JOINT STATEMENT OF THE 28th MEETING OF THE WORLD SEMICONDUCTOR COUNCIL (WSC)

June 6, 2024
Miyazaki, Japan

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 28th meeting of the World Semiconductor Council (WSC) today in Miyazaki, Japan.

The meeting was chaired by Noriyasu Kurihara of Toshiba Electronic Devices & Storage Corporation and Chair of the host delegation, the Semiconductor Industry Association in Japan, and included delegations from the Semiconductor Industry Associations in China, Chinese Taipei, Europe, Korea, and the United States. The delegations were chaired, respectively, by Nanxiang Chen of Yangtze Memory Technologies Co., Ltd. (SIA in China), Cliff Hou of TSMC (SIA in Chinese Taipei), Frédérique Le Grevès of STMicroelectronics (SIA in Europe), Joon Choi of SK hynix (SIA in Korea), and Richard Templeton of Texas Instruments (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 2023, the global semiconductor market totaled US$527 billion in revenue, down year-over-year by 8.0 percent.

Logic was the largest semiconductor category by sales at $178.6 billion (33.9% of 2023 total market revenue). Memory ($92.3 billion) and analog ICs ($81.1 billion) rounded out the top three product categories in terms of total sales.

China, other Asia-Pacific markets and the Americas constituted the top three markets in 2023, collectively accounting for $424.4 billion in total revenue. Annual sales declined in most regions, but only in Europe ($56 billion, up 3.5%), an increase year-over-year. Sales by end application were led by communications (32.1% of total revenue) and computers (25.4% of total revenue), with the automotive market demonstrating substantial year-over-year growth of 14.7%.

The semiconductor market has been stagnant due to global inflation and geopolitical risks. However, the semiconductor market is expected to recover in 2024.

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**

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

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:

- 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.

The WSC calls on the GAMS to take note of these suggestions and implement them as feasible.

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.

2022 PFC data were characterized by a decline in both absolute and normalized emissions. This decrease is due to both the implementation of the new methodology (IPCC 2019, tier 2c, AR5 GWPs) and emission reductions efforts by companies. 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.

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 has started working on the data collection in 2024 and intends to report 2023 data at the GAMS 2024 meeting.

The WSC will publish industry-wide progress on the 2030 goal on an annual basis. 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. the 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

PFOA phase out

The WSC is pleased to report to Governments/Authorities that the semiconductor industry globally has successfully completed the phase-out of intentional uses of perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds in photolithography and etch processes, and therefore the industry no longer has a need for such exemptions in semiconductor manufacturing, such as those afforded under the UN Stockholm Convention. This elimination is a major environmental management achievement for the worldwide semiconductor industry that has been working on managing and substituting these uses of PFOA. The WSC will also report this successful action to the United Nations POPS-RC. (See Annex 2.)

Like the industry's previous phase-out of PFOS announced by the WSC in 2017, the industry's ability to eliminate the use of PFOA was the result of a concerted effort by semiconductor companies and their suppliers over many years and required a significant investment of resources and technical expertise to identify, qualify, and integrate alternative short-chain PFAS that meet the demanding performance requirements of the semiconductor industry. The WSC appreciates Governments/Authorities for working with the industry to provide appropriate exemptions over time that enabled the industry to achieve this result in an orderly fashion. This result demonstrates that the global semiconductor industry and Governments/Authorities, working in a coordinated manner, can achieve shared environmental goals.

As Governments/Authorities continues its 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.

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

Specifically, the WSC recommends that Governments/Authorities take into account 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 any regulations provide 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 be provided with 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.

PFAS model challenges

The WSC recognizes that it is important to develop a greater understanding of the uses and releases of PFAS in semiconductor manufacturing processes. In order to 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 will facilitate 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 support fundamental research methods to detect, treat, and abate PFAS in semiconductor manufacturing applications, as well as 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 has established a 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.

(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. The 2023 results will be published at the JSTC/GAMS meeting in October 2024.

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 (WIPO) 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 requests that 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 court 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. Semiconductors are the "brains"

inside critically important electronic systems, including healthcare and medical equipment, electric power grids, communications systems, automotive systems, and aviation systems. 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.

Counterfeiting threatens the innovation-driven economy that underpins prosperous societies and industry sectors like semiconductor manufacturing. The WSC supports proactive industry and law enforcement activities to prevent trademark infringing and counterfeit semiconductors from being sold on online platforms. To promote further awareness of online challenges and mitigation practices, the WSC has produced a paper on *Counterfeit Semiconductors and the Online Environment*. 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. As part of WSC awareness-raising, the WSC will support the World Anti-Counterfeiting Day on June 5, 2024 which highlights the problems and risks caused by counterfeits. (See Annex 3.) Moreover, WSC members engage with national 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 has circulated widely the WSC's White Paper "Winning the Battle against Counterfeit Semiconductor Products," available here.

The WSC appreciates the GAMS' commitment to fighting semiconductor counterfeiting. The WSC looks forward to continued coordination in stopping counterfeits and will continue to cooperate with GAMS customs and enforcement authorities across all regions of the WSC in these efforts.

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 welcomes the GAMS' support for the WSC Encryption Principles, which 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.

The WSC underlines the importance of non-discriminatory implementation thereof, in particular as regards the issuance of essential certifications to operate in a given domestic market.

The WSC supports the GAMS statement, in the 2023 GAMS Chair's Summary, that "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 encourages GAMS to continue the dialogue, making use of the results of the 2023 and 2024 WSC Self-Assessment Surveys to complete the review, analysis and assessment of relevant policies and measures by the 2024 GAMS Encryption Workshop and GAMS meeting with a view to the full implementation of the WSC Encryption Principles.

The WSC is pleased to note the good progress on non-discriminatory access to standardization organizations with respect to cryptography achievements. Recently, some international stakeholders became members of TC260 Working Group 3 (WG3). **The WSC encourages GAMS to continue discussing non-discriminatory access to standardization organizations for international stakeholders.**

VII. Customs and Tariffs

WTO Moratorium on Customs Duties

The WSC applauds the decision by WTO members at 13th Ministerial Conference (MC13) to maintain the current practice of not imposing customs duties on electronic transmissions, but expresses grave concern over the potential for the Moratorium to expire as early as the 14th Session of the 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 and the growth of the digital economy. The cross-border exchange of knowledge, technical know-how, and scientific and commercial information across transnational IT networks, as well as access to digital tools and global market opportunities have played a vital role in sustaining and developing global economies and living standards. It has strengthened supply chain resilience by bringing developing countries into global technology supply chains, and has supported higher living standards through the expansion of global services and education.

Continuation of the Moratorium is also important to efforts to promote supply chain resilience, including semiconductors. 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 seamless movement of semiconductor data across borders is essential to the healthy functioning of global semiconductor supply chain. 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.

While some Members are likely to continue the Moratorium on a plurilateral basis, those that impose tariffs are likely to find themselves locked out of global technology and services supply chains because of their higher costs and the bureaucratic complexities inherent in collecting tariffs on something as ephemeral as data flows. The imposition of tariffs on cross-border data and on a massive array of global services dependent on delivery through cross-border data transmissions also would be an enormous step backward for the WTO at a time when the global trading system faces serious challenges.

In light of the above, the WSC urges GAMS to start working immediately with the other WTO members on an extension of the Moratorium and develop a WTO agreement that ensures semiconductor and semiconductor-related data and digital tools are permanently 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 harmonised and 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 in semiconductors and facilitates trade through reduction of unnecessary complexity and administrative burden. It is therefore important that new and innovative semiconductor products are integrated into the HS through its regular review cycles.

The WSC is grateful to the GAMS and their Customs Services for their continued cooperation on customs classification matters. This cooperation has recently led to important clarifications in the World Customs Organisation with regard to the classification of certain Multi-Chip ICs. These products will be soon classified in the semiconductor family of products under HS heading 8542, providing much-needed simplification in classification operation for companies and Customs authorities alike.

The WSC calls on GAMS to further build on their recently ongoing cooperation and support the WSC proposal to include "Smart printed circuit board" (or Smart PCBs) in the HS by amending HS heading 8534 (Annex 4) The WSC calls on GAMS to cooperate with its customs services to achieve the implementation of this amendment to HS heading 8534 within the HS2027 review.

Information Technology Agreement

Information Technology Agreement (ITA) The ITA and its Expansion (hereinafter "the Agreement") have greatly accelerated trade in semiconductors and semiconductor-enabled technologies.

The Agreement has generated a very significant increase in the value of global semiconductor-related trade, making semiconductors one of the most globally traded products today.

The expanded deployment of semiconductor-enabled technologies has had a profound impact on society and the economy. It has spurred productivity, boosted worldwide innovation, and made significant contributions toward solving global societal challenges like healthcare, climate change, secure connectivity, education, and more.

Ever faster technological innovation has continued in the semiconductor industry since the 2015 ITA-Expansion Agreement was signed. As a result, there currently are semiconductor products, manufacturing equipment, healthcare technologies, and materials which fall outside the scope of the Agreement.

The rapid technological development has meant that products that were not on the market or not identified in international customs classifications at the time the Agreement was signed are now on the market but are not covered by the Agreement today. These products include a myriad of indispensable components of devices which are critical, for example, to telecommunications, connectivity, remote healthcare, reductions in carbon emissions, energy usage, and transport infrastructure.

The WSC strongly supports a continued update of the ITA product scope in line with technology developments. Given the unique role semiconductors and semiconductor-enabled technologies play in advancing solutions to global challenges, the WSC urges Governments and Authorities to start working without delay to expand the product and country coverage of the ITA and explore the launch of a new round of negotiations over an ITA-3.

VIII. Regional Support Programs

The WSC continues to encourage governments/authorities to ensure that semiconductor support programs are transparent, non-discriminatory, avoid market and trade distortions, are guided by market-based principles, and are fully consistent with the GAMS Regional Support Guidelines and Best Practices (Guidelines) and WTO rules.

The WSC welcomes GAMS' support for full implementation of the Guidelines, developed by the WSC and adopted by the GAMS in 2017. The Guidelines reflect the 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 welcomes the GAMS' ongoing commitment to increasing transparency through the regular sharing of information, analysis, and assessment of subsidies and other forms of regional support. 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. Since 2017, 42 semiconductor-related programs have been covered over the first two phases of information exchange (Phase 1 and Phase 2). An additional 12 semiconductor-related programs are included in the Phase 3 information exchange initiated at the WSC meeting in 2023. Before beginning Phase 3, the WSC agreed to a set of process improvements to ensure the timely, equitable, and reciprocal sharing of information by all regions. GAMS welcomed these process improvements and committed to continue intersessional work between the GAMS through an exchange of written questions and responses on Phase 3 regional support programs.

The WSC continues to pursue work on the best practices for government/authority transfers (grants, loans, equity infusion and loan guarantees),

including by reaching consensus on several specific best practice principles in the draft paper: Transparency and Market Based Principle – Substantial Recipient Stake (Annex 5).

The WSC requests GAMS to complete the analysis and assessment of the Phase 3 programs, with respect to consistency with the Regional Support Guidelines and Best Practices at a 9th Workshop on Regional Support at the 2024 GAMS Meeting. The WSC presents to GAMS a proposal for the workshop agenda, and requests that GAMS members work to finalize an agenda and invite appropriate officials in their regions to participate in this workshop (See Annex 6). The WSC also requests GAMS to continue and review the process of regular exchanges in support of full implementation of the Regional Support Guidelines and Best Practices, and continue the discussion of best practices for government/authority transfers at the GAMS level.

The WSC welcomes the October 2022 GAMS agreement to work together to maintain the effectiveness of existing WTO disciplines, as well as to reform the WTO to help it meet new challenges.

IX. Global Supply Chain

The WSC appreciates the complexity, value and importance of the global supply chain to the semiconductor industry. In response to the invitation by GAMS to continue cooperative efforts to examine ways and means to increase resilience, security and transparency of the global supply chain, with the aim to help mitigate shortages of semiconductors, the WSC presented an initial report of semiconductor global supply chain.

The WSC invites GAMS to acknowledge the complexity of the semiconductor global supply chain, and the fact that it would be virtually impossible for any single region to replicate all of the elements of the current global supply chain. To this end, the WSC is committed to deepening its understanding of the global supply chain, including all the elements, and the interactions among them, with the aim to preserve the healthy functioning of the global supply chain.

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 October 2024 in Berlin, Germany.

XI. *Next Meeting*

The next meeting of the WSC will be hosted by the Semiconductor Industry Association in China in May 2025.

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:
http://semicon.jeita.or.jp/en/

Semiconductor Industry Association in Korea:
http://www.ksia.or.kr

Semiconductor Industry Association in the US:
http://www.semiconductors.org

Annexes:

Annex 1: Why should students join the semiconductor industry? Four compelling reasons

Annex 2: Semiconductor Industry Statement to the UN Stockholm Convention POP-Review Committee on the Phase-Out of PFOA

Annex 3: WSC Supports World Anti-Counterfeiting Day

Annex 4: WSC proposal to include “Smart printed circuit board” (or Smart PCBs) in the HS by amending HS heading 8534

Annex 5: Key Principles for Governments/Authorities on Transfers of Government/Authority Funds

Annex 6: Proposed Agenda for the 2023 GAMS Workshop on Regional Support

Annex 1: Why should students join the semiconductor industry? Four compelling reasons

1. Cutting Edge, Innovative, Exciting and Growing

- Semiconductors serve as the brains of essential goods in our modern society around the globe and are indispensable to our daily lives: e.g., Artificial Intelligence, Big Data, Gaming, Virtual Reality, Wearables, self-driving cars, smart phones, PCs, smart homes and home entertainment, work-from-home technology, the internet of things and linked appliances, buildings and cities, etc. ***Join this important cutting edge, innovative, and exciting industry!***
- Semiconductors are the drivers enabling exciting future technologies that will improve our quality of life in ways that may be beyond our imagination today. ***The global semiconductor industry is expected to go through a decade of steady growth and become a trillion-dollar industry by 2030*** (Source: McKinsey).
- Working in the semiconductor industry, and IC design in particular, gives our people the "bragging rights" to friends, family and future generations that they contribute directly to the state-of-the-art technologies that people are using in everyday life.

2. Making a Meaningful Contribution to a Sustainable World & Better Health

- Semiconductors are the foundation for making our planet more sustainable, and our loved ones healthier. ***Join the industry and make a real difference that helps our planet and its people, at a time when semiconductors' greatest potential lies ahead!***
- Semiconductors enhance our lives and contribute to a cleaner environment through addressing climate change and promoting clean energy: e.g., green technologies, energy savings and green goods, energy harvesting, energy-efficient sensing.
- Semiconductors also play a crucial role in modern healthcare and will play an even more important role in future advances: e.g., AI medical devices, bio/genetic and personalized medicine, wearable diagnostics, etc.

- Semiconductors are enabling new technologies that transform society for the better, including brain-inspired computing, smart devices, robotics, and artificial intelligence.

3. Interconnected Value Chain & Varied Job Opportunities

- Semiconductors result from cross-industry collaboration, with an intricately interconnected supply chain spanning device manufacturing, foundry, fabless, SME, materials, and packaging in locations across the world. This collaboration offers diverse job opportunities and career paths. Individuals can explore various roles within different industry segments, in different countries, working in areas such as R&D, engineering, and manufacturing. ***Join this industry and avail yourself of diverse career options for growth and mobility, both intellectually and internationally!***
- A vibrant working environment is fostered through extensive collaborative research involving universities, research institutions, and industry partners. From engineering, to research and development, to business and marketing, there are diverse career paths within the semiconductor value chain***. Join this industry for a truly global perspective with opportunities to collaborate with renowned innovation and research centers, diverse nationalities, and universities and research institutions!***
- There are many exciting career paths and lucrative job opportunities within the semiconductor industry for people of different educational backgrounds. And there are many programs aimed at welcoming and enhancing women's participation in this industry.

4. Lucrative and Stable Income

- Given the fundamental importance and projected growth of the semiconductor industry, it offers opportunities for advancement, high income, stability and work life balance. ***Join this industry for a financially secure future!***

Annex 2: Semiconductor Industry Statement to the UN Stockholm Convention POP-Review Committee on the Phase-Out of PFOA

June 2024

The associations of the global semiconductor industry appreciate the work performed by the Secretariat on behalf of the POPs Review Committee (POP-RC) of the Stockholm Convention regarding specific exemptions and acceptable purposes for the use and production of perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds, as listed in Annex A to the Convention.

A global industry entity, the World Semiconductor Council (WSC), announced in June 2024 that, as of 2023, all associations have successfully completed the phase-out of intentional uses of PFOA in photolithography and etch processes, and therefore the industry no longer has a need for such exemption. We are glad to report this successful elimination of this use of PFOA in our industry two years prior to the 2025 restriction under Part X of Annex A.

The industry's ability to eliminate these uses of PFOA, its salts, and PFOA-related compounds was the result of a concerted effort by semiconductor companies and their suppliers over many years and required a significant investment of resources and technical expertise to identify, qualify, and integrate alternative chemicals that met our demanding performance requirements. We appreciate the POP-RC for working with the industry to provide appropriate exemptions over time that enabled the industry to achieve this result in an orderly fashion. This result demonstrates that the global semiconductor industry and the POP-RC, working in a coordinated manner, can achieve shared environmental goals.

As the POP-RC continues its work on other chemicals of potential interest to the semiconductor industry, including the ongoing work on other PFAS substances, we are hopeful the POP-RC and the semiconductor industry are able to continue to work together to achieve environmentally beneficial results in a manner consistent with our technological and business needs.

As we have informed the Secretariat and the POP-RC previously, the semiconductor industry relies on chemicals (such as short-chain PFAS) that possess specific chemical and physical properties and functional attributes required to manufacture semiconductor devices. There currently are no known alternatives to many of these chemicals for use in our manufacturing processes. For this reason, replacing these chemicals may prove to be more difficult even than the PFOS and PFOA challenges. The industry has a demonstrated record of responsible chemical use and management, including minimizing emissions, identifying and implementing substitutes, and reducing use of these chemicals when and where possible. We will continue this work in the future. When considering taking action on future chemicals that may be critical to the semiconductor industry, we recommend the POP-RC to take into account a variety of factors in their reviews of chemicals, such as criticality of specific chemicals, the availability of proven substitutes, the time needed to qualify and transition to substitute chemicals if available, the limited potential risk of exposure to workers, and the fact that these chemicals are not intended to be released from the finished product under normal conditions of use.

We further suggest that if taking action in the future on chemicals of concern, the POP-RC continue to work cooperatively with the semiconductor industry to ensure use exemptions are established to provide the time necessary for the industry to identify and qualify alternatives.

SIA in China
SIA in Chinese Taipei
SIA in Europe
SIA in Japan
SIA in Korea
SIA in the United States

Annex 3: WSC Supports World Anti-Counterfeiting Day

On 5th June 2024, the EU's Intellectual Property Office and Global Anti-Counterfeiting Group are celebrating the 26th edition of the World Anti-Counterfeiting Day (WACD). The World Semiconductor Council (WSC) strongly supports the WACD and believes it is a great initiative to highlight the anti-counterfeit measures being taken across industries. In recent years, the overall semiconductor shortage has shown that counterfeiters are now more active and have shifted trademark infringing online offerings of semiconductors to less well-known online platforms.

In 2012, the WSC has established an Anti-Counterfeiting Task Force amongst the semiconductor industry associations of China, Chinese Taipei, Europe, Japan, Korea, and the United States, with the aim of promoting activities to fight counterfeiting, including training, awareness raising, and encouraging purchases from authorised sources. The WSC works closely with governments and authorities on policies and regulations, and encourages domestic, bilateral, and multilateral countermeasures and enforcement activities. Such enhanced anti-counterfeiting cooperative activities at the industry level alongside government agencies, customs and law enforcement agencies are instrumental to identify and stop parties involved in manufacturing or trafficking in counterfeit goods. The World Anti-Counterfeiting Day enables the organisation of various events focusing on problems of counterfeiting & piracy under the umbrella of an international outreach campaign.

According to the Organisation for Economic Co-operation and Development (OECD), international trade in counterfeit goods represented up to 2.5% of world trade, or up to USD 464 billion[2] in 2019. In view of these staggering numbers, the WSC is convinced of the importance of an initiative such as the World Anti-Counterfeiting Day, especially as counterfeit products are expected to circulate rapidly to meet current high demand and believes it to be a great way of highlighting the common cause of fighting counterfeiting – industry sectors alongside well-informed customers, and national enforcement authorities.

[2] Source: Organisation for Economic Co-operation and Development (OECD)–European Union Intellectual Property Office (EU IPO) (2021), *Illicit Trade, Global Trade in Fakes A WORRYING THREAT*

Annex 4

- HS 2027 Review -

Proposed amendments to HS Chapter Notes and Explanatory Notes for heading 85.34

Chapter 85 – Legal Notes

8. For the purposes of heading 85.34

a) "printed circuits" are circuits obtained by forming on an insulating base, by any printing process (for example, embossing, plating up, etching) or by the " film circuit " technique, conductor elements, contacts or other printed components (for example, inductances, resistors, capacitors**,** **transducers**) alone or interconnected according to a pre-established pattern, other than elements which can produce, rectify, modulate, or amplify an electrical signal (for example, semiconductor elements)

~~The expression "printed circuits" does not cover circuits combined with elements other than those obtained during the printing process, nor does it cover individual, discrete resistors, capacitors or inductances. Printed circuits may, however, be fitted with non printed connecting elements.~~

b) ***"Smart printed circuits (smart PCBs)" are obtained by embedding one or more semiconductor components (i.e. discrete active or passive elements or electronic integrated circuits, bare or encapsulated) or other non-semiconductor-based components into "printed circuits" referred to in Note 8.a) to Chapter 85. Smart PCBs might be able (but not limited) to produce, rectify, modulate or amplify an electrical signal or to perform logical functions (for example by means of integrated circuits).***

Printed circuits ***and smart printed circuits*** may, however, be fitted with non-printed connecting elements.

Thin or thick film circuits comprising passive and active elements obtained during the same technological process are to be classified in heading 85.42.

HS Explanatory Notes for Heading 85.34 Printed circuits

In accordance with Note 6 to this Chapter, this heading covers the circuits which are made by forming on an insulating base, by any printing process (conventional printing or embossing, plating up, etching, etc.), conductor elements (wiring), contacts or other printed components such as inductances, resistors, capacitors, ***transducers*** (" passive " elements).

In smart PCBs semiconductor or other non-semiconductor-based components are embedded into the built-up layers of a typical printed circuit board. This allows building highly compact electronic systems. Components are embedded either in a single or into

multiple layers of the PCBs build-up with an two or three-dimensional interconnection architecture.

Depending on the available components (semiconductor or other non semiconductor based chips or components) and their respective connectors, different methods can be applied for the embedding. The highest degree in miniaturization and performance is achieved by embedding of bare dies (semiconductor chips without package). On the other hand, packaged components, as commercially available, could also be embedded into the built-up layers of the printed circuit board. In this manner, highly compact and robust systems with a two or three dimensional interconnection architecture could be created.

Some basic or " blank " circuits may comprise only printed conductor elements generally consisting of thin uniform strips or wafers with, if appropriate, connectors or contact devices. Others combine several of the above elements according to a pre-established pattern.

The insulating base material is generally flat but may also be in the shape of a cylinder, a truncated cone, etc. The circuit may be printed on one or both sides (double circuits). Several printed circuits may be assembled in multiple layers and interconnected (multiple circuits)~~.~~ ***or have embedded components, (i.e., Smart PCBs).***

The heading also covers thin or thick film circuits consisting solely of passive elements.

Thin film circuits are formed by the deposition on glass or ceramic plates of specific patterns of metallic and dielectric film, by vacuum evaporation, cathode sputtering or chemical methods. The patterns may be formed by deposition through masks or by deposition of a continuous sheet with subsequent selective etching.

Thick film circuits are formed by screen printing onto ceramic plates of similar patterns, using pastes (or inks) containing mixtures of powdered glass, ceramics and metals with suitable solvents. The plates are then furnace fired.

Printed circuits may be provided with holes or fitted with non printed connecting elements either for mounting mechanical elements or for the connection of electrical components not obtained during the printing process. Film circuits are generally supplied in metallic, ceramic or plastic capsules which are fitted with connecting leads or terminals.

Individual passive components such as inductances, capacitors, resistors ***or transducers*** obtained by any printing process are not regarded as printed circuits of this heading but are classifiable in their own appropriate headings (e.g., heading 85.04, 85.16, 85.32, 85.33 or 85.41).

Circuits on which mechanical elements or electrical components have been mounted or connected are not regarded as printed circuits within the meaning of this heading. They generally fall to be classified in accordance with Note 2 to Section XVI or Note 2 to Chapter 90, as the case may be.

Annex 5: Key Principles for Governments/Authorities on Transfers of Government/Authority Funds

Transparency – All transfers of government/authorities funds (including grants, loans, equity infusions, loan guarantees, provision or purchases of goods and services, forgone government revenue, e.g. tax credits, etc.), covered by Article 1.1 of the WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement), which are specific to the semiconductor industry and made within a GAMS region's territory, should be notified to the WTO pursuant to SCM Article 25, and to the WSC and GAMS pursuant to the WSC/GAMS Regional Support Guidelines and Best Practices in the interests of transparency, including transfers channeled through a government funding mechanism or a private body which is entrusted or directed by a GAMS authority to carry out one or more types of functions identified in SCM Article 1.1 (a) (1) (iv). Such notifications should be sufficiently specific to enable WSC and other GAMS Members to evaluate the trade effects and to understand the operation notified regional transfer programs.

Market Based Principle - Substantial Recipient Stake – All government/authority transfers of funds should be guided by market-based principles. The competitiveness of companies and their products, and not the interventions of governments and authorities, should be the principal driver of industrial success and international trade. To ensure that government/authority transfers by GAMS authorities covered by SCM Article 1.1 (including grants, loans, loan guarantees, provision or purchases of goods or services, equity infusions, forgone government revenue, e.g. tax credits, etc.) to specific semiconductor projects, operations, or facilities are market-based, a government/authority transfer should be matched by equivalent or substantial funding contributions from the recipient, which is financially accountable and has substantial capital, debt obligations, and/or funds at risk, so as to provide that such project, operation, or facility is guided by market forces, subject to market disciplines, and reflects an independent, market-based determination by the recipient as to the commercial viability of the project, operation, or facility from the standpoint of long-term returns and risks. This principle represents only one tool for use by a GAMS authority to ensure that a government transfer is market-based, but does not preclude the use of other tools, factors, tests, or requirements for this purpose.

Annex 6

2024 GAMS Workshop on Regional Support

5 min	**Welcome and Introduction by GAMS Chair**	**EU GAMS Chair**
5 min	WSC Guidelines & Best Practices	Regional Support TF Chair
60 min	Presentation and Q&A on Phase 3 Programs	GAMS Delegates
5 min	Update from the WSC on 2 Key Principles for Best Practices for Government/Authorities Transfers	Regional Support TF Chair
10 min	Coffee Break	
40 min	Regional support programs in non-GAMS regions Best Practices for Regional Support Programs	Outside experts Non WSC region experts
10 min	Conclusions	EU GAMS Chair

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