A Practitioner of Green Power

TSMC aims to set the standard for environmental protection by seamlessly integrating green practices into daily operations. The Company uses innovative technologies to address climate and energy, water stewardship, circular resource management, air pollution control, and biodiversity. TSMC champions comprehensive sustainable actions to strengthen environmental protection, driven by its commitment to coexist and thrive with the Earth's ecosystem.

Climate and Energy | Water Stewardship | Circular Resources | Air Pollution Control | Biodiversity

Zero Waste Manufacturing Center

Promoted resource regeneration, creating nearly 91,600 tons of regenerated resources and steam

8,963 Participants

Participated in natural and environmental education, promoting biodiversity mainstreaming

0

Incidents of abnormal operation in air pollution control equipment

Climate and Energy

Strategies	2030 Goals	2026 Targets	2025 Achievements
Strengthen Climate Resilience Develop climate change response and measure to reduce the impact of climate risks	(Applicable to all TSMC fabs around the world) 0 days of production interruption due to climate disasters	0 days of production interruption due to climate disasters	0 days of production interruption due to climate disasters Target: 0 days (Achieved)
Drive Low-carbon Manufacturing Continue to use best available technology to reduce emissions of greenhouse gases (GHG) and become an industry leader in low-carbon manufacturing	(Applicable to all TSMC fabs around the world) Reduce Scope 1 and Scope 2 emissions by 31% (base year: 2025), and restore total emissions to 2020 levels Note 1 NEW	Reduce Scope 1 and Scope 2 emissions by 6.2% (base year: 2025) NEW	Increased greenhouse gas emissions per unit of production (metric ton of carbon dioxide equivalent (MTCO2e)/12-inch equivalent wafer mask layer) by 2% Target: Reduce 10% (base year: 2020) (Missed Target, Note 3)
	(Applicable to all TSMC fabs around the world) Reduce Scope 3 emissions by 15% (base year: 2025) Note 2 NEW	Reduce Scope 3 emissions by 3% (base year: 2025) NEW	
Use Renewable Energy Continue to purchase renewable energy and install solar-energy power systems to achieve target of 100% renewable energy use	(Applicable to all TSMC fabs around the world) 60% of the electricity consumption at all company operational sites comes from renewable energy	35% of the company's total electricity consumption comes from renewable energy	Reached 100% renewable energy use at overseas subsidiaries; renewable energy accounted for 20.1% of total company electricity consumption Target: TSMC overseas sites used 100% renewable energy; accounting for 20% of TSMC's power consumption (Achieved)
Increase Energy Efficiency Plan and implement new energy-saving measures each year to increase energy efficiency	(Applicable to TSMC fabs in Taiwan and other specific fabs) Achieve a cumulative energy-saving rate of 7.5% from new energy-saving measures adopted between 2026 and 2030 Note 1	Achieve a cumulative energy-saving rate of 1.5% starting in 2026	Achieved a cumulative energy-saving rate of 16% from 2016 to 2025 Target: 15% (Exceeded)
	(Only applicable to TSMC fabs in Taiwan) Double energy efficiency after five years of volume production for each process technology	Energy efficiency of 3nm process technology increases by 0.4 times in the 3rd year of volume production	Energy efficiency of 3nm process technology was 0.5 times higher in the 2nd year of volume production Target: Energy efficiency of 3nm process technology 0.2 times higher in the 2nd year of volume production (Exceeded)

Applicable to all TSMC fabs around the world | Applicable to TSMC fabs in Taiwan and other specific fabs | Only applicable to TSMC fabs in Taiwan | Applicable to TSMC overseas fabs | Exceeded | Achieved | Missed Target

Note 1: TSMC supports and commits to Science Based Targets (SBT) and, in 2025, reviewed and updated its existing carbon reduction and energy-saving targets to align with Science Based Targets initiative (SBTi) requirements. Updates included defining reduction scopes, adjusting the base year, optimizing energy efficiency planning, and setting more ambitious reduction levels to strengthen the Company's sustainability commitments.

Note 2: Based on SBTi requirements for Scope 3 coverage under Near-Term Targets, TSMC identified key emission sources: Category 1 (purchased goods and services, e.g., raw materials and outsourced packaging services), Category 2 (capital goods, e.g., equipment), Category 3 (fuel- and energy-related activities)

Note 3: For factors contributing to unmet targets, see "Drive Low-carbon Manufacturing."

Climate resilience is critical to sustainable operations. The World Economic Forum's (WEF) Global Risks Report 2026 identifies environmental risks as three of the top ten global risks over the next decade: Extreme Weather Events, Biodiversity Loss and Ecosystem Collapse, and Critical Change to Earth Systems. Recognizing its responsibility, TSMC remains committed to achieving net-zero emissions by 2050. To align with SBTi requirements, the Company reviewed and updated its carbon and energy targets, set stricter reduction standards, adopted 2025 as the base year, and submitted its reduction plan in 2026, reinforcing its commitment to environmental sustainability.

In 2025, TSMC made continued progress in renewable energy adoption and energy efficiency. At Taiwan fabs, renewable energy constituted 11.4% of total electricity use, and the Company brought its first offshore wind power online. On energy efficiency, five major energy conservation teams conducted 2,141 energy conservation measures across eight categories, delivering approximately 900 GWh of annual savings. At the Taichung Zero Waste Manufacturing Center, the semiconductor industry's first carbon capture facility completed trial operation, advancing low-carbon manufacturing through green innovation and setting a new benchmark for sustainable industry development.

Strengthen Climate Resilience

Environment Programme (UNEP) COP30 in 2025, the UNEP released its Global Cooling Watch Report 2025, proposing a "sustainable cooling pathway" framework to guide global cooling standards, aiming to cut greenhouse gas emissions and lower energy demand. Concurrently, The Ministry of Environment in Taiwan, where TSMC is headquartered, published its 2035 Nationally Determined Contributions (NDC 3.0), setting more ambitious decarbonization targets and an implementation framework. TSMC closely monitors international developments and continues to strengthen its GHG reduction standard practices. Guided by its climate management framework, the Company supports sustainable operations throughout its facilities and supply chain, regularly identifies climate risks and opportunities, and applies climate risk adaptation measures to enhance organizational resilience. In 2025, TSMC maintained uninterrupted production, demonstrating operational stability and strong adaptability.

Alongside its energy conservation and carbon reduction efforts, TSMC further embraces a "Just Transition" by engaging stakeholders to address climate challenges. Internally, the Company conducts regular training programs and workshops on energy conservation, carbon reduction, water stewardship, and circular economy practices, equipping employees with green skills and raising environmental awareness. Externally, TSMC promotes its Water Positive initiative to restore local water resources and supports natural conservation and biodiversity protection through the Plant-A-Tree Program and the Eco Plus! Ecological Harmony Program. The Company also drives supply chain participation through the "T.S.M.C. Supply Chain Carbon Reduction Action Guide," supporting suppliers in meeting emissions targets and bolstering climate resilience across the value chain, while creating shared sustainable value throughout the transition.

Summary of Response Measures for Climate Change

2021
- Climate Change Statement revised, declaring the target of Net Zero Emissions by 2050
- TCFD Report issued

2022
- Carbon Credits task force established carbon credits quality standards and procurement project
- Supply Chain Carbon Disclosure Project (CDP) launched
- TSMC overseas sites achieved net zero emissions in Scope 1 and 2

2023
- Declared 60% renewable energy usage in 2030, 100% in 2040
- Created the first Renewable Energy Joint Procurement Model

2024
- Published the first "Climate and Nature Report"
- Taichung Zero Waste Manufacturing Center officially begins commercial operation, and signed a memorandum of understanding for net zero transition cooperation with Ministry of Environment

2025
- **Committed to Science Based Targets (SBT)**
- **Completed trial run of carbon capture facility at Taichung Zero Waste Manufacturing Center**
- **Introduced the use of offshore wind power in Taiwan**

Climate Management Framework

TSMC's Climate Change Statement and Environmental Policy serve as its guiding framework, with the Board of Directors overseeing related management measures. The ESG Steering Committee, chaired by the Chairman, defines the Company's short-, medium-, and long-term climate change strategies. Through the ESG Committee, the Company integrates cross-functional resources, drives project collaboration, and reports progress to the Board on a regular basis. In 2025, TSMC aligned with the IFRS S2 Climate-related Disclosures and the semiconductor manufacturing standards of Taiwan's Reference Guidelines for the Determination of Sustainable Economic Activities, boosting transparency and further elevating its sustainability governance.

	Corporate Management Strategies and Actions	2025 Execution Summary
Governance	The Board will regularly review risks and opportunities related to climate change	Expanded renewable energy use and reviewed progress at each stage The ESG Steering Committee regularly monitored and reviewed SBT submission progress and target execution NEW The Energy Saving and Carbon Reduction Committee defined five major energy conservation teams and adopted the achievement rate of annual energy conservation targets and the level of innovation for energy conservation ideas as benchmarks to encourage the conception and implementation of energy conservation ideas The chairperson of Risk Management Steering Council reported to the Audit and Risk Committee regarding net zero transition, water resources, power supply risks, natural disasters, regulations, and other issues related to climate change
Strategies	Organize interdepartmental discussions and identify short-, mid-, and long-term climate risks and opportunities	Planned and carried out 2,141 energy-saving measures across eight major categories, saving additional 900 GWh. See "Increase Energy Efficiency" for more information Promoted the "Green Energy for Charity" project" to install photovoltaic (PV) systems for charity organizations and schools in remote townships. See "Renewable Energy Systems" for more information
	Assess the potential financial and operational impact on TSMC from major climate risks and opportunities	Completed financial impact qualitative assessment of major climate risks and opportunities and conducted financial impact quantitative assessment of financial impact of major climate risks. See "TSMC Climate and Nature Report" for more information
	Conduct scenario analysis and assess SBT and net zero emission reduction blueprint and actions	See "TSMC Climate and Nature Report" for more information
	Assist suppliers in enhancing awareness and adaptability to climate risks, develop and execute specific carbon reduction actions	Required major emission contributors to execute GHG emission reduction agreement and commit to reduction targets Conducted "TSMC Supply Chain Carbon Reduction Action Guide" to assist suppliers in achieving carbon reduction targets
Risk Management	Use TCFD frameworks to develop a process for identifying climate risks	Evaluated the qualitative and quantitative financial impact of major climate risks/opportunities discussed in the climate risk/ opportunity workshop
	Set up and execute response measures based on the results of climate risk identification and prioritization	Reported assessment results of the climate risks/opportunities and response plans to the ESG Committee Chairperson
	Integrate climate risk identification and assessment in the ERM process	See "6.2 Risk Management" in the annual report for more information
Metrics and Targets	Set management indicators related to climate	See "Climate and Energy Strategies, Goals, and Outcomes" for more information
	Through ISO 14064 annual inventory and disclosure of GHG emissions, review the impact on the company's operations and assess the risks of Scope 1, Scope 2, and Scope 3 and related mitigation strategies	Continued to execute carbon reduction measures based on various inventory and evaluation results. See "Drive Low-carbon Manufacturing" for more information
	Set climate management targets and review progress and performance	Set climate and energy targets for 2030 with regular performance review by senior executives. See "Climate and Energy Strategies, Goals, and Outcomes" and "GHG Reduction Standard Practices" for more information

Drive Low-carbon Manufacturing

TSMC reviews its overall carbon performance annually based on third-party verified greenhouse gas inventory results. In 2025, total greenhouse gas emissions were approximately 49.63 million metric tons of CO_2 equivalent, with Scope 1 Direct Emissions from Processes (including fluorinated greenhouse gases and nitrous oxide) accounting for 4%, Scope 2 Indirect Emissions from Energy Usage (electricity use) for 23%, and Scope 3 Indirect Emissions from the Value Chain — covering upstream and downstream activities such as raw material production, capital goods, upstream energy activities, waste treatment, commuting, and transportation — for 73%, representing the largest emission source. As advanced process capacity continued to expand, total greenhouse gas emissions increased by 2% compared to the base year (2020), falling short of the annual target. The Company is continuing to advance energy-saving and carbon reduction measures, while increasing renewable energy use to meet its decarbonization commitments.

TSMC closely follows international climate governance trends and maintains industry-leading greenhouse gas reduction practices. For Scope 1 direct emissions, the Company installed local scrubbers at process tools in 2025, lowering emissions of fluorinated greenhouse gases and nitrous oxide. The Company also converted central chiller systems to refrigerants with lower global warming potential (GWP) and ozone depletion potential (ODP), reducing hydrofluorocarbon use.

For fluorinated greenhouse gas substitution in manufacturing processes, TSMC collaborated with gas and equipment suppliers in 2025 to develop emission mitigation solutions for carbon tetrafluoride (CF_4) in etching processes and nitrogen trifluoride (NF_3) in chemical vapor deposition processes. The Company collected equipment testing data from suppliers and plans to introduce these solutions for small-scale in-fab validation. To accelerate its net-zero transition, TSMC invested in emerging technologies and built the semiconductor industry's first carbon capture facility at the Taichung Zero Waste Manufacturing Center. Using membrane technology, the facility captures carbon prior to release, lowering greenhouse gas emissions. The Company completed trial operation by the end of 2025, demonstrating leadership in carbon reduction technologies while enabling a circular approach that converts waste into resources.

For Scope 2 Indirect Emissions from Energy Usage, TSMC launched the EUV Dynamic Energy Saving Program in 2025 to improve electricity efficiency in advanced processes and conducted feasibility assessments for adopting high-performance cooling equipment, including electronic chillers, to support low-impact manufacturing. The Company also added six certified green buildings, bringing the total number of facilities with LEED Gold or higher certification to 57. Additionally, the Fab 15 Phase 5 Office Building obtained Net-Zero Building Energy Label, and the Fab 18 Phase 1 Office Building achieved Nearly Zero-Carbon Building Label. For Scope 3 Indirect Emissions from the Value Chain, TSMC expanded its Supply Chain Carbon Reduction Subsidy Project and partnered with ammonia suppliers to launch the "Blue Ammonia Adoption Project," becoming the first semiconductor company in Taiwan to use blue ammonia while continuing to explore low-carbon raw material alternatives. For more information, refer to "Promote Green and Low-Carbon Supply Chains."

Green Building Certificates

LEED

Added 6 buildings
Office building of Fab 18 Phase 7, Fab 20 Phase 1, office building of Fab 21 Phase 1, Fab 21 Computer Room, Fab 21 Phase 1, and Advanced Backend Fab 6 Phase 2

No.1 in global semiconductor industry and Taiwan
LEED green building certification area

57 12-inch fabs worldwide obtained the LEED Gold Certification or above
Three Platinums and 54 Golds

EEWH

Added 1 building
Office building of Fab 12 Phase 8

32 building
12-inch fabs in Taiwan have obtained EEWH certifications (21 Diamonds, eight Golds, and three Silvers)

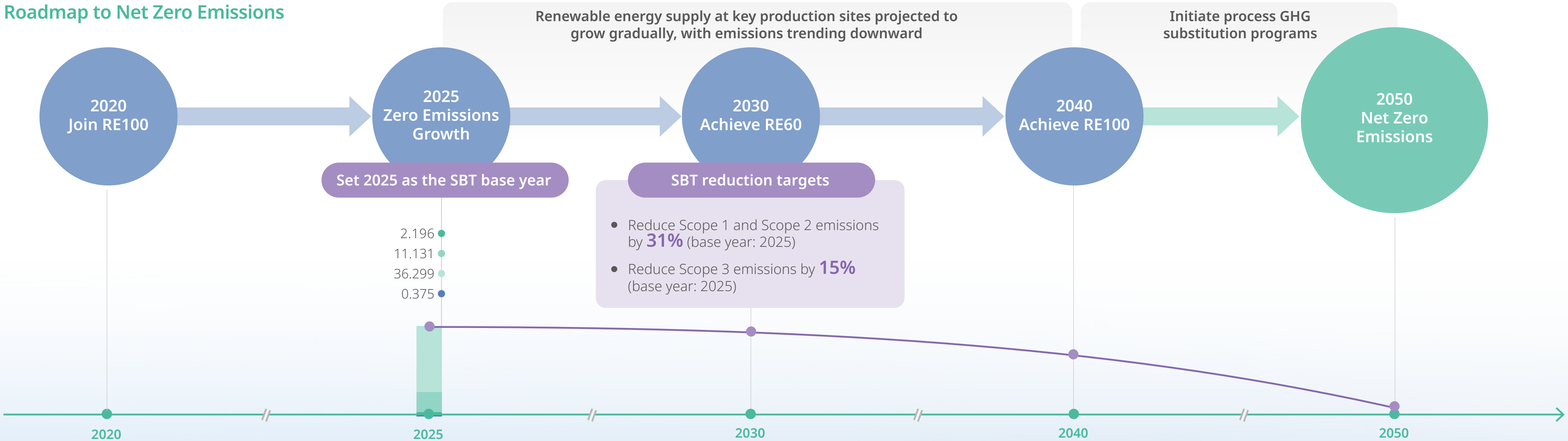
No. 1 in Taiwan
Excellent Green Building Award

Green Factory

No.1 in Taiwan
Number of certified green factories

14 Green factories

Roadmap to Net Zero Emissions



Scope 1 (Mt CO_2e) | Scope 2 (Mt CO_2e) | Scope 3 (Mt CO_2e) | Carbon offset (Mt CO_2e) | Total emission

Note: Starting in 2025, TSMC revised its Scope 3 inventory boundary to align with SBTi methodology requirements.

GHG Reduction Standard Practices

Scope 1 Direct GHG Emissions

Processes that use F-GHGs and nitrous oxide

- Optimize gas quantity used in production
- Install Point-of-Use abatement equipment for F-GHG and nitrous oxide
- Low Global Warming Potential Gas Substitution Project

3,540 Units
- Installed abatement systems on all newly installed process tools emitting fluorinated greenhouse gases and nitrous oxide

96%
- Installed/replaced abatement systems on 60 existing fluorinated greenhouse gas process tools; achieved a company-wide fluorinated greenhouse gas abatement rate of 96%

158 Units
- Transitioned all central chiller systems in new fabs to eco-friendly refrigerants

Scope 2 Indirect GHG Emissions (From Purchased Energy)

Energy usage

- Build green buildings
- Enhance energy efficiency
- Utilize renewable energy
- Incorporate energy-saving and low-carbon emission designs into next-generation process equipment
- EUV Dynamic Energy Saving Program

1
- Ranked first globally among semiconductor companies in green building certified floor area; certified seven new buildings, bringing cumulative totals to 57 LEED (U.S.) and 32 EEWH (Taiwan) certifications

2,141 Measures
- Surpassed peers with comparable technology in advanced process energy efficiency[Note 1]; executed 2,141 energy-saving measures, saving approx. 900 GWh and cutting emissions by nearly 420,000 metric tons

1
- Led the industry's only Next-Generation Semiconductor Manufacturing Tool Energy Conservation Project; collaborated with 11 suppliers to develop energy-efficient tools and components, achieving annual electricity savings of 460 GWh

5,780 GWh
- Used about 5.78 billion kWh of renewable energy globally, accounting for 20.1% of total electricity use

Scope 3 Indirect GHG Emissions (Value Chain)

Raw material production, energy-related activities upstream, and transportation

- Require suppliers to pass third party verification
- Guide suppliers on energy saving
- Subsidize suppliers to replace or install new equipment
- Provide on-site carbon reduction guidance for suppliers
- Adopt low-carbon raw materials

93%
- Required high electricity-use suppliers[Note 2] to complete greenhouse gas inventories with third-party verification; achieved a verification rate of 93%

1,360 GWh
- Guided suppliers in setting energy-saving targets and action plans; added 338 GWh in annual electricity savings, cutting emissions by 160,000 metric tons; cumulative electricity savings since 2018 reached 1,360 GWh

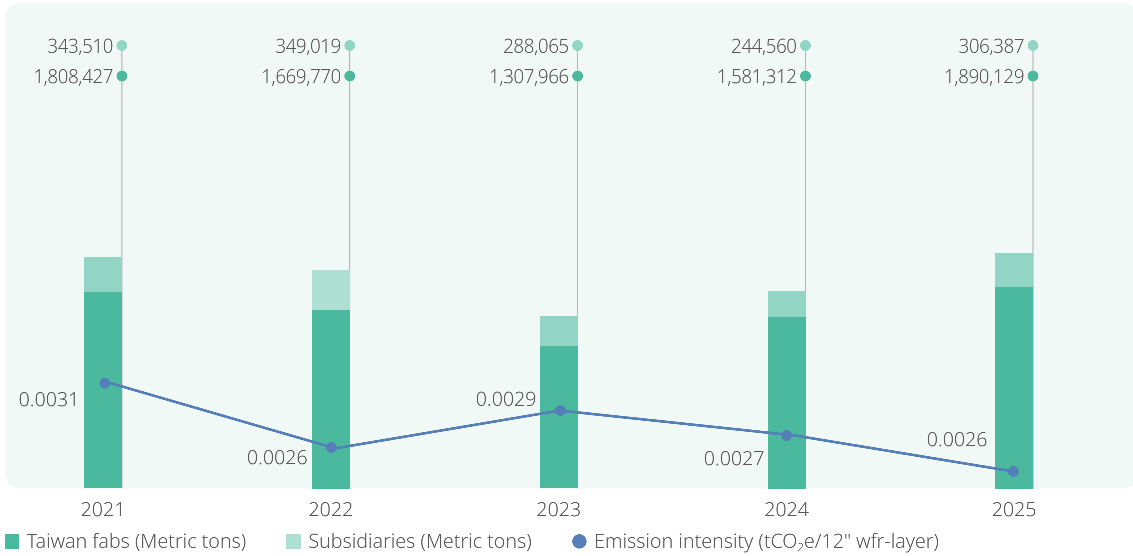
165,000 Metric tons
- Provided NT$160 million in subsidies; selected 31 suppliers, cutting emissions by 165,000 metric tons

30 Suppliers
- Completed on-site guidance for 30 domestic suppliers, strengthening carbon reduction capabilities and performance

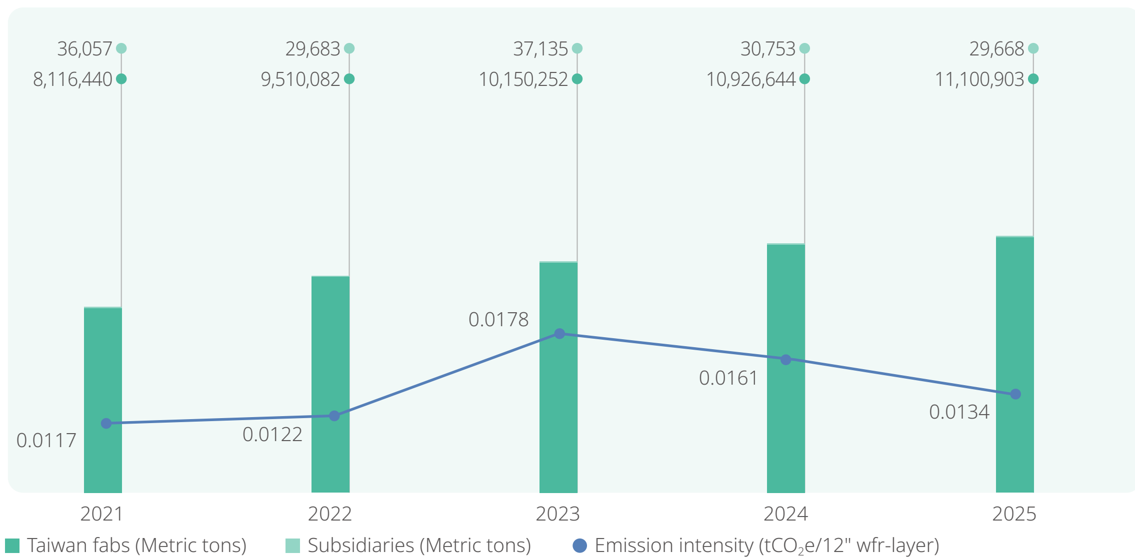
70,486 Metric tons
- Adopted electronic-grade IPA and blue ammonia; projected annual emission cuts of approx. 70,486 metric tons upon full adoption

Note 1: Figures from the Joint Steering Committee (JSTC) report of the World Semiconductor Council
Note 2: High Energy Consumption Suppliers: Suppliers that consume more than 5GWh/year in a single factory.

Scope 1 GHG Emissions



Scope 2 GHG Emissions



Scope 3 GHG Emissions

UNIT: Metric tons

Note 1: Scope 1 data is prepared using the operational control approach as the inventory boundary. From 2020 to 2024, the Company used the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the 100-year Global Warming Potential (GWP100) values from the IPCC Fifth Assessment Report. In 2025, the Company applied the GWP100 values from the IPCC Sixth Assessment Report. Greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

Note 2: In terms of electricity emission factor, TSMC fabs in Taiwan (including the R&D Center) and VisEra adopted 0.474 kg CO_2e/kWh as announced by Ministry of Economic Affairs in 2024; TSMC (China) adopted the average emission factor of power grids in Shanghai City of 0.574 kg CO_2e/kWh in 2023; TSMC (Nangjing) adopted the national electricity average emission factor of 0.531 kg CO_2e/kWh; TSMC Washington, LLC adopted an electricity emission factor of 0.288 kg CO_2e/kWh; TSMC Arizona adopted an electricity emission factor of 0.320 kg CO_2e/kWh; JASM adopted an electricity emission factor of 0.423 kg CO_2e/kWh; and Japan 3DIC R&D Center adopted an electricity emission factor of 0.452 kg CO_2e/kWh.

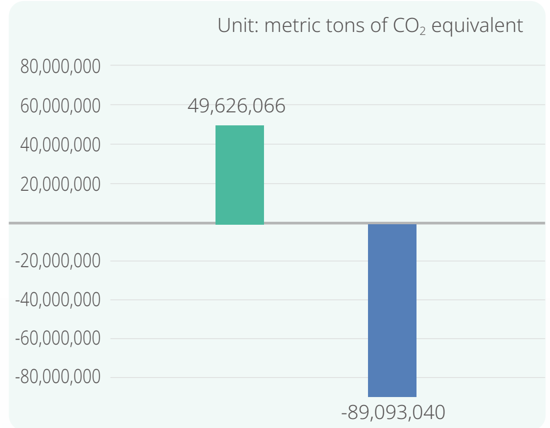
Product Carbon Footprint

TSMC regards product carbon footprint assessment as a core element of product stewardship and eco-design. The Company follows ISO 14067 and the Product Category Rules (PCR) for Integrated Circuit Wafer Fabrication Services, covering a "cradle-to-gate" boundary from raw material extraction to completion of TSMC's manufacturing processes. To track decarbonization progress more closely throughout its operations and supply chain, TSMC increased the frequency of product carbon footprint assessments to an annual basis starting in 2025, enabling precise monitoring of emissions in all fabs. Assessment results are verified by a third party every three years in accordance with ISO 14067 requirements. The findings support carbon reduction strategy development, process optimization, and sustainability disclosure, and are integrated into the ISO 14001 Environmental Management System to drive continuous improvement.

TSMC's 2026 assessment results show that, compared with 2023, product carbon footprints decreased by 8.8% in mature process fabs (>7nm) in 2025, while advanced process fabs (≤ 7nm) dropped by 46.5%, reflecting TSMC's continued efforts in environmental stewardship and sustainable operations.

Beyond quantifying carbon emissions through product carbon footprint assessment, TSMC adopts the "Carbon Handprint " concept to measure the positive contribution of its technologies and products to global emissions reduction. Based on estimates from the Industrial Technology Research Institute's Industry, Science and Technology International Strategy Center (ISTI), ICT products using TSMC chips across six major smart applications enabled approximately 188,000 GWh of global electricity savings in 2025, avoiding about 89.09 million metric tons of carbon emissions. In particular, high-performance computing products enable approximately 11.8 kWh of global electricity savings for every 1 kWh of electricity used in production. These results demonstrate the positive Carbon Handprint generated by TSMC for its customers, with an overall impact equivalent to 1.8 times the Company's own operational carbon footprint.

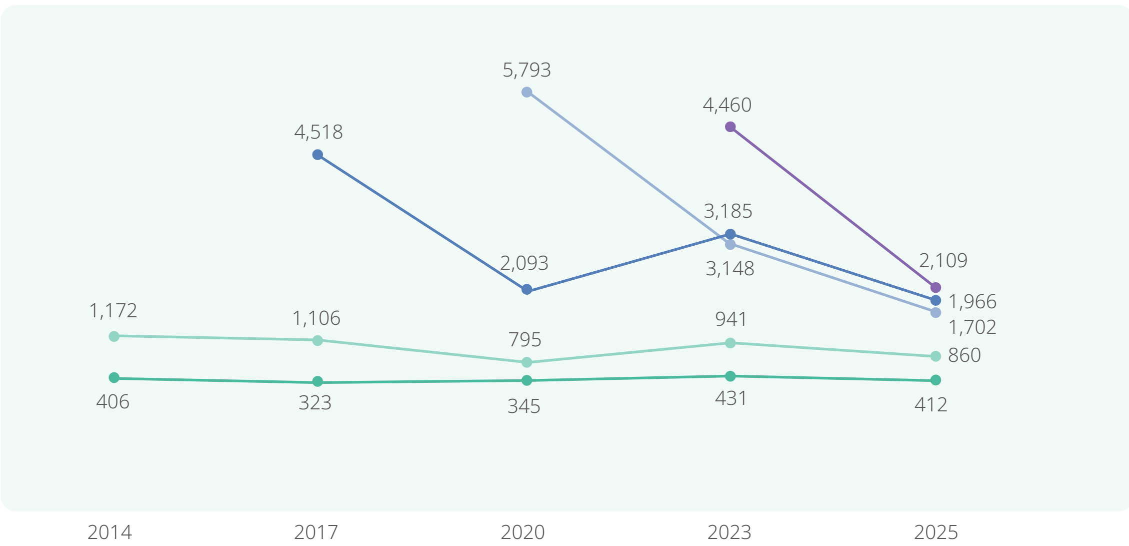
Total Carbon Emissions and Carbon Handprint in 2025



● Total carbon emissions (Scopes 1, 2, and 3 GHG emissions)
● Carbon handprint (carbon emissions avoided due to smart ICT product applications)

Product Carbon Footprint Data

Unit: Kg CO_2e/Wafer



● 8-inch wafer average ● N16~N90 wafer ● N7~N10 wafer ● N5 wafer ● N3 wafer

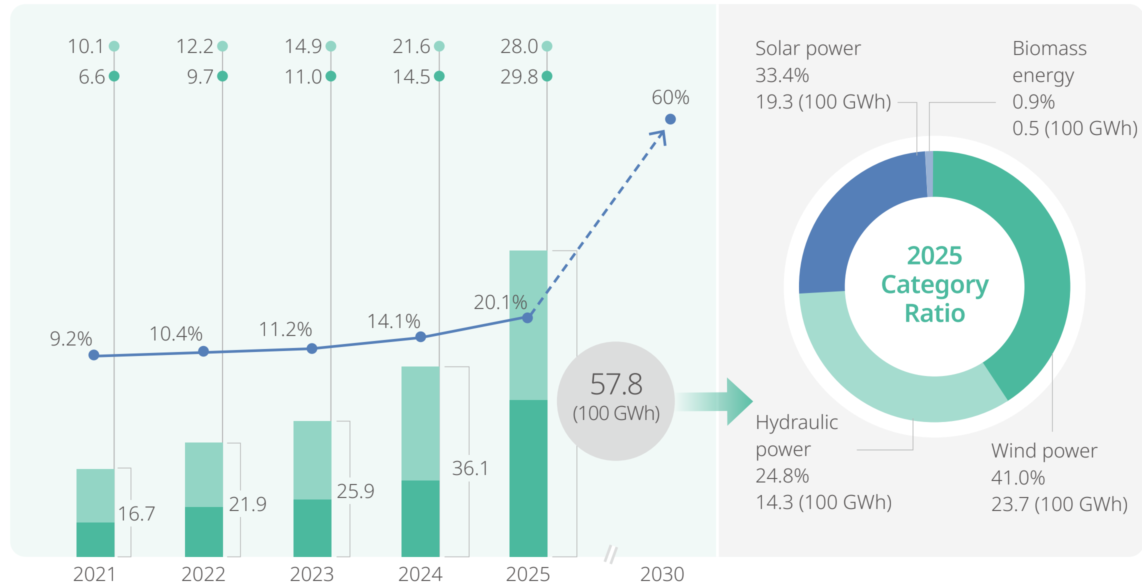
Use Renewable Energy

TSMC continues expanding its use of renewable energy. In 2025, renewable energy accounted for 20.1% of the Company's total global electricity consumption, while usage at Taiwan fabs increased to 2,940 GWh, representing 11.4% of total electricity consumption in Taiwan operations. In September of the same year, TSMC became the first private company in Taiwan to use offshore wind power. Overseas fabs continue to increase renewable energy adoption in support of the RE100 target.

In energy transition efforts, TSMC completed participation in the Ministry of Economic Affairs and Taiwan Power Company's "Flexible Green Power Allocation Pilot Program" in 2025 and continued engagement in the updated "Green Power Market Flexible Allocation Pilot Program." With TSMC integrating over 40 renewable energy suppliers and confirming the electricity demands of each fab, the mechanism achieves more precise and real-time supply-demand balancing in 15-minute intervals, enhancing renewable electricity efficiency and flexibility throughout TSMC fabs. Total installed capacity participating in the program reached 2.3 GW, including 1.2 GW from the ongoing Roof-mounted PV Procurement Project, supporting renewable energy diversification and the green economy. As of 2025, TSMC has signed renewable energy purchase agreements totaling 7.3 GW of capacity. Once all projects are fully operational, they are expected to supply approximately 15,800 GWh of renewable electricity annually, avoiding about 7.5 million metric tons of carbon emissions.

In 2025, TSMC collaborated with the Taiwan Semiconductor Industry Association (TSIA) and the SEMI Energy Collaborative (EC) to strengthen renewable energy development. The Company worked with government agencies, power utilities, and industry partners to review regulatory frameworks and remove supply barriers, with the aim of reducing carbon emissions in the semiconductor industry and jointly advancing environmental sustainability.

Renewable Energy Consumption and Ratio



Renewable energy purchased for Taiwan fabs (100 GWh) | Renewable energy purchased for overseas fabs (100 GWh)
Renewable energy usage by percentage (%)

Note: Definition of renewable energy use: Self-generated renewable energy, purchased renewable energy and renewable energy certificates

Renewable Energy Development Timeline

2021
- Committed to reaching 40% of the Company's electricity consumption as renewable energy by 2030

2022
- Established diverse supply of renewable energy by contracting with a small-scale hydroelectric station which started supply in December

2023
- Brought forward the 2050 target of 100% renewable energy coverage in the company to 2040
- Committed to 60% renewable energy coverage in 2030
- Pioneered supply chain renewable energy joint procurement model
- Participated in the green power allocation sandbox project

2024
- Joined the "Energy Collaborative" jointly initiated by SEMI and SCC
- Initiated the "roof-mounted PV procurement project" and "maximal renewable energy installation project for existing fabs"

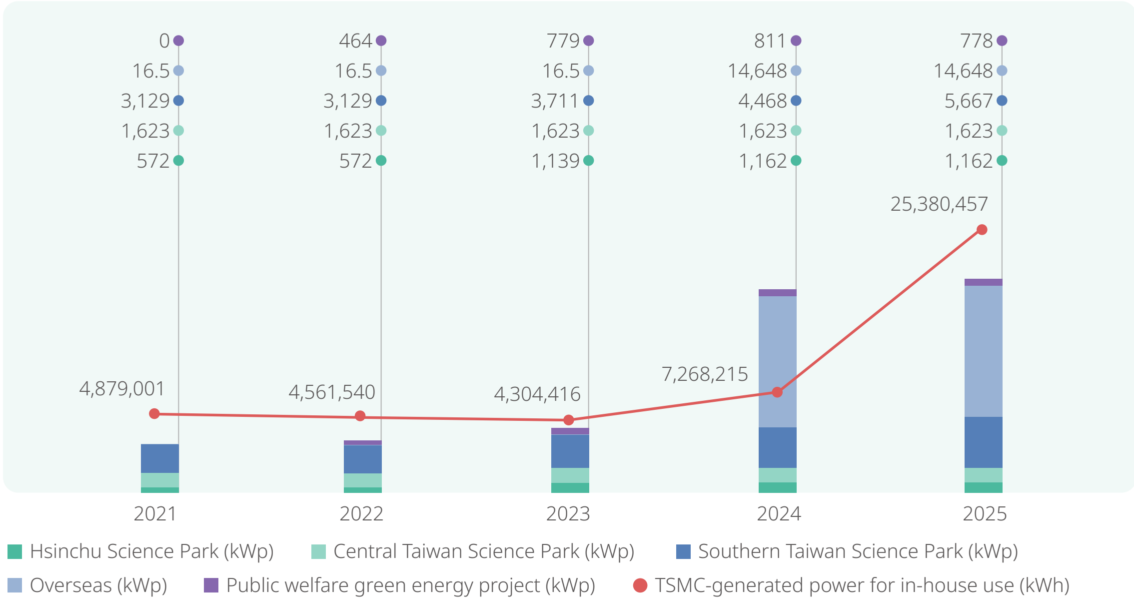
2025
- **Participated in the green power market flexible allocation pilot program**
- **Began utilizing offshore wind power in Taiwan**

Renewable Energy Systems

Beyond procuring renewable energy, TSMC also installs on-site photovoltaic systems to generate zero-carbon renewable electricity for its fabs, while advancing the Maximal Renewable Energy Installation Project for existing Fabs. In 2025, newly installed solar capacity reached 1,199 kWp, and a 14.6 MWp solar power system at the TSMC Arizona fab parking facility entered operation — bringing total company self-generated electricity to over 25 GWh, a 3.4-fold increase over the prior year, and cutting emissions by approximately 8,872 metric tons. TSMC Arizona also installed 86 EV charging stations, providing shaded parking spaces for employees and contractors and encouraging electric vehicle adoption to reduce transportation-related emissions.

In 2025, TSMC continued its Public Welfare Green Energy Program to strengthen community well-being. Led by the TSMC Charity Foundation, the program leverages TSMC's facility resources and subcontractor network, in collaboration with government agencies and academic institutions, to install solar photovoltaic systems free of charge at social welfare organizations and rural schools, creating a stable source of revenue for these institutions through green electricity sales. In 2025, 14 new sites were added, with an installed capacity of approximately 778 kWp and electricity generation of 0.834 GWh, yielding annual electricity sales revenue of approximately NT$3.55 million.

TSMC Renewable Energy Installed Capacity and Power Generation for In-house Use

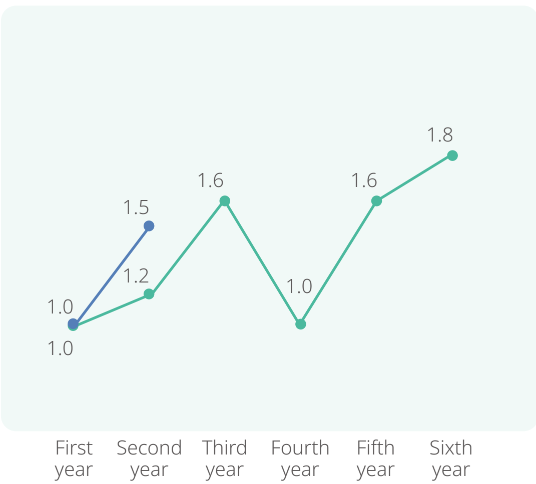


TSMC Arizona fab parking lot solar PV system

Increase Energy Efficiency

In 2025, TSMC's total energy consumption reached 30,990 GWh, with purchased electricity constituting approximately 92.8%, natural gas 7.1%, and diesel 0.1%. In preparation for its 2026 application to the Science Based Targets initiative (SBTi), the Company reviewed and raised its energy-saving targets, increasing in 2025 the annual average electricity-saving target from 1.2% to 1.5%. Newly established fabs — Fab 20 and Fab 22 — as well as overseas operations such as TSMC Arizona, also joined the energy-saving program, further enhancing energy efficiency.

Process Energy Efficiency



Note 1: The standardized baseline for energy efficiency is the values taken from the first year of volume production.

Note 2: The data covers fabs in Taiwan. (excluding the R&D Center)

Note 3: Process energy efficiency is defined as product equivalent per kWh of electricity consumed (12-inch wafer-mask layer equivalents / kWh).

Case Study

Developed a Smart Standby Energy-Saving Mechanism, Saving 85 million kWh

During wafer fabrication, electric-heating local scrubbers — both primary and backup units — must maintain standby temperatures of 700 ° C–1,000 ° C to treat a wide variety of process tail gases. Even when the primary unit operates normally, backup units must remain active to enable immediate switchover in the event of an anomaly. To enhance energy efficiency, TSMC initiated the development of a smart standby energy-saving mechanism in 2020, conducting independent temperature ramp-up tests and operator response training for each equipment type. By optimizing the linkage between primary and backup units, backup units automatically enter a smart sleep mode when the primary unit is operating normally, significantly lowering standby energy consumption. When an abnormal temperature drop signal from the primary unit is detected, the backup unit immediately initiates a rapid heat-up sequence to reach operating temperature, ensuring uninterrupted tail gas treatment.

This mechanism not only lowers standby energy consumption of backup units but also minimizes component wear caused by prolonged high-temperature operation, extending overall system lifespan and enhancing operational stability. Through sustained team efforts, TSMC completed performance validation and operator training for four equipment types in 2025 and fully deployed the mechanism across 2,444 units at all 8-inch and 12-inch wafer fabs — saving 85 GWh while strengthening system reliability and response capability.

TSMC enhances standby mode for electric-heating local scrubber backup units.

Expand Energy-saving Measures

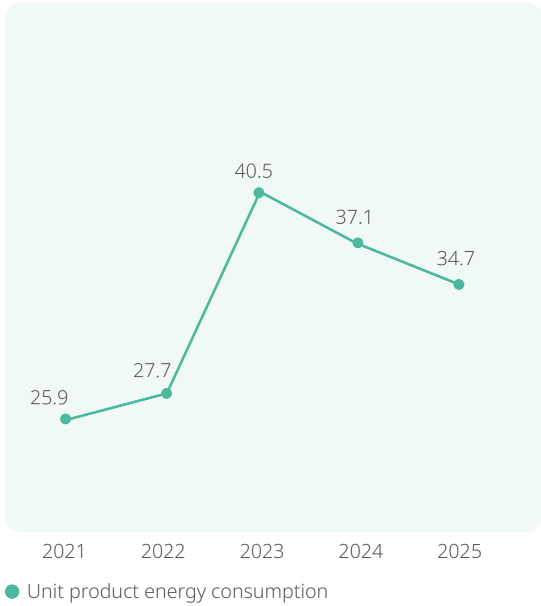
TSMC is committed to identifying energy-saving opportunities. In addition to establishing five major energy conservation teams based on process technologies, the Company drives energy efficiency through a range of initiatives. In 2025, TSMC executed 2,141 energy conservation measures across eight categories, including tool exhaust reduction, optimization of cooling water temperature and usage, optimization of pipeline heating system temperatures, installation of aerogel insulation kits, and upgrades to hot water recovery tanks. These initiatives delivered approximately 900 GWh of annual energy savings, reduced nearly 420,000 metric tons of CO_2 emissions, and generated electricity cost savings of approximately NT$3.85 billion.

To strengthen energy efficiency in advanced processes, TSMC collaborated with suppliers through the EUV Dynamic Energy Saving Program, successfully reducing peak power consumption by 44% while maintaining production capacity. In 2025, the Company also completed testing of standby energy-saving modes for electric-heating local scrubbers, enabling the equipment to enter sleep mode during idle periods and supporting more environmentally responsible process management.

Under the Energy Conservation Action Project for Next Generation Fab Tools, TSMC expanded its external collaborations, increasing the number of equipment partners from six to 11 in 2025 and continuing to develop energy-saving components for fab tools. Energy savings from new tools reached 460.14 million kWh in 2025. The Company also launched a feasibility assessment for developing tool energy-saving modes, aiming to reduce energy consumption during standby and improve operational efficiency.

Unit Product Energy Consumption

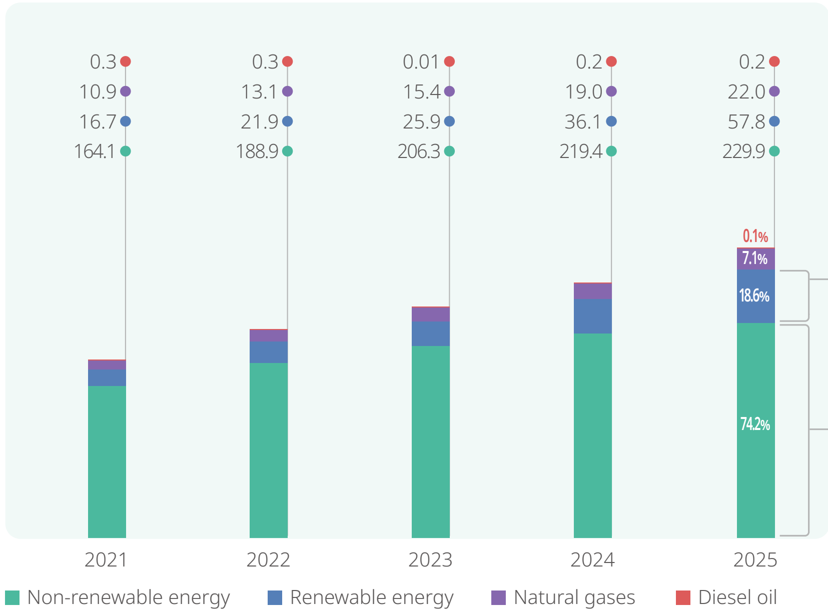
Unit: kWh/12-inch equivalent wafer mask layer



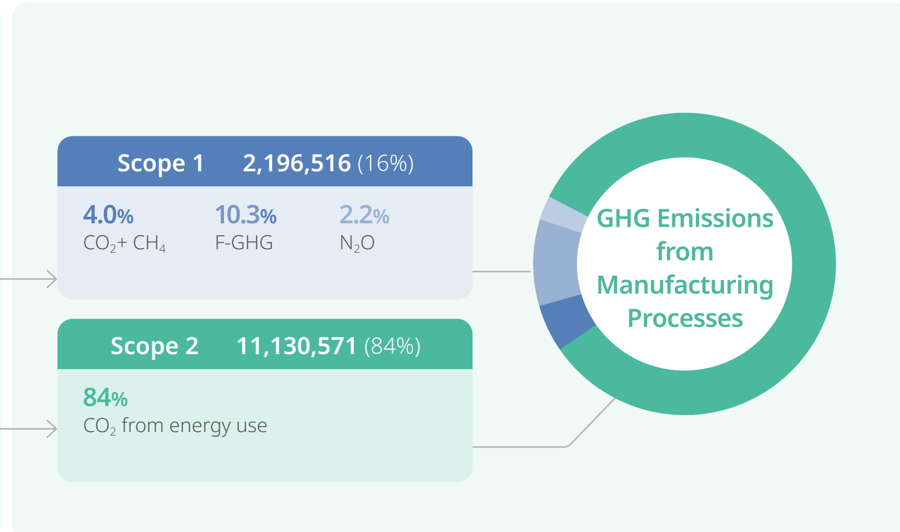
Note 1: The data covers fabs in Taiwan (including the R&D Center), TSMC (China), TSMC (Nanjing), TSMC Washington, LLC, TSMC Arizona Corporation, JASM, and VisEra.
Note 2: Diesel and natural gas are not used for production and are excluded from the calculation.

Energy Consumption

Unit: 100 GWh



Unit: Metric tons

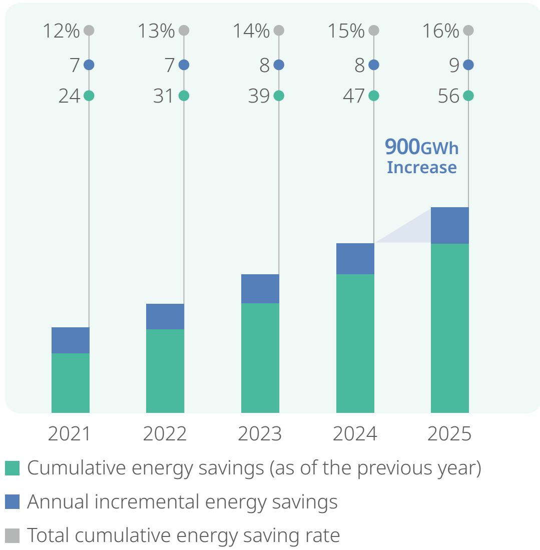


Note 1: (Import) LNG = 9,000 kcal/m3; vehicle diesel = 8,642 kcal/L; 1 kcal = 4,186.8 J; 1 kWh = 860 kcal ≒ 3,600 kJ
Note 2: GHG emissions from production processes include only direct emissions (scope 1) and indirect emissions from electricity use (scope 2).

To boost the efficiency of energy-saving and carbon reduction management teams in all fabs, TSMC held training at the Hsinchu, Taichung, and Tainan fabs in 2025, focusing on forward-looking technologies such as carbon sequestration and carbon-free electricity. The training covered TSMC's SBT net-zero roadmap and strategic blueprint, promoting green transformation through technical knowledge exchange. A total of 295 participants attended the three sessions.

Cumulative Energy Savings

Unit: 100 GWh



Note: 1 kWh = 3,600 kilojoules

Continuous Innovation with Five Key Energy Conservation Teams

	Advanced Processes R&D Team	12-inch Wafer Fab Team	Advanced Backend 8-inch Wafer Fab Team	EUV Team	Facility Team
Targets (including existing and future tools)	Next Generation 3nm/2nm	12-inch wafer fabs (including overseas fabs)	Backend fabs and 8-inch wafer fabs (including overseas fabs)	EUV tools	Shared facilities not used for production
Mission	• Develop energy-efficient components • Optimize programs • Set tool specifications	• Replace and upgrade equipment with low energy efficiency • Optimize programs • Launch energy-saving programs at new domestic and overseas fabs	• Replace and upgrade equipment with low energy efficiency • Set specifications for new tools in backend fabs	• Optimize programs • Develop energy-efficient components	• Upgrade equipment with low energy efficiency • Develop smart energy conservation systems • Set specifications for new tools
Achievements from Key Programs in 2025	Installed high-performance equipment in new tools at Fab 20 and Fab 22, saving 127.65 GWh Executed the Low Global Warming Potential Gas Substitution Project, projected to reduce HFCs consumption by approximately 16%	Optimized tool exhaust and cooling water usage through process adjustments at existing fabs, saving 91.13 GWh Adopted 5nm high-performance tools with optimized settings at TSMC Arizona, saving 28.94 GWh NEW	Accelerated high-performance pump/chiller replacement plans at Fabs 2, 3, 5, 6, and 8, saving 7.22 GWh Deployed high-performance equipment and optimized settings at advanced backend fabs, saving 44.12 GWh	Advanced the EUV Dynamic Energy Saving Program; field measurements showed energy savings of up to 8% of total annual tool energy consumption NEW	Executed energy-saving mechanisms for electric-heating local scrubbers, saving 85 GWh NEW

Energy Conservation Measures

A total of **2,141** Measures

Facility Equipment

Lighting Energy Savings

All Fabs

- Replaced yellow-light fixtures with LED lighting

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
44	59.54 GWh	28,222 Metric tons

A.C. Energy Savings

All Fabs

- Converted air compressor cooling water supply from chilled water to warm water NEW
- AI powered chilled water energy saving system
- Replaced cold water with PCW for cooling air compressors throughout first- and second-stage compression

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
20	60.75 GWh	28,794 Metric tons

Increased Performance

All Fabs

- Consolidated UPS systems NEW
- Replaced aging equipment with new units NEW
- Installed variable-frequency drive (VFD) controls on equipment NEW
- Applied wet film plate energy-saving measures NEW

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
120	78.75 GWh	37,326 Metric tons

Standby Energy Savings

All Fabs

- Energy-saving mode for uninterrupted power supply system
- Reduced standby temperature for local scrubber backup units
- Cooling fan for battery cabinet to conserve energy

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
41	52.11 GWh	24,701 Metric tons

Manfacturing Tools

Energy Usage Management

All Fabs

- Reduced PCW and exhaust consumption for tools
- Optimized tool program settings

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
256	91.13 GWh	43,196 Metric tons

Unit Replacement

All Fabs

- Replaced high-performance pumps and chillers

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
414	42.13 GWh	19,970 Metric tons

New Unit Specs

All Fabs

- Installed high-efficiency energy-saving auxiliary equipment and components in new tools
- Optimized water usage and exhaust settings for new tools

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
1,065	460.14 GWh	218,106 Metric tons

Equipment Adjustments

All Fabs

- Upgraded tools with energy-saving components
- Hot DI water circulation system

Energy-saving measures	Energy-saving kWh	Reduced of CO_2
181	42.65 GWh	20,216 Metric tons

Note: The carbon emission equivalent factor is 0.474 kg CO2e per kWh; 1 kWh = 860 kcal = 3,600 kJ

Water Stewardship

Strategies	2030 Goals	2026 Targets	2025 Achievements
Sustainable Water Stewardship[Note1] Enforce climate risk mitigation policies, implement daily water conservation and water shortage adaptation, develop diversified water sources, and advance restoration initiatives to lower environmental risks	Global Water Positive achievement rate of > 65%	Global Water Positive achievement rate of 18%	**Global Water Positive achievement rate of 21%** (Exceeded) Target: 17% **Increased unit water consumption by 8.8% (L/12-inch equivalent wafer mask layer) (Base year: 2010)** (Missed Target, Note 2) Target: Reduce unit water consumption by 2.7% (Base year: 2010) **18% Replacement of water resources with reclaimed water** (Exceeded) Target: 15%
Innovative Water Pollution Prevention Technology Improve the efficiency of water pollution control and removal of water pollutants	Reduce water pollution composite indicator[Note 3] by >60%	Reduce water pollution composite indicator reduction rate by 60%	**Water pollution composite indicator reduction rate of 61.9%** (Exceeded) Target: 60%

Applicable to all TSMC fabs around the world · Applicable to TSMC fabs in Taiwan and other specific fabs · Only applicable to TSMC fabs in Taiwan · Applicable to TSMC overseas fabs · Exceeded · Achieved · Missed Target

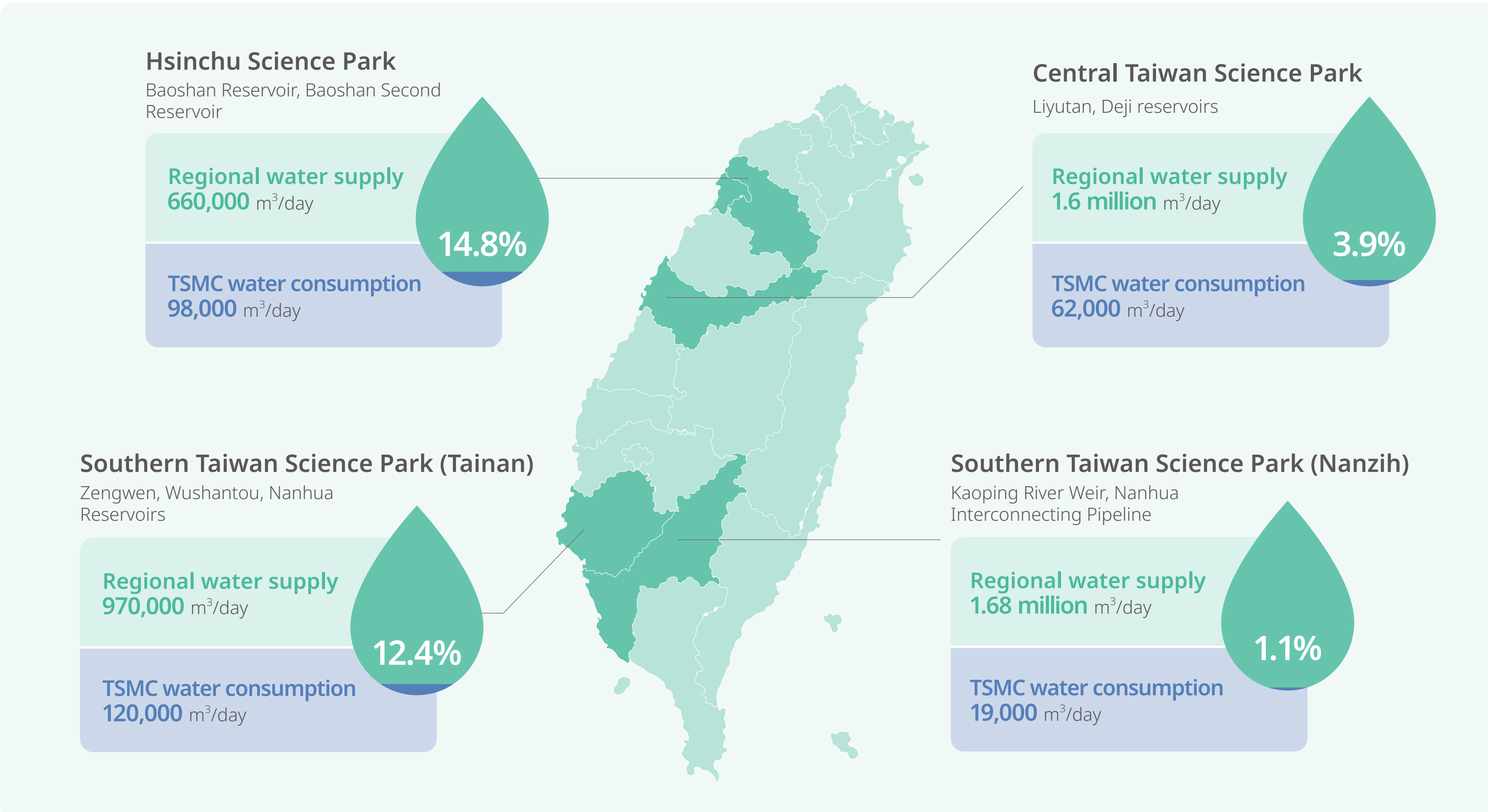
Note 1: TSMC is committed to optimizing water use efficiency. To drive a more comprehensive and systematic approach to water stewardship and effectively address climate change challenges as well as ensure water resilience, the Company integrated its "Water Resource Risk Management" and "Diverse Water Resource Development" strategies into "Sustainable Water Stewardship" in 2025. The Company also adopted global Water Positive impact as a key indicator to evaluate the overall effectiveness of its strategy and its positive contribution to the ecological environment.

Note 2: For factors contributing to unmet targets, please refer to "Strengthen In-house Water Reclamation and Water Use Efficiency."

Note 3: Covers ten key pollutants — chemical oxygen demand (COD), fluoride, suspended solids (SS), ammonia nitrogen, nitrate nitrogen, arsenic, boron, copper, cobalt, and total phosphorus — serving as indicators to assess overall pollutant concentration reduction and control performance.

TSMC upholds the commitments made in its Water Statement and advances four key water conservation measures to enhance in-fab water reclamation and overall water use efficiency. The Company also set achieving Water Positive impact as a core sustainability objective, while expanding the adoption of alternative water sources such as reclaimed water and desalinated seawater to deliver tangible results. In 2025, cumulative reclaimed water use at Taiwan fabs reached 23.53 million cubic meters, with the substitution rate rising to 18%. In 2026, reclaimed water from the Kaohsiung Qiaotou facility will be introduced, and the TSMC S.T.S.P. Reclaimed Water Plant will be further expanded, with daily supply capacity expected to reach 30,000 cubic meters by 2028. At the same time, TSMC Arizona began construction of a reclaimed water facility, incorporating industry-leading near-zero liquid discharge (NLD) technology and setting a new benchmark for water stewardship in the semiconductor industry.

TSMC Water Consumption Share Across Four Science Parks



Resource: Water Resources Agency, Ministry of Economic Affairs

Furthermore, TSMC actively develops diversified water sources and restoration initiatives. In 2025, in addition to JASM's achieved of groundwater replenishment, TSMC Arizona is also planning river restoration efforts for the Verde River in its operating watershed. These initiatives aim to optimize regional water efficiency and improve aquatic ecosystems, with completion anticipated in 2026, thereby fostering environmental sustainability.

Sustainable Water Stewardship

TSMC applies the World Resources Institute (WRI) water risk assessment tool each year to evaluate water-related risks across its global operations. Based on the 2025 assessment results, TSMC (China) and TSMC Arizona are classified as high-risk locations, while all other sites fall within medium-low or low-risk categories.

Although TSMC (China) is located in a water-abundant region, significant fluctuations in raw water quality place it in the high-risk category. The site ensures a stable and high-quality process water supply through a municipal water purification plant and in-fab water treatment systems. TSMC Arizona, located in a desert climate region, initiated a local reclaimed water plant project in 2024, with construction commencing in 2025. The facility plans to adopt NLD technology to maximize water reclamation, minimize wastewater discharge, and optimize concentrated waste treatment, while advancing water resource restoration initiatives.

For sites in medium-low or low water risk regions, TSMC applies established preventive measures — such as elevating site ground levels and installing flood barriers — while incorporating proven water reclamation, reuse, and wastewater treatment systems from existing fabs into the planning and design of new facilities. At the same time, regional operations teams regularly review local water use profiles and water availability conditions and take timely response actions as needed to ensure operational resilience. In addition, TSMC continues to advance the use of diversified alternative water sources, including reclaimed water and desalinated seawater, to ease pressure on local water resources.

Water Resource Management and Technological Development

TSMC manages site water according to the Alliance for Water Stewardship (AWS) standard. In 2025, the Hsinchu and Taichung sites underwent annual certification, while the Tainan sites completed their triennial recertification, with all sites maintaining Platinum-level performance. For an overview of TSMC's overall water management framework, please refer to the Water Flow and Upstream/Downstream Environmental Relationship Diagram.

To advance environmental sustainability, TSMC channels resources through its Water Stewardship Cooperation Model and continues investing in new technology development through a Joint Development Project (JDP) with academic institutions. In 2025, the Company collaborated with universities in Taiwan on research covering phosphoric acid wastewater treatment and recycling, three-dimensional groundwater monitoring technologies, and analysis of trace unknown substances in ultrapure water, with the aim of strengthening water quality monitoring and treatment capabilities. TSMC also partnered with institutions in the United States, Japan, and China to study per- and polyfluoroalkyl substances (PFASs) treatment and their potential environmental impacts, addressing shared global environmental challenges. Given JASM's reliance on groundwater resources, TSMC additionally collaborated with local universities in Kumamoto on groundwater quality assessment, volume simulation, and monitoring in response to regional hydrogeological conditions.

WRI Risk Identification

Overall WRI Risk Index

Frequency
- Water risk
- Decreasing underground water levels
- Interannual variation
- Seasonal variation
- Drought
- Flood risks
- Tsunami risks

Quality control
- Coastal erosion
- Untreated water bodies

Regulation and reputation
- Drinking water quality
- Sanitary conditions
- Sustainable investment index

TSMC Assessment

- Flood risk
- Water risk
- Water quality risk

TSMC Assessment Results

- Low risk: 1 Facility
- Mid-to-low risk: 22 Facility
- High risk: 2 Facility

TSMC Response Measures

Facility design
- Elevate facility
- Install flood gates

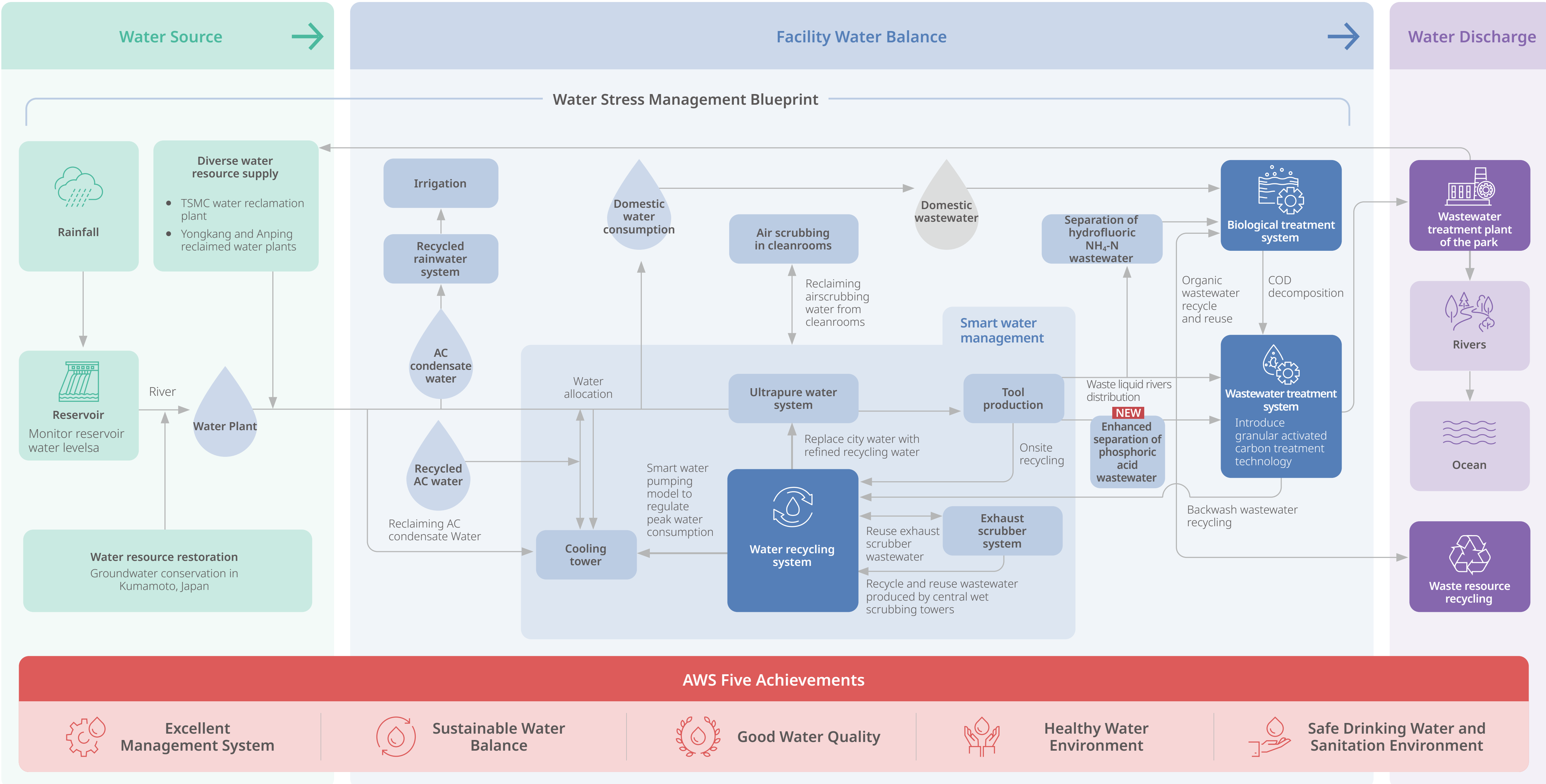
Water management
- Establish emergency response procedures
- Develop diverse water sources
- Introduce reclaimed water into processes
- Set water pollution composite indicator

TSMC's Response Measures for High-Risk Areas

TSMC (China)
- Strengthening in-plant water treatment systems

TSMC Arizona
- Built a reclaimed water plant and implement NLD technology
- Promoted water resource restoration programs

Water Flow and Upstream/Downstream Environmental Relationship Diagram



Note: In 2025, the AWS annual certification covered the Hsinchu sites (Fab 5, Fab 12A, Fab 12B, and Advanced Backend Fab 3) and the Taichung sites (Fab 15A and Fab 15B), while the triennial recertification covered the Tainan sites (Fab 6, Fab 14A Phase 7, and Fab 14B Phase 5 and Phase 6).

Water Positive

In response to its global expansion and increasing water demand from advanced manufacturing processes, TSMC upholds sustainable co-prosperity as its guiding principle and adopts Water Positive impact as a key performance indicator, integrating water stewardship efforts across multiple dimensions. The core concept of water positivity is to ensure that the volume of water returned to local ecosystems through diversified water sourcing and external water restoration initiatives is equal to or greater than the volume of water withdrawn for operations. Diverse water resources include tap water replacement such as reclaimed water, as well as supplementary tap water sources such as desalinated seawater and brackish water. Water restoration initiatives encompass groundwater recharge, wetland restoration, reservoir dredging, and watershed rehabilitation, all aimed at mitigating environmental impacts and achieving sustainable water use.

• Reclaimed Water

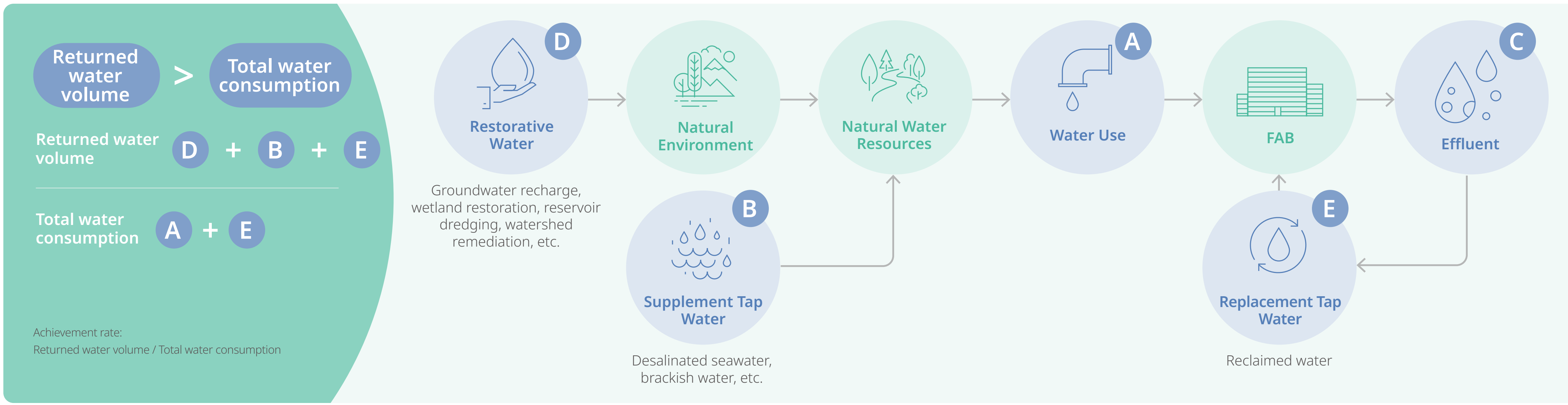
TSMC expanded its use of reclaimed water, with cumulative consumption reaching 23.53 million cubic meters in 2025 (including 22.73 million cubic meters of reclaimed water intake and 0.80 million cubic meters of water exchange), achieving a substitution rate of 18% at Taiwan fabs. In addition, the Company completed the expansion of the Kaohsiung Nanzi and Qiaotou reclaimed water plants and signed agreements for the Hsinchu Science Park reclaimed water plant. The Qiaotou reclaimed water plant is expected to supply 25,500 cubic meters of reclaimed water per day to Fab 22 starting in 2026.

For reclaimed water that cannot be directly supplied to fabs due to distance or volume constraints, TSMC pursued innovative collaboration models. In 2025, through coordination by the Tainan City Government Water Resources Bureau, TSMC partnered with industrial users near the Rende Reclaimed Water Plant to establish Taiwan's first cross-regional reclaimed water exchange mechanism based on a carbon trading–inspired concept, with official water supply commencing in September. This tripartite collaboration enhanced the cost efficiency of reclaimed water delivery and regional water resource utilization, while reducing reliance on local natural water resources and creating shared benefits among stakeholders.

• Desalinated Seawater and Brackish Water

Beyond reclaimed water, TSMC supports national policies on diversified water resource development. In 2025, the Company signed additional desalinated seawater subscription contracts for 136,000 cubic meters per day. To reinforce a resilient foundation for water supply, TSMC also collaborated with industry, government, and academic partners to explore emerging water sources, including brackish water in tidal river reaches and atmospheric water harvesting technologies, with the aim of converting these sources into industrial-grade water through advanced treatment technologies, further enhancing water supply stability and resilience.

Water Positive Calculation Method



• Restorative Water

In terms of water resource restoration, TSMC not only conducts research on river restoration and water-saving initiatives for agricultural irrigation at its Taiwan fabs, but also actively advances conservation across its global operations. At JASM in Kumamoto, Japan, the Company carried out groundwater recharge programs, achieving a restoration volume of eight million cubic meters in 2025, with continued expansion of the program scope, demonstrating solid progress in sustainable water stewardship.

The Salt River is one of the primary water sources in the watershed where TSMC Arizona operates. To address long-standing seepage and evaporation losses along the upstream Verde River conveyance system, TSMC plans to convert the existing open earthen canal into a closed pipeline system, thus improving regional water use efficiency, restoring flows in the Salt River, and enhancing aquatic habitats. The project was formally contracted at the end of 2025, with completion scheduled for 2026, and is expected to deliver positive outcomes for local ecosystems and biodiversity conservation.

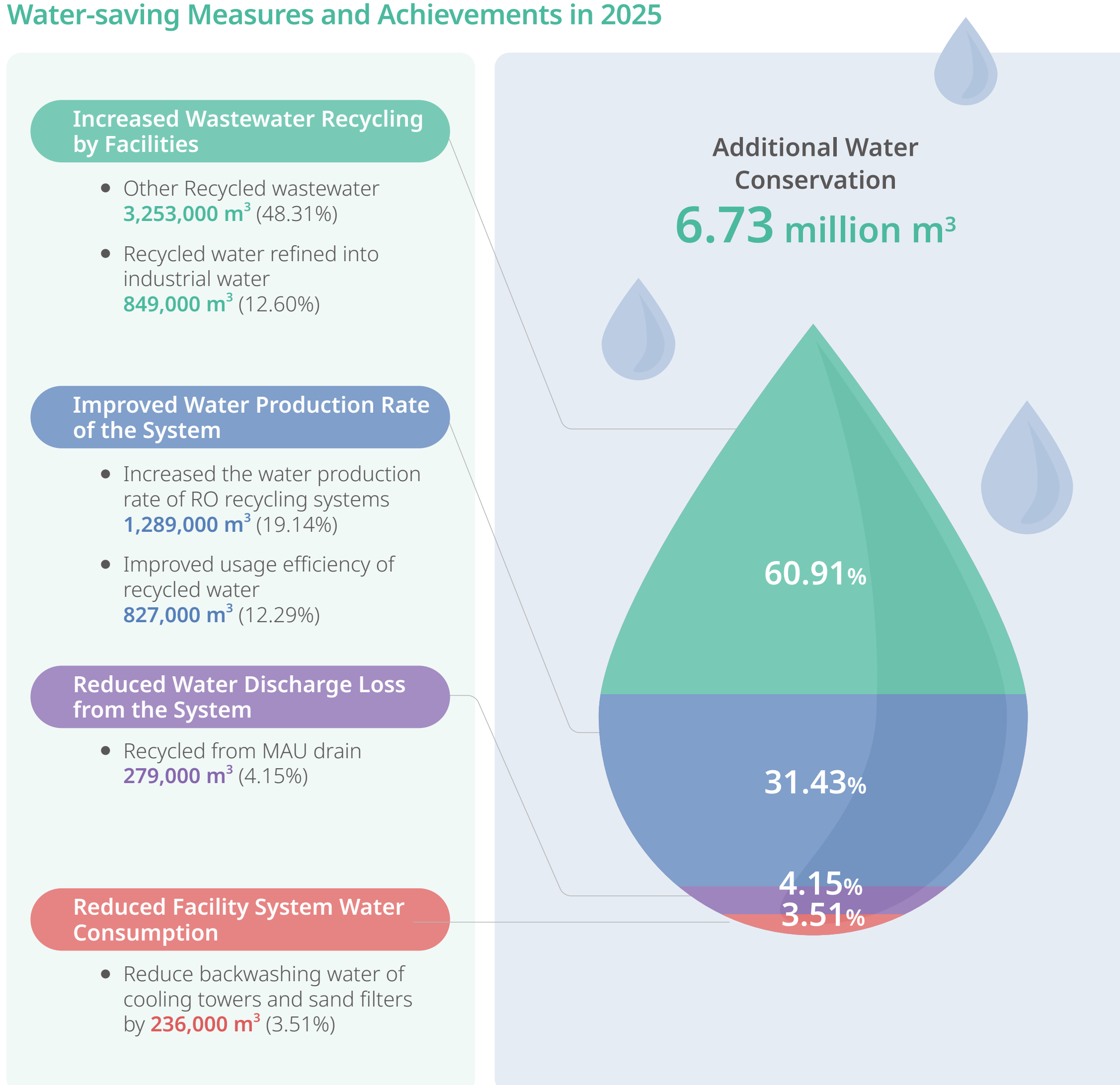
Strengthening In-house Water Reclamation and Water Use Efficiency

TSMC manages in-fab water usage through its diversified water supply integration platform and implements four water conservation measures: Decreasing Water Discharge Loss from the System, Reducing Facility System Water Consumption, Increasing Wastewater Recycling by Facilities, and Improving Water Production Rate of the System. In 2025, newly achieved water savings reached 6.73 million cubic meters, while total reclaimed water volume from the overall recovery system stood at 318.94 million cubic meters, representing a 12% increase compared with 2024.

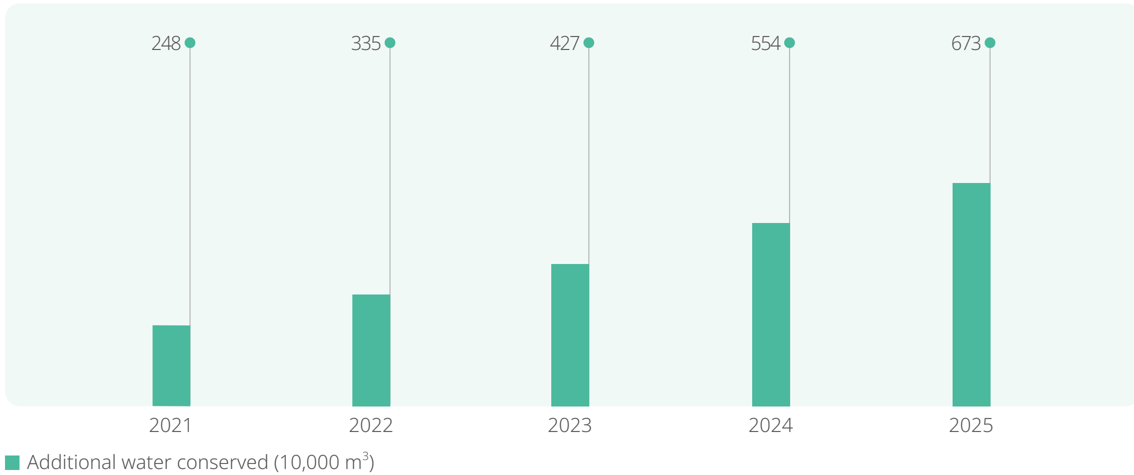
In 2025, TSMC's unit water consumption was 153.3 liters per 12-inch equivalent wafer mask layer, down 4.8% from 161.0 liters in 2024, but still above the 2010 baseline of 140.9 liters per 12-inch equivalent wafer mask layer. This was primarily driven by strong global wafer demand in recent years and the accelerated expansion of TSMC's global footprint, with multiple newly built fabs in pre-production qualification stages, including Fab 20 Phases 1 and 2, Fab 22 Phases 1 and 2, TSMC Arizona Fab Phase 1, JASM Fab Phase 1, and Advanced Backend Fab 8. These sites accounted for approximately 20% of total global tap water consumption, thus affecting the reduction trend in unit water consumption. Excluding these new fabs, unit water consumption in 2025 would have been 122.3 liters per 12-inch equivalent wafer mask layer, a 13.2% decrease compared with the 2010 baseline, reflecting continued improvements in water efficiency at existing fabs.

As TSMC continues to scale up its operations, the impact of new fab ramp-ups on water consumption per unit of product will remain an ongoing factor. To tackle this challenge, the Company focuses on its global Water Positive achievement rate as the key indicator for guiding and evaluating water resource management performance, furthering its commitment to sustainable water stewardship.

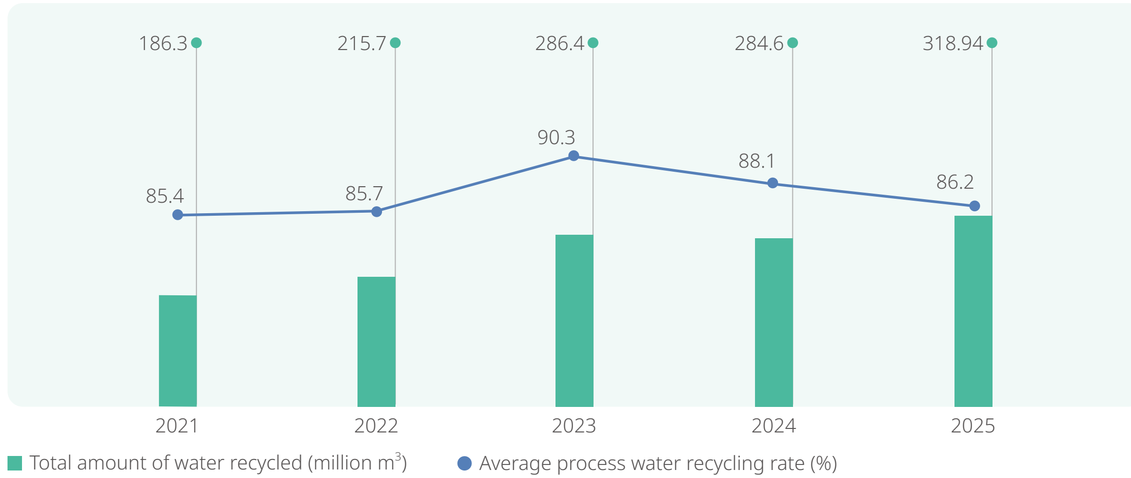
Water-saving Measures and Achievements in 2025



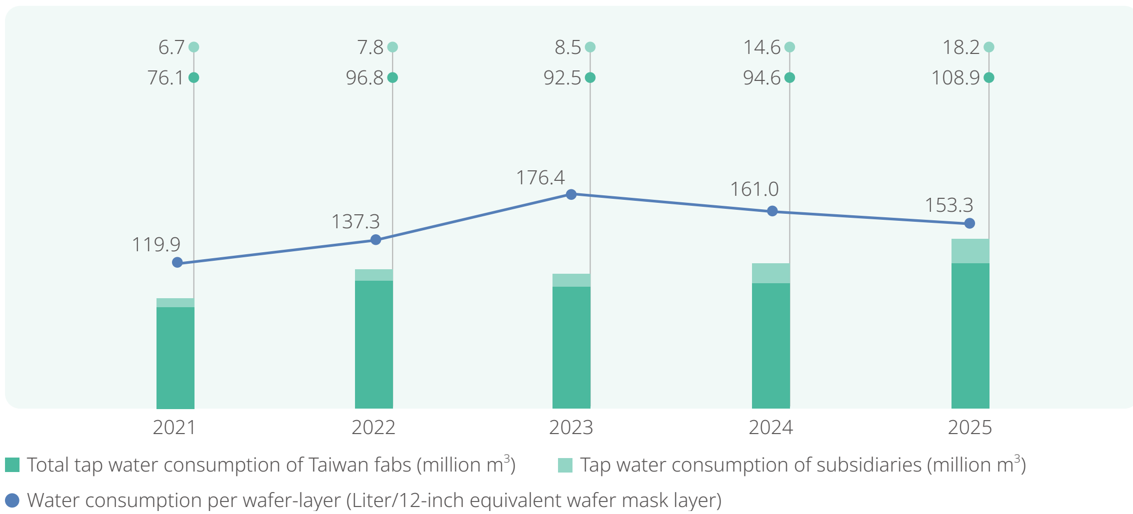
Annual Incremental Water Conservation



Water Recycling and Process Usage Efficiency

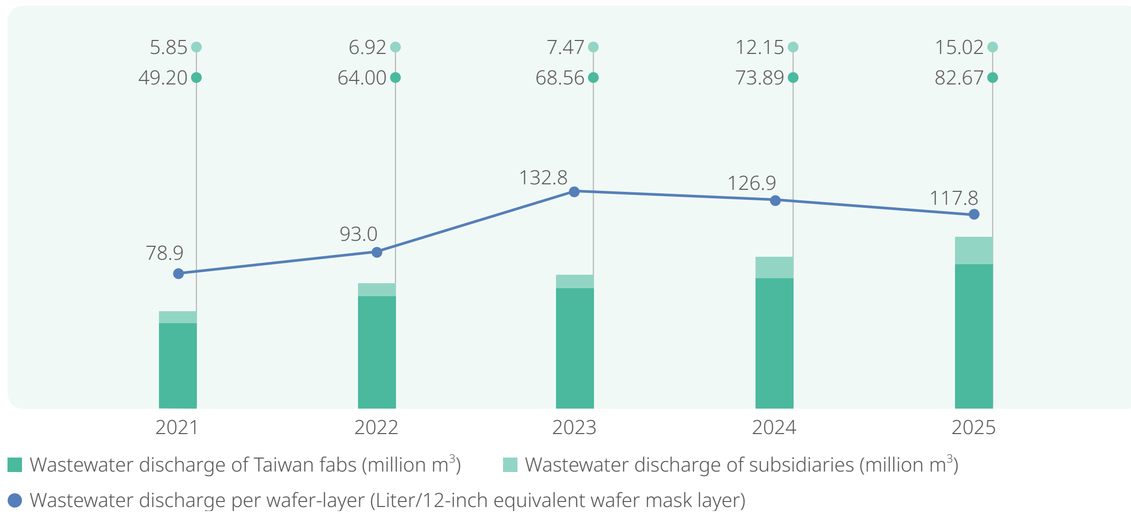


Tap Water Consumption and Water Consumption per Wafer-layer



Note: The scope of subsidiaries include TSMC (China), TSMC (Nanjing), TSMC Washington, LLC, TSMC Arizona, JASM, and VisEra.

Wastewater Discharge per Unit



Note: The scope of subsidiaries include TSMC (China), TSMC (Nanjing), TSMC Washington, LLC, TSMC Arizona, JASM, and VisEra.

Product Water Footprint

To effectively manage and reduce product water footprint, TSMC conducts a product water footprint assessment every three years, with third-party verification in accordance with ISO 14046. The 2024 assessment results indicate that, due to fab expansion and associated increases in water demand, the share of water footprint attributed to the wafer manufacturing stage increased. In response, TSMC strengthened water-saving measures in manufacturing processes to cut water consumption. At the same time, the Company monitors pollution prevention performance through the water pollution composite indicator reduction rate and actively develops advanced wastewater treatment technologies to improve pollutant removal efficiency and reach its environmental sustainability objectives.

Water Resources Education

Guided by the principle of shared prosperity between business and the environment, TSMC leverages environmental education to raise awareness of sustainable water use among both internal and external stakeholders. Externally, TSMC launched its environmental education website in 2025, providing the public with environmental education courses, activities, and outreach information. Among these initiatives, the TSMC S.T.S.P. Reclaimed Water Plant Environmental Education Center offers diversified water resource programs designed for different age groups, using interactive formats to enhance public awareness and engagement. In 2025, TSMC held a total of 71 events, attracting 2,971 participants and fostering greater public attention to water resource conservation.

Internally, TSMC continues to reinforce employees' water resource awareness. In addition to ongoing "Understanding Reclaimed Water Plant Tours," the Company launched two online courses in 2025, "Water Stewardship" and "TSMC Environmental Education: A Comprehensive Analysis of Water Stewardship." These courses provide knowledge on water resources and the Company's strategies, while encouraging employees to practice water conservation in daily operations. As of December, 1,550 employees completed both on-site activities and online courses.

Case Study

Innovative Application of Reclaimed Water Cuts Chemical Usage by 20%

In 2024, TSMC successfully introduced reclaimed water into advanced manufacturing processes. Compared with tap water, reclaimed water contains significantly lower levels of total organic carbon (TOC) and conductivity, as well as sodium bromide originating from the treatment process. In 2025, TSMC further leveraged these characteristics by conducting precise analysis and adjustment of operating parameters of the ultrapure water system. As a result, consumption of chemicals including hydrochloric acid, sodium hydroxide, and sodium bromide in processes such as urea treatment, activated carbon, and ion exchange resin units was reduced by more than 20%. In addition, reduced TOC and turbidity extended the replacement cycle of activated carbon consumables by 30%, leading to additional cost and resource savings. This innovation demonstrates multiple benefits in process optimization, resource conservation, and environmental performance, underscoring TSMC's commitment to sustainable water stewardship.

TSMC uses reclaimed water to reduce energy and resource consumption.


TSMC promotes water resource education programs.

Innovative Water Pollution Prevention Technology

TSMC continues to advance pollution prevention technologies through the development of an Ammonia Nitrogen Wastewater Diversion and Processing Inspection System, which reduces effluent conductivity by 40% and chemical usage by 30%. In 2025, the system was implemented at Fab 20 Phase 1, and was then validated at Fab 20 Phase 2 and Fab 22 Phase 1, demonstrating its scalability. The system is being adopted as a standard design for new fabs and further extended to existing facilities. In addition, for PFASs-containing process wastewater, TSMC introduced drinking-water-grade bituminous coal granular activated carbon (GAC) adsorption and filtration technology, achieving an average removal efficiency of 95%. The system was fully deployed at all existing fabs in 2025 and incorporated as the standard wastewater treatment design for new fabs, further enhancing overall treatment performance.

TSMC (Nanjing) completed a "Wastewater Phosphorus Reduction Project" in 2025 to comply with stringent local total phosphorus discharge regulations (3 ppm). Through optimization of the defluorination system, adoption of phosphorus-free corrosion inhibitors in cooling towers, and tighter control of phosphorus-containing chemicals, the site reduced total phosphorus discharge by more than 45%. The phosphorus-free cooling tower corrosion inhibitor not only addresses local discharge requirements but also demonstrates potential for company-wide application, demonstrating TSMC's green technology innovation capability.

Wastewater Classification and Resource System

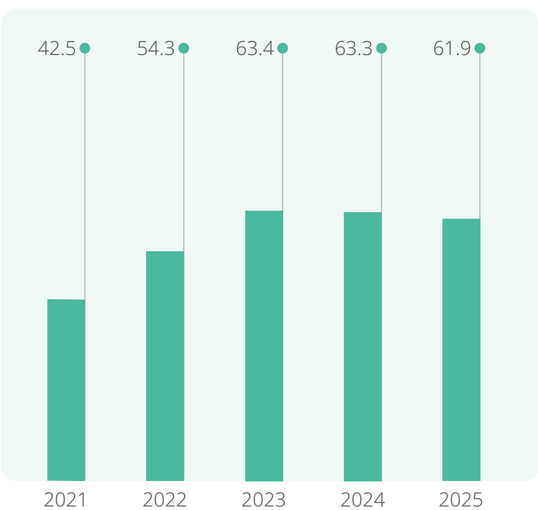
TSMC establishes 39 wastewater diversion systems for recycling and reuse based on process wastewater composition and concentration characteristics. For wastewater that cannot be reclaimed, the Company applies membrane bioreactor systems, hypochlorous acid (HOCl) conversion systems, and high-gravity rotating beds before discharging treated effluent to science park wastewater treatment facilities. In 2025, the global Water Pollution Composite Indicator reduction rate reached 61.9%, exceeding the annual target of 60%. To ensure stable system operation and achieve zero failure in pollution control, wastewater treatment systems are equipped with redundancy and early warning mechanisms, enabling continuous operation in the event of system malfunctions. No abnormal wastewater discharge incidents occurred in 2025.

TSMC continuously enhances wastewater resource management.

In anticipation of Taiwan's total phosphorus effluent discharge standards taking effect in 2027, TSMC acted ahead of schedule by officially incorporating total phosphorus into its Water Pollution Composite Indicator management framework in 2025. The Company segregates and recovers phosphoric acid–containing wastewater at the source, then concentrates it using evaporation technology and transfers it to qualified recyclers for conversion into secondary industrial-grade phosphoric acid. This approach not only effectively manages total phosphorus levels in wastewater but also advances circular economy principles.

Water Pollution Composite Indicator Reduction Rates

Unit: %



Wastewater Classification and Resource System

	39 Different Types of Liquid Classified	9 Recycling Systems	13 Types of Wastewater Treatment	8 Products Recycled
Hydrofluoric (HF) Acid Wastewater	• HF acid wastewater (two types) • Ozone-containing HF acid wastewater • Manufacturing process scrubbing water (two types)	• Hydrofluoric (HF) acid wastewater • Local scrubber wastewater recycling	• Chemical coagulation treatment of HF acid • HF (including ammonia) treatment • Biological treatment of HF acid wastewater	• Calcium fluoride • Fluorite Cryolit
Acidic, Caustic, and Organic Wastewater	• Deionized water • Acidic wastewater (three types) NEW • Ozone-containing acidic wastewater • Caustic wastewater • Ozone-containing Caustic wastewater • TMAH wastewater • Organic wastewater (two types)	• Acidic wastewater recycling • Ozone-containing acidic wastewater recycling • Caustic wastewater recycling • Caustic wastewater upcycling • Organic wastewater recycling	• Acidic and Caustic wastewater treatment • NH_4-N wastewater treatment and recycling • TMAH liquid waste recycling • Biological treatment system for organic wastewater	• Ammonium sulfate • TMAH
CMP Wastewater	• Electroplating wastewater • CMP wastewater (two types) • Copper-containing CMP wastewater • Cobalt-containing CMP wastewate	• Chemical coagulation recycling of CMP wastewater • Copper-containing CMP wastewater upcycling	• CMP wastewater treatment • Copper-containing CMP wastewater treatment • Cobalt-containing CMP wastewater treatment	• Silicon aluminum oxide
High concentration Liquid Waste	• Other wastewater (16 types) • Waste sulfuric acid • Waste copper sulfate • Cobalt-containing liquid		• Waste-H_2SO_4 reclamation • Copper-containing electroplating wastewater recycling • Cobalt-containing electroplating wastewater recycling	• Sulfuric acid • Copper bar • Cobalt bar

Circular Resources

Strategies	2030 Goals	2026 Targets	2025 Achievements
Sustainable Resource Management Note 1 Continuously promote waste segregation and source reduction, require suppliers to provide low-chemical consumption tools. The Company also engaged in developing innovative resource recovery technologies, actively promote the reuse of recycled electronic-grade chemicals to enhance resource utilization	In-house recovery rate Note 2 ≧ 70% 100% Waste recovery rate Note 3	In-house recovery rate ≧ 35% 98% Waste recovery rate	Outsourced waste Note 4 amount per wafer production in Taiwan Note 5: ≦ 1.08 (kg/12-inch equivalent wafer mask layer) Target: ≦ 1.11 (Exceeded) Outsourced waste amount per wafer production in overseas subsidiaries: ≦ 1.17 (kg/12-inch equivalent wafer mask layer) Target: ≦ 1.36 (Exceeded) In-house recovery rate in Taiwan 33% Target: ≧ 33% (Achieved) Promoted four "incineration-to-recovery" projects Target: three projects (Exceeded) Waste recovery rate 98% Target: 97% (Exceeded)
Strengthen Audit and Guidance Enhance contractor capabilities in self-management and resource recycling through audit, guidance, and tracking with applied technologies	All waste contractors shall acquire ISO 14001 or other international EHS Management certification Note6 All waste contractors shall finish building the System of Waste Intelligent Fast Track (S.W.I.F.T.) Note7 Increase the percentage of "Excellent" and "Good" waste contractor evaluation results to 90% Note8	92% of waste contractors shall acquire ISO 14001 or other international EHS Management certifications 60% of waste contractors shall finish building the System of Waste Intelligent Fast Track (S.W.I.F.T.) Increase the percentage of "Excellent" and "Good" waste contractor evaluation results to 90%	92% of waste contractors shall acquire ISO 14001 or other international EHS Management certifications Target: 90% (Exceeded) 56% of waste contractors shall finish building the System of Waste Intelligent Fast Track (S.W.I.F.T.) Target: 48% (Exceeded) Increased the percentage of "Excellent" and "Good" waste contractor evaluation results to 91% Target: 90% (Exceeded)

Applicable to all TSMC fabs around the world | Applicable to TSMC fabs in Taiwan and other specific fabs | Only applicable to TSMC fabs in Taiwan | Applicable to TSMC overseas fabs | Exceeded | Achieved | Missed Target

Note 1: As capacity changes and global expansion have made emission intensity per unit of production a less effective measure of management performance in recent years, TSMC has replaced the original "outsourced waste amount per wafer production" metric with "in-house recovery rate." The Company has also continued upgrading waste treatment technologies, actively shifting incinerated waste toward reuse and recovery processes; accordingly, the "waste recovery rate" replaces the previous target of "reducing CO_2 emissions from waste incineration to 2020 levels."

Note 2: In-house recovery involves on-site recycling and reuse, on-site recycling into products, the Zero Waste Manufacturing Center, electronic-grade chemical recycling, and chemical leasing.

Note 3: Due to technical and material limitations in waste recovery, the long-term target of 100% waste recovery has been adjusted to 99.5%.

Note 4: Outsourced waste refers to waste processed through methods other than in-house recovery.

Note 5: The data includes TSMC fabs in Taiwan and VisEra.

Note 6: Waste treatment contractors include waste disposal and recovery contractors, government-owned enterprises, public-private enterprises, enterprises operating under the Act for Promotion of Private Participation in Infrastructure Projects, wholesale and retail enterprises, contractors handling waste exempted from itemized online reporting, and those who handle waste wood, waste lubricants, waste cooking oil, and food waste are not included in this scope.

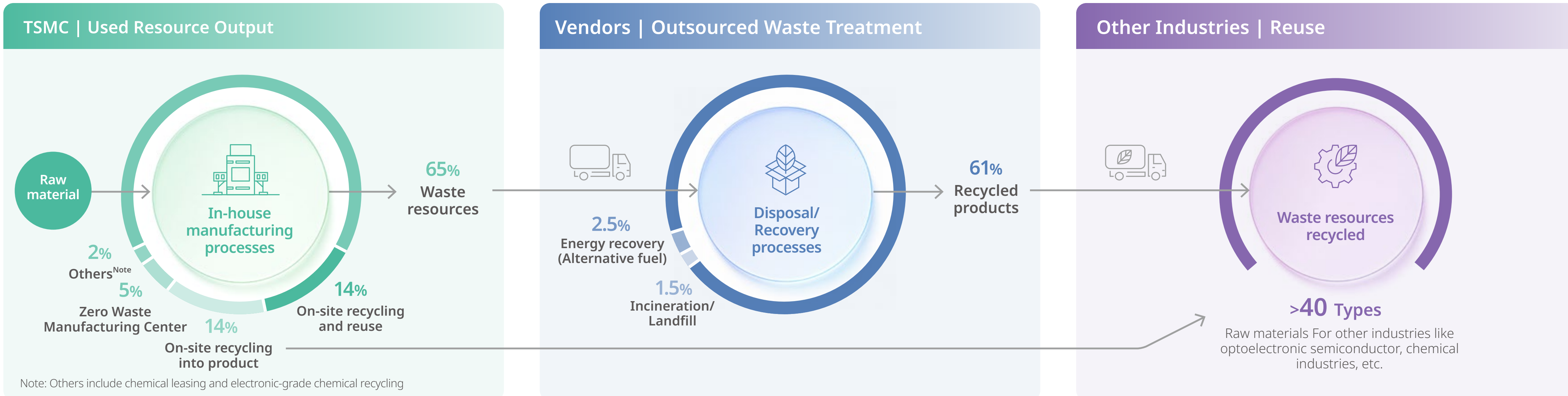
Note 7: Waste treatment contractors include waste disposal and recovery contractors, government-owned enterprises, public-private enterprises, enterprises operating under the Act for Promotion of Private Participation in Infrastructure Projects, wholesale and retail enterprises, contractors handling items exempted from itemized online reporting, entities operating in the Zero-Waste Manufacturing Center, and contractors handling waste wood, waste lubricant, waste cooking oil, and food waste are not included in this scope.

Note 8: The evaluation does not include wholesale and retail enterprises, contractors handling waste exempted from itemized online reporting, entities operating in the Zero-Waste Manufacturing Center, and contractors handling waste wood, waste lubricants, waste cooking oil, and food waste.

TSMC drives resource circulation through two strategies: Sustainable Resource Management and Audit & Guidance. By deepening waste segregation, source reduction, and recovery technologies, the Company realizes the dual value of waste resource integration and circular utilization. In 2025, TSMC integrated its source reduction and circular economy strategies into sustainable resource management. At the same time, the Company prevents illegal disposal and environmental pollution risks through audits and guidance. These efforts aim to "minimize waste, maximize recycling, and optimize management." In 2025, TSMC's global waste recovery rate reached 98%, and its Taiwan fabs maintained a landfill rate below 1% for 16 consecutive years. TSMC also sustained UL 2799 platinum certification at its Taiwan fabs and extended these practices to overseas sites, thereby enabling TSMC (Nanjing) and TSMC (China) achieve UL 2799 platinum certification, all of which demonstrates its commitment to the Company's Environmental Policy .

In addition, TSMC actively builds a green circular resource system by collaborating with suppliers to convert isopropanol (IPA) waste into electronic-grade products , which were successfully adopted at its wafer fabs in 2025. Under the incineration-to- recovery program, approximately 850 metric tons of aluminum-plastic packaging waste were diverted from incineration. The Company also works with suppliers on anaerobic digestion trials of organic sludge to produce biogas, shifting sludge treatment from incineration to recovery. Through these diversified sustainable resource management initiatives, TSMC fosters greater environmental friendliness.

TSMC Waste Life Cycle Management Procedure



In-house waste management

- Source separation and segregated collection procedure
- Source reduction project
- In-house recycling equipment
- Zero Waste Manufacturing Center
- Chemical leasing
- Zero Waste to Landfill, UL 2799 certification
- New vendor selection procedure
- Annual evaluation standards
- Waste management practice forum

Waste collection and transportation

- TSMC GPS satellite fleet system
- Automated waste declaration platform
- Operational Enhancement 2.0
- Waste collection and transportation safety meeting

Disposal and recovery operation

- Electronics-grade chemical
- Industry cooperation to co-create resources project
- Annual audit plan
- Quarterly audit plan
- ISO 14001 certification plan
- System of Waste Intelligent Fast Track (S.W.I.F.T.)

Recycled product transport

- Cloud reporting platform

Recycled product flow

- Monthly tracking report
- Cloud reporting platform
- Track and compare with declared data

2025 Total waste production 1,340,449 Metric tons

98%[Note1] Waste for recovery (1,314,487 Metric tons)

	General waste	Hazardous waste
Outsourced recycling (62.5%)	339,186 Metric tons	499,461 Metric tons
On-site recycling and reuse (13.6%)	960 Metric tons	181,510 Metric tons
On-site recycling into product (13.2%)	127,104 Metric tons	49,727 Metric tons
Zero Waste Manufacturing Center (4.5%)	31,865 Metric tons	28,332 Metric tons
Energy recovery (Alternative fuel) (2.8%)	30,927 Metric tons	6,706 Metric tons
Others[Note 2] (1.4%)	2,929 Metric tons	15,790 Metric tons

2% Non-recoverable waste (25,956 Metric tons)

	General waste	Hazardous waste
Incineration (1.7%)	15,769 Metric tons	6,686 Metric tons
Landfill (0.3%)	3,071 Metric tons	426 Metric tons

Note 1: The data includes TSMC fabs in Taiwan, TSMC China, TSMC Nanjing, TSMC Arizona, TSMC Washington, LLC, JASM, and VisEra

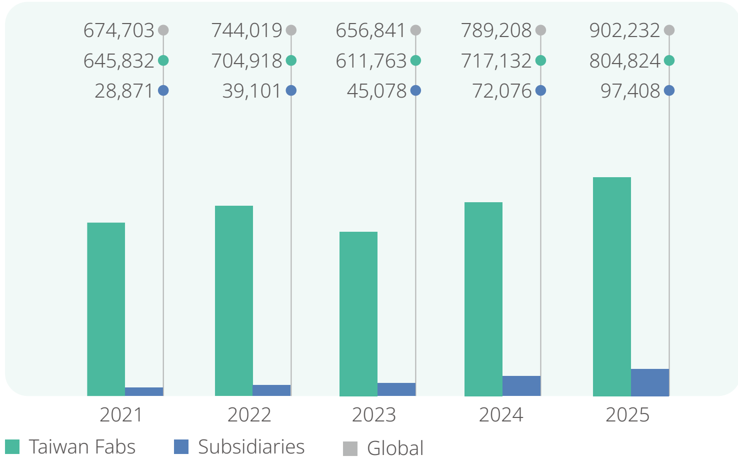
Note 2: Includes 18,719 metric tons of electronic-grade chemicals

Outsourced Waste

Unit: Metric tons/year

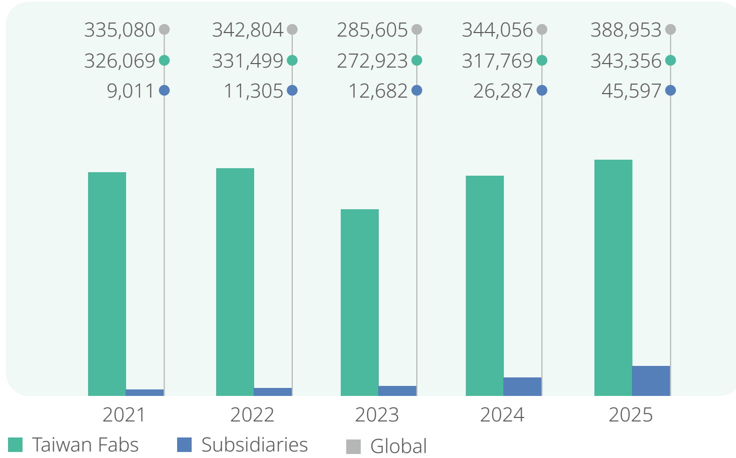
Outsourced Waste

Unit: Metric tons/year



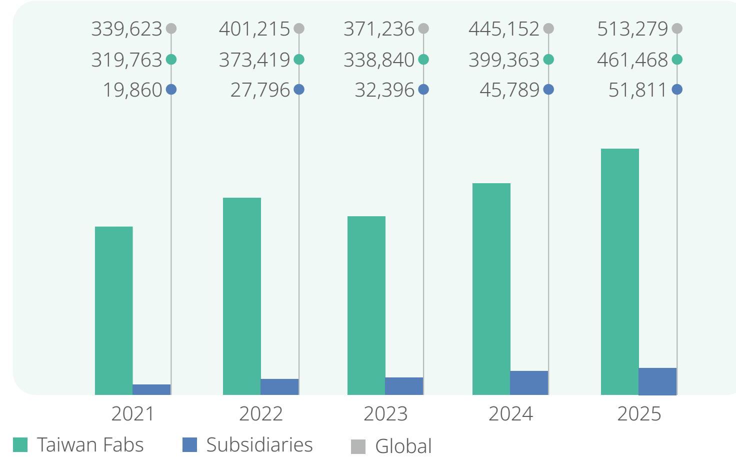
Outsourced General Waste

Unit: Metric tons/year



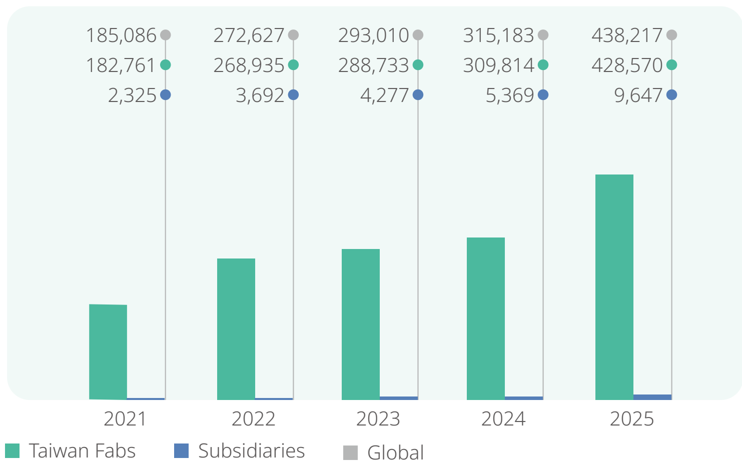
Outsourced Hazardous Waste

Unit: Metric tons/year



In-house Recovered Waste[Note]

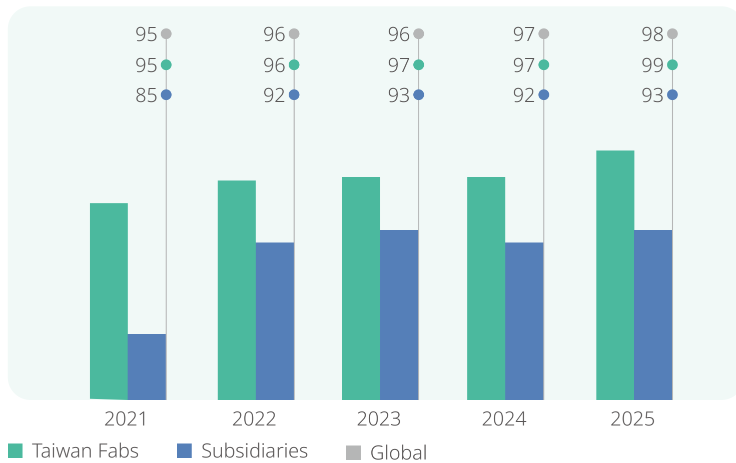
Unit: Metric tons/year



Note: In-house recovery includes on-site recycling and reuse, on-site recycling into product, the Zero Waste Manufacturing Center, electronic-grade chemical recycling, and chemical leasing.

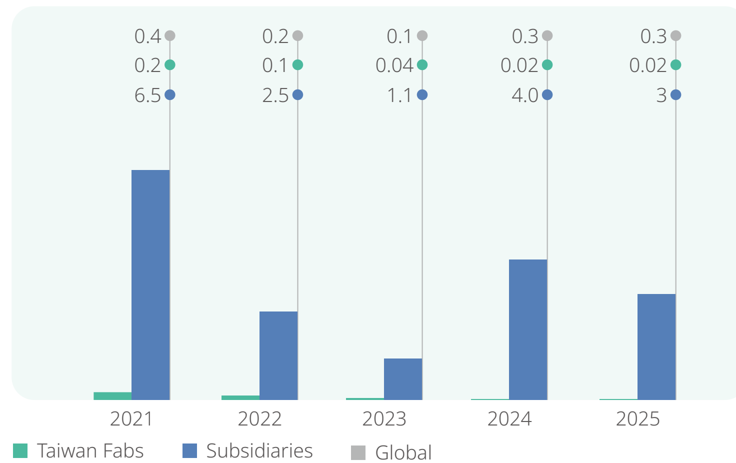
Waste Recovery Rate

Unit: %



Percentage of Waste Sent to Landfills

Unit: %

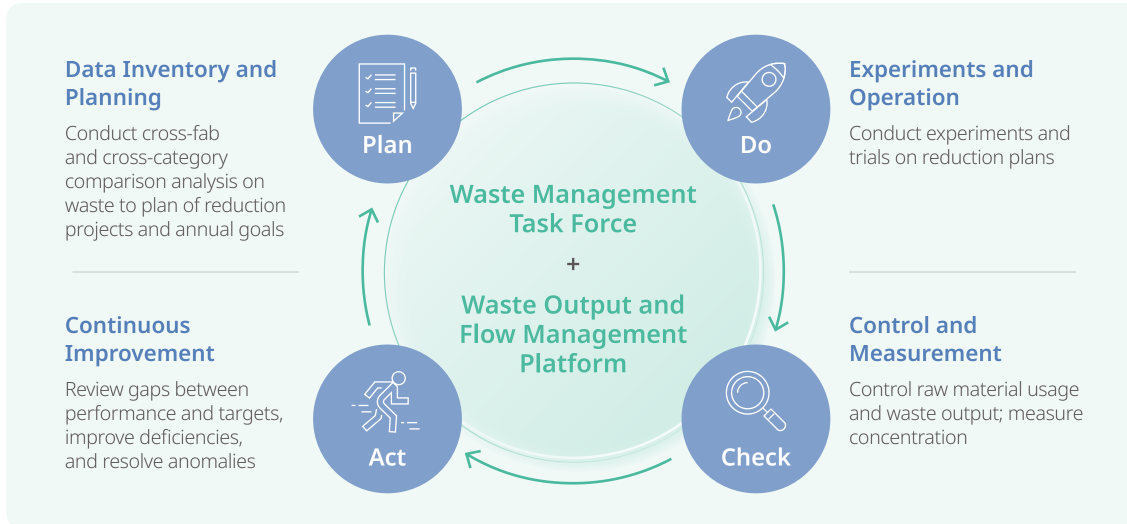


Sustainable Resource Management

To minimize waste generation, TSMC reduces waste at the process source and optimizes raw material usage. The Company established the Waste Management Task Force at Taiwan fabs to integrate process, facilities, and circular resource management units. Using a Plan–Do–Check–Act (PDCA) approach, the group sets annual waste reduction plans. Measures include adjusting tool parameters, optimizing process technologies, and extending material lifecycles to lower raw material consumption. On-site recycling is prioritized for materials after use. Waste generation is monitored through the Waste Output and Flow Management Platform, with regular progress and performance tracking. In 2025, TSMC drove 198 waste reduction projects on production tools, estimated to reduce approximately 26,278 metric tons of waste.

Isopropanol (IPA), widely used in process cleaning due to its rapid evaporation and high solubility, is one of the main sources of waste liquid. In 2025, TSMC Arizona addressed abnormal pH levels in IPA waste by coordinating with Taiwan fabs to adjust tool drainage methods, successfully restoring pH to the normal range. Fab 18A and TSMC Arizona are estimated to reduce waste liquid by approximately 200 metric tons per month.

TSMC Waste Reduction Management Mechanism



Taiwan Fab Waste Reduction Measures and Results, 2025

Manufacturing Equipment Waste Reduction >26,000 metric tons
- 111 Reduced chemical usage time/flow rate
- 28 Simplified process measures
- 55 Extended chemical usage cycles
- 1 Chemical substitution
- 3 Others

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On-site recycling and reuse / On-site recycling into product >340,000 metric tons
- 2 Copper/cobalt waste liquid electrolysis
- 1 Ammonium sulfate crystallization
- 1 Silicon-containing liquid dehydration by filter press
- 1 Sulfuric acid reclamation
- 1 Hydrofluoric acid recycling

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Zero Waste Manufacturing Center >60,000 metric tons
- 1 Fluoride sludge recycling
- 1 Silica sludge recycling
- 1 IPA waste liquid recycling
- 1 Solvent waste liquid recycling

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Electronic-Grade Chemicals >18,000 metric tons
- 1 Recycled electronic-grade cyclopentanone
- 1 Recycled electronic-grade TMAH
- 1 Recycled electronic-grade IPA

=

>444,000 metric tons Waste Reduction

211 Waste Reduction Measures Adopted Across Fabs

TSMC aims to maximize resource reuse. Through the "Action Plans to Turn Waste into High-Value Products", the Company converts sulfuric acid, copper sulfate, cobalt sulfate, ammonium sulfate, hydrofluoric acid, and silicon-containing waste liquids into products for use on-site, or for other industries. In 2025, Taiwan fabs recycled and reused 172,800 metric tons of waste on site and recycled 176,800 metric tons of waste into products, delivering approximately NT$2.39 billion in economic benefits. At the same time, TSMC adopted the Waste Sulfuric Acid Reclaim System 2.0, developing new catalysts and using high-temperature, corrosion-resistant glass-lined reactors to enhance recovery efficiency and extend equipment durability. Following one year of operational validation, the system became standard design for all new fabs starting in 2025, further increasing the value of recycled materials.

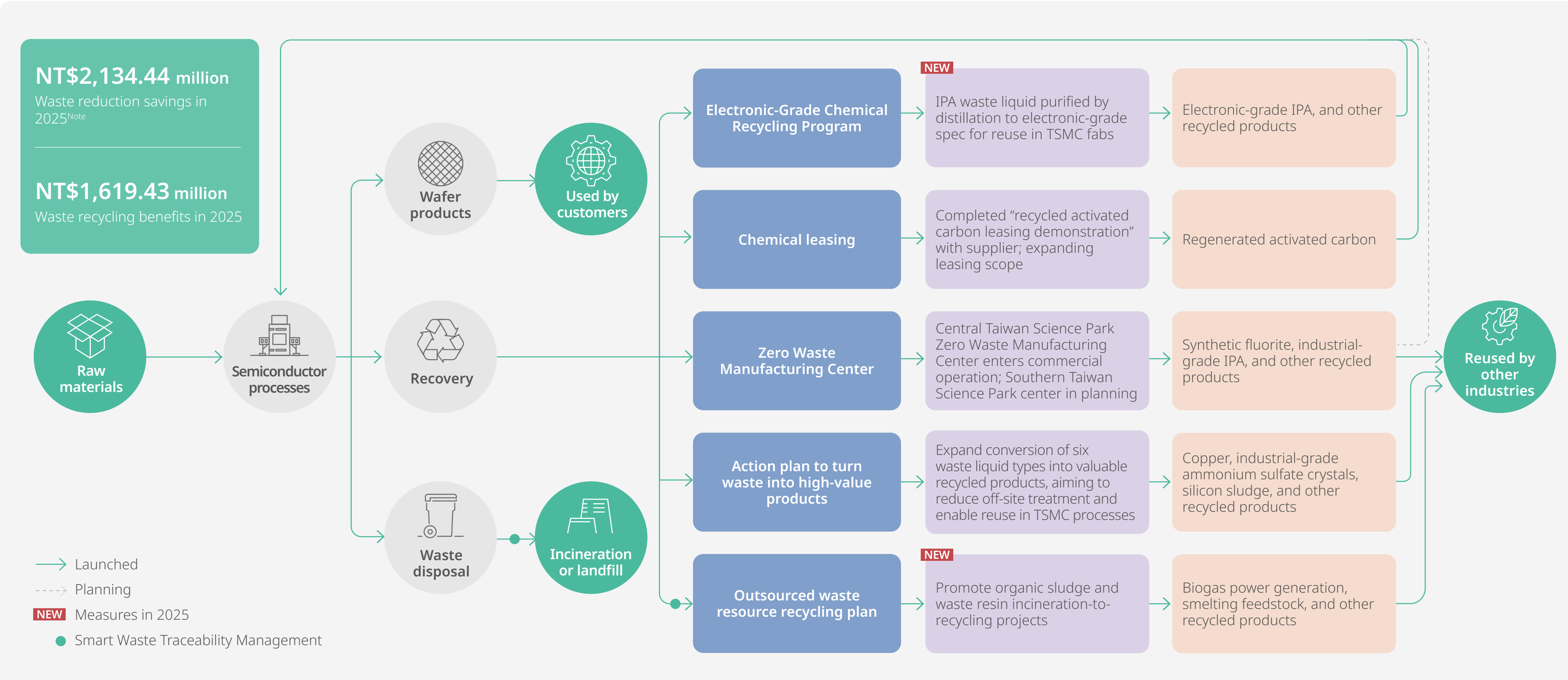
Regarding the "Electronic-Grade Chemicals Recycling Project", TSMC collaborated with suppliers in January 2025 to develop a dual-cycle recycling mechanism for Isopropanol (IPA) waste. The Company optimized distillation column process parameters and enhanced impurity separation, reclaiming electronic-grade isopropanol for on-site reuse. Secondary wastewater was purified and repurposed in cooling towers, establishing a cradle-to-cradle green recycling system. In the Chemical Leasing program, TSMC completed a demonstration project in 2024 that applied regenerated activated carbon in acidic wastewater recycling systems. In 2025, the Company expanded the scope to include copper-containing chemical mechanical polishing (CMP) wastewater. The project received approval from the Ministry of Environment and is scheduled for adoption in 2026. At the Taichung Zero Waste Manufacturing Center, TSMC recovered 60,197 metric tons of fluorine-containing sludge, silicon-containing sludge, isopropanol waste, and organic solvent waste, producing approximately 12,800 metric tons of reusable materials and 78,800 metric tons of steam. The Tainan Zero Waste Manufacturing Center is planned and under construction to further expand recovery capacity.

TSMC also worked with suppliers to drive the Outsourced Waste Resource Recovery Program. In 2025, the Taiwan fabs converted organic sludge into biogas through anaerobic digestion to generate green electricity and processed waste resin into feedstock for steel production. Overseas fabs successfully commissioned four new recovery technologies. To expand the impact of resource circulation, TSMC launched the Global Resource Circulation Expansion Project in 2025, bringing together waste management teams from all fabs to share recovery technologies and explore additional circular opportunities.

To strengthen employees' knowledge of circular resource management, TSMC organized online courses covering waste classification principles, relevant waste regulations, and international ESH certifications such as ISO 14001. In 2025, the Company held 52 sessions with approximately 27,200 participants. In August, TSMC launched the Waste Output and Flow Management Platform, presenting material life cycles and waste reuse in an interactive fashion, and ran a prize quiz featuring limited-edition business card holders made from 100% recycled wafer cassettes to encourage employees to propose ideas for circular innovation. In November 2025, TSMC hosted a Circular Economy Forum, inviting experts from industry, government, and academia to discuss Taiwan and global trends in resource circulation, business models, TSMC strategies and challenges, and Zero Waste Manufacturing Center technologies. The event drew 327 employees, fostering in-depth exchange and advancing circular economy practices, demonstrating the Company's innovation and commitment to sustainable operations.

TSMC aims to maximize resource reuse.

Sustainable Resource Management Implementation Plan



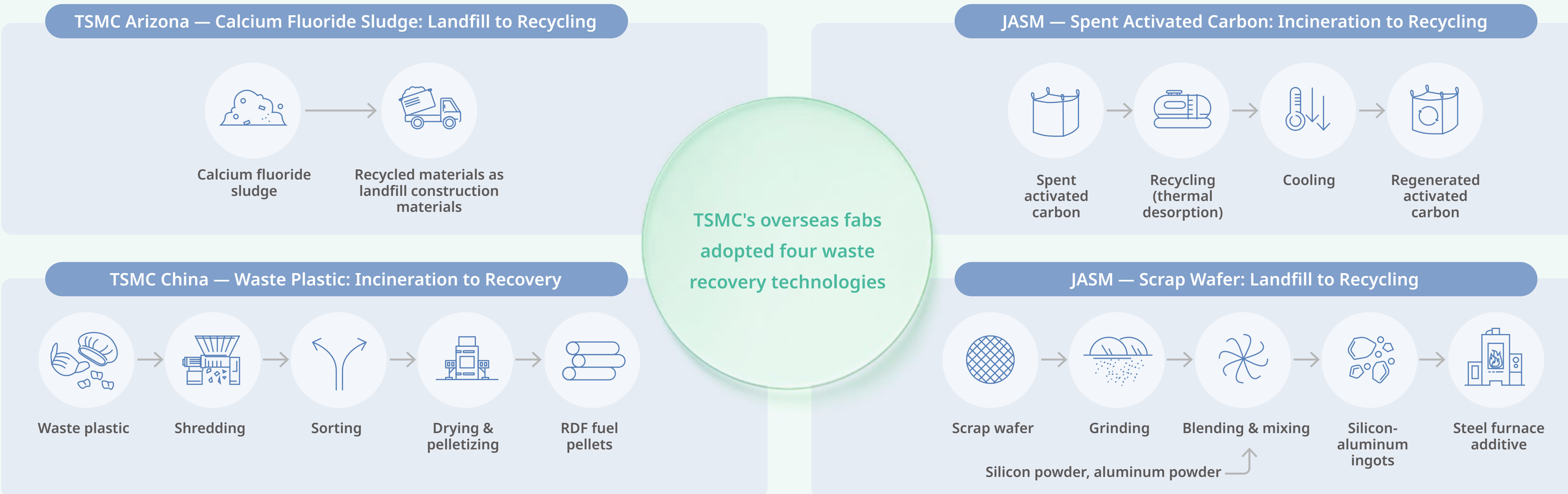
Note: Figures represent cost savings on outsourced waste treatment achieved through estimated waste reduction volumes from production tools and in-house waste recovery (on-site reuse and on-site recycling into products for sale).

Case Study

Extending Resource Circulation Globally and Upgrading Recovery Technologies at Overseas Fabs

To support its global expansion, TSMC launched the Global Resource Circulation Expansion Project to share 60 resource reuse practices from Taiwan fabs with overseas sites. In 2025, the Company launched four recovery technologies, including calcium fluoride sludge recycling at TSMC Arizona, conversion of spent activated carbon from incineration to recycling at JASM, scrap wafer diversion from landfill to recycling, and plastic waste conversion from incineration to recovery at TSMC China. These efforts raised the global recovery rate by 0.04%. When TSMC's Taiwan fabs jointly became the first in the global semiconductor industry to earn UL 2799 certification, the highest platinum rating, in 2023, the Company expanded this approach through Smart Copy. In June 2025, TSMC Nanjing and TSMC China also obtained the same highest platinum rating through joint certification. TSMC plans to strengthen technology sharing and exchange across all global fabs, advancing resource circularity and sustainable recycling while demonstrating its environmental commitment.

TSMC Global Resource Circulation Expansion Project



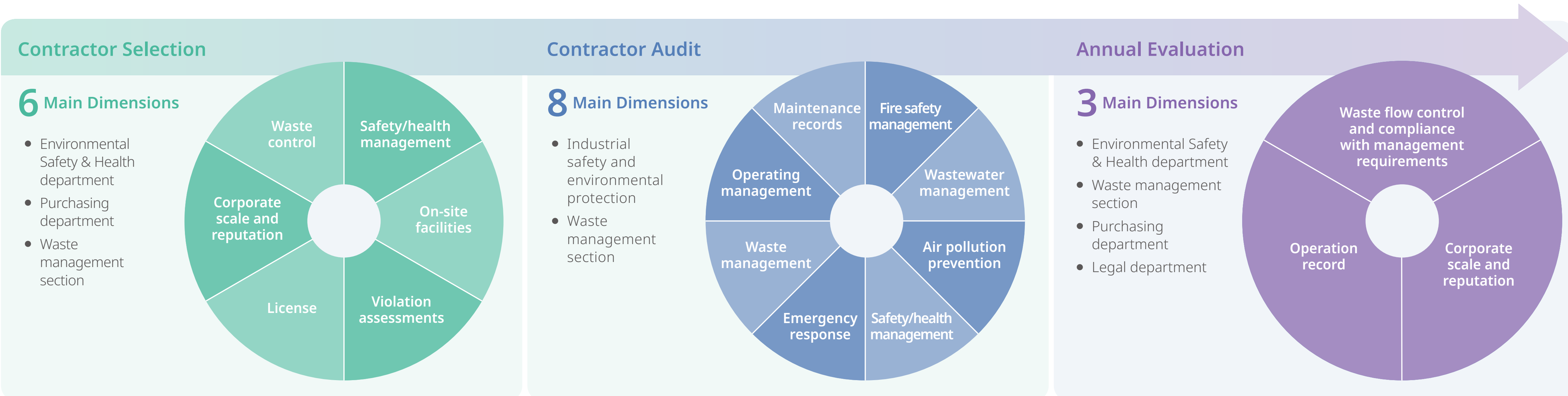
Strengthen Audit and Guidance

TSMC's Supplier Transportation Management White Paper, sets clear requirements for vehicle, driver, and transportation management. The Company strengthened accountability in outsourced waste transport and promoted a culture of transportation safety. Through a dedicated GPS tracking system, TSMC monitors waste transport from end to end to ensure transparent management and prevent illegal dumping. To improve transportation safety, the Company upgraded the "Waste Collection and Transportation Enhancement Project 2.0" in 2025, adding on-site spot tests to reinforce safety awareness in addition to continued quarterly training and online assessments for transport personnel. In 2025, TSMC conducted 316 spot checks, with a 99% pass rate. Further, TSMC completed annual audits of 65 transport vendors, with 100% coverage for tankers, sludge hauling vehicles, and hazardous waste transport vehicles. The Company addressed 29 deficiencies, including one in operational management, four in personnel training, seven in vehicle and personnel safety, and 17 in transport procedures.

For waste treatment contractors, TSMC launched the Waste Treatment Contractor Sustainability Enhancement Project. The Company first established a new contractor selection system, conducting document reviews and on-site inspections across six dimensions. For existing contractors, TSMC and third-party auditors carry out annual audits and guidance covering eight dimensions and 156 audit items. Finally, contractor performance is evaluated across three dimensions to inform retention or replacement decisions. In 2025, TSMC completed on-site audits of all 77 contractors, achieving 100% coverage, and resolved 68 identified deficiencies. The share of contractors rated "Good" or above rose from 88% in 2024 to 91%.

TSMC requires waste contractor to obtain ISO 14001 or ISO 45001 certification three years after becoming qualified partners, establishing a foundation for standardized management while completing the setup of System of Waste Intelligent Fast Track to reinforce waste life cycle management through technological tools. In 2025, the proportion of vendors obtaining international EHS certifications such as ISO 14001 reached 92%, and the proportion of vendors establishing tracking systems reached 56%. The Company also supported contractors' digital transformation by incorporating electronic facility inspection forms and digital approval workflows into the smart tracking system, replacing paper-based operations, streamlining processes, and enhancing efficiency for shared sustainability goals.

Waste Treatment Vendor Sustainability Enhancement Project



Waste Collection and Transportation Enhancement Project 2.0 to Improve Safety Management

Contractor Selection Before Collection and Transportation

- Establish a standardized vendor qualification and selection process
- Establish personnel and vehicle certification systems to ensure operational proficiency and vehicle compliance

Collection and Transportation Operation Observation

- Audit on-site tanker operations for compliance based on documentation, vehicle specifications, and operational procedures
- Require contractor supervisors to conduct ride-along self-audits to strengthen operational management of the transportation process
- Implement on-site tests for drivers to ensure their familiarity with operational procedures NEW

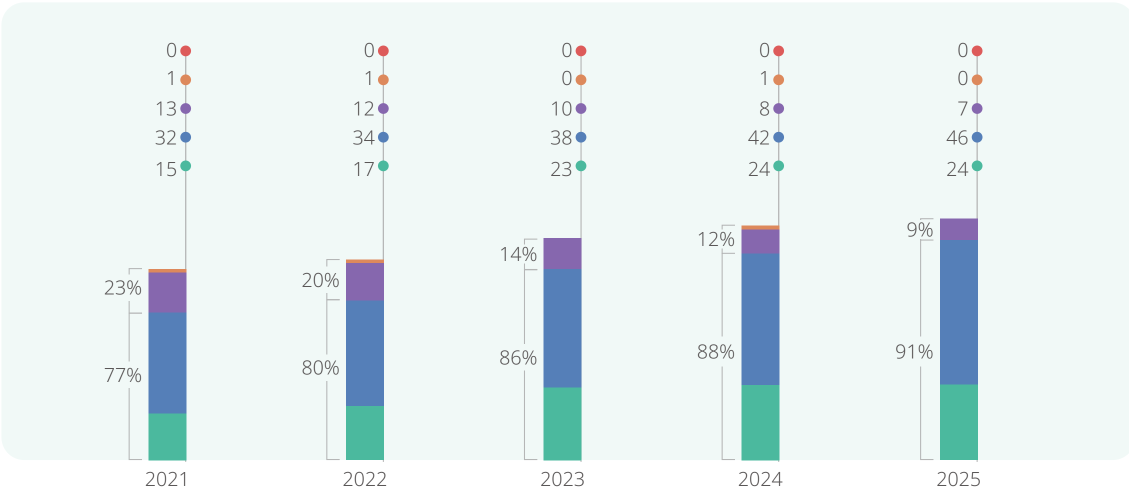
Annual Audit After Collection and transportation

- Conduct annual audits to comprehensively review contractor management and operations
- Strengthen accident case awareness and self-inspection practices through the annual personnel training program and the annual tank truck inspection plan
- Organize waste collection and transportation safety meetings to reinforce safety culture awareness
- Implement quarterly training sessions and online assessments to reinforce familiarity with operational procedures

Waste Treatment Vendor Audit and Guidance Results in 2025

Category	Share	Cases	Legal Compliance	On-site Environment/ Operational Improvement	Establishing Regulations and Procedures
Waste Management	60%	41 Cases	Increase requirements under the "Regulations Governing Determination of Reasonable Due Care Obligations of Enterprises Commissioning Waste Clearance" Correct inaccurate declaration data Amend waste contracts to comply with regulatory requirements Ensure licensed personnel complete mandatory retraining Strengthen application procedures for long-term on-site waste storage	Correct incorrect labels in waste storage areas Align waste storage locations with permit specifications Improve waste storage conditions Extend retention period of monitoring systems data to meet regulatory requirements	Strengthen review mechanism for sales recipients of recycled products
Safety and Health Management	29%	20 Cases	Set occupational environmental monitoring items and frequency, and arrange special health examinations, based on the hazard-exposure risk. Increase the number of personnel with first aid and occupational safety and health supervisor certifications to meet regulatory staffing requirements Ensure licensed personnel complete mandatory retraining	Improve on-site chemical labeling and safety data sheet compliance Reinforce education and implementation of wearing personal protective equipment Optimize safety hardware protection equipment	Establish and execute a hearing protection program Develop a prevention plan for musculoskeletal disorders from repetitive tasks Execute training for personnel handling hazardous chemicals
Wastewater Management	7%	5 Cases	Adjust the scope of operations in the water pollution prevention and control plan to comply with on-site practices Align water sampling points in the water pollution prevention and control plan with on-site locations Establish and document a designated personnel inspection system	Improve signage at discharge outlets and wastewater piping	
Air Pollution Prevention	2%	1 Case		Carry out inspection, maintenance, and upkeep of sampling facilities	
Emergency Response	2%	1 Case			Add safety training materials in foreign languages for migrant workers

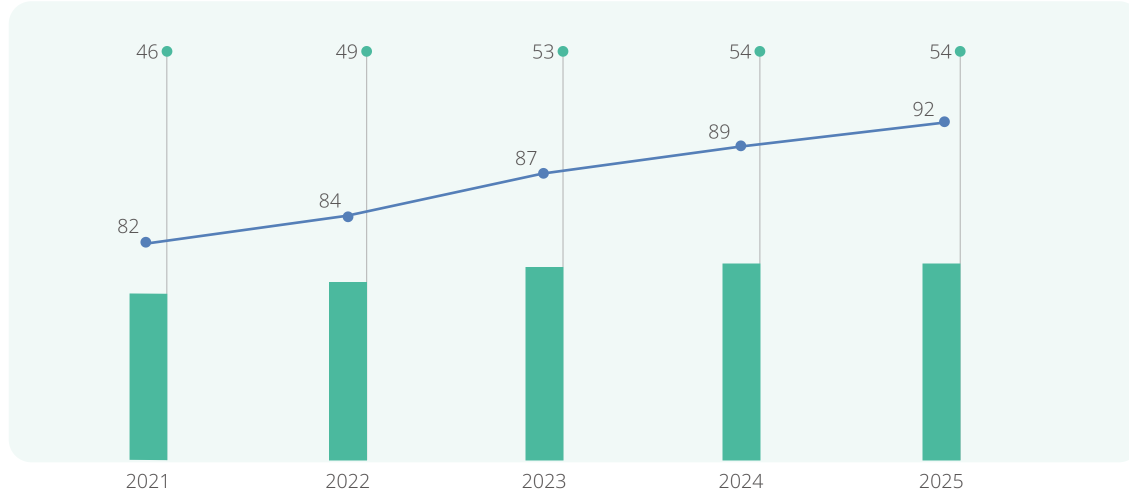
2025 Waste Treatment Vendor Evaluation Results



Excellent | Good | Medium | Passing | Disqualified

Note: The total score is 100 points: greater than 90 points is rated as "Excellent"; 80-89 points is "Good"; 70-79 points is "Medium"; 60-69 points is "Passing"; vendors with less than 60 points are Disqualified

ISO-certified Waste Treatment Vendors



Number of certified vendors | Percentage (%)

Waste Treatment Vendor Management Milestones

2020
- Collaborate with vendors to host waste management conference
- Finish integrating the Recycled Product Cloud Reporting Platform with the MOENV's reporting platform
- Strengthen dedicated TSMC GPS Satellite Fleet System
- Launch Smart Management project for Appropriate Waste Handling
- Establish a Cloud Reporting Platform for recycled product flow traceability

2021
- Establish Waste Collection and Transportation Enhancement Project
- Establish S.W.I.F.T.
- Facilitate public access to flow of recycled products reported to the MOENV

2022
- New version of annual waste treatment vendor audit plans

2023
- Waste Collection and Transportation Enhancement project 2.0

2024
- Organized collection and transportation safety meetings
- Implement quarterly training sessions and online assessments for drivers

2025
- **Implement on-site tests for drivers**
- **Collaborate with third-party specialists for annual waste treatment vendor audits.**

2030
- Achieve 100% ISO 14001 certification and S.W.I.F.T. implementation among our contractors

In-house Waste Management | Waste Collection and Transportation | Monitoring Waste Treatment/Reuse | Transporting Recycled product | Flow of Recycled Product

Air Pollution Control

Strategies	2030 Goals	2026 Targets	2025 Achievements
Adopt Best Available Technology Adopt the Best Available Technology to control pollutants emitted from TSMC operations and minimize environmental impact	Reduce air pollution composite indicator by >90%[Note 1]	Reduce air pollution composite indicator by >85%	Reduced unit air pollutant emissions[Note 2] by 58% Target: 58% (Achieved)
	Reduction rate of volatile organic gases: >99%	Reduction rate of volatile organic gases: >98.7%	Reduction rate of volatile organic gases: 98.9% Target: >98.6% (Exceeded)
Strengthen Monitoring for Air Pollution Control Equipment Leverage backup systems and dual-track management, along with pollutant monitors, to ensure that the equipment works as intended and to prevent abnormalities	Report <1 abnormal occurrence[Note 3] in air pollution control equipment	Report <1 abnormal occurrence in air pollution control equipment	Reported 0 abnormal occurrences in air pollution control equipment Target: <1 (Achieved)

Applicable to all TSMC fabs around the world | Applicable to TSMC fabs in Taiwan and other specific fabs | Only applicable to TSMC fabs in Taiwan | Applicable to TSMC overseas fabs | Exceeded | Achieved | Missed Target

Note 1: To strengthen air quality management and environmental resilience, TSMC adopted the ">90% reduction rate in air pollution composite indicator" target in 2025, replacing the previous target of "65% reduction in unit air pollutant emissions" to more effectively measure pollution control performance. The composite indicator covers eight air pollutants: total hydrocarbons (THC), sulfuric acid (H_2SO_4), hydrochloric acid (HCl), nitric acid (HNO_3), hydrofluoric acid (HF), phosphoric acid (H_3PO_4), chlorine (Cl_2), and ammonia (NH_3). The reduction rate is calculated by taking the emission control concentration for each pollutant in new processes as stipulated by the "Air Pollution Control Act" (including draft amendments) as the baseline, subtracting TSMC's actual emission concentration, and then dividing by the aforementioned control concentration to obtain the average value.

Note 2: Unit air pollutant emissions are calculated by dividing the air pollutant amount (grams) by the 12-inch wafer equivalent (with 2015 as the base year).

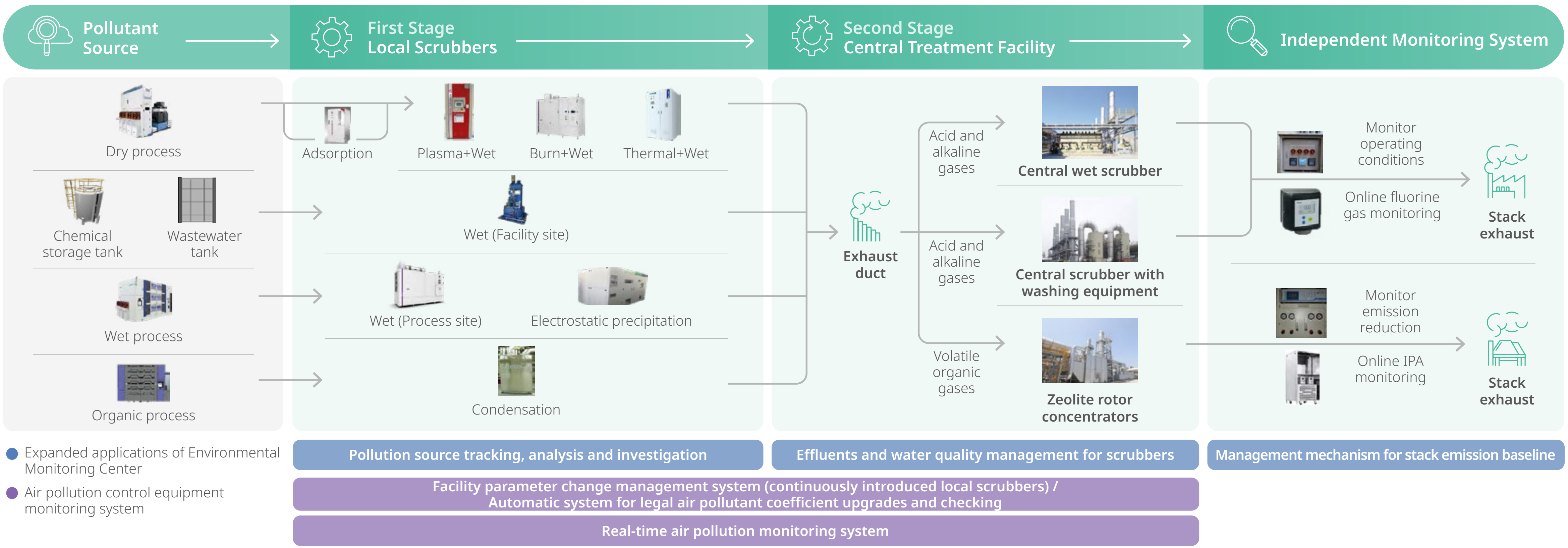
Note 3: Abnormalities in air pollution control equipment indicate abnormal air pollution caused by malfunctioning equipment with no backup that could not be repaired in 24 hours, or equipment that ceased functioning.

TSMC drives air pollution reduction through source segregation and multi-stage treatment technologies, minimizing pollutant emissions. In 2025, the volatile organic compounds (VOC) reduction rate reached 98.9%, reflecting strong environmental management performance. The Environmental Monitoring Center expanded its scope of services by adding 11 new testing items and obtained ISO/IEC 17025 accreditation — the international standard for laboratory competence and quality — enhancing the accuracy and credibility of testing data and supporting environmental sustainability.

Adopt Best Available Technology

Acid and alkaline gases and VOCs are the primary air pollutants generated during semiconductor manufacturing. TSMC addresses these issues through two approaches: segregation and reduction at the exhaust source, and enhanced processing at terminal-end equipment, applying multi-stage treatment systems to achieve best available technology standards. For high-concentration acid and alkaline gases, as well as greenhouse gases with toxic, corrosive, or flammable properties, first-stage segregation directs exhaust to high-performance local scrubbers for pre-treatment, after which residual trace acid/alkaline gases are conveyed to central scrubbers for second-stage wet scrubbing and neutralization. VOCs are evaluated based on boiling point to determine the need for condensation-type local scrubbers; treated exhaust is then routed to zeolite rotor concentrators for adsorption, effectively cutting emissions.

Air Pollution Control Procedures



Different Types of Local Scrubbers

Process	Semiconductor Fabrication	Target Pollutant	Control Technologies	Equipment	Reduction Rate	Real-time Parameter Monitoring
Dry process	Epitaxial dry etching	Corrosive gases	Burn-wet		>99%	• Natural gas flow • Oxygen flow • Circulating water flow • Inlet pressure
		Perfluorocarbons	Burn-wet			
	Dry etching	Corrosive gases	Plasma-wet		>95%	• Current amperage • Circulating water flow • Inlet pressure
		Perfluorocarbons				
		Flammable gases				
	Thin film	Corrosive gases	Thermal-wet with chemical dosing		>95%	• Reactor temperature • Circulating water flow • pH value • Inlet pressure
	Diffusion	Perfluorocarbons				
	Sputtering	Flammable gases				
		Hydrochloric acids	Thermal-wet with chemical dosing (Add high-efficiency spray device)		Hydrochloric acids >87%	
		Particulate matters			Particulate matters >86%	
	Ion implantation sputtering epitaxy	Toxic gases	Adsorption		>95%	• Pressure difference of local scrubber • Inlet pressure
	Thin film	Nitrous oxide (N_2O)	High-temperature thermal+wet		>90%	• Reactor temperature • Circulating water flow • Inlet pressure
Wet process	Wet etching	Corrosive gases	Wet + chemical dosage		>95%	• Differential pressure of local scrubber • Circulating water flow • Inlet pressure • pH value
		Organic gases				
		Alkaline gases $PM_{2.5}$	Wet electrostatic precipitation		>90%	• Inlet pressure • Corona voltage • Corona current
Organic process	PR stripping	High boiling point organics	Condensation		Specific high boiling point organics >95%	• Differential pressure of local scrubber • Condensation temperature
Storage tanks	Chemical Storage tank	Corrosive gases	Wet + chemical dosage (Facility site)		>95%	• Differential pressure of local scrubber • pH value • Circulating water flow • Inlet pressure
	Wastewater tanks	Acid and alkaline gases				

Source Reduction and Management - High Efficiency Local Scrubbers

To prevent air pollution risks arising from new processes and chemicals, TSMC operates a two-stage review mechanism through its New Tool and New Chemical Review Committee to ensure comprehensive control and minimize environmental impacts. In 2025, the Committee completed 330 reviews, including 160 new tools and 170 new chemical evaluations. The first-stage review focuses on assessing risks associated with new chemicals and establishing corresponding control measures. The second-stage review evaluates potential environmental impacts of emission testing results to determine the most appropriate exhaust segregation strategy and local scrubbers. Pre-treatment technologies include electrothermal, combustion, plasma, chemical scrubbing, adsorption, condensation, and wet scrubbing systems.

In 2025, TSMC adopted a nitrous oxide (N_2O) reduction technology that passed both the SEMI S2 Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment and the TSMC New Tool and New Chemical Review Committee review in 2024. It was deployed at Fab 12A, Fab 12B, Fab 14A, Fab 14B, Fab 15A, and Fab 15B. The Company plans to complete the retrofit or replacement of electric-heating local scrubbers throughout all existing fabs by 2028, with the aim of further improving abatement efficiency and enhancing overall emission control performance.

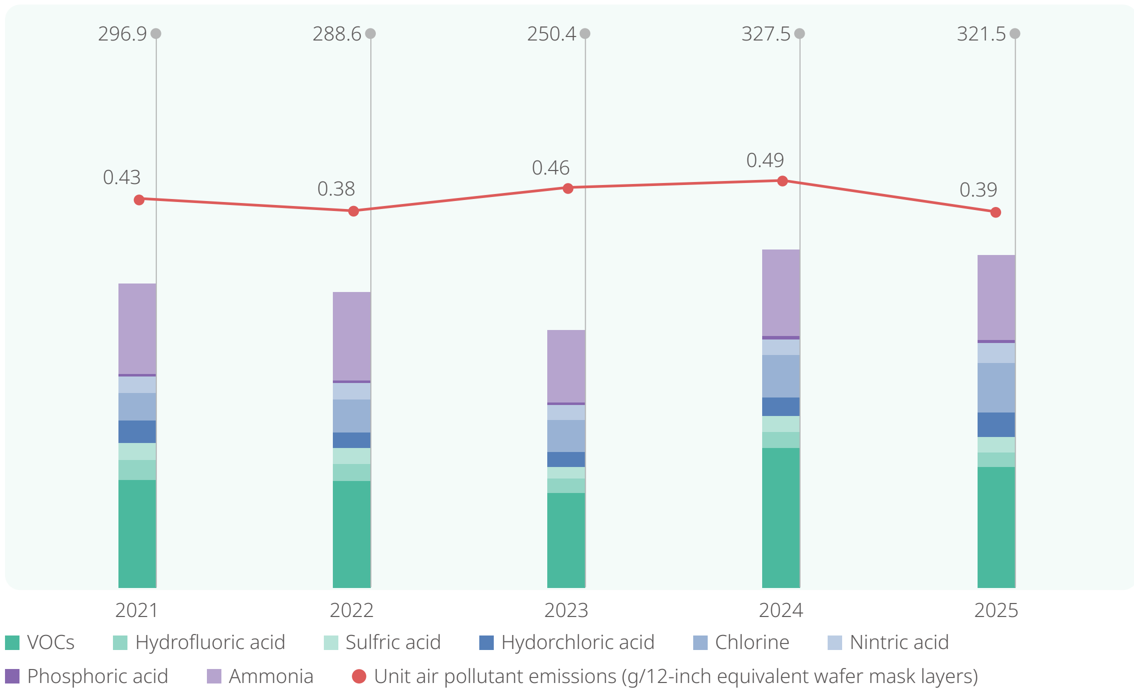
Strengthening Management of Terminal Prevention Facilities - Central Scrubbers

Acid and alkaline gases are first treated by local scrubbers and then routed to central scrubbers for wet scrubbing and acid–base neutralization. For wet processes, which generate relatively higher volumes of acid and alkaline gases, a centralized scrubber system combined with water-wash equipment is applied through a two-stage scrubbing process to enhance pollutant removal efficiency. For VOC treatment, existing fabs continue to execute the "Replacement Program for Inefficient Single Zeolite Rotor Concentrators," and new fabs adopt dual zeolite rotor concentration systems. In 2025, advanced backend fabs further improved VOC removal performance by optimizing zeolite rotor material selection to enhance methanol adsorption capacity.

To address potential secondary nitrogen oxide (NOx) emissions arising from high-temperature combustion of VOC-concentrated exhaust from zeolite rotor systems, low-NOx burners were deployed at newly built facilities in 2025, including Fab 20 Phase 2, Advanced Backend Fab 7, and Advanced Backend Fab 8. These systems utilize low-oxygen combustion and flow field control technologies to reduce NOx emissions. The VOC reduction rate reached 98.9% in 2025.

Historical Emissions and Emissions Per Unit of Production

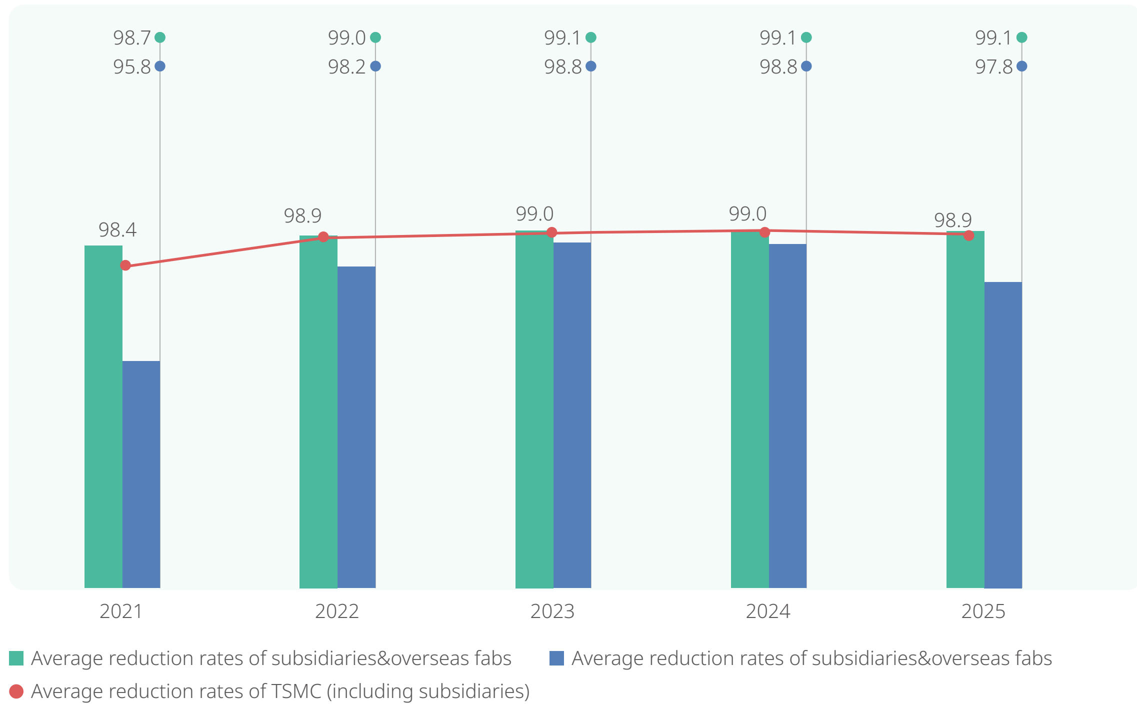
Unit: Tons/year



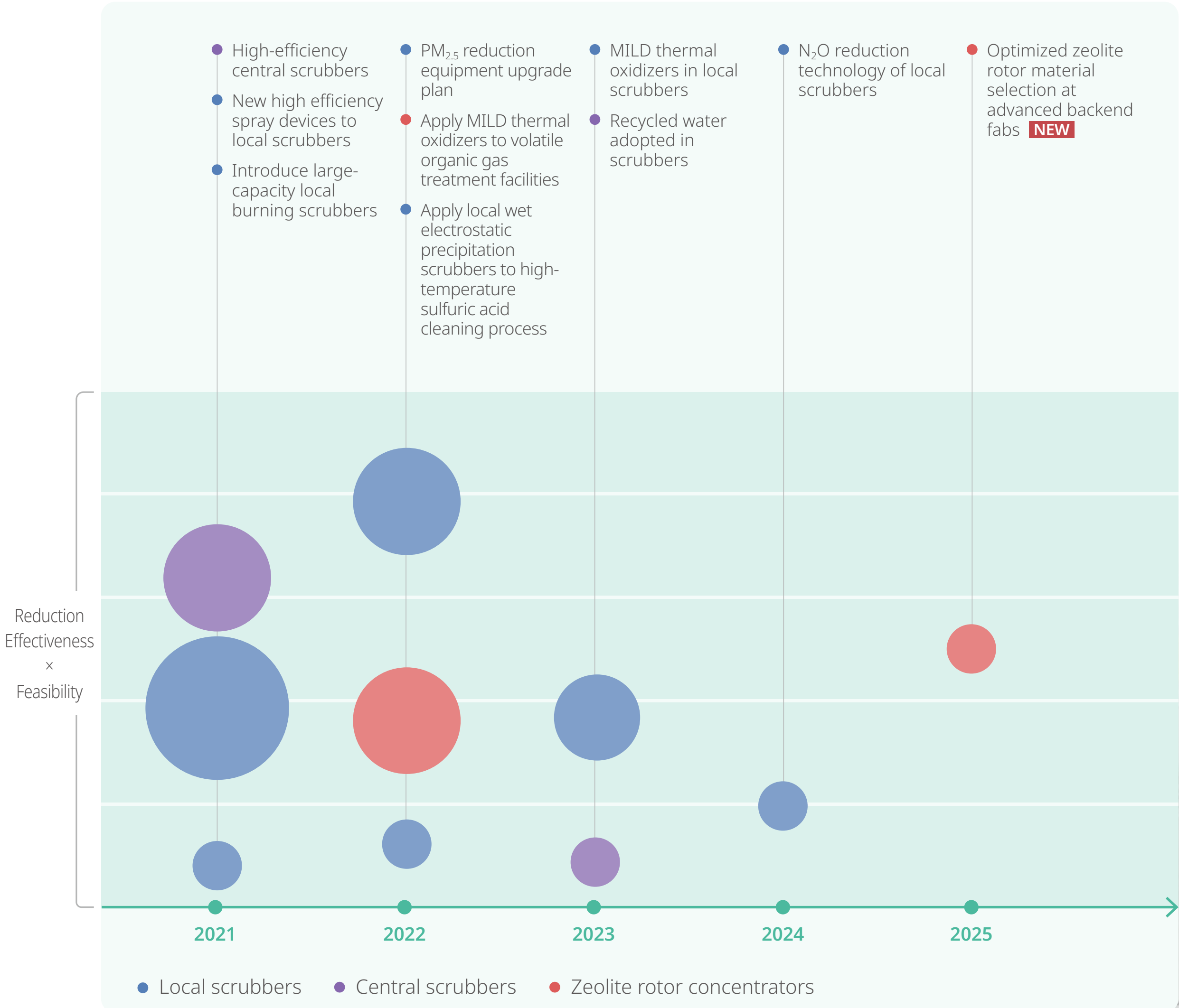
Note: TSMC air pollutant emissions are reported in accordance with local laws and regulations.

Historical Volatile Organic Gas Reduction Rates

Unit: %



Historical Assessment of Air Pollution Control Technology and Reduction Performance



Note: Size of the bubble indicates the technology's reduction efficiency.

Enhanced Monitoring of Air Pollution Prevention Equipment

TSMC continues to improve the stability and monitoring capability of its air pollution control systems by installing automated monitoring instruments across emission stacks, including total hydrocarbon monitors and online monitoring systems for isopropanol and fluorine gas, to verify monitoring data against actual emissions. The Company leverages the "Automated Verification System for Air Pollution Reporting Legal Coefficients," the "Facility Parameter Change Management System," and the "Facility Monitoring and Data Collection System" to track operating parameters of local scrubbers, while using automated cross-checking and verification functions to ensure reporting accuracy and prevent data loss or errors caused by human factors.

In response to advances in process technology and fab expansion needs, TSMC continued the 2024 upgrade of its Facility Parameter Change Management System in 2025, incorporating key control parameters of local scrubbers into the change management scope at newly built Fab 20 Phase 2, Advanced Backend Fab 7, and Advanced Backend Fab 8, ensuring stable operation of air pollution control equipment.

To maintain the stable operation of air pollution control systems, TSMC adopts an "N+1" model with backup systems, monitoring mechanisms, and alarm functions for abnormal conditions. In the event of equipment failure, the Facility Department and Industrial Safety and Environmental Departments can immediately activate backup units or initiate emergency repairs, supported by uninterruptible power supply (UPS) systems to minimize operational risk, achieving the zero-failure target for pollution control systems. In 2025, no abnormal events involving air pollution control equipment occurred, and no penalties or fines were incurred due to non-compliance with air pollution regulations.

Enhancing the Functional Capabilities of the Environmental Monitoring Center

Through sampling and analytical techniques, TSMC's Environmental Monitoring Center helps fabs identify optimal treatment methods for target pollutants, strengthening overall pollution control performance. In 2025, the Center further expanded its testing scope by adding fluorinated greenhouse gas analysis for air emissions, as well as fluoride salts and ammonia nitrogen testing for effluent. In the waste recycling domain, it developed eight analytical methods for sludge and waste organic solvent testing. Sludge analyses include moisture content, calcium fluoride and calcium carbonate in fluoride sludge, calcium fluoride in silicon-containing sludge, volatile solids, and elemental composition, while waste organic solvent testing includes moisture content and organic acid–base value analysis.

Beyond technical advancements, the Environmental Monitoring Center further strengthened the independent sampling and analytical capabilities of related personnel. In 2025, three workshops were conducted with a total of 39 participants, completing 96 hours of hands-on training in acid, alkaline, and heavy metal sampling, as well as data interpretation. These initiatives enhance air pollution abatement efficiency and create value for environmental protection.

Four Key Applications of the Environmental Monitoring Center

Four Major Applications

Air Emissions

- Emission stack management system
- Traceability investigation
- Air pollution data digitalization and anomaly tracking
- $PM_{2.5}$ testing
- Self-sampling training
- Fluorinated greenhouse gas and nitrogen oxide testing NEW

Effluents

- Effluent and scrubber water quality management system
- Water pollution data digitalization and anomaly tracking
- Total phosphorus and NO_3-N testing
- Fluoride salt and ammonia nitrogen testing NEW

Surrounding Area

- Monitor surrounding areas with air quality vehicles
- Set up fixed testing stations at Zhunan, CTSP, and Tainan Science Park
- Organic photochemical precursor testing

Waste Recycling

- Sludge testing
- Waste organic solvent testing NEW

Case Study

Advance ISO/IEC 17025 Accreditation to Enhance Testing Capabilities

To improve environmental emissions management, TSMC's Environmental Monitoring Center enhances monitoring and control of pollutants in emission sources. Based on fab requirements, sampling and analysis are conducted for volatile organic compounds, acids, and alkaline substances to accurately identify pollutant types and enable source tracing, improving the efficiency and coverage of abatement systems. To ensure data accuracy, consistency, and reliability, TSMC established a laboratory quality management system compliant with ISO/IEC 17025 international standards, providing comprehensive control over personnel, facilities and environments, equipment traceability and calibration, and analytical technical processes. The Center conducts regular sample comparisons with the National Environmental Research Academy (NERA) accredited laboratories and maintains comprehensive documentation of testing processes to support traceability and technical improvement.

Following the ISO/IEC 17025 international accreditation obtained by the Facility Environmental Laboratory at TSMC (Nanjing), TSMC's Environmental Monitoring Center and Facility Diagnostic and Analysis Center in Taiwan was also successfully accredited in 2025. TSMC will continue to promote its in-house testing mechanisms and standardized practices across additional fabs, while providing technical support to further enhance environmental monitoring capabilities throughout its global operations.

The Environmental Monitoring Center passes ISO/IEC 17025 accreditation.

Biodiversity

Strategies	2030 Goals	2026 Targets	2025 Achievements	
Achieve No Net Loss (NNL) of nature and biodiversity Identify risk and impact sources. Adopt science-based assessment methodologies to quantify and manage impacts and restoration outcomes	Implement on-site and off-site ecological habitat enhancement. Achieve 10% progress toward NNL NEW	Establish NNL baselines for Taiwan fabs NEW	Develop a Nature and Biodiversity NNL Action Roadmap NEW	-
Promote ecological restoration and education Drive ecological conservation and restoration while expanding access to environmental education	Engage more than 9,000 participants annually in nature and environmental education programs NEW	Engage more than 9,000 participants annually in nature and environmental education programs NEW	Engage 8,963 participants in nature and environmental education programs NEW	-

Applicable to all TSMC fabs around the world | Applicable to TSMC fabs in Taiwan and other specific fabs | Only applicable to TSMC fabs in Taiwan | Applicable to TSMC overseas fabs | Exceeded | Achieved | Missed Target

To address biodiversity loss, the United Nations Convention on Biological Diversity established the Kunming-Montreal Global Biodiversity Framework under the vision of "living in harmony with nature," serving as a key global reference for biodiversity conservation through 2030. In alignment with this framework, TSMC follows its Biodiversity Statement to protect aquatic and terrestrial ecosystems and collaborates with stakeholders to advance ecological conservation and ensure biodiversity sustainability.

In 2025, TSMC designated biodiversity as a material topic. The Corporate Sustainability Office, Corporate ESH Division, Facility, and Materials Management organizations jointly focused on two strategies: achieve No Net Loss (NNL) of nature and biodiversity, and promote ecological restoration and education. TSMC launched an impact identification process and developed a Nature and Biodiversity NNL Action Roadmap, tailoring ecological restoration, environmental conservation, and education programs to the characteristics of each global site. The Company also supports sustainable carbon negative technologies and cross-sector collaboration, to realize the harmonious development of technology and ecology.

Achieving NNL of Nature and Biodiversity

Also in 2025, TSMC developed a Nature and Biodiversity NNL Action Roadmap with internal and external stakeholders to build a pathway toward net positive impact through phased ecological actions. Near-term efforts focus on establishing methodologies and developing ecological habitats at Taiwan sites. Mid-term efforts expand evaluation of habitat effectiveness and enhance regional ecological network functions. Long-term efforts apply regular quantitative monitoring to continuously improve ecological quality. TSMC commits to fulfilling its corporate citizenship responsibilities through concrete actions and works toward achieving NNL and Net Positive Impact (NPI) for nature and biodiversity, contributing to global ecological conservation.

Nature and Biodiversity NNL Action Roadmap

Resource Assessment and Action Launch

Near-term (2026–2030)

Develop a natural and biodiversity NNL assessment methodology, prioritizing green space mapping and habitat optimization at Taiwan sites[Note]. Establish quantitative management baselines and apply source-based mitigation measures

- Develop TSMC's natural and biodiversity NNL assessment methodology
- Complete baseline assessments at Taiwan fads and start to evaluate the baseline of oversea fabs
- Build an ecological habitat development plan for Taiwan sites
- Identify potential conservation partnership opportunities near Taiwan fabs and engage key stakeholders
- Collaborate with stakeholders to advance conservation at fab sites and in surrounding communities

Regional Collaboration and Adaptive Management

Mid-term (2031–2040)

Strengthen stakeholder collaboration, advance community conservation, and enhance ecological network functions and connectivity in surrounding regions

- Review NNL target progress and adjust approaches based on results
- Evaluate ecological habitat development outcomes at Taiwan fabs
- Complete baseline assessments at global fabs
- Continue advancing and evaluating conservation efforts at fab sites and in communities

Outcome Verification and Net Positive Impact Achievement

Long-term (2041–2050)

Apply regular quantitative monitoring to improve ecological quality and progressively achieve NNL and NPI

- Continue advancing and evaluating conservation efforts at fab sites and in communities
- Analyze the relationship between ecological impacts and conservation outcomes to achieve NNL and NPI
- Scale successful practices and establish long-term partnerships

2026 | 2030 2031 | 2040 2041 | 2050

Note: Fabs include both operational and pre-operational facilities.

Impact Identification and Assessment

Since 2023, TSMC has followed the Taskforce on Nature-related Financial Disclosures (TNFD) guidelines and applied the LEAP methodology — Locate, Evaluate, Assess, and Prepare — to identify dependencies between its global sites and surrounding ecosystems. The Company has adopted Life Cycle Assessment (LCA) and the LC-Impact model to assess biodiversity loss, with the Potentially Disappeared Fraction (PDF) of species as the key indicator.

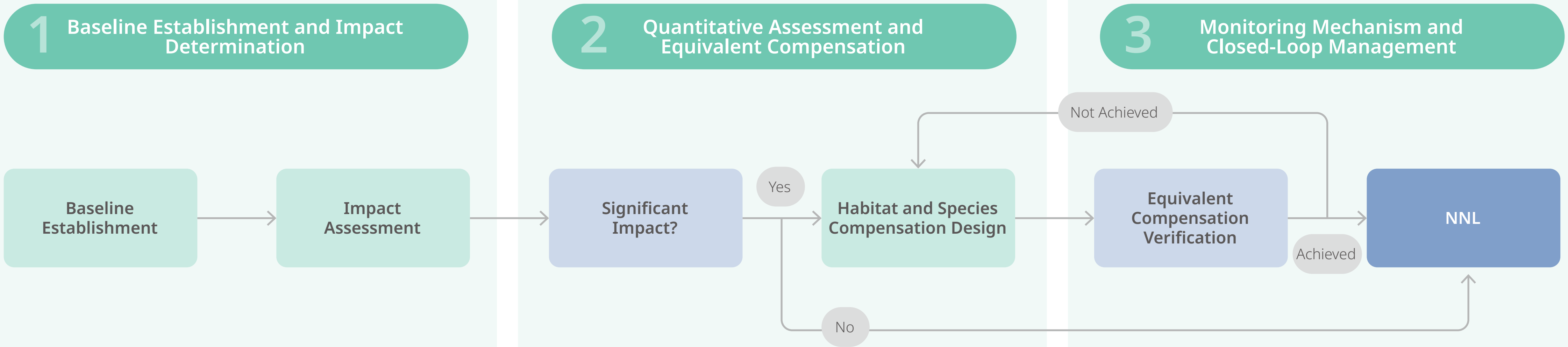
Assessment results show that TSMC operations have limited impact on surrounding ecosystems, with biodiversity risk rated as minor across global fab locations. The analysis identifies greenhouse gas emissions, water consumption, and wastewater discharge as the top three environmental impact drivers. To reduce these impacts, TSMC advances carbon reduction, water conservation, and water pollution prevention measures. For greenhouse gas management, the Company installs process exhaust treatment systems, improves energy efficiency, and expands renewable energy procurement and use to reduce Scope 1, 2, and 3 emissions. For water stewardship, TSMC adopts low-conductivity water treatment technologies at advanced process fabs, increases use of reclaimed water to reduce chemical consumption, and lowers salinity in discharge to minimize impacts on aquatic ecosystems, integrating biodiversity into core green operations. For details, refer to the "Climate and Energy" and "Water Stewardship" sections of this report, as well as the Climate and Nature Report.

Develop Natural and Biodiversity NNL Assessment Methodology

To ensure effective biodiversity protection, TSMC designated 2025 as the base year for biodiversity impact and performance assessment. Referring to international frameworks — including the Nature Positive Initiative, Germany's Federal Compensation Ordinance (BKompV), Australia's Biodiversity Assessment Method, and the UK Biodiversity Metric — TSMC collaborates with third-party expert consultants to establish a tiered management approach for operational and pre-operational facilities based on operational stage. In 2026, the Company plans to establish a consistent and quantifiable NNL assessment methodology, complete ecological baseline assessments for Taiwan fabs, quantify the biodiversity impacts of its operations, and develop corresponding conservation actions.

TSMC is committed to ensuring the effective execution of biodiversity conservation actions.

NNL Methodology Development Process



- Survey habitats and species at development sites to establish ecological baselines
- Assess the degree of disturbance to habitat functions or sensitive species from development activities and apply tiered management

- Evaluate habitat and species tiers and identify ecological enhancement opportunities
- Design compensation measures following the Principle of Ecological Equivalence

- Adopt an adaptive review mechanism to regularly monitor habitat compensation quality and species recovery status
- Conduct performance verification and dynamic strategy adjustments to ensure compensation measures deliver tangible ecological outcomes

Supply Chain Impact Identification and Management

TSMC extends biodiversity management to its supply chain. Referencing the Sector Actions Towards a Nature-Positive Future guidance jointly published by the World Economic Forum (WEF) and the World Business Council for Sustainable Development (WBCSD), the Company prioritizes suppliers in specific sectors including chemicals, energy, and waste management across key operating regions in Taiwan. TSMC conducts overlay analyses of supplier sites and surrounding ecosystems and investigates suppliers that may operate in ecologically sensitive areas to verify site compliance, environmental impact assessment approvals, and mitigation measures. Assessment results show that suppliers pose a low risk to the ecological environment, and TSMC will continue to monitor their impact.

To build supplier awareness of biodiversity, TSMC's Supplier Code of Conduct requires suppliers to comply with biodiversity conservation regulations, commit to zero deforestation during development and operations, and participate in land conservation. In 2026, the Company plans to launch a biodiversity awareness training series for suppliers and encourage supply chain partners to issue biodiversity statements to help minimize impacts on the natural environment. Recognizing the direct ecological impacts of renewable energy facilities during construction, operation, and decommissioning, TSMC established the Renewable Energy Supplier Biodiversity Screening Guidelines in 2025. Through assessment, identification, measurement, and monitoring, the Company identifies biodiversity risks associated with renewable energy development, reviews their impacts mitigation measures, and plans to incorporate these findings as considerations in future procurements. For details, refer to the Climate and Nature Report .

Promote Ecological Restoration and Education

TSMC works with stakeholders to advance the coexistence of business operations and the natural environment by planning and carrying out ecological restoration efforts both at and beyond its sites. In 2025, TSMC became the first company in Taiwan to restore endangered species within a fab site and register a natural carbon sink through coastal afforestation. Through three categories — environmental education facilities, project-based initiatives, and volunteer engagement — TSMC provides environmental education services to schools and the public, develops biodiversity talent across educational levels, and expands the reach and impact of environmental stewardship.

Ecological Restoration Actions

TSMC explores biodiversity conservation opportunities to minimize the ecological and environmental impacts of its operations. Within its sites, TSMC conducts ecological surveys, builds ecological ponds and waterways, restores close-to-nature forests to protect rare species, and plants host and nectar plants to enhance species diversity. The Company also extends these conservation efforts beyond its sites through the Eco Plus! Ecological Harmony Program and the Plant-A-Tree Program, building collaboration platforms with stakeholders and launching ecological restoration programs at domestic and overseas sites to advance environmental sustainability through concrete action.

• Eco Plus! Ecological Harmony Program

TSMC launched the Eco Plus! Ecological Harmony Program on the International Day for Biological Diversity (May 22) in 2024, focusing on three categories: habitat, species, and knowledge. For the habitat category, as of end-2025 TSMC extended eco-friendly farming to one hectare and submitted an application for Other Effective area-based Conservation Measures (OECM) recognition for Fab 15A to the Ministry of Agriculture's Forestry and Nature Conservation Agency. In terms of the species category, TSMC transformed the Fab 15A ecological pond into a sanctuary for the Squalidus banarescui , an endangered fish species, marking the first case in Taiwan of a company restoring an endangered species within its fab site. This achievement reflects cross-sector collaboration under the Taichung Regional Green Network Conservation Cooperation Memorandum of Understanding, signed between the Taichung Branch of the Forestry and Nature Conservation Agency, the Third River Management Branch of the Water Resources Agency under the Ministry of Economic Affairs, and the Agriculture Bureau of Taichung City Government. Regarding the knowledge category , TSMC focuses on citizen science and species identification while supporting emerging biodiversity talent and research.

Squalidus banarescui now inhabits the ecological pond at TSMC's Taichung site, setting a new benchmark for biodiversity conservation efforts

- **Plant-A-Tree Program**

TSMC has supported the Plant-A-Tree Program since 2021 to create spaces where people and nature can coexist. By the end of 2025, the Company had planted a total of 435,000 trees and 2,040,000 shrubs and ground cover plants. To expand its benefits, TSMC applied for a Voluntary Greenhouse Gas Reduction Project under the Ministry of Environment in February 2024, adopting the Afforestation and Reforestation Carbon Sink Project methodology, which was validated by a third-party verification body. In January 2025, the project received approval from the Ministry of Environment, making TSMC the first company in Taiwan to register a carbon sink through coastal afforestation. The project is expected to generate approximately 1,011 metric tons of carbon dioxide equivalent (CO_2e) in carbon credits over the next 30 years, delivering both ecological conservation and climate mitigation benefits.

At its Nanjing site, TSMC has worked with local authorities since 2020 to rescue abandoned trees, with more than 3,200 trees salvaged by the end of 2025. The Company also successfully restored 10 specimens of Sinojackia rehderiana, a nationally protected Class II endangered species in China, within the site. TSMC plans to introduce additional species, including Tilia miqueliana and Liriodendron chinense, to further expand conservation planting areas.

- **TSMC Honey Program**

Bees are pollinators, essential to global plant reproduction. Since 2024, TSMC has partnered with the Department of Life Science at Tunghai University and local beekeepers at its Hsinchu, Taichung, and Tainan sites to launch the TSMC Honey Project. Restoration bases were established at Fab 12 Phase 8, Fab 14B, Fab 15A, Fab 15B, and Fab 18B, with environmental education integrated into family day events at each site to deepen awareness of ecological conservation. By the end of 2025, 59 hives across the restoration bases housed approximately 1.18 million bees and produced a total of around 500 kilograms of honey.

- **Ecological Restoration at Overseas Sites**

TSMC's actions on biodiversity conservation are tailored to the ecological characteristics of each operating location. In 2025, European Semiconductor Manufacturing Company (ESMC), TSMC's subsidiary in Dresden, Germany, worked with local environmental authorities and conservation groups to successfully protect and relocate more than 350 sand lizards to 12 newly established habitats. ESMC also adopted environmentally friendly measures for temporary construction roads and staging areas, including protective fencing along construction routes and waterways, wildlife passages for otters under temporary bridges, capture buckets for safe amphibian relocation, and dedicated ponds to support breeding habitats for northern swans and salamanders. In Arizona, TSMC partnered with local conservation groups on a water efficiency improvement project for the Verde River supply canal, restoring river flow and improving aquatic habitat conditions. For details, refer to the "Water Stewardship" section.

TSMC's Plant-A-Tree Program dedicated to building green spaces

Nature and Environmental Education

The Kunming-Montreal Global Biodiversity Framework highlights that strengthening biodiversity communication, education, and awareness is essential to advancing framework implementation and driving behavioral change while promoting sustainable lifestyles. Beyond its core business-driven biodiversity mitigation and adaptation measures, the TSMC Ecological Park in Central Taiwan Science Park and the TSMC Southern Taiwan Science Park Reclaimed Water Plant Environmental Education Learning Park have both received accreditation as Environmental Education Facilities from the Ministry of Environment. Through these facilities, TSMC invests in nature and environmental education to build public environmental awareness and strengthen community engagement. In addition, through cross-sector initiatives such as the Eco Plus! Ecological Harmony Program, the Plant-A-Tree Program, and ecological volunteer programs, the Company encourages students and academics to participate in Taiwan's biodiversity conservation and motivates employees to contribute to environmental stewardship and serve as ecological education ambassadors, supporting biodiversity development.

Environmental Education Facilities

TSMC works to strengthen positive ecological impact on its sites. The TSMC Ecological Park in Central Taiwan Science Park offers the "Green Park Exploration Tour" and "Waterdrop Baby's Fab Journey" programs, while the TSMC Southern Taiwan Science Park Reclaimed Water Plant Environmental Education Learning Park provides water resource courses for elementary and junior high school students as well as adults, including "Urban Mini Reservoir" and "Environmental Education Workshop: The Art and Magic of Reclaimed Water." In 2025, the two facilities engaged 3,192 and 2,971 participants, respectively.

The TSMC Ecological Park in Central Taiwan Science Park promotes nature and environmental education.

Project-based Initiatives

TSMC collaborates with internal and external stakeholders to advance ecological restoration. In 2025, the Eco Plus! Ecological Harmony Program developed a cross-education-level capacity-building strategy to expand biodiversity conservation capabilities. The Plant-A-Tree Program engaged 822 employees in tree planting and habitat development activities, building ecological awareness and advancing sustainability in practice.

TSMC's Plant-A-Tree Program encourages employees to take action for environmental sustainability.

Volunteer Engagement

TSMC formed ecological volunteer teams composed of employees with strong interest in environmental issues. These volunteers conduct guided tours and hands-on activities at on-site environmental education facilities and the Tainan Jacana Ecological Education Park, helping students and the public better understand environmental protection and biodiversity. In 2025, ecological volunteer activities reached 246 participants. For details, see the TSMC Charity Foundation section.

TSMC's ecological volunteers promote environmental and biodiversity awareness, expanding the reach of environmental education.

Case Study

Cross-Generational Biodiversity Education to Empower a Sustainable Future

Talent is the foundation of biodiversity mainstreaming. TSMC's Eco Plus! Ecological Harmony Program integrates industry, government, academia, and research resources to build knowledge across all levels of education — from elementary and middle school through high school, universities and research institutions, to the public. In 2025, through three initiatives — cultivate citizen scientists, establish an incentive mechanism, and develop species identification experts — the program added 4,209 new iNaturalist platform users, trained 840 bird survey specialists, and recognized 22 outstanding biodiversity research proposals. TSMC views talent development as a key bridge connecting conservation action with a sustainable future.

Three Empowerment Initiatives under the Eco Plus! Ecological Harmony Program

Cultivate Citizen Scientists

Elementary, junior, and senior high schools

- **411** schools reached
- **4,209** new iNaturalist platform users (2024–2025)

TSMC collaborates with the Ministry of Education and the widely used natural science platform iNaturalist to promote training for citizen scientists in primary and secondary schools. By integrating with the existing education system, the Company fosters early-stage biodiversity awareness and develops the next generation of ecological surveyors.

TSMC promotes citizen science development.

Establish an Incentive Mechanism

Universities and research institutions

- **First** Biodiversity Scholarship and Proposal Grant launched
- **55** domestic and international organizations participated / **22** winning entries recognized (2025)

TSMC collaborates with the Taiwan Biodiversity Research Institute under the Ministry of Agriculture and the Taiwan Society of Plant Systematics to launch the inaugural TSMC Biodiversity Scholarship and Proposal Grant. The Company also hosted the TSMC Biodiversity International Forum and Award Ceremony to recognize winning projects and invited domestic and international ecologists to exchange perspectives, stimulating momentum for conservation.

Award recipients share their work at the TSMC Biodiversity International Forum and Award Ceremony.

Develop Species Identification Experts

General public

- **840** bird survey specialists trained
- **First** species identification training system established (2025)

TSMC leverages the iNaturalist platform and the eBird Taiwan database to build a biodiversity knowledge base. In collaboration with the Taiwan Biodiversity Research Institute under the Ministry of Agriculture, the Company established a structured training and assessment system for species identification professionals, and partnered with the Taiwan Wild Bird Federation to expand bird survey talent development.

TSMC partners with the Taiwan Wild Bird Federation to develop bird survey talent.