



Comprehensive Industry Feedback Note from SIA-India on the
Draft Tamil Nadu Space Industrial Policy

As a dynamic, not-for-profit space sector association, SIA-India is dedicated to advancing sectoral interests, accelerating industry growth, and catalysing innovation through strategic engagements with key governmental and global stakeholders, policymakers, regulatory bodies, and standardisation entities, aiming to create a vibrant and innovative ecosystem within the civil, commercial and defence space domains.

SIA-India has gathered valuable feedback from various industry stakeholders regarding the Draft Tamil Nadu Space Industrial Policy. Below is a structured and detailed summary of the key points and suggestions received, capturing all relevant details and references from the original feedback documents.

1. Innovation and Partnership Ecosystem

- a. **Emphasis on Innovation Ecosystem:** The policy should highlight the importance of fostering a robust innovation ecosystem within Tamil Nadu, including collaboration with start-ups, established industries, venture capitalists, and well-established global examples of successful space innovation ecosystems like the Harwell Cluster/Space applications Catapult in the UK. ISRO's success in driving organic innovation should be extended to the broader space industry through some of these external partnerships.
- b. **Core vs. Non-Core Technologies:** Focus on indigenising and developing core technologies critical for a thriving local space industry while leveraging partnerships for non-core technologies. Core technologies are those on the critical path to achieving a self-sufficient space industrial ecosystem. These include essential technologies that are fundamental to the space industry's operations, such as satellite manufacturing and propulsion systems, ensuring self-reliance and strategic autonomy. Non-core technologies, which are important but not critical to immediate operations, can be acquired through global partnerships and collaborations. Differentiating between core and non-core technologies allows for building a strong foundation of essential capabilities locally while utilizing global expertise for advanced but non-essential technologies. This approach allows Tamil Nadu to build a strong foundation of essential capabilities locally while leveraging global expertise for advanced but non-essential technologies, promoting innovation, cost-effective development, and strategic autonomy.
- c. **Procurement Support:** Composite materials are highly controlled, and import restrictions can hinder quick progress. Additional support should be provided for overcoming procurement challenges for such critical materials, including easing background checks etc.

2. Certification and Incentives

- a. **Clarity on Certification Process:** Provide detailed and clear guidelines for certification processes to ensure clarity and inclusivity in incentives to benefit both new and expanding existing entities. Outline the mode and manner of technical assistance for obtaining necessary certifications from national and international agencies as mentioned in Chapter 6, Paragraph 6.3, and Chapter 7, Paragraphs 7.1.1.8 and 7.1.1.9 of the policy.
- b. **Inclusive Incentives:** Extend incentives not only to new investments from April 1, 2024 but also to existing space sector players who are expanding their operations. This clarification will help current players, who are in the process of implementing their space projects, in their decisions to engage and benefit from the Tamil Nadu Space Industrial policy.
- c. **Establish a Dedicated Government Body:** Establish a dedicated government body or liaison office that assists start-ups and companies in navigating the certification process. This body can provide end-to-end support, from application preparation to final approval, ensuring a smoother and faster certification process.
- d. **Enhanced Clarity on Selection Process:** The policy should provide a more detailed process for the selection of proposals, including specific criteria and factors considered for selection. For example, instead of the vague term "quality of proposal," (Page 63 part, Annexure III) concrete parameters should be defined to allow for a more objective assessment by the committee. This transparency will strengthen the selection process and ensure fairness.
- e. **Greater Autonomy for Utilisation of Funds:** To support start-ups in raising outside capital, the policy should grant greater autonomy to start-ups for the utilisation of funds. The current provision allowing the committee to suggest a different pattern of fund utilisation (Page 63 part, Annexure III) may hinder start-ups' ability to attract private sector capital, given the capital-intensive nature of the space sector. Allowing start-ups to follow their proposed utilisation plans will enhance their implementation success and attract investors.

3. Support for Start-ups and Existing Players

- a. **Inclusivity in Start-up TN Scheme:** Extend the benefits of the Start-up TN scheme to start-ups headquartered outside Tamil Nadu that wish to establish operations within the state. This approach will foster investment and setup operations by space players in Tamil Nadu.
- b. **Holistic Approach:** The Draft TN Policy clearly outlines the Tamil Nadu government's mission to create a self-sustaining space ecosystem within the state. To further this goal, policymakers should also consider the needs of space sector players and start-ups that are currently operational in other states but are looking to expand their operations, manufacturing, or development into Tamil Nadu. By accommodating these established players, the policy will foster a more comprehensive and inclusive space ecosystem in the state.

- c. Utilizing Existing MSME Ecosystem: Apart from the incentives for startups, the policy should also address the goal of utilising the existing MSME ecosystem. MSMEs should be supported in upgrading their quality standards and certifications to meet space sector requirements.

4. [Focus on Emerging Sectors](#)

- a. **In-Space Manufacturing:** In-space manufacturing is listed as one of the five key space sectors. This sector is poised to significantly benefit non-space industries such as biopharma, life sciences, and semiconductors globally. However, the current policy does not adequately cover in-space manufacturing in subsequent sections. It is crucial to recognise and address in-space manufacturing as a significant sector and detail its impact on various industries. The future of space manufacturing is expected to see substantial growth due to advancements in 3D printing and automated processes, which will enable the production of complex components directly in space. A tabular representation of including this in the table given on page 17 is enclosed as Annexure 1.
- b. **Microgravity Research:** New fields in the in-space economy are emerging. While microgravity research for in-space manufacturing (ISM) has been ongoing for decades, continuous production of profitable products is still nascent. Developing commercial space stations, free-flying platforms, and small re-entry capsules will expand this field. ISM includes in-orbit construction (for space), creating materials in microgravity (for Earth), and manufacturing on surfaces like the Moon, Mars, and asteroids. Supporting services in transportation, orbital platforms, and space mining are also evolving. The pharmaceutical industry, with its \$280 billion annual R&D spend, might invest in space companies to improve innovation returns and product development timelines. Applications include cell cultures for disease models and oncology drug research, potentially generating \$2.8 billion to \$4.2 billion in revenues.
- c. **Quantum Technologies:** In light of the rapid advancements in quantum technologies and their significant implications for secure communications, data protection, and other areas, the Tamil Nadu space policy must recognise Quantum Key Distribution (QKD), Cyber Quantum Encryption, quantum sensors, and quantum materials as critical areas of technological development and innovation. This recognition will ensure that these technologies are prioritised in policy discussions and funding allocations, fostering innovation and keeping Tamil Nadu at the forefront of technological advancements in the space sector.
- d. **R&D Incentives:** For R&D, specific provisions should include pre-registration, plan approval, and milestone-based incentives to offset the high costs and lengthy timelines of developing new technologies.

5. [Policy Refinements and Simplifications](#)

- a. **Definition of Space Industry:** Refine the definition of what constitutes a space industry company versus a general manufacturing or technology company. A space industry company is an entity primarily engaged in the design, development, manufacturing, and testing of space systems and components, such as satellites, launch vehicles, propulsion systems, space-grade materials, and related ground support equipment. This includes companies involved in space-based services like satellite communications, remote sensing, space tourism, and in-space manufacturing. Non-space-focused companies are those whose primary activities do not involve space-related products or services, such as general electronics manufacturers, consumer goods companies, or traditional IT service providers. This will prevent potential misuse of incentives by non-space-focused companies.

- b. **Simplified Incentive Structure:** Simplify the multiple incentive schemes in the Draft Tamil Nadu Space Industrial Policy while ensuring specificity and relevance, by consolidating similar incentives into broader categories such as "R&D Incentives," "Manufacturing Support," and "Infrastructure Development," with detailed sub-sections within each category to cater to specific needs. A comprehensive decision tree should be developed to guide companies through eligibility criteria and the application process, including clear criteria, examples, scenarios, and step-by-step instructions. Additionally, maintaining a robust feedback mechanism will allow regular input from industry stakeholders to refine the incentive structure, ensuring it remains relevant and effective. An online portal should be created to provide easy access to the decision tree, real-time assistance, and application submission. Implementing a transition period where both the original detailed incentives and the new consolidated structure are available will help companies adjust smoothly. This balanced approach promotes simplicity, clarity, and relevance, encouraging greater participation in Tamil Nadu's space industry initiatives.

6. Local Supply Chain and Human Capital Development

- a. **Local Supply Chain Requirements:** Introduce incentives for developing a local supply chain for companies engaging with this policy. This will help ensure the development of a robust local supply chain.
- b. **Targeted Skill Development:** To incentivise investments in human capital and promote upward social mobility, expenses incurred towards the training and upskilling of employees by eligible entities should be reimbursed. Paragraph 7.1.1.6 of the Draft Policy already provides a training subsidy, but it is limited to employees who are residents of Tamil Nadu. Given the significant number of migrant workers in the state, extending to cover their training is essential. To further incentivise local workforce engagement, a graded system of subsidies could be implemented, offering higher subsidies for upskilling local workers compared to migrant workers. Additionally, the policy lacks specific targets or programs for developing the specialised workforce needed for the space industry, which could become a significant bottleneck to growth. Setting clear targets and establishing dedicated programs for cultivating these specialised skills is crucial to ensure a steady supply of qualified professionals, thereby supporting the sustainable growth and competitiveness of Tamil Nadu's space industry.
- c. **Public Engagement and STEM Outreach:** To support the long-term growth and sustainability of Tamil Nadu's space industry, the policy should include initiatives aimed at promoting space science and technology among the public and students. Activities such as interactive exhibits, educational programs, workshops, and competitions in science parks, educational centres, museums, and schools can foster interest in space and inspire future careers in STEM fields. By integrating these efforts, the policy will raise public awareness, build a skilled workforce, and support the state's vision of becoming a leading hub for space activities.
- d. **Investing in educational programs** that cultivate skilled professionals in Deep-Tech fields like AI, Drones & UAVs, space tech, biotechnology, and quantum computing should go beyond just including these subjects in the curriculum. It should involve a comprehensive approach that encompasses not only teaching these subjects but also promoting hands-on practical experience, research opportunities, industry collaborations, and internships.
- e. **Commercialization of Research:** Promote the commercialization of space-related research conducted at universities and research institutions by supporting technology transfer offices and fostering partnerships with startups.

Enlisting Projects and Requirements: Develop a common portal to list and manage space-related projects. This portal can feature a list of in-state, out-of-state, and international projects. A bidding system for fair competition. TN government can setup a team of technical personnel, along with consultants, which can help bring in such projects from various locations worldwide.

7. Environmental and Sustainability Considerations

- a. **Environmental Safeguards:** The policy currently lacks specific provisions for environmental safeguards in space-related activities, which could become a significant issue, particularly for launch operations. For example, the Kulasekarapattnam SpacePort benefits from its strategic location near the cargo ports of Tuticorin and Nagapattnam, facilitating efficient transportation of satellite components and equipment. To support industry growth while ensuring sustainability, the policy should include specific provisions for environmental safeguards, especially for launch activities and spaceports like Kulasekarapattnam and expanded economic incentives for green practices. These measures will help maintain efficient operations, minimise environmental impact, and ensure long-term viability and community support for spaceport activities.
- b. **Sustainability Incentives:** Given the environmental impact of industries, the State Government should consider offering economic incentives to support companies in adopting environmentally friendly measures. Paragraph 7.1.1.7 of the Draft Policy already proposes subsidies for green initiatives like recycling waste and water for industrial use and sustainable energy usage. To further assist businesses, this can be expanded to include reimbursing a percentage of the capital costs for establishing effluent treatment plants and installing air pollution control devices. Additionally, offering reduced electricity tariffs for using renewable energy sources would make it more attractive for companies to adopt sustainable practices. By modifying Paragraph 7.1.1.7 to include these initiatives, the policy would help businesses reduce their environmental impact while also benefiting from economic incentives.

8. International Collaboration and New Space Economy

- a. **Explicit Provisions for Collaboration:** While the policy focuses on domestic industry development, it would greatly benefit from incorporating more explicit provisions for international collaborations and technology transfers. By strengthening these provisions, the policy can facilitate the influx of global best practices and cutting-edge technologies into Tamil Nadu. This approach will not only enhance the state's technological capabilities but also foster innovation and competitiveness within the local space industry. International collaborations can lead to valuable partnerships, knowledge exchange, and access to advanced technologies that may not be readily available domestically. Emphasising these aspects in the policy will ensure that Tamil Nadu remains at the forefront of global advancements in the space sector, ultimately driving growth and development.
- b. **Incentives for Small Satellite and Commercial Space Services:** The policy could be more explicit in addressing and incentivising new trends within the space economy, such as small satellite constellations and commercial space services. By specifically targeting these emerging areas, the policy would align itself with the latest developments in the space industry. Small satellite constellations are becoming increasingly important for various applications, including Earth observation, communication, and navigation. Similarly, commercial space services, ranging from space tourism to in-orbit servicing, are rapidly expanding and represent significant growth opportunities. By providing targeted incentives and support for these sectors, the policy can foster innovation and attract investment, ensuring that Tamil Nadu remains competitive and at the forefront of the evolving space economy. Addressing these trends explicitly will position the

state to take full advantage of the new opportunities presented by the dynamic and rapidly changing space industry.

9. Application and Infrastructure Support

- a. **Support for Downstream Applications:** To foster the growth of remote sensing and geospatial services start-ups, the policy should provide targeted support through dedicated funds, grants, and tax incentives, reducing their initial financial burden and enabling innovation. Promoting public-private partnerships will create demand for these services, offering start-ups opportunities to work on government and other significant projects. This comprehensive support will ensure the sustainable growth of this sector, contributing to Tamil Nadu's space industry development.
- b. **Infrastructure and Technology Access:** Ensuring affordable or free access to high-quality satellite imagery and advanced computing facilities, and government collected data is crucial for start-ups. The policy should facilitate data-sharing agreements with national and international space agencies to provide necessary data and resources. Investing in advanced computing infrastructure will enhance start-ups' capabilities, allowing complex data analysis and innovative application development. Establishing innovation hubs or centres of excellence for remote sensing and geospatial technologies will provide start-ups with resources, mentorship, and networking opportunities, fostering a collaborative environment that drives growth. By ensuring access to critical infrastructure and technology, the policy will enhance the competitiveness and sustainability of Tamil Nadu's space application industry.
- c. **Integration of Geospatial Data in Government Programs:** Encourage the use of geospatial data and remote sensing applications in various government programs such as urban planning, agriculture, infrastructure development, and disaster management. Establish dedicated projects and initiatives that leverage these technologies to enhance the efficiency and effectiveness of government services. Foster public-private partnerships to develop and implement geospatial solutions for public sector needs, and provide incentives for private companies to participate in these projects. Develop clear regulatory frameworks and data-sharing agreements to facilitate the use of geospatial data in government programs, and conduct training programs for government officials to build capacity in utilising these technologies effectively.

10. Land, Electricity, and Water Concessions

- a. **Clarity on Land Use Concessions:** To attract investors and businesses in the space industry, the policy should clarify conditions for stamp duty concessions, registration fee reductions, and land use conversion charges. Paragraph 7.1.1.4 of the Draft Policy links stamp duty concessions on private land acquisition to specific investment and employment commitments. These commitments should be clearly defined. Additionally, as registration fees are charged on an ad valorem basis and can be costly, offering similar concessions would help. Unique facilities like launch pads and test sites often cannot comply with traditional zoning and building norms. Therefore, they should be exempted or subject to modified regulations.

For converting agricultural land to non-agricultural use, providing concessions on land use conversion charges typically levied on an ad valorem basis, is recommended. These steps will set clear expectations and facilitate investment in Tamil Nadu's space industry.

- b. **Electricity and Water Tariffs:** To support the space industry's growth, the policy should offer concessions on electricity tariffs and water charges, particularly for water-intensive operations like spaceports and launch pads. In addition to the electricity tax exemption provided under Paragraph 7.1.1.5 of the Draft Policy, granting concessions on electricity tariffs will help reduce the significant variable costs over time for eligible entities. This measure will benefit all eligible businesses, regardless of their specific operations. Similarly, water charge concessions should be provided, especially for operations that require substantial water usage. By offering these concessions, the policy will alleviate the financial burden on space industry businesses, making operations more cost-effective and encouraging further investment in Tamil Nadu's space sector.

11. Transportation and Turnover Subsidies

- a. **Transportation Cost Support:** To alleviate the financial burden of transportation expenses for space industry businesses, the policy should provide concessions on toll and entry taxes, and reimburse a portion of transportation costs for capital goods. In scenarios where the State Government or local authorities levy tolls, entry taxes, or similar charges on goods being transported, offering concessions for specified goods commonly used in the industry will be particularly beneficial. This is especially relevant for capital-intensive businesses that require transporting large quantities of goods and materials, such as manufacturing units, propellant plants, testing facilities, and ground stations. Additionally, partial reimbursement of transportation costs for moving plant machinery and other large capital goods should be provided. This support will be especially valuable for smaller entities or those incurring significant transportation expenses, ensuring more cost-effective operations and encouraging investment in Tamil Nadu's space sector.
- b. **Turnover-Based Subsidy:** To encourage sustainable business growth and reduce the cost of capital for the state government, the policy should extend turnover-based subsidies to a broader range of entities and link them to incremental turnover. Currently, Paragraph 7.1.1.2 of the Draft Policy provides such subsidies only to entities supplying to "space majors," yet the policy lacks a clear definition or list of these space majors. Clarifying this definition will set clear expectations. However, limiting subsidies to entities supplying only to space majors may inadvertently discourage broader business development. Instead, expanding the scope to include other eligible entities will promote a more diverse and resilient business environment. Linking the subsidy to year-on-year incremental turnover, rather than total annual turnover, will incentivise continuous growth and innovation while reducing the financial burden on the state government, as subsidies will be based on the increase in turnover each year. This approach ensures that businesses are rewarded for their growth, fostering a dynamic and thriving space industry in Tamil Nadu.

12. Intellectual Property and Security

- a. **IP Registration Costs:** To encourage innovation and protect critical technologies, the policy should clarify and reimburse costs related to the registration of intellectual property both in India and abroad. Paragraph 7.1.1.10 of the Draft Policy mentions that the State Government will reimburse 50% of the expenditure incurred for patents, copyrights, trademarks, and geographical indicators registration. However, it is unclear whether this reimbursement covers the costs of developing intellectual property, registering it, or both. The policy should explicitly state that at least the registration fees incurred by eligible entities in India and offshore jurisdictions will be reimbursed. Protecting intellectual property rights over critical or strategic technologies is essential to foster innovation and ensure that innovators can benefit from their efforts. Notably, trademarks and patents need to be registered in each relevant jurisdiction to receive protection, and the associated filing fees can be substantial. By providing clear and comprehensive reimbursement for these costs, the policy will support and incentivise the development and protection of valuable intellectual property.
- b. **Security for Sensitive Facilities:** Given the sensitive nature of certain facilities in the space industry, such as propellant plants, launch pads, and ground stations, a higher degree of security is required compared to ordinary facilities. To ensure critical operations are adequately protected, the State Government should consider utilising state police forces to secure these sensitive sites. Providing this level of security will help safeguard crucial infrastructure and support the safe and efficient functioning of the space industry in Tamil Nadu.

13. State Support Agreements and Single-Window System

- a. **Model State Support Agreements:** To attract large investments and support critical infrastructure needs, the policy should develop model state support agreements for large projects. These agreements, common in industrial states, specify the support and cooperation the State Government will provide, addressing the challenges of operationalising large projects. The State Government should create a model agreement for eligible entities committing to projects of a defined scale, such as test facilities, launch pads, ground stations, and TT&C centres. These agreements can offer benefits beyond the Draft Policy, as large projects often need additional support. The support package could include assistance with land acquisition, provision of public utilities, expedited licensing processes, and additional financial support through grants, loans, or equity. This approach ensures clarity and attracts significant investments, facilitating the execution of large-scale projects in Tamil Nadu's space industry.

- b. **Enhanced Single-Window System:** To simplify and expedite the approval process for businesses, the policy should expand and streamline services on the Tamil Nadu Single Window Portal, emphasising deemed approvals. Following the enactment of the Tamil Nadu Business Facilitation Act, 2018, the State Government has established the Single Window Portal to provide a consolidated platform for obtaining various licenses, registrations, and permits from multiple departments. The State Government should review and expand the list of services offered through the portal, adding additional services currently missing. Furthermore, it is essential to ensure that as many services as possible are subject to deemed approval if no response is received within the prescribed timeline, as outlined in Section 12 of the Act. This will significantly enhance the efficiency of the approval process, making it easier for businesses to operate in Tamil Nadu.

14. Monitoring and Evaluation

- a. **Clear Metrics for Success:** The policy currently lacks clear metrics for measuring its success and impact. To address this, it should establish specific, measurable targets that will facilitate future evaluation and necessary adjustments. By setting these clear metrics, the policy can ensure it remains effective and responsive to industry needs over time, enabling continuous improvement and alignment with the evolving landscape of the space industry.
- b. **Regular industry engagement and advisory input** could enhance policy effectiveness as space is a dynamic sector. We suggest including sector associations in the various groups formed, that entails inviting representatives or members of industry associations to actively participate in the working groups or committees that are established to shape and implement policies and initiatives for the ecosystem.

These points represent a consolidated view of the industry's feedback and aim to enhance the Draft Tamil Nadu Space Industrial Policy. We trust this comprehensive note will assist in refining the policy to better serve the needs of all stakeholders.

Annexure 1:

Stream	Sector	Recent Developments	Future Developments Anticipated
Upstream	Microgravity Research & In-space Manufacturing	<p>Increase in the Number of Private Space Stations and Autonomous Platform Enablers</p> <p>Potential Interest from Biopharma Companies and Research Institutes in India</p> <p>Indian Orbital Space Station (Bharatiya Antariksha Station)</p>	<p>The future of space manufacturing will see significant growth due to advancements in 3D printing and automated processes, enabling the production of complex components and materials directly in space and reducing costly Earth launches. In-space manufacturing will benefit various industries like biopharma, life sciences, and semiconductors by leveraging microgravity for unique processes and superior materials. This research will lead to advanced materials with improved properties, driving innovation and economic growth. Increased international collaborations and partnerships are expected, with countries and companies working together on joint ventures.</p>