JOINT STATEMENT OF THE 29th MEETING OF THE WORLD SEMICONDUCTOR COUNCIL (WSC)

May 22, 2025
Qingdao, China

The world's leading semiconductor industry associations – consisting of the Semiconductor Industry Associations in China, Chinese Taipei, Europe, Japan, Korea, and the United States – held the 29th meeting of the World Semiconductor Council (WSC) today in Qingdao, China.

The meeting was chaired by Nanxiang Chen of Yangtze Memory Technologies and Chair of the host delegation, the Semiconductor Industry Association in China, and included delegations from the Semiconductor Industry Associations in China, Chinese Taipei, Europe, Japan, Korea, and the United States. The delegations were chaired, respectively, by Nanxiang Chen of Yangtze Memory Technologies Co., Ltd. (SIA in China), Shan-Chieh CHIEN of UMC (SIA in Chinese Taipei), Robert Li of NXP Semiconductors (SIA in Europe), TAKEMI Masayoshi of Mitsubishi Electric Corporation (SIA in Japan), Hyouk Woo KWON of Samsung Electronics (SIA in Korea), and David GOECKELER of SanDisk (SIA in the U.S.).

The WSC meets annually to bring together industry leaders to address issues of global concern to the semiconductor industry. The WSC's mandate is to encourage cooperation to promote fair competition, open trade, protection of intellectual property, technological advancement, investment liberalization, market development, and sound environmental, health and safety practices. The WSC also supports expanding the global market for information technology products and services.

Established under the "Agreement Establishing a New World Semiconductor Council" signed on June 10, 1999, and amended on May 19, 2005, the WSC has the goal of promoting cooperative global semiconductor industry activities in order to facilitate the healthy growth of the industry from a long-term global perspective. This Agreement states, "the increasing globalization of the semiconductor industry raises important issues that must be addressed effectively through international cooperation within the world semiconductor industry", and that "the WSC activities . . . shall be

guided by principle of fairness, respect for market principles, and consistency with WTO rules and with the laws of the respective countries or regions of each Member. The WSC recognizes that it is important to ensure that markets will be open without discrimination. The competitiveness of companies and their products should be the principal determinant of industrial success and international trade."

The WSC seeks policies and regulatory frameworks that fuel innovation, propel business, and drive international competition and avoid any actions that distort markets and disrupt trade. Antitrust counsel was present throughout the meeting. During the meeting, the below reports were given and discussed, and related actions were approved.

I. Semiconductor Market Data

The WSC reviewed the semiconductor market report covering global market size, market growth, and other key industry trends. According to WSTS data, in 2024, the global semiconductor market totaled US$631 billion in revenue, up year-over-year by 19.7 percent.

Logic was the largest semiconductor category by sales at $215.8 billion (34.2% of 2024 total market revenue). Memory ($165.5 billion) and analog ICs ($79.6 billion) rounded out the top three product categories in terms of total sales.

The Americas, China and other Asia-Pacific markets constituted the top three markets in 2024, collectively accounting for $532.5 billion in total revenue. Annual sales increased in most regions, but only in Europe ($51.3 billion, down 8.1%) and Japan ($46.7 billion, down 0.2%), a decrease year-over-year. Sales by end application were led by computer (34.9% of total revenue) and communication (33.0% of total revenue).

The global semiconductor market witnessed a remarkable growth in 2024, indicating that the downstream demand has regained its vigorous momentum.

II. Workforce Development

The skills shortage is a serious challenge for the economies worldwide and particularly for the semiconductor industry. Especially in times of digital and green transformation the importance of semiconductors will continue to increase. This will also increase the need for more manufacturing sites and will lead to the construction

of several new semiconductor manufacturing sites in various regions over the next few years. This will require many thousands of new skilled workers in design, research and development and manufacturing. In addition, fabs are in need of construction workers. The lack of a skilled workforce must be understood as one of the most severe risks to the sector's ability to stay ahead of competition as there is an expected demand for more than one million additional skilled workers by 2030 in the semiconductor sector.[1] A scenario based on the status quo will lead to severe gaps in the operation of manufacturing sites ("fabs") and, perhaps more importantly, in the design of semiconductor innovations.

A global education campaign on STEM subjects is required. This should target schools, from primary level onwards, as well as universities. Early education projects can help to increase the interest and motivation in the next generation. To develop the talent and skills needed by industry, it's important that universities and industry work together to provide students with a useful education. Promoting the attractiveness of a career in the semiconductor sector for students will also be vital. The document addressing this issue, entitled "Why should students join the semiconductor industry? Four compelling reasons," has been appended to the Joint Statement as Annex 1.

Many regions currently do not have enough capacity and capability in semiconductor education. Basically, there is an insufficient number of training centers that focus on training and offer relevant study programs, often with a very specific focus area. As a result, it remains a major challenge for talented students to be able to acquire the skills needed to work in production facilities. Education in semiconductors and incentivizing cooperation between countries and regions to develop a holistic talent curriculum for the semiconductor industry are of the highest importance. By introducing and promoting more exchange projects, such partnerships can be further strengthened. Failure to do so could result in severe shortages for this critical industry. **The WSC therefore urges the GAMS to work with industry to promote STEM education and training to support the semiconductor industry's needs for an expanded workforce.**

Public policy should promote the cooperation between all relevant stakeholders in the ecosystem, including industry, government and non-government research centers, and academia. Each stakeholder brings different core competences in education and talent development and pooling them together is essential for the semiconductor industry to train and educate talent and to sustainably attract a workforce to the industry. Specific actions urgently needed include:

[1] https://www2.deloitte.com/us/en/pages/technology/articles/global-semiconductor-talent-shortage.html

- relaxed immigration rules and faster immigration procedures for STEM students and semiconductor workforce,
- more English-speaking STEM degrees across the world,
- more public-funded industry-education partnerships, which should involve joint curriculum building and lectures delivered by industry experts at universities complementing theoretical learning,
- more degrees where students spend time both at universities and in industry to increase industry exposure,
- facilitating researchers and academics' global mobility,
- providing high school level teachers training in microelectronics,
- promoting industry-led short-term learning experiences and massive open online courses (MOOCs), and
- focusing efforts on key countries and regions, encompassing all front-end and back-end semiconductor manufacturing sites.

III. Cooperative Approaches in Protecting the Global Environment

(1) GHGs

The World Semiconductor Council (WSC) has a decades-long track-record of voluntary perfluorinated compound (PFC) emissions reductions. In 2022, it announced a new voluntary PFC emissions reduction goal for 2030. The WSC commits to achieve a PFC reduction rate of 85% by 2030 with the baseline being 82.6% in 2022. Emission reductions will be achieved by implementing the best practices compiled by the WSC in its best practices document.

The WSC agreed to continue the existing data collection framework throughout the duration of the 2030 voluntary agreement according to the IPCC 2019 guidelines, tier 2c. 2024 data are being collected according to IPCC 2019 Tier 2c, AR6.

The WSC is collecting the Heat Transfer Fluids emissions data and evaluating its effects on the GHG emission.

The WSC agreed to work on collecting scope 2 emissions, and to continue work toward developing a GHG goal comprising Scope 1 and Scope 2 emissions to be considered by the WSC in the future.

The WSC will periodically publish industry-wide progress toward the 2030 goal. This external reporting will provide aggregated results of the absolute PFC consumption and emissions as well as the emission reduction trend. These figures

represent the aggregated emissions for the six WSC regional associations, in their own regions and in the "Rest of World" fabs.

The WSC supports the phase-down of non-essential uses of HFCs as required by the Kigali Amendment to the Montreal Protocol. Some HFCs are essential to semiconductor process operations and there are currently no known alternatives. **The WSC recommends that Governments/Authorities continue to provide exemptions for uses of HFCs in the semiconductor industry in implementing the Kigali Amendment in their respective jurisdictions**. For example, the U.S. legislation implementing the Kigali Amendment (the AIM ACT) provides for allocations for HFCs used in semiconductor plasma etch and chamber cleaning processes to ensure these essential uses can continue.

The WSC further recommends that Governments/Authorities exempt HFCs used in small equipment level chillers with small refrigerant charges in semiconductor operations. Semiconductor processes require extremely high levels of control in all aspects of the manufacturing process and currently known alternatives to HFCs do not have compatible properties with existing equipment level chillers.

(2) Chemical Management

As Governments/Authorities continue to work on PFAS and other chemicals of potential interest to the semiconductor industry, the WSC urges Governments/Authorities to continue fostering cooperation with the semiconductor industry to achieve environmentally beneficial results in a manner consistent with our technological and business needs while advancing the positive global socioeconomic benefits of the semiconductor industry.

The WSC is aware that governments around the world are increasingly taking action on chemicals of interest to the semiconductor industry. **The WSC reiterates its recommendation that Governments/Authorities proceed thoughtfully in regulating chemicals that are essential to the semiconductor industry.**

Specifically, the WSC recommends that Governments/Authorities consider the limited potential risk of exposure from uses in the semiconductor industry, the management practices in the semiconductor industry, and the fact that these chemicals are not intended to be released from the finished product under normal conditions of use.

The WSC further recommends that GAMS provides the semiconductor industry with sufficient time to evaluate our uses of chemicals that may be subject to potential regulation and the uses within our supply chain. If restrictions on chemicals used in

the semiconductor industry are deemed to be necessary and appropriate for the protection of human health and the environment, the WSC recommends that GAMS provide sufficient time for the industry to identify, qualify, and transition to alternative chemicals that satisfy the functional and performance requirements of the semiconductor industry, and provide exemptions to allow continuation of critical uses of these chemicals in processes and articles. In addition, where regulations cover articles, the threshold levels in regulations should be harmonized globally and be technically feasible.

The WSC recognizes that it is important to develop a greater understanding of the uses and potential releases of PFAS in semiconductor manufacturing processes. To better understand and predict environmental releases from continued use of PFAS, many companies and industry consortia are investing significant resources to collect data on PFAS use and releases that are facilitating the development of industry models.

The release models are complicated and highly technical in nature and require the development of industry default factors based on current science and understanding. In order for these models to be useful to both industry and Governments/Authorities, it is important that the models provide estimates that are functional, reliable, and accurate. The models will evolve over time as understanding and technologies change. The WSC plans to cooperate on developing common methods for quantifying PFAS uses and releases and will update Governments/Authorities on the best available information as it becomes available.

Therefore, in developing regulations on PFAS, Governments/Authorities should recognize the challenges, complexity, and time needed to quantify PFAS uses and releases.

Additionally, Governments/Authorities should continue to support research and development of methods and technologies to detect, treat, and abate PFAS in semiconductor manufacturing applications, and to accelerate the adoption of these methods and technologies, as well as to develop technologies necessary to identify high-performance alternatives that have the necessary performance characteristics with an improved environmental, health, and safety profile.

(3) Water

The WSC recognizes that water plays a critical role in the semiconductor industry, that certain areas of the world experience acute water shortages, and that stakeholders are increasingly demanding responsible water management practices from semiconductor firms. Water is a non-fungible natural resource and is one of the essential resources in the semiconductor industry. The WSC Water Working Group to

collaborate on enhancing water utilization efficiency by defining a common water reuse rate formula, sharing best practices for water utilization efficiency and establishing a standard template for data collection. agreed on the Water Recycling Rate title, formula and data collection form referring to international standards. 2025 data will be collected as a case study to confirm the data format.

(4) Safety and Health

The WSC is focused on a sound proactive approach to safety and health (S&H) policies and practices, including the provision of a workplace environment that is safe and healthy for all employees.

Collecting S&H data is a typical tool which semiconductor companies use to review and manage their activities and in order to identify learnings for continuous improvement of safety and health practices. Additionally, the WSC is sharing S&H semiconductor best practices in expert settings, to advance industry practices as a whole.

Five associations have contributed to S&H aggregated data at the WSC. 2024 data will be published at the JSTC/GAMS meeting in November 2025.

IV. Effective Protection of Intellectual Property

Patent Quality- IP Statistics and Cooperation with WIPO

Patent quality is essential to innovation and controlling abusive patent litigation in the semiconductor industry. The WSC commends the World Intellectual Property Organization for its efforts to collect and publish metrics bearing on patent quality across jurisdictions, which can be a useful tool in monitoring patent quality.

An important issue for WSC stakeholders concerns the paucity of data about IP-related litigation globally and among the GAMS regions in particular. The WSC believes that improved visibility into international IP litigation would lead to a better understanding of this important area and potentially to ideas for improvements aimed at benefiting innovation, reducing costs and obstacles, and better protecting IP worldwide.

While WIPO has been able to collect and publish international data on patent applications, processing, grants, and post-grant review by patent offices, it has been unable to collect data in the important area of patent litigation in the courts, despite various efforts to do so, as there is no standard process for monitoring and collecting

such data internationally. The WSC is hopeful that governments/authorities can assist in resolving this data gap by establishing necessary collection procedures.

Toward this goal, the WSC suggests that governments/authorities work with WIPO to include data on post-grant reviews and patent litigation in the courts in the "bibliographic data" format by assigning new "INID codes" to post-grant reviews and patent litigation in the courts. WSC believes that such data on post-grant review and patent litigation shown on an official patent publication in each country/region would help stakeholders have access to global statistics of the patents that are consistent, comparable, and continuous.

The WSC therefore redoubles its requests for GAMS to explore the most feasible way to collect and report to WIPO annually basic statistical information regarding patent litigation on a consistent and transparent basis by including data on post-grant reviews and patent litigation in the "bibliographic" data format.

Abusive Patent Litigation and Third-Party Financing

The WSC recognizes that abusive patent litigation seriously undermines innovation by redirecting resources to unnecessary litigation expenses and makes it more difficult for companies to bring legitimate products to market. **The WSC encourages GAMS to support the WSC Best Practices to Combat Abusive Patent Litigation and implement rules and policies to achieve these best practices**.

The WSC takes note of the growth of third party-financed patent infringement litigation, and, when such litigation is abusive, the potential for adverse effects on the patent system, including diversion of resources from judicial and administrative mechanisms that support a healthy patent system and billions of dollars in assets from innovative manufacturers to often unknown investors. **The WSC encourages GAMS to enhance transparency through disclosure and other forms of accountability to minimize any negative effects of such litigation finance models.**

V. Fighting the Proliferation of Semiconductor Counterfeiting

Counterfeit semiconductor products create serious risks to the safety and health of the public as well as to critical national infrastructure and can have a significant economic impact for semiconductor rights holders. The WSC's Anti-Counterfeiting

Task Force promotes practices to combat counterfeiting, including training and information sharing with law enforcement authorities, awareness raising, and encourages purchasing from authorized sources.

The WSC supports proactive industry and law enforcement activities to prevent trademark infringing and counterfeit semiconductors from being sold on online platforms. Together, the online economy and globalization has allowed criminal networks to expand the scope of their operations, free ride on intellectual property, sell counterfeit goods directly worldwide with virtually no barriers to entry, low costs of set-up, and fewer risks of being caught. There are indications that counterfeiters are now more active and have also shifted from large well-known B2B & B2C platforms to lesser-known online platforms.

WSC members remain committed to increasing awareness of risks caused by counterfeits to the infrastructure, public health and safety. Moreover, WSC members engage with national law enforcement authorities to allow customs officers to better identify counterfeit semiconductors.

The WSC has shared examples of anti-counterfeiting capacity building measures and practices that could be employed across the semiconductor industry and is currently revising the WSC's White Paper "Winning the Battle against Counterfeit Semiconductor Products".

The WSC recommends that GAMS members continue to implement appropriate domestic, bilateral, and multilateral IP enforcement countermeasures to deal with counterfeit semiconductors. The WSC supports GAMS coordination with their customs and law enforcement authorities to facilitate a further strengthening of IP enforcement activities at global, regional, and national levels through closer cooperation with the industry.

VI. Encryption Certification & Licensing Regulations

The WSC continues to encourage the GAMS to ensure that the regulatory framework for Encryption is consistent with the WSC Encryption Principles, as they emphasize market access, transparency, adoption of international standards, and non-discriminatory and open procedures and rules for commercial encryption.

In line with GAMS, the WSC underscores the importance of meaningful stakeholder participation whenever regulations, administrative procedures, or

certification requirements on the importation or use of commercial encryption are created or revised.

In addition, the WSC supports the GAMS statement, made in the 2024 GAMS Chair's Summary, that *"Voluntary consensus-based international standards adopted through open procedures are the optimal way to achieve rigorously scrutinized and broadly studied cryptographic technology and facilitate trade in line with the WSC Principles".*

Indeed, open markets and the application of international standards ensure the worldwide availability of the most robust and trusted security solutions and support the diffusion of emerging encryption technologies.

The WSC welcomes the GAMS' continued commitment to reviewing of the global regulatory environment for products with encryption, through the regular sharing of information, analysis and assessment of relevant measures.

The GAMS exchange of information has yielded positive results, increasing mutual understanding and further ensuring transparency. The WSC is pleased to note, in addition the good progress achieved in 2023 and 2024 concerning access to the TC260 Working Group 3 (WG3) on Cryptography, recently some non-domestic companies became members of WG3.

The WSC welcomes the invitation by GAMS "to reflect on additional relevant regulations and related standards, as appropriate, impacting the semiconductor industry and to present the results of [WSC] reflection during a dedicated GAMS Workshop" in November 2025.

The WSC presents a proposed an agenda of such workshop and invites the GAMS to finalise it with a view to continue the dialogue towards the full implementation of the WSC principles.

VII. Customs and Tariffs

WTO Moratorium on Customs Duties

The WSC expresses concern over the potential expiration of the Moratorium as early as the 14th WTO Ministerial Conference or 31 March 2026.

The long-standing WTO agreement to not impose customs duties on electronic transmissions has greatly contributed to the growth and development of the semiconductor industry, the growth of the digital economy, and strengthened supply

chain resilience. The seamless movement of semiconductor data across borders is essential to the healthy functioning of global semiconductor supply chain. Semiconductor companies in every segment of the industry rely on the constant flow of semiconductor research, design, process data and software to enable their production flows and supply chains for critical products. The imposition of customs procedures and import duties on the flow of semiconductor data – to include design data, software, chemical formulations, manufacturing information, and other development data – would increase costs and lead to shipment delays and other disruptions to these critical supply chains.

The WSC urges GAMS to work with the other WTO members immediately on an agreement to extend the Moratorium and develop a permanent WTO agreement that ensures semiconductor and semiconductor-related data and digital tools remain exempt from customs duties and procedures.

HS Classification for semiconductors

The WSC recalls that the Harmonised System (HS) plays a fundamental role in ensuring a globally consistent customs classification for all traded goods including semiconductors. It also creates the basis for a level playing field in international business.

The WSC highlights that it is crucial that the HS nomenclature stays up-to-date with technology developments. Regularly integrating new semiconductor products into the HS through its review cycles facilitates trade for innovative products.

The WSC is grateful to the GAMS and their Customs Services for their continued cooperation on customs classification matters, most recently in clarifying the classification of certain MCP ICs.

The WSC calls on GAMS to further cooperate and support the WSC proposal to include "Smart printed circuit board" (or Smart PCBs) in the HS by amending HS heading 8534 (Annex 4) accordingly.

Trade Policies

For decades, semiconductor technology has maintained exponential performance growth, transforming society, and entire industries, at a rapid pace. Semiconductors have become essential components of virtually every electronic devices, enabling the green and digital transitions and powering countless critical

downstream applications. All along, trade policies have played a key role in supporting semiconductor growth.

The WSC would like to emphasize that, for semiconductor companies, certainty regarding the conditions at which they can trade is an essential prerequisite for success.

Hence, **the WSC calls on GAMS to create a more predictable trade environment, and to negotiate expeditious resolution to trade challenges. We urge GAMS to consult closely with industry, and the WSC stands ready to support GAMS to achieve positive outcomes.**

VIII. Regional Support Programs

The WSC continues to encourage governments/authorities to ensure semiconductor support programs are fully consistent with the GAMS Regional Support Guidelines and Best Practices (Guidelines) and WTO rules, developed by the WSC and adopted by the GAMS in 2017. The Guidelines reflect the WSC's shared view that regional support in the semiconductor sector should be transparent, non-discriminatory, and non-trade/investment distorting; that government/authorities actions should be guided by market-based principles and expectations regarding long-term rates-of-return and levels of risk; and that the competitiveness of companies and their products, not the intervention of governments and authorities, should be the principal drivers of innovation, industrial success and international trade.

The WSC reached consensus on two additional best practice principles in the draft paper: Key Principles for Governments/Authorities on Transfers of Government/Authority Funds ("Draft Principles," See Annex X) on government/authority transfers (grants, loans, equity infusion and loan guarantees). We seek further guidance from the GAMS towards securing consensus on these principles.

The WSC welcomes the GAMS' ongoing commitment to increase transparency through the regular sharing of information, analysis, and assessment of subsidies and other forms of support provided by the GAMS authorities to the semiconductor industry in their region. Such transparency and assessment are vital to promoting consistency with the principles of the Guidelines and WTO rules, and avoiding non-market-based support that can lead to excess capacity that is not commercially justified, create unfair competitive conditions, hinder innovation, and undermine the efficiency of global value chains.

This information exchange has had some notable success in filling the gaps caused by shortfalls in the WTO's subsidy notification process. The WSC and GAMS have reviewed 42 semiconductor-related programs in two phases of information exchange (Phase 1 and Phase 2). A third phase (Phase 3) of the regional support information exchange on an additional 12 semiconductor-related programs was initiated at the WSC meeting in 2023. These Phase 3 programs were reviewed at the 2024 GAMS Workshop on Regional Support Programs in Berlin.

We welcome the invitation from GAMS to continue discussions at a 10th Workshop on Regional Support at the 2025 GAMS meeting. We present to GAMS a proposed agenda for this workshop (see Annex X), and request GAMS members to finalize the agenda and invite appropriate officials from their governments/authorities to participate, with a view to completing the analysis and assessment of the Phase 3 programs at the 10th Workshop.

We further request GAMS to evaluate the merits of continuing the regular information exchanges on regional support programs at the GAMS meeting in Busan, and to discuss the additional Draft Principles with a view towards reaching consensus.

IX. Global Supply Chain

The WSC remains committed to deepening the understanding of the global supply chain for the semiconductor industry, with the aim to preserve the healthy functioning of the global supply chain. In this regard, the WSC appreciates the GAMS acknowledgement that no single region can replicate all elements of the global supply chain for semiconductors. As part of this effort, the WSC presents a report on semiconductor global supply chains, including a summary of efforts taken by some regions to increase the resilience of the semiconductor supply chain. The report demonstrates the importance of continued collaborative effort and information sharing to facilitate the healthy functioning of the supply chain and to mitigate potential disruptions.

The WSC looks forward to continued engagement with GAMS to further strengthen global supply chain resilience, while supporting a policy environment that encourages collaboration, openness, innovation, and trust.

X. Approval of Joint Statement and Approval of Recommendations to GAMS

The results of today's meeting will be submitted by representatives of WSC members to their respective governments/authorities for consideration at the annual meeting of WSC representatives with the Governments/Authorities Meeting on Semiconductors (GAMS) to be held in November 2025 in Busan, Korea.

XI. Next Meeting

The next meeting of the WSC will be hosted by the Semiconductor Industry Association in Europe in June 2026.

XII. Key Documents and WSC Website:

All key documents related to the WSC can be found on the WSC website, located at: http://www.semiconductorcouncil.org. Information on WSC member associations can be found on the following websites:

Semiconductor Industry Association in China:

http://www.csia.net.cn

Semiconductor Industry Association in Chinese Taipei:

http://www.tsia.org.tw

Semiconductor Industry Association in Europe:

http://www.eusemiconductors.eu

Semiconductor Industry Association in Japan:

https://semicon.jeita.or.jp/index_e.html

Semiconductor Industry Association in Korea:

http://www.ksia.or.kr

Semiconductor Industry Association in the US:

http://www.semiconductors.org