

tsmc

TSMC 2025

Sustainability in Action



Behind every sustainability achievement lies TSMC’s long-term commitment.

In 2026 we are publishing “Sustainability in Action” for the first time. Written to be approachable, this booklet draws together highlights from the 2025 TSMC Sustainability Report to trace how the Company starts with innovation and weaves sustainability into daily operations, the value chain, and mutual prosperity with society. Now, we invite you to step into the site and see our work in action, witnessing positive change firsthand.

02	<u>Innovation Opens a New Chapter in Sustainability</u>
03	<u>Cutting-Edge Technology, Where Care Matters Most</u>
06	<u>Supporting Her Passion for Technology, Every Step of the Way</u>
09	<u>Safety in Every Detail, So Everyone Returns Home Safely</u>
12	<u>Cherishing Every Resource the Earth Provides</u>
15	<u>From Local Experience to Worldwide Change</u>
18	<u>Global Vision, Sustainable Progress</u>
19	<u>More Sustainability Milestones, More to Explore</u>

Innovation Opens a New Chapter in Sustainability

TSMC continues to drive sustainability through innovation actions. In 2025 we achieved several “firsts” and reached a number of milestones, spanning from enhancing our own operations to building shared prosperity across the value chain and the society and making innovations the catalyst for positive change.

Enhancing Our Own Operations

- Successfully entered volume production of 2nm process technology
- Established Taiwan's first model for utilizing offshore wind power
- Pioneered Taiwan's first model for industrial users to exchange reclaimed water across regions
- Developed and Action Roadmap for No Net Loss (NNL) of Nature and Biodiversity
- Held our inaugural “Global Inclusive Workplace Month”
- Issued the Company's first "Construction Site Safety at TSMC" statement

Creating Value Across the Industry

- Established the Company's first Supplier Human Rights Management Tracking Platform
- Successfully introduced blue ammonia into the production process, a first for Taiwan's semiconductor industry
- Successfully reprocessed isopropanol alcohol (IPA) waste into electronic-grade products and used them in our fabs for the first time

Building Shared Prosperity with Society

- Held the inaugural Trade Secret Intelligent Management Expo
- Launched the inaugural TSMC Biodiversity Scholarship and Proposal Grant, and hosted the first TSMC International Biodiversity Forum
- Established a rehabilitation site for the endangered *Squalidus banarensis* gudgeon, the first time a Taiwanese company has restored a threatened species on its facility grounds

Cutting-Edge Technology, Where **Care** Matters Most

With a few prompts entered on a smartphone, a picture envisioned in the mind becomes a high-definition video. In a classroom, learning software adapts to each child's pace, offering tailored exercises. Inside the Arctic Circle, AI combines satellite imagery with climate data to predict changes in sea ice, helping scientists track animal migration patterns and habitat shifts. These life-changing innovations originate from one wafer after another, advancing with each step forward in the evolution of semiconductor technology.



Inside TSMC's cleanrooms, engineers continue to push boundaries, from perfecting 2nm process technology to achieving yield breakthroughs in 3DIC advanced packaging. By strengthening AI applications to boost production capacity, they ensure high quality across every fab in Taiwan and overseas. In 2025, we supported 534 customers in driving 12,682 chip innovations, not only bringing AI into healthcare, transportation, and education, but also achieving a remarkable result: each 1 kWh of electricity used by TSMC in manufacturing helps save 6.8 kWh globally, combining technological innovation with environmental sustainability.

AI applications are also a part of our employees' everyday work. For new hires, the HR AI assistant "Bonnie" provides customized learning and resources based on the challenges highlighted in new recruits' onboarding WeCare Survey, supporting their transition into the workplace. At fab construction sites, an AI-based visual recognition system detects hazards such as personnel without hard hats or those approaching hazardous zones, proactively alerting site managers to take immediate action, and safeguarding every worker.



This deep sense of caring also extends to children's classrooms. TSMC volunteers design AI science camps, helping children in remote areas discover a world beyond their textbooks through interactive, hands-on experiments. The TSMC Education and Culture Foundation sponsors the Marie Curie Science Camp, leading high school students to explore the ethical challenges of AI applications alongside domestic and international scholars. It has also localized the Day of AI curriculum, co-developed by Massachusetts Institute of Technology, translating it into Chinese teaching materials tailored for Taiwan, and established the AI Literacy Education Alliance to help teachers and students in elementary and junior high schools master AI while developing their independent critical thinking skills.

From nanometer technology on a chip to a child's very first lesson in technology, TSMC continues to push AI forward, bringing technology back to humanity, and delivering gentle and meaningful changes.



Visit the Sustainability Report to Learn More [↗](#)

- | 3DIC Advanced Packaging
- | Intelligent Precision Manufacturing
- | HR AI Assistant Bonnie
- | AI-based Visual Recognition System
- | STEM Education
- | AI Literacy Education Alliance
- | Sponsor Science Camps

A photograph of a woman and a young girl, both wearing white cleanroom suits with hoods. The woman is smiling and holding the girl's hands. The girl is also smiling and has a small blue and white sticker on her cheek. They are in a cleanroom environment with a white door in the background.

Supporting **Her** Passion for Technology, Every Step of the Way

The career path of an engineer is not a future that every science-loving girl dares to imagine. TSMC believes that supporting female talent in STEM should begin the moment when their dreams begin to sprout.

On campus, TSMC has long invested in STEM programs for female high school students, hosting the TSMC Journey of Female Scientists. Through lectures from professors, university laboratories tours, and workshops, we introduce girls to semiconductors and enable them to explore technology firsthand. In addition, the Girls' High School Student Scholarship provides tangible resources to give girls more confidence when choosing STEM fields. We also invite female alumni back to their alma maters to share real-world perspectives on their academic and career journeys, showing their younger peers that they can find their spotlight in the future of technology.



When these girls grow up and join TSMC, this companionship extends to both their careers and daily lives. Women@tsmc brings women across the Company together through peer exchange and career talks, creating a space where workplace challenges can be shared and no one has to move forward alone. Through one another's stories and encouragement, they find a pace that feels right for them. For those who choose to become mothers, the TSMC ChildCare Benefit Program 3.0 provides support at every stage, from pre-pregnancy through a child's sixth birthday, while the TSMC Kindergarten and lactation rooms at TSMC sites help meet the everyday needs of raising a family.



That support reaches beyond the fabs and into family life. The Open House Family Day brings employees' families into the company, where children put on cleanroom suits and explore the magic of technology with curious eyes, and "Mom is busy at work today" finally becomes something they can see for themselves. As families step into her working world, they gain a deeper understanding of her expertise, her passion, and the dedication she brings to her work.

From a girl's first spark of curiosity about science, to becoming an engineer, and through various stages of her life, TSMC walks alongside them, taking action to help them unleash their potential and shine in the world of technology.

Sustainability in Action | 08

Welcome tsmc Fab 20

我是小小工程師

無塵服體驗

台積電
FAB 20

我是小小工程師

Visit the Sustainability Report to Learn More

TSMC Journey of Female Scientists

Girls' High School Student Scholarship

Women@tsmc

TSMC ChildCare Benefit Program 3.0

Open House Family Day

Safety in Every Detail, So Everyone Returns Home Safely

A phone screen lights up with a message from family: "Are you home yet?" Before fastening a hard hat to start a shift, a worker takes a quick glance at the family photo on the phone. At TSMC, safety is never merely a document or a metric. It means keeping that sense of care close and making sure every colleague and partner can return home safely.



Taiwan experiences frequent earthquakes. Historically, restoring production after an earthquake relied heavily on manual labor, which came with the risks of retrieval and transport at dangerous heights. Today, our automated materials handling system includes earthquake mitigation features which enable equipment to detect abnormalities on their own, allowing production lines to get back on track more quickly. Safety upgrades are found not only in equipment but also in the gear our colleagues wear. As protective equipment on the market is designed for Western male physiques, TSMC designed 30 types of personal protective equipment (PPE) from head to toe, offering diverse sizes tailored to Asians to ensure safety.

That meticulous care for safety extends to the construction sites where our contractor partners work. In 2025 TSMC issued the "Construction Site Safety at TSMC" statement and set up a cross-organizational Construction Safety Enhancement Committee, bringing employees and contractor partners together around the shared understanding that "safety is the top priority." This understanding does not just live on paper; it must be physically remembered. In the Smart Occupational Safety Training Classroom, partners go through simulated scenarios of falls, pinches, and electric shocks. Personal experience is far more memorable than any poster.



Safety awareness also begins with the very first lesson before construction starts. In 2025, the TSMC Supplier Sustainability Academy launched 24 interactive online courses on occupational safety and health. Partners are required to complete the training and pass the certification to qualify for on-site work; supervisors must also complete the training courses before entering the site, turning safety into a common language shared by all.

From self-recovering equipment and well-fitting protective gear to hands-on simulation training and pre-entry certification, every effort reflects our consistent belief that every partner can enjoy peace of mind at work and return home safely.



Visit the Sustainability Report to Learn More



- | Automatic Material Handling System
- | Smart Occupational Safety Training Classroom
- | Personal Protective Equipment (PPE)
- | Supplier Sustainability Academy
- | Construction Site Safety at TSMC

A wide-angle photograph of a TSMC semiconductor manufacturing facility. In the foreground, a large solar farm with rows of photovoltaic panels stretches across a body of water. The facility's white, industrial buildings with numerous chimneys are visible in the background, separated from the water by a line of green trees. The sky is blue with light, wispy clouds.

Cherishing Every Resource the Earth Provides

The charge of electricity, the circulation of water, and the cycles of ecosystems are resources accumulated over centuries. TSMC understands the finite nature of natural resources, and approaches them with deepest care and rigorous standards, working to align business growth with a thriving environment.

Every unit of energy is valued. TSMC has committed to net zero emissions by 2050, and in 2025 announced its commitment to join the Science Based Targets initiative (SBTi). Inside our fabs, from switching to LED lighting and installing variable-frequency drives on equipment to optimizing water use and exhaust settings for new tools, 2,141 energy-saving measures were executed across our global sites, achieving additional energy savings of 900 GWh. Addressing the energy efficiency of advanced processes, we partnered with suppliers to launch the EUV Dynamic Energy Saving Program, tuning tools to reduce peak power consumption by 44% and integrating the solution into the automated production system, accomplishing a win-win for both energy conservation and productivity.

Every drop of water is treated with gentle care. TSMC carefully treats used water to produce reclaimed water, which has now replaced 18% of our municipal water consumption. We also pioneered Taiwan's first cross-regional reclaimed water exchange model for industrial users to increase regional water efficiency. Moving beyond our Taiwan fabs, we promoted groundwater recharge programs at JASM in Kumamoto, Japan, restoring over eight million cubic meters of water. In the Verde River watershed near TSMC Arizona, we invested in a river restoration project to improve aquatic ecosystems, actively advancing toward our goal of a 100% Global Water Positive achievement rate by 2040.



We also keep precious lives close to our hearts. TSMC has developed an action roadmap toward No Net Loss (NNL) of nature and biodiversity, beginning with the land and waterways surrounding its fabs to explore the possibilities of coexistence between technology and nature. Launched in 2024, the Eco-Plus! Ecological Harmony Program joins hands with cross-sector partners to advance biodiversity mainstreaming across three areas: habitats, species, and knowledge. Today, the endangered *Squalidus banarescui* gudgeon successfully reproduces in the ecological pond at Fab 15A, while biodiversity scholarships support scholars and youth in their research and restoration efforts. TSMC volunteers serve as guides, leading students and the public to learn about environmental protection and ecological education, building new momentum for citizen scientists.

From every single kilowatt-hour (kWh) saved and every drop of water reclaimed to every living thing we carefully protect, TSMC turns its respect for nature into tangible progress toward its environmental commitments, allowing ecology to lead the way for every step of our operational growth.



Squalidus banarescui



Visit the Sustainability Report to Learn More [🔗](#)

- | Science Based Targets initiative (SBTi)
- | No Net Loss (NNL) of Nature and Biodiversity
- | Energy Conservation Measures
- | Eco-Plus! Ecological Harmony Program
- | EUV Dynamic Energy Saving Program
- | Ecological Volunteers
- | Water Positive

TSMC North America
TSMC Technology

TSMC Washington
TSMC Arizona
TSMC Design
Technology Canada

TSMC Europe
ESMC

TSMC Japan
TSMC Design
Technology Japan
TSMC Japan 3DIC
R&D Center
TSMC Korea
TSMC Nanjing
TSMC China
JASM
Taiwan Facilities

From Local Experience to Worldwide Change

As TSMC's expands globally, it is not only tools and technology that cross the ocean, but also our long-term ESG practices. From resource circularity and talent development to innovative solutions, experience gained in one location becomes the foundation for global sites to improve together, opening the possibilities for sustainable thinking to take root and flourish worldwide.



Resource circularity is the tangible realization of our sustainability experience extending outward. Through the Global Resource Circulation Expansion Project, TSMC shared 60 recycling technologies from Taiwan fabs with overseas sites to brainstorm more opportunities for circular economy. In 2025, four recovery technologies were successfully put into practice, from calcium fluoride sludge at TSMC Arizona, plastic waste at TSMC China to spent activated carbon and scrap wafers at JASM. Waste once destined for landfill or incineration is given a second life, transforming the green know-how developed at headquarters into meaningful positive changes across borders.

This replication of experience relies on methodology, while culture-building comes from people. In response to more frequent international collaboration, TSMC launched the Intercultural Learning Program, offering 88 in-person courses and online learning resources designed to strengthen employees' adaptability in the workplace across mindset, knowledge, and skills. This investment in people also extends to the next generation. In 2025, the Company partnered with German universities for the Semiconductor Talent Training Program, inviting 55 exchange students to Taiwan for a six-month training program to strengthen their vocational foundations. As intercultural understanding and technical expertise take root through hands-on experience, these globally-minded talents are becoming a driving force for TSMC's global expansion.





Talents allow knowledge to cross borders, while the ESG AWARD aggregates global sustainability experience. Since its inception in 2020, the ESG AWARD has encouraged employees to propose solutions to challenges discovered in their everyday work, and as TSMC expands globally, overseas organizations have fully responded. In 2025, employees from TSMC Arizona, JASM, TSMC Nanjing, and TSMC China were honored. Among the ten BEST IMPACT AWARD winners, our U.S. colleagues stood out with an innovative approach to improve air quality in equipment maintenance areas. The ESG AWARD allows domestic and overseas sustainability actions to be seen, connecting individual innovations into a network and transforming them into more impactful, mutually beneficial practices.

When cross-border ideas converge, sustainability takes on a more human dimension. Wherever they are, TSMC employees around the world walk hand-in-hand with the same aspirations, turning commitments into action to co-create long-lasting value.



Visit the Sustainability Report to Learn More [↗](#)

- | Global Resource Circulation Expansion Project
- | Intercultural Learning Program
- | Semiconductor Talent Training Program

Global Vision, Sustainable Progress

TSMC's sustainability footprint always aligns with international trends and standards. Recognition and support from around the world are more than encouragement for our long-term commitment — they generate momentum to expand our impact further.



Dow Jones Best-in-Class Indices (DJBIC)

- Dow Jones Best-in-Class Indices for the 25th consecutive year



MSCI Selection Index

- MSCI ACWI Selection Index component
- MSCI Emerging Markets Selection Index



World Benchmarking Alliance (WBA)

- SDG2000 – The 2,000 Most Influential Companies



UL Solutions

- Platinum Rating for UL 2799 Waste Recycling Standard – TSMC’s Taiwan Fabs, TSMC China, TSMC Nanjing



ISS STOXX

- “Prime” Rated by ISS STOXX Corporate Rating



FTSE4Good Index

- FTSE4Good Emerging Index component
- FTSE4Good All-World Index component
- FTSE4Good TIP Taiwan ESG Index component



CDP

- Water Security A- Ratings
- Climate Change B Ratings
- Supply Chain Management A Ratings



Alliance for Water Stewardship, AWS

- “Platinum” Class Certification – Fab 5, Fab 6, Fab 12A, Fab 12B, Fab 14P5, Fab 14P6, Fab 14P7, Fab 15A, Fab 15B, AP3



Sustainability Report



Climate and Nature Report



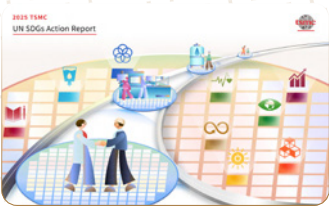
Human Rights Report



Sustainability Impact Valuation Report



Materiality Analysis Report
(Published every two years)



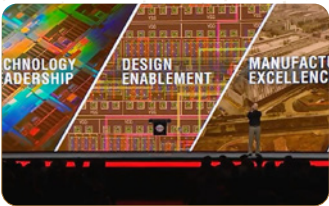
UN SDGs Action Report



Responsible Supply Chain Report
(Published every two years)



Sustainability Website



TSMC LinkedIn

More Sustainability Milestones, More to Explore

Sustainability in Action takes you closer to the scenes where TSMC and our partners create value together, and where positive change happens. To learn more about our achievements and progress, we welcome you to explore our Sustainability Report, Theme Reports, and our Sustainability Website.



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