TSMC 2024

Sustainability Impact Valuation Report

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Letter from the ESG Committee Chairperson

Over the past year, the rise in extreme weather events, rapid advancements in disruptive digital technology, and growing social inequalities have significantly reshaped companies' business models. These changes, present both risks and opportunities, ultimately influencing companies' financial performance.

Amid growing global uncertainty, TSMC adopts the double materiality approach as outlined by the European Sustainability Reporting Standards (ESRS). This approach examines Impacts, Risks, and Opportunities (IRO), allowing the Company to factor in external effects when making decisions. TSMC recognizes that its value transcends business performance, encompassing its positive contributions to society, the environment, and human well-being.

Aligned with its impact driven approach to sustainability, TSMC combines financial performance with causal analysis to comprehensively assess the positive and negative effects of its value chain activities across eight key well-being dimensions: human health, environmental quality, income and wealth, employment and wages, education and skills, work-life balance, subjective well-being, and social connections. By converting these impacts into comparable monetary values, TSMC gains actionable insights to decision-making. This enables the Company to achieve solid financial growth while meaningfully contributing to societal well-being and shaping its sustainability strategy.

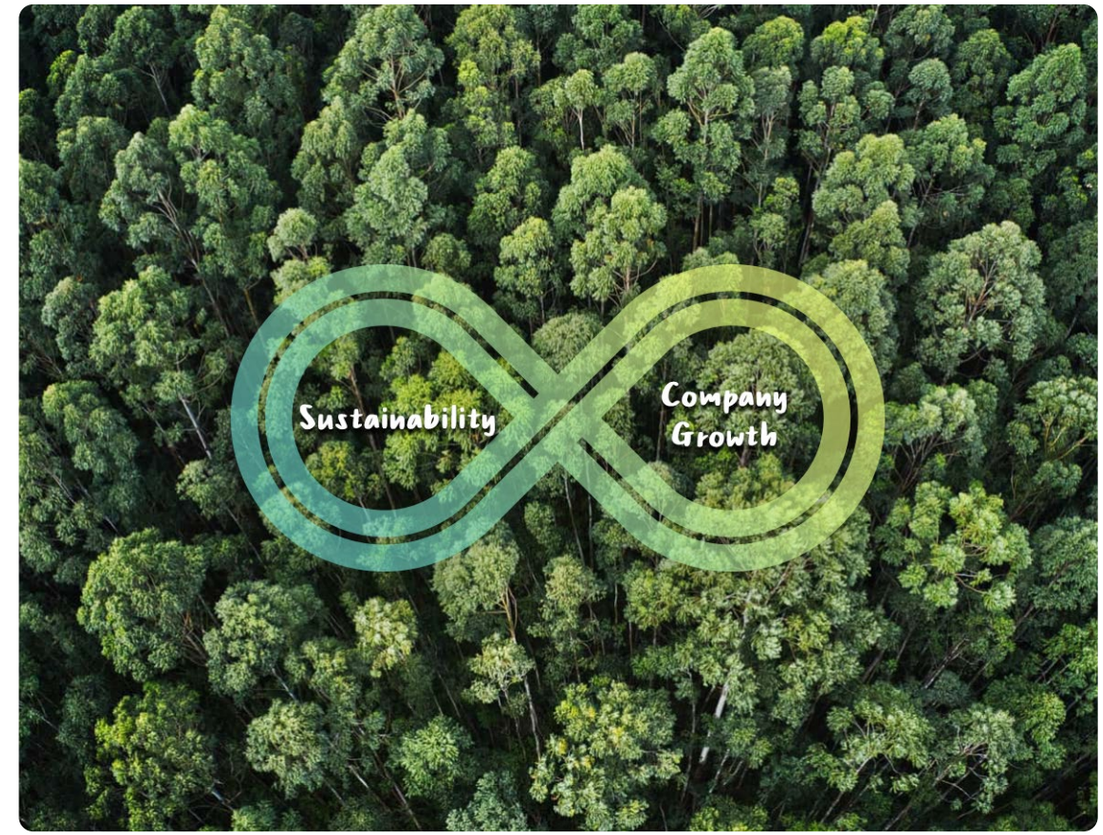
To strengthen its application of impact management, TSMC continues to expand its assessment scope by developing analytical models that better reflect geographic representation, contextual relevance, and the real-world effects of scientific and social advancements. In 2024, the Company hosted its inaugural Sustainability Impact Workshop, combining theory with practice and working together with cross-functional teams to explore ways to embed impact-driven thinking throughout the value chain. This approach serves as a critical foundation for resource allocation, R&D innovation, and sustainability management.

As a responsible global corporate citizen, TSMC is dedicated to reducing the negative impacts of its operations. The Company is improving energy and water efficiency, accelerating renewable energy adoption, setting water-positive targets, and partnering with suppliers to reduce carbon emissions—steadily progressing toward its 2050 net-zero commitment. At the same time, the Company actively fosters a healthy, inclusive workplace by strengthening support for employees' family responsibilities, offering on-site psychological counseling and promoting personal protective equipment (PPE) in various sizes to ensure the physical and mental well-being of our workforce. Through these efforts, TSMC amplifies, its positive contributions to society.

Sustainable development requires a long-term commitment. By conducting impact assessments, TSMC can continuously refine its strategies and actions, in real-time, ensuring steady progress toward a society founded on shared prosperity. Looking to the future, the Company will leverage its strong foundation in technology leadership, working collaboratively with suppliers, customers, and ecosystem partners to drive net positive outcomes and foster a more inclusive and sustainable world.

Lora Ho
Senior Vice President and ESG Committee Chairperson

> External impacts are often the starting point of internal risks and opportunities, and the two are deeply interconnected.



What is Impact Thinking?

Impact Thinking refers to the practice of assessing the actual and potential positive and negative impacts of a company's operations on the environment and society, and integrating these considerations into business decision-making. This approach aims to help companies strike a balance between financial performance and sustainability responsibilities, while effectively managing risks and seizing opportunities during their transformation journey.

A company's operations can impact the environment and society in various ways. For instance, greenhouse gas emissions from production processes may exacerbate climate change. Meanwhile, procurement activities can create employment opportunities in the supply chain but may also raise concerns about labor conditions and human rights. These impacts not only affect the external environment but also prompt companies to take strategic actions, such as advancing low-carbon transition, enhancing energy efficiency, adopting sustainable procurement policies, and improving supply chain management. When companies implement these strategies, they may encounter related financial risks and opportunities. For instance, failure to effectively control GHG emissions could expose a company to rising carbon costs, regulatory fines, or reputational damage. Conversely, proactively adopting green technologies or developing sustainable innovative products can raise operational efficiency and tap into new market demand, creating potential financial opportunities.

Overall, the Impact Thinking focuses on the social and environmental impacts caused by companies and drives strategic adjustments accordingly. These adjustments, in turn, influence the risks and opportunities companies face during their sustainability transformation. This interconnected network enables companies to pursue profitable growth while simultaneously advancing social welfare and environmental protection, achieving more resilient and forward-looking sustainability goals.

Sustainability Impact Thinking

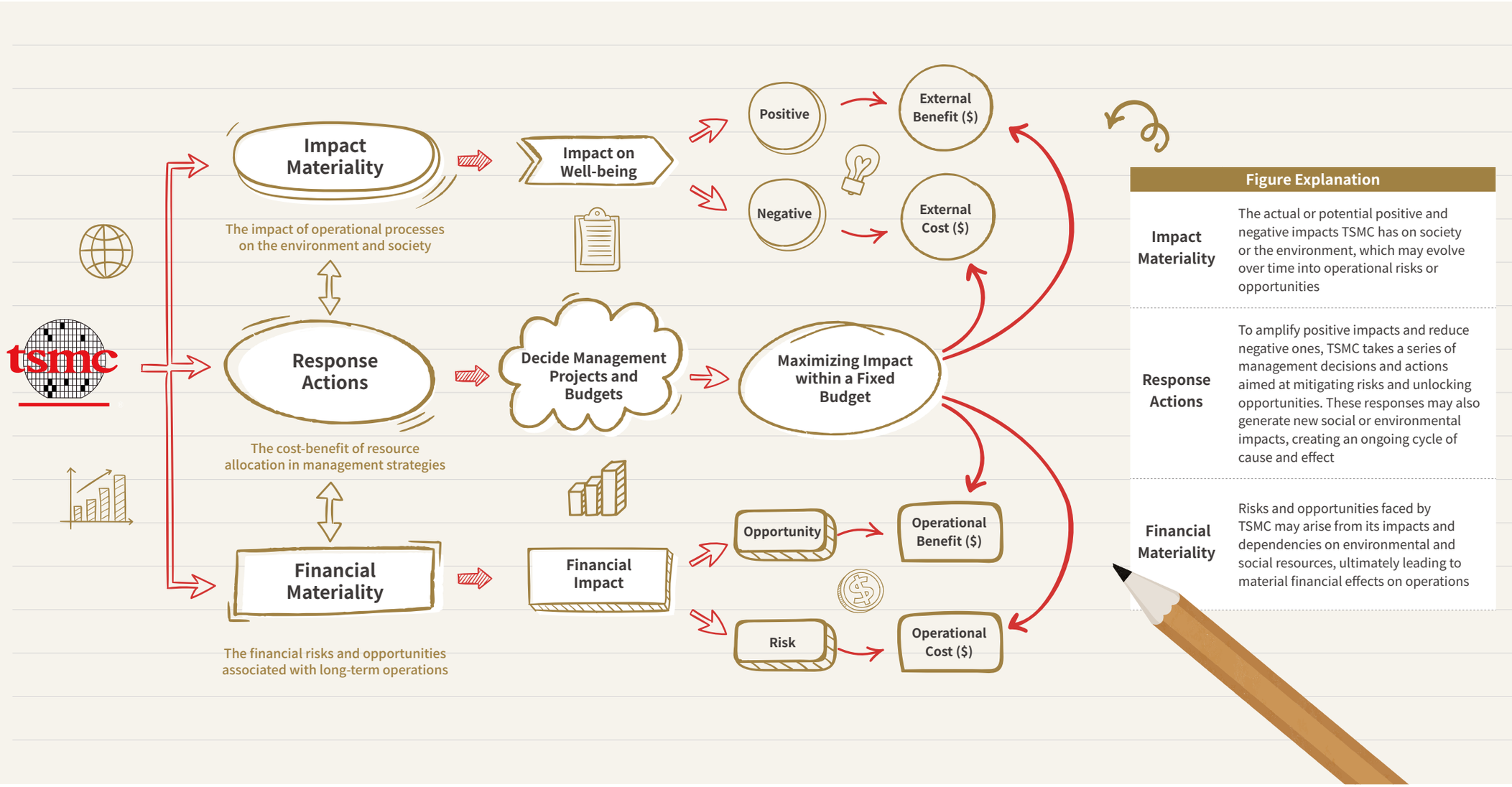


Figure Explanation	
Impact Materiality	The actual or potential positive and negative impacts TSMC has on society or the environment, which may evolve over time into operational risks or opportunities
Response Actions	To amplify positive impacts and reduce negative ones, TSMC takes a series of management decisions and actions aimed at mitigating risks and unlocking opportunities. These responses may also generate new social or environmental impacts, creating an ongoing cycle of cause and effect
Financial Materiality	Risks and opportunities faced by TSMC may arise from its impacts and dependencies on environmental and social resources, ultimately leading to material financial effects on operations

About this Report

This report analyzes TSMC's operational impacts on stakeholders from an outside-in perspective by applying the Impact Measurement & Valuation (IMV) methodology. The Company observes the Double Materiality principle advocated by the European Sustainability Reporting Standards (ESRS) to disclose both the financial materiality and sustainability impacts of material issues. The analysis offers an in-depth view of how a company's pursuit of financial performance creates both positive and negative impacts for the environment, society, and human well-being.

Utilizing the Organization for Economic Co-operation and Development (OECD) framework on"Measuring Business Impacts on People's Well-being and Sustainability," TSMC categorizes the well-being impacts of its value chain operations into eight major dimensions: human health, environmental quality, income and wealth, employment and wages, education and skills, work–life balance, subjective well-being, and social cohesion. The evaluation also incorporates 33 sustainability impact indicators and comprehensively covers the entire value chain, including the upstream supply chain, TSMC operations, and downstream product and service applications. The Company further analyzes the affected stakeholders—including the environment, society, internal and external employees, customers, suppliers and contractors, shareholders and investors, and government—and links these impacts to TSMC's material ESG issue management strategies to reinforce the connection between internal governance and external impacts.

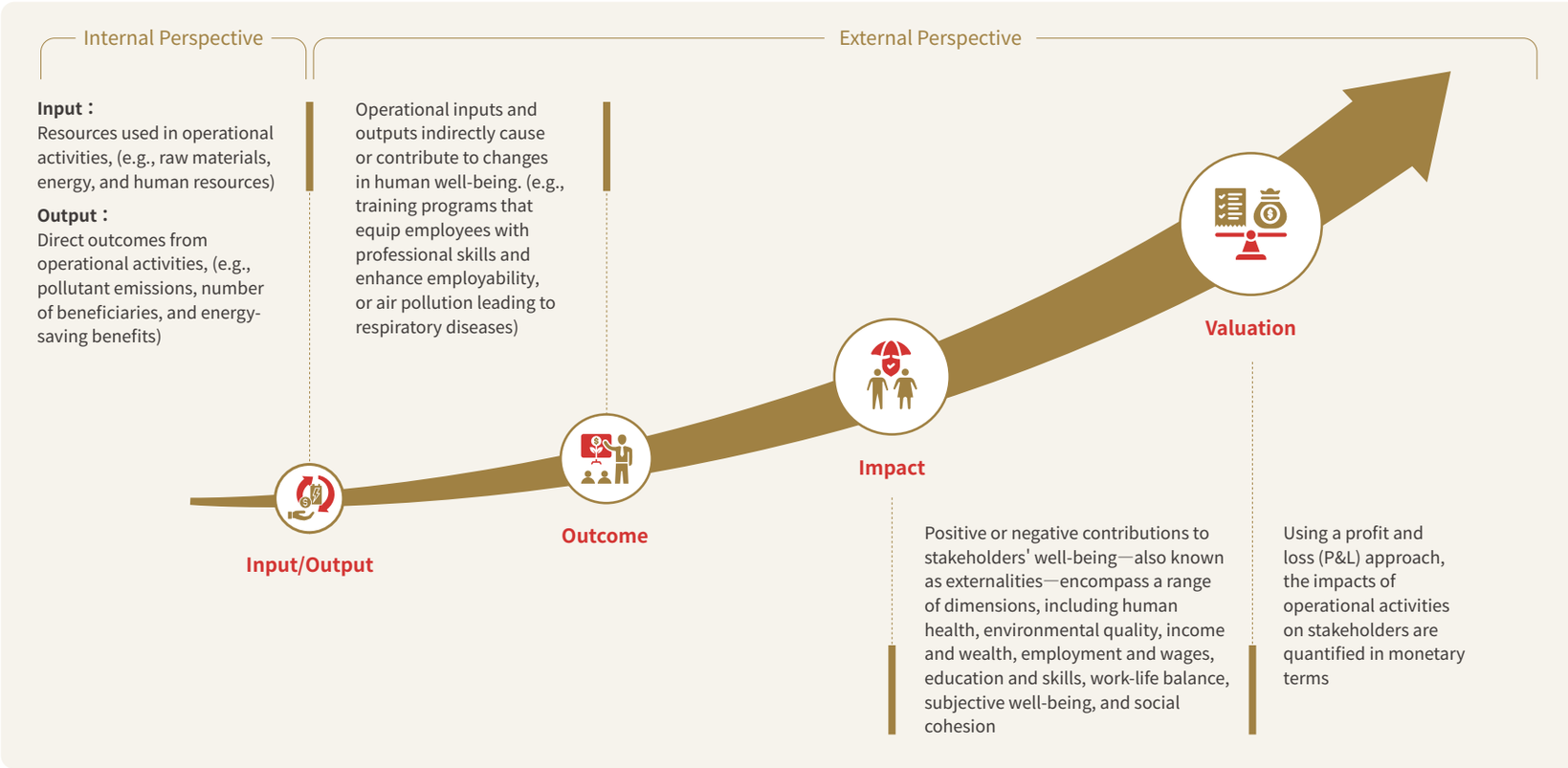
Impact indicators are inherently bidirectional. Positive indicators include contributions such as increased supply chain output driven by procurement activities, the creation of jobs and income, and improvements in overall purchasing power and quality of life. In contrast, negative indicators reflect the potential harm to environmental and social well-being arising from factors such as energy and resource consumption, pollutant emissions, and risks related to human rights and labor conditions in the supply chain. These positive and negative impacts are collectively referred to as"externalities." To understand and manage these externalities, TSMC adopts the Impact Pathway Methodology, which analyzes relationships between business activities and well-being outcomes. This approach integrates assessment frameworks and standards, including the Natural Capital Protocol, Social & Human Capital Protocol, ISO 14008:2019 Monetary Valuation of Environmental Impacts and Related Environmental Aspects, the International Foundation for Valuing Impacts (IFVI), Harvard Business School's Impact-Weighted Accounts (IWA), and the Value Balancing Alliance (VBA). Through these methodologies, the Company measures the impacts of operational activities and expresses them in New Taiwan Dollar equivalents, thereby enabling compatibility with traditional financial reporting. While the monetization of externalities does not represent

Number of Issuances	Second issuance
Reporting Period	January 1st to December 31st, 2024
Reporting Scope	This report covers TSMC's global operational sites, including all TSMC fabs in Taiwan (headquarters, all wafer fabs and backend fabs in Taiwan), TSMC (China), TSMC (Nanjing), TSMC Washington LLC, VisEra, and other subsidiaries. Any discrepancies in disclosed scope will be noted in the respective paragraph.

exact financial amounts—nor does it indicate direct revenue or expenditure of businesses—it still reflects the far-reaching impacts of their operational stability, reputation, and social trust, and serves as a consistent basis for measuring the extent of environmental and social impacts and for resource allocation decisions. By applying this methodology, the Company is able to view external benefits (positive) and external costs (negative) generated by value chain activities from a Profit and Loss (P&L) point of view, facilitating more diverse perspectives into risk identification and strategic planning.

TSMC continues to integrate impact-oriented thinking into its decision-making and value creation processes, positioning sustainability impacts as a core principle in materiality assessment and embedding them into management practices. For example, the Company applies Environmental Profit and Loss (EP&L) analysis tools to identify external impact hotspots in the supply chain and invests resources to assist suppliers in enhancing process efficiency and maximizing energy and resource utilization, mitigating environmental impacts. This report aims to help stakeholders better understand the Company's sustainability commitments and tangible actions. For more comprehensive understanding and insight, please refer to TSMC's Sustainability Report and other thematic reports.

Sustainability Impact Pathway



Sustainability Report and Other Theme Reports

TSMC Sustainability Report

The "Sustainability Impact" section explains TSMC's establishment of a sustainability impact management framework anchored in P&L principles and the Triple Bottom Line (TBL). This framework is underpinned by the six major capitals, four core elements, and six sustainable management competencies. The section also presents the analysis results of TSMC's sustainability impact over the past five years, quantified in monetary terms, to strengthen the connection between internal management and external impacts

Theme Report

Climate and Nature Report

TSMC applies the EP&L methodology to assess the environmental impacts of its value chain activities in monetary terms. In the Climate and Nature Report, the Company elaborates on the interdependencies between TSMC's operations and climate and biodiversity, while also outlining pertinent response strategies.

Materiality Analysis Report

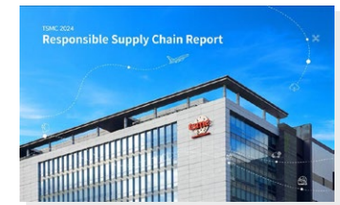
The Materiality Analysis Report shows that TSMC conducts double materiality analysis by considering three dimensions: stakeholder concerns, organizational operating impact, and sustainable development impact. The assessment of sustainable development impact employs both monetary and non-monetary methods, with the monetary impact level derived from the analysis results presented in this report.

UN SDGs Action Report

The United Nations' 17 Sustainable Development Goals (SDGs) constitute an action plan addressing humanity, the planet, and economic prosperity. Potential corporate contributions to these goals are grounded in the externalities arising from operational activities. This report correlates the sustainability impacts from these externalities with the SDGs. Additionally, the Company expounds upon the outcomes of diverse sustainable management practices in its UN SDGs Action Report.

Human Rights Report

This report examines the social costs that could arise from human rights risks from a value chain perspective. The Company's Human Rights Report elaborates on its endeavors to prevent adverse human rights impacts on employees, suppliers, customers, and communities through policy formulation, due diligence, mitigation, and remedy measures.



Responsible Supply Chain Report

This report analyzes the supply chain output, job creation, water and energy savings, and waste reduction benefits driven by TSMC's procurement activities, along with the corresponding external costs related to human rights, GHG emissions, and air pollution. Its Responsible Supply Chain Report further discloses how the Company collaborates with suppliers to build a low-carbon, green supply chain and extends human rights governance upstream to strengthen source control of external costs.

Methodological Update

Impact Measurement and Valuation (IMV) serves as a tool for TSMC to assess its operational outcomes, and as a foundation for strategic decision-making and resource allocation. Through a systematic analysis of impacts, the Company is able to examine its environmental and social footprint alongside the creation of financial value, thereby reinforcing sustainable governance and implementation.

Since 2018, TSMC has adopted an Environmental Profit and Loss (EP&L) approach grounded in the principles of welfare economics to evaluate environmental impacts throughout its global operations and supply chain activities. In 2023, the assessment scope was expanded to encompass economic, environmental, and social dimensions, supported by a comprehensive management framework. To improve accuracy and applicability, the Company further advanced its impact assessment efforts by creating a localized coefficients database, enhancing analytical quality while lowering data uncertainty. TSMC also applies an impact-based thinking to strategic decision-making processes such as product design, resource allocation, and risk assessment.

In 2024, TSMC refined the monetization coefficients for environmental impacts of GHG emissions and water consumption. The adjustment incorporated the latest methodologies developed by the International Foundation for Valuing Impacts (IFVI) and the Value Balancing Alliance (VBA), ensuring that the assessed impacts more accurately reflect current scientific understanding and societal consensus. In evaluating the impacts associated with wastewater discharge, air pollutant emissions, and waste treatment, the Company has considered not only the social cost of carbon and human health-related losses but also the costs of ecological degradation, to ensure a more comprehensive impact valuation. Additionally, TSMC employed fixed inflation and exchange rate adjustment factors to measure all impacts using consistent monetized values. In light of updates to both assessment methodologies and valuation coefficients, the base year was revised from 2018 to 2023, with all values calculated in New Taiwan dollar equivalents for the reporting year to ensure analytical comparability and consistency.

TSMC continues to refine its methodological development and strengthen its grasp of operational externalities, establishing a solid foundation for an "impact-centered" sustainability management model. For more methodological details, please refer to the "Environmental Profit and Loss Methodology Overview.

2018

Implemented EP&L

- Focused on global manufacturing and operational sites
- Covered environmental issues, including GHG emissions, air pollution, water pollution, waste, and water consumption

2019

Extended Assessment to the Supply Chain

- Expanded the assessment boundary upstream to include 441 suppliers in environmental hotspot analysis

2020

Assessed Critical Suppliers

- Broadened environmental hotspot analysis to over 1,000 suppliers
- Assessed critical raw material suppliers

2021-2022

Enhanced the Database

- Continued development of localized coefficients
- Evaluated over 95 critical raw material suppliers and established a supplier EP&L database

2023

Expanded Assessment Scope

- Included both upstream and downstream value chain activities
- Incorporated topics such as family-friendly support, training for future income, equal opportunities, sexual harassment, and health management
- Integrated human rights concerns in the supply chain, including child labor and forced labor

2024

Strengthened Management Applications

- Updated social cost of carbon coefficients and incorporated ecosystem impact assessment
- Held sustainability impact workshops to cultivate an internal impact-based thinking
- Continued to enrich the supplier EP&L database

Environmental Profit and Loss (EP&L) Report

Sustainability Impact Valuation Report

Issues	Value Coefficients – Prior to Update		Value Coefficients – After Update	Affected Indicators
GHG Emissions	● **Social Cost of Carbon (SCC)：** Based on the 2016 research by the U.S. Environmental Protection Agency, which utilized three integrated assessment models—DICE, PAGE, and FUND—with discount rates of 2.5%, 2%, and 5% respectively, the SCC was estimated for GHG emissions from 2010 to 2050, covering issues such as changes in agricultural productivity, effects on human health, property loss due to flood risks, disruptions to energy systems, and variations in ecosystem service value $ In 2024, the environmental external cost per metric ton of GHG emissions was approximately NT$1,650 (subject to annual increase over time)	Revised	● **Social Cost of Carbon (Revised)：** Based on the U.S. Environmental Protection Agency's 2023 updated estimation approach, which adopts the GIVE and DSCIM integrated assessment models and adjusts the discount rates to 1.5%, 2%, and 2.5%, the revised model projects the SCC of GHG emissions from 2020 to 2080, covering issues such as changes in agricultural productivity and labor, impacts on human health, damage to buildings and property, increased energy and water demand, shifts in the frequency and severity of natural disasters, conflict risks, environmental migration, and changes in ecosystem service values $ In 2024, the environmental external cost per metric ton of GHG emissions is approximately NT$7,433 (subject to annual increase over time)	● GHG Emissions from the Supply Chain ● Energy-saving Consultation for the Supply Chain ● Waste Reduction Consultation for the Supply Chain ● GHG Emissions from TSMC Operations ● Benefits of Using Renewable Energy ● Benefits of Promoting Energy-saving Measures ● Wastewater Discharge from TSMC Operation ● Waste Disposal from TSMC Operations ● Energy-efficient Product Design
Water Usage	● **Human Health Loss：** Evaluated the health impacts caused by undernutrition and waterborne diseases due to declines in agricultural yields and shortages in domestic water supply $ The environmental external cost per cubic meter of water consumption ranged from NT$0.02 to NT$3.4, depending on hydrological conditions		● **Ecosystem Services (New)：** Evaluate the impact of ecosystem service loss on health, social cohesion, economic capital, human capital, and social capital $ The environmental external cost per cubic meter of water consumption ranges from NT$29 to NT$61, depending on hydrological conditions	● Water-saving Consultation for the Supply Chain ● Water Resource Consumption from TSMC Operations ● Benefits of Using Reclaimed Water ● Benefits of Promoting Water-saving Measures
Wastewater Discharge	● **Social Cost of Carbon：** GHG emissions generated during the wastewater treatment process ● **Human Health Loss：** Health effects from pollutants present in wastewater $ The environmental external cost per kilogram of pollutant discharged ranged from NT$1 to NT$890,000, depending on the nature of the pollutant	New	● **Ecosystem Loss (New)：** The impact of waterborne pollutants on biodiversity $ The environmental external cost per kilogram of pollutant discharged ranges from NT$1 to NT$1.12 million, depending on the pollutant's characteristics	● Wastewater Discharge from TSMC Operation
Air Pollutant Emissions	● **Human Health Loss：** Health damage caused by air pollutants $ The environmental external cost per kilogram of air pollutant emitted ranged from NT$1 to NT$2,484, depending on pollutant characteristics		● **Ecosystem Loss (New)：** The biodiversity impact of airborne pollutants $ The environmental external cost per kilogram of air pollutant emitted ranges from NT$1 to NT$3,096, depending on the pollutant's characteristics	● Air Pollution Emissions from TSMC Operations
Waste Disposal	● **Social Cost of Carbon：** GHG emissions from waste incineration processes ● **Human Health Loss：** The health impact of air pollutants emitted during the incineration process $ The environmental external cost per metric ton of waste incinerated ranged from NT$4 to NT$4,509, depending on waste characteristics		● **Ecosystem Loss (New)：** The biodiversity impact of air pollutants emitted during the incineration process $ The environmental external cost per metric ton of incinerated waste ranges from NT$20 to NT$20,775, depending on waste characteristics	● Waste Reduction Consultation for the Supply Chain ● Waste Disposal from TSMC Operations

Reader's Guide

This Report aims to articulate the external impacts of TSMC's business activities on stakeholders, society, and the environment through a number of impact indicators. These impacts encompass both direct and indirect effects as well as positive and negative effects—for instance, the generation of Gross Value Added (GVA) income for stakeholders or the externalities created for society and the environment.

This guide is designed to assist readers in interpreting each impact indicator. To help the reader gain a thorough understanding, the Report adopts an "Impact Summary, Impact Pathway, Analytical Results, and Management Actions" framework to present a clear and coherent narrative for each indicator. Additionally, the "Calculation Description" strengthens the transparency of data disclosure, while the "Impact Alignment Framework" links the Impact Reporting and Investment Standards (IRIS) indicators with the United Nations Sustainable Development Goals (SDGs), guiding readers to understand the report content from a more comprehensive perspective and gain deeper insight into TSMC's sustainability actions and contributions.

Reminders

- Considering that negative impacts represent losses in well-being and may be irreversible, this Report presents positive and negative impacts separately to prevent the offsetting or overlooking of adverse effects through aggregation.
- In response to updates in methodologies related to the issues, this Report re-evaluates historical data using the latest methodology to ensure comparability and consistency of analytical results and trends.

Impact Indicators

The heading reflects the name of each impact indicator. A total of 33 impact indicators are disclosed in this Report

ESG Issue

Identifies TSMC sustainability issue that corresponds to this indicator

Impacted Stakeholders

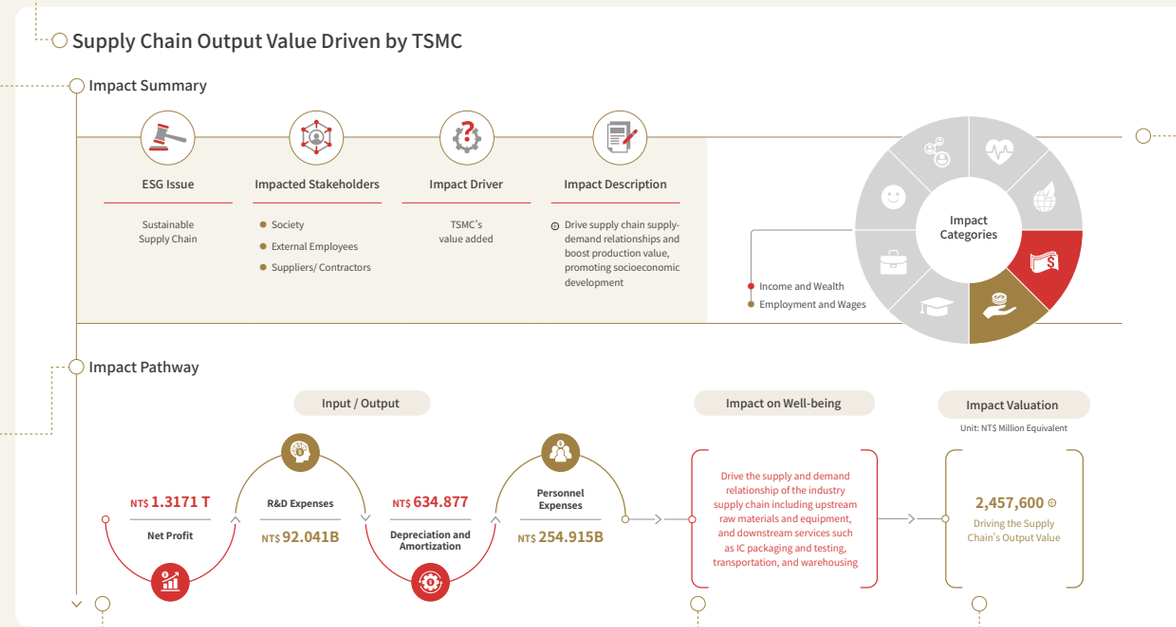
Describes the stakeholders, society, or environmental elements impacted

Impact Driver

Explains the reason behind the impact and its relation to TSMC's operations

Impact Description and Category

Details the type of well-being affected, whether the outcome is positive or negative, and includes a summary of the impact



Impact Summary

This section offers a concise overview of the external impacts resulting from TSMC's business activities, covering the source, impacted stakeholders, impact driver, description, and category while linking them with the Company's ESG issues

Impact Pathway

Analyzes the causal relationship between TSMC's business activities and changes in human well-being, as well as the resulting positive or negative impacts

Inputs/Outputs

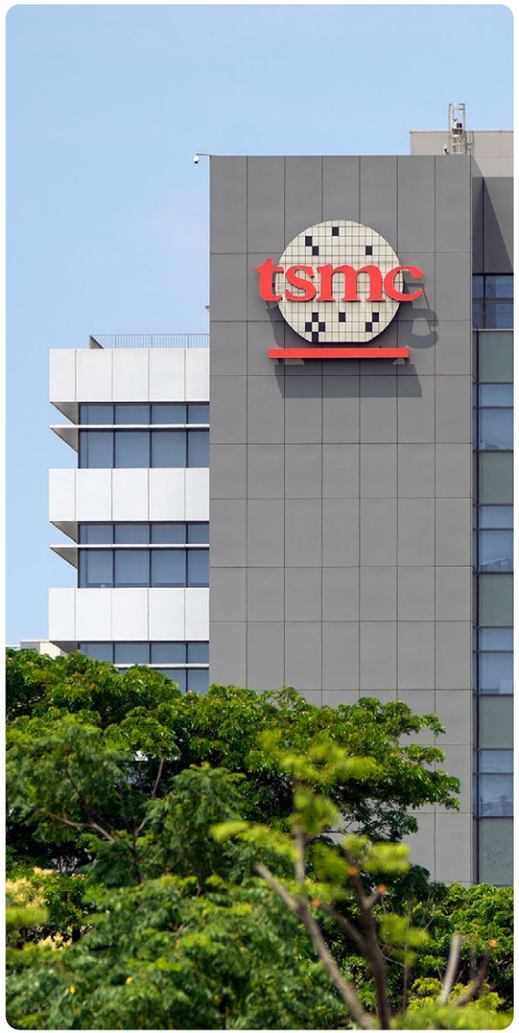
Refers to the resources used and the results generated by TSMC's operations

Impact on Well-being

Describes how operational inputs and outputs contribute positively or negatively to the well-being of impacted stakeholders

Impact Valuation

Represents the relative value of the positive or negative impacts of TSMC's business activities on human well-being, derived from formulas and scenario simulations, rather than the absolute figures found in financial statements



Analysis Results

This section describes the external impacts of TSMC's business activities on human well-being by monetizing these impacts into New Taiwan Dollar equivalents and analyzing trends over the past several years

Management Actions

Based on the results of the impact indicator analysis, TSMC formulated corresponding management actions aimed at reducing negative impacts and operational risks, or at enhancing positive impacts and growth potential

Calculation Description

This section outlines the data sources for each impact indicator, the coverage across global operating sites, the analysis methods used, and reference materials consulted

Impact Alignment Framework

This section explains how each impact indicator is linked to international sustainability initiatives or frameworks

Analysis Results

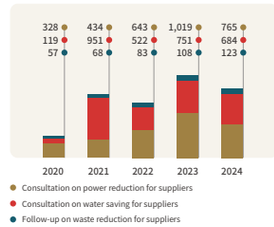
In 2024, TSMC made significant advancements by engaging suppliers in energy saving, water conservation, and waste reduction initiatives, generating a positive environmental external benefit valued at NT$1.571 billion. In terms of energy saving, 203 suppliers reduced electricity consumption by 217 million kWh—bringing cumulative savings to 1.03 billion kWh since the 2018 base year—through measures such as process heat recovery, parameter optimization, and the implementation of energy-efficient equipment. With respect to water conservation, 203 suppliers conserved 12.28 million cubic meters of water—bringing cumulative savings to 54.86 million cubic meters since the 2020 base year—through measures such as process water conservation and the recycling of condensate, wastewater, and rainwater. Regarding waste reduction, TSMC initially focused on suppliers in Taiwan responsible for the top 80% of raw material-related waste, tracking their performance annually. In 2024, the scope of coverage was expanded from major waste-generating suppliers in Taiwan to all Taiwan-based suppliers, accompanied by the establishment of a new long-term target: achieving an 86% waste recycling rate by 2030, in alignment with TSMC and international waste management practices. At the same time, the Company delivered training courses on topics such as resource circulation, recycled raw material certification, and waste reduction, building supplier capabilities in circular economy and waste management, resulting in a 24,328-metric-ton reduction in supplier waste generation for the year.

Management Actions

Through the Supply Online 360 global responsible supply chain management platform, TSMC provides online resources, assembles expert teams for on-site guidance, and hosts forums to facilitate the exchange of environmental technologies and best practices. In 2024, the Company conducted 12 in-person carbon management training sessions, with a total of 261 participants. Additionally, it offered one ISO 14064-1 internal verifier training course for suppliers on GHG inventory, in which all 40 participants obtained certification. Furthermore, 41 suppliers were invited to attend in a training session on Scope 3 inventory under the GHG Protocol, aimed at deepening green knowledge and enhancing environmental management capabilities. The Company also expanded its focus to include water stewardship and waste reduction, working alongside suppliers to accelerate the green transition.

Environmental External Benefits from Supplier Consultation

Unit: NT$ Million



Calculation Description

Evaluation Boundary

Consultation on power reduction: primarily suppliers in Taiwan

Consultation on water saving: primarily suppliers in Taiwan

Waste reduction tracking: suppliers in Taiwan producing 80% of raw materials waste

Activity Data

Differences in power consumption, water usage, and waste generation before and after supplier consultation

Analysis Methodology

Within the EP&L framework, the Company assessed the environmental impacts mitigated by suppliers' energy conservation, water saving, and waste reduction efforts compared to the anticipated amounts set in the base year. This assessment included the avoidance of SCC associated with decreased energy consumption and waste incineration, as well as the health-related cost savings resulting from diminished risks of water scarcity and air pollutant emissions from waste incineration

Reference

LC-Impact（2016）、USEtox（2017）、US EPA（2016）、OECD（2012）、PwC UK（2015）、CE Delft（2018）

Impact Framework Alignment

IRIS Metrics

OI6697：Energy Conserved
OI4015：Water Conserved
OI7920：Waste Reduced

SDGs

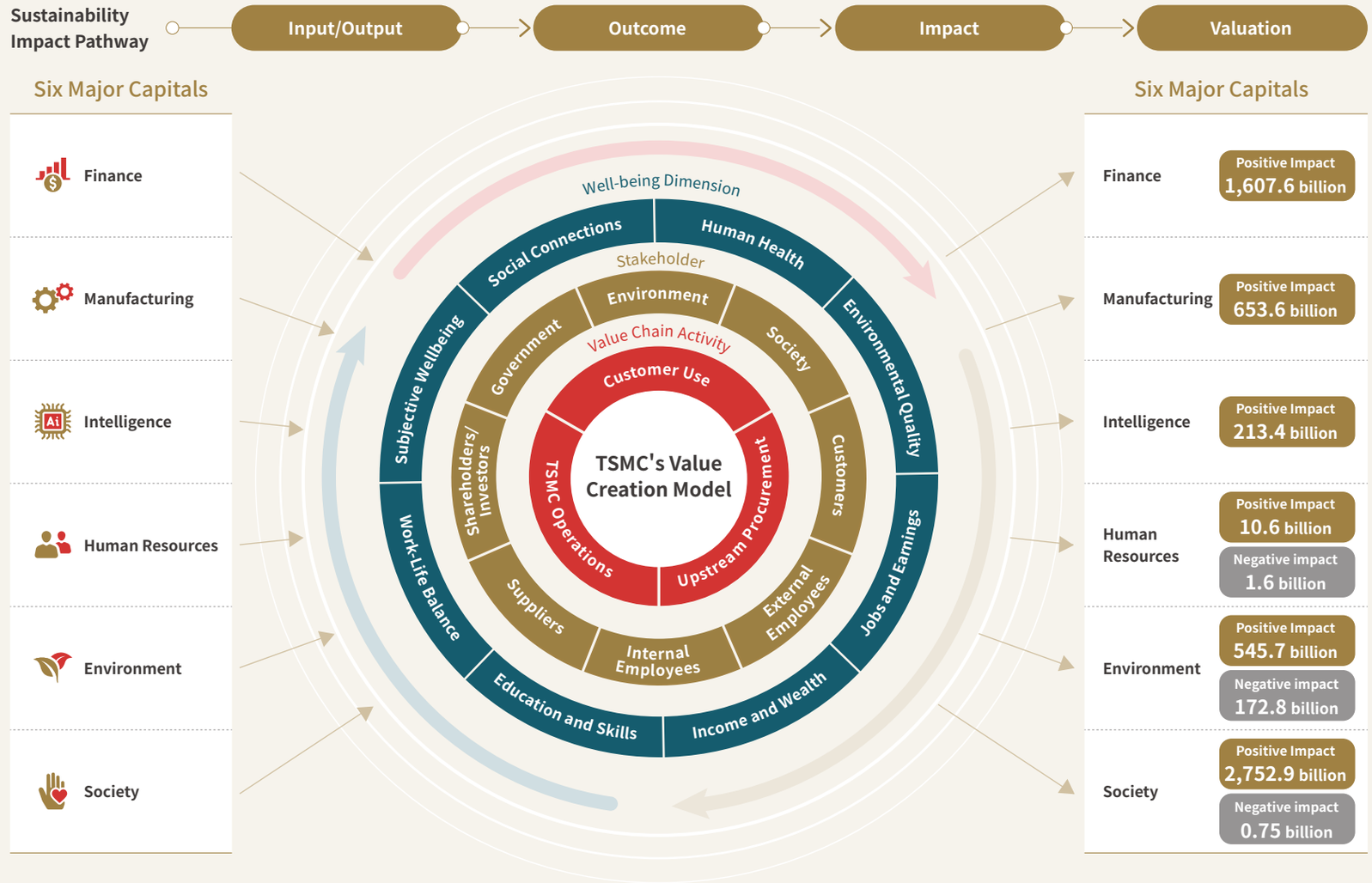
Note1 : IRIS Impact Metrics: The Impact Reporting & Investment Standards (IRIS) is a standardized metrics framework developed by the Global Impact Investing Network (GIIN) to measure the social, environmental, and economic performance of enterprises. Its goal is to enhance the comparability of impact investments.

Note2 : United Nations Sustainable Development Goals (SDGs): The Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as a global action framework aimed at achieving balanced development across three dimensions—economic prosperity, social progress, and environmental sustainability—by 2030. The framework includes 17 overarching goals and 169 specific targets.

Sustainability Impact Across the Value Chain

TSMC is committed to expanding positive impacts and mitigating adverse impacts by leveraging scientific data and systematic approaches to strengthen sustainability governance.

TSMC integrates six major capitals—financial, manufacturing, intellectual, human, environmental, and social—through an external perspective. By applying a profit-and-loss mindset alongside a causality-driven Sustainability Impact Pathway, the Company has developed a value creation model grounded in the Triple Bottom Line, a business framework that evaluates organizational success based on three interconnected dimensions: profit, people, and planet, emphasizing financial, social, and environmental sustainability. This model systematically analyzes value chain activities across upstream procurement, TSMC operations, and customer use to assess their effects on the eight dimensions of human well-being: physical health, environmental quality, income and wealth, jobs and earnings, education and skills, work-life balance, subjective wellbeing, and social connectedness. These analyses serve as the foundation for reinforcing sustainability governance and progressing toward a net positive future.



In 2024, TSMC's overall value chain activities generated a positive impact of NT$5.7854 trillion on human well-being. Of this, 48% stemmed from procurement-driven supply and demand dynamics that stimulated supply chain output and employment, demonstrating the Company's role in fostering industrial prosperity, economic development, and job creation. At the same time, its operational activities resulted in a negative impact of NT$175.2 billion on the environment and society, primarily due to greenhouse gas emissions from production processes (accounting for 62%) and air pollution and emissions across the supply chain (accounting for 33%). These figures highlight the urgency of advancing the transition to low-carbon supply chain, increasing the use of renewable energy, and applying innovative energy-saving technologies.

TSMC incorporates operational costs and financial profitability, and broad environmental and social impacts—as well as long-term risk and opportunity assessments—into its management decisions. The Company will continue to collaborate with stakeholders to implement persistent and ambitious sustainability actions, aiming to curtail the adverse effects of operations and value chain activities, while amplifying their positive contributions to the environment and society.

Upstream Procurement

Positive Impact
NT$ 2.752 trillion

Negative Impact
NT$ 58.1 billion

In 2024, TSMC's procurement activities drove NT$2.4576 trillion in supply chain output, created 460,000 jobs, and contributed NT$292.8 billion in wages for supply chain workers. However, the associated environmental footprint and human rights risks in the supply chain also posed a potential social cost of NT$58.1 billion. As such, the Company will continue to improve on two key strategies—Improve Sustainability Risk Management and Promote Green and Low-Carbon Supply Chains—to extend its responsible business practices to supplier management and enhance their operational resilience.

TSMC Operations

Positive Impact
NT$ 2.5349 trillion

Negative Impact
NT$ 117.1 billion

In 2024, TSMC generated NT$2.2415 trillion in gross value added (GVA) for stakeholders, encompassing operating revenue, dividend distribution, tax contributions, R&D investment, depreciation, and amortization. These outcomes not only contributed to technological advancement across industries and supported customer product success, but also enabled governments to expand infrastructure and social welfare programs, while delivering quality returns for investors.

From a social perspective, compensation exceeding living wage standards boosted employee well-being and purchasing power, totaling NT$233.1 billion. Comprehensive training programs and career planning enhanced workforce competitiveness, creating NT$1.5 billion in wage growth.The leave and benefits programs, which exceeds regulatory standards, provides economic support amounting to NT$6,282 million, enabling employees to achieve a balance between work and life. Community engagement and charitable efforts yielded NT$2.4 billion in social value, while diversified wellness programs generated NT$500 million in health benefits. Workplace injuries and incidents of sexual harassment, however, translated into NT$75.2 million in physical, psychological, and medical costs. Additionally, the Company assessed gender-related disparities in compensation and career progression across job categories. In technical roles, female employees experienced an improvement of NT$2.3 billion in wage growth potential. In contrast, gaps in opportunity for women in managerial, professional, and assistant roles led to NT$1.6 billion in potential wage compensation costs.
From an environmental standpoint, the production and operational activities resulted in external environmental costs amounting to NT$115.5 billion, primarily due to their environmental footprint and resource consumption. From an environmental standpoint, the production and operations activities in external environmental costs amounting to NT$115.5 billion, primarily due to their environmental footprint and resource consumption. To curb the ecological effects of operational activities, the Company embedded green management practices into daily operations, applying innovative solutions to climate and energy, water stewardship, resource circularity, and air pollution control. These efforts—ranging from source mitigation and process efficiency to recycling and end-of-pipe treatment—collectively yielded NT$47.2 billion in environmental benefits.

Customer Use

Positive Impact
NT$ 496.9 billion

TSMC offers 288 process technologies that have enabled 11,878 product innovations for 522 customers, assisting customers in producing more advanced and energy-efficient products. By continually developing globally leading high-performance, energy-saving semiconductor technologies, the Company facilitates the advancement and application of more power-efficient information and communications technologies and products. Based on model-driven analysis, products manufactured by TSMC for customers in 2024 contributed to global electricity savings of 141 billion kWh, creating a positive impact of NT$496.9 billion. By 2030, for every kWh of electricity the Company consumes in production, it is projected to help reduce electricity consumption by 6.39 kWh across other industries and daily use globally—delivering a cumulative saving of 351.4 billion kWh and a positive impact of NT$1.3728 trillion.

Input/Output				Outcome	Impact		Valuation
Causes of the Impact	ESG Issues	Operational Inputs and Outputs (IRIS Metrics)		Impacts on Well-being	Eight Well-being Dimensions	Impacted Stakeholders	Impact Level
Upstream Procurement	Sustainable Supply Chain	Payment to Suppliers for Procurement	PI5478	Procurement demand driving industry supply and demand relationships	Jobs and Earnings	Suppliers/ Contractors	●●●●●●● ↑ Positive
				Procurement demand creating supply chain job opportunities	Jobs and Earnings, Education and Skills	Suppliers/ Contractors	●●●●●●○ ↑ Positive
				Risks of forced labor resulting in loss of freedom and risks to physical and mental health for workers	Health, Education and Skills	Suppliers/ Contractors	●●○○○○○ ↑ Negative
				Risks of child labor resulting in loss of access to quality education and future income	Education and Skills, Work-Life Balance	Suppliers/ Contractors	●○○○○○○ ↑ Negative
				Social cost of carbon derived from supply chain GHG emissions	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●●●○○○ ↑ Negative
				Health and ecosystem losses caused by Supply Chain air pollution emissions	Health, Environmental Quality	Environment	●●●●○○○ ↑ Negative
		Effectiveness of Supplier Consultation	OI6697	Avoid social cost of carbon derived from mitigated GHG emissions	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●○○○○○ ↓ Positive
			OI4015	Avoid health and ecosystem losses resulting from water resource scarcity	Health, Environmental Quality	Environment	●○○○○○○ – Neutral
			OI7920	Avoid social cost of carbon, health, and ecosystem losses from waste disposal reduction	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●○○○○○○ ↑ Negative
TSMC Operations	Finance performance/ Tax	Net Revenue	FP6510	Bringing returns to investors and fostering economic growth momentum	Jobs and Earnings	Shareholders/ Investors	●●●●●●● ↑ Positive
		Depreciation	FP9573	Changes in fixed assets generate revenue for suppliers	Jobs and Earnings	Internal Employees	●●●●●●○ ↑ Positive
		Amortization	–	Knowledge-based intangible assets help in the development and application of industry technology	Jobs and Earnings	Internal Employees	●●●○○○○ – Neutral
		R&D Expenses	–	R&D expenses aids in the development and application of industry technology	Jobs and Earnings	Internal Employees	●●●●●○○ ↑ Positive
		Tax	FP5261	Supporting government initiatives for infrastructure expansion and social welfare	Social Connections	Government, Society	●●●●●○○ – Neutral
	Climate and Energy	GHG Emissions	OI1479	Social cost of carbon emissions derived from GHG emissions	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●●●●○○ ↑ Negative
		Use of Renewable Energy (Self-generated)	OI2496	Avoid social cost of carbon derived from GHG emissions	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●●●○○○ ↑ Negative
		Use of Renewable Energy (Purchased)	OI3324	Avoid social cost of carbon derived from GHG emissions	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●●●○○○ ↑ Negative
		Effectiveness of Energy-saving Measures	OI6697	Avoid social cost of carbon derived from GHG emissions	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●●●○○○ ↑ Negative
	Water Stewardship	Water Consumption	OI0263	Water resource scarcity leads to health and ecosystem losses	Health, Environmental Quality	Environment	●●●○○○○ – Neutral
		Use of Reclaimed Water	OI1927	Avoid health and ecosystem losses resulting from water resource scarcity	Health, Environmental Quality	Environment	●●●○○○○ ↑ Positive
		Water Conservation and Water Resource Recycling and Usage	OI4015	Avoid health and ecosystem losses resulting from water resource scarcity	Health, Environmental Quality	Environment	●●●●○○○ – Neutral
		Wastewater Discharge	OI0386	Social cost of carbon, health, and ecosystem losses derived from wastewater disposal	Health, Environmental Quality, Jobs and Earnings, Education and Skills	Environment	●●○○○○○ ↑ Negative
	Air Pollution Control	Air Pollution Emissions	–	Health, and ecosystem losses derived from air pollution emissions	Health, Environmental Quality	Environment	●●○○○○○ ↑ Negative

Health | Environmental Quality | Income and Wealth | Jobs and Earnings | Education and Skills | Work-Life Balance | Subjective Wellbeing | Social Connections

Finance | Manufacturing | Intelligence | Human Resources | Environment | Society | Environment | Society | Customers | Internal Employees | External Employees | Suppliers/ Contractors | Shareholders/ Investors | Government

Note 1: Impact Reporting & Investment Standards (IRIS) is a standardized framework developed by the Global Impact Investing Network (GIIN) for measuring the environmental, social, and economic performance of enterprises. It enhances the comparability of impact investments.

Note 2: External employees refer to employees of suppliers or contractors, while internal employees refer to employees of TSMC.

Causes of the Impact	ESG Issues	Input/Output: Operational Inputs and Outputs (IRIS Metrics)		Outcome: Impacts on Well-being	Impact: Eight Well-being Dimensions (Health / Environmental Quality / Income and Wealth / Jobs and Earnings / Education and Skills / Work-Life Balance / Subjective Wellbeing / Social Connections)	Impacted Stakeholders	Valuation: Impact Level
TSMC Operations	Circular Resources	Waste Disposal	OI6192	Social cost of carbon, health, and ecosystem losses derived from waste disposal	V V V V	Environment	●●●○○○○ ↑
	Talent Attraction and Retention	Employee Compensation and Benefits	OI4724	Enhance well-being and purchasing power through improved quality-of-life-oriented compensation	V V V	Internal Employees	●●●●●●○ ↑
		Employee Support Programs	OI2742	Achieve work-life balance through family-friendly and life-supportive initiatives	V V	Internal Employees	●●●○○○○ –
		Incidents of Workplace Sexual Harassment	OI9077	Cause medical costs and future well-being losses from physical and psychological harm due to sexual harassment	V V	Internal Employees	●○○○○○○ ↑
	Talent Development	Employee Training and Development	OI7877	Train to enhance skills and employability, leading to increased future earnings	V V	Internal Employees	●●●○○○○ ↑
	Inclusive Workplace	Employee Compensation Structure	–	Boost salary growth potential through equal opportunities for women in high-paying positions	V	Internal Employees	●●●○○○○ ↑
			–	Result unequal opportunities for women in high-paying positions in potential salary compensation costs	V	Internal Employees	●●●○○○○
	Occupational Safety and Health	Employees with Improved Health Management	OI4061	Lifestyle and health improvements through health education	V	Internal Employees	●●○○○○○ ↑
		Employee Occupational Accident Incident	OI3757	Physical and mental impact of workers and healthcare expenditure	V V V	Internal Employees	●○○○○○○ ↓
		Employee Occupational Accident Fatality Incident	OI6525				
		Contractor Occupational Accident Incident	OI3757	Physical and mental impact of workers and healthcare expenditure	V V V	External Employees	●○○○○○○ –
		Contractor Occupational Accident Fatality Incident	OI6525				
	Social Impact	Social Investments	OI1619	Promotion of local community relations and improvement of life quality	V V	Society	●●●○○○○ ↑
Customer Use	Innovation Management	Benefits of Energy-efficient Products	PI7623	Assisting customers in product energy efficiency to prevent and mitigate environmental impacts from GHG emissions	V V V V	Customers, Environment	●●●●○○○ ↑

Health, Environmental Quality, Income and Wealth, Jobs and Earnings, Education and Skills, Work-Life Balance, Subjective Wellbeing, Social Connections

Finance, Manufacturing, Intelligence, Human Resources, Environment, Society

Environment, Society, Customers, Internal Employees, External Employees, Suppliers/ Contractors, Shareholders/ Investors, Government

Impact Value

Monetary Value (NT$ Million)	Positive Impact Level	Monetary Value (NT$ Million)	Negative Impact Level
>1,000,000	●●●●●●●●	<-1,000,000	●●●●●●●●
500,000 to 1,000,000	●●●●●●●○	-500,000 to -1,000,000	●●●●●●●○
100,000 to 500,000	●●●●●●○○	-100,000 to -500,000	●●●●●●○○
50,000 to 100,000	●●●●●○○○	-50,000 to -100,000	●●●●●○○○
10,000 to 50,000	●●●●○○○○	-10,000 to -50,000	●●●●○○○○
1,000 to 10,000	●●●○○○○○	-1,000 to -10,000	●●●○○○○○
100 to 1,000	●●○○○○○○	-100 to -1,000	●●○○○○○○
0 to 100	●○○○○○○○	0 to -100	●○○○○○○○

Impact Trend

↑ : Impact magnitude **increased by over 10%** compared to the previous year

– : Impact magnitude **increased or decreased within 10%** compared to the previous year

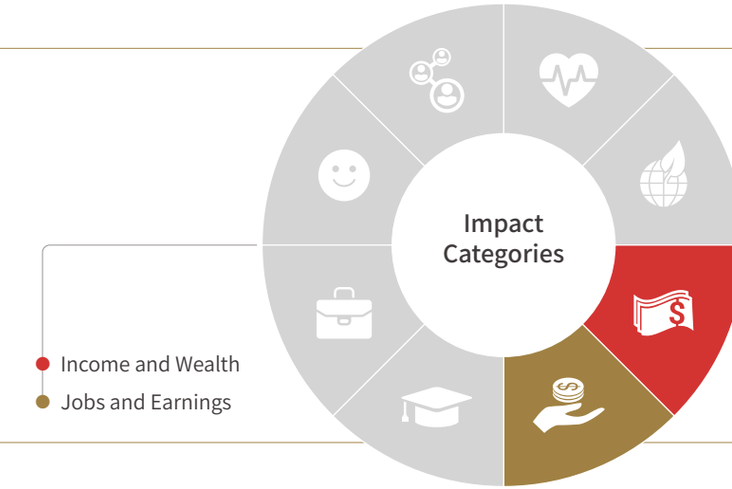
↓ : Impact magnitude **decreased by over 10%** compared to the previous year

Upstream Procurement

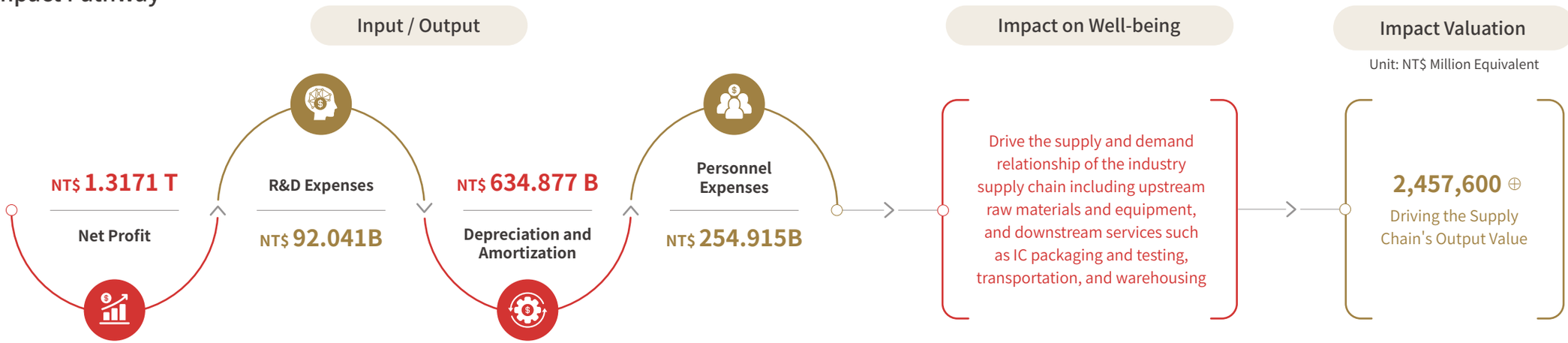
Supply Chain Output Value Driven by TSMC

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Sustainable Supply Chain	● Society ● External Employees ● Suppliers/ Contractors	TSMC's value added	⊕ Drive supply chain supply-demand relationships and boost production value, promoting socioeconomic development



Impact Pathway



Note : Evaluation boundary includes TSMC's operational sites in Taiwan. Value-added is the sum of net profit, R&D expenses, depreciation and amortization, and personnel expenses, with R&D expenses excluding personnel and depreciation costs.

Analysis Results

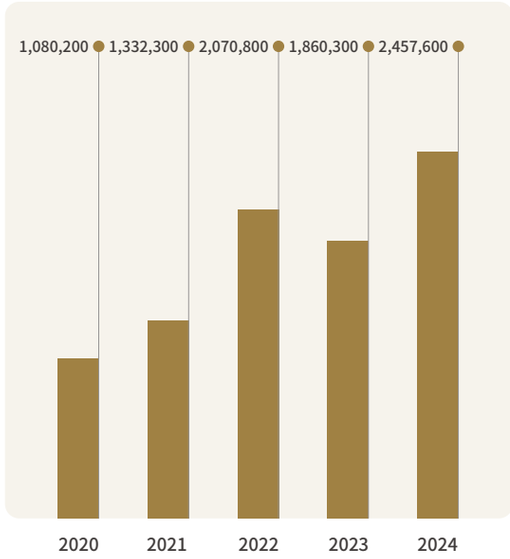
In 2024, TSMC's value-added in Taiwan surpassed NT$2.2990 trillion, calculated by aggregating net profit, R&D expenses, capital depreciation and amortization, and personnel expenses. According to calculations based on the Input-Output Tables from the Directorate-General of Budget, Accounting and Statistics of the Executive Yuan, these activities also indirectly generated NT$2.4576 trillion in supply chain output value (positive). The most significant linkage effects were observed in the basic chemical materials, electricity and steam supply, wholesale, basic metal, and semiconductor sectors. According to recent trends, the driving effects in 2024 reached a record high, up approximately 32.1% compared to the previous year. This growth primarily resulted from rising global demand for AI servers and high-performance computing, which drove expansion in the semiconductor industry and subsequently increased domestic supply chain demand and total output, further amplifying TSMC's value added.

Management Actions

TSMC is committed to working with its supply chain to create long-term social value while also analyzing the positive and negative impacts of supply chain operations and the use of critical raw materials. For more details, please refer to the "Upstream Procurement" and "EP&L Assessment of Critical Raw Material Suppliers" sections.

5-year Supply Chain Output Trend

Unit: NT$ Million Equivalent



Calculation Description

Evaluation Boundary

TSMC's operational sites in Taiwan

Activity Data

TSMC's value added (net profit, R&D expenses, depreciation and amortization, and personnel expenses)

Analysis Methodology

The Company employed the 2016 Input-Output Table compiled by the DGBAS to assess the spillover effects of the semiconductor industry across its upstream and downstream supply chain. The semiconductor industry is one of the 164 industry categories in Taiwan. Domestic production and manufacturing within this industry stimulate demand for upstream chemical materials (including basic chemicals and petrochemical materials), other chemical products, machinery and equipment (including specialized machinery equipment, general machinery equipment, machinery equipment repair and installation), fabricated metal products (among other basic metals), as well as downstream services including transportation, warehousing, communication, wholesale, and even insurance, rental and leasing, and power services. This, in turn, propels production and services within the other 163 sectors to meet the demands of the semiconductor industry, amplifying domestic semiconductor supply chain output value and employment opportunities.

Reference

2016 input-output table by DGBAS

Impact Framework Alignment

IRIS Metrics

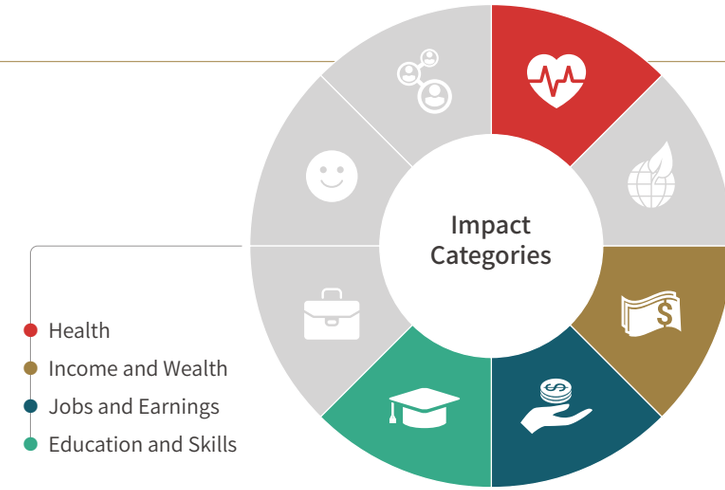
PI5478：Payments to Supplier Organizations

SDGs

Supply Chain Employee Compensation and Human Rights Risk

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Sustainable Supply Chain	● External Employees	TSMC Procurement Demand	⊕ Create employment opportunities in the supply chain, providing workers with wage income and enhancing their purchasing power ⊖ Potential risk of forced labor in the supply chain, leading to loss of freedom and harm to workers' physical and mental well-being ⊖ Potential risk of child labor in the supply chain, depriving children of access to quality education and resulting in future income loss



Impact Pathway

Input / Output

1,429
Tier 1 Supplier Partners

Countries/regions with Supplier Presence
>20

Impact on Well-being

460,000	Supply Chain Employment Opportunities Created
1.74 ‰	Potential Risk of Forced Labor per 1,000 Supply Chain Workers
0.005 ‰	Potential Risk of Child Labor per 1,000 Supply Chain Workers

Impact Valuation

Unit: NT$ Million Equivalent

292,826 ⊕	Supply Chain Employee Compensation Generated
747 ⊖	Social Costs Arising from Potential Loss of Freedom and Physical and Mental Health due to Forced Labor among Supply Chain Workers
1.9 ⊖	Social Costs Arising from Potential Loss of Income due to the Lack of Quality Education for Child Laborers in the Supply Chain

Analysis Results

In todays economy, more than ever, businesses are closely connected and rely on each other to operate, creating a network of shared activities and impacts. TSMC uses input-output analysis to understand how its procurement demand influences resources across the industrial value chain, including direct and indirect labor needs and wage expenditures. In 2024, the Company's procurement indirectly created 460,000 supply chain jobs, and contributed NT$292.826 billion in wage income as a positive social impact. The industries benefiting the most were machinery and equipment (62.2%), construction engineering (17.8%), electronic components (8.5%), chemical products (4%), and information services (3.5%).

The semiconductor industry operates within a highly globalized framework, where each link in the supply chain is intricately interconnected. Should any link encounter a human rights violation incident, it could disrupt not only the entire supply chain but also harm a company's reputation, legal obligations, business operations, and competitive standing in the market. TSMC carries out human rights risk assessments based on supplier locations. In 2024, the risk of supply chain workers being subjected to forced labor was approximately 1.74 per thousand (‰), while the risk of child labor within the supply chain was a minimal 0.005‰. These risks could potentially translate into negative social costs of approximately NT$748 million.

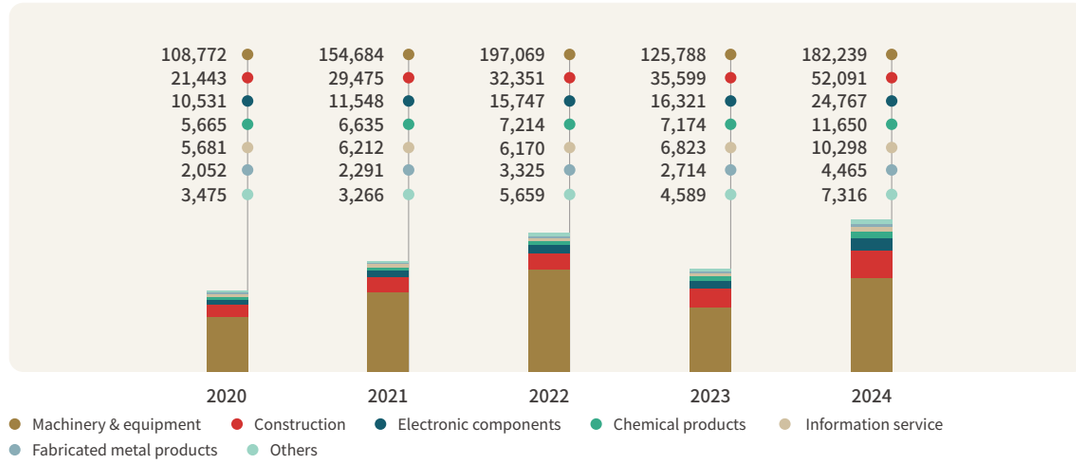
Supply Chain Wages Distribution (By Region)

Unit: NT$ Thousand Equivalent

Asia	154,610,854	52.8%
Europe	54,425,776	18.6%
America	83,789,397	28.6%

Supply Chain Wages Distribution (By Industry)

Unit: NT$ Million Equivalent



Management Actions

Guided by its Human Rights Policy, TSMC implements a four-stage human rights management support framework for suppliers: identify human rights performance, assess areas for improvement, allocate support resources, and track implementation outcomes. The Company also references the six major human rights topics recommended by the United Nations Development Programme (UNDP)—Governance and Security, Labor Rights, Services and Products Liability, Environmental Rights, Voice and Participation, and Gender Equality—to enhance human rights items in the supplier Self-Assessment Questionnaire (SAQ), and to monitor execution results among Tier 1 suppliers. In 2024, suppliers' human rights performance was included for the first time in TSMC's long-term sustainability goals, while the Supplier Human Rights Management Tracking Platform was established to provide best practice examples, educational materials, and online consultation resources. The Company also hosted six training sessions and workshops covering international human rights trends and standards, the business and human rights framework, and benchmark enterprise case studies, with a total of 1,377 participants attending and an average satisfaction rate of 98%.

Calculation Description

Evaluation Boundary

Tier 1 suppliers are defined as those with direct transactions involving three annual orders or more and an annual transaction value exceeding NT$5 million, excluding suppliers engaged in warehousing, hospitals, or those with no subsequent transactions

Activity Data

Payment for supplier procurement

Analysis Methodology

The Input-Output Model was employed to account for all input factors involved in both the direct supplier production stage and the service processes and indirect upstream stage, based on their industry attributes and geographical locations. This model allocated resources by assessing shifts in final demand driven by TSMC's activities. It enabled the analysis of both direct and indirect resources across the industry supply chain to meet changes in final demand caused by TSMC's procurement . These changes include indirectly created employment opportunities and wage income for supply chain workers.

At the same time, analysis is conducted based on the proportion of child labor and forced labor among workers in various countries' labor force statistics. The social externalities caused by employing child labor include the restoration costs for providing quality education for children not attending school and implementing additional components of reintegration programs for children, as well as compensation cost for the loss of future earnings when a child is prevented from attending school during youth. The social externalities caused by forced labor include the economic losses suffered by workers subjected to forced labor, the costs of reintegrating into society, and the costs of health damage.

Reference

EXIOBASE 2 database, United Nations International Children's Emergency Fund (UNICEF) database, Walk Free database, Value Balancing Alliance's (VBA) Extended Input-Output Model (VBA, 2021), Impact-Weighted Accounts (IWA) methodology.

Impact Framework Alignment

IRIS Metrics

PI5478：Payments to Supplier Organizations

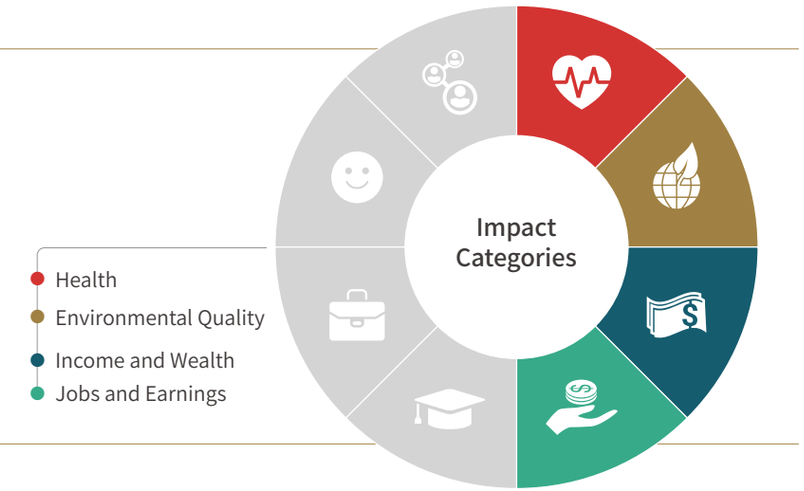
SDGs

▲ Health and Safety Executive (HSE, 2020), VBA's Impact Statement Methodology for Social and Economic Aspects (VBA, 2022), He (2005), and Tsao et al. (2013)

Supply Chain GHG Emissions and Air Pollution Emissions

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Sustainable Supply Chain	● Environment ● Suppliers/ Contractors	TSMC Procurement Demand	⊖ GHG emissions from supply chain production generate a social cost of carbon ⊖ Air pollutant emissions from supply chain production result in harm to human health and ecosystem degradationl-being



Impact Pathway

Input / Output

1,429
Tier 1 Supplier Partners

Countries/regions with Supplier Presence
>20

Impact on Well-being

4.019 M metric tons of CO_2e
Global Warming Potential from Supply Chain GHG Emissions

Supply Chain Air Pollutant Emissions

19,800 metric tons
- 2.724 DALYs
  Health Burden of Diseases Caused by Supply Chain Air Pollutant Emissions
- 6.51 Ecosystem Damage Potential
  Air pollutant emissions from the supply chain pose risks of biodiversity loss

Impact Valuation

Unit: NT$ Million Equivalent

29,876 ⊖ Social Costs from Supply Chain GHG Emissions

27,441 ⊖ Social Costs from Supply Chain Air Pollutant Emissions

Analysis Results

In 2024, TSMC conducted an environmental hotspot analysis for 1,429 Tier-1 suppliers across various industries. The results revealed that procurement demands indirectly led to 4.019 million metric tons of greenhouse gas emissions and 19,831 metric tons of air pollutant emissions. The estimated environmental external costs, expressed in monetary terms, amounted to approximately NT$57,317 million (negative). In terms of supplier industry, the five industries with the most significant environmental externalities due to the processes involved in providing products or services are chemical products (48.5%), machinery and equipment (20.3%), construction (9.6%), fabricated metal products (7.9%), and electronic components (7.7%). Among environmental impact categories, the two key contributing factors are the social cost of carbon from supply chain greenhouse gas emissions (52%) and the impact on health impact from particulate pollution (39%).

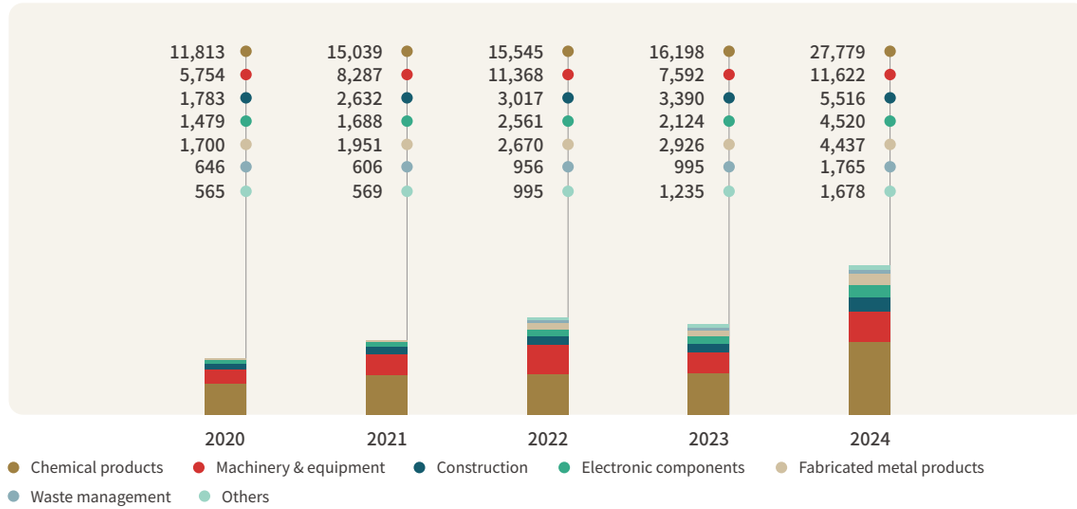
Supply Chain Environmental Hotspot Distribution (by Region)

Unit: NT$ thousand Equivalent

Asia	44,061,242	76.9%
Europe	3,583,443	6.2%
America	9,672,039	16.9%

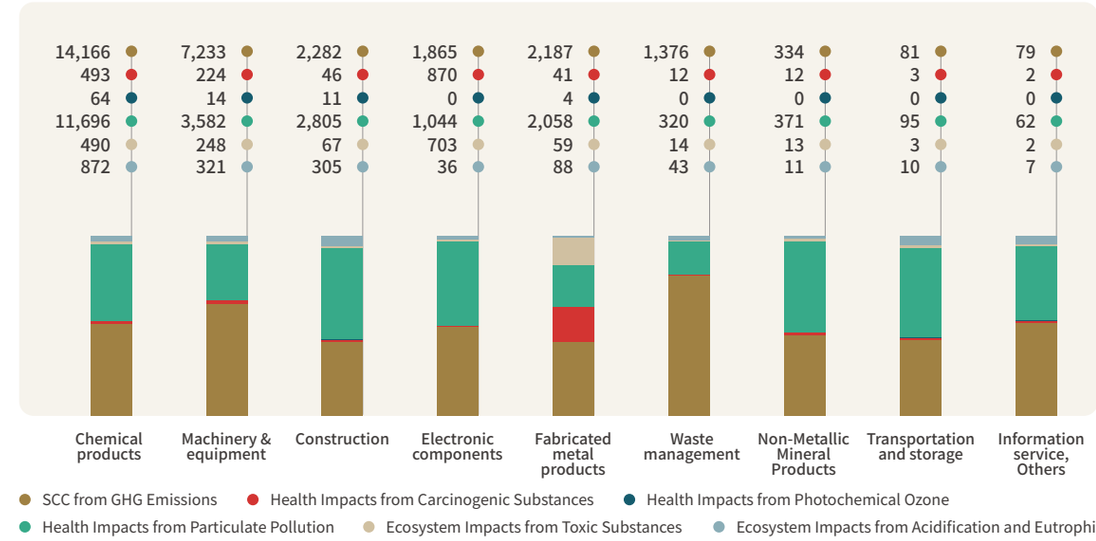
Supply Chain Environmental Hotspot Distribution (by Industry)

Unit: NT$ Million Equivalent



Supply Chain Environmental Hotspot Distribution (by Impact Factors)

Unit: NT$ Million Equivalent



Management Actions

Supply chain carbon emissions management is one of TSMC's key initiatives for achieving its net-zero target. Through four strategic approaches—Tracking, Support, Motivation, and Creativity—the Company collaborates with suppliers to advance the development of a low-carbon supply chain. In 2024, TSMC introduced its first Supply Chain Carbon Reduction Subsidy Program to support suppliers in implementing Scope 1 and Scope 2 emission reduction measures within their operational boundaries. The Company also continued its partnerships with suppliers to develop recycling technologies for electronic-grade chemicals and promoted a fab-wide nitrogen usage efficiency project to cut raw material demand at the source and minimize environmental impact.

To reduce air pollution, TSMC requires suppliers, under the Supplier Sustainability Standards, to establish pollutant emission management plans and regularly monitor exhaust emissions and control system performance. Through environmental audits and guidance, the Company assists suppliers in identifying emission reduction opportunities to lower the environmental external costs of air pollution. In 2024, TSMC received a report from a member of the public concerning a supplier facility suspected of emitting air pollutants. Upon on-site investigation by the audit team, the production process in question was confirmed to have been fully terminated and removed, thereby preventing recurrence of such incidents.

Furthermore, TSMC examines its procurement strategies using supply chain environmental hotspot analysis to identify industries that may have substantial environmental effects. Subsequently, the Company conducted audits on critical raw material suppliers to pinpoint significant environmental impact factors and develop priority improvement projects, cutting environmental external costs associated with the procurement process. As of 2024, TSMC has audited 147 types of raw materials, and continues to uncover improvement opportunities, driving the industry's transition to sustainability. For more information, please refer to the "Extended Application: Environmental Profit and Loss Assessment of Critical Raw Material Suppliers."

Calculation Description

Evaluation Boundary

Tier 1 suppliers are defined as those with direct transactions involving three annual orders or more and an annual transaction value exceeding NT$5 million, excluding suppliers engaged in warehousing, hospitals, or those with no subsequent transactions

Activity Data

Payment for supplier procurement

Analysis Methodology

From an EP&L perspective, TSMC assessed environmental externalities within the supply chain that were indirectly influenced by procurement spending, using environmentally extended input-output (EEIO) analysis. This evaluation encompassed the social cost of carbon (SCC) arising from GHG emissions, as well as the social costs associated with respiratory diseases and carcinogenic effects due to air pollutant emissions..

Reference

EXIOBASE 2 database, US EPA (2016), OECD (2012), PwC UK (2015), CE Delft（2018）

Impact Framework Alignment

IRIS Metrics

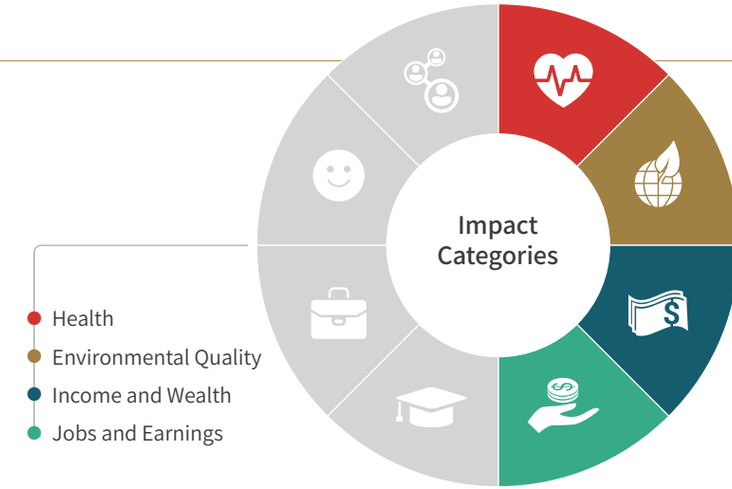
PI5478：Payments to Supplier Organizations

SDGs

Supply Chain Consultation on Water and Energy-saving and Waste Reduction

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Sustainable Supply Chain	• Environment • Suppliers/ Contractors	Supplier guidance on energy saving, water conservation, and waste reduction	⊕ Supporting suppliers in reducing electricity consumption helps avoid GHG emissions and the resulting Social Cost of Carbon ⊕ Assisting suppliers in conserving water helps mitigate health risks associated with water scarcity ⊕ Guiding suppliers in waste reduction helps prevent health impacts arising from waste disposal processes



Impact Pathway

Input / Output

2.17 M kWh electricity saved
203 Suppliers Effectively in Power Reduction

203 Suppliers Effectively in Water Reduction
12.28 M cubic meters of water saved

24,328 tons waste reduced
10 Majors Suppliers Tracked in Waste Reduction

Impact on Well-being

117,000 metric tons of CO_2e	GHG Emissions from Electricity Usage And Waste Incineration
0.5 DALYs	Prevented Risks from Health Loss due to Water Scarcity
2.19~3.06	Avoid Creating Pressure on Biodiversity on nearby communities
24,391 kg	Prevented air pollutant emissions from incineration of waste • 1.78 DALYs Prevented health loss risk from air pollution • 6.9 Ecosystem Damage Potential Prevented biodiversity loss risks from air pollution

Impact Valuation

Unit: NT$ Million Equivalent

765	Social Benefits of Power Reduction Consultation in the Supply Chain
684 ⊕	Social Benefits of Water-Saving Consultation in the Supply Chain
123 ⊕	Social Benefits of Waste Reduction Tracking in the Supply Chain

Analysis Results

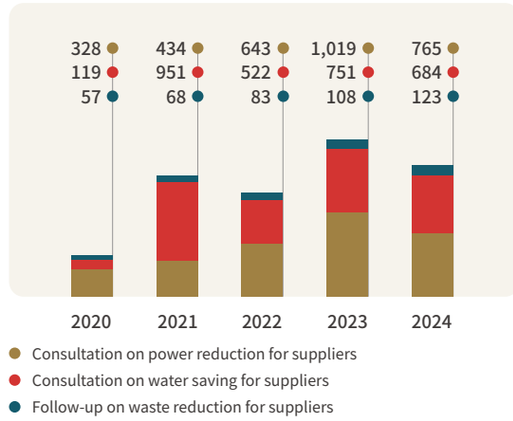
In 2024, TSMC made significant advancements by engaging suppliers in energy saving, water conservation, and waste reduction initiatives, generating a positive environmental external benefit valued at NT$1.571 billion. In terms of energy saving, 203 suppliers reduced electricity consumption by 217 million kWh—bringing cumulative savings to 1.03 billion kWh since the 2018 base year—through measures such as process heat recovery, parameter optimization, and the implementation of energy-efficient equipment. With respect to water conservation, 203 suppliers conserved 12.28 million cubic meters of water—bringing cumulative savings to 54.86 million cubic meters since the 2020 base year—through measures such as process water conservation and the recycling of condensate, wastewater, and rainwater. Regarding waste reduction, TSMC initially focused on suppliers in Taiwan responsible for the top 80% of raw material-related waste, tracking their performance annually. In 2024, the scope of coverage was expanded from major waste-generating suppliers in Taiwan to all Taiwan-based suppliers, accompanied by the establishment of a new long-term target: achieving an 86% waste recycling rate by 2030, in alignment with TSMC and international waste management practices. At the same time, the Company delivered training courses on topics such as resource circulation, recycled raw material certification, and waste reduction, building supplier capabilities in circular economy and waste management, resulting in a 24,328-metric-ton reduction in supplier waste generation for the year.

Management Actions

Through the Supply Online 360 global responsible supply chain management platform, TSMC provides online resources, assembles expert teams for on-site guidance, and hosts forums to facilitate the exchange of environmental technologies and best practices. In 2024, the Company conducted 12 in-person carbon management training sessions, with a total of 261 participants. Additionally, it offered one ISO 14064-1 internal verifier training course for suppliers on GHG inventory, in which all 40 participants obtained certification. Furthermore, 41 suppliers were invited to attend in a training session on Scope 3 inventory under the GHG Protocol, aimed at deepening green knowledge and enhancing environmental management capabilities. The Company also expanded its focus to include water stewardship and waste reduction, working alongside suppliers to accelerate the green transition.

Environmental External Benefits from Supplier Consultation

Unit: NT$ Million Equivalent



Calculation Description

Evaluation Boundary

Consultation on power reduction: primarily suppliers in Taiwan

Consultation on water saving: primarily suppliers in Taiwan

Waste reduction tracking: suppliers in Taiwan producing 80% of raw materials waste

Activity Data

Differences in power consumption, water usage, and waste generation before and after supplier consultation

Analysis Methodology

Within the EP&L framework, the Company assessed the environmental impacts mitigated by suppliers' energy conservation, water saving, and waste reduction efforts compared to the anticipated amounts set in the base year. This assessment included the avoidance of SCC associated with decreased energy consumption and waste incineration, as well as the health-related cost savings resulting from diminished risks of water scarcity and air pollutant emissions from waste incineration

Reference

LC-Impact（2016）、USEtox（2017）、US EPA（2016）、OECD（2012）、PwC UK（2015）、CE Delft（2018）

Impact Framework Alignment

IRIS Metrics

OI6697：Energy Conserved
OI4015：Water Conserved
OI7920：Waste Reduced

SDGs

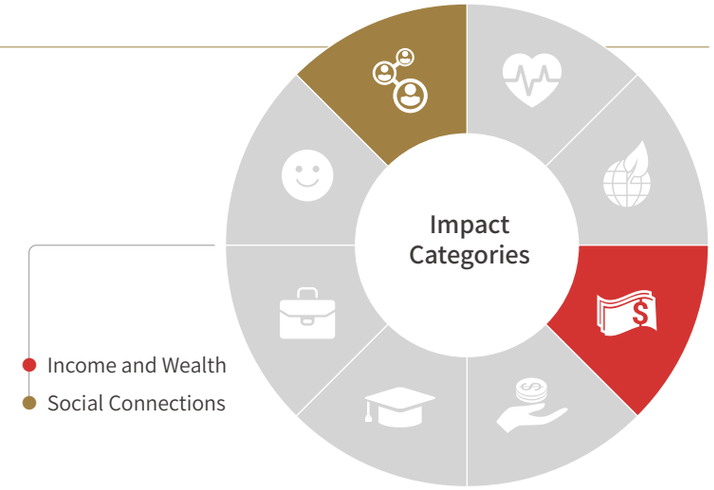
TSMC Operations

Gross Value Added

Impact Summary

Note: Gross Value Added (GVA) can serve as a basis for understanding a company's contribution to the well-being of stakeholders. (VBA, 2021)

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Finance Performance and Taxation	• Suppliers/ Contractors • Shareholders/ Investors • Government	Financial capital management	⊕ Operating profit generates returns for investors and contributes to economic growth ⊕ Tangible and intangible assets drive industrial technology development and generate income for suppliers ⊕ R&D investment advances industrial technology development and supports customer product success ⊕ Tax payments enable the government to expand infrastructure and social welfare programs



Impact Pathway

Input / Output

NT$ 2,894.31 B

Revenue

Impact on Well-being

Stakeholder Well-being

Assuming that one NT dollar holds a financial value equal to the purchasing power and wellbeing it brings to stakeholders, without any other conversion factors involved

Impact Valuation

Unit: NT$ Million Equivalent

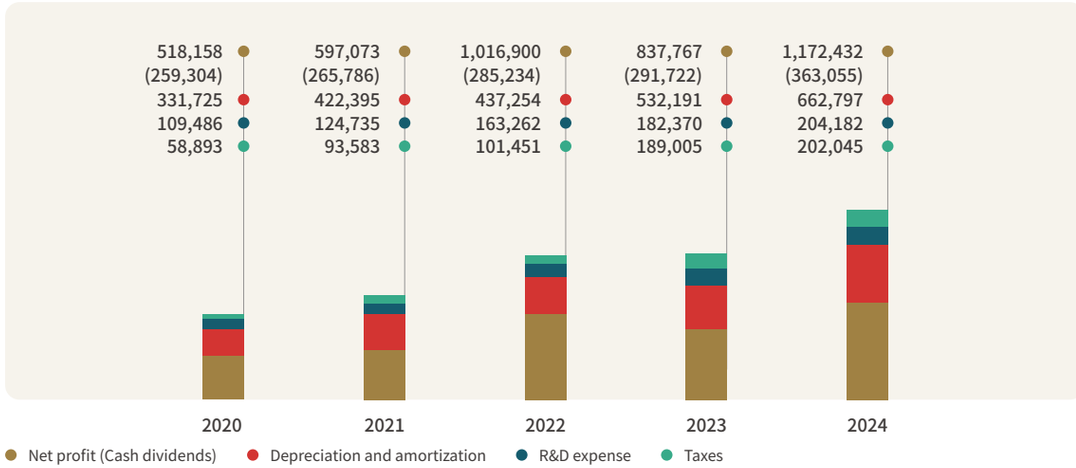
1,172,432 ⊕ Net Profit	Brings Returns to Investors and Drive Economic Growth Momentum
662,797 ⊕ Depreciation and Amortization	Drives Industrial Technology Development through Tangible and Intangible Assets
204,182 ⊕ R&D Investment	Supports Customer Product Success and Drive Industrial Technology Development
202,045 ⊕ Taxes	Supports the Government in Expanding Infrastructure and Social Welfare

Analysis Results

In 2024, TSMC recorded NT$2.8943 trillion in operating revenue, with NT$662.8 billion allocated for depreciation and amortization, NT$ 204 billion in R&D expenses and NT$202 billion paid in taxes. These contributions not only facilitated the success of customer products and drove technological advancement for the industry but also supported government initiatives in expanding infrastructure and social welfare (positive impact).

Stakeholders' Gross Value Added

Unit: NT$ Million Equivalent



Management Actions

Despite uncertainties in the macroeconomic environment and geopolitical landscape dampening consumer confidence and end-market demand, TSMC has delivered strong financial results by leveraging its technology leadership and robust customer demand for AI-related products. At the same time, the Company reinforced investor communication through transparent and timely financial reporting, bolstering their confidence in TSMC's long-term investment value.

Moreover, by setting clear financial quantitative targets and consistently achieving performance goals, the Company remains committed to delivering sustainable and stable returns that not only support customer development but also create profitable growth for shareholders.

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Net profit (after taxes), depreciation and amortization, R&D expenses, taxes

Analysis Methodology

Used Gross Value Added (GVA) to assess the difference between intermediate inputs and final outputs in TSMC's operational process, while considering the economic activities of original inputs and public expenditures that benefit different stakeholders

Reference

Value Balancing Alliance's (VBA) Impact Statement Topic-Specific Method Paper: Social and Economic (VBA, 2022) and Harvard Business School's Impact-Weighted Accounts (IWA)

Impact Framework Alignment

IRIS Metrics

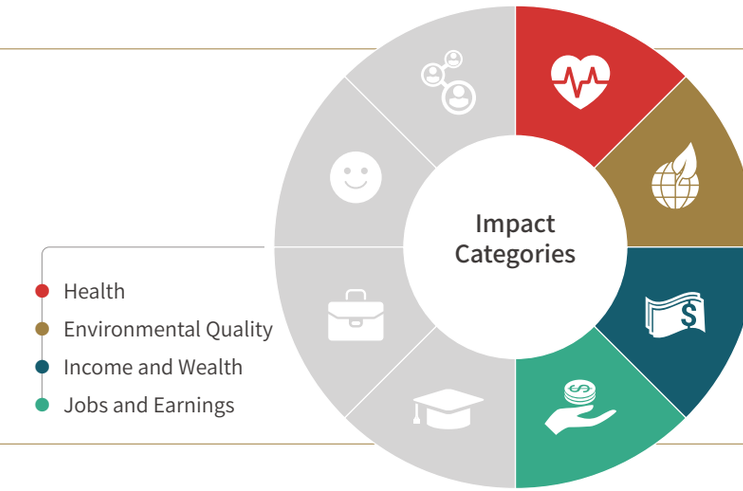
FP1301：Net Income
FP9573：Capital Expenditure
FP5261：Payments to Government

SDGs

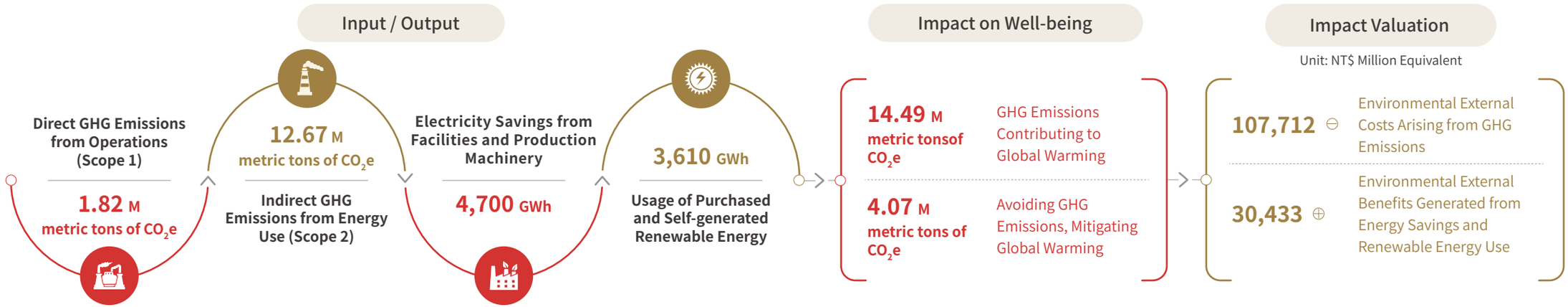
GHG Emissions, Energy-saving Measures and Renewable Energy

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Climate and Energy	● Environment	GHG emissions generated or avoided through TSMC's production and operational activities	⊖ The social cost of carbon associated with GHG emissions ⊕ Avoided social cost of carbon from GHG emissions via energy efficiency or renewable energy use

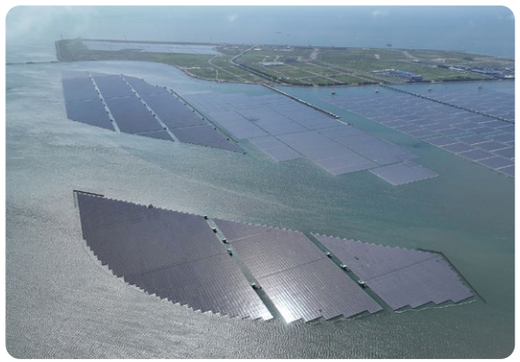


Impact Pathway



Analysis Results

In 2024, the environmental external cost of GHG emissions from TSMC operation sites was approximately NT$107,712 million (negative), which was 93.3% of the overall environmental external cost. As advanced process technologies evolve and production capacity expands, multiple new fabrication plants are entering into operation, GHG emissions from electricity consumption have increased—resulting in a year-over-year rise in associated environmental external costs, which grew by 12.4% in 2024. From a product-level analysis, as the growth rate of production capacity in 2024 exceeded that of GHG emissions, the average external cost per unit of production (12-inch equivalent wafer mask layer) resulting from GHG emissions was NT$158, reflecting a 5.5% decrease year-over-year.



▲ TSMC sets a target of achieving net-zero emissions by 2050 and expands the use of renewable energy.

Management Actions

To continually lower external costs linked to energy and resource consumption, the Company set a target of achieving net-zero emissions by 2050 and is working to improve energy efficiency while expanding the use of renewable energy. In 2024, these actions yielded environmental external benefits (positive) totaling NT$30,433 million, marking a 26.3% increase over the prior year. TSMC plans to designate 2025 as the base year and submit a plan in alignment with the Science Based Targets initiative (SBTi) in 2026 to actively practice green manufacturing.

Increase Energy Efficiency

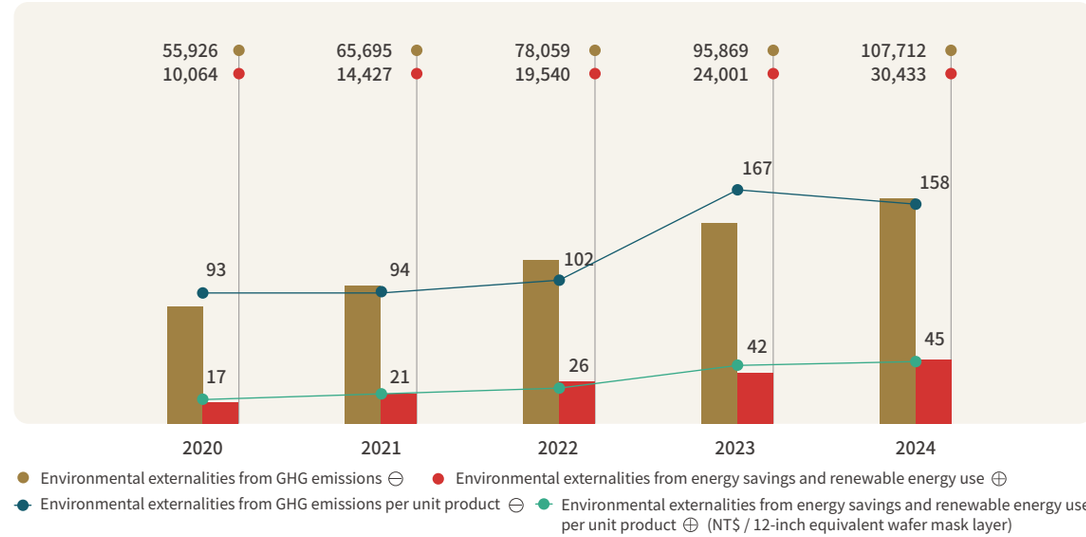
In 2024, TSMC reduced carbon emissions by 390,000 metric tons through the use of carbon-neutral natural gas in its manufacturing processes and deployed 3,436 new tools equipped with technologies to mitigate F-GHG and N_2O emissions. For Scope 2 emissions—the largest source of the Company's GHG footprint—TSMC adopts green building standards for new plant construction. As a result, nine additional facilities obtained green building certification, bringing the total to 51 U.S. LEED-certified and 31 Taiwan EEWH-certified sites, constituting the largest verified green building area in the global semiconductor industry. At the same time, TSMC completed 1,177 energy-saving measures, achieving 810 million kWh in electricity savings for the year. The cumulative savings are equivalent to an abatement of approximately 2.31 million metric tons of GHG emissions and the avoidance of NT$17,357 million in social cost of carbon.

Use Renewable Energy

Continuing to diversify its renewable energy portfolio, TSMC launched the "Rooftop Solar Power Procurement Project" and the "Project to Maximize Renewable Energy Deployment at Existing Fabs," in 2024 increasing solar PV coverage. At the same time, the Company has signed renewable energy purchase agreements totaling 4.4 GW, enabling an annual reduction of approximately 5.23 million metric tons of carbon emissions. TSMC has also maintained zero electricity-related carbon emissions at its overseas subsidiaries for seven consecutive years and plans to begin using offshore wind power in 2025—becoming the first private enterprise in Taiwan to procure such electricity and facilitating the development of Taiwan's renewable energy market. In 2024, TSMC's Taiwan facilities and overseas subsidiaries collectively consumed 3.61 billion kWh of renewable energy, including both self-generated and purchased sources, a 39.4% increase year-on-year. This renewable energy use resulted in an estimated reduction of approximately 1.76 million metric tons of GHG emissions and the avoidance of NT$13,076 million in social cost of carbon.

Environmental Externalities from Operational Energy Use and GHG Emissions

Unit: NT$ Million Equivalent



Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

GHG emissions (scope 1 and scope 2), usage of self-generated renewable energy, usage of purchased renewable energy

Analy sis Methodology

GHGs are gases in the atmosphere that absorb and emit infrared radiation, trapping heat in the Earth's surface and troposphere, creating the greenhouse effect. TSMC adopted the social cost of carbon (SCC) as the external cost coefficient per unit of GHG emissions within the EP&L framework, which represents the social costs arising from the enduring harm to global physical and economic systems caused by climate change, including property and economic losses from physical disasters, damage to human health, and the economic costs associated with energy transition to avoid temperature rise

Reference

US Environmental Protection Agency (US EPA, 2023), IFVI & VBA（2024）

Impact Framework Alignment

IRIS Metrics

OI1479：Greenhouse Gas Emissions: Total
OI2496：Energy Generated for Use: Renewable
OI3324：Energy Purchased: Renewable

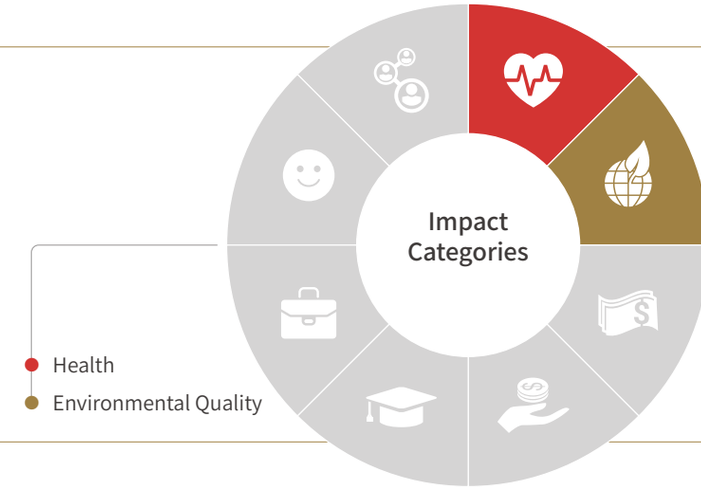
SDGs

▲ TSMC continues to develop energy-saving and carbon-reduction measures, enhancing energy efficiency.

Water Resource Consumption, Water-saving Measures and Reclaimed Water

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Water Stewardship	● Environment	Water resources withdrawn or conserved through TSMC's production and operational activities	⊖ Human health impacts and loss of ecosystem services caused by water scarcity ⊕ Human health impacts and ecosystem service losses from water scarcity prevented through water-saving measures or reclaimed water use



Impact Pathway

Input / Output

109 M cubic meters
City Water Consumption

Water Resource Recycling
285 M metric tons of CO_2e

19.6 M cubic meters
Reclaimed Water Usage

Impact on Well-being

9.13 DALYs	Health Loss Risks Arising from Water Scarcity in Neighboring Communities
2.19~3.06	Increased Pressure on Biodiversity at Nearby Communities
25.53 DALYs	Health Loss Risks Arising from Water Scarcity Prevented in Neighboring Communities
2.19~3.06	Increased Pressures on Biodiversity Prevented in Nearby Communities

Impact Valuation

Unit: NT$ Million Equivalent

5,843 ⊖	Environmental External Cost Caused by Water Resource Utilization
16,811 ⊕	Environmental External Benefits from Water Conservation and Reclaimed Water Usage

Analysis Results

In 2024, the external cost of water consumption at TSMC operation sites was around NT$5,843 million (negative), which is 0.2% of the overall external cost to the environment. The primary impacts were the loss of ecosystem services caused by water shortages, leading to adverse impacts on health, social cohesion, economic capital, human capital, and social capital. At the product level, the average environmental external cost per unit of production (12-inch equivalent wafer mask layer) associated with water use was NT$8.6. Although the external cost of water consumption increased slightly by 6.3% year-on-year, the growth in production capacity outpaced the rise in water usage, resulting in a 10.6% decrease in the external cost per unit of production.

▲ TSMC is committed to optimizing the quality of reclaimed water.

Management Actions

TSMC's Water Statement is its guiding framework for fulfilling water stewardship commitments. Utilizing the water risk assessment tool developed by the World Resources Institute (WRI), the Company conducts annual evaluations of water risk levels across operational sites and takes corresponding response measures. Meanwhile, TSMC advances various water-saving initiatives and integrates reclaimed water to bolster the resilience of its water regulation systems. In 2024, these efforts generated NT$16,811 million in positive environmental external benefits, marking a 1.4% increase from the previous year. The Company has further set a long-term sustainability goal of achieving Water Positive status, aiming for 100% attainment by 2040—a milestone in sustainable water stewardship.

Driving Water Conservation Measures

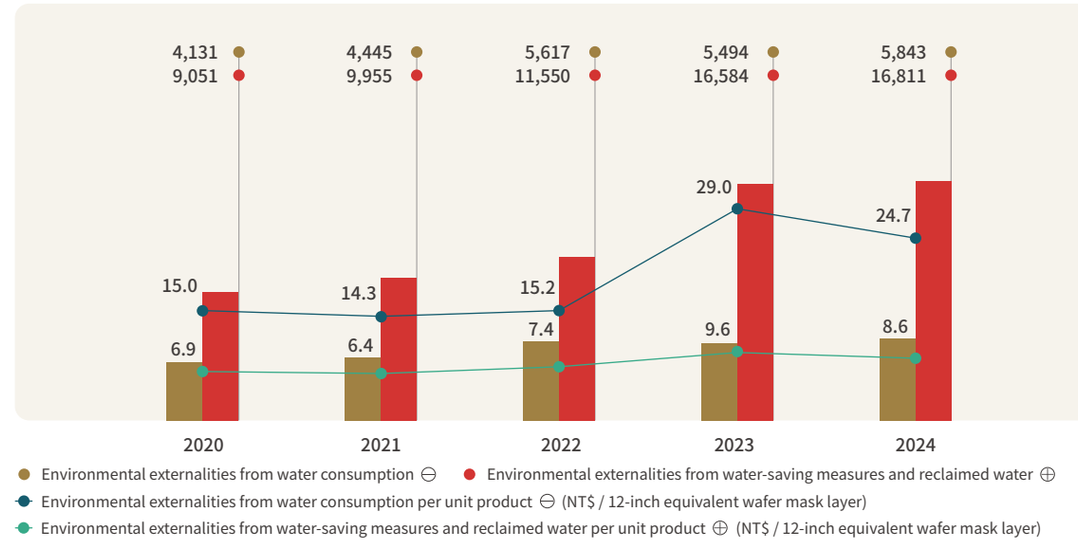
TSMC implements on-site water management in alignment with the Alliance for Water Stewardship (AWS) standard and continues to increase the efficiency of water utilization. By leveraging an integrated and diversified water supply platform, the Company monitors usage data and executes four key measures: Improve System Water Production Rate, Reduce Facility System Water Consumption, Increase Facility Wastewater Recycling, and Decrease Water Discharge Loss from the System. In 2024, these actions yielded an additional 5.54 million cubic meters of water savings, while the total volume of recycled water from the recovery systems reached 284.6 million cubic meters.

Expand Reclaimed Water Deployment

TSMC prioritizes water conservation while developing alternative sources by investing in reclaimed water technologies and diversifying its water supply sources. In 2024, the TSMC Southern Taiwan Science Park Reclaimed Water Plant, Yongkang Water Resource Recycling Center, and Anping Reclaimed Water Plant collectively supplied approximately 67,000 cubic meters of reclaimed water per day. The Tainan fab accumulated a total usage of 19.65 million cubic meters of reclaimed water, reducing city water consumption by 31%. The Company completed the verify of advanced process implementation during the year, expanding its application from mature to advanced manufacturing processes and achieved the goal of using reclaimed water in 5nm and 3nm processes, demonstrating TSMC's commitment to sustainable operations.

Environmental Externalities from Operational Water Consumption

Unit: NT$ Million Equivalent



Calculation Description

Evaluation Boundary

TSMC's global operation sites

Activity Data

Water consumption, reclaimed water usage, water savings

Analy sis Methodology

Water resources are critical assets for sustaining society and natural ecosystems. They are widely utilized for household, agricultural, and industrial purposes. Water scarcity may lead to diminished crop yields and subsequent malnutrition, as well as the spread of waterborne diseases due to the absence of clean domestic water sources (Kounina et al., 2013; Boulay et al., 2011; UNEP, 2016). Adopting the EP&L approach, TSMC examined factors such as the water stress index and the human development index to evaluate the potential ramifications for human health arising from the risk of agricultural and domestic water shortages in TSMC's vicinity due to its water consumption. Furthermore, the Company complemented this assessment with the value of a statistical life (VSL) method to gauge the social costs stemming from human health impairments.

Reference

Pfister et al.（2009）, LC-Impact（2016）, Motoshita et al.（2011）, OECD（2012）, PwC UK（2015）, IFVI & VBA（2024）、WWF Biodiversity Risk Filter, Ecosystem Service Valuation Database, ESVD）

Impact Framework Alignment

IRIS Metrics

OI0263：Water Withdrawn
OI1927：Water Consumed: Recycled
OI4015：Water Conserved

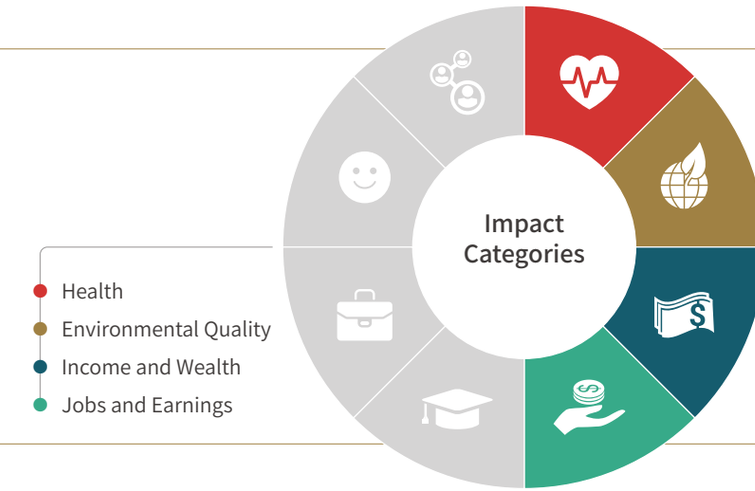
SDGs

▲ TSMC prioritizes water conservation while developing alternative sources by investing in reclaimed water technologies and diversifying its water supply sources.

Wastewater Discharge

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Water Stewardship	● Environment	Wastewater discharge in TSMC's production and operational processes	⊖ Damage to human health and ecosystems from increased concentrations of toxic substances in water ⊖ The social cost of carbon from GHG emissions generated by wastewater treatment



Impact Pathway

Input / Output

86 M
cubic meters

Process Wastewater Discharge

Impact on Well-being

49,000 **metric tons of CO_2e**	GHG Emissions from Wastewater Treatment Contributing to Global Warming
17.2 **DALYs**	Health Loss Risk due to Heavy Metals in Wastewater
14.5 **Ecosystem Damage Potential**	Risk of Biodiversity Loss Due to Heavy Metals Present in Wastewater

Impact Valuation

Unit: NT$ Million Equivalent

530 ⊖

Environmental External Cost of GHG Emissions from Wastewater Discharge

Analysis Results

In 2024, the external cost of water discharge at TSMC operation sites was around NT$530 million (negative), which is 0.5% of the overall external cost on the environment, increased by 12.1% to the previous year. The principal contributors to this impact were GHG emissions from wastewater treatment and the presence of heavy metals in the effluent, which can lead to damage to human health. The environmental external costs per unit product (measured in 12-inch equivalent wafer mask layers) attributed to wastewater discharge stood at NT$0.78, reflecting a 5.3% reduction compared to the previous year, primarily driven by increased capacity.

▲ The average environmental external cost per unit of production marks a 5.3% decrease compared to the previous year.

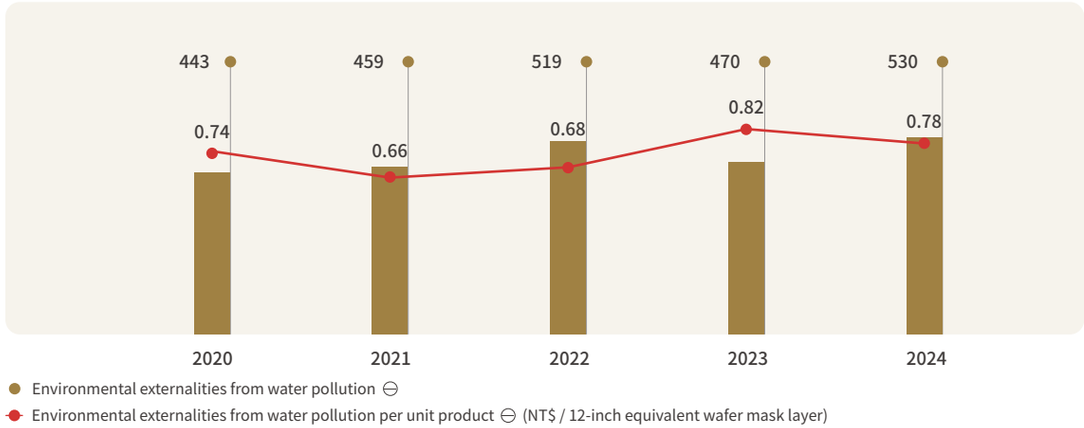
Management Actions

TSMC established 38 wastewater segregation and reuse systems based on the composition and concentration of process effluents, while also developing technologies—including membrane bioreactor systems, hypochlorous acid conversion systems, and high-gravity rotating packed beds—to treat unrecyclable wastewater. In 2024, these efforts resulted in a 63% reduction in the composite water pollution index. Furthermore, the Company designated "technological innovation in water pollution control"as one of its water management strategies, introducing upgraded control technologies to improve processing efficiency and enhance the removal of contaminants from wastewater.

In 2024, TSMC collaborated with National Taiwan University, the Industrial Technology Research Institute, and suppliers to introduce drinking water-grade bituminous coal granular activated carbon (GAC) adsorption and filtration technology for treating process wastewater containing perfluoroalkyl substances (PFASs), achieving an average removal efficiency of 95%. The Company also expanded the application of high-gravity rotating packed bed technology, using high-speed centrifugal force to enhance mass transfer efficiency and promote the reaction of ammonia nitrogen with sulfuric acid to form ammonium sulfate, resulting in a 95% ammonia nitrogen removal rate. Concurrently, TSMC optimized its ammonia nitrogen wastewater segregation and treatment system by directing low-concentration wastewater into biological systems and channeling high-concentration wastewater into degassing membrane systems. This approach is expected to cut chemical usage by 30% in 2025, lowering environmental impacts.

Environmental Externalities from Operational Wastewater Discharges

Unit: NT$ Million Equivalent



▲ TSMC strengthens innovation in water pollution prevention and control technologies.

Calculation Description

Evaluation Boundary

TSMC's global operation sites

Activity Data

Wastewater discharge

Analy sis Methodology

Pollutants can enter the human body via a number of pathways including direct ingestion (e.g., drinking), indirect ingestion (e.g., via bioaccumulation) and direct inhalation (e.g., evaporated pollutants). Long-term exposure can lead to chronic health issues such as cancer, increase the risk of adverse pregnancy outcomes, and reduce mental and central nervous function (PwC UK, 2015; CE Delft, 2018). Methane emissions may occur during the anaerobic treatment of industrial wastewater, while nitrous oxide emissions may arise from wastewater nitrification and denitrification processes (IPCC, 2006). TSMC assessed the human toxicity potential (HTP) resulting from heavy metals and chemical substances in its industrial wastewater within the EP&L framework. This assessment was complemented by applying the value of a statistical life (VSL) methodology to gauge the social costs linked to human health impairments. Furthermore, by evaluating the COD and total nitrogen content in wastewater, the Company computed potential emissions of GHGs, such as methane and nitrous oxide, produced during wastewater treatment at each operational site. This analysis enabled the estimation of their social cost of carbon (SCC).

Reference

USEtox（2017）、IPCC（2006）、US EPA（2016）、OECD（2012）、PwC UK（2015）、CE Delft（2018）

Impact Framework Alignment

IRIS Metrics

OI0386：Water Discharged

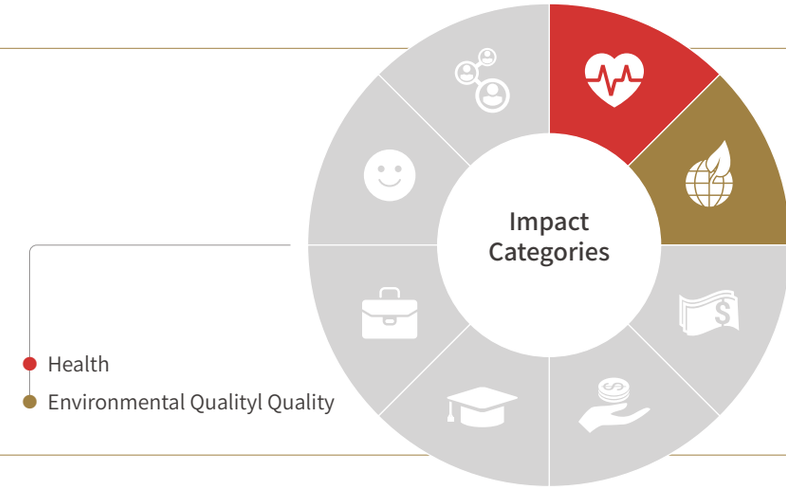
SDGs

▲ TSMC optimizes its ammonia nitrogen wastewater segregation and treatment system, lowering environmental impacts.

Air Pollution Emissions

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Air Pollution Control	● Environment	Air pollutant emissions from TSMC's production and operational activities	⊖ Damage to human health and ecosystems from elevated concentrations of atmospheric particulate matter, photochemical ozone, and toxic substances



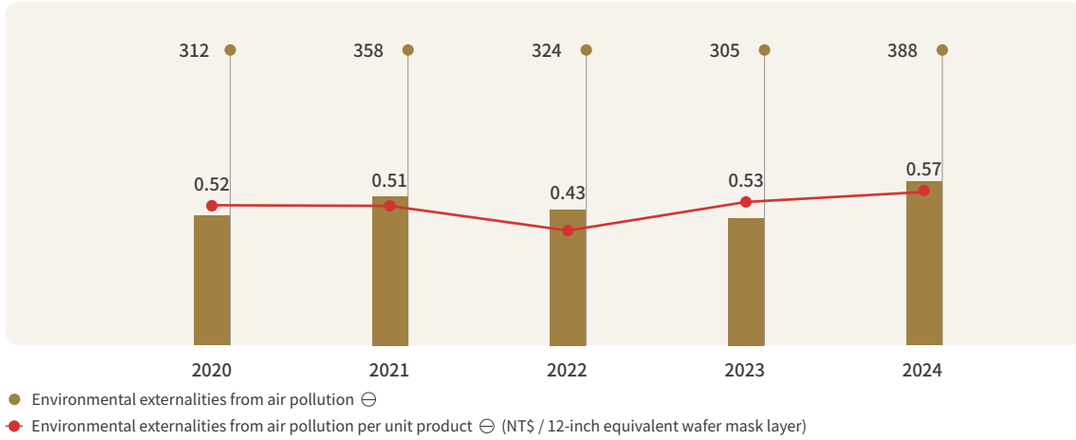
Impact Pathway

Analysis Results

In 2024, the environmental external cost associated with air pollutant emissions from TSMC's global operations reached approximately NT$388 million (negative), accounting for 0.3% of the total operational external cost and representing a 27.9% increase from the previous year. The primary sources of impact included ammonia, nitrogen oxides, sulfur oxides, and sulfuric acid-formed particulates, which contributed to respiratory-related health damages. At the product level, the average environmental external cost per unit of production (12-inch equivalent wafer mask layer) due to air pollution was NT$0.57, indicating a minor increase of 7.5% compared to the previous year.

Environmental Externalities from Operational Air Pollutant Emissions

Unit: NT$ Million Equivalent



Management Actions

To mitigate air pollutant emissions, TSMC adopts the best available technologies to ensure effective pollutant control at both the source and end-of-pipe stages. At the source level, the Company continues to explore nitrogen oxide (NO_x) reduction technologies for various point-of-use treatment systems. In collaboration with suppliers, the Company launched a Nitrogen Oxide (NO_x) Reduction Program that includes methods such as redox reactions, uniform temperature combustion control, and multi-stage heating—achieving a 60% abatement in total nitrogen oxide emissions at a single fab. In 2024, these technologies were officially incorporated into the standard design for new facilities. Moreover, TSMC advanced its Nitrous Oxide Reduction Project by retrofitting electric point-of-use treatment systems, raising the nitrous oxide removal efficiency from 42% to 90%, while also achieving an additional 40% reduction in nitrogen oxide emissions. For end-of-pipe treatment, the Company installed Dual Zeolite Rotor Concentrators paired with low-NO_x incinerators at its new facilities, utilizing low-oxygen combustion and flow field control technologies to reduce nitrogen oxide emissions generated during the high-temperature thermal decomposition of concentrated gases adsorbed by the zeolite rotors. In 2024, the reduction rate of volatile organic compounds (VOCs) reached 99%, demonstrating ongoing progress in air pollution control effectiveness.

In addition, TSMC has reinforced the monitoring capabilities of its air pollution control equipment by installing supplementary instruments—including total hydrocarbon analyzers and online monitors for isopropyl alcohol and fluorinated gases—across emission outlets. The Company also utilizes parameter change management to ensure proper operation of pollution control equipment and to monitor facility emissions and environmental quality. In 2024, TSMC further expanded the scope of its Environmental Testing Center by establishing PM2.5 testing methods for stack emissions and adding organic photochemical precursor monitoring at perimeter boundaries. The Company organized its first training workshop to equip Facility Division and Industrial Safety and Environment Protection Department personnel with the skills needed for independent pollutant sampling to increase the efficiency of air pollution control.

▲ TSMC reinforces the monitoring capabilities of its air pollution control equipment.

Calculation Description

Evaluation Boundary

TSMC's global operation sites

Activity Data

Air pollutant emissions

Analy sis Methodology

Air pollutants, whether emitted directly or formed through secondary reactions with other elements, lead to increased incidences of respiratory and cardiovascular diseases (WHO, 2006). Using an EP&L framework, TSMC assessed the particulate matter formation potential (PMFP), human health ozone formation potential (HOFP), and human toxicity potential (HTP) resulting from air pollutant emissions during operations, which are linked to these diseases. Additionally, the Company applied VSL to estimate the social costs associated with human health losses.

Reference

CML（2016）、ReCiPe（2018）、LC-Impact（2016）、OECD（2012）、PwC UK（2015）、CE Delft（2018）

Impact Framework Alignment

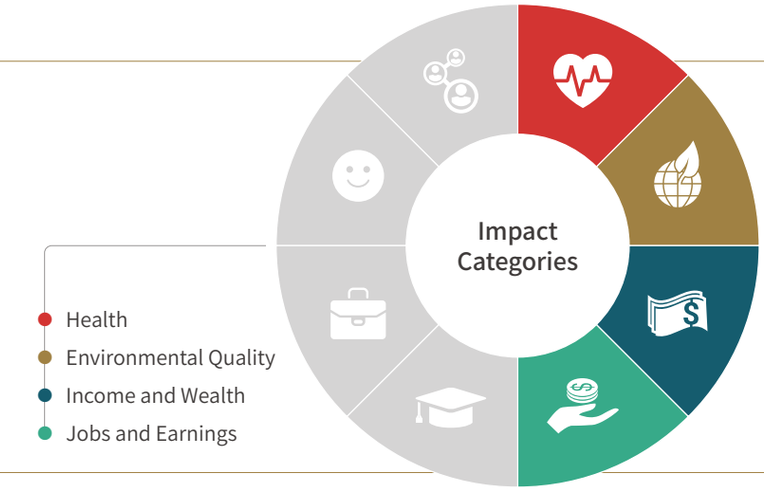
SDGs

▲ TSMC adopts the best available technologies to ensure effective pollutant control at both the source and end-of-pipe stages.

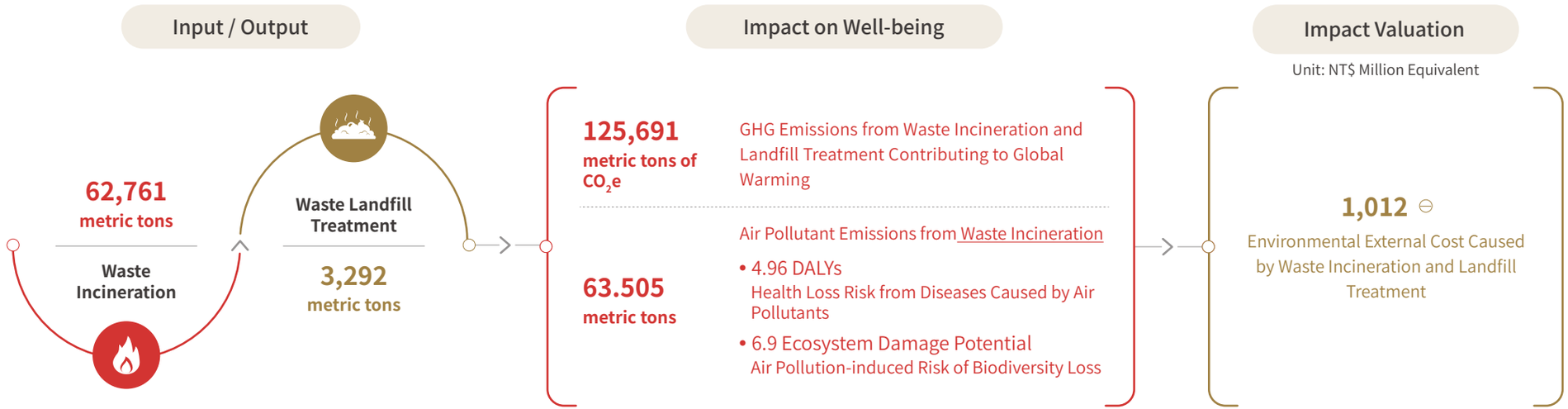
Waste Disposal

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Circular Resources	● Environment	Waste incineration and landfill treatment in TSMC's production and operational processes	⊖ Damage to human health and ecosystems from air pollutants released during waste incineration ⊖ Social cost of carbon arising from GHG emissions during waste incineration ⊖ Social cost of carbon arising from GHG emissions during waste landfilling



Impact Pathway

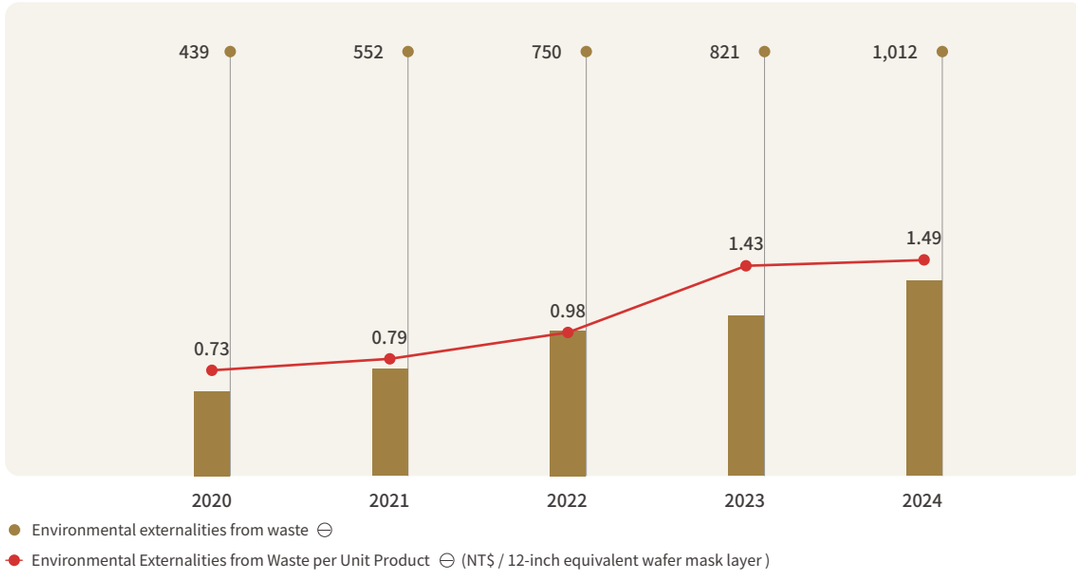


Analysis Results

In 2024, the environmental external cost associated with waste treatment across TSMC's global operations totaled approximately NT$1,012 million (negative), up 23.2% from the previous year and accounting for 0.9% of the total environmental external cost. The primary source of impact was the social cost of carbon resulting from GHG emissions generated during incineration. At the product level, the average environmental external cost per unit of production (12-inch equivalent wafer mask layer) attributable to waste treatment was NT$1.49, representing a slight increase of 3.6% compared to the prior year.

Environmental Externalities from Operational Waste Treatment

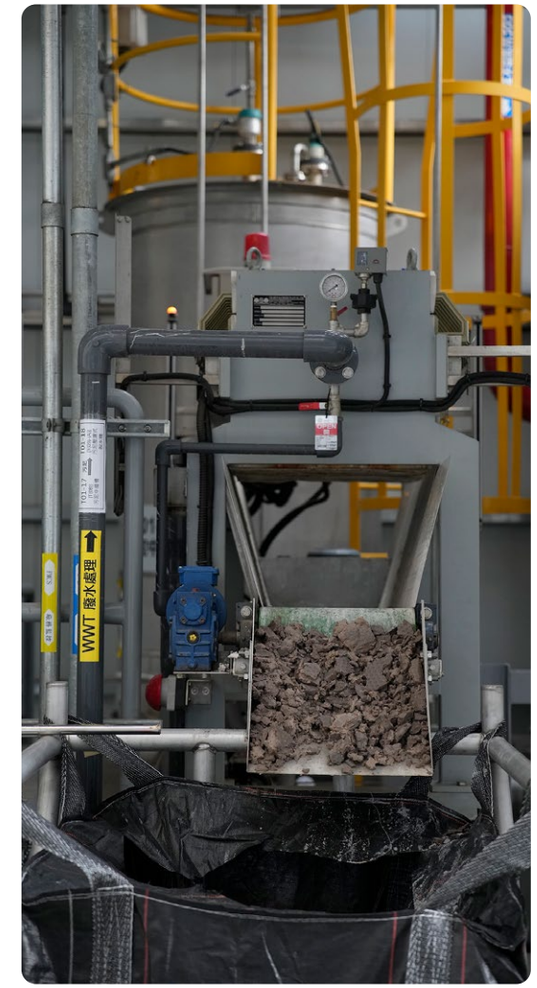
Unit: NT$ Million Equivalent



Management Actions

TSMC advances its resource regeneration efforts through three core strategies: Source Reduction, Circular Economy, and Audit and Guidance. In 2024, its global waste recycling rate reached 97%, while landfill rates at Taiwan sites remained below 1% for the fifteenth consecutive year. For source reduction, the Company carried out 235 waste minimization projects targeting production equipment in the same year, reducing a total of 17,000 metric tons of waste. In terms of circular economy, TSMC implemented the Action Plan to Turn Waste into High-value Products, developing and adopting resource regeneration technologies that convert sulfuric acid, copper sulfate, cobalt sulfate, ammonium sulfate, hydrofluoric acid, and silicon-containing waste liquids into recycled products for reuse within facilities or resale to related industries, creating an economic benefit of NT$1.95 billion. Under the Electronic-Grade Chemicals Recycling Program, the Company partnered with suppliers to recycle electronic-grade tetramethyl ammonium hydroxide (TMAH), electronic-grade isopropanol alcohol (IPA), and reactivated carbon through a "chemical leasing" model, while developing aluminum–plastic separation technologies to enable the reuse of discarded packaging materials. In November 2024, TSMC announced that the Taichung Zero Waste Manufacturing Center—the first integrated energy and resource recycling facility in the global semiconductor industry—officially began commercial operations. The facility comprises four major treatment zones—including a thermal recovery plant for organic solvents and recycling plants for calcium fluoride sludge, silicon dioxide sludge, and isopropanol—and is expected to reduce outsourced waste treatment by 130,000 metric tons annually while generating new value in resource utilization through diverse circular economy models.

With respect to audit and guidance, TSMC continues to assist suppliers in establishing intelligent waste tracking systems conducting annual on-site audits of waste transportation contractors and waste treatment providers. These efforts resulted in the correction of 38 and 98 identified deficiencies, respectively. By fostering a responsible supply chain, the Company pursues shared growth with its suppliers and contributes to environmental sustainability.



▲ TSMC Zero Waste Manufacturing Center adopts diverse circular economy models, generating new value in resource utilization.

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Volume of industrial waste incineration and landfill treatment

Analysis Methodology

The incineration of waste generates air pollutants, primarily comprising particulate matter, nitrogen oxides, sulfur oxides,
dioxins, and heavy metals, which can exert substantial adverse effects on human health, including cancer or cognitive impairment. Moreover, both waste incineration and decomposition in incinerators or landfills also contribute to GHG emissions (EXIOPOL, 2009; PwC UK, 2015). TSMC, assessed the potential impact of air pollutants resulting from waste incineration on human health using the EP&L framework. This was supplemented by the application of the value of a statistical life (VSL) to estimate the social costs associated with human health impact. Furthermore, by considering factors such as the dry matter weight, organic carbon content, fossil carbon content, and incineration efficiency of various types of waste, TSMC estimated the GHG emissions from waste incineration and methane emissions from anaerobic decomposition during landfilling using the First Order Decay (FOD) model. This enabled the estimation of the social cost of carbon (SCC) incurred by both incineration and landfilling processes.

Reference

LC-Impact（2016）、USEtox（2017）、IPCC（2006）、US EPA（2016）、OECD（2012）、PwC UK（2015）

Impact Framework Alignment

IRIS Metrics

OI6192：Waste Disposed: Total

SDGs

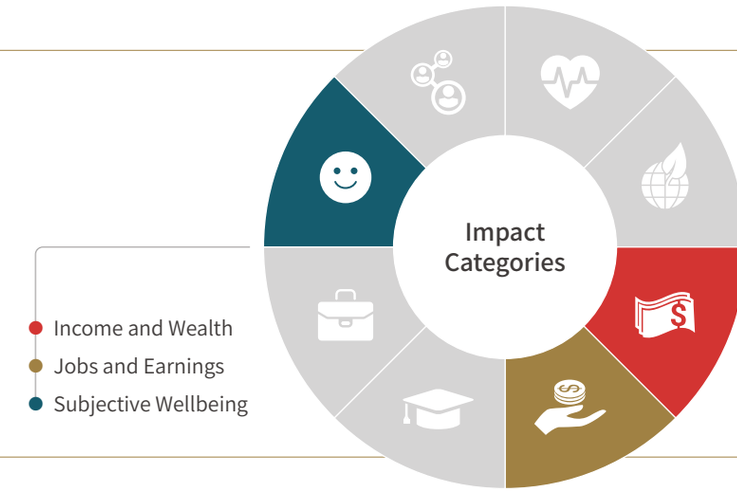
SDGs

▲ TSMC announces that the Taichung Zero Waste Manufacturing Center—the first integrated energy and resource recycling facility in the global semiconductor industry—officially began commercial operations.

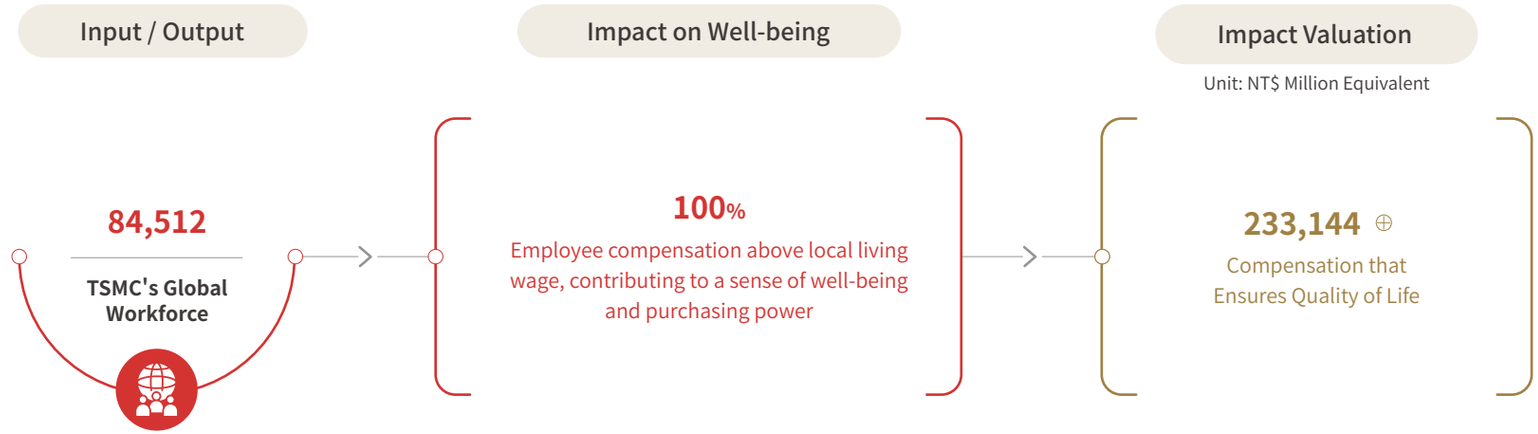
Compensation Balancing Quality of Life

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Talent Attraction and Retention	● Internal Employees	TSMC provides employees with compensation that exceeds living wage standards	⊕ Providing compensation above the living wage improves quality of life, well-being, and purchasing power for employees and their families



Impact Pathway



Analysis Results

In 2024, TSMC recruited 10,073 new employees worldwide, and created 7,291 additional high-quality job opportunities. Its global workforce totaled 84,512 individuals, resulting in competitive salary and bonus income of NT$233.14 billion (positive) for employees.

Living Wage

Compensation received by employees for standard working hours that is sufficient to support a decent standard of living for themselves and their families in the location where they work, including costs for food, clothing, housing, transportation, recreation, and other basic needs

TSMC's Operational Sites	Local Living Wage (NTD/year)
Taiwan	499,200
China	290,400
North America	864,000
Japan	475,200
Europe	612,000

Reference：Numbeo cost of living database

Management Actions

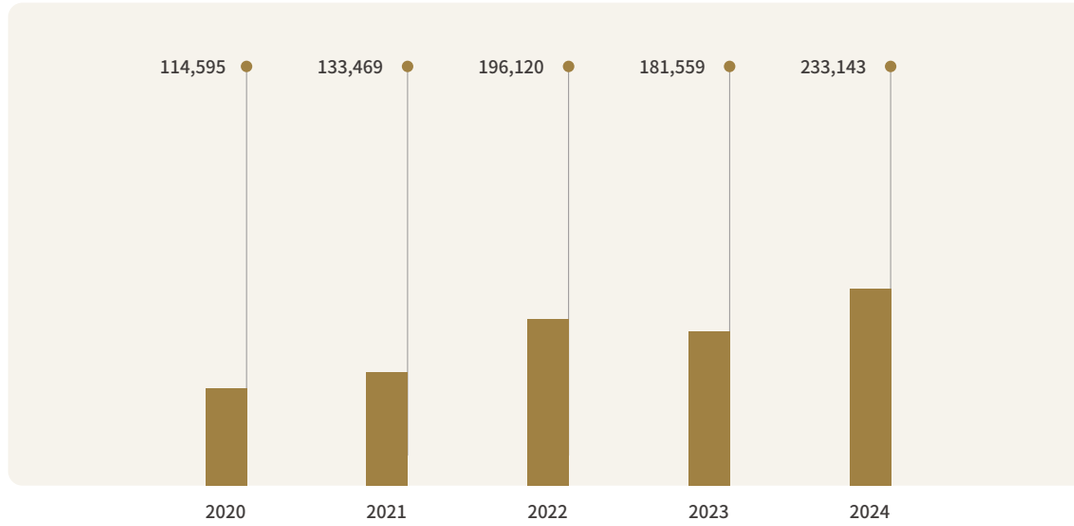
TSMC's total compensation includes base salary, allowances, cash bonuses, and incentive payments. In 2024, for example, newly hired master's-level engineers at Tawan fabs and VisEra Technologies Co., Ltd. received average total compensation exceeding NT$2 million, while direct labor employees received over NT$1 million—equivalent to approximately four times Taiwan's minimum wage in terms of average monthly income.

Compared to the previous year, both the average and median salary levels increased in 2024, reflecting the growth in the number of full-time employees at Taiwan fabs. By offering competitive and living wage-aligned compensation, the Company supports a healthy work-life balance and strengthens employees' motivation.

In addition to cash-based compensation, TSMC and its majority-owned overseas subsidiaries provide all permanent employees with the opportunity to participate in the Global Employee Stock Purchase Plan. The Company provides a 15% subsidy to encourage employees to purchase company shares and share in long-term growth benefits. This plan has received broad support, with a global participation rate exceeding 85%.

Compensation Ensuring Quality of Life

Unit: NT$ Million Equivalent



Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Labor cost – salary and bonus

Analysis Methodology

TSMC assesses both the social benefits and costs linked to the disparity between employee compensation and an adequate local living wage (which varies by geographic location) across its operational sites. Compensation surpassing the local living wage improves employees' well-being and purchasing power, while shortfalls could lead to a decline in their quality of life, incurring additional compensation and prevention costs

Reference

Numbeo cost of living database, Harvard Business School's Impact-Weighted Accounts (IWA), IFVI & VBA (2024)

Impact Framework Alignment

IRIS Metrics

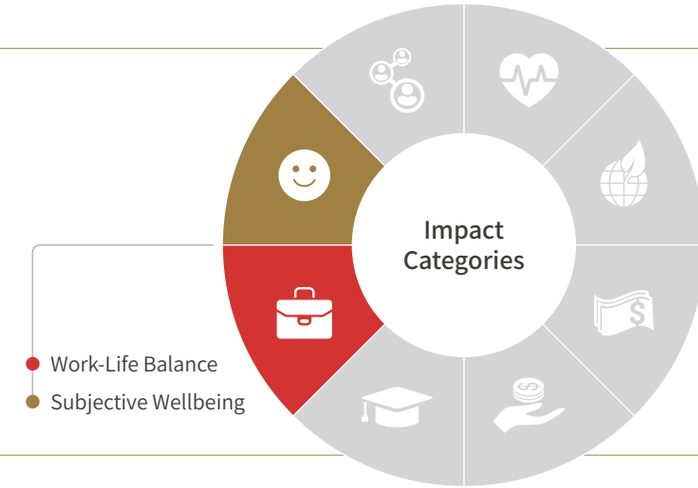
OI4724：Employees Earning a Living Wage or Higher

SDGs

Support for Life and Family

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Talent Attraction and Retention	● Internal Employees	TSMC offers employees both financial and non-financial support that enables them to balance work and family responsibilities	⊕ Family-friendly support allows employees to achieve a balance between professional and personal life



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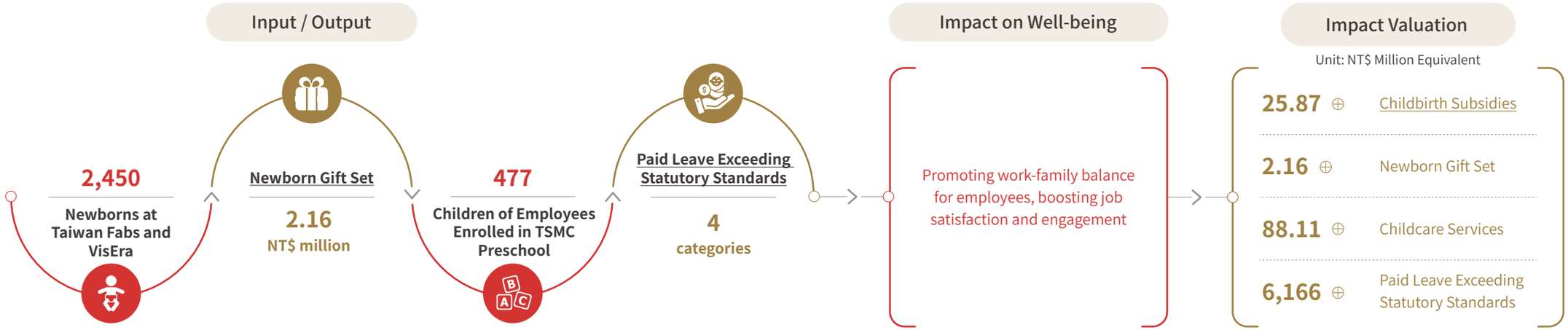


Analysis Results

TSMC extends employee care to include their families through leave and benefits programs that exceeds regulatory standards. In 2024, this initiative provided NT$6,282 million in economic support (positive).

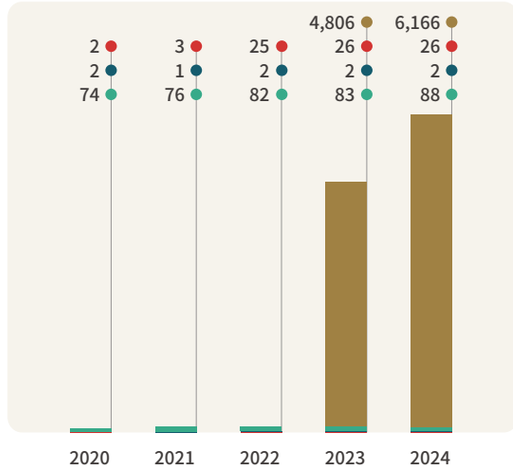
Management Actions

At its Taiwan fabs, TSMC implemented the ChildCare Benefit Program 3.0, offering resources tailored to various stages of child development from pre-pregnancy, pregnancy, childbirth, infancy (ages 0–1), early childhood (ages 2 to 6), up to age 12. During the pre-pregnancy stage, new benefits include one day of leave for each fertility treatment and up to one day of egg-freezing leave per employee. Additional support comprises seven days of childcare leave per year for children under six and 10 days of adoption leave within the first year of adoption. For children under 12, the program also provides seven days of remote work per year. And TSMC provided 4 categories of paid leave exceeding statutory standards, reinforcing the Company's commitment to supporting employees with family responsibilities, enhancing work-life balance.

In addition, TSMC has established four kindergartens across its Hsinchu, Taichung, and Tainan facilities, offering a safe and high-quality learning environment for up to 528 employees' preschool children aged between two and six years old. These kindergartens feature distinctive curricula centered on four key themes: Thematic STEAM Education, Immersive Food and Agriculture Education, Communicative Language Education, and Interactive Parenting Education.

Social Externalities from Family-Friendly Support

Unit: NT$ Million Equivalent



To accommodate employees' work schedules, the childcare services operate from 7:00 a.m. to 8:00 p.m., supporting a balanced integration of professional and family responsibilities. Meanwhile, TSMC has also broadened the scope of enrollment. While priority is given to TSMC employees' children, in 2023 and 2024, enrollment was progressively extended to include children of employees from its subsidiaries and affiliates, as well as those of staff from the Science Park Administration, National Yang Ming Chiao Tung University, National Tsing Hua University, and neighboring companies within the park—further amplifying the program's positive social impact.

Calculation Description

Evaluation Boundary

Operating sites of TSMC in Taiwan

Activity Data

Statistics on benefits related to the TSMC Child Care Benefit Program

Analysis Methodology

Studies indicate that family-friendly welfare systems significantly affect labor participation and income. The absence of gender-neutral family leave and childcare support results in gender disparities and wage loss for caregivers, disproportionately burdening female workers with family responsibilities and leading to adverse effects (Schochet, 2019; BLS, 2017; Glynn, 2018). TSMC, employing the Harvard Business School's Impact-Weighted Accounts (IWA) methodology, analyzed the economic support provided to employees through the various family-friendly benefits offered by the "TSMC Child Care Benefit Program."

Reference

Harvard Business School's Impact-Weighted Accounts(IWA)

Impact Framework Alignment

IRIS Metrics

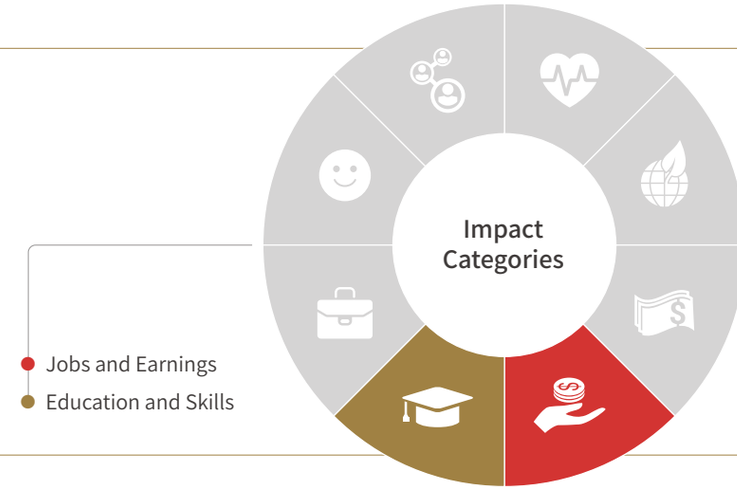
OI2742：Employment Benefits

SDGs

Training Benefits for Employees' Future Income

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Talent Development	• Society • Internal Employees	TSMC provides employees with comprehensive training and development programs	⊕ Enhance employees' job competitiveness through training, create career development opportunities and future salary growth potential and drive the overall development of human capital in society



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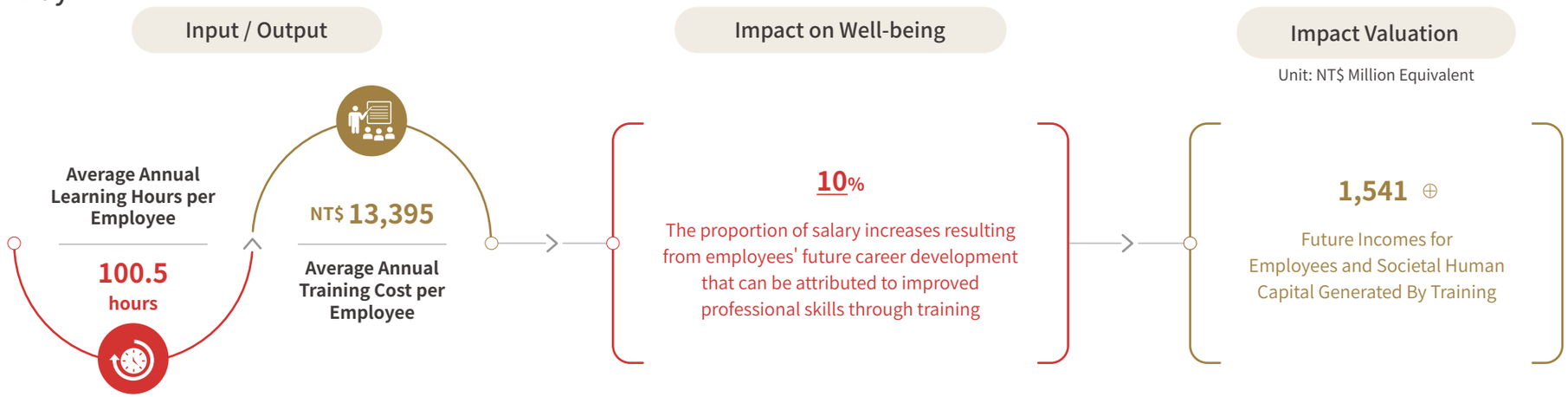
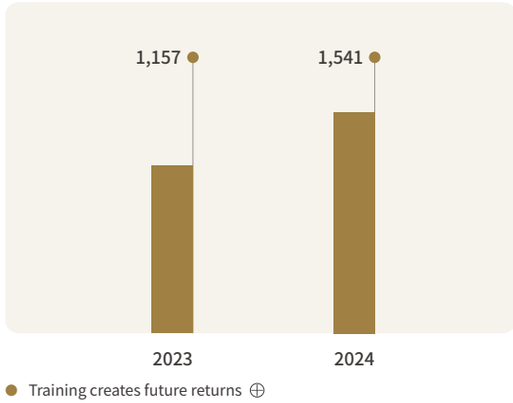


Analysis Results

TSMC leverages a diverse of learning resources and channels to offer courses on regulations, technology, management, and personal effectiveness for employees at different stages of their career development. In 2024, the Company delivered a total of 8.43 million hours of employee training across its global operating sites, continuously cultivating high-caliber talent and creating shared value between the enterprise and its employees. In addition to generating an estimated NT$1,541 million in expected salary growth benefits (positive) for employees' future career transitions, the training programs also enable the Company to unleash individual potential, strengthen overall societal human capital, boost national competitiveness, and drive long-term momentum for economic and social development.

Social Externalities of Training in Creating Future Returns for Employees

Unit: NT$ Million Equivalent



Management Actions

To boost self-learning and build a strong talent pipeline, the Company has established a "TSMC Talent Development Model" featuring two primary strategies: "Unleash Employees' Potential and Innovation" and "Equip Employees with Future Capabilities." Through ability-based learning programs, develop employees' core attributes, general capabilities, leadership capabilities, and functional capabilities. It employs diverse and versatile learning approaches, focusing on a blended learning approach that integrates three key areas: "Experiential Learning," "Feedback and Coaching," and "Education and Training," laying a foundation for employees' career development. Additionally, TSMC designs training and development programs tailored to different job levels, helping employees deepen their professional expertise and enhance their knowledge and skills to improve work performance and employability, growing together with the Company.

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Permanent employees, training hours, average salary, salary adjustment rate, and turnover rate

Analysis Methodology

Enhancing employees' experience and skills is paramount for long-term business and career development. Not only does it boost productivity and revenue for the company, but it also strengthens employees' individual employability. This, in turn, leads to advantageous salary and compensation prospects during career transition or exploring new opportunities, improving quality of life, and bolstering purchasing power. It also contributes to increased tax revenue for the government further benefiting society. Drawing on the Value Balancing Alliance (VBA) methodology and considering factors such as employee salaries, training hours, salary adjustment rates, turnover rates, retirement age, and discount rates, TSMC estimated its social contribution resulting from the anticipated average annual salary growth in employees' careers, facilitated by the accumulation of experiences and skills through the Company's training resources.

Reference

VBA（2022）

Impact Framework Alignment

IRIS Metrics

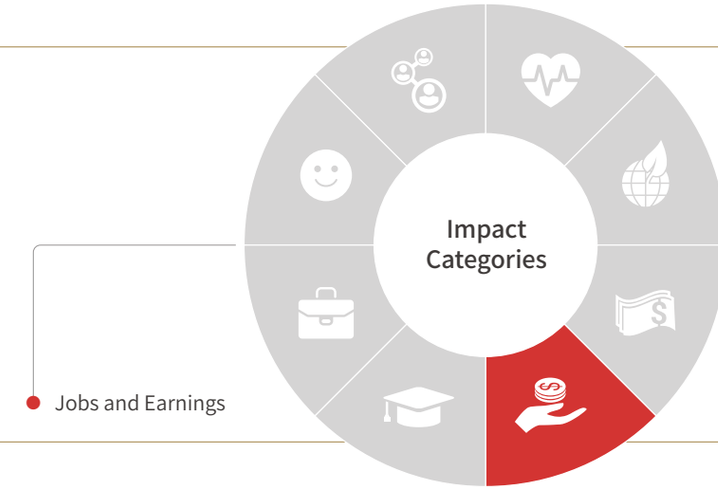
OI7877：Employee Training Hours

SDGs

Equal Opportunity

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Talent Development	● Internal Employees	Equal opportunities for women to access high-paying positions in TSMC's workforce structure	⊕ Equal opportunities for women to access high-paying positions enhance salary growth potential ⊖ Unequal opportunities for women to access high-paying positions create potential salary compensation costs



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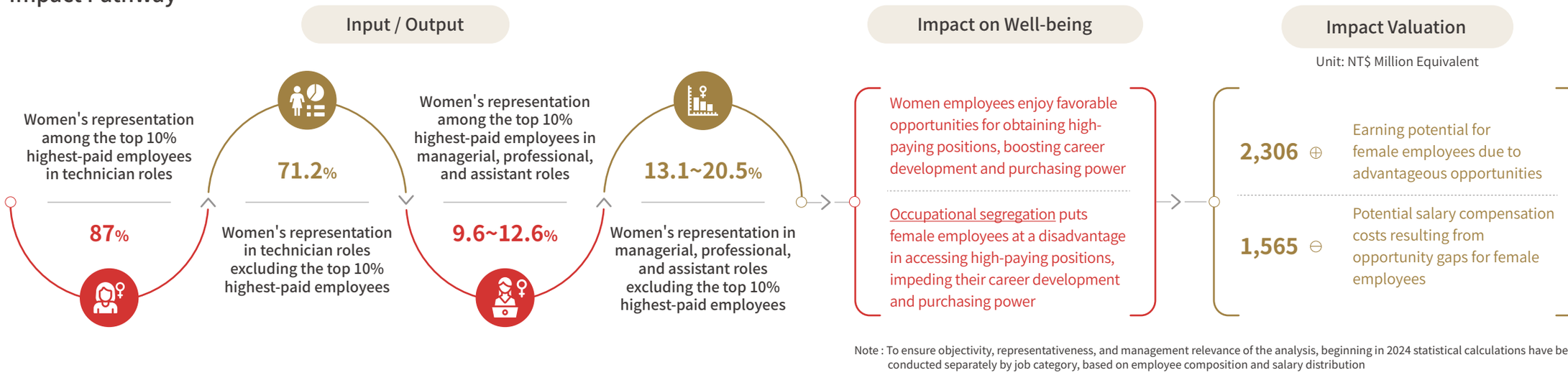


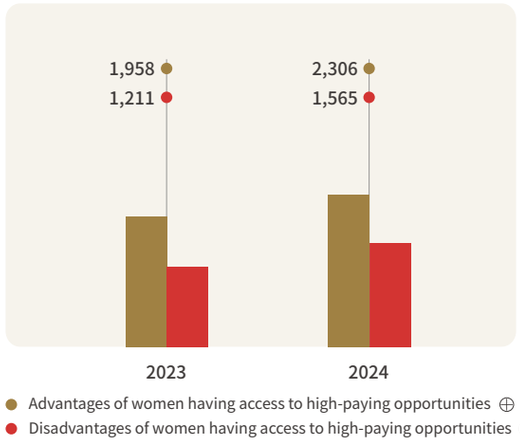
Note : To ensure objectivity, representativeness, and management relevance of the analysis, beginning in 2024 statistical calculations have been conducted separately by job category, based on employee composition and salary distribution

Analysis Results

In 2024, TSMC performed an analysis on the impact of gender factors on compensation and career development by job category at its Taiwan operational sites. In technician roles, female employees demonstrated a 15.8% opportunity advantage, resulting in an estimated NT$2,306 million in earning potential (positive). In contrast, in managerial, professional, and assistant roles, female employees faced opportunity gaps of 3.7%, 9.5%, and 0.5%, respectively—leading to a potential compensation cost of NT$1,565 million (negative).

Social Externalities of Women Attaining Equal Opportunities for High-paying Jobs

Unit: NT$ Million Equivalent



Management Actions

Given the characteristics of the semiconductor industry and prevailing socio-cultural contexts, 66.3% of TSMC's workforce is male. While women constitute the majority of technician roles, male employees account for 80.7% of managerial, professional, and assistant positions. To unlock the potential of diverse talent, the Company actively promotes inclusive workplace experiences for women at every stage of their career. At the Attract / Recruit stage, TSMC hosts events such as Women in Technology and STEM programs for female high school students to cultivate young women in STEM fields. During Onboarding, the Company provides women-focused learning programs and support in daily life to help new employees integrate smoothly into the workplace. At the Engage stage, TSMC implements unconscious bias assessments to raise employee' awareness of implicit biases, and, in partnership with the employee resource group Women@tsmc, organizes cross-disciplinary women's empowerment talks, tech forums, and a Female Caring & Mentoring Program to support women's career advancement. In the Develop / Retain phase, the Company promotes flexible work environments by enhancing leave and attendance systems and launched the TSMC ChildCare Benefit Program 3.0, assisting employees in balancing work and family responsibilities.

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Salary structure data by gender

Analysis Methodology

A study by Cortes & Pan (2018), demonstrated that occupational segregation by gender is a primary driver of wage disparities in the global labor market. According to the Women in Work 2024 study, despite the rising participation of women in the labor force, the gender pay gap continues to widen across most OECD countries, reflecting the persistent influence of workplace bias and systemic inequality. These disparities are further exacerbated when factoring in race and age (PwC UK, 2024). For female employees, unconscious bias often limits access to certain job types, resulting in restricted pay and benefits, slower career progression, and lower job satisfaction (Rothwell & Crabtree, 2019; Penner, 2008; Petersen & Morgan, 1995; Fernandez & Weinberg, 1997). As a result, TSMC adopted the Impact-Weighted Accounts methodology developed by Harvard Business School to analyze gender-based differences in salary structures by job category, measuring both the potential compensation costs arising from wage gaps driven by occupational segregation and the earning potential linked to gender-based opportunity advantages.

Reference

Harvard Business School – Impact-Weighted Accounts

Impact Framework Alignment

IRIS Metrics

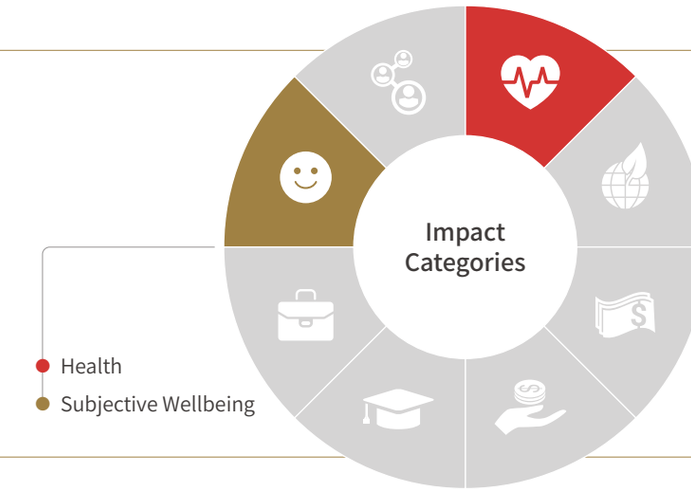
OI1855：Gender Wage Equity

SDGs

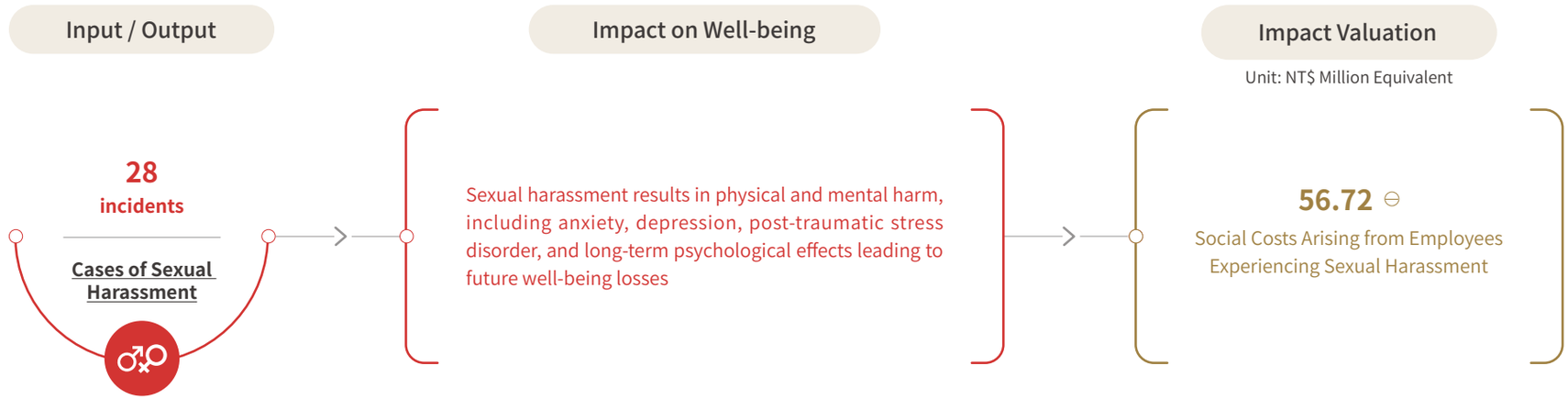
Sexual Harassment

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Talent Attraction and Retention	● Internal Employees	TSMC employees experience verbal or physical harassment	⊖ Harassment causes physical and mental harm, resulting in medical expenses and long-term welfare losses



Impact Pathway

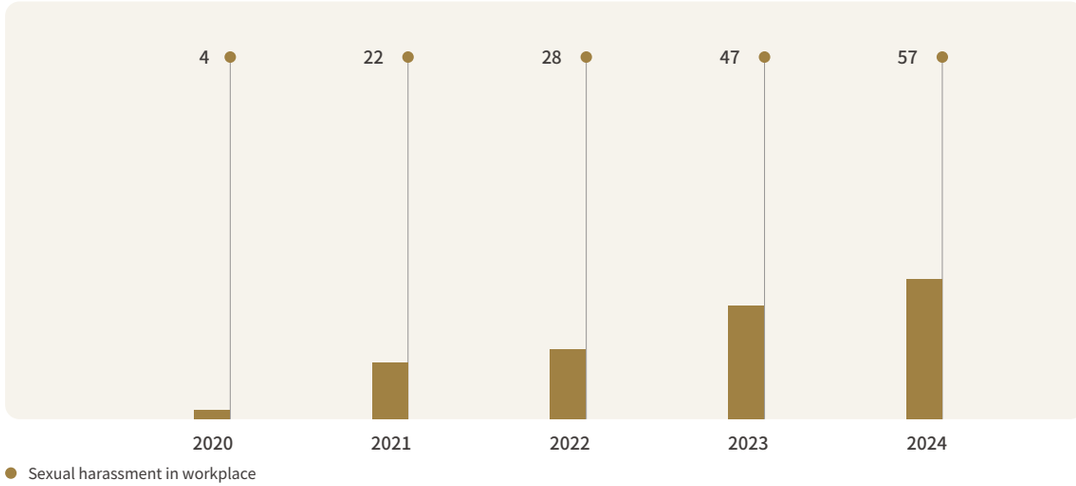


Analysis Results

TSMC established the Sexual Harassment Investigation Committee to serve as a channel for employees to report any sexually suggestive remarks, gender-discriminatory language, messages, repeated or continuous pursuit or following against the person's will In 2024, the Committee received 50 complaints, of which 28 cases were substantiated following investigation. The social cost (negative) associated with the victims' physical and psychological harm and long-term welfare losses is estimated at NT$56.72 million.

Social Externalities from Sexual Harassment Cases

Unit: NT$ Million Equivalent



Management Actions

TSMC imposes disciplinary measures such as job reassignment or dismissal based on the severity of the employee's misconduct, while providing relevant support and protection according to the needs of the complainant. Additionally, in 2024, the Company launched a new course titled "TSMC Human Rights Policy- Build a Workplace Free Of Sexual Harassment" covering potential types of sexual harassment and emphasizing available protection mechanisms and procedures for filing complaints, thereby reinforcing sexual harassment prevention.

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Reported and verified cases of sexual harassment

Analysis Methodology

Entitlement to a safe and equitable workplace is integral to the right to work, with sexual harassment constituting a breach of workers' fundamental rights and a manifestation of gender discrimination within professional settings (ILO, 2013). Sexual harassment encompasses both verbal and physical misconduct, resulting not only in psychological, physical, and financial harm to the victims but also in diminished overall productivity, heightened turnover rates, and tarnished corporate reputation (EEOC, 2016). Applying the Impact-Weighted Accounts (IWA) methodology pioneered by Harvard Business School, TSMC assessed the social costs associated with instances of sexual harassment among employees, factoring in medical expenses arising from the physical and psychological toll on employees, as well as the enduring repercussions on mental health leading to prospective losses of well-being.

Reference

Harvard Business School's Impact-Weighted Accounts(IWA)

Impact Framework Alignment

IRIS Metrics

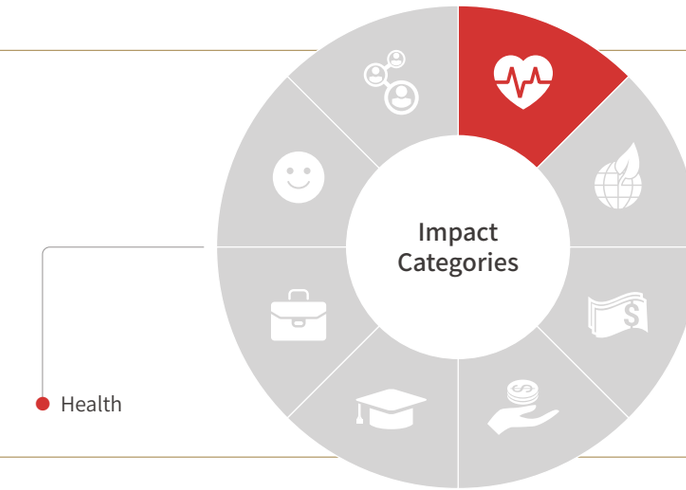
OI9077：Number of Employee Grievances Resolved

SDGs

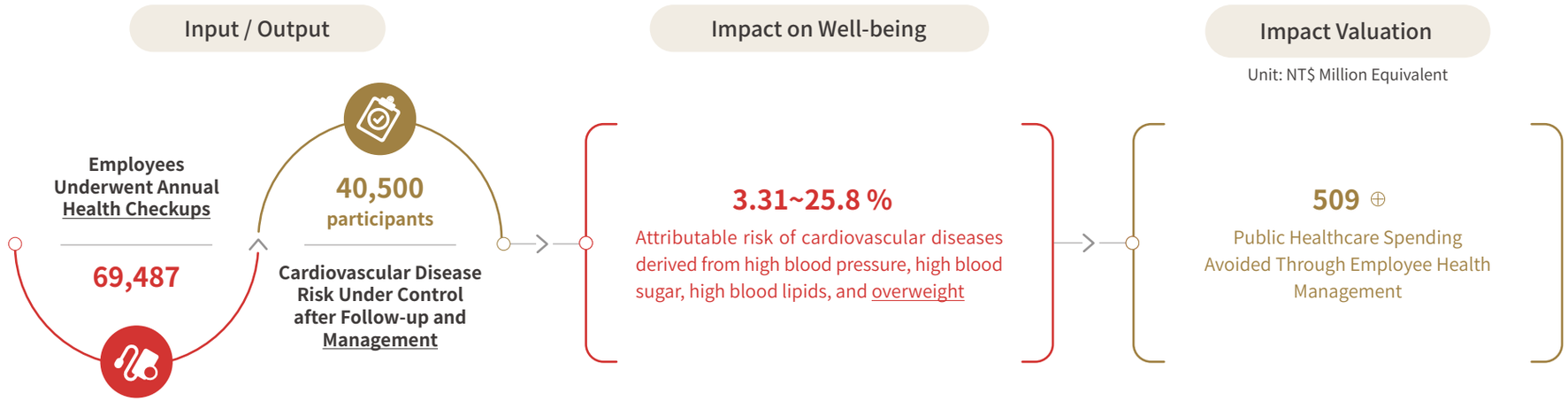
Employee Health Risk and Management

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Occupational Safety and Health	● Internal Employees	TSMC employees at risk of cardiovascular disease maintain effective health management through regular monitoring and follow-up	⊕ Improvements in employees' lifestyles and health status that prevent medical expenses associated with disease



Impact Pathway

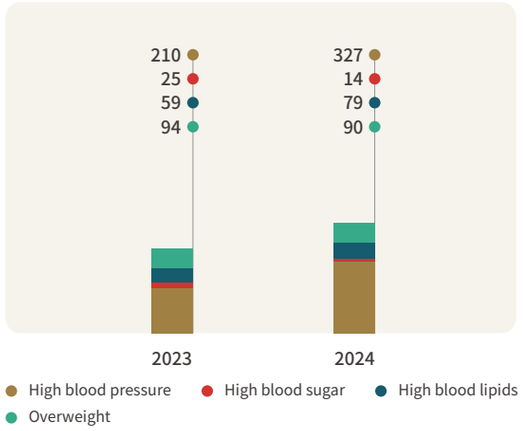


Analysis Results

TSMC safeguards employees' physical and mental well-being through five major approaches: Health Check-up, Health Risk Management, Occupational Disease Prevention, healthcare and support , and Health Promotion. In 2024, a total of 69,487 employees in Taiwan participated in health check-ups. For those identified with cardiovascular risk factors such as abnormal blood pressure, blood sugar, blood lipid levels, or overweight conditions, the Company provided health education, follow-up care, supported employees in effectively managing health risks, and helped avert NT$509 million in medical costs (positive).

Social Externalities of Employee Health Management

Unit: NT$ Million Equivalent



Management Actions

To foster a workplace that supports both physical and mental well-being, TSMC has established 24-hour Wellness Centers surpassing regulatory standards at its facilities in Taiwan and China. Beginning in 2024, similar round-the-clock health services have also been made available at the TSMC Arizona and JASM sites, extending comprehensive care to employees at all hours. The Company has also organized a number of wellness programs, including fast walking, weight management, and health education lectures, while offering a wide range of medical screening resources to facilitate early detection and timely treatment and mitigate health risks.

In terms of mental health, the Company added on-site professional counselors in 2024 to provide prompt psychological support and counseling. In observance of World Mental Health Day on October 10, TSMC expanded the single-day event into a month-long campaign. Through lectures, employees were guided to reflect on and recognize their emotional states and cultivate a positive outlook on life. The events drew a total of 8,564 participants and achieved an overall satisfaction rate of 96.3%.

Calculation Description

Evaluation Boundary

Operating sites of TSMC in Taiwan

Activity Data

Statistics on employee health checkups and health management

Analysis Methodology

According to the Ministry of Health and Welfare, cardiovascular diseases rank among the top three causes of death in Taiwan. Epidemiological studies indicate that factors such as hypertension, high cholesterol, diabetes, and obesity may contribute to cardiovascular diseases (Anderson et al., 1991). From a risk attribution perspective, TSMC actively promotes health management measures to address potential cardiovascular disease risks among employees, including hypertension, hyperlipidemia, hyperglycemia, and overweight. These initiatives assist employees in reducing their risk of developing cardiovascular diseases while preventing future medical cost expenditures.

Reference

World Health Organization (WHO, 2008), Lee (2010), Harvard Business School's Impact-Weighted Accounts(IWA)

Impact Framework Alignment

IRIS Metrics

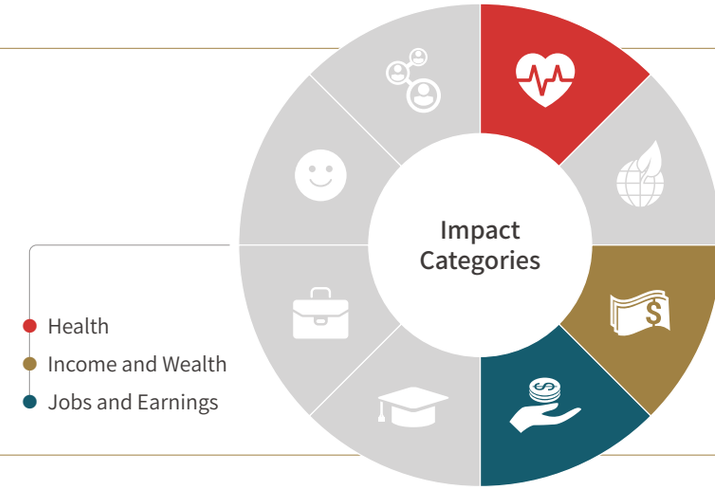
OI4061：Healthcare Benefits Participants

SDGs

Occupational Accidents

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Occupational Safety and Health	● Internal Employees ● External Employees	Occupational incidents involving TSMC employees and contractors	⊖ Occupational accidents result in physical and psychological harm to workers and incur healthcare-related costs



Impact Pathway

Input / Output

Lost workdays due to occupational accidents involving employees and contractors

1,519 days

1 fatality

Fatal occupational accident involving a contractor's employee

Impact on Well-being

NT$ 3.62 M	Willingness to pay to reduce health losses from occupational accidents
NT$ 0.18 M	Compensation from occupational accident-related insurance
NT$ 14.64 M	Socio-economic losses arising from occupational accident fatalities

Impact Valuation

Unit: NT$ Million Equivalent

1.13 ⊖	Social costs arising from employee occupational accidents
17.31 ⊖	Social costs arising from contractor occupational accidents

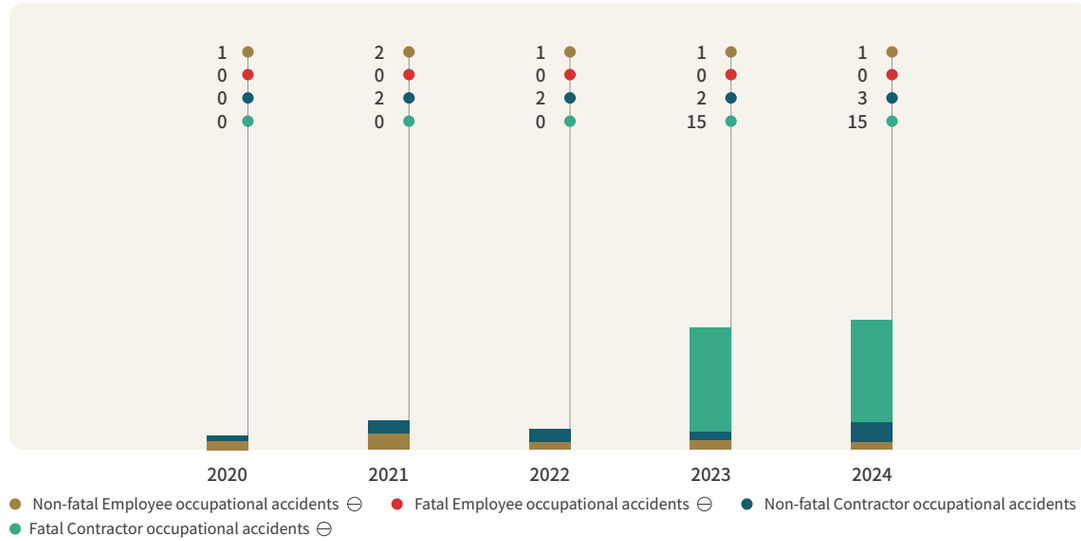
Analysis Results

In 2024, 37 TSMC employees experienced occupational incidents, resulting in 397 lost workdays due to disabling injuries and generating NT$1.13 million in social costs (negative). The primary injury types included falls caused by stepping on fallen materials during tool maintenance and musculoskeletal injuries arising from improper posture during manual tasks. The Company will continue to advance environmental safety management and education. In 2025, TSMC plans a thorough assessment of workplace safety, including floor levelness, lighting adequacy, material stacking conditions, hazard warning signage, and anti-slip facilities. The Company will also evaluate the implementation of strength training programs—such as those combining gait, balance, and coordination and sensory exercises—to build employees' reflexes and muscular strength. Additionally, it will promote safety awareness among employees through safety culture advocacy and safety moment activities.

In addition, contractor operations at TSMC's Taiwan and China sites resulted in 27 occupational incidents involving external workers, leading to 1,122 lost workdays due to disabling injuries and one work-related fatality. These incidents collectively incurred a negative social cost of NT$17.31 million. The fatality occurred during an expansion project on the facility's chilled water pipeline system. The pipeline toppled during installation, injuring the worker, who later died despite medical intervention. In response, TSMC revised the winch hoisting method for installing chilled water valves, while introducing additional safety precautions, including verification of the building's structural integrity, load-bearing capacity, and overload protection mechanisms at the hoisting equipment anchoring points. The updated guidelines mandate that the anchoring point's load capacity must exceed the overload protection specification to prevent similar incidents in the future.

Social Externalities from Occupational Accidents

Unit: NT$ Million Equivalent



Management Actions

TSMC is committed to creating and maintaining a safe working environment. Its fabs in Taiwan, along with subsidiaries TSMC (China), TSMC (Nanjing), TSMC Washington, LLC, and VisEra, have all obtained ISO 45001 Occupational Health and Safety Management System certification, while TSMC Arizona and JASM are scheduled to obtain certification in 2025. In addition, the Taiwan fabs have applied for verification under the Taiwan Occupational Safety and Health Management System (TOSHMS), and address occupational risks at their source in compliance with relevant safety and health regulations and TSMC's Safety and Health Policy.

In 2024, the Company established a chemical hazard identification system for mixed acid data to detect substances with high potential health hazards. By calculating the risks of chemical mixtures, this system enables early identification of operational hazards and lowers the risk of worker exposure. Simultaneously, the Company has collaborated with supply chain partners and experts from industry, government, and academia to develop and promote personal protective equipment in diverse sizes, aiming to deliver comprehensive safety protection and realize an inherently safe working environment.

Regarding contractor management, TSMC implements six major health care initiatives—Vaccination/Blood Donation, Health Management System, Follow-up Care System, On-site Physician Service, Free Health Check-ups in Construction Areas, and Professional Medical Consulting—to provide health services for contractor partners. During the plant construction phase, contractors are required to strictly adhere to standardized management procedures outlined in the ESH Bluebook on Fab Construction, ensuring full compliance with operational safety regulations to safeguard the well-being of both on-site and off-site contractors. Additionally, in 2024, the Company hosted its first Occupational Safety and Health Forum centered on "Inherently Safer Design."The forum covered four key topics: Transitioning from Construction Safety to Operational Safety, Contractor Management, AI-Enabled Disaster Prevention and Tool Management, and Chemical Safety, aiming to elevate workplace safety awareness.

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Occupational accidents involving employees and contractors

Analysis Methodology

The social costs of occupational accidents include both financial and human costs (HSE, 2020). Financial costs comprise productivity losses, medical and rehabilitation expenses, administrative and legal fees, wages, and insurance compensation. Human costs refer to the value individuals are willing to pay to minimize the risk of occupational injury or fatality. Since productivity losses, wage compensation, and administrative and legal fees are already accounted for in the Company's financial statements, and workers' medical and rehabilitation expenses involve personal privacy, these are excluded from the calculations. TSMC's analysis of the social costs of occupational accidents focuses solely on human costs and insurance compensation. Fatal occupational accident takes into account years of potential life lost (YPLL) and work years of potential life lost (WYPLL), using the human capital approach to estimate the monetary value of labor production losses caused by fatalities (Tsao et al., 2013).

Reference

Health and Safety Executive (HSE, 2020), VBA's Impact Statement Methodology for Social and Economic Aspects (VBA, 2022), He (2005), and Tsao et al. (2013)

Impact Framework Alignment

IRIS Metrics

OI3757：Occupational Injuries
OI6525：Occupational Fatalities

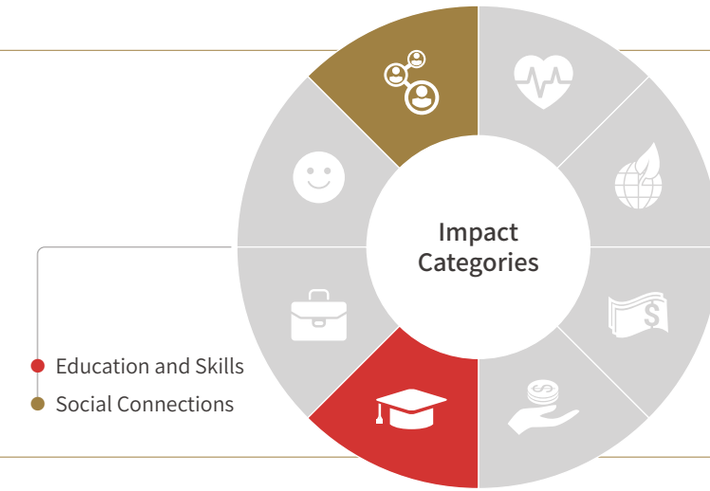
SDGs

▲ TSMC promotes personal protective equipment in diverse sizes, aiming to deliver comprehensive safety protection and realize an inherently safe working environment.

Value of Social Investments

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Occupational Safety and Health	● Society	TSMC allocates financial and non-financial resources to support various public welfare initiatives	⊕ Facilitate local community relations and enhances the quality of life for beneficiaries



Impact Pathway

Input / Output

NT$ 804.93 M
Cash Donations

Time Invested
NT$ 160.97 M

NT$ 1,294.51 M
Materials and Services Provided

Management Fees
NT$ 180.18 M

Impact on Well-being

217	Charity programs
192	Charity partners
1,391,674	Beneficiaries of social engagement programs

Impact Valuation

Unit: NT$ Million Equivalent

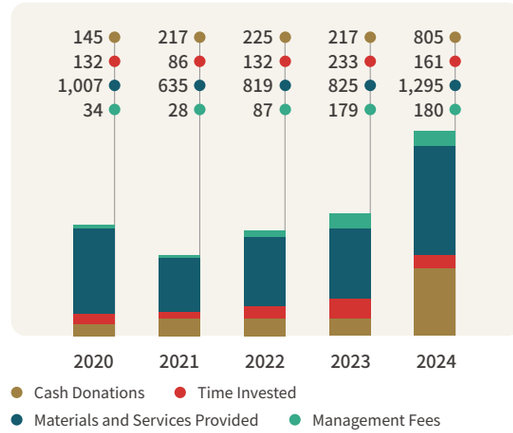
1,800.81 ⊕	Skills or Personal Effectiveness
387.13 ⊕	Behavioral or Attitudinal Change
252.64 ⊕	Quality of Life or Well-being

Analysis Results

TSMC referenced the Business for Societal Impact (B4SI) framework to guide its 2024 project investments, which included cash donations (NT$804.93 million, accounting for 33%), time contributions (NT$160.97 million, 6.6%), provision of goods and services (NT$1,294.51 million, 53%), and management expenses (NT$180.18 million, 7.4%). The resulting outcomes for beneficiaries comprised gains in skills or personal efficacy (NT$1,800.81 million, 73.79%), changes in behavior or attitudes (NT$387.13 million, 15.86%), and improvements in quality of life or well-being (NT$252.64 million, 10.35%), generating a total positive social impact valued at NT$2,440.58 million.

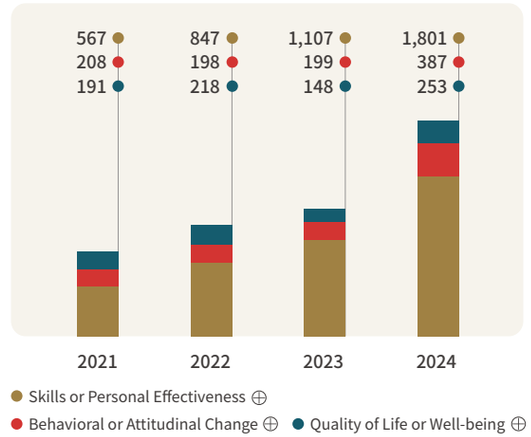
Resource Investment

Unit: NT$ Million Equivalent



Project Impact

Unit: NT$ Million Equivalent



Note : TSMC began evaluating the impact of its charity programs on beneficiaries in 2021.

Management Actions

In collaboration with the TSMC Education and Culture Foundation and the TSMC Charity Foundation, the Company has maintained a long-term focus on a range of societal issues and has undertaken projects in response to emerging needs. In 2024, TSMC conducted a comprehensive review of the aspects and areas of focus of its social participation, concentrating on five major themes: "Educational Innovation, Community Inclusion, Cultural Enrichment, Ecological Sustainability, and Health Protection."

The Company adopted the five dimensions of the Impact Management Project (IMP) framework—What, Who, How Much, Contribution, and Risk – and integrated B4SI principles with the Impact Reporting and Investment Standards (IRIS) to establish a systematic structure to measure, manage, and disclose the outcomes of each project on society and the environment, aiming to deepen social engagement and drive lasting, positive change.

Five Themes	● Educational Innovation ● Community Inclusion ● Cultural Enrichment ● Ecological Sustainability ● Health Protection
What	Assess societal issues, analyze TSMC's potential role, and set goals and expected outcomes
Who	Identify those affected by the issue to serve as the focus of TSMC's project development
How Much	Evaluate the extent of impact generated by TSMC's social projects within a specific period, including scale and depth
Contribution	Apply the B4SI framework to assess TSMC's contributions to society and the environment through various projects
Risk	Identify key factors and risk types that may hinder expected social impact outcomes or prevent achievement of goals

Calculation Description

Evaluation Boundary

TSMC's global operational sites

Activity Data

Social investment value

Analysis Methodology

TSMC utilizes the Business for Societal Impact (B4SI) framework for assessing community investments. This framework calculates the cash, materials, time, and management costs dedicated to philanthropic endeavors. It enables TSMC to evaluate and allocate the quantitative benefits of various projects. Additionally, the Company examines the depth (connection, improvement, change) and type (behavioral or attitudinal changes, skills or personal effectiveness, quality of life or well-being) of the impact of overall resource inputs on beneficiaries. This approach provides insights into the overall benefits derived from these investments.

Reference

Corporate citizenship（2020）

Impact Framework Alignment

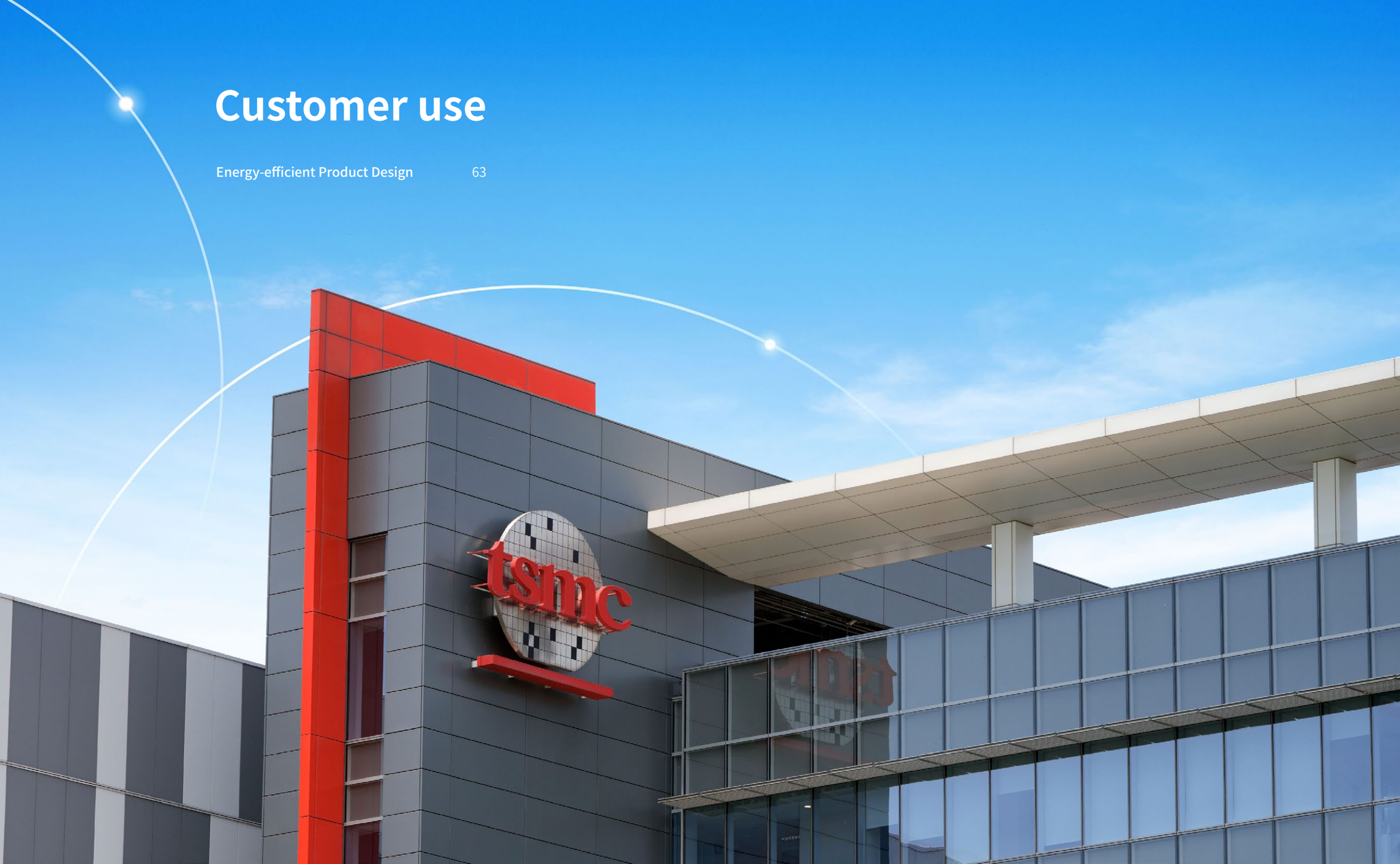
IRIS Metrics

OI7877：Value of Community Development Contributions

SDGs

▲ TSMC aims to deepen social engagement and drives lasting, positive change.

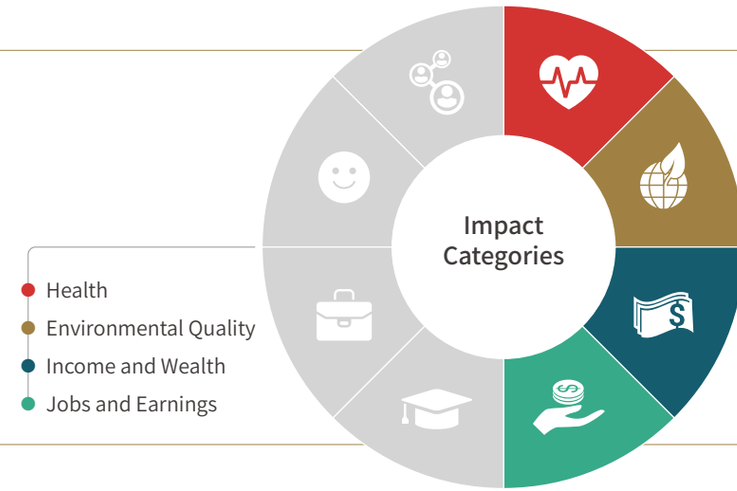
Customer use



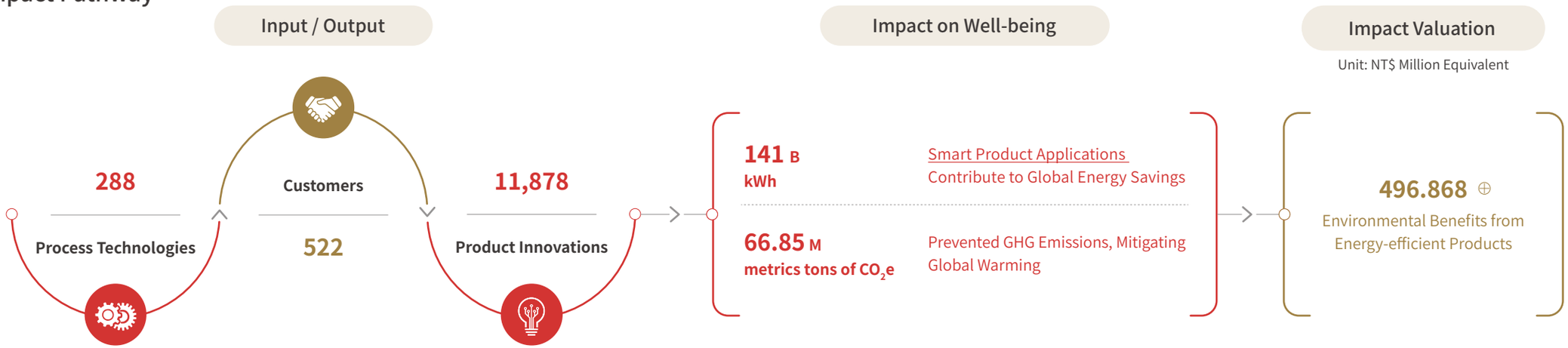
Benefits of Energy Efficient Products

Impact Summary

ESG Issue	Impacted Stakeholders	Impact Driver	Impact Description
Innovation Management	• Environment • Customers	TSMC's innovative technologies assist customers in improving product energy efficiency	⊕ The energy-saving benefits of products help avoid the social cost of carbon associated with greenhouse gas emissions



Impact Pathway



Analysis Results

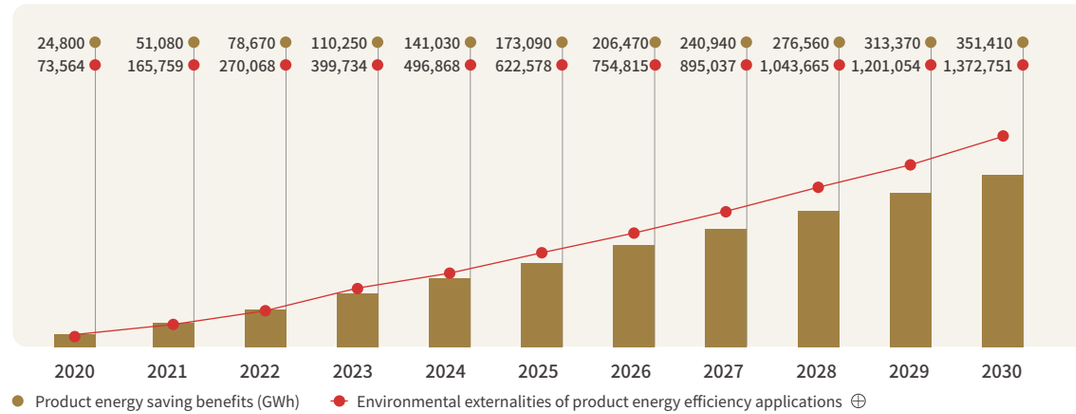
In 2024, TSMC provided 288 process technologies, enabling 11,878 product innovations for 522 customers. This effort helped save 141 billion kWh globally, resulting in positive external environmental effects valued at NT$58.774 billion by curbing GHG emissions. The Industry, Science and Technology International Strategy Center (ISTI) at the Industrial Technology Research Institute conducted a model analysis based on global electricity consumption, gross domestic product (GDP), and the quantity of electronic products. Their findings project that by the year 2030, every kWh of electricity used in production by TSMC, will save 6.39 kWh for other industries and households worldwide. Between 2020 and 2030, TSMC's initiatives are forecasted to amplify global electricity savings from 24.8 billion kWh to 351.4 billion kWh, generating external environmental benefits valued at NT$1.3728 trillion.

Management Actions

TSMC is dedicated to advancing energy-efficient information and communications technology (ICT) through semiconductor manufacturing. By leveraging smart product applications, the Company facilitates energy conservation across various industries and in daily life, contributing to global carbon reduction efforts. By consistently leading the development of next-generation process technologies with higher chip density and lower power consumption, TSMC continues to drive technological innovation and breakthroughs, enhancing computational power and energy efficiency. This enables customers to realize chip innovations and create more advanced, efficient, energy-saving, and cost-effective electronic products, thereby exerting a profound impact on human economic progress, lifestyles, and societal evolution.

Environmental Externalities from Energy-Efficient Product Applications

Unit: NT$ Million Equivalent



Calculation Description

Evaluation Boundary

TSMC chip applications in global end-products

Activity Data

Revenue share of TSMC in high-performance computing, smartphones, Internet of Things (IoT), and automotive technology platforms

Analysis Methodology

A 2009 study by the American Council for an Energy-Efficient Economy (ACEEE) found that U.S. electricity consumption in 2008 was 20% lower than in 1976. Leveraging this methodology, ISTI evaluated the correlation between global electricity consumption and electronic devices. The analysis concluded that semiconductor-based ICT products significantly contribute to global energy savings. Referring to research by the Global Semiconductor Alliance (GSA) and Oxford Economics, the ISTI calculated the contribution rate of semiconductors to the growth of end-use electronic devices. By applying TSMC's share of the global semiconductor market value, the institute gauged TSMC's potential contribution to global energy savings.

Reference

John, A. et al. (2009)、GeSI (2015)

Impact Framework Alignment

IRIS Metrics

PI7623：Energy Savings from Products Sold

SDGs

Extended Applications

--EP&L Assessment of Critical Raw Material Suppliers

To identify potential environmental impacts arising from supply chain activities, TSMC conducts an environmental hotspot analysis of greenhouse gas and air pollutant emissions in the supply chain. Further applying criteria of comparability, data completeness, and procurement weight, the Company developed a systematic supplier review plan focused on 11 categories of key raw materials: Silicon Wafer, Bulk Chemical, Non-process Chemical, Bulk Gas, Specialty Gas, Bulk Lithographic Materials, Litho Photoresist, Far Backend Lithography Materials, Precursor, Specialty Chemical, and Slurry, aiming to thoroughly assess the environmental externalities caused by these materials. Using a Life Cycle Assessment (LCA), the Company examines the external impacts linked to suppliers' production processes, including raw material acquisition, energy and resource consumption, pollutant emissions, and transportation and distribution.

By continuously enhancing the completeness of the supply chain's environmental profit and loss (EP&L) database, TSMC has completed environmental externality assessments for over 147 raw materials in Taiwan as of 2024. The Company also identified potential opportunities for improvement through peer comparison analysis. In 2024, advanced analysis and management strategies were focused on bulk chemicals and bulk lithographic materials—representing 50% of the total weight among the 11 key raw material categories that year. This effort further supports suppliers'improvement measures, including increasing energy and resource efficiency, improving exhaust gas and wastewater management, and promoting waste recycling and reuse, driving the supply chain toward process optimization and green transformation.

Advanced Analysis 1: Bulk Chemicals

TSMC undertook an environmental external cost assessment on seven types of bulk chemicals: sulfuric acid, hydrogen peroxide, hydrochloric acid, ammonia water, hydrofluoric acid, phosphoric acid, and isopropanol. Among these, sulfuric acid and hydrogen peroxide incur the highest external costs, mainly attributed to raw material acquisition and energy consumption during production, which together account for 97% of their combined life cycle external costs. To mitigate these environmental externalities, the Company has adopted a series of effective reduction measures.

- Sulfuric Acid

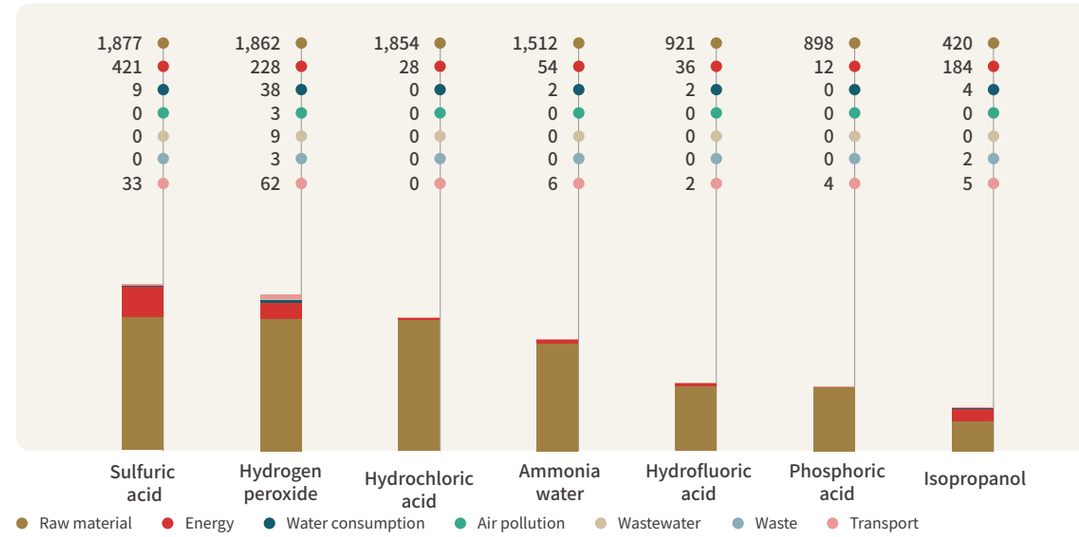
  In 2023, TSMC adjusted the acid discharge mode of wet etching equipment, successfully reducing sulfuric acid wastewater generated per 12-inch wafer by 20%. In 2024, the Company extended this approach to other types of high-temperature wet etching machines. While maintaining process quality, TSMC continues to inspect the equipment's piping for heat and corrosion resistance and monitor temperature fluctuations and pH levels in wastewater collection tanks, achieving a reduction of 3,400 metric tons of sulfuric acid wastewater.

- Hydrogen Peroxide

  TSMC achieves source reduction by decreasing exposure time, prolonging usage cycles, skipping process steps, and employing alternative operational methods. Suppliers are also required to use renewable energy and apply carbon capture technologies to lower the carbon footprint associated with upstream production, further reducing the environmental impact caused by hydrogen peroxide.

Environmental Externalities of Bulk Chemicals

Unit: NT$ Million Equivalent

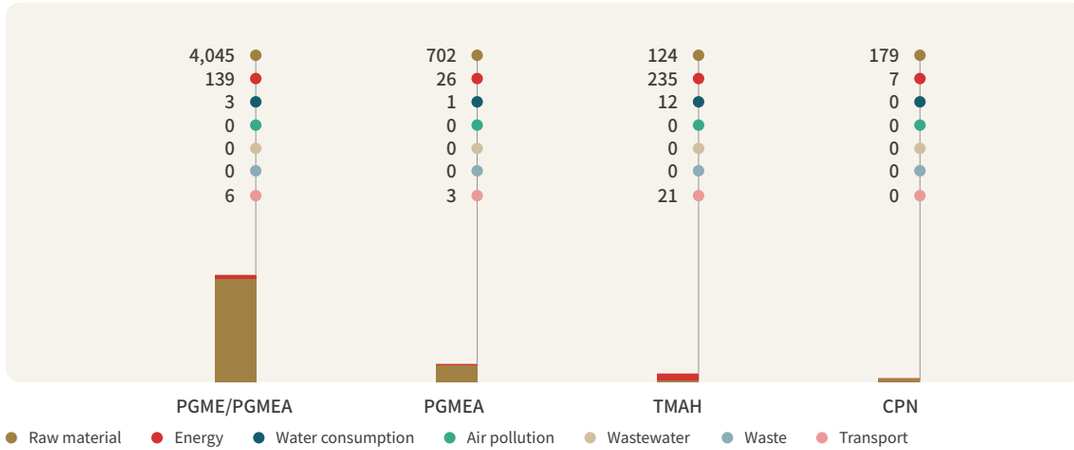


Advanced Analysis 2: Bulk Lithographic Materials

TSMC assessed four types of bulk photoresist materials—including PGME/PGMEA, PGMEA, CPN, and TMAH—which represent 97% of the total usage weight in this category. Among them, PGME/PGMEA exhibits the most significant environmental externalities, with 96% concentrated in the raw material acquisition phase. In response, the Company optimized chemical flow parameters to improve the efficiency of photoresist thinner usage, cutting consumption per unit of production. At the same time, suppliers are required to implement green manufacturing practices at the production source, such as replacing coal with natural gas, procuring renewable energy, upgrading to energy-saving equipment, and developing electronic-grade recycling technologies, all aimed at minimizing environmental impact.

Environmental Externalities of Bulk Lithographic Materials

Unit: NT$ Million Equivalent



▲ TSMC collaborates with suppliers to develop TMAH regeneration technology, creating a green circular system.

Appendix

Historical Data

Causes of the Impact	Operational Inputs and Outputs	Impacts on Well-being	Monetary Value (NT$ Million) Note 2				
			2020	2021	2022	2023	2024
Upstream Procurement	Payment to Suppliers for Procurement	Procurement demand driving industry supply and demand relationships	⊕ 1,080,200	1,332,300	2,070,800	1,860,300	2,457,600
		Procurement demand creating supply chain job opportunities	⊕ 157,619	214,113	267,529	199,008	292,826
		Risks of forced labor resulting in loss of freedom and risks to physical and mental health for workers	⊖ 335	439	525	473	747
		Risks of child labor resulting in loss of access to quality education and future income	⊖ 0	1.6	0.6	0.7	1.9
		Environmental impact of GHG emissions derived from supply chain production processes	⊖ 12,003	16,168	20,496	19,040	29,876
		Environmental impact of air pollution emissions derived from supply chain production processes	⊖ 11,738	14,604	16,616	15,420	27,441
	Assisting suppliers in energy-saving	Assisting suppliers in energy-saving to avoid environmental impact from GHG emissions	⊕ 328	434	643	1,019	765
	Assisting suppliers in water-saving	Assisting suppliers in water-saving to avoid environmental impact from water resource scarcity	⊕ 119	951	522	751	684
	Assisting suppliers in waste reduction	Assisting suppliers in waste reduction to avoid environmental impact from waste generation	⊕ 57	68	83	108	123
TSMC Operations	Net Revenue	Bringing returns to investors and fostering economic growth momentum	⊕ 518,158	597,073	1,016,901	837,768	1,172,432
	Depreciation	Changes in fixed assets generate revenue for suppliers	⊕ 324,538	414,188	428,498	522,933	653,610
	Amortization	Knowledge-based intangible assets help in the development and application of industry technology	⊕ 7,186	8,207	8,756	9,258	9,186
	R&D Expenses	R&D expenses aids in the development and application of industry technology	⊕ 109,486	124,735	163,262	182,370	204,182
	Tax	Supporting government initiatives for infrastructure expansion and social welfare	⊕ 58,893	93,583	101,451	189,005	202,045
	GHG Emissions	Changes in GHG concentrations driving global warming	⊖ 55,926	65,695	78,059	95,869	107,712
	Use of Self-generated Renewable Energy	Changes in GHG concentrations mitigating global warming	⊕ 3,550	5,193	7,398	9,173	13,076
	Use of Purchased Renewable Energy	Changes in GHG concentrations mitigating global warming	⊕				
	Effectiveness of Energy-saving Measures Note1	Changes in GHG concentrations mitigating global warming	⊕ 6,553	9,278	12,217	14,931	17,357
	Water Consumption	Changes in water resource availability intensifies water usage pressure in nearby communities	⊖ 4,131	4,445	5,617	5,494	5,843
	Use of Reclaimed Water	Changes in water resource availability prevents water usage pressure in nearby communities	⊕ –	–	–	712	1,110

Note 1 : Starting in 2024, TSMC has adjusted the calculation basis for energy-saving measures to reflect cumulative electricity savings, with power emission factors disaggregated by operating location. Historical data have also been updated accordingly.

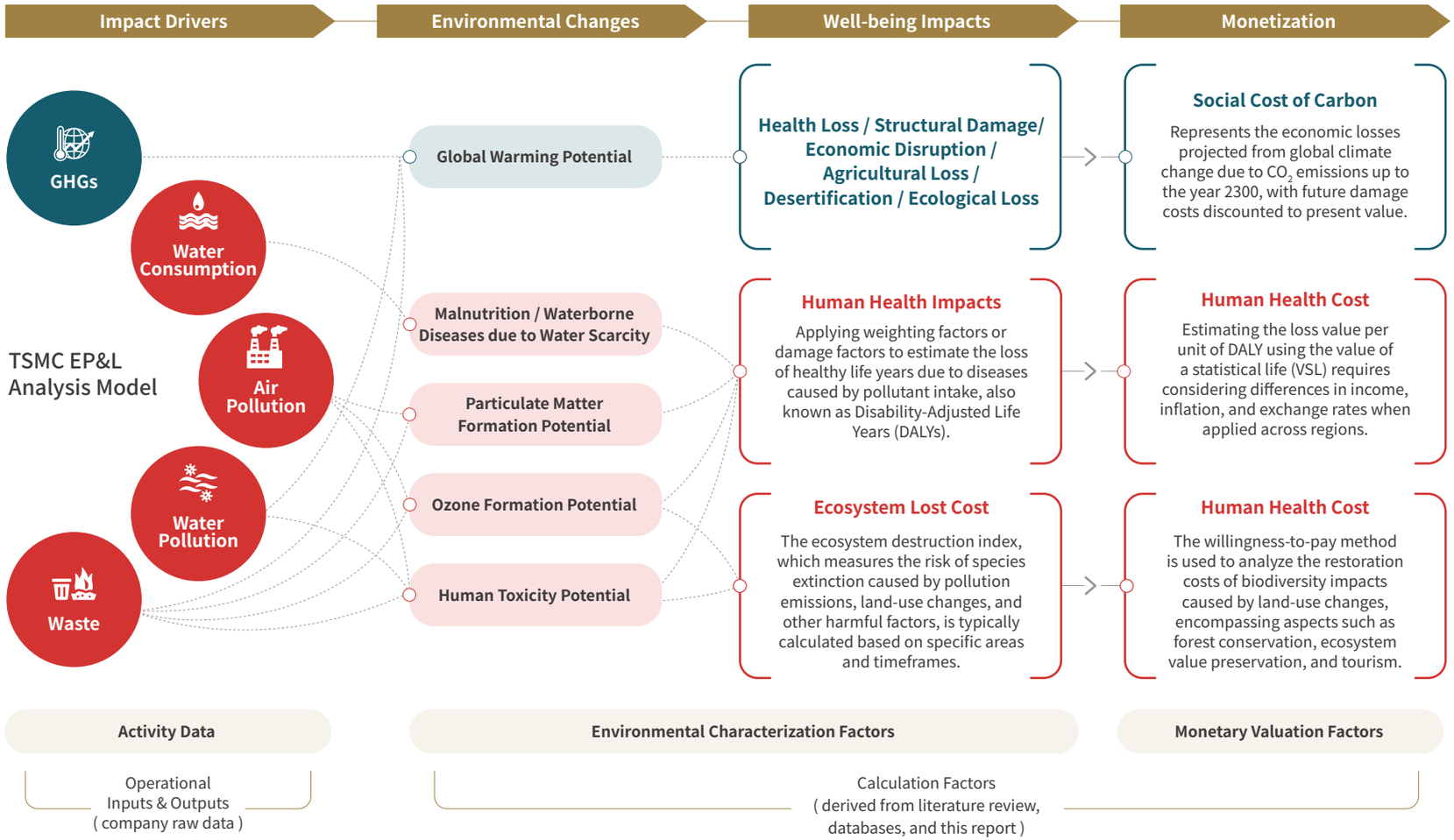
Note 2 : Due to updates to value coefficients, TSMC has revised historical data analyses accordingly. The adjustments cover 14 indicators, including GHG Emissions from the Supply Chain, Energy-saving Consultation for Suppliers, Water-saving Consultation for Suppliers, Waste Reduction Consultation for Suppliers, GHG Emissions from TSMC Operations, Benefits of Using Renewable Energy, Benefits of Promoting Energy-saving Measures, Water Resource Consumption from TSMC Operations, Benefits of Using Reclaimed Water, Benefits of Promoting Water-saving Measures, Wastewater Discharge from TSMC Operations, Air Pollution Emissions from TSMC Operations, Waste Disposal from TSMC Operations, and Energy-efficient Product Design.

Causes of the Impact	Operational Inputs and Outputs	Impacts on Well-being	Monetary Value (NT$ Million) Note 2	2020	2021	2022	2023	2024
TSMC Operations	Water Conservation and Water Resource Recycling and Usage	Changes in water resource availability prevents water usage pressure in nearby communities	⊕	9,051	9,955	11,550	15,872	15,702
	Wastewater Discharge	Changes in pollutant concentrations in water bodies leading to health and ecological impacts	⊖	443	459	519	470	530
	Air Pollution Emissions	Changes in air pollution concentrations in the atmosphere leading to health and ecological impacts	⊖	312	358	324	305	388
	Waste Disposal	Air pollution and GHG emissions from incineration and landfill	⊖	439	552	750	821	1,012
	Employee Compensation and Benefits	Increased happiness and purchasing power from compensation above the living wage	⊕	114,595	133,470	196,121	181,560	233,144
	Employee Support Programs	Work-life balance improvement through paid leave and family-friendly support	⊕	79	80	109	4,918	6,282
	Incidents of Workplace Sexual Harassment	Medical costs and loss of future well-being resulting from physical and mental injuries	⊖	4	22	28	40	57
	Employee Training and Development Note 3	Enhanced professional skills and employability through training	⊕	–	–	–	1,157	1,541
	Employee Compensation Structure Note 3	Boost salary growth potential through equal opportunities for women in high-paying positions	⊕				1,958	2,306
		Result unequal opportunities for women in high-paying positions in potential salary compensation costs	⊖	–	–	–	1,211	1,565
	Employees with Improved Health Management Note 3	Lifestyle and health improvements through health education	⊕	–	–	–	388	509
	Employee Occupational Accident Incident	Physical and mental impact of workers and healthcare expenditure	⊖	1.2	2.2	1.1	1.4	1.1
	Employee Occupational Accident Fatality Incident							
	Contractor Occupational Accident Incident	Physical and mental impact of workers and healthcare expenditure	⊖	0.6	1.9	1.8	15.8	17.3
	Contractor Occupational Accident Fatality Incident							
	Social Investments	Promotion of local community relations and improvement of life quality	⊕	1,318	966	1,263	1,454	2,441
Customer Use	Benefits of Energy-efficient Products	Assisting customers in product energy efficiency to avoid and mitigate environmental impacts from GHG emissions	⊕	73,564	165,759	270,068	399,734	496,868

Note 3 : Beginning in 2023, TSMC has incorporated activity data and externality analysis for indicators related to - future employee earnings generated from training, equal opportunities, employee health management, and support for life and family (exceeds statutory standards paid leave).

Overview of the EP&L Methodology

TSMC adopts the Environmental Profit and Loss (EP&L) analytical approach to assess how environmental changes resulting from corporate value chain activities affect human well-being (PwC UK, 2015). Grounded in welfare economics, this methodology quantifies the positive or negative changes in well-being caused by corporate-driven environmental impacts using either individuals' willingness to pay (WTP) or willingness to accept compensation (WTA) (ISO, 2019). In conjunction with academic institutions, the Company has developed and continuously refined its EP&L methodology, integrating impact pathway analysis with life cycle assessment concepts to characterize externalities arising from operational activities and to assess environmental impacts of value chain processes.



The data used in the calculation process are divided into activity data, environmental characterization factors (CFs), and monetary valuation factors (VFs). Activity data comprise either raw data (primary data) sourced from TSMC or suppliers, or secondary data derived from databases. Environmental CFs and monetary VFs represent secondary data gleaned from peer-reviewed literature, databases, or this study.

Environmental impact characterization factors (CFs) encompass both midpoint and endpoint CFs. Midpoint CFs refer to alterations in environmental conditions caused by resource consumption and pollutant emissions (e.g., increased concentration of particulate matter), while endpoint CFs reflect the effects of such environmental changes on human health and ecosystems, measured in Disability-Adjusted Life Years (DALYs) or Potentially Disappeared Fraction of species per square meter per year (PDF · m^2 · yr). The monetary valuation coefficients include the "social cost of carbon," which measures the long-term economic damage caused by greenhouse gas emissions that contribute to global warming and climate change; the "human health loss cost," which represents the value of disability-adjusted life years lost due to impacts on human health from resource consumption and pollutant emissions; and the "ecosystem damage cost," which accounts for species extinction risks caused by pollutant emissions, land use changes, and other harmful factors.

Target	Activity Data (Input)	Activity Data (Ouput)	CFs	VFs
TSMC	◎	◎	○	○
Supply Chain (hot spot analysis)	◎	○		
Critical Raw Material (life cycle assessment)	◎ / ○	◎ / ○		

◎ **Primary Data (from inventory)**

- Data on resource use and pollutant emissions in TSMC operations
- Data on TSMC's purchases (in NT$) in upstream procurements
- Data on material input, energy consumption, pollutant emissions, and transportation for the supplier's manufacturing process

○ **Secondary Data (from databases and literature)**

- Pollutant emissions data are derived from purchase amount by applying EEIOA, which are referenced from the EXIOBASE 2 database
- Data on material input, energy consumption, pollutant emissions, and transportation for all manufacturing stages of the supplier's raw material supply chain are referenced from the Ecoinvent database
- Midpoint and endpoint CFs are derived from this study or from reference sources such as ReCiPe (2017), LC-Impact (2016), UNEP/SETAC (2017), USEtox (2017), CML (2016), IPCC (2006) and Eco-indicator 99
- VFs referred to the US EPA (2023), OECD (2012), and PwC UK (2015)

Social Cost of Carbon

The social cost of carbon (SCC) is based on US dollar values in 2020 and gauges the long-term economic damage caused by emitting one metric ton of greenhouse gases within a given year. The reference source is a study by the US Environmental Protection Agency (US EPA, 2023), which employs four modular modeling approaches—socioeconomic-emissions scenarios, climate modeling, damage function modeling, and discounting—alongside three damage functions (DSCIM, GIVE, Meta-Analysis) and three discount rates (2.5%, 2%, and 1.5%) to comprehensively evaluate the economic impacts of climate change. Major damage categories include heat- and cold-related mortality, energy expenditures, labor productivity, agricultural losses, and coastal damages. These estimates account for future uncertainties and project damages continuing through 2100. Meanwhile, as climate change intensifies, physical and economic systems will face increasing stress, with future carbon emissions expected to result in greater incremental losses.

Year	Social Cost of Carbon for Three Discount Rates (in 2020 USD / ton-CO_2)		
	2.5%	2%	1.5%
2020	117	193	337
2025	130	212	360
2030	144	230	384
2035	158	248	408
2040	173	267	431
2045	189	283	451
2050	205	308	482

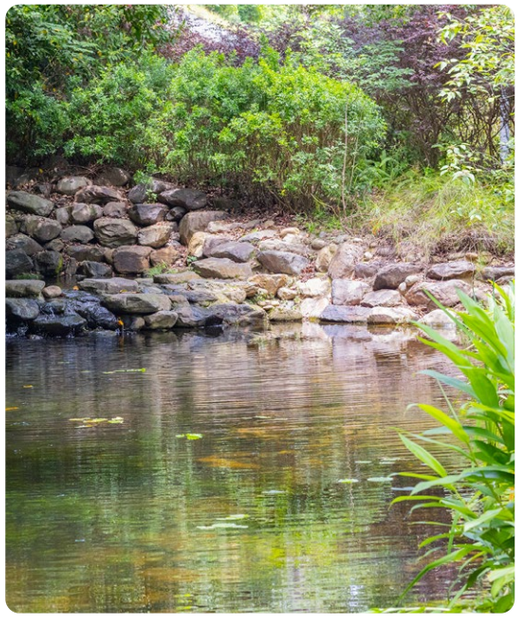
Human Health Cost

This study references research by the Organisation for Economic Co-operation and Development (OECD, 2012), which estimates the average value of life among its member countries at US$3 million (in 2005 dollars). The median age of the study population was 47 years, with a life expectancy of 78 years. This valuation reflects the amount individuals are willing to pay to avoid the risk of losing 31 years of life. Additionally, Prüss-Üstün et al. (2003) indicated that different weights should be assigned to Disability-Adjusted Life Years (DALYs) based on age groups. Building upon these materials, the present study adopts the methodology developed by PwC UK (2015), applying a 3% discount rate. Under the assumption that an individual expected to live until 78 dies prematurely at age 47, the Proportion of Life Lost (PLLwd) is calculated at 23.4%. DALYs are typically valued using the Value of a Statistical Life (VSL) approach, where the proportion of life lost is multiplied by the expected lifespan, and the average value of life is divided by the total DALYs lost. Based on this calculation, the estimated human health loss cost per DALY is US$164,366.

Parameter	Unit	Value
Age of premature death	Years	47
Life expectancy	Years	78
Proportion of life loss	%	23.4%
Number of DALYs loss	Years	18.3
VSL	2005 USD	3,000,000
Human health cost	2005 USD/ DALY	164,366

Cost of Ecosystem Loss

This study references CE Delft (2018), which employs the Willingness-to-Pay (WTP) method to estimate the restoration costs for biodiversity loss caused by land-use change, covering aspects such as forest preservation, ecosystem value conservation, and tourism. The study adjusts findings from Kuik et al. (2008) for the European region (0.47 EUR [2004]/PDF·m^2·yr) by incorporating crop damage into the valuation, while applying a 1% annual inflation factor, and using a 3% discount rate to adjust the monetary value of ecosystem damage to 0.635 EUR (2015)/PDF·m^2·yr.



▲ TSMC creates a sanctuary for endangered species within its facility grounds.

Monetary Value Adjustment

Given that TSMC's operations and suppliers span 23 countries worldwide, the monetary valuation follows the ISO 14008:2019 Monetary Valuation of Environmental Impacts and Related Environmental Aspects. The Company adopts value coefficients from other studies and adjusts them based on geographical and temporal contexts. Using 2023 as the base year, it applies value transfer to the social cost of carbon and human health loss costs.

Adjustment for Geographical Background

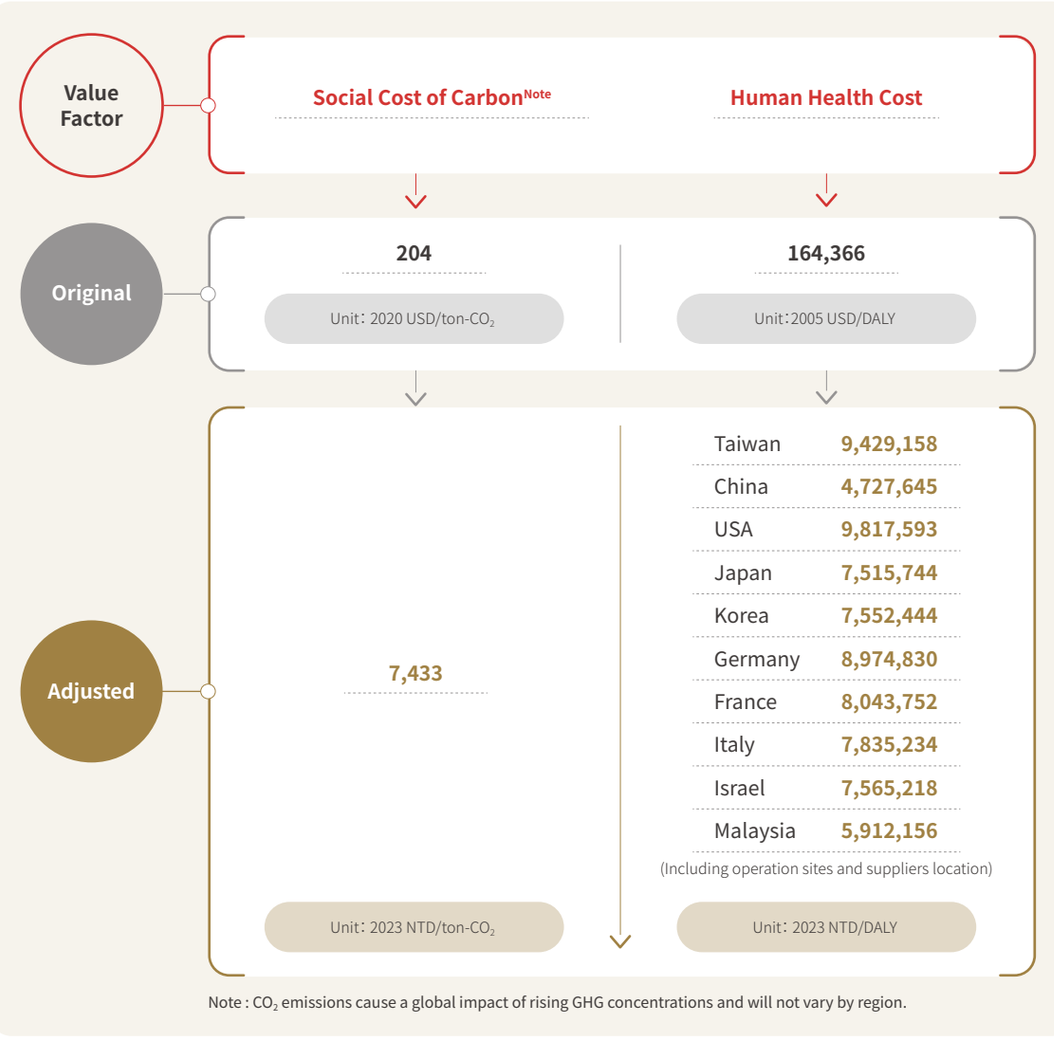
Equity weighting is performed on the gross national income (GNI) per capita and adjusted for purchasing power parity (PPP) by multiplying these monetary values by the power of the income elasticity (OECD, 2012).

Adjustment for Temporal Contextual Differences

When a monetary value is determined for a different base year, the value should be adjusted based on inflation and exchange rates.

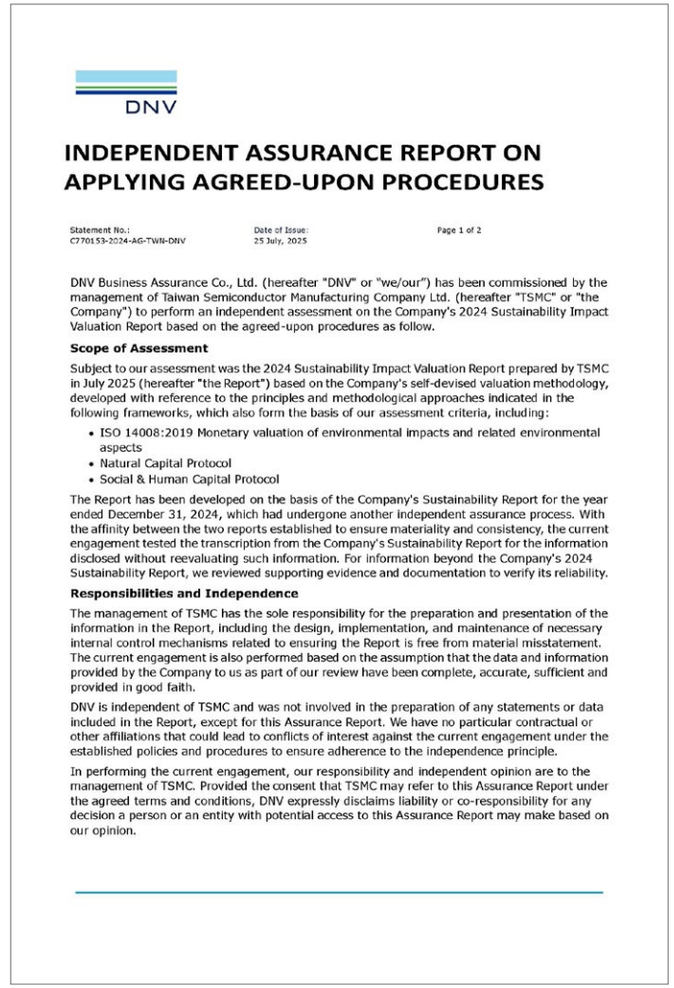
$$E_i=(Y_i/Y_{ref})^{\wedge} \epsilon$$

- E_i —> Income adjusted equity weighting factor
- Y_i —> GNI per capita adjusted for PPP of target region
- Y_{ref} —> GNI per capita adjusted for PPP of reference region
- ϵ —> Income elasticity means WTP for a healthy life, ranging from 0 and 1 ; "1" means that WTP is directly proportional to income; "0" means that WTP has no relationship with income. TSMC uses the PwC UK (2015) recommendation value of 0.6 in the study



Note : CO_2 emissions cause a global impact of rising GHG concentrations and will not vary by region.

Independent Third Party Assurance Statement



DNV

INDEPENDENT ASSURANCE REPORT ON APPLYING AGREED-UPON PROCEDURES

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DNV Business Assurance Co., Ltd. (hereafter "DNV" or "we/our") has been commissioned by the management of Taiwan Semiconductor Manufacturing Company Ltd. (hereafter "TSMC" or "the Company") to perform an independent assessment on the Company's 2024 Sustainability Impact Valuation Report based on the agreed-upon procedures as follow.

Scope of Assessment

Subject to our assessment was the 2024 Sustainability Impact Valuation Report prepared by TSMC in July 2025 (hereafter "the Report") based on the Company's self-devised valuation methodology, developed with reference to the principles and methodological approaches indicated in the following frameworks, which also form the basis of our assessment criteria, including:

- ISO 14008:2019 Monetary valuation of environmental impacts and related environmental aspects
- Natural Capital Protocol
- Social & Human Capital Protocol

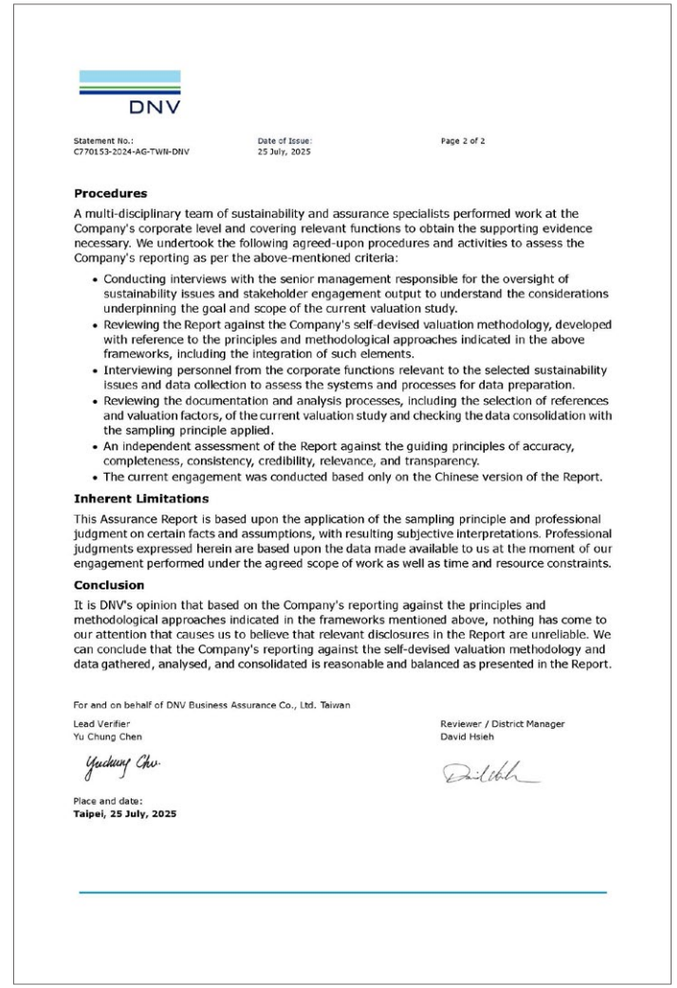
The Report has been developed on the basis of the Company's Sustainability Report for the year ended December 31, 2024, which had undergone another independent assurance process. With the affinity between the two reports established to ensure materiality and consistency, the current engagement tested the transcription from the Company's Sustainability Report for the information disclosed without reevaluating such information. For information beyond the Company's 2024 Sustainability Report, we reviewed supporting evidence and documentation to verify its reliability.

Responsibilities and Independence

The management of TSMC has the sole responsibility for the preparation and presentation of the information in the Report, including the design, implementation, and maintenance of necessary internal control mechanisms related to ensuring the Report is free from material misstatement. The current engagement is also performed based on the assumption that the data and information provided by the Company to us as part of our review have been complete, accurate, sufficient and provided in good faith.

DNV is independent of TSMC and was not involved in the preparation of any statements or data included in the Report, except for this Assurance Report. We have no particular contractual or other affiliations that could lead to conflicts of interest against the current engagement under the established policies and procedures to ensure adherence to the independence principle.

In performing the current engagement, our responsibility and independent opinion are to the management of TSMC. Provided the consent that TSMC may refer to this Assurance Report under the agreed terms and conditions, DNV expressly disclaims liability or co-responsibility for any decision a person or an entity with potential access to this Assurance Report may make based on our opinion.



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Procedures

A multi-disciplinary team of sustainability and assurance specialists performed work at the Company's corporate level and covering relevant functions to obtain the supporting evidence necessary. We undertook the following agreed-upon procedures and activities to assess the Company's reporting as per the above-mentioned criteria:

- Conducting interviews with the senior management responsible for the oversight of sustainability issues and stakeholder engagement output to understand the considerations underpinning the goal and scope of the current valuation study.
- Reviewing the Report against the Company's self-devised valuation methodology, developed with reference to the principles and methodological approaches indicated in the above frameworks, including the integration of such elements.
- Interviewing personnel from the corporate functions relevant to the selected sustainability issues and data collection to assess the systems and processes for data preparation.
- Reviewing the documentation and analysis processes, including the selection of references and valuation factors, of the current valuation study and checking the data consolidation with the sampling principle applied.
- An independent assessment of the Report against the guiding principles of accuracy, completeness, consistency, credibility, relevance, and transparency.
- The current engagement was conducted based only on the Chinese version of the Report.

Inherent Limitations

This Assurance Report is based upon the application of the sampling principle and professional judgment on certain facts and assumptions, with resulting subjective interpretations. Professional judgments expressed herein are based upon the data made available to us at the moment of our engagement performed under the agreed scope of work as well as time and resource constraints.

Conclusion

It is DNV's opinion that based on the Company's reporting against the principles and methodological approaches indicated in the frameworks mentioned above, nothing has come to our attention that causes us to believe that relevant disclosures in the Report are unreliable. We can conclude that the Company's reporting against the self-devised valuation methodology and data gathered, analysed, and consolidated is reasonable and balanced as presented in the Report.

For and on behalf of DNV Business Assurance Co., Ltd. Taiwan

Lead Verifier
Yu Chung Chen

Reviewer / District Manager
David Hsieh

Place and date:
Taipei, 25 July, 2025

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