

## TSMC 2022 Business Overview



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# Vision, Mission & Core Values

## Vision

Our vision is to be the most advanced and largest technology and foundry services provider to fabless companies and IDMs, and in partnership with them, to forge a powerful competitive force in the semiconductor industry.

To realize our vision, we must have a trinity of strengths:

1. Be a technology leader, competitive with the leading IDMs
2. Be the manufacturing leader
3. Be the most reputable, service-oriented and maximum-total-benefits silicon foundry

## Mission

Our mission is to be the trusted technology and capacity provider of the global logic IC industry for years to come.

## Core Values

### Integrity

Integrity is our most basic and most important core value. We tell the truth. We believe the record of our accomplishments is the best proof of our merit. Hence, we do not brag. We do not make commitments lightly. Once we make a commitment, we devote ourselves completely to meeting that commitment. We compete to our fullest within the law, but we do not slander our competitors and we respect the intellectual property rights of others. With vendors, we maintain an objective, consistent, and impartial attitude. We do not tolerate any form of corrupt behavior or politicking. When selecting new employees, we place emphasis on the candidates' qualifications and character, not connections or access.

### Commitment

TSMC is committed to the welfare of customers, suppliers, employees, shareholders, and society. These stakeholders all contribute to TSMC's success, and TSMC is dedicated to serving their best interests. In return, TSMC hopes all these stakeholders will make a mutual commitment to the Company.

### Innovation

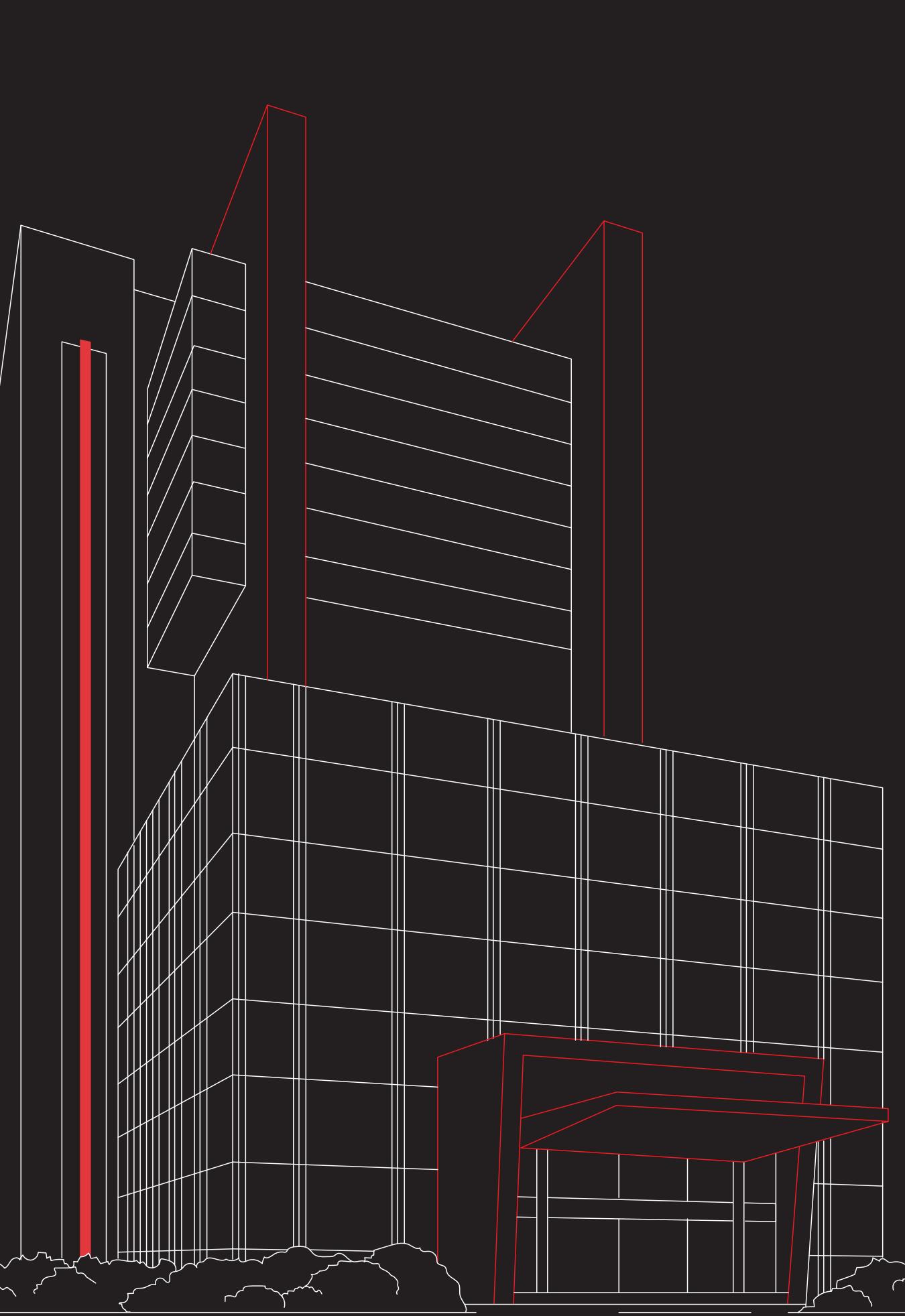
Innovation is the wellspring of TSMC's growth, and is a part of all aspects of our business, from strategic planning, marketing and management, to technology and manufacturing. At TSMC, innovation means more than new ideas, it means putting ideas into practice.

### Customer Trust

At TSMC, customers come first. Their success is our success, and we value their ability to compete as we value our own. We strive to build deep and enduring relationships with our customers, who trust and rely on us to be part of their success over the long term.

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# 1 Letter to *Shareholders*

## Dear Shareholders,

The year 2022 was a landmark year for TSMC. Supported by our strong technology leadership and differentiation, we delivered a thirteenth-consecutive year of record revenue, with strong profitable growth. Our 2022 annual revenue increased 33.5% year-over-year in U.S. dollar terms, while our EPS rose to NT\$39.20, nearly tripling over the past three years.

These achievements were earned in the face of considerable economic, human and geopolitical challenges across the world. The year started with continued COVID-19 lockdowns, conflict in Ukraine, and geopolitical tensions and trade restrictions that severely disrupted global supply chains. Retreat of globalization and free trade fueled inflationary pressure around the world, increased macroeconomic uncertainty, and impacted consumer confidence. In the second half of the year, pandemic-related demand, such as remote working and remote learning, receded as many parts of the world began to re-open, and the semiconductor industry entered an inventory correction mode.

The world also began to focus more intently on the importance of the semiconductor industry, as it suddenly recognized the critical role semiconductors play in a modern economy. The rising tensions in geopolitics also accentuated the attention on a resilient semiconductor supply chain, and the key role it plays in their economic and national infrastructure security.

For TSMC, we continued to focus on the fundamentals of our business. We enriched our R&D intensity and worked diligently on our technology development, especially 2-nanometer, to deliver full node strides in performance and power benefits to our customers, while offering the industry's most advanced transistor scaling. We also increased our productivity and fab operations quality, while successfully bringing our industry-leading 3-nanometer to high volume manufacturing in 4Q'22. We deepened our service and expanded our capacity to support our customers' growth, further earning their trust, as evidenced by higher scores in our annual customer survey. We enhanced our cybersecurity systems and measures continuously, to rigorously protect customers' IP and our proprietary information. As we entered our third year of digital transformation, we accelerated the pace to keep our employees connected and productive in a flexible work environment, while protecting them from COVID infection with stringent anti-pandemic measures.

Despite the recent macroeconomic uncertainties around the world, the fundamental structural growth trajectory in the long-term semiconductor demand remains strong, underpinned by the industry's multi-year megatrends of 5G and High Performance Computing (HPC)-related applications. Therefore, we continuously work closely with our customers in a disciplined manner to plan our capacity, based on the long-term market demand profile, and investing in leading edge and specialty technologies, to support their structural growth.

As geopolitical tensions have arisen in different parts of the world, our customers also start to value more geographic manufacturing flexibility, in addition to technology leadership, manufacturing excellence, low cost and trust of service quality.

Under this environment, based on customers' request, we are expanding our global manufacturing footprint, to increase customer trust, to expand our future growth opportunities, and to reach for global talents.

In Taiwan, our N3 has just entered volume production in Tainan Science Park. We are also preparing for N2 volume production starting in 2025, which will be located in Hsinchu and Taichung Science Parks.

In the U.S., we are in the process of building two advanced semiconductor fabs in Arizona, with N4 and N3 process technology, respectively. We are also building a 12-inch specialty technology fab in Kumamoto, Japan.

These investment decisions are based on our customers' needs in each region, and a necessary level of government support. We believe this is a necessary step to maximize value for our shareholders.

Our pricing will remain strategic to reflect our value, which also includes the value of geographic manufacturing flexibility. At the same time, we will continue to leverage our competitive advantages of large volume, economies of scale and manufacturing technology leadership, to continuously drive costs lower. We will also continue to work closely with all the regional governments, to secure their support.

Combining such actions, TSMC will have the ability to absorb the higher costs of overseas fabs, while remaining the most efficient and cost-effective manufacturer, no matter where we operate. Thus, even as we increase our capacity outside of Taiwan, we can continue to earn a sustainable and healthy return, while delivering long-term profitable growth for our shareholders.

To address the insatiable demand for energy-efficient computing power, customers rely on TSMC not only for reliable capacity, but also a predictable cadence of technology development.

We continued to extend our technology leadership, as our 3-nanometer technology entered volume production in 2022, and is the most advanced semiconductor technology in both PPA and transistor technology.

We are building a strong foundation for the next generation technology to follow. N2 technology development is on track, with risk production scheduled in 2024 and volume production in 2025. Our 2-nanometer technology will be the most advanced semiconductor technology in the industry in both density and energy efficiency when it is introduced.

#### Highlights of TSMC's accomplishments in 2022:

- Total wafer shipments were 15.3 million 12-inch equivalent wafers as compared to 14.2 million 12-inch equivalent wafers in 2021.
- Advanced technologies (7-nanometer and beyond) accounted for 53 percent of total wafer revenue, up from 50 percent in 2021.
- We deployed 288 distinct process technologies, and manufactured 12,698 products for 532 customers.
- TSMC produced 30 percent of the world semiconductor excluding memory output value in 2022, as compared to 26 percent in the previous year.

#### 2022 Financial Performance

Consolidated revenue reached NT\$2,263.89 billion, an increase of 42.6 percent over NT\$1,587.42 billion in 2021. Net income was NT\$1,016.53 billion and diluted earnings per share were NT\$39.20. Both increased 70.4 percent from the 2021 level of NT\$596.54 billion net income and NT\$23.01 diluted EPS.

TSMC generated net income of US\$34.07 billion on consolidated revenue of US\$75.88 billion, which increased 59.6 percent and 33.5 percent respectively from the 2021 level of US\$21.35 billion net income and US\$56.82 billion consolidated revenue.

Gross profit margin was 59.6 percent as compared with 51.6 percent in 2021, while operating profit margin was 49.5 percent compared with 40.9 percent a year earlier. Net profit margin was 44.9 percent, an increase of 7.3 percentage points from 2021's 37.6 percent.

In 2022, the Company further raised its total cash dividend payments to NT\$11.0 per share, up from NT\$10.25 a year ago.

#### Technological Developments

In 2022, we continued to increase our investment in R&D to US\$5.47 billion to extend our technology leadership and differentiation. We also work closely with our customers to enable the global pool of innovators, to unleash their innovations and create greater value for the semiconductor industry.

In its third year of ramp, our 5-nanometer family of technologies contributed 26% of TSMC's revenue. We continued to enhance our N5 family's performance, power and density, and N4 started volume production in 2022. We also introduced N4P and N4X technologies, targeting next wave 5nm products. N4P technology development is well on track, and volume production is scheduled in 2023. N4X is TSMC's first HPC-focused, workload-intensive technology, with customers' product tape-outs in 2023.

After N3 technology entered volume production in 2022, N3E will further extend our N3 family, with enhanced performance, power, and yield. Volume production of N3E is scheduled for 2H'23. We are working on a high level of customer engagement at both N3 and N3E, with the number of tape-outs more than 2x that of N5 in its first and second year. We expect our N3 family to be another large and long-lasting node for TSMC.

Our 2-nanometer technology will adopt nanosheet transistor structure, and deliver full-node performance and power efficiency gains, with 10-15% speed improvement at the same power or 25-30% power improvement at the same speed as compared to N3E, to address the increasing need for energy-efficient computing. N2 will provide our customers with the best performance, cost and technology maturity, and extend our technology leadership position well into the future.

As TSMC pushes the envelope of transistor scaling, we also continue to expand our TSMC 3DFabric™ design solutions, as another dimension to improve system-level performance. TSMC 3DFabric™ consists of both wafer-level 3D and advanced packaging technologies. For our 3D technologies, TSMC-SoIC® Chip-on-Wafer (CoW) technology successfully entered volume production in 2022, demonstrating significant performance improvement by stacking SRAM chips on logic wafers. TSMC-SoIC® Wafer-on-Wafer (WoW) technology demonstrated superb system performance enhancement for HPC products in 2022 by stacking 7nm logic wafer on deep trench capacitor wafer. For our advanced packaging technologies, the CoWoS®-S technology that integrates multiple system-on-chip (SoC) chips, high bandwidth memory stacks, and a 3-reticle size silicon interposer successfully entered volume production for customer HPC products in 2022. For InFO advanced packaging technology, TSMC successfully entered volume production of Integrated Fan-Out on Substrate (InFO\_oS) that integrates multiple SoC chips in a 2-reticle size fan-out package.

To help customers unleash their product innovations with fast time-to-market, TSMC provides customers with comprehensive infrastructure needed to optimize design productivity and cycle times. TSMC continues to expand our Open Innovation Platform® (OIP), providing over 55,000 items of libraries and silicon IP portfolio, more than 43,000 technology files, and over 2,900 process design kits, from 0.5-micron to 3-nanometer in 2022.

## Environmental, Social and Governance

As a responsible global corporate citizen, TSMC is focused on driving changes in Green Manufacturing, establishing a Responsible Supply Chain, Talent Development, Inclusive Workplace, and Caring for the Underprivileged. In 2022, we published our first UN SDGs (United Nations Sustainable Development Goals) Action Report and Materiality Analysis Report to enhance the transparency of our sustainability progress.

Green Manufacturing is the cornerstone of our sustainability management. TSMC strives to be a global standard of an eco-friendly corporation, and we integrate green management into all aspects of our daily operations, both in Taiwan and overseas. In 2022, TSMC's Reclaimed Water Plant commenced operations in the Southern Taiwan Science Park and began water supply of 10,000 metric tons of water per day, with the goal of reaching 36,000 metric tons per day by 2026. At TSMC Arizona, we plan to build an Industrial Water Reclamation Plant, which would allow us to reach "Near Zero Liquid Discharge."

In our supply chain, TSMC is actively working with our suppliers to drive low-carbon emissions management, a key component of our roadmap to Net Zero Emissions by 2050. We continue to expand carbon capture opportunities in our supply chain management, and encourage our suppliers to set up carbon capture facilities to reduce carbon emissions.

Talent is critical to the global semiconductor industry's success. We believe TSMC's global footprint expansion not only enables us to better support our customers, but also gives us more opportunities to reach global talent. To attract more talent and create a sustainable recruitment pipeline for the semiconductor industry, TSMC continues to invest in semiconductor related research through close collaboration with top universities including National Taiwan University, National Tsing Hua University, National Yang Ming Chiao Tung University, National Cheng Kung University, MIT, Stanford University, UC Berkeley, Arizona State University, Tokyo University, and other prestigious institutions around the world.

In order to deepen employee awareness and practice of Diversity and Inclusion, TSMC focuses on enhancing employees' awareness of respecting individual differences and its unique values in the workplace. TSMC has designed a course on unconscious bias to help employees identify and respond to biases in the right way. Employees can also use intercultural assessment tools to evaluate themselves and learn how to work with colleagues from diverse backgrounds in their teams.

The TSMC Education and Culture Foundation and the TSMC Charity Foundation have long been invested in driving positive changes towards a better society, by focusing on caring for the disadvantaged and helping youth education. In 2022, the TSMC Charity Foundation assisted 6,358 students at 134 rural care institutes and collaborated with TSMC volunteers to produce tutorial videos for scientific experiments and science education. TSMC also partnered with SEMI to hold a session at 2022 SEMICON Taiwan, promoting a matching platform that offered 600 jobs opportunities from 30 different companies to rural vocational students.

## Corporate Developments

In December 2022, TSMC announced that, in addition to TSMC Arizona's first fab, which is scheduled to begin production of N4 process technology in 2024, the Company has also started the construction of a second fab in Arizona to begin production of 3nm process technology in 2026. The overall investment for these two facilities will be approximately US\$40 billion. When completed, TSMC Arizona's two fabs will manufacture over 600,000 wafers per year.

In February 2022, TSMC, Sony Semiconductor Solutions Corporation (SSS) and Denso Corporation jointly announced a joint venture of Japan Advanced Semiconductor Manufacturing (JASM). In addition to the previously announced 22/28 nanometer process, TSMC will also enhance JASM's capabilities with 12/16 nanometer FinFET process technology, and increase monthly production capacity to 55,000 12-inch wafers. With the additional capacity, the total capital expenditure for JASM's Kumamoto fab is estimated to be approximately US\$8.6 billion with strong support from the Japanese government.

## Honors and Awards

TSMC received recognition for achievements in innovation, corporate governance, sustainability, investor relations and overall excellence in management from organizations including *Forbes*, *Fortune Magazine*, *Asiamoney*, *The Asset*, *CommonWealth Magazine*, Taiwan Stock Exchange, and Taiwan Institute for Sustainable Energy. For innovation, TSMC was recognized as 3<sup>rd</sup> in IFI Claims Patent Services' "2022 Top 50 US Patent Assignees." TSMC was also recognized by *Fortune Magazine* as "2022 World's Most Admired Companies."

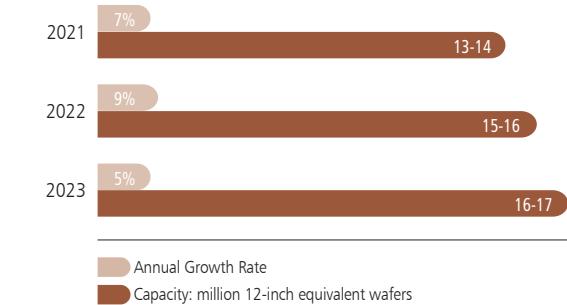
In sustainability, we were chosen once again as a component of the Dow Jones Sustainability Indices, becoming the only semiconductor company to be selected for 22 consecutive years. We also received MSCI ESG Research's AAA Rating, CDP's "2022 CDP Supplier Engagement Leader," Sustainalytics' "Company ESG Risk Ratings-Low ESG Risk" rating, ISS ESG's "Prime" status in the ESG Corporate Rating, and *Corporate Knight's* "2022 Global 100 Most Sustainable Corporations." Meanwhile, we remained a major component in various MSCI ESG and FTSE4Good indices. In investor relations, TSMC continued to receive multiple awards from *Institutional Investor Magazine*.

## Outlook

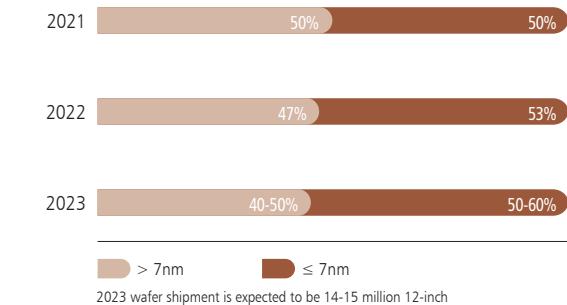
Entering 2023, macroeconomic and geopolitical uncertainties persist. As global COVID-19 pandemic subsides, we have entered a more intelligent and connected world. As semiconductors become increasingly essential and ubiquitous to every part of our daily lives, semiconductor technology is becoming a foundational technology for the modern digital economy. The semiconductor value in the global supply chain continues to increase, creating greater value opportunities for our customers, and greater value opportunities for TSMC.

It is more important than ever for TSMC to fulfill our mission to be the trusted technology and capacity provider for the global logic IC industry for years to come. We will uphold our Trinity of Strengths of Technology Leadership, Manufacturing Excellence, and Customer Trust, to address and capture the strong growth opportunities.

### Capacity Plan



### Wafer Sales Plan



> 7nm      ≤ 7nm  
2023 wafer shipment is expected to be 14-15 million 12-inch equivalent wafers.

We are increasing our investments in R&D, to continue to extend our overall competitiveness and technology leadership. With our leadership in both leading edge process technologies and 3DIC solutions, TSMC's technology cadence remains constant, to deliver the value of our technology platform, and to help our customers to enhance their product competitiveness and to grow their markets well into the future.

We continue to focus on optimizing our manufacturing operations to drive greater efficiency and productivity, including "digitalization" of our fabs, to support high volume ramp of N3 in 2023 and beyond.

We are increasing our capacity beyond Taiwan to expand our future growth potential, to reach for global talent, and to further increase our customer trust. As we expand our global footprint, and recruit people from around the world, our priority is to identify, attract and hire talent whose core values and principles are aligned with TSMC's, so that we can establish TSMC culture in all our employees, no matter where we operate.

We recognize the increasingly important role of TSMC in the global semiconductor industry, our impact to many of the world's economies, and the responsibilities that come with our position. We remain steadfast to our dedicated

foundry business model, and will continue to work as One Team to support all the IC innovators and enable their success. We will hold ourselves to rigorous standards of corporate governance, and adhere to our core values of Integrity, Commitment, Innovation and Customer Trust, while pursuing a sustainable future. We are honored to earn your trust in TSMC through the challenges of 2022. We are more excited about our future, and are even more firmly committed to earning good returns for our shareholders in the years to come.



Mark Liu  
Chairman



C.C. Wei  
Chief Executive Officer

## 2 Introduction

### Company Profile

Established in 1987 and headquartered in Hsinchu Science Park, Taiwan, TSMC pioneered the pure-play foundry business model with an exclusive focus on manufacturing its customers' products. By choosing not to design, manufacture or market any semiconductor products under its own name, the Company ensures that it never competes with its customers. Based on this founding principle, the key to TSMC's success has always been to enable its customers' success. TSMC's foundry business model has led to the rise of the global fabless industry, and, since its inception, TSMC has been one of the world's leading semiconductor foundries. In 2022, the Company manufactured 12,698 different products using 288 distinct technologies for 532 different customers.

TSMC-made semiconductors serve a global customer base that is large and diverse entailing a wide range of applications. These products are used in a variety of end markets including high performance computing, smartphones, the Internet of Things (IoT), automotive, and digital consumer electronics. Such strong diversification helps to smooth fluctuations in demand, which in turn allows TSMC to maintain high levels of capacity utilization and profitability, and generate healthy returns for future investment.

The annual capacity of the manufacturing facilities managed by TSMC and its subsidiaries exceeded 15 million 12-inch equivalent wafers in 2022. These facilities include four 12-inch wafer GIGAFAB® fabs, four 8-inch wafer fabs, and one 6-inch wafer fab – all in Taiwan – as well as one 12-inch wafer fab at a wholly owned subsidiary, TSMC Nanjing Company Limited, and two 8-inch wafer fabs at wholly owned subsidiaries, WaferTech in the United States and TSMC China Company Limited.

In December 2022, TSMC announced that, in addition to TSMC Arizona's first fab, which is scheduled to begin production of N4 process technology in 2024, the Company has also started the construction of a second fab in Arizona to begin production of 3nm process technology in 2026. The overall investment for these two facilities will be approximately US\$40 billion. When completed, TSMC Arizona's two fabs will manufacture over 600,000 wafers per year, with estimated end-product value of more than US\$40 billion. At the same time, the Company continues to execute its plan for a fab in Kumamoto, Japan, with production targeted for 2024.

TSMC provides customer support, account management and engineering services through offices in North America, Europe, Japan, China, and South Korea. At the end of 2022, the Company and its subsidiaries employed more than 73,000 people worldwide.

The Company is listed on the Taiwan Stock Exchange (TWSE) under ticker number 2330, and its American Depository Shares (ADSs) are traded on the New York Stock Exchange (NYSE) under the symbol TSM.

## R&D Highlights in 2022

To meet our customer's needs in today's dynamic marketplace, TSMC is accelerating the pace of its innovation by offering leading-edge processes as well as a wide variety of specialty technologies to unleash their innovation. Many of our technological breakthroughs in materials, processing, and advanced lithography are enabling devices to be faster, smaller and more power efficient. In 2022, the Company developed or introduced a wide variety of technologies.

A summary of highlights is below:

### Advanced Technology Highlights

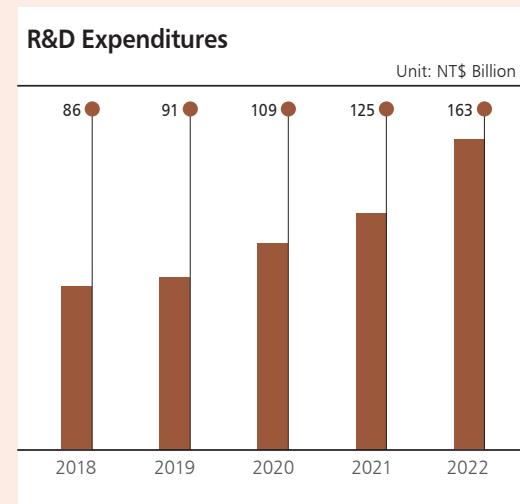
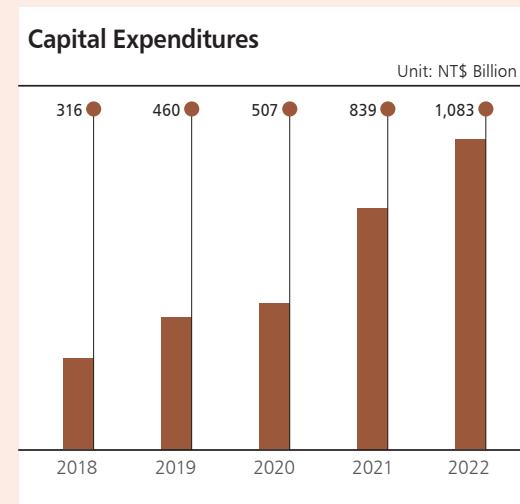
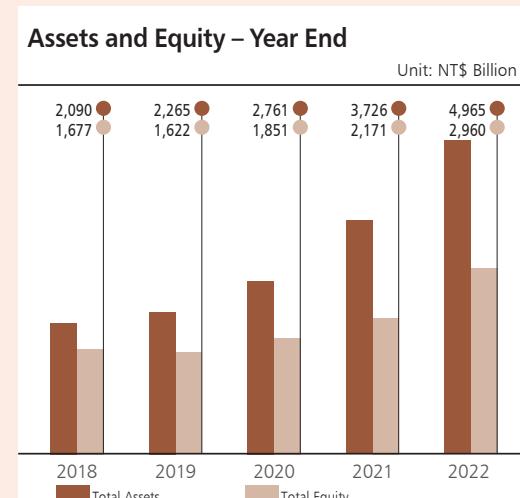
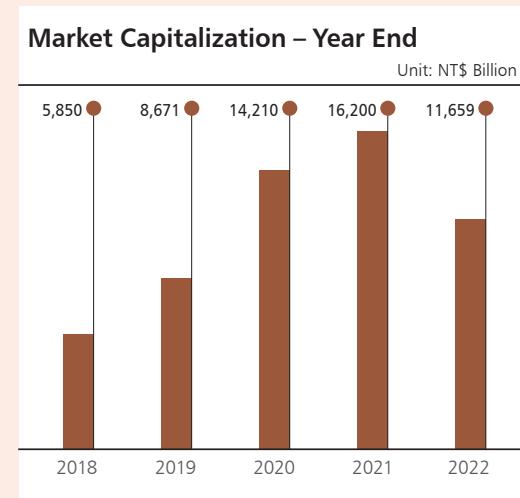
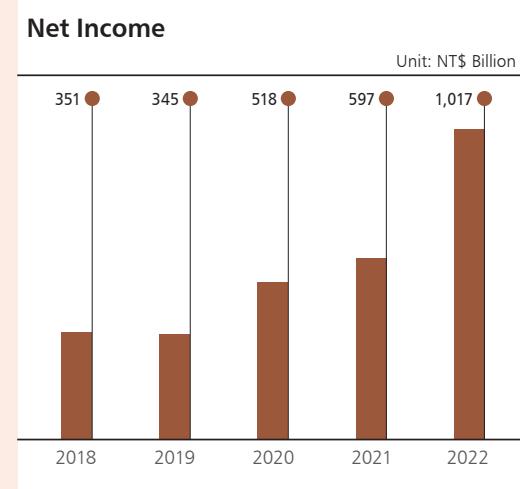
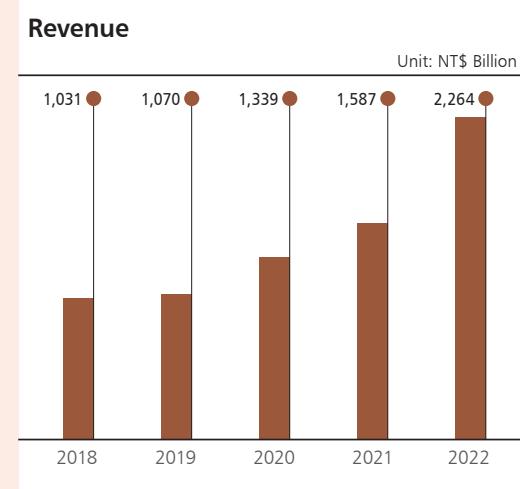
- 2nm (N2) technology development is on track and making good progress. N2 technology features TSMC's first generation of nanosheet transistor technology with full-node strides in performance and power consumption. Volume production is expected in 2025.
- 3nm fin field-effect transistor (FinFET) (N3) technology started volume production in the second half of 2022 as planned. N3E technology, an enhanced version of N3 technology, will continue to provide industry-leading advantages for both mobile communication and high-performance computing (HPC) applications. Volume production is expected in the second half of 2023.
- 4nm FinFET (N4) technology, an enhanced version of 5nm FinFET (N5) technology, started volume production in 2022. 4nm FinFET Plus (N4P) technology development is on track and making good progress. Customer product tape-outs were received in 2022 and volume production is expected in 2023.

### Specialty Technology Highlights

- 5nm FinFET Automotive (N5A) technology, an automotive qualified version of 5nm technology (N5) with automotive design enablement platform, completed technology and IP AEC-Q100 qualification and certified by ISO 26262: Functional Safety – Road Vehicles Standard in 2022. Customer product tape-outs are expected to start in 2023.
- N6 radio frequency (N6 RF) technology received multiple customer product tape-outs in 2022. In addition, the second generation N6 radio frequency (N6 RF+) technology is under development, and its process design kit (PDK) is expected to be completed in 2023.
- 16FFC embedded magnetoresistive random access memory (MRAM) technology completed reliability qualification in 2022, with one million cycles endurance and reflow capability. This technology is ready for production and is expected to pass AEC-Q100 Grade-1 reliability qualification in 2023.

### Advanced Packaging Technology Highlights

- TSMC-SoIC® (System on Integrated Chip) Chip-on-Wafer (CoW) technology successfully entered volume production in 2022. Stacking SRAM chips on logic wafers through CoW technology demonstrates significant performance improvement. In addition, TSMC-SoIC® Wafer-on-Wafer (WoW) technology demonstrated superb system performance enhancement for high performance computing (HPC) products in 2022 by stacking 7nm logic wafer on deep trench capacitor (DTC) wafer.
- Chip on wafer on substrate with redistribution layer interposer (CoWoS®-R) technology featuring redistribution layer (RDL) interposer for better signal integrity for HPC applications successfully started risk production in 2022 and is expected to start volume production in 2023.
- Integrated Fan-Out with local silicon interconnect (InFO\_LSI) technology, which integrates 5nm SoCs with ultra-high density die-to-die interconnects for high performance computing products, successfully started volume production in 2022.



# 3 Market Overview

TSMC estimates that the worldwide semiconductor market excluding memory reached US\$492 billion in revenue in 2022, representing a 10% increase from 2021. In the foundry segment of the semiconductor industry, total revenue rose to US\$130 billion in 2022, a robust growth of 28% over 2021.

In 2022, TSMC's solid growth in the foundry segment was fueled by strong, broad based market demand. Industry megatrends, such as 5G, artificial intelligence (AI) proliferation, and the accelerating digital transformation, drove increased demand across all major markets: smartphones, high performance computing (HPC), Internet of Things (IoT), and automotive. However, the electronics supply chain was also carrying high levels of excess inventory, accumulated over the past two years due to supply uncertainties. Hence, in the second half of 2022, the electronics supply chain entered an inventory correction period, which impacted the foundry segment and TSMC growth.

Looking ahead, TSMC expects the inventory correction to continue into 2023, primarily in the first half of the year. Furthermore, concerns about inflation and slowing economic growth will likely have a dampening impact on discretionary consumer spending, reducing overall demand for electronic devices. Against these two headwinds, TSMC projects mid-single-digit decline for the worldwide semiconductor market excluding memory in 2023. For the longer term, driven by increasing semiconductor content in most electronic devices, continued market segment share gains by fabless companies, increases in integrated device manufacturer (IDM) outsourcing, and the expanding use of in-house application-specific integrated circuits (ASIC) by systems companies, TSMC expects foundry segment revenue to outpace the mid-single-digit compound annual growth rate projected for the worldwide semiconductor market excluding memory from 2022 through 2027.

As an upstream supplier in the semiconductor supply chain, the foundry segment is tightly correlated with the market health of all major platforms including smartphones, HPC, the IoT, automotive, and digital consumer electronics (DCE).

## • Smartphones

Due to the combined impact of the COVID-19 pandemic, the Russo-Ukrainian war and generally higher inflation, smartphone unit shipments declined 11% in 2022, reflecting a slowdown in the pace of 5G commercialization and thus prolonging the replacement of 4G. As this situation is likely to persist, TSMC projects a continued low-single-digit decline for the smartphone market in 2023. Over the longer term, however, the inevitable migration to 5G, together with improved performance, longer battery life, biosensors and more AI features, will all continue to propel smartphone sales going forward.

High performance and power efficient IC technologies are essential requirements among handset manufacturers, and highly integrated chips and advanced 3D packaging designs are the preferred solutions to optimize cost, power and form factor (IC footprint and thickness). The migration to advanced process technologies will certainly continue spurred by the need for higher performance chips to run AI applications and various complex software computations as well as higher resolution video. TSMC is an acknowledged leader in process technology for manufacturing highly integrated chips and advanced 3D packaging designs and as such is very well positioned to serve the evolving smartphone market.

## • High Performance Computing (HPC)

The HPC platform includes PCs, tablets, game consoles, servers, base stations and more. Major HPC unit shipments declined 11% in 2022 due to prolonged high inflation, macro-economic uncertainty and inventory overbuilt, all resulting in weak demand on the consumer side. Meanwhile, the server and data center upgrade cycle remained relatively healthy to accommodate rapidly growing data traffic and to fulfill the expanding needs of AI applications and continued 5G base station deployment.

Although the trend toward accelerated digitalization stimulated by the COVID-19 pandemic has induced a structural increase in HPC-related semiconductor demand, the economic headwinds cited above will increasingly dampen demand on both consumer and enterprise sides and, as a result, TSMC projects another year of low teens decline in HPC unit shipments in 2023. Longer term, an increasingly intelligent and more connected 5G world will fuel massive requirements for computation power as well as a great need for energy-efficient computing. These require higher performance and more power-efficient CPUs, GPUs, NPUs, AI accelerators, and related-ASICs, which will drive the overall HPC platform towards richer silicon content, more advanced process technologies and advanced 3D packaging. These trends are all favorable to TSMC given our technology leadership in these areas.

## • Internet of Things (IoT)

The IoT platform includes various types of "smart" connected devices ranging from wearables, health monitors and speakers to home automation devices, city and manufacturing automation devices. As the COVID-19 pandemic changed individual life and work styles and accelerated the digital transformation in enterprises, IoT unit shipments grew 18% in 2022, with smart health devices, smart retail, and smart manufacturing as the major growth drivers.

While these trends remain strong, TSMC believes demand for consumer-related IoT devices will be somewhat tempered by high inflation and projects unit shipment growth in the low teens in 2023. Overall, as IoT devices take on more AI functions, they will require higher performance but lower power controllers, connectivity ICs and various types of sensors. TSMC offers the industry's most advanced technologies in these areas including ultra-low power (ULP) and various specialty process technologies to help customers meet demand, fulfill ESG requirements and succeed in the marketplace.

## • Automotive

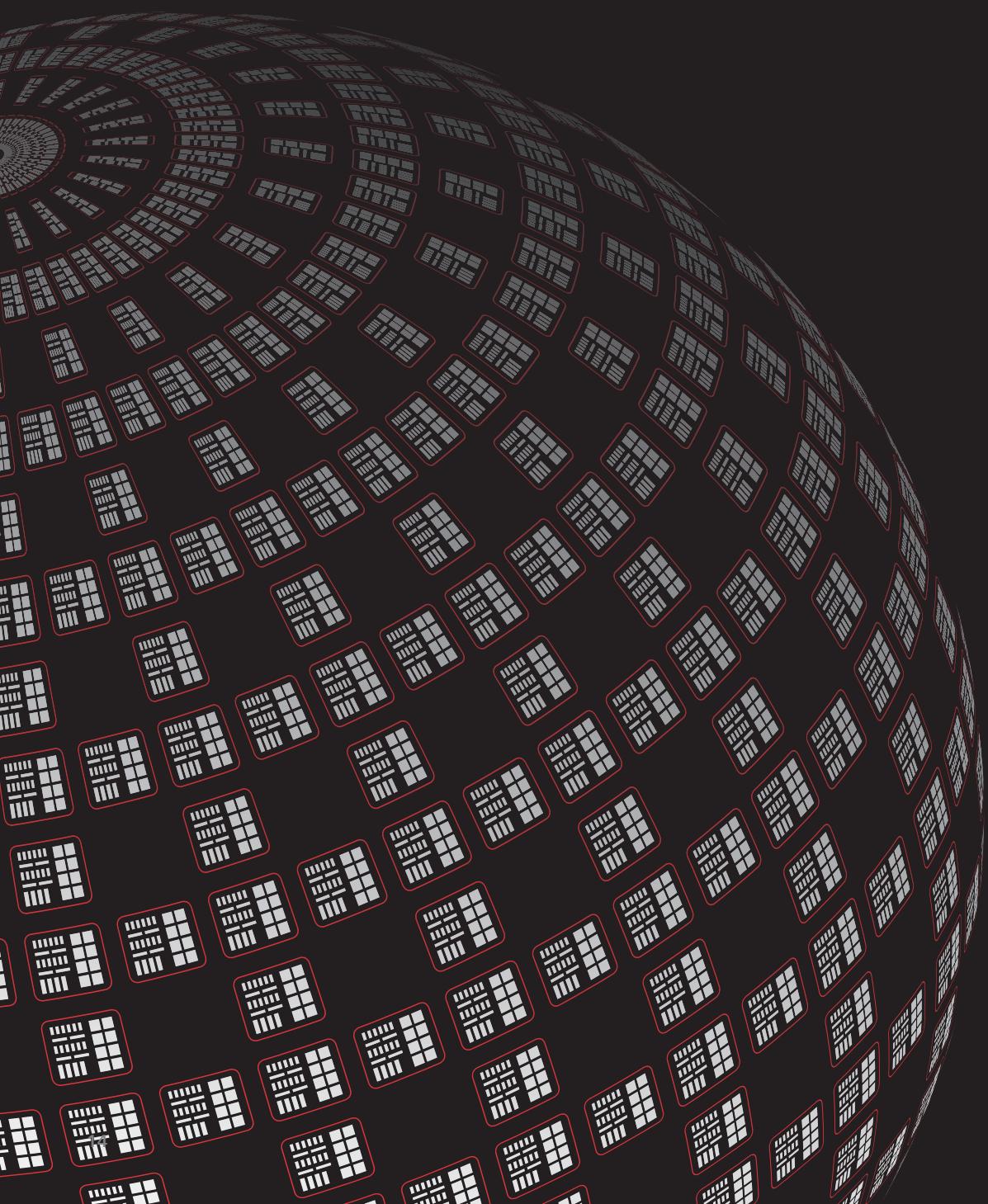
With generally improving chip availability, worldwide car unit production grew 7% in 2022 but was still held back by supply chain disruptions caused by the Russo-Ukrainian war and sporadic lockdowns due to the spread of COVID-19 particularly in China. The ongoing headwinds of high inflation and macro-economic uncertainty are expected to hold global car unit production to low-single-digit growth in 2023 as well.

The entire automotive industry is moving toward "greener, safer and smarter," which will accelerate the adoption of electric vehicles (EVs), advanced driver assistance systems (ADAS) and smart cockpit/infotainment systems, along with new electrical/electronic (E/E) architecture. All these will lead to increased demand for AP/MCU/ASIC processors, in-car networking, sensors, and power management ICs, thus continuously increasing the silicon content per car. TSMC offers a wide variety of relevant process technologies to enable customers to deliver competitive products in the automotive market.

#### • Digital Consumer Electronics (DCE)

Logistical disruptions such as port congestion led to prolonged lead times in the TV supply chain causing major electronics retailers to over-order and create excess inventory in 2022. At the same time, inflation, rate hikes and the China lockdown due to its zero-COVID policy weakened demand for TVs, set-top boxes (STB) and other consumer products. As a result, the total DCE market fell by 11% in 2022.

While some high-end areas such as large screen, 120Hz/144Hz high frame rate TV, voice AI control and WiFi 6 connectivity will continue to show good growth, fears of economic recession may stifle overall recovery. As a result, TSMC forecasts a low-single-digit decline in global DCE unit shipments in 2023. Regardless of the timing of the recovery, TSMC advanced technologies will continue to enable DCE customers to create and differentiate their innovative products.



## 4 TSMC's Trinity of *Strengths*

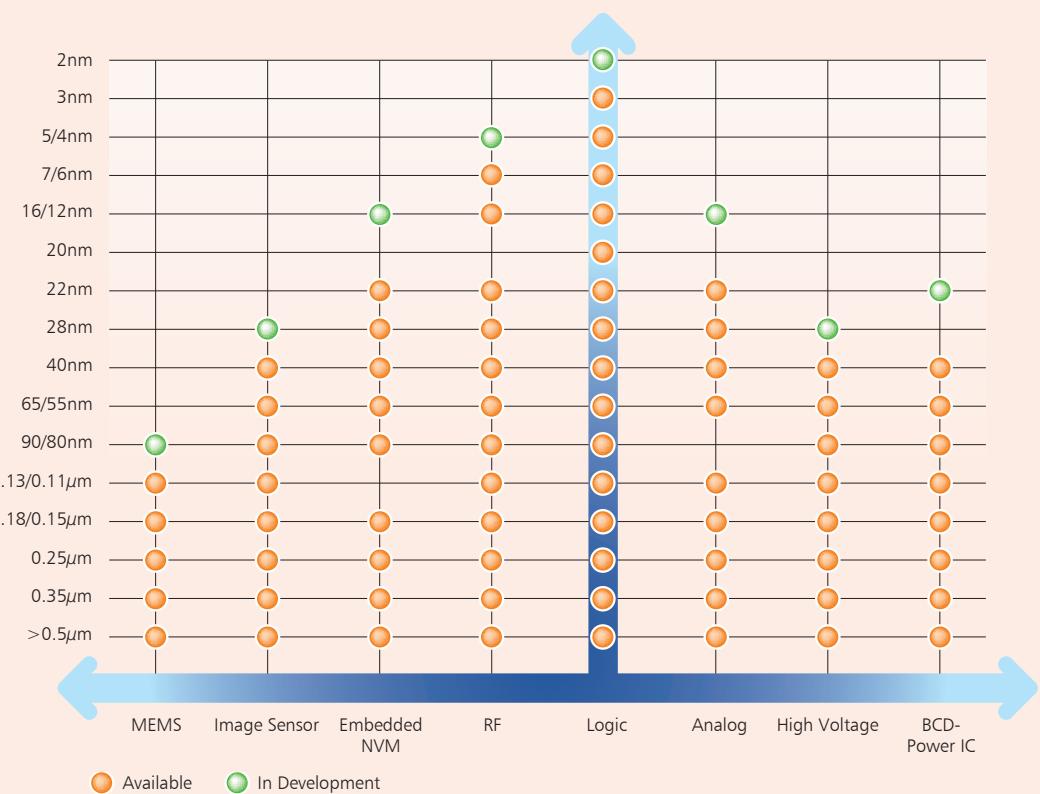
TSMC's growth has outperformed the overall semiconductor industry for all but two years since the company's founding. We have been able to achieve this track record by unleashing the innovation of our customers. We do not compete with our customers but support them as they grow, and participate in their success as they flourish. Our ability to unleash innovation is rooted in our trinity of strengths: Technology Leadership, Manufacturing Excellence, and Customer Trust.

Each component of the trinity plays a critical part. Our Technology Leadership allows us to provide leading-edge technologies to serve the most advanced product designs, and also enables a broad portfolio of specialty processes offerings for a diverse spectrum of IC designers. Our Manufacturing Excellence offers customers the fastest time-to-volume for their products and gives us the flexible capacity to not only manufacture for the foundry segment's largest customer base, but also to provide more capacity when their products succeed and begin to generate high demand. Finally, Customer Trust keeps the goals of TSMC and its customers aligned, because we do not believe long-term success is possible if our customers do not succeed.

### Technology Leadership

As a semiconductor industry leader, TSMC provides the broadest range of advanced, specialty and advanced packaging technology services. Our technology offerings possess the breadth of specialty technologies to suit the needs of a broad array of customers, and our leading-edge technology development has the depth to give customers a head start in the next wave of fast-growing product segments. We commit considerable resources to maintain this competitive advantage in technology. In 2022, TSMC's R&D spending totaled approximately US\$5.47 billion, or 7.2% of revenues.

### Comprehensive Technology Portfolio



Faced with the continuous challenge to significantly scale up semiconductor computing power every two years, thereby extending Moore's Law, the Company has focused its R&D efforts on contributing to customers' product success by offering leading-edge technologies and design solutions. In 2022, the Company successfully started risk production of N3E, an enhanced version of N3 technology; while the development of 2nm, moved into baseline setup and the yield learning stage. Furthermore, the Company's research efforts continued pushing forward with exploratory studies for nodes beyond 2nm.

In addition to complementary metal oxide semiconductor (CMOS) logic, TSMC conducts R&D on a wide range of other semiconductor technologies that provide the functionality required by customers for mobile SoC and other applications. Highlights in 2022 included:

- The Company's integrated interconnect and packaging solution, 3DFabric™, showed significant progress by completing certification of HBM3 (third generation HBM) on CoWoS-S; qualifying InFO\_PoP Gen-8 for mobile applications and enhanced thermal performance; and developing next-generation InFO\_PoP with backside redistribution layers on schedule.
- In specialty technologies, examples of progress included: improving figure-of-merit of 5V devices of 55nm bipolar-CMOS-DMOS (BCD) technology and extended 0.13µm BCD technology to support 55V in automotive applications; qualifying next generation monolithic CMOS-MEMS technology with highly reliable 6-axis inertial measurement unit (IMU); starting risk-production of the world's smallest chips of voltage domain global shutter CMOS image sensors with 3-wafer stack technology; and demonstrating next generation MRAM with smaller cell size, faster writing speed and more power saving for use in MCU, AR/VR/edge-AI applications.

TSMC's design enablement team also provides customers with comprehensive support to optimize design productivity and reduce cycle time, enabling their products to go from the designer's desk to the marketplace as short a time as possible. Our design support includes design flows for electronic design automation (EDA); silicon-proven IP building blocks, process design kits (PDKs), and technology files. As of 2022, the Company has expanded its library and silicon IP portfolio to contain more than 55,000 items, a 37.5% increase over 2021, and has provided customers more than 43,000 tech files and 2,900 PDKs.

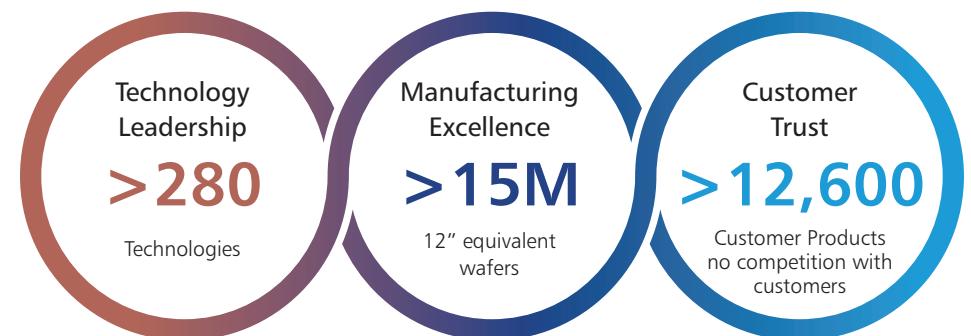
### Manufacturing Excellence

TSMC deployed 288 distinct process technologies, and manufactured 12,698 products for 532 customers in 2022, making it the world's most diversified and largest provider of logic IC capacity. TSMC's unique manufacturing system is tailored to manage the diverse manufacturing requirements of each customer, product, and technology without compromising speed, precision, and flexibility to adapt to changing circumstances. At the same time, our people and systems deliver these results in the leanest and most efficient way possible to support TSMC's profitability.

The Company's use of sophisticated, agile and intelligent operating systems drives manufacturing excellence. TSMC has integrated intelligent process experience, machine tuning, manufacturing know-how, and artificial intelligence technologies to create an intelligent manufacturing environment. Intelligent manufacturing technologies are widely applied to enhance lean manufacturing, boost employee and equipment productivity, and improve process and equipment control, quality control, and robotic control. The end result is real-time information analysis, improved forecast capability, maximum cost effectiveness, and accelerated innovation.

TSMC has also integrated new applications such as intelligent mobile devices, IoT, edge computing, and mobile robot, with intelligent automated material handling systems (AMHS) to consolidate wafer manufacturing data collection and analysis, utilize manufacturing resources efficiently, and maximize manufacturing effectiveness. TSMC continues to intellectualize semiconductor production through AI that processes massive amounts of production data to achieve agile and intelligent operations. In addition, TSMC has implemented augmented reality (AR) technology to improve equipment installation efficiency and assist equipment engineers to diagnose remotely during the COVID-19 pandemic.

### TSMC Trinity of Strengths Enables Us to be Everyone's Foundry



### Customer Trust

Customer Trust is deeply ingrained as one of TSMC's four core values and is our keystone to unleashing innovation. It ensures that we win together with our customers in long-term relationships that last from one generation of technology to another. A critical foundation stone for customer trust is a commitment TSMC made when it first opened for business: to never compete with customers. As a result, TSMC does not design IC products, but chooses to focus all of its resources on serving as the trusted foundry partner for its customers.

The dedicated foundry business model gives TSMC a distinct advantage over IDM foundries which give priority to manufacturing its own IC products over those of its customers. Customers that work with TSMC will not need to be concerned that their products will compete with their foundry's products in the marketplace. Nor will they need to worry that their capacity needs will take a back seat to the capacity needs of the IDM's products.

TSMC's engagement with customers begins at the earliest stages of R&D to understand their technology needs, and continues through to design support, mask making, manufacturing, and packaging and testing. Along the way, customers can call on the support of a dedicated customer service team, as well as 24-hour a day, seven-day-a-week access to real-time information through TSMC-Online, a suite of web-based applications that facilitates design, engineering, and logistics collaboration. From the fundamental tenets of TSMC's business model to the fine-grained details of doing business together, customers can be assured that TSMC is committed to winning together with them.

# 5 Corporate *Governance*

TSMC advocates and acts upon the principles of operational transparency and respect for shareholder rights. We believe that the basis for successful corporate governance is a sound and effective Board of Directors. In line with this principle, TSMC Board of Directors set up the "Audit Committee" and the "Compensation Committee" in 2002 and 2003 respectively. To continue to make our corporate governance more comprehensive, the TSMC Board took a step further in February 2023 to expand and strengthen the functions and responsibilities of its committees, including renaming the "Audit Committee" to the "Audit and Risk Committee", and the renaming the "Compensation Committee" to the "Compensation and People Development Committee". It also established a "Nominating, Corporate Governance and Sustainability Committee" of the Board of Directors. Each Committee supports the Board to fulfill its responsibilities and each Committee's chairperson regularly reports to the Board on its activities and recommendations.

## Board of Directors

TSMC's Board of Directors consists of ten distinguished members with a great breadth of experience as world-class business leaders or professionals. We deeply rely on them for their diverse knowledge, personal perspectives, and solid business judgment. Six of those ten members are Independent Directors: former British Telecommunications Chief Executive Officer, Sir Peter L. Bonfield; former Chairman of National Performing Arts Center and former Advisor of Executive Yuan, R.O.C., Ms. Kok-Choo Chen; former Chairman of Applied Materials, Inc., Mr. Michael R. Splinter; former Chief Executive Officer of Xilinx, Inc., Mr. Moshe N. Gavrielov; currently Chairman of Delta Electronics Inc., Mr. Yancy Hai; and former President of MIT, Mr. L. Rafael Reif.

TSMC's Board is comprised of a diverse group of professionals from different backgrounds in industries, academia, law, etc. These professionals include citizens from Taiwan, Europe and the U.S. with world-class business operating experience, one of whom is female. Independent Directors constitute 60% of the Board.

Inheriting the spirit of TSMC's Founder, Dr. Morris Chang's philosophy on corporate governance, under the leadership of Chairman Dr. Mark Liu and CEO & Vice Chairman Dr. C.C. Wei, TSMC's Board of Directors takes a serious and forthright approach to its duties and is a dedicated, competent and independent Board.

The Board's primary duty is to supervise the Company's compliance with relevant laws and regulations, financial transparency, timely disclosure of material information, and maintaining of the highest integrity. TSMC's Board of Directors strives to perform these responsibilities through its Audit Committee and the Compensation Committee, the hiring of a financial expert consultant for the Audit Committee, and coordination with our Internal Audit department. The second duty of the Board of Directors is to appoint and dismiss officers of the Company when necessary, to evaluate the management's performance and to review the succession plan for senior executives. TSMC's management has maintained a healthy and functional communication with the Board of Directors, has been devoted in executing guidance of the Board, and is dedicated in running the business operations, all to achieve the best interests for TSMC shareholders. The third duty of the Board of Directors is to resolve critical matters, such as capital appropriations, investment activities, dividends, etc. The fourth duty of the Board of Directors is to provide guidance to the Company's management team and risk management. In each quarter, TSMC's management reports to the Board on various subjects (including ESG programs) and strategies, and spends substantial time and effort to communicate with the Board. The Board would comment on the risk and probabilities for success of the proposed corporate strategies. The Board also periodically oversees those strategies' implementation and outcomes, and may suggest the management team to make adjustments to the strategic goals and objectives if necessary.

# 6 Environmental, Social *and Governance*

As a long-term trusted technology and capacity provider of the global logic IC industry, TSMC is dedicated to environmental, social and governance (ESG) issues. The Company collaborates with all stakeholders – employees, shareholders/investors, customers, suppliers/contractors, government/industry associations and society – to create sustainability value by pursuing three primary missions: acting with integrity, strengthening environmental protection, and caring for the disadvantaged.

## TSMC's ESG Management

The ESG Steering Committee is chaired by TSMC's Chairman, while the Chairperson of the ESG committee serves as Executive Secretary, and senior executives from a wide variety of functions – all work together to examine ESG material issues in relation to the Company's operations, set the short-, medium- and long-term strategic directions that link to the UN's sustainable development goals (SDGs).

The ESG Committee functions to coordinate and integrate resources, and facilitate the communications among different divisions, implementing the resolutions of the Company's ESG Steering Committee. ESG Department, on behalf of the ESG Committee, works together with cross-organizational representatives to identify key sustainability issues in relation to the Company's operations and stakeholders' concern. Task forces are formed based on various issues to frame adaptive strategies, goals and action plans. The committee holds quarterly meetings to track progress and ensure the strategies are implemented effectively in daily operations.

The Board of Directors supervises and guides the Company's sustainability management, strategies, and goals. The ESG Committee Chairperson reports quarterly to the Board of Directors on the implementation of plans and results.

In 2022, TSMC focused primarily on green manufacturing and supply chain management (including net zero emission, renewable energy access and use, and low-carbon value chain management), enhancement of workplace diversity and inclusion, talent development (including employee resource groups, diversity and inclusion practices for R&D talents, Science, Technology, Engineering, and Mathematics (STEM) programs for high school girls), making sustainability disclosures in sustainability report, theme reports such as UN SDGs Action Report and Materiality Analysis Report, performing sustainable culture advocacy (i.e., TSMC ESG awards), empowerment projects in remote areas and 2021 ESG spending updates, etc.

## ESG Highlights in 2022

### Reclaimed Water Plants

In September 2022, the TSMC Southern Taiwan Science Park Reclaimed Water Plant commenced operation, supplying 10,000 metric tons per day of industrial reclaimed water by the end of the year, and expected to reach 36,000 metric tons per day by 2026. Built in collaboration with CTCI Co, it is the first industrial reclaimed water plant in the world dedicated to supplying advanced semiconductor processes, and will serve as a model for future reclaimed water plants at other TSMC sites.

In 2022, TSMC also initiated the Hsinchu Science Park Reclaimed Water Plant Project, which is scheduled to supply 10,000 cubic meters per day of industrial reclaimed water in 2025 for 2nm process fabs along with municipal reclaimed water supply. In the future, new TSMC fabs in Hsinchu

Science Park will use 100% reclaimed water. The aim is to achieve an over 60% replacement rate of reclaimed water for fabs in Taiwan by 2030, to enhance operational resilience and ensure sustainable action towards water recycling.

#### **AI-Powered Water Chiller System**

TSMC continues to optimize the energy-saving model of its chiller water system through machine learning methods, successfully developing three innovative functions including "single chiller compressor abnormal energy consumption detection," "multi-chiller compressor operating load precision forecast," and "chiller water system pressure control optimization." TSMC introduced the three functions to Fab 15A in January 2022, saving two million kWh of electricity and reducing 1,000 metric tons of carbon by November 2022. In 2023, all TSMC 12-inch wafer fabs in Taiwan will begin to adopt the three functions, which will also be incorporated as standard designs for new plants. These initiatives are expected to save 100 million kWh of electricity per year and reduce carbon by 50,000 metric tons.

#### **Third TSMC ESG Award**

To promote sustainability, TSMC's ESG Steering Committee, led by Chairman Dr. Mark Liu, presented the third TSMC ESG Award in 2022, honoring internal organizations and divisions for tangible achievements in the Company's five ESG strategic directions: Drive Green Manufacturing, Build a Responsible Supply Chain, Create a Diverse and Inclusive Workplace, Develop Talent, and Care For The Disadvantaged. At the same time, this award presentation encouraged all employees to propose new ideas for sustainability to be assessed for feasibility and potential incorporation in the Company's implementation plans. Compared with 1,257 sustainability proposals in the second year, the third annual ESG Award received 1,880 innovative ideas, adding new energy to the Company's culture of sustainability.



## **7 Financial *Statements***

### **Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries Consolidated Condensed Balance Sheets**

December 31, 2018 - 2022

(In Millions of New Taiwan Dollars (NTD) and U.S. Dollars (USD))

	2022		2021		2020		2019		2018	
	USD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD
<b>ASSETS</b>										
Current Assets										
Cash and Cash Equivalents	\$ 43,721	\$ 1,342,814	\$ 1,064,990	\$ 660,171	\$ 455,399	\$ 577,815				
Investments in Marketable Financial Instruments	7,120	218,672	123,465	131,306	128,049	117,367				
Accounts Receivable	7,532	231,340	198,302	146,038	139,771	129,198				
Inventories	7,201	221,149	193,102	137,353	82,981	103,231				
Other Current Assets	1,267	38,922	27,214	17,317	16,414	24,069				
Total Current Assets	<u>66,841</u>	<u>2,052,897</u>	<u>1,607,073</u>	<u>1,092,185</u>	<u>822,614</u>	<u>951,680</u>				
Non-current Assets										
Long-term Investments	2,245	68,928	29,384	27,728	30,172	29,305				
Property, Plant and Equipment	87,710	2,693,837	1,975,119	1,555,589	1,352,377	1,072,050				
Right-of-use, Intangible and Other Non-current Assets	4,855	149,117	113,927	85,209	59,642	37,093				
Total Non-current Assets	<u>94,810</u>	<u>2,911,882</u>	<u>2,118,430</u>	<u>1,668,526</u>	<u>1,442,191</u>	<u>1,138,448</u>				
Total Assets	<u>\$ 161,651</u>	<u>\$ 4,964,779</u>	<u>\$ 3,725,503</u>	<u>\$ 2,760,711</u>	<u>\$ 2,264,805</u>	<u>\$ 2,090,128</u>				
<b>LIABILITIES AND SHAREHOLDERS' EQUITY</b>										
Current Liabilities										
Short-term Loans	\$ -	\$ -	\$ 114,921	\$ 88,559	\$ 118,522	\$ 88,755				
Accounts Payable	1,840	56,522	48,723	41,095	40,206	34,357				
Payables to Contractors and Equipment Suppliers	6,952	213,500	145,742	157,805	140,811	43,134				
Cash Dividends Payable	4,644	142,617	142,617	129,652	129,652	-				
Accrued Expenses and Other Current Liabilities	16,679	512,274	282,933	197,440	129,745	139,397				
Current Portion of Bonds Payable and Bank Loans	629	19,314	4,567	2,600	31,800	34,900				
Total Current Liabilities	<u>30,744</u>	<u>944,227</u>	<u>739,503</u>	<u>617,151</u>	<u>590,736</u>	<u>340,543</u>				
Non-current Liabilities										
Bonds Payable	27,166	834,336	610,071	254,105	25,100	56,900				
Other Non-current Liabilities	7,349	225,727	205,196	38,833	26,874	15,189				
Total Non-current Liabilities	<u>34,515</u>	<u>1,060,063</u>	<u>815,267</u>	<u>292,938</u>	<u>51,974</u>	<u>72,089</u>				
Total Liabilities	<u>65,259</u>	<u>2,004,290</u>	<u>1,554,770</u>	<u>910,089</u>	<u>642,710</u>	<u>412,632</u>				
<b>Equity Attributable to Shareholders of the Parent</b>										
Capital Stock at Par Value	8,443	259,304	259,304	259,304	259,304	259,304				
Capital Surplus	2,257	69,330	64,762	56,347	56,340	56,316				
Legal Capital Reserve	10,131	311,147	311,147	311,147	311,147	311,147				
Special Capital Reserve	103	3,154	59,304	42,259	10,675	26,907				
Unappropriated Earnings	75,643	2,323,224	1,536,378	1,235,280	1,011,513	1,073,706				
Others	(668)	(20,506)	(62,609)	(54,680)	(27,569)	(15,450)				
Equity Attributable to Shareholders of the Parent	<u>95,909</u>	<u>2,945,653</u>	<u>2,168,286</u>	<u>1,849,657</u>	<u>1,621,410</u>	<u>1,676,817</u>				
Noncontrolling Interests	483	14,836	2,447	965	685	679				
Total Shareholders' Equity	<u>96,392</u>	<u>2,960,489</u>	<u>2,170,733</u>	<u>1,850,622</u>	<u>1,622,095</u>	<u>1,677,496</u>				
Total Liabilities & Shareholders' Equity	<u>\$ 161,651</u>	<u>\$ 4,964,779</u>	<u>\$ 3,725,503</u>	<u>\$ 2,760,711</u>	<u>\$ 2,264,805</u>	<u>\$ 2,090,128</u>				

Note: Amounts in New Taiwan dollars have been translated into U.S. dollars at the rate of NT\$30.713 for the year ended December 31, 2022.

**Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries**

**Consolidated Condensed Statements of Comprehensive Income**

For the Years Ended December 31, 2018 - 2022

(In Millions of New Taiwan Dollars (NTD) and U.S. Dollars (USD), Except for Earnings Per Share)

	2022		2021		2020		2019		2018	
	USD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD
Net Revenue	\$ 75,881	\$ 2,263,891	\$ 1,587,415	\$ 1,339,255	\$ 1,069,985	\$ 1,031,474				
Cost of Revenue	(30,687)	(915,536)	(767,878)	(628,125)	(577,283)	(533,600)				
Gross Profit	45,194	1,348,355	819,537	711,130	492,702	497,874				
Operating Expenses										
Research and Development Expenses	(5,472)	(163,262)	(124,735)	(109,486)	(91,419)	(85,895)				
Sales, General and Administrative Expenses	(2,127)	(63,446)	(44,488)	(35,570)	(28,086)	(26,254)				
Total Operating Expenses	(7,599)	(226,708)	(169,223)	(145,056)	(119,505)	(112,149)				
Other Operating Income and Expenses	(12)	(368)	(333)	710	(496)	(2,101)				
Income from Operations	37,583	1,121,279	649,981	566,784	372,701	383,624				
Non-operating Income and Expenses										
Share of Profits of Associates	261	7,799	5,603	3,593	2,844	3,058				
Net Interest Income (Expenses)	358	10,672	294	6,937	12,939	11,643				
Other Gains and Losses	149	4,441	7,248	7,463	1,361	(815)				
Total Non-operating Income and Expenses	768	22,912	13,145	17,993	17,144	13,886				
Income before Income Tax	38,351	1,144,191	663,126	584,777	389,845	397,510				
Income Tax Expenses	(4,267)	(127,290)	(66,053)	(66,619)	(44,501)	(46,326)				
Net Income	34,084	1,016,901	597,073	518,158	345,344	351,184				
Other Comprehensive Income (Losses)	1,422	42,430	(7,619)	(30,322)	(11,824)	9,837				
Comprehensive Income	\$ 35,506	\$ 1,059,331	\$ 589,454	\$ 487,836	\$ 333,520	\$ 361,021				
Net Income Attributable to:										
Shareholders of the Parent	\$ 34,072	\$ 1,016,530	\$ 596,540	\$ 517,885	\$ 345,264	\$ 351,131				
Noncontrolling Interests	12	371	533	273	80	53				
Earnings per Share - Diluted (NT\$)	\$ 1.31	\$ 39.20	\$ 23.01	\$ 19.97	\$ 13.32	\$ 13.54				
Earnings per ADR - Diluted (US\$)	\$ 6.57	\$ 196.02	\$ 4.12	\$ 3.39	\$ 2.15	\$ 2.24				

Note: Amounts in New Taiwan dollars have been translated into U.S. dollars at the weighted average rate of NT\$29.835 for the year ended December 31, 2022.

**Taiwan Semiconductor Manufacturing Company Limited and Subsidiaries**

**Consolidated Condensed Cash Flow Statements**

For the Years Ended December 31, 2018 - 2022

(In Millions of New Taiwan Dollars (NTD) and U.S. Dollars (USD))

	2022		2021		2020		2019		2018	
	USD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD
Cash Flows from Operating Activities:										
Income Before Income Tax	\$ 38,351	\$ 1,144,191	\$ 663,126	\$ 584,777	\$ 389,845	\$ 397,510				
Depreciation & Amortization	14,656	437,254	422,395	331,725	286,884	292,546				
Share of Profits of Associates	(261)	(7,799)	(5,603)	(3,593)	(2,844)	(3,058)				
Income Taxes Paid	(2,902)	(86,561)	(83,498)	(51,362)	(52,044)	(45,383)				
Changes in Working Capital & Others	4,140	123,514	115,741	(38,880)	(6,702)	(67,661)				
Net Cash Generated by Operating Activities	53,984	1,610,599	1,112,161	822,667	615,139	573,954				
Cash Flows from Investing Activities:										
Interest Received	606	18,084	5,991	9,775	16,875	14,660				
Cash Dividend Received	101	3,016	2,499	3,487	2,039	3,421				
Acquisitions of:										
Property, Plant and Equipment	(36,289)	(1,082,672)	(839,196)	(507,239)	(460,422)	(315,582)				
Marketable Financial Instruments	(7,971)	(237,818)	(259,688)	(266,940)	(257,997)	(99,017)				
Proceeds from Disposal or Redemption of:										
Property, Plant and Equipment	33	983	390	607	287	181				
Marketable Financial Instruments	3,596	107,293	263,973	267,247	247,212	89,159				
Others	7	186	(10,335)	(12,719)	(6,796)	(7,091)				
Net Cash Used In Investing Activities	(39,917)	(1,190,928)	(836,366)	(505,782)	(458,802)	(314,269)				
Cash Flows from Financing Activities:										
Increase (Decrease) in Short-term Loans	(3,753)	(111,960)	35,668	(31,572)	31,804	23,923				
Proceeds from Issuance of Bonds	6,646	198,293	364,593	236,726	-	-				
Repayment of Bonds	(147)	(4,400)	(2,600)	(31,800)	(34,900)	(58,025)				
Repayment of Long-term Bank Loans	(6)	(167)	-	-	-	-				
Interest Paid	(410)	(12,219)	(3,834)	(1,781)	(3,597)	(3,233)				
Cash Dividends Paid for Common Stock	(9,560)	(285,234)	(265,786)	(259,304)	(259,304)	(207,443)				
Repurchase of Treasury Stock	(29)	(872)	-	-	-	-				
Others	547	16,315	8,567	(884)	(3,642)	(346)				
Net Cash Used in Financing Activities	(6,712)	(200,244)	136,608	(88,615)	(269,639)	(245,124)				
Effect of Exchange Rate Changes on Cash and Cash Equivalents and Others	1,957	58,397	(7,584)	(23,498)	(9,114)	9,862				
Net Increase (Decrease) in Cash and Cash Equivalents	9,312	277,824	404,819	204,772	(122,416)	24,423				
Cash and Cash Equivalents at Beginning of Period	35,696	1,064,990	660,171	455,399	577,815	553,392				
Cash and Cash Equivalents at End of Period	\$ 45,008	\$ 1,342,814	\$ 1,064,990	\$ 660,171	\$ 455,399	\$ 577,815				

Note: Amounts in New Taiwan dollars have been translated into U.S. dollars at the weighted average rate of NT\$29.835 for the year ended December 31, 2022.

# Contact Information

## Taiwan

### Corporate Headquarters & Fab 12A

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### TSMC Deputy Spokesperson

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Tel: +886-2-66365566 Fax: +886-2-23116723  
Website: http://www.ctbcbank.com

### ADR Depository Bank

Company: Citibank, N.A.  
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Address: 388 Greenwich Street, New York, NY 10013, U.S.A.  
Website: http://www.citi.com/dr  
Tel: +1-877-2484237 (toll free)  
Tel: +1-781-5754555 (out of US) Fax: +1-201-3243284  
E-mail: citibank@shareholders-online.com

TSMC's depositary receipts of the common shares are listed on New York Stock Exchange (NYSE) under the symbol TSM. The information relating to TSM is available at <http://www.nyse.com> and <http://mops.twse.com.tw>

## Asia

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