SIA-India Submission to the Ministry of Commerce and Industry

on

Leveraging the Indo-Pacific Economic Framework for Prosperity (IPEF) Pillar II (Supply Chain)

Background Note

The Indo-Pacific Economic Framework for Prosperity (IPEF), launched in May 2022, is a transformative initiative that underscores the commitment of its 14 member countries, including India, to fostering fair trade, resilient economies, and inclusive growth. Covering a significant portion of global GDP, trade, and population, the IPEF's pillar-based approach promotes ambitious standards and common rules across critical areas: trade, resilient supply chains, clean economy, and fair economy. India's active participation, particularly as a signatory to the Supply Chain Resilience Agreement (Pillar II), highlights its strategic role in enhancing regional economic cooperation and ensuring the stability and prosperity of the Indo-Pacific region. By being a part of this dynamic framework, India is contributing to shaping a future-oriented, equitable, and sustainable economic landscape.

The IPEF's role would be highly relevant for the space sector in India. By fostering resilient and secure supply chains, IPEF can help ensure the availability of critical components and materials needed for space and defence missions, satellite manufacturing, and advanced technology development. The framework's emphasis on collaboration and fair trade practices among member countries also supports India's growing space industry by promoting international partnerships, reducing dependency on single-source suppliers, and enhancing the robustness of the entire space ecosystem.

India's heavy reliance on imports for critical components and products in the space sector exposes the nation to significant vulnerabilities and risks of supply chain disruptions. In the fiscal year 2021-22, India imported space technology items worth ₹2,114.00 crore, while export earnings in the sector amounted to only ₹174.9 crore, indicating that import expenses are 12 times higher than export revenues.[1]

SIA-India commends the Ministry of Commerce and Industry for recognizing the space sector as a critical area for strengthening India's role in global supply chains through the IPEF. This marks the first time the space sector has been identified as essential due to factors such as high dependency on a single supplier, limited alternative sources, significant import needs, insufficient domestic production capacity, and its interconnectedness with other vital industries.

[1] The Hindu. (2024, August 15). *Import expenses 12 times of export earning in space technology sector*. The Hindu. https://www.thehindu.com/news/national/import-expenses-12-times-of-export-earning-in-space-technology-sector/article66486078.ece

SIA-India has undertaken the initiative to gather industry insights and present a comprehensive analysis to the ministry. This unprecedented opportunity for the industry should be leveraged to build a more robust and self-reliant space sector in India, ensuring long-term growth and global competitiveness.

Through this submission, SIA-India aims to identify and address key vulnerabilities in the space sector supply chain before they become bottlenecks. The goal is to enhance the resilience of India's supply chain ecosystem and leverage improved government-industry coordination to minimize potential disruptions.

SIA-India Submission includes:

- *List Critical Components*: Critical components/products in the space sector with high import dependency. Identify and list critical components currently imported, such as satellite payloads, high-precision sensors, propulsion systems, advanced materials, and electronic systems.
- *Policy Recommendations*: Provide actionable policy recommendations to the government to *build supply chain resilience and reduce import dependency,* and improve India's position in the global space commercial market.

Critical components/products in the space sector with high import dependency

India's space industry faces challenges due to a lack of domestic production capacity for certain critical advanced technological products. While Indian industries supply most materials, approximately 10% of launch vehicle components and 50-55% of satellite components are still imported.[2] The importance of this issue is underscored by the fact that in 2020, ISRO managed to deliver only half of its planned satellites due to a shortage of electronic components. [3] India's dependence on imports is significant, with the country importing INR 6,207 billion worth of electronic products in 2023.[4] The semiconductor sector is particularly vulnerable, with consumption expected to exceed USD 80 billion by 2026, yet the entire supply is imported due to the capital-intensive nature of chip manufacturing and its reliance on reliable access to power and water. In 2021, China exported approximately USD 25.94 billion worth of semiconductors to India, while exports from other countries like Hong Kong, Vietnam, and Singapore were substantially lower.[5] These examples highlight the critical need to push for domestic manufacturing of key components within the space industry or diversify the supply chain to mitigate risks from geopolitical disruptions, raw material shortages, economic instability, and global trade tensions.

Various critical advanced technological products lacking domestic production capacity and several such requirements, not mentioned in the list, pose a challenge in procurement and production. The enlisted products are as follows:

Name of the Critical Product	Description	HS Code and Nomenclature	Partial/Full Matching with HS code	Top Source of import
Spacecraft	Includes satellites and suborbital and spacecraft launch vehicles	880260 / Spacecraft (including Satellites &	Full	

[2] Indian Space Research Organisation. (n.d.). *Indigenisation*. Retrieved from https://www.isro.gov.in/Indigenisation.html

[3] Economic Times. (2020, January 10). *India's lack of electronics manufacturing ecosystem is hurting ISRO's space plans*. The Economic Times. https://economictimes.indiatimes.com/news/science/indias-lack-of-electronics-manufacturing-ecosystem-is-hurting-isros-space-plans/articleshow/73182823.cms?from=mdr

[4] Statista. (2023). *Import value of electronic products in India from financial year 2015 to 2023*. Statista. https://www.statista.com/statistics/625751/import-value-of-electronic-products-india/

[5] India Business Trade. (2023, April 17). *Indian semiconductor industry: From a chip taker to a chip maker*. India Business Trade. https://www.indiabusinesstrade.in/blogs/indian-semiconductor-industry-from-a-chip-taker-to-a-chip-maker/

		Suborbital) Spacecraft Launch Vehicles		
Spacecraft Parts	Parts specifically for spacecraft	88039000/ Other Parts of Goods of HDG 8801 and 8802	Partial	
Compound Semiconductors	Semiconductor devices not elsewhere specified	854150/ Other Semi-conductor devices	Partial	
Epitaxy Machines	Molecular beam epitaxy equipment	848620/ Machines and apparatus for the manufacture of semiconductor devices or electronic integrated circuits	Partial	
Triple Junction or Silicon Solar Cell	Solar Cells, assembled in modules or made up into panels	854143/ Photovoltaic Cells assembled in modules or made up into panels	Full	
Engineering Composite Material	Composite materials for space applications and launch vehicles	681599/ Articles of stones or of other material substances, n.e.s.	Partial	
ADCS/AOCS for Spacecrafts	Attitude, Orbit Determination and Control Subsystem	88039000/ Other Parts of Goods of HDG 8801 and 8802	Partial	
Gyroscope	Gyroscope for Spacecrafts	901420000/ Instruments and appliances for aeronautical or space navigation (other than compasses)	Full	
Reaction Wheels	Reaction wheels for Spacecrafts	88039000/ Other Parts of Goods of HDG 8801 and 8802	Partial	
Star Trackers	Star trackers for spacecraft navigation	901420000/ Instruments and appliances for aeronautical or space navigation (other than compasses)	Full	
RF Communication systems	RF communication systems for spacecrafts	85256092/ Other satellite communication equipment	Partial	

Antenna	Antennas for spacecraft	85291029/ Other antennas for other use	Partial	
Optical Payloads for Spacecraft	Optical payloads such as MSI, Hyperspectral, IR	901580/ Other instruments and appliances	Partial	
Sensors for Spacecraft and Launch Vehicle	Sensors for Spacecraft and Launch Vehicle	90318000/ Other measuring & Checking instruments, appliances & machines	Partial	
Avionics	Advanced avionics for spacecraft	88039000/ Other Parts of Goods of HDG 8801 and 8802	Partial	
Space Grade Adhesives	Adhesives for space applications	35061000/ Products suitable for use as glues and adhesives put up for retail sales not exceeding 1 kilogram	Partial	
Space Grade Lubrication	Lubricants for space applications	340399/ Other lubricating preparations	Partial	
Space-Graded FPGA Boards	Field Programmable Gate Arrays for Space Applications	854239/ Electronic integrated circuits	Partial	
Hydrogen Peroxide (High Concentration)		284700/ Hydrogen peroxide whether or not solidified with urea	Full	
Jumbo Cylinder	Air Cylinders	73110030/ High pressure cylinder (Working pressure>35.2 kg/sqcm)	Partial	UK
Pump	Vacuum Pump	841410/ Vacuum Pump	Full	Germany
	Cryo pump			France/Switzerland
Image Sensor	Imaging Sensor for EO			
Coating Thermal and Optical Instruments				
Thrusters/propulsion systems for spacecraft				
Solid Rocket Motor Castings				

High-Temperature Thermal Protection System				
Precision Machining for Nozzles and Turbo pumps				
Cryogenic Temperature sensor	Temperature monitoring sensors			

SIA-India recommendations to build supply chain resilience and reduce import dependency

Enhance Domestic Production: Invest in research and development to boost local manufacturing capabilities for critical space components. Offer incentives and support for public-private partnerships to develop advanced technologies and reduce reliance on imports. This approach will help balance the trade deficit and strengthen India's position in the global space market.

Implement Anti-Dumping Measures: Enforce anti-dumping duties to protect Indian manufacturers from unfair competition posed by low-cost foreign imports. This will help preserve the competitiveness of domestic space technology firms and prevent market distortion.

Strengthen Coordination and Risk Management: Improve coordination between government and industry to address supply chain vulnerabilities proactively. Develop and implement robust risk management strategies to identify and mitigate potential bottlenecks, ensuring continuity in space missions and operations.

Promote Export Growth: Identify and support opportunities for increasing space technology exports. This includes enhancing the value proposition of Indian space products and improving market access to balance the trade deficit and elevate India's global standing in the space sector. Introduction of Productivity-Linked Incentives (PLI) or designed linked incentive scheme for the space sector especially for MSMEs. Such schemes should focus on promoting the manufacturing of emerging space technologies and incentivizing investments in the sector.

Simplification of Import Processes: Advocate for the inclusion of space sector-related imports, particularly those essential for satellite manufacturing and launch vehicle components, in the list of tax-exempt items. Provide subsidies on import taxes and Integrated Goods and Services Tax (IGST). Streamline customs procedures to reduce delays. Ease government procurement restrictions. Support navigating legal requirements with reduced administrative burden. This will reduce costs and foster growth in the private space sector by alleviating the financial burdens associated with importing crucial components.

Intellectual Property Rights and Standards: Enhance policies related to Intellectual Property Rights (IPR) and establish clear standards for space technology. To foster collaboration, protect innovations, and ensure compatibility across different technologies. To make the import process more efficient and attractive for international partners.

ITAR Reforms: Engage with U.S. authorities to negotiate reforms in International Traffic in Arms Regulations (ITAR) and simplify licensing processes. To mitigate delays and barriers in accessing high-end technologies.

Facilitation of Intra-Company Transfers: Address and reduce regulatory barriers to technology transfer within companies. To enhance the flow of technology and expertise within global firms operating in India.

Establishment of Joint R&D Centers: Set up joint research and development centers with global partners tailored to specific needs. To promote innovation and knowledge exchange in space technology.

Investment in Skill Development: Develop training and educational programs to build a skilled workforce for co-production and technological innovation. To address the skills gap and support the growing needs of the space sector.

Unified Standards and Protocols: Work towards developing and adopting unified standards and protocols for space technology and data exchange to ensure compatibility and interoperability across international systems and foster seamless technology integration.

Conclusion

SIA-India aims to gather industry insights to identify and address supply chain vulnerabilities in the space sector, thereby strengthening India's role in global supply chains through the IPEF. Members are requested to review the list in Annexure II and provide information on imported components and products, including their descriptions, import values (in million USD), top supplying countries, and dependency percentages on these countries.

Please submit this information by 10th August 2024. SIA-India will compile these inputs into a detailed submission for the Ministry of Commerce and Industry and CII.