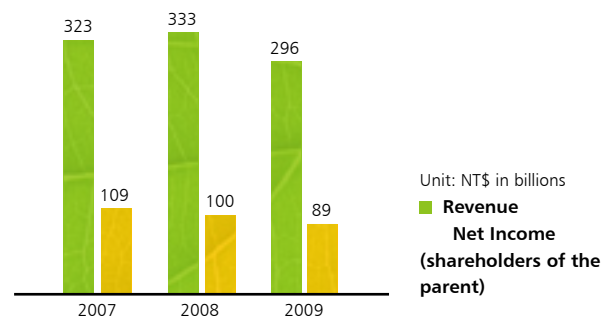
Based on increases on previous expansions, the purchase of production equipment and research and development expenditures, TSMC is entitled to tax incentives, such as tax exemption and investment tax credits. For more information, review TSMC's "Income Tax" disclosed in the "*Financial Information*" of Annual Report (II), page 18-19.

2.4 Corporate Developments

In November, TSMC agreed to a settlement with SMIC. The litigation and settlement have resulted in the full protection of TSMC's trade secrets in the possession of SMIC. Under the new settlement agreement and the related stipulated judgment, SMIC has agreed to make cash payments totaling US$200 million and other valuable considerations to TSMC. Both parties also agreed to terminate the patent cross-licensing agreement signed in 2005.

TSMC also invested US$193 million for a 20% equity stake in Motech, the largest solar cell manufacturer in Taiwan. The Motech investment allows TSMC to accelerate our time to market, to better evaluate opportunities along the solar value chain, and to further formulate our overall solar strategy.

2.5 Awards Received in the Reporting Period

- Chosen for membership in the Dow Jones Sustainability World Index for a ninth consecutive year, and the only Taiwan member from 2003 to 2007
- Awarded "Best investor relations professional (Taiwan)" and "Grand prix for best overall investor relations (Taiwan)" by *IR Magazine*
- Selected by *BusinessWeek* Magazine for the "Info Tech 100", its ranking of top tech performers

- Awarded "Most Admired Company in Taiwan" in *Wall Street Journal* reader's survey of Top 200 companies in Asia
- Ranked in top 10 of "Taiwan's Top 100 Companies" and awarded "Outstanding Achievement Award" by *Business Next Magazine*
- *CommonWealth Magazine* awarded TSMC "Most Admired Company in Taiwan" for a thirteenth consecutive year
- Awarded "Excellence in Corporate Social Responsibility First Prize" by *CommonWealth Magazine*
- Awarded "Corporate Social Responsibility Award" in the Large Cap category by *Globalviews Magazine*
- Awarded with the "Taiwan CSR Report Gold Award" by the Taiwan Institute for Sustainable Energy for Excellent Corporate Sustainability Report
- Recognized with the Golden Quality Award" by the Taiwan Ministry of Education for reconstruction of damaged schools following Typhoon Morakot
- Recognized by the Atomic Energy Council for "Excellence in Radiation Protection"
- Fab 12 Phase 4 was recognized by the U.S. Green Building Council (USGBC) for "Golden Award for Leadership in Energy and Environmental Design of New Construction (LEED-NC) ".
- Fab 12 Phase 4 has passed Taiwan's "Diamond Class Ecology, Energy Saving, Waste Reduction, and Health (EEWH)" certification
- Fab 8 was recognized by the Science Park Administration (SPA) for the "Low Carbon Enterprise Award"
- Fab 12 was recognized by the Science Park Administration (SPA) for "Excellence in Labor Safety and Hygiene"
- Fab 6 and Fab 14 were recognized by the Southern Taiwan Science Park Administration for "Excellence in Environmental Protection"

2.6 International Sustainability Indexes

TSMC has not only achieved outstanding business performance, but has done so in the spirit of giving back to society. TSMC continuously seeks sustainable development, and strives to improve employee welfare as well as workplace safety and health. TSMC also actively participates in community activities, supply chain management, and environmental protection.

The Dow Jones Sustainability Indexes (DJSI) was launched by STOXX Ltd. and SAM Group of Zurich, Switzerland in 1999. The DJSI evaluates companies along economic, environmental, and social dimensions, which selects the top 10% of 2,500 major global companies based on economic, environmental, and social criteria to provide a benchmark for socially responsible investors. TSMC were invited to be evaluated in DJSI world index in 2001, and was selected as one of their components in their third year.

In 2009, TSMC was the only Taiwan company selected for DJSI world index membership for nine consecutive years. TSMC's outstanding overall performance in all three dimensions has once again affirmed the company's achievements and commitment to sustainable development.

2.7 Membership in Industry Associations

As a semiconductor industry leader, TSMC actively participates in trade and industry associations. TSMC executives have been nominated to and hold senior positions in associations including the Taiwan Semiconductor Industry Association, the Association of Industries in Science Parks, the Chinese National Association of Industry and Commerce, the Taiwan Electrical and Electronic Manufacturers' Association, the Mount Jade Science and Technology Association of Taiwan, the Taiwan Business Council for Sustainable Development, and the Taiwan SOC Consortium, holding positions such as Chairman or Executive Board Director. In addition, many TSMC employees also contribute to the semiconductor industry by serving in industry associations as committee chairman or vice chairman in professional committees.

2.8 Stakeholder Identification and Communication

TSMC has established a core team to lead corporate social responsibility activities, including representatives from Investor Relations, Public Relations, Human Resources, the TSMC Education & Culture Foundation, and Risk Management & Corporate ESH. The core team identifies stakeholders and integrates stakeholders' concerns into routine tasks and annual plans, and maintains flexibility to incorporate ad-hoc issues into annual plans. The core team also seeks support from additional departments as necessary.

TSMC stakeholders include stockholders and investors, employees, suppliers, customers, government, the community, and non-profit organizations. TSMC has certain responsibilities to its stakeholders and needs to communicate with them through various measures and channels to understand their needs and expectations from TSMC, and also takes these needs and expectations into account for corporate social responsibility policy and projects. TSMC and its stakeholder communication measures and channels are described in the table below; more detailed information can be found in related chapters of this report.

TSMC's stakeholders communication measures and channels and their concerns.

Stakeholder	Stockholders & Investors	Customers	Employees	Suppliers	Community	Government	Non-profit Organizations
Communication Measures and Channels	1. General stockholders (1) Annual Shareholder Meeting in 2nd quarter (2) Quarterly Institutional Investors' Conference (3) Annual Financial Report (4) Shareholders can communicate with TSMC via telephone and email. 2. Institutional Investors (1) Quarterly Institutional Investors' Conference and global teleconference. (2) Conferences held by domestic and overseas investment institutions (3) Ad-hoc meetings with institutional investors. (4) Investor forums held by brokerage houses	1. Customer audits 2. Customer meetings 3. Annual TSMC Technology Symposiums 4. Customer satisfaction survey 5. Cooperation with customers' industrial environment and social responsibility surveys and implementing improvements.	1. Announcements 2. Human resource representatives 3. Regular meetings, such as quarterly communication meeting/safety committee meeting/ training courses 4. Ad-hoc communication meetings 5. Employee suggestion channels, such as immediate response system/HR employee suggestion box/wellness center/wellness website 6. HR service line 7. Company publications and e-platform 8. Survey forms, such as class satisfaction/meal satisfaction/activity satisfaction/Company Business Philosophy surveys	1. Annual Supply Chain Management forum 2. Online supplier information platform 3. Regular meetings 4. Supplier surveys, audit and assistance	1. TSMC Education & Culture Foundation 2. Corporate Social Responsibility Report 3. Corporate website 4. Public welfare organizations 5. Disaster relief activities	1. Official documents 2. Communication meetings or public hearings on regulations 3. Company financial report 4. Providing official replies or reports in response to requests from government authorities 5. Communication with government authorities through industry organizations including the Science Park Union, Taiwan Semiconductor Industry Association, World Semiconductor Council, and Chinese National Federation of Industries	1. TSMC Education & Culture Foundation 2. Volunteer activities
Topics of Concern	**Economic** • Corporate governance • Social welfare activities • Proprietary information protection • Indirect environmental impact • Financial information • Stock price • Operational performance • Investment plans • Organizational and management changes • Employee salary and stockholder profit sharing • Tax payments • Legal compliance		**Social** • Employee-employer relationship • Employee loyalty • Occupational safety & health • Salary and welfare • Employee development • Recruitment • Response to organizational changes • Work flow & rules • Management leadership • Employee communication • Individual career development • Customer partnership • Workplace accidents • Disaster prevention and backup systems • Community welfare engagement and feedback • Employment opportunities		**Enviornmental** • Water resource management • Greenhouse gas reduction • Pollution control • Energy/resource consumption • Waste management • Product hazardous substance management • Environmental labeling • Ecological preservation • Environmental cost		

TSMC compiles stakeholders' concerns through these channels and measures. The related units then prioritize the concerns according to their impact on company and importance to stakeholders, and the prioritized topics will be treated as annual plans or goals.

TSMC Corporate Social Responsibility Materiality Analysis Procedure

Compile stakeholders' concerns through various channels and measures

Related units prioritize the concerns according to their likelihood and severity

List priorities

Transfer to annual plans or goals
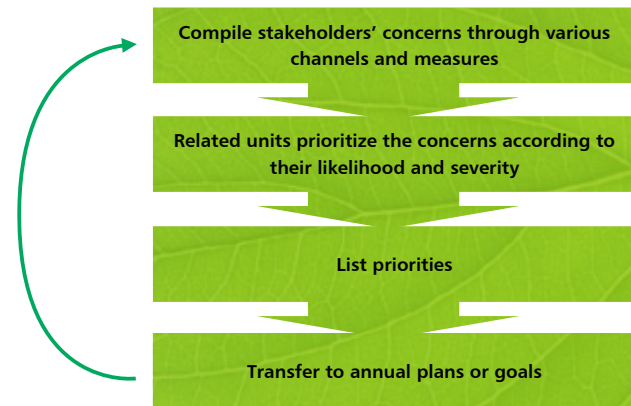
2.9 Investor Engagement

TSMC's business strategies and financial policies aim to uphold and enhance the value of our long-term shareholders. We not only align ourselves with international standards that demonstrate our position and reputation as a premier investment and sustainability champion, but are ranked within the semiconductor industry as a sustainability leader, and are honored to be a component of the Dow Jones Sustainability Index (DJSI) every year since 2001. Since becoming a publicly listed company in 1994, we have consistently delivered value to shareholders through cash dividends, maintaining a strong balance sheet, and keeping one of the highest credit ratings among technology companies.

In order to serve investors and the investment community, TSMC has established a highly effective communication system to disseminate information. Each quarter, our management holds an investor conference, followed by a conference call, to report and discuss company performance with investors

worldwide. On a daily basis, our Investor Relations team holds investor and analyst meetings worldwide. In 2009, more than 350 meetings were held either at the headquarter of TSMC or at financial conferences and institutional investors' offices. All these efforts are focused on serving investors with accurate, timely, and transparent information and financial data regarding TSMC business, operations and performance. In addition, E-mail updates covering all business activities and key events are regularly sent out to thousands of members of the investment community. Information regarding TSMC's business fundamentals and significant filings with regulatory authorities are posted on TSMC's corporate website in a timely manner.

As a result, investors surveyed annually by IR Magazine and other media have recognized the transparency of TSMC's disclosure policies, corporate governance commitment, and equitable treatment to shareholders. In 2009, awards and recognitions received by TSMC include:

Materiality Matrix of Stakeholder Concerns

Company Impact Level

High

Governance | Water Mgt | HS Mgt

PIP

Pollution Control

Legal compliance | GHG Reduction | Labor/Employer Relation

Recruitment

Employee Loyalty | Salary

Energy use

Safety & Health

Employee Development

Env. Cost

Customer Partnership | Employee Communication

Social Welfare

Organization Change

Indirect Env. Impacts

Ecological Preservation

Individual Development

Env. Label

*HS: Hazardous Sbustance
*PIP: Proprietary Information Protection

Low | Stakeholder Concern Level | High

AsiaMoney Magazine
- Best Executive in Taiwan - Dr. Morris Chang
- Best Managed Companies in Taiwan (Large Cap)

The Asset Magazine
- The Asset Triple A Corporate Awards 2009 – Platinum Award

Corporate Governance Asia
- Corporate Governance Asia Annual Recognition Award

FinanceAsia Magazine
- Best Managed Companies
- Best Corporate Governance
- Best Investor Relations
- Best Corporate Social Responsibility
- Best for Most Committed to A Strong Dividend Policy
- Best CFO

IR Magazine
- Grand Prix for Best Overall Investor Relations by a Taiwanese Large Cap Company
- Best Investor Relations Professional

Thomson Reuters Extel Survey
- Best Quoted Company for Investor Relations (in both Taiwan and Asia Pacific Semiconductors)
- Best Investor Relations Professional (in both Taiwan and Asia Pacific Semiconductors)

2.10 Corporate Governance

TSMC advocates and acts upon the principles of operational transparency and respect for shareholder rights. We believe that the basis for successful corporate governance is a sound and effective Board of Directors. In line with this principle, TSMC's Board of Directors established an Audit Committee in 2002 and a Compensation Committee in 2003.

TSMC has established the "Rules and Procedures of Board of Directors Meetings", "Audit Committee Charter", and "Compensation Committee Charter" to govern the operation and process of the Board of Directors, Audit Committee and Compensation Committee.

2.10.1 Governance Structure
TSMC's governance structure is as follows:
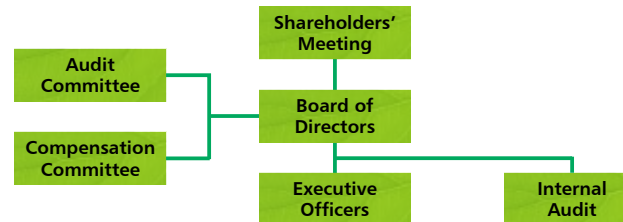
2.10.2 Board of Directors

TSMC's Board of Directors consists of seven (Note) distinguished members with a great breadth of experience as world-class business leaders or scholars. Three of the seven members are independent directors: former British Telecommunications Chief Executive Officer, Sir Peter Bonfield; former Acer Group Chairman, Mr. Stan Shih; and former Texas Instruments Inc. Chairman of the Board, Mr. Thomas J. Engibous. Under the leadership of Chairman Morris Chang, TSMC's Board of Directors takes a serious and forthright approach to its duties and is a serious, competent and independent Board.

In the spirit of Chairman Chang's approach to corporate governance, a board of directors' primary duty is to supervise. The Board should supervise the Company's: compliance with relevant laws and regulations; financial transparency; timely disclose of material information, and maintaining of highest integrity within the Company. TSMC's Board of Directors strives to perform through the Audit Committee and the Compensation Committee, the hiring of a financial expert for the Audit Committee, coordination with the Internal Audit department, and through the ombudsman reporting system.

The second duty of the board of directors is to provide guidance to the management team of the Company. Quarterly, TSMC's management reports to the TSMC Board on a variety of subjects which include the management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles. The management

also reviews the Company's business strategies with the Board. Furthermore, the management often reviews with and updates TSMC's Board on the progress of the strategies, obtaining Board guidance as appropriate.

The third duty of the Board of Directors is to evaluate the management's performance and to dismiss officers of the Company when necessary. TSMC's management has maintained a healthy and functional communication with TSMC Board of Directors, has been devoted in executing guidance of TSMC Board of Directors, and is dedicated in running the business operations, all to achieve the best interests for TSMC shareholders.

The Board meets at least once every quarter. The Chairman convened four regular meetings and three special meeting in 2009.

Note: Throughout most of 2009, TSMC's Board of Directors consisted of eight directors. Ms. Carleton Fiorina resigned as an independent director of TSMC on November 30, 2009, because she planned to devote her full time and energy to her US senatorial campaign.

2.10.3 Audit Committee

The Audit Committee assists the Board in carrying out its financial oversight responsibilities and other duties as set forth in the Company Act, the Securities and Exchange Act, and other applicable laws and regulations. Matters required to be reviewed by the Audit Committee include the Company's: financial reports; auditing and accounting policies and procedures; internal control systems; material asset or derivatives transactions; offering or issuance of any equity-type securities; hiring or dismissal of an attesting CPA, or the compensation

given thereto; and appointment or discharge of financial, accounting, or internal auditing officers. Furthermore, the Risk Management Division also reports to the Audit Committee on enterprise risk management activities on a regular basis.

TSMC's Audit Committee is empowered by its Charter to conduct any study or investigation it deems appropriate to fulfill its responsibilities. It has direct access to TSMC's internal auditors, the Company's independent auditors, and all employees of the Company. The Committee is authorized to retain and oversee special legal, accounting, or other consultants as it deems appropriate to fulfill its mandate, and meets at least four times a year.

The Audit Committee was comprised of all three independent directors and had engaged a financial expert consultant. Sir Peter Bonfield was Chairman of the Audit Committee, and convened four regular meetings and three special meetings in 2009.

2.10.4 Compensation Committee

The Compensation Committee assists the Board in discharging its responsibilities related to TSMC's compensation and benefits policies, plans and programs, and in the evaluation and compensation of TSMC's executives. The Committee meets at least four times a year.

The Compensation Committee was comprised of four members. All three independent directors served as voting members of the Committee and the Chairman of the Board, Dr. Morris Chang, was a non-voting member. Mr. Stan Shih was Chairman of the Compensation Committee, and convened four regular meetings in 2009.

2.10.5 Corporate Compliance

For many years, TSMC has had an Ethics Code that has guided employees, officers and non-employee directors. TSMC's Ethics Code is designed to promote honest and ethical conduct, as well as support compliance with applicable laws and regulations. The principles embodied in this code express TSMC's policies regarding environment, health and safety, discrimination, bribery and corruption, conflicts of interests, and protection of company assets and reputation.

TSMC's management team closely monitors both domestic and foreign government policies and regulatory developments that could have a material impact on TSMC's business and financial operations, and have established related risk management procedures. As of today, TSMC has never been subject to any significant monetary fines and/or nonmonetary sanctions for noncompliance with any statutory laws and regulations.

2.10.6 Anti-Corruption

Under the TSMC Ethics Code (the "Code"), all employees should comply with all applicable laws, rules, regulations, and in-house regulations in every aspect of the Company's corporate activities at all times; all employees should strive to ensure that all corporate activities are in compliance with normal business practices and social ethics; all employees should maintain impartial, fair, and open relationships with all the stakeholders of the Company and will conduct business in a fair manner with them. TSMC's business practices are based on objective norms and integrity, and we do not accept gifts or special favors. The Code requires that:

- TSMC employees must observe high business ethics standards when dealing with suppliers, vendors, subcontractors, customers, competitors, and other relevant parties, including the government. Employees or their family members and close relatives must not give or accept any gift, money, or entertainment to or from any TSMC suppliers, vendors, subcontractors, customers, or competitors. Any form of bribery is strictly prohibited.
- When it is a required courtesy to accept gifts, gratitude or any form of hospitality, or where it is in accordance with accepted courtesy to maintain and promote normal business relationships by giving gifts to relevant parties, employees must abide by the principles set forth in the code.
- All employees should follow common business etiquette and refrain from frequent and excessive business hospitality when entertaining or being entertained. Employees should not give customers or vendors the impression that any form of hospitality, or gift giving is required to establish or maintain a relationship with TSMC.
- Gift giving and entertaining between managers and their subordinates should also follow the above principles, and should be based on the principle of simplicity.

To comply with this Code is the responsibility of every TSMC employee, officer, and non-employee director. To prevent any actual or apparent conflict of interest, the Code requires that all non-executive directors, officers, and employees working in sensitive departments make an annual conflict of interest declaration to the Company. The Company will take disciplinary action, including termination of employment, against employees who violate this Code. TSMC has also put in place various internal control systems to monitor and detect any actual or apparent irregularities within the Company's daily corporate activities so as to protect TSMC from the risk of fraud or corruption.

TSMC also established whistleblowing channels for complaints relating to major management, financial, and auditing issues. Employees may report any violations or suspicions of violations to the Chairman of the Audit Committee, which is under the Broad of Directors, or the Ombudsman, headed by a vice president.

The Code is the highest principle when employees conduct business activities. All employees who newly join TSMC are educated and reminded to comply with the Code.

2.10.7 Political Contributions

TSMC has consistently remained politically neutral, but encourages employees to fulfill their duties as citizens and actively participate in politics and vote for the candidates the employees believe to be the best public servants. TSMC executives have also expressed concern and made public comments on political matters affecting industry and the economy. In the past, TSMC made legitimate political donations to local political parties between 2000 and 2004 to support the development of democracy in Taiwan. Due to a recent revision in Taiwan legislation, TSMC is now prevented from making political contributions as it is over 50 percent owned by foreign investors. TSMC has fully complied with this newly enacted law.

EMPLOYEE

Human capital is one of the invaluable assets that support our business success. TSMC is committed to creating a corporate culture embracing innovation and diversity, and strives to build a challenging, yet enjoyable and rewarding work environment. In 2009, TSMC was awarded the "Most Admired Company in Taiwan" by CommonWealth Magazine for the thirteenth consecutive year.

3.1 Employment

At the end of 2009, TSMC had 24,466 employees, including 2,792 managers, 9,861 professionals, 761 assistant engineer/clerical personnel, and 11,052 technicians. Female managers comprised 11.2% of all managers. Non-Taiwanese employees comprised 10.1% of all TSMC managers and professionals.

TSMC hires all employees equally based on his or her job qualifications regardless of gender, religion, race, nationality or political affiliation. Our employment policy is well-defined to ensure candidates and employees are treated equally in recruitment, deployment, development, evaluation and reward, and in engagement as well.

3.1.1 TSMC Workforce Structure
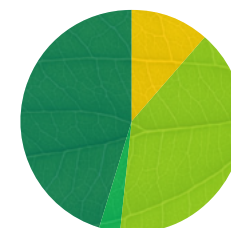
Employee by Job
- Managers (11.4%)
- Professionals (40.3%)
- Assistant Eng./Clerical (3.1%)
- Technician (45.2%)
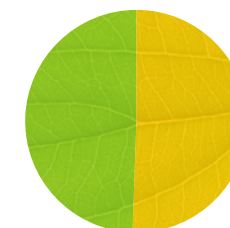
Employee by Gender
- Male (50.7%)
- Female (49.3%)
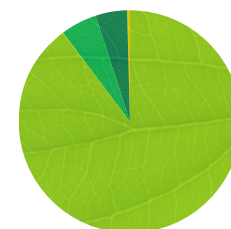
Employee by Geography
- Europe (0.1%)
- Taiwan (89.9%)
- Asia Region *(5.1%)
- North America (4.9%)

*Asia Region includes China, Japan and Korea
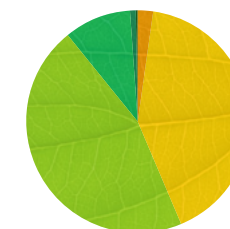
Employee by Age
- <=20 (2.3%)
- 21~30 (41.4%)
- 31~40 (45.5%)
- 41~50 (9.8%)
- 51~60 (0.9%)
- 60+ (0.1%)

Employee by Age

Employee by Age chart — bar categories: Manager, Professionals, Assistant Eng./Clerical, Technician.

- Manager: 12, 167, 1,204, 1,382, 27
- Professionals: 1, 25, 389, 4,723, 1,382, 2
- Assistant Eng./Clerical: 15, 172, 480, 94
- Technician: 15, 644, 4,546, 5,293, 554

Legend:
- <=20
- 21~30
- 31~40
- 41~50
- 51~60
- 60+

Employees by Gender

- Manager: 313, 2,479
- Professionals: 1,700, 8,161
- Assistant Eng./Clerical: 310, 451
- Technician: 9,727, 1,325

Legend:
- Female
- Male

Employees by Geography

- Manager: 29, 258, 72, 2,433
- Professionals: 7, 317, 526, 9,011
- Assistant Eng./Clerical: 249, 33, 479
- Technician: 374, 619, 10,059

Legend:
- Taiwan
- Asia Region
- North America
- Europe

3.1.2 Employee Retention

TSMC's retention programs focus on promoting work-life balance, enhancing managers' capabilities, and providing employee career development opportunities. The average annual turnover rate of the past three years has been less than 10%. In 2009, the turnover rate of male employees was 10.2% and the rate of female employees was 9.8%. By geography, the turnover rate in Europe was the lowest (6.3%) and the Asia region (includes China, Japan and Korea) turnover rate was the highest (25.5%) among all regions. More than 80 percent of turnover came from employees between age 20 and age 40. The annual average turnover was about 10.0%.

Turnover Rate by Gender

Gender	%
Male in Avg.	10.2
Female in Avg.	9.8
Total in Avg.	10.0

Turnover Rate by Location

Location	%
Taiwan in Avg.	9.2
Asia Region in Avg. (includes China, Japan and Korea)	25.5
North America in Avg.	7.5
Europe in Avg.	6.3
Total in Avg.	10.0

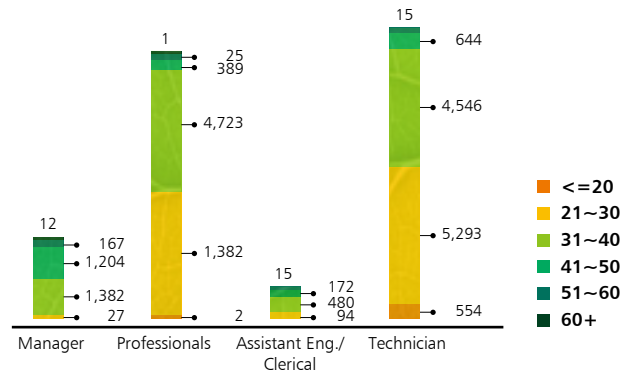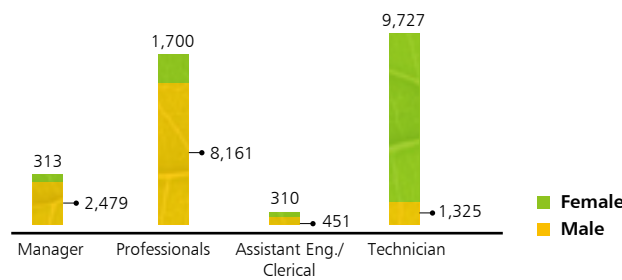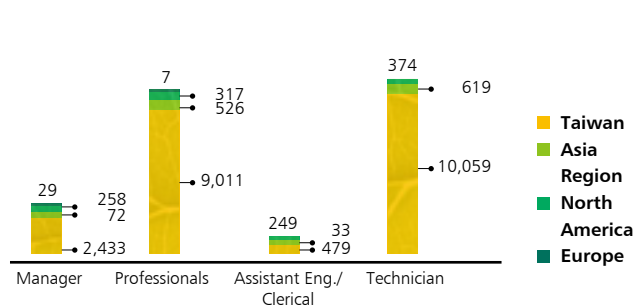## 3.1.3 Recruitment

TSMC is an equal employer and values employee diversity. Recruitment is conducted via an open and fair selection process. Recruiters and hiring managers are carefully trained to ensure the fairness and quality of recruitment. Despite facing an economic downturn in 2009, TSMC aggressively began a recruitment drive beginning in the first quarter, aiming to continuously strengthen technology competitiveness to meet future demand. Throughout 2009, TSMC offered more than three thousand job vacancies to attract talent from around the world to participate in the Company's growth.

TSMC is committed to disability employment. Considering the specific work environment for them, TSMC employed 73 individuals with disabilities in 2009, representing 0.32% of TSMC's total workforce in Taiwan. Regarding the gap between current TSMC employees with disability and the require-to-employ individuals with disability regulated by Taiwanese law, TSMC will evaluate and identify specific job scopes and positions to offer equal employment opportunity for individuals with disability. In addition, TSMC has carried out a special "Academic and Corporate Collaboration Program" and has recruited and supported about 200 students from economically disadvantaged families to continue their education.

3.1.4 Abolition of Child Labor

Taiwan's "Labor Standards Law" states that no workers below the age of 15 shall be employed, and that children between the age of 15 and 16 are not permitted to perform heavy or hazardous work. To comply with the law, TSMC never hires employees less than 16 years old.

3.1.5 Performance Management and Development

TSMC's performance management system aims to integrate and improve the performance of individual employees and the organization as a whole. The five principles of our system are: personal accountability for individual performance, partnership and cooperation between supervisors and employees, ongoing engagement & communication, equal importance given to performance appraisal and development, and performance differentiation.

3.2 Employee Development

Continuous learning is the cornerstone of TSMC's employee development. It is especially important for Company success in this tough economic environment. TSMC provides comprehensive learning opportunities and resources to all employees and a tailor-made individual development plan is established for each employee appropriate to the employee's development needs, along with business needs. During 2009, TSMC conducted 561,403 training hours with a total of 272,743 attendees. The average training hours were 24.35, 32.88 and 13.04 respectively for managers, indirect labor, and direct labor.

3.2.1 Development and Training Programs

TSMC provides diversified training programs and approaches, as detailed below:

Comprehensive Training Programs

	2007	2008	2009
(A) Headcount as of 12/31	23,148	22,843	24,466
(B) Training hours	726,907	641,939	561,403
(C=B/A) Average Training Hours per Employee	31.40	28.10	22.95

	Manager	Indirect Labor	Direct Labor	Total
(A) Headcount as of 12/31	2,792	10,662	11,052	24,466
(B) Training hours	67,987	349,293	144,123	561,403
(C=B/A) Average Training Hours per Employee	24.35	32.88	13.04	22.95

● New Employee Training: Newcomers entering TSMC begin with New Employee Orientation, consisting of classroom learning and job orientation that shapes simulated scenarios of the job, people, objectives, and the road ahead. In addition, managers and our well-established Buddy System are actively involved in the assimilation process. In 2009, 3,774 newcomers participated in new employee orientation totaling 49,025 training hours. By the end of 2009, TSMC developed 2,600 buddies to help newcomers quickly adapt to our environment and culture.

● General Training: refers to training required by government regulations and Company policies.

● Professional/Functional Training: provides technical and professional training required by various functions within the Company.

● Direct Labor (DL) Training: enables production line employees to acquire the knowledge, skills and attitudes they need to perform their job well. It also helps employees pass required tests in order to be certified for operating equipment.

● Management Training: TSMC has developed talent development processes to improve leadership and management quality and nurture leaders, including leadership assessment, job/project experience, executive coaching, mentoring by senior managers and management training
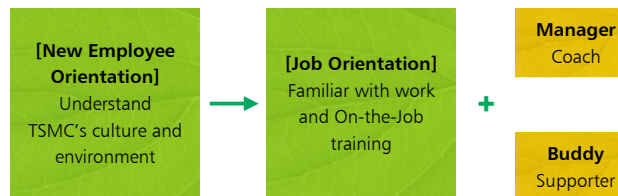
Harvard Business School case summit for senior-level managers at National Tsing Hua University

An engineer presents his application result and receives feedback from instructors in the post-course application competition.

courses. TSMC has implemented specific Management Training roadmaps, including a mandatory New Manager Program for first-time managers, an Experienced Manager Program for middle-level managers, and a Senior Manager Program for senior-level managers, to equip them with skills for managing people, managers, and business to act as future leaders.

To facilitate knowledge sharing and leverage internal know-how, TSMC cultivates internal trainers through a well-established internal trainer development system. In 2009, 39 internal trainers were developed to accelerate knowledge, skills, and attitude delivery through diversified training programs. By the end of 2009, there were a total of 670 employees certified as internal trainers to foster TSMC employee training.

3.2.2 Diversified development and learning approaches

Employees access rich resources through diversified development and learning approaches, including on-the-job training, coaching, mentoring, job rotation, on-site courses, e-learning, external learning opportunities, seminars and speeches.

TSMC has a customized e-learning system to provide varied training courses. By the end of 2009, 1,379 e-learning courses had been offered, covering Engineering and Technical courses, Functional and Professional courses, Management courses, and others. A total 187,165 attendees participated in 136,718 hours of e-learning.

Employees can not only participate in internal learning and development activities, but can also take external training as a supplement. In 2009, a total of 511 employees took short-term courses totaling 8,561 training hours, 424 employees took advanced studies totaling 115,270 training hours, and 445 employees took language courses totaling 11,153 training hours.

3.2.3 Training Effectiveness
In addition to providing timely and useful training programs, TSMC takes care to ensure the quality and application of training.

First, TSMC evaluates trainees' satisfaction of on-site training programs through trainee questionnaire feedback, which

focuses on the relevance of training objectives and contents, the delivery quality of the trainers and the trainees' perceived return on investment. TSMC sets a specific score standard for every program evaluated and reviews the ones that do not meet the criteria defined as OOS (Out of Spec). When training programs are OOS, improvement actions are proposed, taken and tracked. In 2009, the overall course feedback score was close to 90 out of a possible 100.

Second, TSMC tracks training results through behavior-based observation feedback. Trainees, as well as trainees' subordinates and supervisors, are contacted after a certain period following the training course to see if trainees apply the knowledge, skills, and attitude they learn from the training course to daily work.

TSMC has also adapted post-course application competitions in the Personal Effectiveness Training series beginning in 2008 to encourage learning application. During the campaign, trainees first applied the learned skills and knowledge in their job and then presented the application results to demonstrate the linkage between training and their job performance and received feedback from judge team.

3.3 Compensation and Benefits
TSMC values every employee, and entitles employees to a comprehensive compensation and benefits program above the industry average. TSMC's compensation policy is based on the following principles:

- Must be in the interests of both shareholders and employees.
- Must be able to attract and retain good employees.
- The Company's success should create moderate wealth for high-level, long-term managers.

TSMC does not discriminate on the basis of gender in starting salary, and the ratio of men's starting salary to women's is 1:1. TSMC not only complies with local regulations but also participates in compensation surveys by well-known consultancies and compensation associations to ensure the total compensation is competitive in the market. TSMC offers a variety of competitive compensation programs to motivate employees by aligning their personal development and contributions with the Company's long-term business achievements. Also, TSMC is committed to pay-for-performance incentive programs that reward employees for the value they add to the Company. Award criteria are based on a combination of corporate, team, and individual performances.

All employees are offered benefits programs including insurance programs and leave programs. The insurance programs include labor insurance, national health insurance, and group insurance. In addition, paid annual leave, sick leave, maternity leave, and flexible floating holiday arrangements are granted to employees via leave programs.

Employees in Taiwan are eligible to participate in pension plans as detailed below:

• Defined Benefit Plan
TSMC has a defined benefit plan under the Labor Standards Law that provides benefits based on an employees' length of service and average monthly salary for the six-month period prior to retirement.

• Defined Contribution Plan
TSMC has made monthly contributions equal to 6% of each employee's monthly salary to employees' pension accounts starting from July 1, 2005

3.4 Employee Relations
TSMC has approximately 25,000 full-time employees and sees harmonious employee relationship as the foundation of high productivity and performance. Therefore, TSMC is dedicated to building employee relationships by strengthening open communication channels and recognizing employees' achievements.

3.4.1 Open Communications
TSMC communicates with employees through diversified channels for timely conveyance of management policies to employees and listening and responding to employees' voices. Besides the usual channels, the employee survey and the Ombudsman channel collect employee views on their concerns and significant management issues.

As a result of TSMC's annual (2008) performance management and development appraisal, some employees were separated from the Company and a few cases of labor disputes occurred. The Company responded to these disputes by inviting those ex-employees to resume work in the company, providing financial help to those who chose not to return, and puts the disputes largely to an end. (see 3.4.3 Human Rights Figure: Labor Dispute Process Flow)

The Company's management team has learned important lessons from this dispute. To harmonize labor relations and create a win-win situation for the company and its employees, TSMC restated the positive and constructive principles of Performance Management and Development system (PMD), adjusted PMD system, and reinforced mutual and timely employee communication based on existing platforms.

Internal Communication Structure
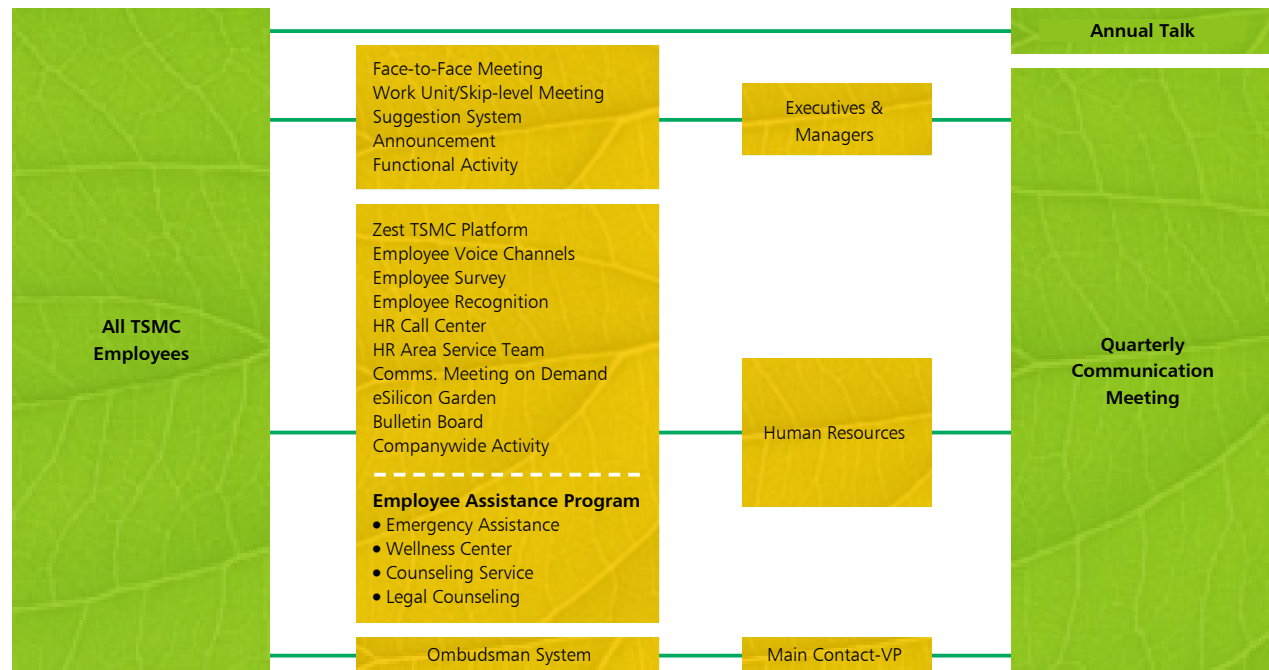
3.4.2 Employee Recognition

TSMC has a tradition of recognizing noteworthy performance in support of organizational goals, openly commending outstanding team and individual accomplishments. All awards encourage employees to aggressively pursue continuous improvement, attain high levels of excellence, and increase overall competitiveness. The recognition programs include:

- Employee Role Model Awards, Outstanding Engineer Award and the Total Quality Excellence Conference aim to honor and stimulate employees who have applied specialized technology and knowledge to create enhanced value for TSMC.

- Our Service Year Recognition aims to appreciate employees' long term commitment and contribution.

- TSMC encourages and supports employees to compete for external awards. TSMC employees have been granted many national awards such as: the Taiwan Role Model Award; the Taiwan National Management Excellence Award; the Taiwan Outstanding Young Engineer Award; the Taiwan Distinguished Engineers Award; the Hsinchu Science Park Outstanding Labor Award.

3.4.3 Human Rights

TSMC believes that all employees should be treated with dignity and respect. TSMC is committed to upholding the internationally recognized human rights of workers and respects internationally proclaimed human rights, namely, the United Nations Universal Declaration on Human Rights, and the International Labor Organization's fundamental conventions on core labor standards. TSMC's Human Rights Policy aims to communicate our social and ethical values to our customers, suppliers, investors, employees and the communities in which we operate.

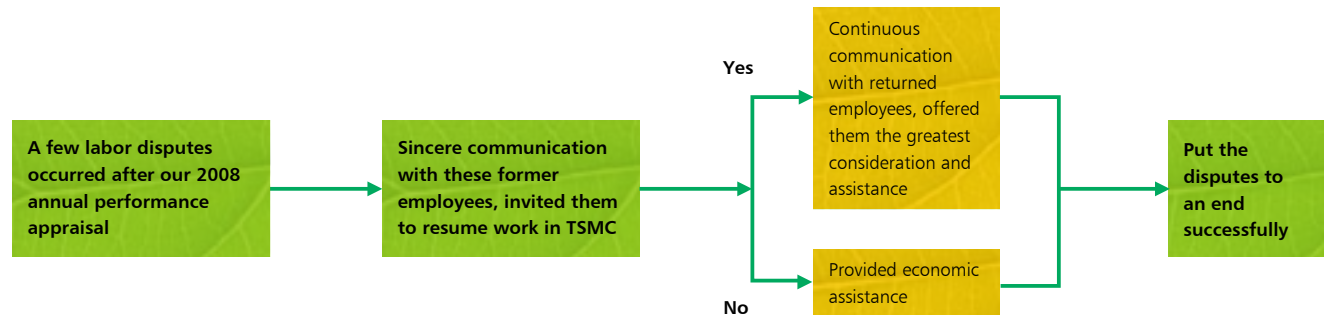**Figure: Labor Dispute Process Flow**

The company not only offers equal opportunities to job applicants and employees, but also ensures the basic human rights of employees and families. Senior executives are required to sign an annual declaration confirming no breaches of the policy occurred during the course of the year.

TSMC has established and actively advocated policies and measures for ensuring gender equality and a fair working environment in accordance with employment laws and sexual harassment prevention policy.

At the same time, TSMC conducts regular training to all employees in sexual harassment awareness and prevention, and holds a learning session during newcomer orientation programs.

There were complaints filed by employees through company's ombudsman system in 2009. None were related to discrimination, and all were appeals against unfair performance appraisals, which were settled satisfactorily.

3.4.4 Freedom of Association

The company respects the employee's rights entitled by the law, and never impedes the employee's freedom of association.

3.5 Work and Life Integration Program

TSMC's work and life integration program helps employees enjoy a better quality of life and it also contributes to TSMC's success. TSMC promotes employees' mental and physical health by providing a healthy working environment and services, and offering a variety of clubs and activities.

3.5.1 Health Care and Promotion

TSMC offers annual employee health examination, consultation service as well as on-site clinics and a dental clinic for convenient employee medical service. Health promotion activities for employees include fitness programs, women's care programs, mother's rooms, body weight control programs, sleep problem management, massage and chiropractic services, hepatitis and flu vaccinations, and health lectures.

The TSMC Employee Assistance Program provides 5 free individual counseling sessions, group sharing, workshops, mental assessment, as well as lectures on personal and family issues for employees' multidimensional well being.

Employees can choose their favorite meal

2009 TSMC Sports Day

3.5.2 Occupational Health

TSMC Health Centers operate 24 hours a day to implement corrective and preventive actions for occupational injuries. Emergency medical teams are given 28 hours training to respond to emergencies. TSMC's occupational injury rate has shown a significant decrease of 1.5 ‰ over the past 3 years, and there have been no controversies, fines or settlements relating to health and safety cases in recent years. TSMC provides professional assessment and advice for return to work for someone who was recovered from injured or illness. TSMC also promotes correct ergonomics with preventive programs for healthy posture and comfortable working environment.

3.5.3 Employee Accommodation, Dining, and Transportation Services

TSMC cafeterias offer a wide variety of meals with English and Chinese offers and surveys employees' satisfaction by e-voting after their meal. The company also provides comfortable dormitories and shuttle buses for convenient transportation to work. Other on-site services include travel agents, 24-hour convenience stores, dry cleaning, coffee shops, fitness centers, a barbershop and bookstore.

3.5.4 TSMC Employee Welfare Committee- Recreation and Sports & Community for Employees and Families

The TSMC Employee Welfare Committee (EWC) was established under the requirements of Taiwan's Employee Welfare regulations. Its key mission is to provide comprehensive welfare services to all employees, and help to keep a good balance between work and life. The EWC organizes employee activities, provides in-house recreational facilities and amenities, and extends these services to employees' families.

The committee consists of 25 members who are appointed by the management team and elected representatives from each function. The EWC is led by a Chairman and a Secretary General for daily operations.

In 2009, EWC expenditures amounted to about NT$210 million. Expenditures included subsidies for special occasions, holiday gift vouchers, emergency aid, artistic/recreational activities and departmental outings.

Activities promoting work-life balance in 2009 included:

● Company-Wide Events: TSMC Sports Day and TSMC Family Days. A total of 57,000 participants including employees and family members attended.

● Sports Activities: Over 100 sports competitions (basketball, ping-pong, badminton, swimming, etc.) were carried out and attracted 8,000 employees' participation.

● Arts and Literature Activities: Over 42 expert talks, 8 family-oriented arts programs, and 234 movies were presented to the employees and their families with a total of 18,000 participants.

● Social Clubs: Sponsored over 50 social clubs (e.g. chorus group, cycling club, triathlon club, swimming club, aerobics club, belly dance club, calligraphy club, Tai-Chi club, etc). Approximately 6,000 employees participated in various club activities.

● Departmental Outings: Promoted relationship-building and interaction between colleagues and within departments by subsidizing group outing expenses. Some 18,000 employees and family members enjoyed the benefit of various outings.

● TSMC Sports Center/Fitness Center: Two large sports centers located in Hsinchu and Tainan and five on-site fitness centers promote regular exercise and employee health. We provide facilities and equipment competitive with gyms and health clubs. In 2009, the centers received a total of 15,000 visits including employees and family members, and served over 6,000 employees every month on average.

3.6 Corporate Security and Risk Control

TSMC works to create a safe working environment and protect proprietary information. Therefore, TSMC is dedicated to Proprietary Information Protection (PIP), physical security, employee security, and vendor security to preserve the interests of the Company, customers, employees and shareholders. TSMC takes effective risk management to avoid possible security threats.

TSMC not only uses and protects classified information properly, but also educates employees and vendors with regular awareness promotion and training. If violations against PIP policies occur, warnings or punishments will be delivered depending upon its severity.

In order to ensure the physical security of workplaces, TSMC installs advanced physical access control systems to ensure all physical access is properly authorized according to designate job functions and locations. All certified security guards must pass a series of background and qualification checks, and receive proper training such as etiquette, traffic directing, security spot checks, CPR, and foreign language.

TSMC also provides various security consultations for employees. Our designated instructors help organizations to deliver safety courses. Meanwhile, an exclusive security service website has been set up to provide personal and household security tips. In 2009, the goal of "Zero victims" was successfully achieved in accordance with anti-fraud campaigns. Meanwhile, an exclusive security service website has been set up to provide updated personal and household security tips.

TSMC regards vendors as the Company's important partners, and takes charge of vendors' security training and management to help them fit in with the Company's security culture. All vendors must take PIP and work safety training, sign a non-disclosure agreement, and pass a work safety exam before receiving working badge to make sure they fully understand and recognize related regulations. In 2009, TSMC also conducted inventory checks for all issued vendor badges and screens and terminated all invalid vendor badges to enhance badge reliability. TSMC also provides related security resources to vendor companies and help them act on their own. For example, TSMC hosts a suppliers' security symposium every quarter. During the gathering, vendor companies not only share successful experiences, but also review improvement plans. The symposium successfully helps vendors follow TSMC regulations.

3.7 Safety and Health

3.7.1 Safety and Health Management

TSMC's Environmental, Safety, and Health Policy clearly states that the company's highest priority is protecting the safety of employees, followed by protection of the environment, property, and production. TSMC believes that good safety and health management is an important part of the company's commitment to take care of employees and their families, and a way of giving back to society and the community. In practice, TSMC's

safety and health management is based on the framework of the OHSAS 18001 management system, and uses information technology to continually improve our "Plan-Do-Check-Act" (P-D-C-A) cycle to prevent accidents, improve employee safety and health, and protect company assets. All TSMC fabs passed the 2007 version of OHSAS 18001 certification, and all fabs in Taiwan were also TOSHMS (Taiwan Occupational Safety and Health Management System) certified in 2009.

For TSMC's safety and health management organization, please review "6.1 Green Management Organization and System". Current safety and health management operations can be divided into several areas as below:

Hardware Safety and Health Management
The effectiveness of a facility's hardware safety and health performance is largely determined in the design phase. TSMC follows local regulations, international codes, and internal standards when planning, designing, and building new facilities or rebuilding existing facilities for production, IT, general services or other purposes. A designated team takes responsibility for safety and health management using the procedures below:

- New tool and chemical management procedure: TSMC's New Tool and Chemical Committee (NTCC) ensures that all new tools and chemicals meet international codes such as SEMI-S2 as well as local regulations and TSMC standards. In order to reduce risks before operation, the committee not only reviews tool safety, but also evaluates the related safety issues of location, accessory equipment, safety interlock, and facility system connections. To comprehensively evaluate the safety of new tools and chemicals, the NTCC includes experts in a broad variety of fields, including process, equipment, facility and safety specialists. In 2009, the NTCC reviewed 32 new tools and 44 new chemicals.

- Safety management of change (SMOC): All new TSMC fab designs and changes in design or operation procedure in existing TSMC fabs that could alter safety or fire prevention conditions are required to follow SMOC procedure. SMOC cases undergo strict review by facilities, equipment, ISEP, and ESHP departments before implementation. There were 654 SMOC reviews in 2009.

- New tool installation and new facility system safety sign-off procedure: All production-related tools and new facility systems must follow a three-phase safety sign-off procedure before operation. In phase 1, the tool sponsor must confirm interfaces between facility systems and the new tool are under safe conditions before turning on non-HPM (Hazardous Production Materials) related utilities. In phase 2, the tool sponsor must verify hazardous gases and chemical supply systems, fire protection, toxic gas monitoring, tool safety interlocks, laser and radiation protection, the tool's local gas or chemical delivery system, and exhaust abatement before turning on the tool. In phase 3, the tool sponsor must remedy any shortcomings found in phase 1 and phase 2, execute IR scans for electrical utilities, and put all safety requirements into the new tool's regular maintenance procedures. In TSMC's Fab 14, for example, there were more than 11 process tool sign-offs per month in 2009.

- Used tool safety control: In addition to new tool safety controls, TSMC has also set up a procedure for used tool safety management. All used tools purchased by TSMC are required to go through this safety control procedure, which uses tool configuration inspection data and a safety interlock verification checklist to confirm that tool settings and safety interlocks are functioning correctly. After these basic checks, the tool must also go through tool installation safety signoff procedures to ensure it is safe for use after release.

Operation Safety and Health Control

In TSMC's daily operations, we not only prevent accidents through strict controls on high-risk work, contractor management, chemical safety controls, and routine audits, but also maintain emergency response plans and hold regular drills to minimize the impact of potential accidents on the environment, society, employees and property.

● High-risk work control: TSMC's high-risk work management procedure classifies any work that may cause serious injuries, casualties or major property damage as level-1 high-risk operations. In total, TSMC has identified 21 facility-related high-risk tasks. Before beginning high-risk work, the contractor company must have OHSAS 18001 certification, individual contractors must have level-1 high-risk task skill certification, and the sponsor must obtain a high-risk work permit and approval by relevant managers. In addition, TSMC requires case sponsors and contractors' supervisors to supervise critical tasks such as disconnection of gas piping or tank entry from beginning to end.

● Contractor management: TSMC values the safety of our contractors just as we value the safety of our own employees. Before placing purchasing orders, TSMC requests that contractors list a fixed-rate safety management fee and provide qualified safety staff. In addition, to help contractors

Chemical Change Operation Safety

Safety Control for Gas Cylinder Change

understand hazards, all contractors' workers must take a "Contractor ESH Training" course before entering job sites. All projects must perform a Job Safety Analysis (JSA) to identify risks, and the scope of the work, hazards, and safety requirements are reconfirmed at contractor meetings. The specific risks and safety requirements of daily work are announced to all workers at a "tool box" meeting. The TSMC sponsor must perform on-site audits to find out potential risks. Any unsafe behavior or environmental conditions are immediately rectified. TSMC disciplines contractor violations with a record of the violation, fines, or suspension of the contractors' eligibility to work for TSMC. The record of the violation will serve as a reference to TSMC's facilities and procurement departments when issuing future purchase requests.

● Personal protective equipment (PPE): TSMC requests that employees use PPE to reduce exposure to hazards to an acceptable level. Each department using PPE cooperates with the ISEP department to develop a PPE program that addresses the hazards they face, the selection, maintenance, and use of PPEs, the training of employees, and monitoring of the program to ensure its ongoing effectiveness. In TSMC, all PPEs can be acquired at any time. Each site also exhibits PPEs and displays posters periodically to heighten employee awareness.

● Enhancement and promotion of ergonomics: TSMC takes action to prevent musculoskeletal injury caused by equipment design, heavy loads and improper posture. On equipment design, TSMC requires that all new tools must meet SEMI-S8 requirements and take some supplementary measures to reduce ergonomic risk. TSMC endeavors to automate 300mm front-opening unified pod (FOUP) transportation due to the innate weight of 300mm wafers in order to eliminate accumulative damage caused by long-term manual carrying.

TSMC 300mm fabs have achieved 99.9% in automatic transportation. To address the issue of improper posture, TSMC offers instructional videos on exercises that can be performed in the office, as well as ergonomics evaluation software for office staff. TSMC also includes ergonomics in our technicians' one-hour training programs to enhance employee awareness and prevention of musculoskeletal injury.

● Workplace environment assessment: TSMC performs semi-annual workplace environment assessments which include physical hazards such as CO_2 concentration, illumination, noise, and chemical factors that are identified by domestic law. If the assessment finds abnormal measurements, ISEP performs job observations and engineering improvement until exposure risk reaches acceptable levels.

● Special health examinations: TSMC arranges annual special health examinations for employees performing special tasks, such as those involving radiation, noise, and certain chemicals. If the result of the health examination is classified as level-2 or above, the Wellness Center will provide historical health examination records and workplace environment assessment results for review by an occupational therapist. In 2009, a total of 2,700 employees took special health examinations, and the results were tracked and submitted to the Science Park Administration.

● ISEP Technical Board: TSMC has set up a cross-fab function technical board (TB) to coordinate and integrate cross-fab operation needs. The TB consists of four subgroups responsible for safety, emergency response, health, and environmental protection respectively. Site ISEP department managers are selected to lead the subgroups, which include site section

ISEPTB Organization

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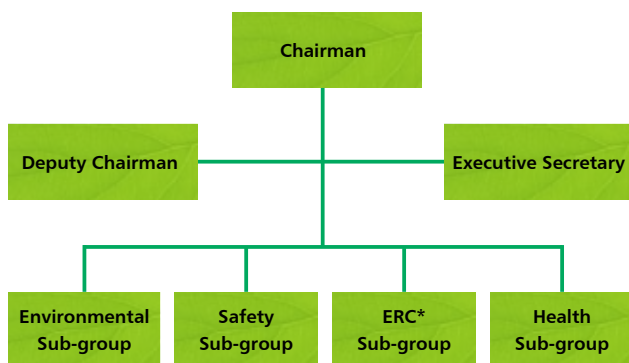
*ERC: Emergency Response Center

managers and related engineers, in monthly meetings. Agenda at the meetings include items from operation alignment to abnormal events at individual fabs and common conclusions and/or solutions for cross-fab execution. In addition, there is a TB-level meeting held by TB chairmen to review the conclusions reached in each subgroup and gain the support of each site ISEP department manager.

Programs in 2009

• Metal materials exposure risk assessment and improvement

In 2009, all TSMC sites performed a cross-fab metal materials risk assessment and improvement program. The program tracked storage, transportation, usage and disposal of metal materials. Using data from the assessment, TSMC created a comprehensive hazardous materials operation management procedure and risk assessment model.

• Tool Periodical maintenance (PM) risk assessment and improvement

Hazardous process materials (HPMs) emission risk is often caused by periodic tool maintenance, and TSMC performed a cross-fab review to understand and lower potential risks. ISEP departments at all sites performed data investigation, job observation (JOP), and on-line byproducts measurement to identify process tools with potential high exposure risk in 2009. TSMC identified eleven tools with high exposure risk during periodic maintenance, corrected the standard operating procedure in cleaning those tools, and held discussions with equipment engineers to modify the procedure at all fabs.

• Cold off tool and recovery safety

Production tools are sometimes set to a "cold off" state to adjust production capacity. TSMC requires that hazardous process materials (HPMs) are eliminated during tool cold off. Tools are also required to follow a sign-off procedure to check HPMs release safety during tool recovery. In addition, we have also set safety ground rules and checklist for cold off tool and recovery to enhance safety management.

• Infrared radiation (IR) scan analysis and improvement

An analysis of IR scan results over the past few years have shown 4 common abnormal high temperature issues, including Controlled Decomposition Oxidation (CDO) control panel, uninterruptible power supply (UPS) panel, transformer (TR) panel and motor control center (MCC) panel. We have devised a solution for operational technology improvement and set up a trace mechanism for common abnormalities.

• Lab safety management and cross-team audit

We survey lab safety management and require safety self-training and an ERT drill each year. In addition, we created a lab safety audit checklist, conducted cross-fab audits, and corrected abnormalities found in the audits.

• ESH E-platform

TSMC established a total ESH management (TSM) system in 2008. This web-based platform integrates five ESH IT systems covering planning, doing, checking, acting and information such as safety management of change, contractor management, accident/incident corrective action request (CAR), conclusion tracing, ESH indicators, and others. TSMC aims to reduce costs and risks while improving management efficiency and effectiveness though cross-fab implementation of this platform.

• GHS system implementation

To meet regulatory requirements of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), TSMC requested all chemical suppliers modify their chemical material safety data sheet (MSDS) on TSMC's eMaterial online database. In 2009, 100% of chemical MSDS on the database was updated. In addition, in order to minimize the possibility of employee exposure to carcinogenic, mutagenic and reproduction-toxic chemical materials, TSMC set up a task force to study the risk, observe site operations, assess protection of employees, and to draft a document to control chemical usage.

• Safety and health awareness promotion

To improve employee ESH, TSMC began conducting a series of promotions regarding safety and health beginning in 2008. Through e-mails, posters, quiz competitions, and displays, we educate employees in topics ranging from knowledge of on-job and off-job safety, personal protective equipments (PPEs), traffic safety, use of firefighting equipment, principles of emergency response, ergonomics, and fitness.

Social Engagement

TSMC's outstanding ESH team dedicates itself to minimizing risks to TSMC, shares its rich management experience, and uses its influence in the semiconductor industry to make contributions to society.

• Supply chain: TSMC reduces accidents and improves contractor ESH management through audit and assistance programs. We hold an annual Supply Chain Management Forum as well

as an ESH and Risk Management Forum to improve TSMC's green supply chain by sharing management experience and discussing important topics such as restriction of hazardous substance (RoHS), perfluorooctane sulphonates (PFOS), and Climate Change. Our close cooperation with companies in our supply chain over the past several years has begun to yield results as some suppliers have started to embed ESH management models into their own systems, providing additional protection to laborers.

- High-tech Industries: We believe safety and health are universal values in society. TSMC openly shares its safety and health experience through the Association of Industries in Science Park Safety and Health Committee.

3.7.2 Emergency Response

The first priority of TSMC's disaster response policy is to ensure the safety of personnel, followed by avoiding pollution of the environment, and finally to reduce property losses and maintain normal production. We believe that when natural disasters or accidents occur, proper treatment in the incipient stage of the event not only minimizes the chance of personnel injury and environmental pollution, but also significantly reduces losses and lowers the difficulty of resuming production. TSMC therefore pays considerable attention to emergency response. From emergency equipment setup, creation of emergency procedures, training, drills, and other preparations, TSMC follows the process of "planning, implementation, evaluation and improvement".

Emergency Response Center Hardware
All TSMC fabs maintain an emergency response center, or ERC. Two full-time ERC staff are on duty around the clock. If any accident or abnormal event occurs, ERC staff on duty will be informed immediately through monitoring systems. An emergency response team will be promptly and effectively assembled by staff on duty to handle the event. The following systems are equipped at each ERC:

- Rescue Procedure and information: includes plant layout, tool maps, and emergency response flowcharts;
- Safety and monitoring systems: includes fire and gas monitoring systems, emergency ventilation systems, CCTV systems, gas and chemicals shutdown emergency off (EMO), and paging systems;
- Emergency response equipment: includes various types of protective clothing, personal protective equipment, self-contained breathing apparatus, portable detectors, and leak handling equipment. In addition, each factory has designated a second ERC outside of the fab equipped with appropriate emergency response equipment to continue emergency response if the ERC is affected by natural disasters and to facilitate the rapid establishment of a command post. Monitoring systems in the first ERC can be accessed through wireless networks while ERC on-duty staff evacuate to the second ERC.

Software in Emergency Response
TSMC has detailed emergency response organizations, handling procedures and business continuity plans for a variety of unexpected situations such as earthquakes, fires, chemical spills, toxic gas leaks, sudden interruption of utilities and natural disasters. Emergency response team members are trained in communications, disaster relief operation, factory systems, on-site control, rescue, and logistic support. Types of training include the following:

- ERT training: includes ERT basic and advanced training, and incident commander training;
- Fire fighting training: Professional fire fighting skill training at the Hsinchu Fire Bureau training base;

- Quarterly ERT drill: A quarterly drill is requested for each production-related department to build familiarity with emergency response skills, equipment and factory surroundings.

Social Engagement
Each TSMC factory performs annual emergency response and evacuation drills to train TSMC employees as well as contractors and vendors. In 2009, the drills included a wide range of scenarios such as fire, gas leaks, chemical spill, earthquakes, power outage, and confined space accidents. In particular, our experts also hold exercises in earthquake building damage assessment.

- More than 2,000 employees participated in an earthquake emergency response drill at Fab 12 simulating a magnitude 5.0 earthquake. The drill included evacuation, building damage evaluation after earthquake, and cleanroom chlorine gas leakage response. The emergency response team improved its response skills through the multiple scenarios of the drill, and employees were familiarized with the appropriate response.

3.7.3 Corporate Contagious Disease Prevention Project

The World Health Organization (WHO) announced at the end of April 2009 that the "swine flu" originating from Mexico had became a highly contagious novel H1N1 influenza and could severely impact global health. Experts also forecast that the H1N1 pandemic could threaten global economic activity. To control this major potential risk, TSMC drafted the "TSMC Novel Influenza Prevention Plan" based on our SARS prevention experience in 2005 and established a task force. This plan also integrates prevention plans by the WHO, the US. Centers for Disease Control, The Taiwan Center for Disease Control's "Novel Influenza Combat Plan", Singapore's "Influenza Pandemic

Preparedness and Response Plan", as well as consultations with domestic epidemiological experts and distinguished medical doctors.

The "TSMC Novel Influenza Response & Prevention Plan" includes monitoring global epidemic status, employee disease prevention education, maintaining stockpiles of disease prevention materials, kitchen disease prevention management, leave and travel management, case management, notification and medical assistance, procedures for mask wearing and hand washing, supplier/contractor and visitor H1N1 prevention control, body temperature measurement procedures, work-at-home plans, routine disinfection of the work environment, reduced meeting frequency, medical waste treatment, and other preventive measures. TSMC's Senior VP of Materials Management and Risk Management also holds regular meetings to review disease prevention preparations. If Novel Influenza cases occur in Taiwan, TSMC will initiate a new set of procedures in accordance with the stage of the epidemic to lower its impact on employees and operations.

To reduce the impact of H1N1 on overseas subsidiaries such as TSMC (China), WaferTech, and TSMC North America, TSMC also convened overseas coordinators to immediately initiate prevention procedures and announce appropriate responses based on changes in the pandemic. In addition, TSMC also requires that suppliers set disease prevention policies and set contingency plans for major labor shortages during the peak period of the pandemic.

As of the end of 2009, H1N1 has been proved to be a highly contagious, but only moderate severe new strain of influenza, and enterprise risk management should neither over- nor under-react to the risk. TSMC will continue to carefully manage H1N1 risk and accumulate experience to strengthen our disease prevention capability.

TSMC Novel Influenza Response & Prevention Plan

External Benchmark
- World Health Organization Information
- US CDC business response guideline
- Taiwan CDC business response guideline
- Singapore CDC business response guideline

TSMC H1N1 Response Guideline
- TSMC
- TSMC (China)
- WaferTech

Customers Satisfactions → Customers Worldwide

Experience Sharing → Suppliers/Contractors/Vendors

TSMC H1N1 Response Guideline

Prevention
- Organize pandemic response team
- Monitor CDC and WHO Information
- Educate employees
- Prepare masks, thermometers, hands washers…
- Trigger "Pandemic Flu Response Procedures"
- Execute traveling safety control
- Hand-washing guideline
- Alcohol-based sterilizer installation

Response
- Sick employee handling guideline
- Monitor employee leave status
- Workplace disinfection guideline
- Manager response guideline
- Employee response guideline for workplace and home

Continuity Plan
- TSMC H1N1 Business Continuity Plan
- Manpower shortage scenario and plan
- Delegation System
- Work at home guideline

H1N1 Promotion Poster

3.7.4 Occupational Injury and Illness Statistics

TSMC uses the Disabling Injury Frequency Rate (FR, cases of disabling injuries and illness per million labor-hours) and Severity Rate (SR, lost workdays caused by disabling injuries and illness per million labor-hours) defined by Taiwan's Council of Labor Affairs (CLA) to evaluate the effectiveness of the Company's occupational health and safety programs. TSMC's FR and SR have consistently been significantly lower than Taiwan's semiconductor industry average.

TSMC strives to maintain a safety culture that ensures a safe and healthy workplace. The causes of all occupational injuries are analyzed and improvement programs are implemented based on the data. Our program further requires us to regularly collect and analyze data on types of high-frequency occupational injuries and departments with higher incident rates. These reviews focus as a first priority on incidents that are relatively serious, affect multiple departments, or happen more frequently.

Disabling Injury Frequency Rate (FR) and Severity Rate (SR)

The FR and SR of TSMC fabs in Taiwan were 0.27 and 4.11 respectively in 2009 – much lower than the Taiwan semiconductor industry average FR of 0.59 and SR of 37.65 in 2009. However, the 2009 SR rose from the previous year mainly due to more fall and collision incidents, most stemming from unsafe behavior. TSMC has strengthened employees' safety awareness to prevent further occupational accidents.

3.7.5 Disaster Risk Management Earthquake Protection

Earthquake Protection

Taiwan, a densely-populated island located on the seismically active "ring of fire" circling the Pacific Ocean, is one of the world's most high-risk regions for earthquakes. Investors,

TSMC Fabs in Taiwan Occupational Injury Statistics
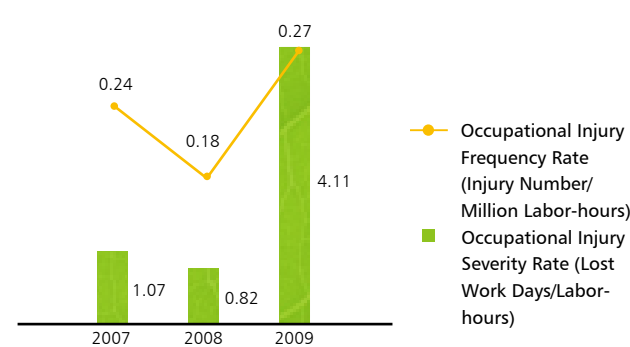
customers, and employees all have an interest in how Taiwan companies control earthquake risks. As a multinational corporation based in Taiwan, TSMC believes that while earthquakes cannot be avoided, its risks can be reduced. Avoiding employee injury is the first priority in TSMC's strategy, and the second priority is to reduce direct financial loss and recover quickly to continue services for customers. Our practice is to simultaneously strengthen the seismic resistance of facilities and our organization's emergency response skills.

● Seismic Resistance of Hardware and Facilities

Following the September 21, 1999 Chi-Chi earthquake in Taiwan, TSMC conducted a comprehensive investigation and improvement program based on the technologies available at that time. In addition to repairing damaged buildings, facility systems and process tools, the company also enhanced the seismic anchorage of equipment and facilities. In recent years, the company has also adopted new anti-seismic concepts and methodologies and carried out a series of earthquake protection projects. Based on the semiconductor industry's special requirements, a project team studied both international and Taiwanese standards, assessed and improved facility firmware

including buildings, raised floors, facility systems, process tools, automated materials handling systems (AMHS), laboratory equipment, and IT equipment as well as measures such as personnel training, emergency response, damage checklist and management systems.

TSMC's anti-seismic projects in the past several years included analysis of the most likely potential earthquake fault lines, facility seismic durability evaluation, quick earthquake damage assessment, post-earthquake risk evaluation, reinforcement of existing buildings, and reinforcement and anti-seismic design for equipment. In 2008, TSMC conducted studies and evaluations of the earthquake resistance of raised floors, evaluated the seismic resistance of cable trays and improved the seismic resistance of furnace tube equipment design. We also continued our analysis of the most likely potential earthquake fault lines and established an earthquake evacuation procedure.

TSMC has established an anti-seismic design review process and set up related procedures, as well as procedures for certification of professional engineers. TSMC also performs regular site inspections and improvements, and holds training classes. At the same time, the company closely cooperates with external experts including structural engineers, the National Center for Research on Earthquake Engineering (NCREE), the Industrial Technology Research Institute (ITRI), academic organizations, and the Constructions and Planning Agency, Ministry of the Interior (CPAMI) to efficiently enhance the anti-seismic capabilities of facilities and equipment. The knowledge accumulated from all these projects is used to improve existing factories and form the basis for the design of new factories.

Post-earthquake danger evaluation retraining and discussion

● **Establishment of Response Procedures to Strengthen the Emergency Response of Personnel**

TSMC has clearly defined its post-earthquake emergency response organization and procedures, has established an earthquake damage evaluation system, and conducts periodic drills to minimize casualties, reduce property loss and shorten operation recovery time. At the same time, TSMC has also established business continuity plans to guide support and recovery for the entire company. To strengthen earthquake emergency response ability, TSMC held special retraining for key seed personnel from each facility, and in turn these personnel trained their colleagues. In addition, each site continued to hold annual earthquake drills to familiarize personnel with response procedure and techniques. Suggestions by judges are also incorporated into annual drills.

● **Earthquake Insurance**

TSMC's properties are appropriately insured to distribute business losses if worst-case scenarios occur. TSMC has developed an earthquake loss evaluation system taking into account both construction enhancement and insurance strategy.

Fire Loss Control

The primary goal of TSMC's fire loss control strategy is prevention. The second goal is containment of potential fires to minimize losses. The final goal is to strengthen emergency response and disaster recovery during and after the event. Based on these principles, TSMC pays close attention to fab fire protection planning and design, maintenance of fire protection equipment, personnel training, and development of emergency skills.

● **Fire Risk Control at the New Fab Design Stage**

New fab fire protection planning and design not only follows local fire protection and construction regulations but also takes international codes such as NFPA and FM into consideration. The key points for fire control at this stage are:

1. Fire loading of buildings, equipment, and piping materials
2. Fire separation between buildings
3. Fire alarm and extinguishing systems, particularly automatic fire alarm and extinguisher systems
4. Personnel evacuation routing

Fire loading restriction decreases the likelihood of fires and limits incipient fires. Fire separation between buildings contains maximum damage to the company's assets. Automated fire extinguishing systems are a necessity for modern cleanrooms, and good personnel evacuation routes can save lives.

A new bumping process production line was installed on the first floor of the Fab 14 chemical building in 2009. In order to comply with international and local regulations and basic safety requirements, process tools using flammable and combustible chemicals were not permitted to be placed in the basement.

● **Fire Risk Control for Equipment Installation**

Fire control at the equipment installation stage is a core part of industrial safety. The Site Safety and Environment Department is responsible for supervising engineering units and contractors in this stage.

Fire Loss Control Flow

New Fab Planning and Design	Equipment Installation	Mass Production
● Systematic Design for Fire Risk Management ● Local/International Fire Codes and Regulations ● External Expert Comment ● Case-by-case Risk Decisions ● Set New Design Standard	● New Equipment and Chemical Review ● Verification of Construction Materials and Quality ● Function Test for Fire Protection System ● Construction Site Safety Management ● Safety Change Management	● Maintenance of Fire Protection System ● Periodical Internal Audit ● AAA External Audit ● High Risk Operation Management ● Emergency Response Drills

The New Tool and New Chemical Committee is responsible for verifying that all new tools and chemicals introduced comply with international semiconductor equipment safety standards such as SEMI-S2, national fire protection, and other safety regulations, as well as TSMC's internal safety and health requirements.

• **Fire Risk Control at the Mass Production Stage**

At the mass production stage, it is often necessary to relocate, add, or remove equipment to meet production demands. All of these changes must carefully follow change management procedures to assure that existing fire protection systems, emergency evacuation routes, fire breaks, detection systems, and standard operating procedures remain functional.

• **AAA Property Loss Control Risk Evaluation Program**

To ensure the effectiveness of fab fire loss protection, TSMC adopted the AAA property loss control evaluation program in 1995 to augment internal audits by site safety departments. This program covers overall fire prevention, fire extinguishing equipment, and related maintenance management. Through regular external audits, we can identify weak points in fire management, give personnel an opportunity to keep abreast with international developments in the field, and meet our goal of continuous improvement and sustainable management. TSMC's earlier fabs, such as Fab 2 and Fab 3, scored below 27 points due to the potential engineering risk in rebuilding facility systems. However, TSMC designs and builds new fabs using the most up-to-date fire damage prevention technology, and these fabs can achieve a full score of 27 within one year of operation.

As TSMC sites completed a AAA property loss control audit in 2008, within the current insurance period, we did not perform an external AAA audit again in 2009. However, to verify the continuity of our property loss control program, TSMC assembled an internal AAA audit committee and adopted more stringent criteria to complete an audit and related improvements.

AAA Ratings Summary
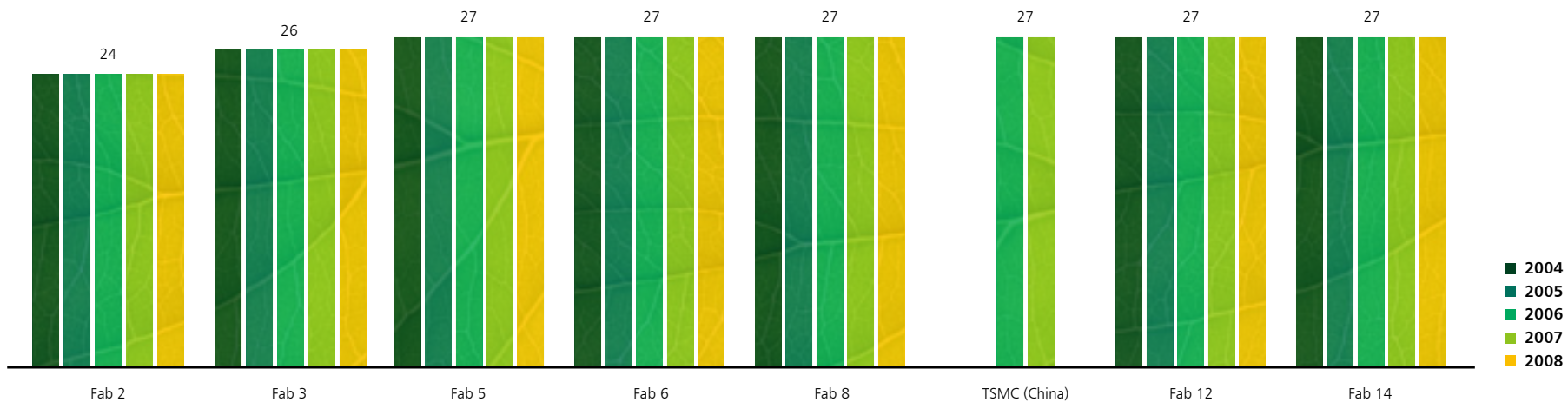

Note: Full score is 27.

SUPPLY CHAIN MANAGEMENT

TSMC cooperates with suppliers to meet our corporate social responsibilities by building a reliable and sustainable supply chain, which supports protection of the environment, human rights, safety, and health. Our committees and managing teams responsible for aligning corporate direction in supply chain management execute a complete "Plan-Do-Check-Act" (P-D-C-A) cycle.

4.1 Supply Chain Risk Management

In 2009, TSMC brought together fab operations, materials management, risk management, and quality system management in an internal committee dedicated to managing our supply chain. The focuses of the committee are risk mitigation and supply chain improvement. The steering team, including a senior vice president and managers, directs annual goals and reviews progress each quarter. The committee's working team assists suppliers in lowering production and transportation risks by sharing risk management practices and helping suppliers improve quality systems, green procurement, protection of the environment, and safety. At the same time, we monitor the financial situation of key suppliers through regular communication or public information, monitor the inventory of supply chain, and draft backup plans. The working team holds monthly meetings to monitor progress and actively handle suppliers' issues.

TSMC Suppliers Allocation (by purchasing amount)

- Taiwan (31%)
- USA (20%)
- Europe (4%)
- Singapore (3%)
- Others (1%)
- Japan (41%)
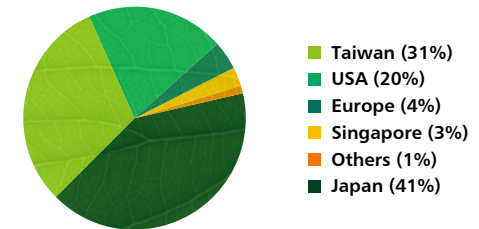
4.2 Environmental, Safety, and Health (ESH) Standards

4.2.1 Supply Chain Sustainability: Environmental, Safety, Health, and Risk Control

In recent years, global consumers increasingly feel that corporations have the responsibility to supervise their suppliers. TSMC believes that helping suppliers improve environmental, safety, and health standards both reduces risks to our supply chain and gives TSMC an opportunity to contribute to society. Our performance in supply chain sustainability can answer the concerns of global customers. Although some of our measures are progressive and difficult, we are resolute in our determination to lead the industry in carrying them out.

Supply Chain Risk Management

Risk Map

Poor	Good
Fair	Excellent
70	80	90

Drive for improvement →

Supply Chain Risk Management (Green)

- Code Compliance
- ISO 14001 management system
- Hazardous substance management
- Climate change - Carbon inventory
- Climate change - Carbon reduction
- Other Green Activities
  - Green design-in
  - Green procurement
  - Green promotion for employees

Supply Chain Risk Management (Risk)

- Fire Hazard & Protection
- Seismic Hazard & Protection
- Geographic & natural hazard
- Safety management system
- IT availability protection
- Business continuity plan
- Transportation risk
- Pandemic preparedness
- Supply chain risk management

In 2005, TSMC began regular audits of critical local assembly, testing, raw materials and parts cleaning suppliers and conducted questionnaire surveys of overseas suppliers with the goal of improving environmental performance, reducing safety and health risks in our supply chain, lowering the possibility of supply chain disruption, and enhancing partnership with suppliers.

In 2008, in addition to covering fire, seismic protection ESH management, and business continuity plans, the questionnaire and site audit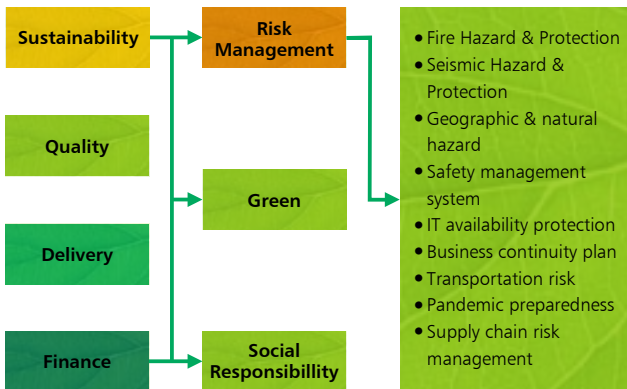s also evaluated carbon inventory and reduction, suppliers' supply chain risk management, transportation risk, H1N1 pandemic response plans and protection of human rights in response to global trends in green product and human rights requirements. These survey and audit results are combined with delivery, quality, business and financial data and developed into a risk map of suppliers, which serves as a reference for our procurement strategy. In 2009, TSMC surveyed 44 raw material suppliers, which covered 85% of total purchasing.

Supplier audit and assistance

When TSMC discovers major shortcomings in our suppliers' goods or services, we work directly with their top managers on improvement. If they lack the resources or ability to make improvements, we offer support by holding supplier ESH forums for experience sharing and through on-site assistance. In 2009 to 2010, we focused on providing assistance to some of our raw materials suppliers and parts cleaning suppliers – a low-profile but important part of the technology supply chain. We found that some aspects of these suppliers' workplace safety and environmental protection required improvement, and we focused on those areas in particular. Over the past two years, with their close cooperation, their ESH performance has improved significantly.

Supplier Audit & Assistant

Audit Score
- ■ >80
- ■ 70-90
- ■ <70
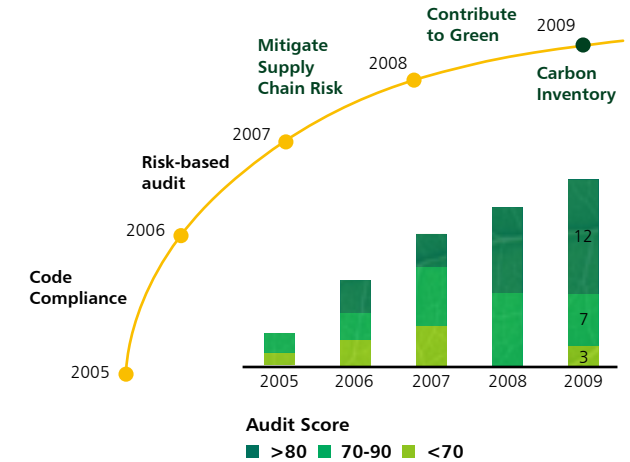
Since TSMC began to manage environmental, safety, and health risks in our supply chain, we have not only significantly reduced our own supply chain risks but also improved the employee safety and property protection of our suppliers. We believe this is a "win-win" strategy that enhances the competitiveness of TSMC and members of our supply chain, and we will continue to meet our commitment to meet our responsibility to customers, investors, and society.

Supply Chain ESH Risk Control Flow

4.2.2 TSMC Green Supply Chain

TSMC believes it has the responsibility to establish an integrated green supply chain, and not only strives to prevent pollution, conserve energy and resources, and minimize waste and hazardous substances in its own manufacturing processes, but also actively leads its upstream raw material suppliers and downstream assembly and testing facilities to collaborate and improve the environmental and carbon reduction performance of products. We implement our green supply chain from a product life cycle (LCA) point of view to reduce the environmental impact of manufacturing at each stage of the supply chain and minimize the environmental impact of end products used by consumers.

As a leader in semiconductor manufacturing and services, and to meet our corporate social responsibilities, TSMC began to implement the QC 080000 hazardous substances process management system in 2005, and all TSMC fabs including WaferTech and TSMC (China) were certified for QC 080000 by July 2007. TSMC also requested that suppliers pass QC 080000 certification, and TSMC backend suppliers began certification starting in 2008.

TSMC's leadership in guiding upstream supply chain partners and downstream companies to adopt QC 080000 demonstrates our willingness to take action and improve the semiconductor industry's environmental social responsibility. Our goal is to embed the "green product" concept in all suppliers and assembly and testing subcontractors.

In order to mitigate climate change risk, TSMC not only actively inventories and reduces its own greenhouse gas emissions, but also requires suppliers to inventory their greenhouse gas emissions. TSMC is the first corporation to complete the Minstry of Economic Affairs (MOEA) "Supply Chain Carbon Inventory Assistance Plan". With the assistance of the MOEA's Industrial Development Bureau, TSMC in June 2009 became the first company in Taiwan to lead its suppliers in successfully completing and registering a carbon inventory. TSMC and its supplier partners also participated in a series of four "Practical Seminars on Industry Greenhouse Gas Inventory and Product Carbon Footprint" in Taipei, Hsinchu, Taichung, and Kaohsiung in September to share our experience in conducting a supply chain carbon inventory and to learn from other domestic industries.

In 2005, TSMC began requesting major wafer backend and testing suppliers, raw material suppliers and parts cleaning suppliers to complete questionnaires on energy conservation, carbon reduction, hazardous substance control, and other environmental subjects. TSMC also carries out site audits and follow-up assistance in these areas. (note: for environmental protection policies regarding new fab construction, please refer to the "green building" and "contractors safety and hygiene management" sections). TSMC places great importance on the professionalism and effectiveness of these questionnaires and site audits, and uses the results, along with results of health and safety and risk management audits to set a "sustainability score" for suppliers. The sustainability score is integrated with delivery records, quality, financial soundness, and operations to create a risk map of suppliers, the most important reference for TSMC's green procurement strategy.

TSMC also maintains "green procurement" procedures, requiring raw materials suppliers to declare that the materials they supply to TSMC do not contain any prohibited substances. This ensures that products manufactured by TSMC comply with customer requirements and the regulatory requirements of the European Union's RoHS directive. TSMC also requests that critical subcontractors, such as assembly facilities, obtain QC 080000 certificates.

Practical Seminars on Industry Greenhouse Gas Inventory and Product Carbon Footprint

4.3 Managing Contractors' ESH

TSMC endeavors to be a good corporate citizen and meet its social responsibilities. We believe in going beyond providing a safe workspace for employees to establish a higher ESH standard with our partners in all industries. TSMC is committed to communicating with suppliers and contractors on environmental, safety, and health issues and encouraging them to improve their ESH performance. TSMC treats contractors like our employees and works together with them to adopt good safety protection, and leads members of our supply chain to reduce their environmental impact.

4.3.1 Identifying High-risk Work for Priority Management

TSMC has established standards for high-risk work to strengthen contractor safety management. TSMC began adopting high-risk work management and self-management to govern work performed by contractors in 2005. TSMC's high-risk work management classifies work that may cause injuries, casualties or major property damage as level-1 high-risk operations. These include work in confined spaces, work with electrical shock risk, hot work, or disconnection of gas or chemical piping. Work that may result in system shutdowns or production interruptions are classified as level-2 high-risk operations. TSMC explicitly defines safety precautions and control procedures to be taken by personnel according to different operations.

4.3.2 Request Contractor to Establish OHSAS 18001 Management System and Worker Skill Certification

In terms of self-management, TSMC requires that contractors performing level-1 high-risk work must complete worker certification before July 1, 2006, and establish their own OHSAS 18001 safety and health management system before July 1, 2007 before they are eligible to bid on contracts. This self-management is aimed at increasing contractors' sense of ownership and responsibility with the goal of promoting safety awareness and technical improvement for all contractors in the industry. As of 2009, 94 high-risk work contractors had received OHSAS 18001 certificates, and over 2,400 workers had passed required working skill certification.

In 2008, in addition to routine audits by third party certification agencies, TSMC also conducted audits of OHSAS 18001-certified contractors. TSMC plans to audit contractors every year to ensure the quality of contractor OHSAS 18001 and worker skill certification. If an audit finds that a contractor is not qualified, the contractor's level-1 high-risk work qualification may be revoked. TSMC also communicates with contractors through regular safety notices for updates on contractor safety & health requirements, accident lessons learnt and safety & health regulations. Added in 2009 were health-related notices to contractors to follow H1N1 prevention measures.

TSMC plans to continuously promote its contractor safety certification program in the future, perform regular audits and recognize outstanding contractors. In addition, TSMC holds an annual "Contractor ESH Forum" to announce ESH requirements and share safety management experience. TSMC believes that we can help the community and the environment by leading our contractors to reach higher standards of environmental, safety, and health protection and create a better workplace.

4.4 Helping Suppliers Improve Delivery and Quality

4.4.1 Supplier Web Site

TSMC's "Supplier Online" is an integrated website containing detailed information about our ethics, environmental, safety, and health requirements for suppliers. The secure area of the site promotes effective communications and ensures that proper data is collected.

4.4.2 Lean Supply Chain

TSMC works closely with raw material suppliers to exchange inventory information, so that in-bound supply chain inventories are transparent and demand fluctuations can be detected early. We collaborate with our suppliers to build a strong and lean supply chain together to mitigate the risk of supply interruption and avoid making surplus materials.

4.4.3 Collaborating for Continuous Improvement

TSMC evaluates key supplier performance each quarter for delivery, quality, and safety, and the results of the evaluation are delivered to supplier's top manager. TSMC also works closely with its suppliers to improve weaknesses through regular meetings. In certain projects, TSMC provides special technical support to suppliers through open communication meetings.

4.5 Ensuring Supplier Compliance

4.5.1 Quarterly Business Review

TSMC conducts quarterly meetings with our suppliers' senior managers to review performance, including quality, delivery and sustainability performance. We ensure suppliers comply with TSMC requirements and through semi-annual or quarterly monitoring of key indicators through a scorecard and checklist.

4.5.2 Site Audit

TSMC visits our suppliers and performs audits according to an annual plan. When special concerns arise from these audits, we work with suppliers to develop appropriate solutions for fulfilling our expectations. These solutions are executed by specified sponsors with a clear goal and timeframe.

4.5.3 Certification

TSMC encourages its suppliers to be certified for ISO 14001 and OHSAS 18001. Furthermore, we conduct site audits to ensure suppliers' factories are well protected by fire protection systems and measure supplier safety performance through accident counts.

4.6 SCM Forum and Excellent Supplier Award

TSMC held its ninth annual TSMC Supply Chain Management Forum on December 4, 2009 to recognize the support and contributions of its suppliers and to award outstanding suppliers for their excellent performance over the past year. The theme of the forum was "Thriving amid Economic Uncertainties", and in the keynote address, Chairman and Chief Executive Officer Dr. Morris Chang said: "Technology leadership, manufacturing excellence, and customer partnership are TSMC's trinity of strengths, and are the keys to TSMC's growth throughout the economic cycle. TSMC's success comes from the success of its customers and its supplier partners, and as an important member of the semiconductor industry, TSMC hopes to continue growing stronger with its supplier partners and create mutual success".

In addition, the forum also included breakout sessions on supply chain cooperation in development of 15nm process technology, case studies of successful collaboration between TSMC and suppliers, creating sustainable and mutually beneficial supplier partnerships, measuring supplier performance, supply chain carbon footprint management, as well as facility and IT systems power conservation. Some 410 suppliers from around the world in the fields of equipment, materials, packaging, testing, facilities, IT systems and services, export/import services, and environmental and waste management services participated in the forum.

4.7 Customer Service and Satisfaction

4.7.1 Customer Partnership

Customer partnership is one of TSMC's core values. At TSMC, customers come first. Their success is our success, and we value their ability to compete as we value our own. We strive to build deep and enduring relationship with our customers, who trust and rely on us to be part of their success over the long term. Customer partnership is also one of TSMC's trinity of strengths to support its value proposition.

4.7.2 Customer Service

TSMC is committed to providing the best service to our customers and believes that customer service is critical to enhancing customer loyalty. In turn, customer loyalty leads to higher levels of customer retention and to expansion of business relationships. TSMC's goal is to maintain its position as the most advanced and largest provider of semiconductor manufacturing technologies and foundry services. TSMC believes that achieving this goal will help retain existing customers, attract new customers, and further strengthen customer partnerships.

To facilitate customer interaction and information access on a real-time basis, TSMC has established a wide range of web-based services covering applications in design, engineering, and logistics collaboration. They are collectively branded as eFoundry™. TSMC also has a dedicated team or interface or champion throughout the management chain for serving our customers.

4.7.3 Customer Satisfaction

TSMC regularly conducts surveys and reviews to ensure that customer's needs and wants are adequately understood and addressed. Continual improvement plans supplemented by customer feedback are an integral part of our business processes.

An Annual Customer Satisfaction Survey is carried out by an independent third party consulting firm with the goal of:
- Understanding customers' specific needs and expectations from TSMC, and
- Obtaining formal and direct feedback from our customers to measure TSMC's performance and identify TSMC's weaknesses for development of improvement strategies.

The findings and analysis of customer feedback will be presented to the TSMC executive team, and appropriate details will be shared throughout the TSMC organizations. Based on the survey input, all the related functional and regional teams will work together on action plans, with the progress monitored closely.

Successful Customers

Technology Leadership	Manufacturing Excellence	Customer Partnership
• Advanced Technology	• Capacity Leader	• 100% Dedicated Foundry
• Best speed-power optimization	• Responsive and Flexible	• Total Solution Service
• Highest density for cost effectiveness	• Best Yields and Cycle Time	• Partnership Collaboration
• More than Moore's Technology	• Fast Ramp	• Long Term
• Enriched functionality	• Quality	• Win-Win
• More portability		• Trustworthy
• Energy efficient		

Financial Strength and Manufacturing Capacity

SOCIAL CONTRIBUTION

Taiwan's society was sharply affected by global economic crisis in 2009, and in response to the needs of society, TSMC contributed a total of NT$270 million toward education, culture, and typhoon disaster relief of the communicaties.

TSMC established the TSMC Education and Culture Foundation in 1988 to coordinate the Company's sponsorships as part of its efforts in corporate social responsibility. The Foundation is led by Chairman Dr. F.C. Tseng, and devote its resources towards four core areas: education, sponsorship of art and culture, community building, and the employee volunteer program. In 2009, National Taiwan University inaugurated Tzi-Shueh Hall, a new Chemistry building donated by the TSMC Foundation as part of TSMC's commitment to cultivating talent and improving educational infrastructure. The Foundation also continued to organize the Hsin-Chu Art Festival to bring arts to the community and expanded the employee volunteer program.

5.1 Commitment to Education

Talented people are essential to the development of the economy. As a leader of Taiwan's knowledge-based industry, TSMC regards cultivating talent for society as a major responsibility.

The TSMC Education and Culture Foundation tailors various programs to target a whole range of education at different age levels. At the college level, we donate funds for the construction of new facilities to support scientific research and cultivate top-level scientists. For secondary schools, we place equal emphasis in both science and humanities to unlock students' scientific potential and enrich their appreciation of the arts. At the primary school level, our focus is on aesthetic education, with the goal of exposing children to art as early as possible.

5.1.1 The College Level–Strengthening the Facilities of Universities

TSMC has long been committed to offering support for top-notch research and development of top scientific talent.
To support that commitment, the TSMC Foundation funds university facilities and chair professorships.

Tzi-Shueh Hall of the Chemistry Department in National Taiwan University, to which TSMC Foundation donated NT$120 million, was completed and inaugurated in November 2009.

The TSMC Foundation donated NT$120 million NT dollars towards the construction of the National Taiwan University's Tzi-Shueh Hall, which was completed and inaugurated in November 2009. Tzi-Shueh Hall is the second phase of the NTU Chemistry Department research building with eight stories above ground and one basement. NTU honored TSMC by combining the word "Tzi" from the Chinese name of TSMC with the word "Shueh" meaning "Learning", and the literal meaning of the name is "hall for the accumulation of knowledge".

Many outstanding alumni have graduated from the NTU Chemistry Department of NTU and its highly-regarded teaching and research makes it one of the most important fundamental scientific research centers in Taiwan. The Foundation hopes this building can provide the department's teachers and students with top-notch facilities to support state-of-the-art scientific research activities.

5.1.2 The High School Level–Nurturing Science and Humanities

At the secondary school level, the TSMC Education and Culture Foundation emphasizes the need for a balanced education in both science and the humanities. In science, the Foundation continued sponsorships of science camps to stimulate students' scientific potential. In the humanities, we organized the "TSMC Youth Calligraphy Contest" and the "TSMC Literature Award" providing a showcase for young talent and deepening appreciation of the arts.

TSMC Youth Calligraphy Contest

The art of calligraphy is a distinguished legacy of Chinese culture. To preserve this art in the modern era of technology, the TSMC Foundation encourages young people to learn calligraphy and continue this artistic tradition. The Foundation launched the first

"TSMC Youth Chinese Calligraphy Contest" in 2008 to broad acclaim. In 2009, the contest expanded to include a Chinese seal carving division with a higher contestant age limit to widen participation and attract more lovers of traditional arts.

The Winning Works of The 2nd TSMC Youth Calligraphy Contest

First Prize, Regular Script

Yang-Ming High School
Cha-Ning Tsao
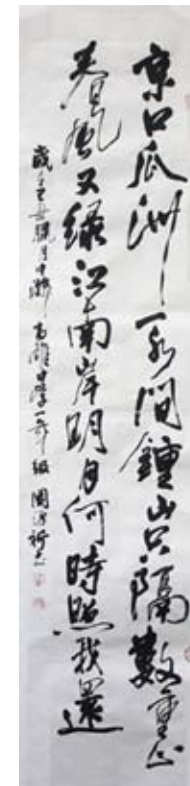
First Prize, Cursive Script

Kao-hsiung High School
Yuan-Chi Chao

First Prize, Seal Carving

Taiwan University of Arts
Ming-Che Liu

Alongside the competition, the Foundation also invited well-known calligraphers to write with calligraphy lovers and the winners of the contest, and also invited professors to share different ways to appreciate the beauty of Chinese characters with the audience in Taipei and Tainan. More than 500 contestants registered in 2009. Contestants from previous years entered new works that won higher marks, a sign that the contest is gradually making an impact and giving young people who love calligraphy a stage to showcase their talent.

TSMC Youth Literature Award

The Foundation has held the "TSMC Youth Literature Award" for six years, and works entered in the competition have become more sophisticated and diverse each year. In 2009, works entered in the competition reveal these young writers' deep thoughts about the value of life and the transition of society. The "TSMC Youth Literature Award" is a platform that has fostered numerous young writers, who continue to create new works published in newspapers and magazines. Developing a writing tradition, this event has become the most prestigious contest for young literature writers.

Science Talent Camps

To cultivate talented young scientists, the Foundation continued to sponsor Wu Chien-Shiung Science Camp and the Wu Ta-Yu Science Camp. The camps provide talented students with the opportunity to hold discussions with world-class scientists with the goal of inspiring students and helping them realize their potential.

2009 was the twelfth anniversary of the Wu Chien-Shiung Science Camp, and the camp invited 4 world-class scientists in the fields of physics, chemistry, biology and astronomy to speak with 90 gifted youths, 25 Science Olympiad contestants, and 40 science teachers for one week. The camp also held lectures

and creative poster competitions. The 8th Wu Ta-Yu Science Camp celebrated bi-centenary of Darwin's birth by setting "Gene and Evolution" as its theme. The camp invited 13 world-class scientists in related fields to present the study and new trends in evolution, genetic engineering, and biological preservation with 90 outstanding students.

The Foundation aims to inspire and nurture future scientists through in-depth training and interaction with masters and peers.

5.1.3 The Primary-School Level–Cultivating Aesthetic Education

TSMC Aesthetic Education Tour

At the primary-school level, TSMC's focus is on aesthetic education. Since 2003, the TSMC Education and Culture Foundation has been running the TSMC Aesthetic Education Tour to provide students from remote school districts with educational tours to museums, art galleries, local historic sites and exhibitions. Over these 7 years, we have invited over 50,000 students to take the tour. These projects expose children to arts as early as possible and help to bridge the gap between rural and urban schools.

In 2009, "The Smiling Kingdom - The Terracotta Warriors of Han Yang Ling" exhibition was held in the National Museum of History. The Foundation sponsored exhibition visits for rural students with professional guides who helped them understand the artifacts and learn the evolution of art styles.

The Hope Reading Program

To help narrow the gap in educational resources between rural and urban areas, the TSMC Foundation continued to sponsor the Hope Reading Program, initiated by the Common Wealth Educational Foundation. In 2009, the TSMC Foundation has

The TSMC Foundation took students from rural areas to visit the National Palace Museum and "The Smiling Kingdom" Exhibition, exposing them to the arts as early as possible.

"The pottery figures of Han are different from the ones of Chin. The Chin figure's faces are very brutal, but the Hans are so gentle and smile. The Han figures have no arms mostly. I really appreciate the art of Han. The figures of human beings and animals are so vivid."

-- Do-Nan Primary School, Chang Io-Ping

"The Jade Cabbage is so delicate. There even are locusts on it. They said that people gain more from traveling ten thousand miles than studying ten thousand books. My knowledge has really been widened through this trip.

-- Do-Nan Primary School, Huang Ming-Hua

provided two hundred rural schools with 20,000 books. Since 2004, we have provided the students with over 90,000 books in total. By providing books to 25,000 children in remote and underprivileged areas of Taiwan, TSMC hopes to promote literacy and inspire interest in reading among these children so that they will have good books to read and the opportunity to one day leave poverty.

In addition to donating books, the Hope Reading Program has extended into other educational activities, building a platform for domestic educators to learn from international experience.

At two forums held in Taipei and Taichung, experts shared their experience of promoting reading and teaching children to respect life and environment with nearly 1,000 teachers. In addition to the overseas workshops, we also organized 8 workshops for 1,600 teachers to learn about trends in reading promotion through lectures and discussions, the educators learned about trends in reading promotion to apply to their teaching. We also continued the "Little Writer" campaign designed to encourage children to transform their thoughts into words and pictures.

5.2 Community Building

TSMC's major manufacturing facilities are based in Hsinchu and Tainan. Facilitating a better living environment and active community for our employees is a responsibility that TSMC takes very seriously. In order to contribute to local communities and bring arts opportunities to these high-tech cities, the Foundation began to focus its funding for fine arts on activities in Hsinchu and Tainan beginning in 2003. By organizing fine arts exhibits and performances in these cities and packaging them into the "TSMC Hsin-Chu Art Festival", we hope to encourage a greater

appreciation of arts in the site communities. In addition, the Foundation supports long-term projects with various NGOs to provide assistance to disadvantaged in these areas.

5.2.1 TSMC Hsin-Chu Arts Festival

TSMC Foundation chose "Find a New World" as the theme of Hsin-Chu Art Festival to bring inspiration despite the impact of the global financial crisis. The goal of this series of educational and cultural programs was to sustain the confidence of our community and to look forward to a better future.

The festival opened with a series of lectures. Writers and experts were invited to speak on different ways to face the difficult economic situation. Promoting Chinese Theatre is an important feature of the festival, and we presented the Kunqu Opera "The Jade Hairpin" to present the beauty of Kunqu. We again invited "Taipei Qu Yi Tuan", and brought them to present the beauty of Chinese performing arts with an audience in Tainan. Also, the Hsinchu-born maestro Shao-chia Lu led the National Orchestra to present a wonderful concert. Taiwan writer Chun-Ming Huang invited Hsinchu local children to take part in a drama

performance and learn about environmental protection in the process. At the same time, several charity programs promoted care of the underprivileged from every corner of society.

5.2.2 Caring for the Underprivileged

The Foundation supports long-term projects with various NGOs to provide assistance to disadvantaged in the site communities. In 2009, Hsin-Chu Art Festival cooperated with Syin-Lu Foundation to present the documentary film "Hao-Ten-Ten" in the community and in schools. The film about the lives of disabled people helps students and other members of society better understand their determination.

In 2009, TSMC continued to support the Hsinchu Help Center of the Modern Women's Foundation, providing local female victims the legal consulting and social welfare resources to protect them from sexual attacks and domestic violence. Through seminars in the community and high schools, the help center also educates women and students in self-defense and promotes gender equality to provide a secure environment to women and their families.

The theme of the 2009 Hsin-Chu Art Festival was "Find a New World", offering the community inspiration amid the global economic crisis.

The noted writer, Chun-Ming Huang invited Hsinchu children to take part in a drama performance.

The Foundation cooperated with Syin-Lu Foundation to present the "Hao-Ten-Ten" documentary film in the community and in schools.

5.3 Promotion of Arts and Culture

The TSMC Education and Culture Foundation is devoted to the promotion of arts and culture. Over the years, the Foundation pioneered several original approaches and positive responses from the public has prompted many companies to join our efforts.

5.3.1 Analects of Confucius in Hsin's View–A Broadcasting Program

The development of technology has changed society greatly in past 100 years, but the spirit of Chinese classics has never lost its relevance. Mainland China has enjoyed a renaissance in the Chinese classics in recent years, with Confucianism gaining much commercial and academic attention.

TSMC Foundation has long been devoted to reviving Chinese traditional culture. Beginning in 2008, the Foundation worked with Hsinchu radio station IC Radio to present a series of broadcasts by Professor Hsin Yih-yun on the Analects of Confucius. We hope that Professor Hsin's simple but inspiring lessons help more people understand the wisdom of the Analects.

"Analects in Hsin's View" has received an overwhelming positive response from overseas and local listeners since the first broadcast. It not only brings the audience inner peace, but is also an excellent supplemental material for studying Chinese culture. In 2009, the TSMC Foundation continued to support the program. We believe that Professor Hsin's knowledge and vivid examples will guide the audience through the Classic to find their own happiness.

The TSMC Foundation promotes traditional culture. Begining in 2008, the Foundation worked with IC Radio to present a series of broadcasts by Professor Hsin Yih-yun on the Analects of Confucius.

Professor Hsin uses all kinds historical or life examples to present the essence of Confucianism. Professor Hsin teaches us how apply the knowledge on the daily lives, which helps us feel the joy of life. I used some concepts of "Analects in Hsin's view" in my teaching. The students' response is quite positive.

-- IESE Business School, Professor Lee Yih-teen

5.3.2 Taiwan Literature Camp

TSMC continues to support the Taiwan Literature Camp to promote literature. Every year, the camp organizes workshops and lectures in fiction, prose, poetry and drama, and brings distinguished authors face to face with literature students.

In 2009, 400 literary devotees convened at Cheng Kung University in Tainan for opportunities to meet distinguished authors form Taiwan and China and to receive three days of training and pure inspiration. In addition to the lectures, the masters also selected good works from participants and published the collections to encourage them to continue creating new works.

5.4 TSMC Employee Volunteer Program

TSMC's most valuable asset is the knowledge and professional skill of its employees. The TSMC Foundation encourages TSMC employees to devote themselves to society as volunteers to promote education and culture in an employee volunteer program launched in 2003. The TSMC volunteers' services include serving as guides to introduce the electronics industry at the National Science Museums during weekends, reading books to elementary students in remote townships on weekdays, and providing the local community with energy-saving measures. In 2009, a new team of Community Volunteers was formed to help the local community with emergency assistance.

All volunteers are coordinated and organized by TSMC Volunteers Society. In 2009, Ms. Sophie Chang (Su-feng Chang) was elected as a director of the Society. Ms. Chang will lead volunteers to devote themselves to various educational and philanthropic initiatives to serve the society.

5.4.1 Community Volunteer

Typhoon Morakot Disaster Relief Project

Typhoon Morakot struck south Taiwan, causing Taiwan's most severe flooding in 50 years. TSMC and all its employees are deeply saddened by the suffering caused by this typhoon, and we have assembled a "Typhoon Morakot Project Team" and have decided to donate NT$200 million to provide some small measure of relief to the people and places affected by this disaster.

- **Distributed NT$50 million in relief funds to more than 1,000 employees affected by the floods.**

As TSMC employees come from all over Taiwan, many colleagues and their families live in areas severely affected by this disaster.

Ms. Sophie Chang helps to sell agricultural products from Taiwan's aboriginal Tsou tribe as part of TSMC's efforts to help the tribe recover from the impact of Typhoon Morakot.

Schoolchildren in Tainan county express their gratitude after returning to school on time after TSMC repaired damage to their schools from Typhoon Morakot.

We therefore asked managers at all levels to inquire whether their staff was affected by the flooding and whether they need assistance. Currently, about 1,000 of our employees and their relatives live in severely flooded areas, and the great majority are production-line technicians. To provide the fastest and most direct support, TSMC will disburse up to NT$50 million in aid funds. Our employees' direct supervisors will conduct site

visits, and we will also use all our available resources to help our employees find missing family members. We hope that these efforts will demonstrate TSMC's commitment to its employees and also reduce some of the government's relief burden.

- **Provided NT$50 million to assist in the repair and restoration of damaged middle and elementary schools around the South Taiwan Science Park to reopen before the beginning of the school year.**

Many Schools near TSMC's Tainan site were severely affected by this disaster, with heavy damage to fences, classrooms, computers, schools, and other equipment. Students would be unable to begin classes on schedule if they were not restored quickly. TSMC disbursed NT$50 million to take direct responsibility for repairing, cleaning, and rebuilding in a safe and timely fashion. We believe this was the most direct and efficient fashion to help restore damaged schools, help students return to school on time, and do our part for the disaster area.

At the same time, colleagues in TSMC began a book collection drive inside and outside the company, which received enthusiastic support. TSMC received more than 50,000 books and donated them to schools in Tainan, Chiayi, Pingtung, Nantou, and Taitung that were affected by Typhoon Morakot

- **Pledged NT$100 million to assist in the government's overall relief efforts.**

Aboriginal villages were among the main disaster areas of Typhoon Morakot, and aborigines have long been an underprivileged minority in Taiwan. TSMC has focused its relief efforts on aboriginal villages to support the government. Our goal is to quickly and effectively find the appropriate roles for government, villagers, and the private sector in building a model of cooperation that will provide long-term support to these villages.

5.4.2 Energy-saving Volunteer and Pursuance of Energy Saving in the Community

Pollution is becoming an increasingly serious issue with the advance of industrialization and technology, causing rapid global warming and triggering natural disasters. Global attention has turned to urgent actions in energy saving and carbon emission reduction.

With rapid global warming and energy consumption, environmental protection and energy conservation has become a concern for everyone. To support environmental protection, the TSMC Foundation has recruited employees with technical knowledge to provide schools in Hsinchu and Tainan with their experience in reducing power consumption. Through inspections
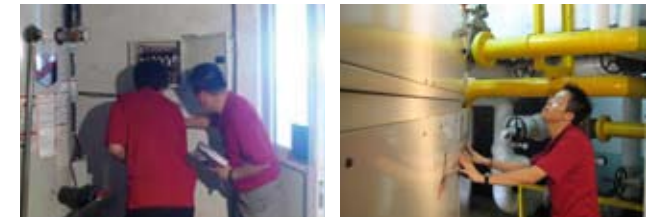
The Energy-saving Volunteers' goal is to convey to high school students concepts and habits to help reduce carbon emissions and to build a better and safer community.

Last semester, the TSMC Energy-saving Volunteer came to NEHS (National Experimental High School at Hsinchu) to assess the cost and effectiveness of our school's power, air conditioning, and telecom. On February 16, the volunteers came back to give a report on the diagnosis. The report states that our school's self-estimated capacity of high-voltage electricity is currently the most cost-effective, however, there is much room for improvement when it comes to saving energy and lowering the costs of electricity bills. Methods to conserve energy include replacing ineffective air conditioners, alternating the use of air conditioners, or turning off lights when leaving the classroom. Most importantly, all students and teachers should strive to be environmentally-conscious and develop energy-conservation habits. The TSMC volunteers' suggestions have been very helpful to the administration and also serve as a useful references in the management of NEHS.

Cited from "the Garden of NEHS"

and communications, the volunteer team offers plans for energy conservation to schools for improving their power efficiency.

The Energy-saving Volunteer was formed in 2008 by 25 TSMC employees. Over some 1,200 working hours of service, the volunteer team has suggested 168 environmental and safety improvements with potential to reduce 360 tons of carbon emissions. The professional service of the team has been much appreciated by schools. In 2009, the service will extend to 5 high schools in Hsin-chu and Tainan.

5.4.3 TSMC Volunteer Guide Program and Promotion of Science Education

To promote science education, the Foundation donated to renovate an exhibition hall in the National Museum of Natural Science (Taichung) and set up an exhibition titled "The World of the Integrated Circuits. We organize employees to serve as volunteer guides at the exhibition on weekends. The volunteer team has continued to grow over the years with the infusion of employee family members and employees of TSMC affiliates. In

Number of TSMC Energy-saving Volunteers since 2008
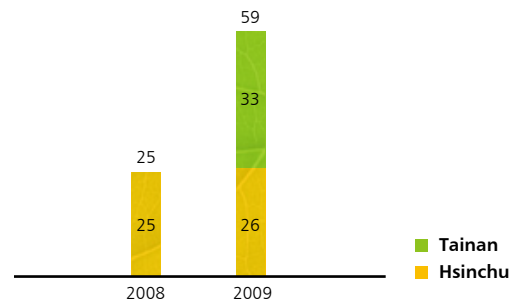
The Services Provided by TSMC Energy-saving Volunteers
1. The evaluation of electricity rates
2. The evaluation of efficiency of air-condition devices
3. The evaluation of telecommunication rates
4. The evaluation of water usage
5. The evaluation of the safety of power usage

2009, 470 volunteer, organized by the TSMC Volunteers Society, continued to devote their time and effort to guide visitors to promote science education.

5.4.4 TSMC Book Reading Volunteer Program and Support for Education of the Underprivileged Students

Beginning in 2003, the Foundation has sponsored the Hope Reading Program organized by the renowned *CommonWealth Magazine*, donating 20,000 books to children in two hundred schools in remote rural areas in Taiwan. In addition to donating

Number of TSMC Guide Volunteers since 2004

books, TSMC employees travel to read stories to the students in remote townships for building their interest in learning. In addition to the regular readings, the volunteers also organizes games or plays during holidays to further encourage children's interest in reading. Volunteers develop the deep friendships with the school children by working with them over the long term. In 2009 alone, TSMC Booking Reading Volunteers dedicated about 1,640 hours to 334 children of five rural schools in Hsinchu and Tainan. TSMC Book Reading Volunteers have served for six consecutive years, and 148 volunteers continue to read to children and help pave the road for their future.

Number of TSMC Booking Reading Volunteers ans Schools since 2004
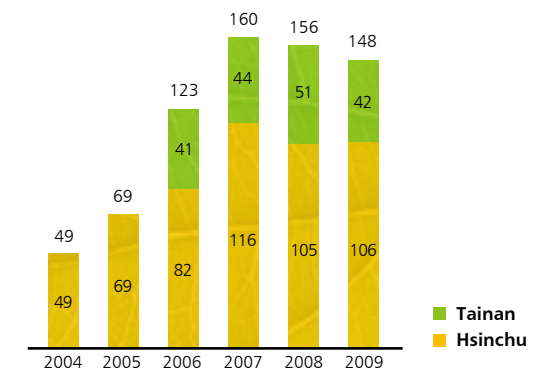
Schools Served by TSMC Books Reading Volunteers

Year	2004-2005	2006	2007-2009
Schools	Jia Hsing Elementary School, Hsinchu County Wufeng Elementary School, Hsinchu County	Jia Hsing Elementary School, Hsinchu County Jin Ping Elementary School, Hsinchu County Sung Ren Elementary School, Tainan County Guang Rong Elementary School, Tainan County	Lu Feng Elementary School, Hsinchu County Jin Ping Elementary School, Hsinchu County Jian Shi Elementary School, Hsinchu County Sung Ren Elementary School, Tainan County Guang Rong Elementary School, Tainan County

ENVIRONMENTAL PROTECTION

TSMC and all its employees acknowledge their responsibility for environmental protection. We not only comply with the environmental regulations of the locations where we operate, but also track new developments in global environmental issues, and take the lead in adopting new environmentally-friendly measures. In addition to protecting the environment of our manufacturing sites in Taiwan and around the world, we lead our suppliers to establish a green supply chain. TSMC actively seeks to raise the environmental consciousness of all employees, and through social engagement and dialogue with industries, we encourage the industry to contribute to the environment of the globe.

Major environmental protection activities in 2009 included: (1) continuation of our green building project for new fabs: TSMC's newly-constructed Fab12 Phase 4 won "diamond" level certification in Taiwan's Ecology, Energy Saving, Waste Reduction, Health (EEWH) and U.S. Leadership in Energy and Environmental Design (LEED) "gold" level certification; (2) initiated and led the semiconductor industry and supply chain to complete the "Integrated Circuit Product Category Rule (IC PCR), and gained "Type III Environmental Product Declaration (EPD)"

certification and "Taiwan Electrical and Electronic Manufacturers' Association (TEEMA) carbon footprint" certification; (3) led and assisted major suppliers in Taiwan to establish their ability for greenhouse gas (GHG) inventory, and completed GHG inventory and registration; (4) expanded the environmental audit scope to local parts cleaning contractors, and assisted them to improve environmental competence and performance; (5) actively participated in discussions with government on setting regulations as well as experience sharing on environmental protection and social responsibility among industries.

We also set our green targets for 2010 as below:
- Greenhouse gas emissions reduction: (1) Reduce perfluorinated compounds (PFCs) emissions to 10% below the average emission level of 1997 and 1999. (2) Reduce PFC emissions of newly constructed fabs by at least 90% through treatment.
- Waste reduction: (1) Maintain a waste recycling rate of greater than 90% for operational fabs. (2) Maintain a waste recycling rate of greater than 90% for construction waste.
- Energy conservation: Reduce power usage intensity to 92% of year 2009.
- Water conservation: Reduce water usage intensity to 92% of year 2009.
- All new fabs to gain green building certification.
- Continue investing in green energy businesses.

6.1 Green Management Organization and System

TSMC's environmental, safety, and health (ESH) management organization is divided into the central planning unit, the Operational Organization Technical Board, and the designated department in each fab, which have defined responsibilities and operate in cooperation. The Risk Management and

Corporate ESH Division (RMESHD) is responsible for ESH policies, establishing standards, auditing, and external activities with suppliers, customers, the community and governmental authorities. The Operational Organization Technical Board is in charge of integrating the standards and procedures for fab operation and tracking the status of execution. Fab directors are responsible for fab ESH. The on-site ISEP departments are

in charge of planning, supervising, implementing the ESH operations of each fab, and participating in external audits for high-risk operation contractors. The ISEP departments report to fab directors and must identify ESH risks of daily operations, plan for environmental management programs, and submit annual environmental goals. The fab directors host monthly ESH committee meetings, and also host annual management review meetings to ensure the achievement of continuous improvement goals.

TSMC EHS Organization Chart
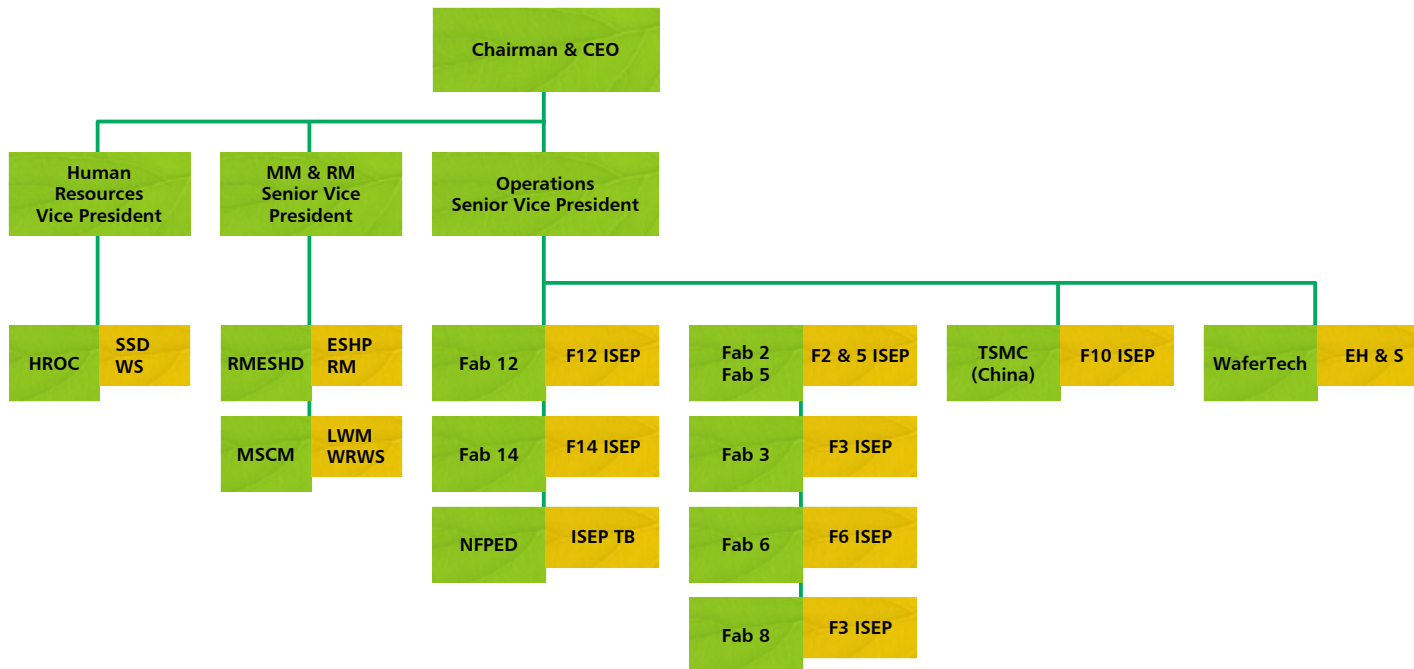
ESHP: Environment, Safety & Hygiene Strategic Planning
FAC: Facility Department
HROC: Human Resources Operations Center
ISEP: Industrial Safety and Environmental Protection
ISEP TB: Industrial Safety and Environmental Protection Technical Board
LWM: Logistics & Warehouse Management Department
MSCM: Material Supply Chain Management Division
NFPED: New Fab Planning and Engineering Division
RM: Risk Management
RMESHD: Risk Management & Corporate ESH Division
SSD: Shared Service Department
WRMS: Waste Resources Management Section
WS: Wellness Section

6.1.1 ESH and Hazardous Substance Management System Certificates

All TSMC manufacturing facilities in Taiwan, China, and United States have received ISO 14001 certification for environmental management systems, OHSAS 18001 for occupational safety and health, and QC 080000 certification for hazardous substance management systems, and new facilities will be certified as well. In line with ISO 14001 and OHSAS 18001's concept of continuous improvement, TSMC diligently carries out its responsibilities of pollution prevention, energy and resource conservation, waste reduction, accident prevention, and establishment of a safe and comfortable work place. By practicing QC 080000 for hazardous substance management, TSMC ensures its processes and products comply with the requirements of the Stockholm Convention. TSMC continues to identify ESH risks, drafting feasible control measures and carrying them out to reduce ESH and hazardous substance risks.

In 2009, TSMC all fabs in Taiwan were certified by the Taiwan Occupational Safety and Health Management System (TOSHMS), which is not only valid for Taiwan but also compatible with global safety and health management systems.
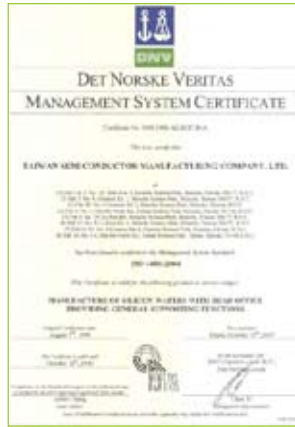
ISO 14001 Certificate

OHSAS 18001 Certificate

TOSHMS Certificate

QC 080000 Certificate

6.1.2 Environmental Accounting

Environmental accounting categorizes a company's environmental costs, and is useful in implementing cost-efficient environmental programs and aiding external communication about environmental efforts. Environmental costs are often hidden in normal expenses and can be difficult to identify; for example, maintenance fees for environmental equipment are often categorized as production equipments costs, and the cost of management, such as certification or salaries of environmental protection staff is often neglected. Environmental accounting is necessary for collecting accurate information on environmental costs.

TSMC established its environmental accounting system in 2002 and integrated environmental accounting practices with the Environmental Management System (EMS) in 2003. The integrated system not only helps each fab to implement environmental management programs, but also evaluates their economic efficiency at the same time. In addition, each department has improved their performance in using correct environmental account codes for annual budget planning, enhancing the accuracy of future statistics. In 2009, the total benefit for promoting environmental management programs, including waste recycling and industrial waste reduction, amounted to NT$66 million. Environmental accounting has helped TSMC assure that environmental protection measures also produce major economic benefits. In 2009, the ISEP Technical Board conducted an environmental accounting project, which identified discrepancies in data collection and developed training materials for responsible personnel to minimize discrepancies in future environmental accounting statistics. This helps responsible environmental personnel become more familiar with environmental accounting and make them more aware of environmental protection goals.

In 2009, the benefits from environmental programs and waste minimization totalled NT$66.2 million. Environmental accounting allows TSMC to ensure that environmental protection also yields economic benefit.

TSMC's environmental expenditure in 2009 was approximately NT$3.2 billion.

TSMC 2009 Environmental Cost

Unit: NT$ thousands

Classification	Description	Investment	Expense

1. Direct cost for reducing environmental impact
   (1) Pollution Control
 	
   (2) Resource Conservation
   (3) Waste Disposal and Recycling
	Fees for air pollution control, water pollution control, and others.
	Costs for resource (e.g. water) conservation.
	Costs for waste treatment (including recycling, incineration and landfill)
		1,338,451
		
		390,887
		0
			1,243,768
			
			15,883
			85,134

2. Indirect cost for reducing environmental impact (managerial cost)	(1) Cost of training (2) Environmental management system and certification expenditures (3) Environmental measurement and monitoring fees (4) Environmental protection product costs (5) Environmental protection organization fees	46,323	91,634
3. Other environment-related costs	(1) Costs for decontamination and remediation (2) Environmental damage insurance and environmental taxes (3) Costs related to environmental settlement, compensations, penalties and lawsuits	0	0
4. Total		1,775,661	1,436,419

TSMC's environmental efficiency in 2009 was approximately NT$66.2 million.

TSMC 2009 Environmental Efficiency

Unit: NT$ thousands

Items	Description	Efficiency
Recycling of industrial waste	Recycling of waste pallets, packaging materials, wafer boxes, wafers, computers and accessories, fluorescent lamps, metals, empty toner cartridges, and other waste	66,200

6.2 Climate Change and Greenhouse Gas (GHG) Reduction

Global climate change is a major environmental concern for TSMC, and TSMC continuously monitors global climate change and international response trends as part of enterprise risk management decision-making. The U.N. Intergovernmental Panel on Climate Change (IPCC) has declared that greenhouse gas emissions are the primary cause of global climate change, which may have a catastrophic impact on the world economy and human life. TSMC is dedicated to reducing not only its own carbon emissions, but to serving as a benchmark in environmental protection by leading our supply chain members and sharing experience in emission reduction with other industries. TSMC also actively provides recommendations to the government, and assists them in making feasible and effective regulations.

TSMC acknowledges that, as a member of the global village, it is necessary to reduce the GHG emissions of our facilities. Besides continued energy conservation to reduce indirect CO_2 emissions, TSMC also spends funds and manpower to conduct reduction programs for GHG used in manufacturing processes. At the same time, we offer a wide variety of environmental protection training courses and promotional programs encouraging all employees to conserve energy and protect the environment in their daily life.

TSMC's past climate change strategy was to actively carry out energy conservation measures, implementing voluntary PFCs emission reduction projects, and conducting GHG inventories and verification every year. In 2008, we adopted climate change as a major Enterprise Risk Management (ERM) item to be evaluated and controlled, with regular reviews by senior executives and the Board of Directors.

Carbon Disclosure Project (CDP)

TSMC takes a pro-active attitude towards carbon disclosure, and has publicly disclosed climate change information every year since 2005 through participation in an annual survey held by the nonprofit Carbon Disclosure Project (CDP), which includes the greenhouse gas emission and reduction information for all TSMC fabs, subsidiaries, joint-ventures and overseas offices. TSMC also takes further action to review the regulatory, natural disaster, financial, and operational risks and opportunities created by global climate change. The greenhouse gas emission information includes: 1) direct emissions from facilities, 2) indirect emissions from external procurement for power and steam, and 3) indirect emissions from suppliers, employee business travel and product transportation. The related information is disclosed on the CDP website (https://www.cdproject.net/en-US/Pages/HomePage.aspx).

In addition to the carbon disclosure information in the CDP and this report, TSMC also reports its greenhouse emission and reduction information through the Electronic Industry Citizenship Coalition (EICC) carbon reporting web-based system, and provides related information to customers according to their requests to assist them in establishing their product carbon footprint.

6.2.1 Greenhouse Gas Inventory

Reducing GHG emissions is a key method for mitigating global warming and climate change, and conducting an inventory provides supporting data for reduction. An accurate inventory allows us to set priorities and reduction goals, raise the efficiency of the reduction process, and confirm reduction results. TSMC believes that a company must know its actual GHG emissions as the first step toward energy conservation and carbon reduction and make this reduction an important item in establishing a green supply chain. All these efforts have become a key concern for government, domestic and international environmental
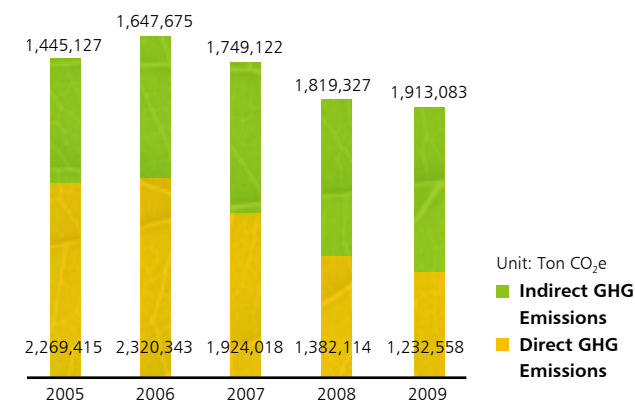
groups, major investors, and customers. Therefore, we believe it is better to take greenhouse gas inventory as early as possible.

In 2005, TSMC was the first semiconductor company in Taiwan to make a thorough inventory of GHG emissions and to receive official certification. The purpose of the inventory was to serve as a reference for TSMC's GHG reduction strategy, to enable us to respond to investors' and customers' inquiries, to prepare for future carbon dioxide trading and corporate carbon asset management, and to meet future domestic regulatory requirements. We distributed inventory information to related departments in order to build a basic understanding and common language to build consensus for later environmental protection activities.

In 2006, the Taiwan Semiconductor Industry Association (TSIA) began a GHG inventory project for all members, including TSMC. This project followed the ISO 14064-1 standard to conduct a GHG inventory for 2000 to 2008, and acquired verification by an accreditation agency. TSMC will use these established systems to coordinate with the Taiwan Environmental Protection Agency (EPA) and TSIA to update GHG inventory data and proceed with third party verification. TSMC (China) and WaferTech have also adopted the same methodology for their GHG inventory.

TSMC's GHG emissions can be categorized into direct and indirect sources. Direct emissions include process gases (PFCs, N_2O, CH_4 and CO_2), fuel such as natural gas, LPG (Liquefied Petroleum Gas), gasoline and diesel used for boilers, power generators, vehicles, fork lifts and kitchen stoves, as well as fugitive emissions from septic tanks and fire fighting equipment. Indirect sources include purchased electricity, product and raw material transportation, suppliers' manufacturing, employee business travel, waste disposal and employee commuting (note: purchased electricity is the only source of indirect emissions included in this report). Annual GHG inventories for TSMC fabs in Taiwan are as below.

TSMC GHG Emissions

Unit: Ton CO_2e
- ■ **Indirect GHG Emissions** (green)
- ■ **Direct GHG Emissions** (yellow)

Year	Indirect GHG Emissions	Direct GHG Emissions
2005	1,445,127	2,269,415
2006	1,647,675	2,320,343
2007	1,749,122	1,924,018
2008	1,819,327	1,382,114
2009	1,913,083	1,232,558

The U.S. EPA Climate Leaders program (http://www.epa.gov/climateleaders/) held an onsite review at WaferTech in early 2009 to finalize its GHG inventory. WaferTech is working on a reduction goal of 20% by 2017 to submit to the EPA.

Because WaferTech was not yet manufacturing in the baseline year of 1997, it is not participating in the U.S. SIA voluntary reduction program. WaferTech is participating in weekly meetings and will be submitting its emission inventory for 2009 in preparation of being part of the next 10-year commitment.

WaferTech is actively tracking regulatory activities in the United States and the State of Washington related to greenhouse gases. The State of Washington has finalized a reporting rule, which requires WaferTech to submit 2009 GHG emissions in 2010. At this time, there are no federal requirements. A federal reporting rule is expected soon.

TSMC (China) GHG Emissions

119,949
129,699
104,072
124,715
81,232

Unit: Ton CO$_2$e
- 🟩 Indirect GHG Emissions
- 🟨 Direct GHG Emissions

| 41,521 | 82,595 | 131,901 | 111,274 | 77,185 |
| 2005 | 2006 | 2007 | 2008 | 2009 |
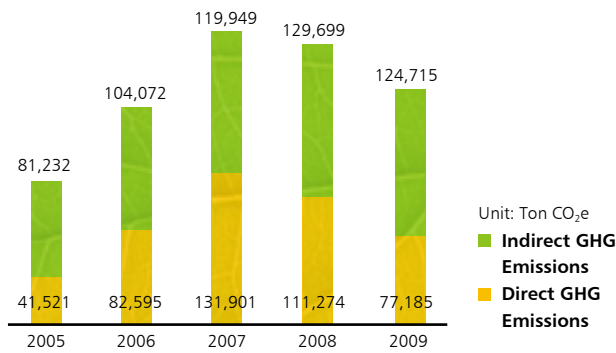
WaferTech GHG Emissions

15,565
15,842
15,497
14,652
15,011

Unit: Ton CO$_2$e
- 🟩 Indirect GHG Emissions
- 🟨 Direct GHG Emissions

| 192,353 | 231,758 | 211,003 | 190,844 | 167,247 |
| 2004 | 2005 | 2007 | 2008 | 2009 |
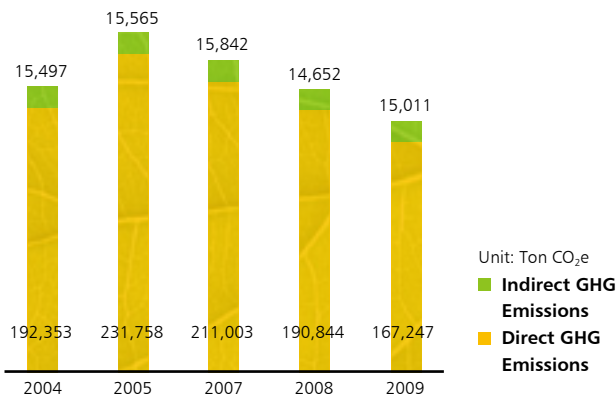
6.2.2 GHG Emission Reduction

PFCs Emission Reduction

In response to the GHG emission reduction requirements of the Kyoto Protocol, many developed countries have set reduction goals. Taiwan is not a UN member and cannot ratify the Kyoto Protocol. However, the Taiwan government is actively establishing related regulations and reduction goals. In addition, many corporations in Taiwan have decided to voluntarily lower GHG emissions to act as good global citizens.

TSMC is committed to environmental protection, actively participates in international environmental protection programs, and conducts energy conservation to reduce indirect carbon emission. In particular, TSMC takes active measures to reduce direct greenhouse gas emissions. The semiconductor manufacturing process generally uses perfluorinated compounds (PFCs) such as CF_4, C_2F_6, SF_6, NF_3, CHF_3, C_3F_8, and C_4F_8. TSMC and the TSIA have signed a memorandum of understanding with the World Semiconductor Council and the Environmental Protection Agency of the Executive Yuan of the R.O.C. respectively to set a PFCs emission reduction policy and implementation plan. Under the plan, TSMC voluntarily commits to reduce PFCs emissions to 10% below the average emission level of 1997 and 1999 by 2010. This emission target remains fixed as TSMC continues to grow and const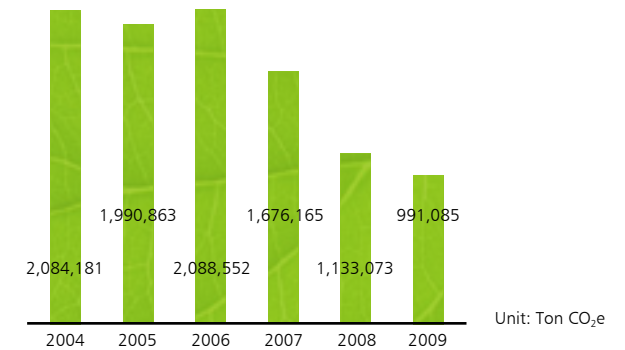ruct new fabs. We have achieved significant results in the past several years and we expect to reduce more than 70% of PFCs emissions and to reach our target as scheduled. TSMC's emissions reduction strategies are as follows:

- Accurate measurement of PFCs gas production by chemical vapor deposition (CVD) process equipment and effectiveness of PFCs treatment equipment to calculate actual emission coefficients and volume of PFCs emitted.

- Evaluation of the feasibility of using low greenhouse gas emission gases to replace higher-emission gases, such as C_3F_8 and NF_3 as cleaning gases during the CVD process. Respectively, 97% and 100% of these projects were completed in 2009. In 2009, WaferTech installed a C_3F_8 delivery system. Seven CVD tools were connected to the C_3F_8 delivery system during the fourth quarter of the year. Additional CVD tools will be connected to the C_3F_8 delivery system in 2010. WaferTech plans to qualify three tools to use NF_3 in 2010.

- To evaluate and make effective use of combustible and catalytic PFCs abatement systems. TSMC will install the systems from 2008 to 2010; installation was 33% complete at the end of 2009. TSMC will do its best to install the remaining PFCs abatement systems in 2010.

After achieves its PFCs reduction goal in 2010, TSMC will continue to the reduction measures above and evaluate new approaches to reducing carbon emissions.

TSMC PFCs Emissions

1,990,863
1,676,165
991,085
2,084,181
2,088,552
1,133,073

Unit: Ton CO$_2$e

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |

TSMC GHG Reduction

| 2004 | 2005 | 2007 | 2008 | 2009 |

Unit: Ton CO$_2$e

-288,020
-367,174
-762,554
-1,006,694
-1,107,145
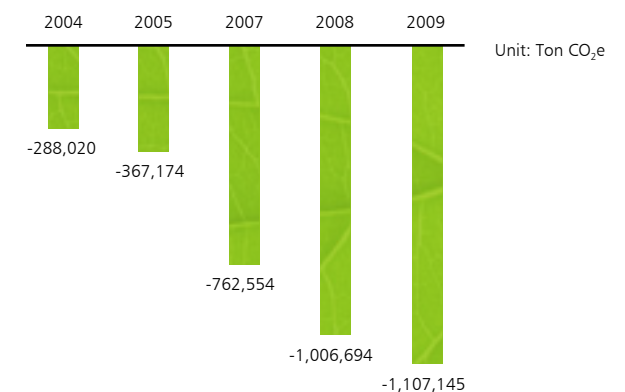
Energy Conservation

TSMC's primary source of energy is electric power, followed by natural gas. Consumption of other types of energy is negligible. As Taiwan's electric power comes primarily from coal and gas-fired generators, which emit large amounts of CO_2, energy conservation is an important part of CO_2 emission reduction for industries in Taiwan. TSMC has consistently promoted energy conservation at all its facilities, reducing CO_2 emissions while saving costs at the same time.

TSMC uses energy-conserving designs when building new fabs, and continues to implement energy-saving activities on production equipment in operation. Although energy-saving efforts in office areas make a smaller impact than conserving energy used in production, TSMC puts great effort into such programs because we believe they can raise employees' awareness of environmental protection. TSMC manages its conservation performance through an energy management organization and energy audit measures.

TSMC has made significant achievements in its many years of energy conservation at all fabs. If 2003 is taken as a baseline for power consumption per 8" equivalent wafer, we have reduced electricity consumption by an estimated 780M KWH per year, enough to power a city of 100,000 people for one year, and equivalent to 500,000 tons of CO_2 emissions.

TSMC Energy Saving Measures

Energy-saving measures are integrated in TSMC fabs at the design phase, including adoption of heat recovery chiller systems, a mini-environment design for cleanrooms, dual-temperature chilled water systems to enhance the efficiency of heat exchange, inverters in air conditioning, exhaust and process cooling water systems, Variable Air Volume (VAV) controls in office air-conditioning systems, selection of high-efficiency

electrical equipment (Offline UPS, lighting), optimization of natural lighting and ventilation in office buildings, and adoption of natural gas instead of diesel in VOC abatement and boiler systems. In 2009, we also joined the Ministry of Economic Affairs Bureau of Energy's Energy Service Company (ESCO) project, and adopted heat pump and compressed dry air for energy saving.

Advanced Energy Saving Heat Pump

Energy Saving Compressed Dry Air System

At the operational stage, the energy-saving measures of TSMC fabs include: heat exchange of cleanroom makeup air and indoor exhaust temperature; reduction of cleanroom outdoor air leakage; process tool exhaust reduction and enhancing the operating efficiency of energy equipment, for example: optimizing the operation mode of chiller machines, replacing purge-type compressors with heating-type compressors, and using heat pump systems. A dedicated TSMC team communicates with employees through our internal website and through promotional posters to help workers develop energy-saving habits such as lighting reduction in office areas and saving energy by placing computers in standby mode.

In 2009, TSMC's Fab 12, Phase 4, facility based in Hsinchu Science Park, Taiwan won certification from the U.S. Green Building Council's Leadership in Energy and Environmental Design – New Construction (LEED NC) green building rating system with a "gold class" score. It follows TSMC's Fab 14, Phase 3 in winning U.S. Green Building Council certification.

Power Consumption Records

TSMC reduced average power consumption per 8" equivalent wafer from 480 KWH in 2003 to 379 KWH in 2009, continuing our gradual reduction in energy consumption.

Power Consumption
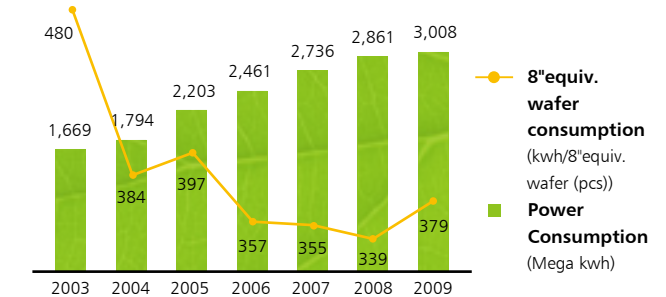
Natural Gas Consumption Records

TSMC's natural gas is mainly used for boilers and organic adsorption treatment systems, and its usage is adjusted for optimization. TSMC reduced average natural gas consumption per 8-inch wafer from 3.0NM³ in 2003 to 1.9NM³ in 2009, also extending a gradual reduction.

Nature Gas Consumption
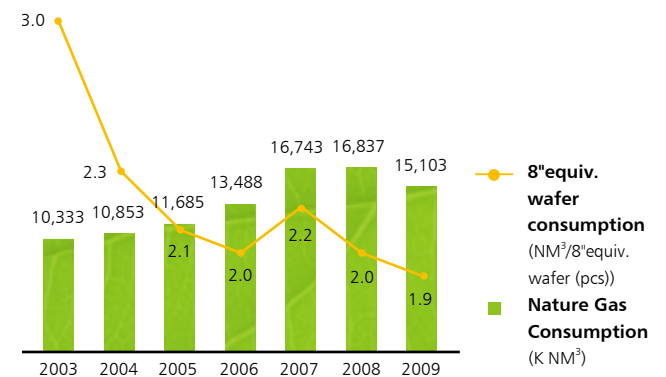
A total of six of TSMC's seven fabs in Taiwan have won the Ministry of Economic Affairs' "Energy Conservation Award".

TSMC (China) Energy Saving Measures
- Natural gas reduction: changed by-pass flow control mode, decreased UPW pre-heating temperature presets, shut down idle VOC equipment, reduced local scrubber natural gas consumption, and reduced kitchen waste by sharing expenses. These measures cut natural gas consumption by $1,122,263m^3$ each year, reducing CO_2 discharge by 2,345.5 tons per year.
- Green lighting improvement: changed conventional T8 tubes to T5, which cut power consumption 1,995,798 kwh each year and reduced CO_2 discharge by 1,761.3 ton per year.

6.3 Green Building

Company-wide Initiative

Experts estimate that building-related activity accounts for more than 40% of carbon emissions. Many countries, such as the United States, advocate green buildings as one of the main methods for conserving energy and reducing carbon emissions. TSMC initiated a "green factory" program in 2006 to improve environmental performance and health. The program covers design and construction of new fabs, enhancement of existing fabs, internal training, and encouraging partners to gain "green building" certification. To reach our targets, TSMC established a Green Building Task Force, which will certify new fabs and existing office buildings according to the U.S. Leadership in Energy and Environmental Design (LEED) standard and Taiwan's Ecology, Energy Saving, Waste Reduction, Health (EEWH) standard. In 2008 and 2009 respectively, TSMC's newly-constructed Fab14 Phase 3 and Fab12 Phase 4 won EEWH diamond level and LEED gold level certification. For this project, TSMC invited Dr. Kath Williams, former vice president of the United States Green Building Council (USGBC) to serve as a consultant, and also consulted experts from leading Taiwan universities.

TSMC believes that more companies must build green factories to effectively improve the environment and lower construction costs. Therefore, we freely share our practical experience with industry, government, and academia. In 2008, TSMC held its "2008 TSMC Green Forum" and invited Architecture and Building Research Institute (ABRI), Dr. Kath Williams of the U.S. Green Building Council, National Cheng Kung University (NCKU), National Taipei University of Technology (NTUT), AU Optronics (AUO) and China Steel Corporation to share their experiences.

Integrating industry, government, and academia in setting standards for green factories is an important part of guiding industry toward "total green management". In 2009, ABRI gave its support to TSMC, The South Taiwan Science Park Administration, NCKU, NTUT, Delta Electronics, AUO, Chimei Optoelectronics and United Microelectronics Corp. in a joint initiative to establish a "Green Factory Standard". We also extended this program to work with the Ministry of Economic Affairs Industrial Development Bureau to establish a "Green Technology Factory Standard" to provide a challenging, differentiated, and practical performance index that can be revised and applied to other industries.

2008 TSMC Green Forum

Achievements of TSMC's Green Building Program

Green buildings and their facilities aim to reduce the ecological damage of construction, operation, and dismantling by reducing consumption of scarce resources and decreasing harmful emissions. Green buildings seek to achieve a balance between cost and environmental protection through green design and environmentally friendly construction procedures, lowering energy and water consumption to improve operation cost, and reducing waste production and emissions of greenhouse gases to provide a healthy and comfortable environment. These concepts are already broadly used in the construction of factories, shopping centers, offices, hospitals, and schools and can be applied to construction, remodeling, and interior design.

Both the U.S. LEED and Taiwan's EEWH are aimed at improving a site's sustainability, enhancing resource recycling and water conservation, raising energy efficiency and reducing impact on the environment. TSMC has gained the following ten capabilities since beginning its green building program:
- Building energy use simulation and conservation analysis
- Vegetated roofs and use of high-reflectance roofing materials
- Use of glass curtain walls, evaluation of sunlight and heat transmission for energy savings
- Use of daylight and energy-saving lighting
- Integrating the control of lighting and air conditioning
- Recycling and reusing low temperature condensate for outside air conditioning systems, and reusing energy from reheating coils
- Integrating renewable energies
- 95% recycling ratio of construction waste
- Reusing energy recycled from hot gas exhaust
- Recycling water from rainfall and sewage

TSMC Fab 14 P3 Green Building

TSMC Fab 12 P4 Green Building

EEWH Diamond Level
Certificate

LEED Gold Level Certificate

Fab 14/Fab 12 "Green Building" Project
TSMC's Fab 14 Phase 3 and Fab 12 Phase 4 respectively gained LEED NC (New Construction) gold level as well as EEWH diamond level certification in 2008 and 2009.

TSMC has taken the following measures to meet various LEED and EEWH requirements:

- Sustainable Site: providing construction pollution prevention plans; evaluating site conditions; evaluating development density and community connectivity; installing bicycle parking and changing rooms; providing parking space for carpools and vanpools; cultivating domestic plants; ensuring that post-development water permeability of the site was greater than pre-development; moving all parking spaces underground; using high-reflectance roofing materials; and planting vegetated roofs
- Energy and Atmosphere: simulating and optimizing buildings' energy performance; confirming that HVAC systems use no CFCs; enhancing refrigerant and firefighting CFC management; using green power such as solar energy and wind power; achieving energy efficiency 20% higher than standards set by The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- Water Efficiency: using only recycled rainwater for irrigation and increasing sewage (kitchen and toilet) equipment efficiency by 30% through use of high-efficiency fixtures; future operation process water recycling rates are expected to exceed 90%
- Materials and Resources: classifying and appropriate storage of wastes; establishing collection points for recyclable materials; reducing construction waste by 95% by reusing construction materials; using local materials
- Indoor Environmental Quality: use of HVAC system meeting

ASHRAE 62.1-2004 IAQ standard; forbidding indoor smoking; locating smoking space away from building openings (entrance, outdoor air intakes, operable windows); monitoring CO_2 concentrations within all densely occupied spaces; increasing outside air ventilation rates; developing and implementing indoor air quality management plans in the construction and pre-occupancy phases; using low-emission materials; controlling indoor chemical and pollutant sources; controlling lighting, temperature and humidity; investigating thermal comfort satisfaction

TSMC hopes that its efforts to build and promote green buildings will encourage the industry to take conservation and pollution reduction into consideration when building new fabs to reduce both damage to the environment and waste of resources, and to leave a better future for generations to come.

6.4 Green Product

6.4.1 Product Life Cycle Assessment
As the concept of sustainable development gains acceptance, product environmental impact evaluation has taken a more comprehensive approach of examining product life cycles, including raw material mining, transportation, product manufacturing, use, and disposal to thoroughly evaluate environmental impact. A product life cycle assessment can produce dramatically different results from a traditional product environmental impact analysis for products that would have relatively little environmental impact in the production or disposal stage, but a large impact in other stages. The results of product life cycle assessment can serve as a reference to consumers and also to enterprises on environmental concerns for procurement and production.

TSMC strives to produce green products, and cooperated with the Industrial Technology Research Institute (ITRI) for a "Product Life Cycle Assessment (LCA) Project" on wafer production in 2002, using ITRI's Do-It-Pro model to analyze data such as energy, raw materials consumption, and pollutants from the entire manufacturing chain, starting from raw materials to shipment from TSMC. TSMC has completed "Eco-profiles" for all TSMC fabs in Taiwan, which will help the company meet regulations such as the European Union's "Energy-Using Product" directive. These Eco-Profiles can also be provided to customers who require such documentation.

Product life cycle data shows that water is the most heavily consumed raw material for TSMC and its suppliers, followed by air, coal, and petroleum. Air is considered a renewable resource and effectively inexhaustible. According to a weighted analysis, the most significant environmental impact of wafer manufacturing is water consumption, followed by energy consumption, aquatic toxicity, and the greenhouse effect. The LCA results helped TSMC to recognize the importance of water resource and energy conservation and waste reduction, and to place these as the first priority for environmental protection, achieving significant results.

In 2009, TSMC collaborated with its assembly partner, Advanced Semiconductor Engineering Group (ASE) to lead semiconductor companies to complete the world's first Integrated Circuit Product Category Rule (IC PCR). This IC PCR follows ISO 14025 standards, and addresses the unique nature of semiconductor manufacturing. It was compiled based on input from major semiconductor companies around the world. The content of the IC PCR covers energy and water consumption, pollutant production, waste production, air pollution, carbon footprint, and other factors. It can act as a reference for global

semiconductor companies when completing an Environmental Product Declaration Type III (EPD), and also support the global electronics supply chain in meeting requirements from Wal-Mart, the world's largest retailer, for all suppliers to provide eco-labeling within 5 years.

TSMC obtained a Carbon Footprint Certification from TEEMA

Also in 2009, TSMC and ASE followed this IC PCR to complete an EPD Type III for integrated circuits and obtained a Carbon Footprint Certification from the Taiwan Electrical and Electronic Manufacturers' Association (TEEMA), taking a major step forward in manufacturing low-carbon products.

6.4.2 Design for Low Power Consumption and Green Products

"Green Products" are environmentally friendly products that conserve energy, have no or low toxicity, and can be recycled. As a major wafer foundry, TSMC provides power-efficient design platforms to its customers. Using such design platforms,

TSMC's customers can develop energy-saving products to be manufactured by TSMC. TSMC cooperates with a third-party IP partner to integrate their patented energy-saving technology and TSMC's advanced manufacturing technology to provide a "Power Trim Service" to our customers.

In 2009, TSMC unveiled Reference Flow 10.0, the latest version of its industry-leading design methodology to introduce System-in-Package (SiP) design solutions for the first time, and continues to drive differentiated features in power, performance and Design for Manufacturing (DFM) of 28nm process technology. In addition, TSMC continues to cooperate with customers to develop advanced semiconductor technology, and to integrate more functions into smaller chips, speeding up the expansion of wireless communication products in new markets, and allowing next-generation mobile communication products to provide more powerful functions and lower energy consumption.

6.4.3 Hazardous Substance Restriction Management

QC 080000 Hazardous Substance Process Management System Hazardous substances in products threaten the environment as well as human health, and are a major concern to global consumers and governments. International regulations such as RoHS (Restriction of Hazardous Substances), PFOS (Perfluorooctane Sulphonate), ODS (Ozone Depleting Substances), Halogen, and others focus on hazardous substances in electric and electronic end products, but do not detail how a corporation can become "hazardous substance free". To offer guidance, the International Electrotechnical Commission (IEC) Quality Assessment System for Electronic Components (IECQ) developed the QC 080000 hazardous

substance process management system based on the ISO 9001 framework. QC 080000 establishes a hazardous substance management mechanism for all operational procedures, such as R&D, procurement, outsourcing, production, and testing to help companies become "hazardous substance free".

As a leader in semiconductor manufacturing and services, and to meet our corporate social responsibilities, TSMC began to implement the QC 080000 hazardous substances process management system in 2005, and in June 2006 became the first semiconductor company to earn certification for one of its fabs. TSMC's U.S. fab, WaferTech, obtained certification in September 2006, and all TSMC fabs including TSMC (China) were certified for QC 080000 by July 2007. In addition, TSMC has also shared its QC 080000 policies and experience with affiliated companies, and requested those using critical substances receive QC 080000 certification. So far, Vanguard International Semiconductor, ASE, Siliconware Precision Industries Ltd, SSMC in Singapore, and STATS ChipPAC in Korea have all received QC 080000 certification. All TSMC fabs in Taiwan and overseas, as well as major subcontractors, are QC 080000 certified.

By practicing QC 080000, TSMC not only ensures that products comply with the EU Restriction of Hazardous Substance (RoHS), Perfluorooctane Sulfonates (PFOS), Ozone Depletion Substance (ODS), Halogen free regulations, we are also able to better understand and implement new regulations and customer requirements. TSMC monitors international regulation trends and has listed the EU REACH (Registration, Evaluation and Authorization and Restriction of Chemicals) SVHC (Substance of Very High Concern) in TSMC green procurement procedures, including 14 newly announced SVHCs in 2010. TSMC also collaborates with other semiconductor companies in a project by the TSIA (Taiwan Semiconductor Industry Association) to monitor future EU RoHS revisions. As TSMC and its supply chain partners are all compliant with QC 080000 in hazardous

substance management, all TSMC products meet international hazardous substance-related restriction directives such as EU RoHS, PFOS, ODS and Halogen free.

6.4.4 Product Packing Materials Reduction
TSMC uses recyclable plastic and paper as packing materials for shipping products. These packing materials comply with EU regulations requiring lead, cadmium, mercury and chromium (IV) concentration of less than 100 ppm, and also contain no polyvinylchloride (PVC).

TSMC recycles packing materials from products shipped to customers and testing and assembly facilities for reuse after cleaning. Packing materials from raw wafers are also reused in product shipping, reducing both packing material consumption and waste generation.

6.5 Water Resource Management
As global climate change becomes more severe, development and allocation of water resources has become a key issue in many countries. It is particularly vital in Taiwan, a highly industrialized and densely populated island with mountainous terrain that does not retain water easily. Development of water resources and balancing ecology with the economy has become an important issue for both government and the private sector.

Our first principle of water use is reduction, followed by recycling. TSMC recognizes that water resources are limited, and new factories will be subject to environmental impact assessments. TSMC therefore promotes water saving programs and recycles as much as cost allows.

TSMC's sole source of water is the Taiwan Water Corporation. In addition to water use reduction, TSMC works with the local water utility and other semiconductor companies through the

Ultra Pure Water System

Association of Science Park Industries to improve the quality of the water supply. Together, we have successfully resolved many issues, including Total Organic Carbon (TOC) contamination, water dam eutrophication research, and others.

6.5.1 Water Conservation and Recycling Status
Internal Water Saving Status
Taiwan has limited water resources, and in addition to government efforts to develop water resources, TSMC also promotes many water conservation practices to continually reduce water net usage. The primary method of reducing net water usage is to raise the efficiency of process equipment in using ultrapure water by adjusting its operation parameters. The secondary method of raising our water-recycling rate is water quality categorization management, followed by innovative process wastewater recycling technology.

TSMC's facilities collect process water discharges through independent drainages, and reuse the water for the manufacturing process or secondary uses. These secondary uses, which do not come into human contact, include cooling tower make-up water, wet scrubber make-up water, cleaning water for sludge de-watering filter in wastewater treatment systems, or toilet water. Secondary uses of water are also optimized to reduce make-up water quantity.

TSMC also works with industry experts continually to implement new technology for water reuse, such as reclaiming slurry wastewater into ultrapure water systems, and adopting reverse osmosis and Electro Dialysis Reversal to reclaim wastewater containing fluorine.

We also regard rainwater as a precious resource. TSMC modified existing rainwater drainage systems to collect about 32,000 tons of rainwater for reuse every year. Since 2008, process water recycling rates for some TSMC fabs have reached higher than 90%, leading the global semiconductor industry, while the total average process water recycling rate was 83% in 2009, meeting or exceeding standards set by the Science Park Administration, and also exceeding the worldwide semiconductor industry standard.

The major water saving approaches are:
- Optimization of water usage for process tools, air pollution control wet scrubbers, cooling towers, ultrapure water systems, and wastewater systems
- Installation of organic/acid water recycling systems, separated collection according to water quality, recycling water to ultra-pure water systems or secondary uses such as cooling towers
- Installation of general and copper-containing CMP wastewater recycling systems, recycling wastewater to ultra-pure water systems or secondary water use
- Installation of wet scrubber water recycling systems to recycle wet scrubber effluent after treatment
- Recycling of air conditioning condensation for cooling tower use
- Establishment of rainwater storage system on roofs to supply plant irrigation systems, toilets, and wet scrubber water use
- Use of water saving faucets for employees
- 100% use of recycled water for toilet flushing
- Controlled water use for external wall cleaning and irrigation to avoid unnecessary water use

TSMC Water Conservation Performance

Item	2005	2006	2007	2008	2009
Average process water recycling rate (%)[1]	76%	79%	82%	84%	83%
Water saved (10,000 tons)	1,849	2,144	2,314	2,637	2,689
Water saved, measured in standard swimming pools[2]	7,396	8,575	9,255	10,549	10,758
Water saved, measured in the full capacity of Paoshan Reservoir[3]	3.46	4.01	4.32	4.93	4.98

Note:
1. Average process water recycling rate is defined by the Science Park Administration.
2. A standard 50x25x2m swimming pool contains up to 2,500 tons of water.
3. Paoshan Reservoir is the major reservoir that supplies water to Hsinchu Science Park. The full capacity of Paoshan Reservoir is 5.35 million tons.

Water Usage

Normalized index (Ton/waferout cm^2): 0.00753 (2004), 0.00794 (2005), 0.00701 (2006), 0.00689 (2007), 0.00619 (2008), 0.00656 (2009)

Usage (Ton): 11,003,890 (2004), 13,828,708 (2005), 15,158,176 (2006), 16,696,422 (2007), 6,429,002 (2008), 16,371,402 (2009)
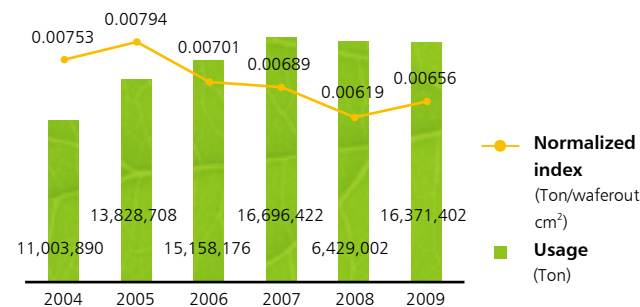
In 2009, we saved a total of 26,890,000 tons of water, which can provide a town with population of 240,000 with 1 year of water, or 4.98 times the volume of Hsinchu's Paoshan Reservoir. Average process water recycling rates decreased in 2009 due to the global economic downturn. However, new fabs (Fab 12 P4 and Fab 14 P3) began operations, causing annual overall water reuse quantity to increase from the previous year.

External Cooperation in Water Saving Activities

Since water resources are inherently local, TSMC shares its water saving experience with other semiconductor companies through the Association of Science Park Industries to promote water conservation. At the same time, TSMC collaborates with the Science Park Administration to assist small facilities in the Science Park in well-water resource management to achieve the Science Park's goals and ensure long-term balance of supply and demand.

A total of six out of TSMC's seven fabs in Taiwan have won the Ministry of Economic Affairs' "Water Saving Award".

Water Saving Activities in TSMC (China)

- Local scrubber waste water reclaim treatment: Set up a new local scrubber waste water reclaim treatment system and recycled waste water to reduce use of ultrapure water. This reduced natural gas consumption by 170,209m^3 each year, and conserved 328,500m^3 of city water every year each year.
- Supply water system energy saving: Reorganized water distribution so that equipment with low requirements for water pressure are supplied by gravity-fed water tanks, reducing power consumption by 547,345 kwh each year.

6.6 Pollution Prevention

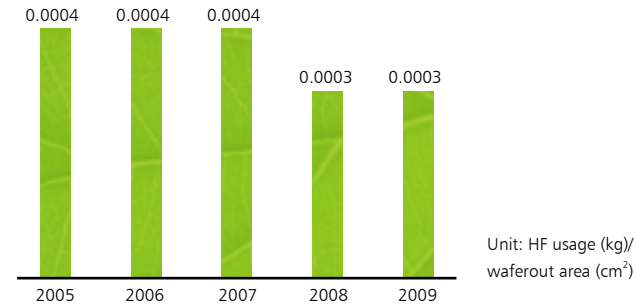TSMC believes that pollution prevention is one of a corporation's most important responsibilities. TSMC's pollution prevention is based on the ISO 14001 environmental management system, and uses the "Plan-Do-Check-Act" management model to promote continuous improvement. We believe that conserving raw materials, energy, and resources as well as reducing waste and pollutants both saves production costs and protects the environment.

TSMC has established comprehensive management and operations procedures for pipe-end treatments such as air and water pollution controls, and ensures these procedures are carried out precisely. TSMC has also installed monitoring systems on the discharging sides of pollution control facilities for on-line monitoring. Facility personnel follow emergency response and reporting procedures to take proper actions if operating conditions diverge from preset limits. For waste management, TSMC has transitioned from traditional "treatment and disposal" to a concept of effective resource management and implements this concept in daily operations.

We manage waste as a resource, categorize and collect waste at the source, raise waste recyclability, and also collaborate with waste treatment and recycling facilities to search for or develop possible recycling measures to reduce the waste amount for incineration and landfill. In addition, TSMC actively collaborates with raw material suppliers to reduce chemical usage and waste chemicals. We also study the feasibility of waste recycling by raw materials suppliers to reach our goal of sustainable resource recycling.

HF per Wafer Production

Year	Value
2005	0.0004
2006	0.0004
2007	0.0004
2008	0.0003
2009	0.0003

Unit: HF usage (kg)/ waferout area (cm^2)

H$_3$PO$_4$ per Wafer Production

Year	Value
2005	0.0003
2006	0.0003
2007	0.0007
2008	0.0006
2009	0.0007

Unit: H$_3$PO$_4$ usage (kg)/waferout area (cm^2)

H$_2$SO$_4$ per Wafer Production

Year	Value
2005	0.0044
2006	0.0040
2007	0.0045
2008	0.0050
2009	0.0068

Unit: H$_2$SO$_4$ usage (kg)/waferout area (cm^2)

H$_2$O$_2$ per Wafer Production

Year	Value
2005	0.0014
2006	0.0014
2007	0.0017
2008	0.0017
2009	0.0022

Unit: H$_2$O$_2$ usage (kg)/ weferout area (cm^2)

NaOH per Wafer Production

Year	Value
2005	0.0049
2006	0.0043
2007	0.0041
2008	0.0038
2009	0.0038

Unit: NaOH usage (kg)/waferout area (cm^2)

With this waste resource management model, TSMC has successfully raised its waste recycling rate each year, reduced its incineration and landfill rate, and reduced waste disposal cost by generating waste recycling income. In 2009, TSMC's waste recycling rate reached more than 90% and the landfill rate was less than 1%.

6.6.1 Raw Materials Usage Reduction

TSMC seeks to optimize processes to minimize raw material use and waste production, protecting the environment while reducing costs at the same time. TSMC has a designated unit that periodically reviews raw materials reduction performance.

6.6.2 Water Pollution Control

TSMC's ultrapure water system turns raw water into ultrapure water mainly used in process tools for cleaning chemical residue on wafer surfaces. To reduce total water usage, TSMC's effluent water from ultrapure water systems and process tools are graded by purity. The cleanest is reused by in the manufacturing process; the second grade taken from the recycling treatment is employed in secondary uses such as cooling-tower water. Wastewater that cannot be recycled is discharged to treatment facilities for final wastewater treatment.

TSMC adopts a strict front-end wastewater categorization strategy to improve treatment efficiency. Wafer fabs' wastewater can be divided into fluoride, general acid, and various polishing wastewaters. All kinds of wastewater are strictly categorized at process tools, and collected to wastewater treatment facilities through separated piping, carefully operated and maintained by professional teams to comply with the standards of the

Science Park Administration (SPA). The water is then discharged to the SPA wastewater treatment plant for further treatment after professional teams ensure the discharge complies with SPA standards. The treated wastewater is discharged to rivers from the SPA's wastewater treatment plants in compliance with river discharge standards. SPA also will conduct random measurement of the discharges of each company in Science Park.

In addition to complying with SPA standards, TSMC continually works with industries and universities to improve discharge quality in areas such as COD (Chemical Oxygen Demand) and TMAH (Tetra-methyl ammonium hydroxide) to reduce hazards to water bodies. For example, we reduced Chemical Oxygen Demand (COD) for 12-inch fab discharge by 62.5%.

In addition, TSMC continues to look ahead and explore new wastewater treatment technologies. For example, our industry-leading experiments to obtain the best possible processing technology for NH_3-N attests to our efforts to protect the environment.

TSMC operates only after ensuring that the environment will not be polluted. Each fab is equipped with effective wastewater treatment systems including complete backup systems, such as emergency power supplies, to reduce the likelihood of abnormal discharge. Operating status of all of TSMC wastewater treatment systems are monitored 24 hours a day by shift personnel. If operating conditions diverge from the preset limits, a warning signal is sent and wastewater discharge is halted. Data gathered for monitoring system effectiveness have been designated an important tracking item to ensure the effluent's quality.

Wastewater Discharge Statistics

Although TSMC continues to grow rapidly, the overall volume of wastewater discharge has decreased since 2006, and the annual overall wastewater discharge volume decreased from 1,127 million tons in 2007 to 1,041 million tons in 2009. TSMC reduced wastewater discharge volume per cm^2 of wafer area from 0.00521 tons in 2004 to 0.00418 tons in 2009, an average decrease of 19.7%, demonstrating that TSMC's wastewater discharge per wafer has gradually decreased each year.

Wastewater Effluent

Normalized Index (Ton/waferout cm²)

Quantity (Ton)

Year	2004	2005	2006	2007	2008	2009
Normalized Index	0.00521	0.00579	0.00513	0.00465	0.00396	0.00418
Quantity	7,616,963	10,084,193	11,100,421	11,279,116	10,510,165	10,419,781
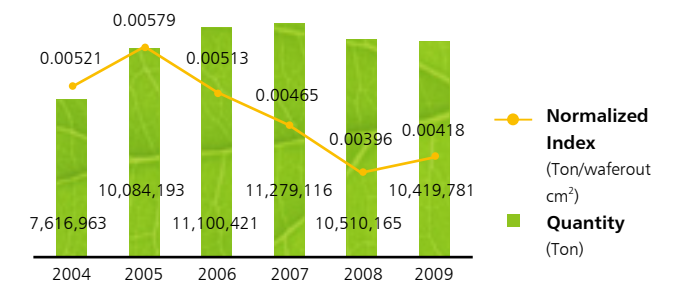
Wastewater Effluent Monitoring

All TSMC fabs are equipped with continuous monitoring equipment to monitor and record changes in water quantity and quality, such as acidity and fluoride ion concentration, in order to take appropriate responses when abnormal situations occur. We also conduct off-site sampling and analyze wastewater effluent quality at least four times a year, which also provides a calibration reference for on-line analyzers, ensuring that TSMC complies with water quality standards.

6.6.3 Air Pollution Control

TSMC fabs emit three major types of exhaust: acid exhaust, base exhaust, and volatile organic compounds. Heat exhaust emitted by process equipment does not cause air pollution.
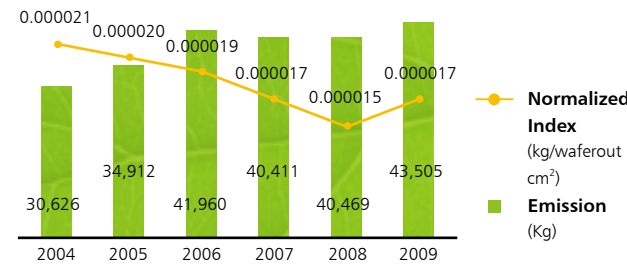
TSMC installs local scrubbers behind process tools in order to treat toxic, flammable and PFC gases. First, high temperatures or other physical and chemical measures are used to significantly reduce the concentration of pollutants in tool exhaust. The gas is then inducted to central waste gas treatment equipment for end-point treatment. End-point treatment includes zeolite-rotary-wheel absorbing equipment for volatile organic chemical (VOC) treatment and wet scrubber equipment for acid or base gases. All TSMC fabs are equipped with VOC zeolite-rotary-wheel treatment systems. In 2009, the average removal efficiency of VOC exhaust in Taiwan's TSMC fabs was 95%.

Performance of all TSMC air pollution systems meet Taiwan air pollutants emissions standards. Overseas fabs are also compliant with or better than the local regulations. Air pollution control systems of TSMC fabs are highly stable, and all TSMC fabs continuously monitor the real-time concentration of VOCs and conduct annual emission measurements as required by environmental laws. Emissions have been far below EPA standards every year.

Volatile organic chemical (VOC) emissions Statistics TSMC's VOC volume per cm^2 of wafer area decreased from 0.000021 tons in 2004 to 0.000017 tons in 2009, an average decline of 19%, demonstrating that VOC emission per wafer has gradually decreased each year.

VOC Emission

Normalized Index (kg/waferout cm^2)
- 2004: 0.000021
- 2005: 0.000020
- 2006: 0.000019
- 2007: 0.000017
- 2008: 0.000015
- 2009: 0.000017

Emission (Kg)
- 2004: 30,626
- 2005: 34,912
- 2006: 41,960
- 2007: 40,411
- 2008: 40,469
- 2009: 43,505

TSMC has installed effective air pollution control equipment, including backup systems, for all pollution control equipment to continue waste gas control in the event of equipment breakdown and lower the risk of air pollutant emission. To ensure normal equipment operations, TSMC has installed backup fuel supply systems for VOC pollution control equipment that will engage if the original fuel supply system experiences difficulties. Operational status of all of TSMC air pollution control systems is monitored 24 hours a day by shift personnel. Data collected by system efficiency monitoring have been classified as an important tracking item in order to ensure air exhaust quality. In 2009, we added an electronic quarterly air pollution report system that can automatically confirm the accuracy of declarations.

6.6.4 Waste Management and Resource Recycling

Establishment of a Designated Unit

Our designated unit for waste management, the Waste & Resources Management Section, is responsible for planning and management of waste recycling and disposal. This unit sets waste management goals and is the contact window for all fabs' waste disposal contractors. It effectively executes waste management through waste data analysis and collaborates with

Waste Sulfuric Acid Recycling Operation

related units in fabs to achieve the goal of reducing waste at the source. It also actively cooperates with scholars and other companies to develop new waste recycling models. We hope to achieve the goal of zero waste by improving waste recycling and reducing waste disposed in landfills.

Waste Reduction from Sources

To reach the goal of sustainable resource utilization, TSMC balances feasible technology with economic cost and then sets its priority on process waste reduction and pollution prevention to continuously minimize waste production. TSMC has made great efforts in raw material usage reduction with significant achievements that not only reduce waste, but also save costs for the company. In 2009, TSMC recycled scrap masks as mask glass substrates, removed patterns on scrap wafers to reuse as control or dummy wafers, reused cleanroom chemical filters by using a scrubbing process, and reused raw wafer packing materials. TSMC also prolonged the lifetime of raw materials to reduce waste. TSMC's R&D, manufacturing, facility, ESH and waste management departments have all participated in continuous improvement programs and have made significant achievements.

Recycling and Reuse

In waste treatment, TSMC first considers material recycling, followed by energy recycling. TSMC's continuously shares experiences with waste recycling industries to improve waste related equipments and also invites academics to participate in joint research to develop new uses for recycled wastes. Newly developed uses for recycled waste include: waste chemicals recycling in bumping process, silicon recycling in wafer grinding process, re-use of waste sulfuric acid, and cooperation with new contractors for waste cupric sulfate recycling. These demonstrate TSMC's efforts and contributions in waste recycling.

Ensuring Final Disposal Destination

To effectively track disposal of waste materials, TSMC carefully selects waste treatment and recycling contractors, and sets annual audit plans using regular and spot audits of certification documents, site operations, and transportation routes to ensure legal and appropriate treatment of waste to be recycled and to prevent secondary environmental pollution. There were 44 spot audits, 34 regular audits and 5 new contractors sites evaluations in 2009. Through site audits of waste disposal contractors, TSMC not only ensures all wastes are treated properly but also shares waste management experiences.

Waste Recycling Performances
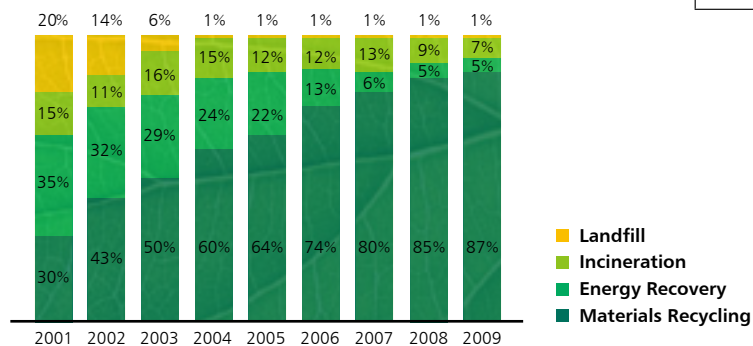
TSMC's recyclable waste and post-recycling products are detailed below.

Recyclable Waste	Post-recycling Products	Recycled Amount in 2009 (Tons/year)
Scrap wafer	Repurposed to produce solar cells	19
	Reproduced control or dummy wafer	4
Waste Sulfuric acid	Turned into aluminum sulfate, industrial class Ammonium Sulfate and diluted sulfuric acid	18,615
Calcium fluoride (CaF2) sludge	Cement Additive	8,842
Residual Polishing Liquid	Potassium Silicate	13
Waste Cupric Sulfate	Industrial Grade Cupric Sulfate	1,977
Waste Cupric Liquid	Recycled for production of new etching liquid	3,935
Photo resist thinner	Distilled for Reuse	4,859
Waste Isopropyl Alcohol (IPA)	Distilled for Reuse	722
Stripper used to remove photo resistant layers	Distilled for Reuse	570
Solvent used to remove photo resistant layers	Cement kiln supplementary fuel	2,418
Waste Phosphoric acid	Industrial Grade Phosphate, Calcium Phosphate	728
Empty chemical drum	Refilled by suppliers	1,431
Kitchen scraps	Animal feed	1,642
Waste Hydrofluoric acid	Turned into Calcium Fluoride (Flux)	312
Waste photo mask	Raw material for quartz	0.263
Wafer grinding waste	Silicon material	2

TSMC continued to carry out waste reduction and recycling programs in 2009, and our waste recycling rate reached 90% for a second consecutive year (not including office general waste), while our landfill rate was below 1% for the sixth consecutive year.

6.7 Ecological Preservation

All TSMC wafer fabs in Taiwan and China are located in industrial parks, which conducted environmental impact assessment (EIA) before development, and continue to meet EIA commitments for environmental protection after development. Therefore, all TSMC wafer fabs in Taiwan and China are operating under the industrial parks' or its own EIA commitments, and do not have a significant environmental impact on their local ecological environments. In addition, two of TSMC green building certified fabs in 2008 and 2009 not only preserve native Taiwan animals and plants but also provide ecological ponds and trees as habitats for birds and animals.

Although TSMC's U.S. subsidiary fab WaferTech is not located in an industrial park, it maintains a designated department to take responsibility for monitoring and maintaining on-site ecological preservation. WaferTech has successfully completed a 10-year wetlands mitigation project, where 29 acres of wetlands are in a permanent preservation, including 8 acres of enhanced wetlands. This project preserves valuable habitat for local wildlife and is home to beavers, deer, rabbits, coyotes and a variety of birds.

6.8 Green Promotion Activities

TSMC communicates the most up-to-date environmental concepts to its employees, collaborates closely with scholars, communities, industries and governments in the countries where we operate, and is systematically building a green supply

Fab 12 P4 Ecological Pond

Green promotion posters

chain. These activities are all aimed at using our influence as a corporation to protect the environment and meeting our corporate social responsibilities. The following section details TSMC's environmental promotion programs in 2009:

Enhancement of Employee Environmental Awareness
TSMC frequently holds environmental training courses and promotional activities. Besides professional environmental education courses, TSMC also makes good use of designated environmental bulletin boards in each fab as well as promotional materials in elevators, restrooms, and employee publications to embed environmental concepts in employees' everyday work and life.

TSMC held "Earth Day" and "World Environmental Day" activities to promote understanding of green energy, energy conservation and carbon reduction in daily life, and "green" ways to save money, emphasizing that environmental protection must begin with individuals.

In order to give employees easy access to up-to-date environmental knowledge, we maintain an internal environmental protection website which files related information and maintains links to global environmental protection-related websites.

Participation in External Environmental Protection Activities
Besides focusing on its own environmental protection work, TSMC also interacts closely with local governments, academia, and communities to act as a positive influence in environmental protection. TSMC actively participates in organizations such as the environmental protection committee of the Association of Science Park Industries, the ESH Committees of the Taiwan Semiconductor Industry Association (TSIA), the Taiwan Electric and Electrical Manufacturers' Association (TEEMA), and the Taiwan Business Council for Sustainable Development (BCSD-Taiwan; TSMC is one of BCSD-Taiwan's founding companies,

and has been a board member since it was launched in 1997). TSMC is connected with the latest in environmental thinking and shares its experience with local industries.

Science Park "ESH Month" Activities

TSMC is an active participant in community environmental protection activities, such as the "ESH Month" held by the Science Park Administration and the Association of Science Park Industries. The goal of "ESH Month" is to give Science Park Employees a deeper understanding of workplace safety and sustainable development. It brings together companies around the Science Park as well as residents living in the communities around the science park.

Continued Participation in the Tainan Science Park River Patrol and Guard Team

TSMC led the establishment of the Tainan Science Park river patrol and guard team, and works together with environmental authorities to control and rectify activity that may endanger environmental water quality. The team patrols waterways upstream and downstream from the Science Park once a month and makes random inspections for water effluents. If pollution incidents are discovered, the team will take pictures and report to the Science Park Administration and Tainan Environmental Protection Bureau.

Green Promotion Activities in WaferTech
● Enhancement of Employee Environmental Awareness

In the second quarter of 2009, WaferTech promoted understanding of the effects of Greenhouse Gases, energy consumption and impacts of improper disposal of waste electronics at the home & office & other environmental activities to support "Earth Week". This week-long event included displays and an E-cycle event, where employees could recycle home electronics at work for free. WaferTech employees recycled

2,350 pounds of electronics. This event enhanced environmental awareness and emphasized that environmental protection must begin with individuals.

● Participation in External Environmental Protection Activities

WaferTech also shares its concern for the environment with the community, participating in local community Emergency Response Drills, the annual Fire Department Open House event and providing building forms to the public for free for re-use projects such as gardening, worm beds and composting. In 2009 WaferTech diverted 170,000 pounds of these building forms from landfill. Below are several photos of some of the public's creative uses for these forms.

6.9 Environmental Compliance Record

There were no significant spills, environmental penalties or fines in 2009.

APPENDIX

This section shows the compliance of this report to GRI G3 guidelines and the AA1000 Assurance Standard (2008) for the principles of inclusivity, materiality and responsiveness. It includes an Independent Assurance Opinion Statement and a GRI G3 Content Index.

INDEPENDENT ASSURANCE OPINION STATEMENT

2009 TSMC Corporate Social Responsibility Report

The British Standards Institution is independent to Taiwan Semiconductor Manufacturing Company, Ltd. (hereafter referred to as TSMC in this statement) and has no financial interest in the operation of TSMC other than for the assessment and assurance of this report.

This Independent assurance opinion statement has been prepared for TSMC only for the purposes of assuring its statements relating to its corporate social responsibility (CSR), more particularly described in the Scope, below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the Independent assurance opinion statement may be read.

This Independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by TSMC. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to TSMC only.

Scope

The scope of engagement agreed upon with TSMC includes the followings:

1. The assurance covers the whole report and focus on systems and activities during the 2009 calendar year on the TSMC headquarter, all fabs located in Taiwan and all other sites excluded except for partial ESH information in two wholly-owned subsidiaries.
2. The evaluation the nature and extent of the TSMC's adherence to all three AA1000 AccountAbility Principles in this report as conducted in accordance with type 1 of AA1000AS (2008) assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.
3. This statement was prepared in English and translated into Chinese for reference only.

Opinion Statement

We conclude that the 2009 TSMC Corporate Social Responsibility Report Review provides a fair view of the TSMC CSR programmes and performances during 2009. We believe that the 2009 economic, social and environment performance indicators are fairly represented. The CSR performance indicators disclosed in the report demonstrate TSMC's efforts recognized by its stakeholders.

Our work was carried out by a team of CSR report assurors in accordance with the AA1000 Assurance Standard (2008). We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that TSMC's description of their approach to AA1000 Assurance Standard and their self-declaration of compliance with the GRI guidelines were fairly stated.

Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- review of issues raised by external parties that could be relevant to TSMC's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers and staff on TSMC's approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 12 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the extent and maturity of the relevant accounting systems for financial and non-financial reports.
- review of the findings of internal audits.
- The consolidated financial data are based on audited financial data, we checked that this data was consistently reproduced.
- review of supporting evidence for claims made in the reports.

- an assessment of the company's reporting and management processes concerning this reporting against the principles of Inclusivity, materiality and responsiveness as described in the AA1000 AccountAbility Principles Standard (2008).

Conclusions

A detailed review against the AA1000 AccountAbility Principles of Inclusivity, Materiality and Responsiveness and the GRI G3 guidelines is set out below:

Inclusivity

TSMC continually commits to it's stakeholders in this report. The effort has been shown in conducting the participation

of stakeholders for developing and achieving an accountable and strategic response to CSR. The 2009 report reflects this. The reporting systems are being developed to deliver the required information. There are fair reporting and disclosures for economic, social and environmental information in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the TSMC's inclusivity issues, however, the future report should be further enhanced by the following areas:

- Continually developing the formal CSR committee reporting to CEO to facilitate a mechanism for effective implementation and coordination of CSR vision.

Materiality

TSMC has established relative procedure in corporate level, as the issues which were identified by all departments have been prioritized according to the extent of impact and applicable criterion for sustainable development of company. Therefore, material issues were completely analyzed and the relative information of sustainable development were disclosed to enable its stakeholders to make informed judgments about the company's management and performance. In our professional opinion the report covers the TSMC's material issues, however, the future report should be further enhanced by the following areas:

- Continuously aligning priority to decision of materiality issues with CSR strategy to form the corporate core strategy in future.
- Publishing a written guideline for the methodology to identify and prioritize TSMC's material issues to enable all departments to follow continuously.

Responsiveness

TSMC has continuously committed to implement the CSR practice and demonstrate relative performance information to respond to the expectations and perceptions of its stakeholders as appropriate. In our professional opinion the report covers the TSMC's responsiveness issues, however, the future report should be further enhanced by the following areas:

- Extending the experience from current comprehensive mechanism of supplier engagement to   continually develop and update responsive strategy for other stakeholders' participation.

GRI-reporting

TSMC provided us with their self declaration of compliance within GRI G3 Guidelines and the classification to align with application level A+. Based on our review, we confirm that social responsibility and sustainable development indicators with reference to the GRI Index are reported, partially reported or omitted. In our professional opinion the self declaration covers the TSMC's social responsibility and sustainability issues, however, the future report will be improved by the following areas:

- Formalizing CSR informative management and reporting process to systematically collect information for supporting their report including performance indicators.

Assurance Level

The moderate level assurance provided is in accordance with AA1000 Assurance Standard (2008) in our review, as defined by the scope and methodology described in this statement.

Responsibility

This CSR report is the responsibility of the TSMC's CEO as declared in his responsibility letter. Our responsibility is to provide an Independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

Competency and Independence

The assurance team was composed of Lead auditors and Carbon Footprint Verifiers experienced in Engineering sector, and trained in a range of sustainability, environmental and social standards including AA1000 AS, ISO 14001, OHSAS 18001, ISO 14064 and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.

For and on behalf of BSI:

Dr. Yi-Min Gao
Managing Director BSI Taiwan
31 May, 2010

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BSI Taiwan is a subsidiary of British Standards Institution.

GLOBAL REPORTING INITIATIVE (GRI) SUSTAINABILITY REPORTING GUIDELINES 2006 AND ITS CONTENT INDEX

● : covered in report   ○ : not available or not disclosed

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
1	**Strategy and Analysis**				
1.1	Statement from the most senior decision maker of the organization	●	1. Letter from the Chairman and CEO	03	
1.2	Description of key impacts, risks, and opportunities.	●	1. Letter from the Chairman and CEO 2.2.3 Industry Outlook, Opportunities and Threats	03, 05	
2	**Organizational Profile**				
2.1	Name of the organization.	●	2.1 An Introduction to TSMC	04	
2.2	Primary brands, products, and/or services.	●	2.2 Market/Business Summary	05	
2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures.	●	2.1 An Introduction to TSMC	04	
2.4	Location of organization's headquarters.	●	2.1 An Introduction to TSMC	04	
2.5	Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report.	●	2.1 An Introduction to TSMC	04	
2.6	Nature of ownership and legal form.	●	2.1 An Introduction to TSMC	04	
2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).	●	2.2 Market/Business Summary	05	
2.8	Scale of the reporting organization, including: • Number of employees; • Net sales (for private sector organizations) or net revenues (for public sector organizations); • Total capitalization broken down in terms of debt and equity (for private sector organizations); and • Quantity of products or services provided.	●	2.1 An Introduction to TSMC 2.3 Financial Highlights	04, 07	
2.9	Significant changes during the reporting period regarding size, structure, or ownership.	●	2.4 Corporate Development	08	
2.10	Awards received in the reporting period.	●	2.5 Awards Received in the Reporting Period	08	

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
3	**Report Parameters**				
3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	●	Overview	02	
3.2	Date of most recent previous report (if any).	●	Overview	02	
3.3	Reporting cycle (annual, biennial, etc.)	●	Overview	02	
3.4	Contact point for questions regarding the report or its contents.	●	Contact Information	73	
3.5	Process for defining report content, including: • Determining materiality; • Prioritizing topics within the report; and • Identifying stakeholders the organization expects to use the report.	●	2.8 Stakeholder Identification and Communication	09	
3.6	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers).	●	Overview	02	
3.7	State any specific limitations on the scope or boundary of the report.	●	Overview	02	
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations.	●	2.1 An Introduction to TSMC	04	
3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report.	●			The finacial and environmental data in this report are conducted or verified by third parties.
3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g., mergers/ acquisitions, change of base years/periods, nature of business, measurement methods).	●	Overview 2.1 An Introduction to TSMC	02, 04	
3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	●			There is no significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.
3.12	Table identifying the location of the Standard Disclosures in the report.	●	Global Reporting Initiative (GRI) Sustainability Reporting Guidelines 2006 and its Content Index	64	
3.13	Policy and current practice with regard to seeking external assurance for the report. If not included in the assurance report accompanying the sustainability report, explain the scope and basis of any external assurance provided. Also explain the relationship between the reporting organization and the assurance provider(s).	●	Overview Independent Assurance Opionion Statement	02, 61	

		GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
4		**Governance, Commitments, and Engagement**				
	4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight.	●	2.10 Corporate Governance	12	
	4.2	Indicate whether the Chair of the highest governance body is also an executive officer (and, if so, their function within the organization's management and the reasons for this arrangement).	●	2.10 Corporate Governance 2.10.1 Governance Structure 2.10.2 Board of Directors	12	
	4.3	For organizations that have a unitary board structure, state the number of members of the highest governance body that are independent and/or non-executive members.	●	2.10 Corporate Governance 2.10.2 Board of Directors	12	
	4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	●	2.8 Stakeholder Communication 2.9 Investor Engagement 3.4.1 Open Communication	09, 11, 19	
	4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization's performance (including social and environmental performance).	●	2.10.4 Compensation Committee	13	
	4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	●	2.10.3 Audit Committee	13	
	4.7	Process for determining the qualifications and expertise of the members of the highest governance body for guiding the organization's strategy on economic, environmental, and social topics.	●	2.10 Corporate Governance	12	
	4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.	●	2.10.5 Corporate Compliance 2.10.6 Anti-Corruption	13	
	4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.	●	2.10.2 Board of Directors 2.10.3 Audit Committee	12, 13	
	4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance.	●	2.10.2 Board of Directors	12	
	4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	●	2.10.3 Audit Committee	13	

		GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
	4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	●	2.8 Stakeholder Identification and Communication 2.9 Investor Engagement	09, 11	
	4.13	Memberships in associations (such as industry associations) and/or national/international advocacy organizations.	●	2.7 Membership in Industry Associations	09	
	4.14	List of stakeholder groups engaged by the organization.	●	2.8 Stakeholder Identification and Communication	09	
	4.15	Basis for identification and selection of stakeholders with whom to engage.	●	2.8 Stakeholder Identification and Communication	09	
	4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.	●	2.8 Stakeholder Identification and Communication	09	
	4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting.	●	2.8 Stakeholder Identification and Communication	09	
Economic Performance Indicators						
	EC1	Economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.(Core)	●	2.3 Financial Highlights 3.3 Compensation and Benefits 5. Social Contribution	07, 18, 35	
	EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change. (Core)	●	6.2 Climate Change and Greenhouse Gas Reduction	45	
	EC3	Coverage of the organization's defined benefit plan obligations. (Core)	●	3.3 Compensation and Benefits	18	
	EC4	Significant financial assistance received from government. (Core)	●	2.3 Financial Highlights	07	
	EC5	Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation. (Additional)	●	3.3 Compensation and Benefits	18	
	EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation. (Core)	●	4. Supply Chain Management	30	
	EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation. (Core)	●	3.1 Employment	15	
	EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement. (Core)	●	5. Social Contribution	35	
	EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts. (Additional)	○			TSMC does not evaluate indirect economic impacts.

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
Environment Performance Indicators					
EN1	Materials used by weight or volume. (Core)	●	6.5.1 Water Reduction and Recycle 6.6.1 Raw Materials Usage Reduction	52, 55	
EN2	Percentage of materials used that are recycled input materials. (Core)	●	6.4.4 Product Packing Materials Reduction 6.5.1 Water Reduction and Recycle 6.6.4 Waste Management and Resource Recycling	52, 56	TSMC does not use recycled materials in manufacturing process.
EN3	Direct energy consumption by primary energy source. (Core)	●	6.2.1 Greenhouse Gases Inventory 6.2.2.2 Energy Conservation	46, 48	
EN4	Indirect energy consumption by primary source. (Core)	●	6.2.1 Greenhouse Gases Inventory 6.2.2.2 Energy Conservation	46, 48	
EN5	Energy saved due to conservation and efficiency improvements. (Additional)	●	6.2.2.2 Energy Conservation	48	
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. (Additional)	●	6.4.2 Design for Low Power Consumption Green Product	51	
EN7	Initiatives to reduce indirect energy consumption and reductions achieved. (Additional)	●	6.2.2.2 Energy Conservation 6.3 Green Building	48, 49	
EN8	Total water withdrawal by source. (Core)	●	6.5.1 Water Reduction and Recycle	52	
EN9	Water sources significantly affected by withdrawal of water. (Additional)	●	6.5 Water Resource Management 6.5.1 Water Reduction and Recycle	52	
EN10	Percentage and total volume of water recycled and reused. (Additional)	●	6.5.1 Water Reduction and Recycle	52	
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. (Core)	●	6.7 Ecological Preservation	58	
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas. (Core)	●	6.7 Ecological Preservation	58	
EN13	Habitats protected or restored. (Additional)	●	6.3 Green Building 6.7 Ecological Preservation	49, 58	
EN14	Strategies, current actions, and future plans for managing impacts on biodiversity. (Additional)	●	6.3 Green Building 6.7 Ecological Preservation	49, 58	
EN15	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk. (Additional)	●	6.7 Ecological Preservation	58	

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
EN16	Total direct and indirect greenhouse gas emissions by weight. (Core)	●	6.2.1 Greenhouse Gases Inventory	46	
EN17	Other relevant indirect greenhouse gas emissions by weight. (Core)	●	4.2.2 TSMC Green Supply Chain 6.2.1 Greenhouse Gases Inventory	32, 46	
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved. (Additional)	●	6.2.2 GHG Emission Reduction	47	
EN19	Emissions of ozone-depleting substances by weight. (Core)	●			TSMC does not use class 1 or 2 ozone-depleting substances.
EN20	NOx, SOx, and other significant air emissions by type and weight. (Core)	●	6.6.3 Air Pollution Control	56	
EN21	Total water discharge by quality and destination. (Core)	●	6.6.2 Water Pollution Control	55	
EN22	Total weight of waste by type and disposal method. (Core)	●	6.6.4 Waste Management and Resource Recycling	56	
EN23	Total number and volume of significant spills. (Core)	●	6.9 Environmental Compliance Record	59	
EN24	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally. (Additional)	○	6.6.4 Waste Management and Resource Recycling	56	TSMC is compliant with environmental laws for hazardous waste disposal.
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff. (Additional)	○	6.6.2 Water Pollution Control	55	TSMC's treated wastewater is discharged to the Science Park wastewater treatment plant, there is no significant environmental impact.
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation. (Core)	●	6.4.1 Product Life Cycle Assessment 6.4.2 Design for Low Power Consumption and Green Products 6.4.3 Hazardous Substance Restriction Management 6.4.4 Product Packing Materials Reduction	50, 51, 52	
EN27	Percentage of products sold and their packaging materials that are reclaimed by category. (Core)	●	6.4.4 Product Packing Materials Reduction 6.6.4 Waste Management and Resource Recycling	52, 56	
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations. (Core)	●	6.1.2 Environmental Accounting 6.9 Environmental Compliance Record	44, 59	
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce. (Additional)	●	6.4.1 Product Life Cycle Assessment	50	
EN30	Total environmental protection expenditures and investments by type. (Additional)	●	6.1.2 Environmental Accounting	44	

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
Labor Practices and Decent Work Performance Indicators					
LA1	Total workforce by employment type, employment contract, and region. (Core)	●	3.1 Employment	15	
LA2	Total number and rate of employee turnover by age group, gender, and region. (Core)	●	3.1.1 TSMC Workforce structure 3.1.2 Employee Retention	15, 16	
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations. (Additional)	●	3.3 Compensation and Benefits	18	
LA4	Percentage of employees covered by collective bargaining agreements. (Core)	●	3.4.4 Freedom of Association	20	
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements. (Core)	●			TSMC is compliant with the notification process rule across all organizations.
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs. (Additional)	●	6.1 Green Management Organization and System	43	TSMC is compliant with the legal requirement for percentage of total workforce represented in formal joint management-worker health and safety committees.
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region. (Core)	●	3.7.4 Occupational Injury and Illness Statistics	27	
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases. (Core)	●	3.7.3 Corporate Contagious Disease Prevention Project	25	
LA9	Health and safety topics covered in formal agreements with trade unions. (Additional)	●	3.4.4 Freedom of Association	20	
LA10	Average hours of training per year per employee by employee category. (Core)	●	3.2 Employee Development	17	
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings. (Additional)	●	3.2 Employee Development 3.2.1 Development and Training Programs	17	
LA12	Percentage of employees receiving regular performance and career development reviews. (Additional)	●	3.2 Employee Development	17	
LA13	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity. (Core)	●	3.1.1 TSMC Workforce Structure	15	
LA14	Ratio of basic salary of men to women by employee category. (Core)	●	3.3 Compensation and Benefits	18	

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
Human Rights Performance Indicators					
HR1	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening. (Core)	●			Our site selection criteria include: geography, population & transportation survey, public utility, climate survey, labor regulations, environmental protection regulations, and labor union status.
HR2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken. (Core)	●	4.2.1 Supply Chain Sustainability: Environmental, Safety, Health, Risk Control	30	
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained. (Additional)	●	3.2 Employee Development 3.4.3 Human Rights	17, 20	
HR4	Total number of incidents of discrimination and actions taken. (Core)	●	3.4 Employee Relations	19	
HR5	Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights. (Core)	●	3.4.4 Freedom of Association	20	
HR6	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor. (Core)	●	3.1.4 Abolition of Child Labor	16	
HR7	Operations identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of forced or compulsory labor. (Core)	●	3.4 Employee Relations	19	Operation risks are well-managed and supervised according to government law. No relevant cases were identified.
HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations. (Additional)	●	3.6 Corporate Security and Risk Control	21	
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken. (Additional)	●			There were no violations involving rights of indigenous people in 2009.
Society Performance Indicators					
SO1	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting. (Core)	●	5.2 Community Building	38	
SO2	Percentage and total number of business units analyzed for risks related to corruption. (Core)	●	2.10.5 Corporate Compliance 2.10.6 Anti-Corruption	13	
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures. (Core)	●	2.10.5 Corporate Compliance	13	
SO4	Actions taken in response to incidents of corruption. (Core)	●	2.10.5 Corporate Compliance	13	

	GRI Indicators	Status	Related TSMC CSR Report Section	Page(s)	Explanatory Notes
SO5	Public policy positions and participation in public policy development and lobbying. (Core)	●	2.10.7 Political Contributions	14	
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country. (Additional)	●	2.10.7 Political Contributions	14	
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes. (Additional)	●	2.10.5 Corporate Compliance	13	
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations. (Core)	●	2.10.5 Corporate Compliance	13	There were no non-compliance cases with laws and regulations in 2009.
Product Responsibility Performance Indicators					
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures. (Core)	●	6.4 Green Product 6.4.1 Product Life Cycle Assessment 6.4.3 Hazardous Substance Restriction Management	50, 51	
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes. (Additional)	●			There were no non-compliance cases with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle in 2009.
PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements. (Core)	●	6.4.3 Hazardous Substance Restriction Management	51	
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes. (Additional)	●			There were no non-compliance cases with regulations and voluntary codes concerning product and service information and labeling in 2009.
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction. (Additional)	●	4.7 Customer Service and Satisfaction 4.7.3 Customer Satisfaction	34	
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship. (Core)	●	2.10.5 Corporate Compliance 6.4.1 Product Life Cycle Assessment 6.4.3 Hazardous Substance Restriction Management	13, 50, 51	
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes. (Additional)	●			There were no non-compliance cases with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship in 2009.
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data. (Additional)	●			There were no substantiated complaints regarding breaches of customer privacy and losses of customer data in 2009.
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services. (Core).	●			There were no non-compliance cases with laws and regulations concerning the provision and use of products and services in 2009.

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