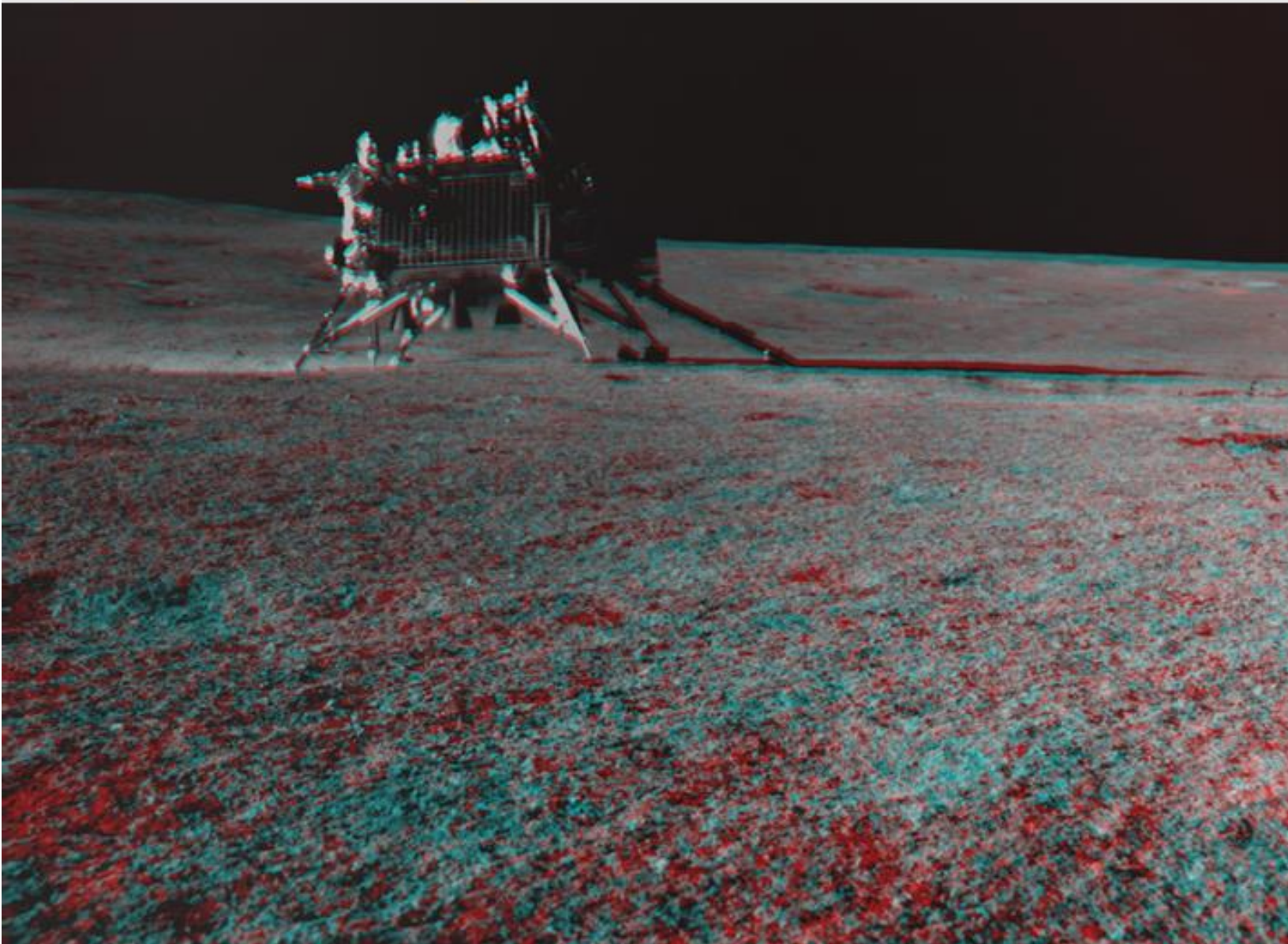


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# **Karnataka Space Technology Policy, 2024-2029 (Draft)**

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## Definitions and Acronyms

Acronym	Expansion
<b>AI/ML</b>	Artificial Intelligence/Machine Learning
<b>AIT</b>	Assembly Integration and Testing Facilities
<b>BEL</b>	Bharat Electronics Limited
<b>BHEL</b>	Bharat Heavy Electricals Limited
<b>CETP</b>	Common Effluent Treatment Plant
<b>CIF</b>	Common Infrastructure Facilities
<b>CMTI</b>	Central Manufacturing Technology Institute
<b>CoE</b>	Centre of Excellence
<b>DRDO</b>	Defence Research Development Organisation
<b>EO</b>	Earth Observation
<b>ECS</b>	Electronics and Communication Systems cluster of DRDO
<b>ESDM</b>	Electronics System Design and Manufacturing
<b>ETP</b>	Effluent Treatment Plants
<b>FDI</b>	Foreign Direct Investment
<b>GCC</b>	Global Capability Centres
<b>GIS</b>	Geographical Information System
<b>GST</b>	Goods and Services Tax
<b>HAL</b>	Hindustan Aeronautics Limited
<b>IIIT</b>	International Institute of Information Technology
<b>IISc</b>	Indian Institute of Science
<b>INR</b>	Indian Rupee
<b>IN-SPACE</b>	Indian National Space Promotion and Authorization Center
<b>ISRO</b>	Indian Space Research Organisation
<b>IT and ITeS</b>	Information Technology and Information Technology Enabled Services
<b>ITI</b>	Industrial Training Institute

<b>ITI</b>	Indian Telephone Industries Limited
<b>KARSEMVEN Fund</b>	Karnataka Semiconductor Venture Capital Fund
<b>KITS</b>	Karnataka Innovation and Technology Society
<b>KITVEN Fund</b>	Karnataka Innovation and Technology Venture Fund
<b>KSRAC</b>	Karnataka Remote Sensing and Application Center
<b>LISS</b>	Linear Imaging and Self Scanning Sensor
<b>LTRE</b>	Electronics & Radar Development Establishment
<b>NAL</b>	National Aeronautics Limited
<b>NGP</b>	Norms, Guidelines and Procedures, 2024 to the Indian Space Policy, 2023
<b>NSIL</b>	NewSpace Indian Limited
<b>OEM</b>	Original Equipment Manufacturer
<b>PLI</b>	Production Linked Incentives
<b>PNT</b>	Positioning, Navigation and Timing
<b>PoC and PoV</b>	Proof of Concept and Proof of Value
<b>PPP</b>	Public Private Partnerships
<b>R&amp;D</b>	Research and Development
<b>SATCOM</b>	Satellite Communication
<b>SGST</b>	State Good and Services Tax
<b>SI</b>	System Integrator
<b>STP</b>	Secondary Treatment Plant
<b>TBI</b>	Technology Business Incubator
<b>USD</b>	United States Dollar
<b>VFA</b>	Value of Fixed Assets
<b>VTU</b>	Visvesvaraya Technological University

Definitions	
<b>CMKKY</b>	<b>Chief Minister’s Kaushalya Karnataka Yojane</b> : Government of Karnataka’s skill development initiative aimed at providing training and employment opportunities to the youth of Karnataka.
<b>ELEVATE</b>	An Idea 2 Proof of Concept grant-in-aid scheme administered by Department of Electronics, Information Technology, Biotechnology and Science and Technology, Government of Karnataka which provides grants to early-stage startups that are in the process of converting an idea into proof of concept.
<b>GIAC</b>	<b>Global Innovation Alliance Connect</b> : Initiative of Department of Electronics, Information Technology, Biotechnology and Science and Technology, Government of Karnataka to create strategic partnerships with global economies for Karnataka based enterprises, Start-Ups and MSMEs.
<b>Host Institution (NAIN2.0)</b>	Host institution is a college affiliated to State University or a Deemed University which is selected (or has applied for being selected) under the NAIN program to set-up New Age Incubator.
<b>K-VGF</b>	<b>Karnataka - Viability Gap Funding</b> : Government of Karnataka’s viability gap funding mechanism to support the development of infrastructure projects through public-private partnerships.
<b>LAHARI</b>	<b>LAHARI</b> is a state-of-the-art advanced electronics test facility spread over a 45000 sq ft area in Mysore to promote innovation in the area of Electronics system design and manufacturing. LAHARI is a joint initiative of Government of India and Government of Karnataka in partnership with industry.
<b>MSME(Micro, Small, and Medium Enterprises)</b>	Classification of MSME is as per prevailing policies of Government of Karnataka and Government of India <ul style="list-style-type: none"> <li>• Micro Manufacturing and Services Enterprises: Enterprises with annual turnover not more than INR 5 Crore and investment in plant and machinery or equipment not more than INR 1 Crore</li> <li>• Small Manufacturing and Services Enterprises: Enterprises with annual turnover not more than INR 10 Crore and investment in plant and machinery or equipment not more than INR 50 Crore</li> <li>• Medium Manufacturing and Services Enterprises: Enterprises with annual turnover not more than INR 50 Crore and investment in plant and machinery or equipment not more than INR 250 Crore</li> </ul>
<b>NAIN</b>	<b>New Age Innovation Network</b> : A program administered by Department of Electronics, Information Technology, Biotechnology and Science and Technology, Government of Karnataka to establish innovation centers and technology business incubators in technology institutions across Karnataka to enable entrepreneurs from across Karnataka to benefit from funding, facilities and mentorship
<b>NGE</b>	Non-Government Entity as defined in the Indian Space Policy, 2023 and its associated Norms, Guidelines and Procedures (NGP), 2024 to the Indian Space Policy, 2023



<b>NIPUNA</b>	Program of Government of Karnataka administered by Department of Electronics, IT, BT, S&T. The program aims to help young people transition into the workforce, especially in high-tech and deep-tech sectors.
<b>PMA Framework</b>	An initiative of Government of Karnataka to promote the growth of startups in Karnataka, while encouraging procurement of startup products/ services by State Government Departments/ State Public Sector Units.
<b>Start-up</b>	A Private Limited/ One Person Company/Limited Liability Partnership/Partnership firm registered in Karnataka, with a turnover not exceeding INR 100 Crores in any financial year since incorporation/registration, and must not be older than 10 years from the date of incorporation/registration as of the date of application submission for schemes and incentives from Government of Karnataka
<b>Yuva Yuga program</b>	The Yuva Yuga scheme is an industry-led program administered by Karnataka Innovation and Technology Society to encourage and promote skill development for youth throughout Karnataka.
<b>YUVIKA</b>	ISRO's annual initiative to impart basic knowledge on Space Science, Space Technology and Space Applications to school students.
<b>GCK</b>	Grand Challenges Karnataka : Program administered by Department of Electronics, Information Technology, Biotechnology and Science and Technology, Government of Karnataka under the Karnataka Start-Up Policy that a program that supports innovations and technologies to address societal problems in the state of Karnataka.
<b>Industrial Zones/ Zonal Classification</b>	Zonal classification as per Karnataka Industrial Policy, 2020-25

# Overview: Space sector

## Sector overview: Global

The global space sector is undergoing transformation, evolving from a government/national space agency-dominated domain into a public-private collaborative model where private enterprises complement government initiatives in financing, technology development, and production. Popularly dubbed as “NewSpace”, this transformation is primarily engineered through advancements in technology viz., lowering launch costs, miniaturization of satellites, advanced electronics, and digital technologies viz., AI/ML, Big Data, additive manufacturing etc.<sup>1</sup>

Taking cognizance of this transformation, Governments worldwide have implemented policies, laws, and strategies to facilitate and encourage participation of private enterprises and startups across the entire value chain of space activities - carry out end-to-end activities in the space domain<sup>2</sup>. As private capital increasingly complements Government budgets in the sector, commercial value creation through the sector is set to exponentially rise which will flip the cost-value equation and business models of the sector.

Various industry estimates, global forums and independent think tanks, the value of the global space economy, currently pegged at around USD 500 - 600 billion, can breach the USD 1 - 1.8 trillion range in the next decade<sup>3</sup>.

## Sector overview: National

In line with the global realities, Government of India has undertaken several initiatives to unlock the commercial potential of the sector and boost the national capabilities in space research and missions. A new architecture for the sector has been put in place, with clear vision and role for Department of Space, Indian Space Research Organisation (ISRO), Indian National Space Promotion and Authorization Center (IN-SPACe), NewSpace India Limited (NSIL) and the Non-Government Entities (NGE). The sector is projected<sup>4</sup> to grow into USD 44 billion sector in value by 2033, including USD 11 billion in exports, generate USD 22 billion investments and eventually hold 10% of the global market share<sup>5</sup>.

Through the Indian Space Policy, 2023 and its associated Norms, Guidelines and Procedures (NGP), 2024 to the Indian Space Policy, 2023, privatisation of the sector has been formalized. This has been followed up

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<sup>1</sup> [https://www.oecd.org/en/publications/harnessing-new-space-for-sustainable-growth-of-the-space-economy\\_a67b1a1c-en.html](https://www.oecd.org/en/publications/harnessing-new-space-for-sustainable-growth-of-the-space-economy_a67b1a1c-en.html) : Report prepared for 4th edition of the G20 Space Leaders' Meeting under India's G20 Presidency

<sup>2</sup> [https://www.isro.gov.in/media\\_isro/pdf/IndianSpacePolicy2023.pdf](https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf)

<sup>3</sup> <https://www.weforum.org/press/2024/04/space-economy-set-to-triple-to-1-8-trillion-by-2035-new-research-reveals/>

<https://www.spacefoundation.org/2024/07/18/the-space-report-2024-q2/>

<sup>4</sup> [https://www.inspace.gov.in/inspace?id=inspace\\_decadal\\_vision\\_strategy](https://www.inspace.gov.in/inspace?id=inspace_decadal_vision_strategy)

<sup>5</sup> [https://www.business-standard.com/industry/news/india-aims-10-share-in-global-space-economy-in-10-yrs-isro-chief-somanath-124082001084\\_1.html](https://www.business-standard.com/industry/news/india-aims-10-share-in-global-space-economy-in-10-yrs-isro-chief-somanath-124082001084_1.html)

with the liberalization of the FDI norms for the sector allowing up to 100% FDI<sup>6</sup> (49% - 100% through automatic route across various segments of the sector), announcement of an INR 1000 Cr. venture capital fund<sup>7</sup>, technology transfer initiatives to the private sector etc.

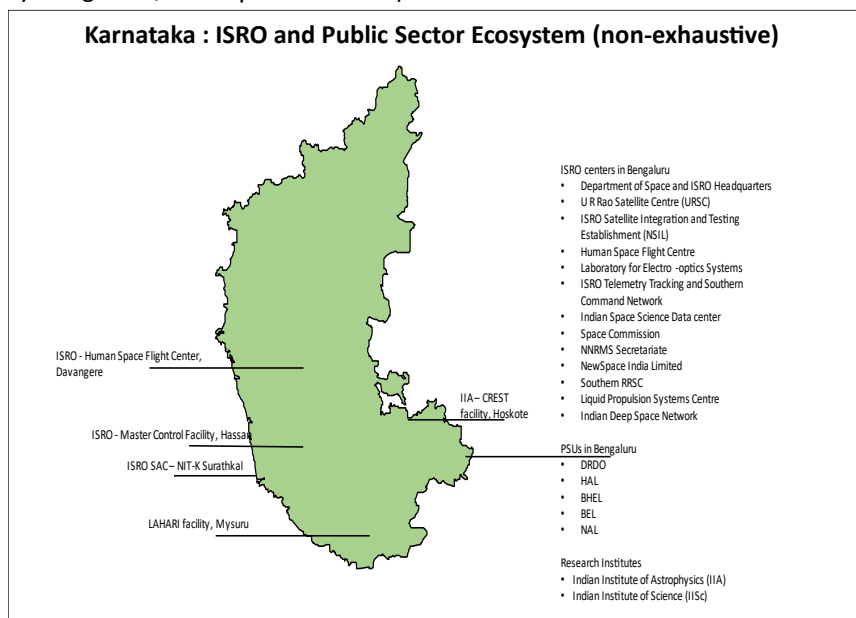
These initiatives have already resulted in significant advancements including the registration/incorporation of 200+ new-age space Start-Ups in the country<sup>8</sup> who have received an aggregate funding of USD 400 million. Several Indian legacy private enterprises who have been strong technology partners/vendors to ISRO are also pivoting towards commercial ventures, backed by technology transfer support from ISRO/NSIL<sup>9</sup>.

### Sector overview: Karnataka

Across the world from, USA to Europe and Asia, space clusters have agglomerated around the national and regional space agency programmes. In regions without national space agencies or their associate facilities, the presence of anchor units who are major vendors to national space programmes or independent aerospace and space enterprises, have catalyzed this agglomeration of clusters. The role of academia is also very pronounced, as availability of skilled professionals and an active research community have acted a strong force in attracting enterprises and investments<sup>10</sup>.

Within India, Karnataka, particularly Bengaluru, is the preeminent space cluster for both conventional and NewSpace sectors. Karnataka hosts a mature ecosystem spanning the entire space value chain, encompassing:

- Satellite and launch vehicle design
- Manufacturing, assembly, integration, and testing facilities
- Research capabilities in astronomy and deep space exploration
- Commercial applications in communications and earth observation



<sup>6</sup><https://pib.gov.in/PressReleasePage.aspx?PRID=2007876#:~:text=Under%20the%20amended%20FDI%20policy,in%20Indian%20companies%20in%20space>

<sup>7</sup><https://pib.gov.in/PressReleaseframePage.aspx?PRID=2068155#:~:text=The%20INR.%201%20C000%20crore%20VC,reward%20field%20of%20space%20technology>.

<sup>8</sup> <https://pib.gov.in/PressReleasePage.aspx?PRID=2027137>

<sup>9</sup> [https://www.isro.gov.in/Productionisation\\_of\\_PSLVs.html](https://www.isro.gov.in/Productionisation_of_PSLVs.html)

<sup>10</sup> An International Comparison of Approaches to Space Cluster Development, Catapult Applications : <https://d11avd6t8zdcx0.cloudfront.net/uploads/2021/05/International-Comparison-of-Approaches-to-Space-Cluster-Development-Full-Report-Mar-21.pdf>

- Strategic space programs
- Downstream analytics and applications

The state’s robust ecosystem has been enabled by ISRO HQ, NSIL and ISRO centers viz., U R Rao Satellite Centre (URSC), ISRO Telemetry Tracking and Command Network, National Natural Resource Management System (NNRMS), Laboratory for Electro-Optics Systems (LEOS), ISRO Satellite Integration and Testing Establishment (ISITE), Indian Space Science Data Center (ISSDC), Human Space Flight Centre etc., that are spread across the state.

The presence of space related large Public Sector Undertakings (PSU) including HAL, BEL, BHEL, NAL, CMTI, ITI etc. has contributed to enriching the mature ecosystem. Premier academic institutions viz., IISc Bangalore, Indian Institute of Astrophysics, IIT Bangalore VTU Belagavi etc., have built a considerable knowledge hub and consistently produce trained professionals for the sector.

All the above has resulted in establishing a dynamic private sector ecosystem in the state. From established global space sector to domestic space companies, a diverse industrial base spans the entire spectrum of space and allied sector activities.

MSMEs constitute almost 50% of the space industrial ecosystem<sup>11</sup>. Karnataka has 2500+ companies<sup>12</sup> who are vendors to ISRO (largest in the country). Majority of these vendors are MSMEs who focus on niche components, sub-components and systems critical to the space sector. This has ensured that Karnataka also emerges as the epicenter for NewSpace companies. Karnataka not only tops the list of registered space Start-Ups, but Karnataka based space Start-Ups have received USD 150+ million as investments which is ~35% of the total funding received by NewSpace enterprises in India.

The Department of Electronics, Information Technology, Biotechnology and Science & Technology, Government of Karnataka, conducted two comprehensive industry consultations with key stakeholders to: identify growth opportunities and innovation potential, understand the ecosystem challenges, and assess industrial requirements. The summary of the asks and requirements is as follows:

Summary of asks and suggestions from the space tech industry			
Training and Skill Development	Access to markets, capital and other fiscal initiatives	Access to testing facilities and software	Partnerships
<ul style="list-style-type: none"> <li>• Focus on developing skills that make graduates versatile and ready for employment in various organizations within the space sector.</li> <li>• While most of the industry is focused on upstream activities, there is a significant opportunity gap in</li> </ul>	<ul style="list-style-type: none"> <li>• Specialized fund focused on the space sector with a longer tenure of investment to align with the extended innovation cycle and commercialization timeline.</li> <li>• Suggested Government of</li> </ul>	<ul style="list-style-type: none"> <li>• Suggested Public Private Partnership (PPP) models, common funds managed by the government and direct subsidies to reduce testing costs.</li> <li>• Every month at least 30 working models are being built and are ready for testing. Access</li> </ul>	<ul style="list-style-type: none"> <li>• Several Start-Ups have benefitted from academic institutions and access should be provided for academic and research mentorship to early-stage Start-Ups.</li> <li>• An industry partner can enable</li> </ul>

<sup>11</sup> <https://www.mmindia.co.in/article/1922/catalyzing-indian-space-growth-story>

<sup>12</sup> <https://www.isro.gov.in/Industry.html>

<p>midstream and downstream activities, where the applications of all upstream space activities are reaching the public. Developing courses to support those skills should be prioritized.</p> <ul style="list-style-type: none"> <li>• Skilling can be an overarching activity carried out in both centers where participants will get hands-on experience.</li> <li>• Explore options for facilitating collaboration between startups and universities for skill development.</li> <li>• Stressed the need for a comprehensive approach to scaling that aligns with industry requirements and ensures graduates are well-equipped for diverse job opportunities in the space sector.</li> </ul>	<p>Karnataka to identify and procure space-based applications and services for custom requirements.</p> <ul style="list-style-type: none"> <li>• Representation with and of Government of Karnataka in international conferences, trade offices and embassies.</li> <li>• Establishment of a space tech fund or fund of funds to encourage investment and government matching for capital funds invested.</li> <li>• Scheme for import duty subsidy from Government of Karnataka for Start-Ups registered with the government as well as subsidies based on end-use certificate of critical components.</li> <li>• Grants for early-stage Start-Ups to underwrite investments and accelerate the sector’s growth.</li> <li>• Initiatives like defence offset clauses to enable more joint ventures initiatives, especially with knowledge partners, to address technological risks.</li> </ul>	<p>to testing facilities and new facilities will reduce waiting time.</p> <ul style="list-style-type: none"> <li>• Access to software for design, calibration and simulation of spacecrafts require access to advanced software whose license cost may be prohibit innovation and prototyping by early-stage companies.</li> <li>• Collaboration with facilities like in IN-SPACe in Ahmedabad, and LAHARI facilities including the 45000 sq ft clean room facility can be made accessible.</li> <li>• Promote high-performing computing setups to spur innovation</li> </ul>	<p>technology transfer and mentor Start-Ups for quick prototyping and marketing.</p> <ul style="list-style-type: none"> <li>• Support with the catalogue certified manufacturing facilities and component suppliers in the state.</li> <li>• Consider a hub-and-spoke model where another center could be set up to support design, development, and testing of components and other parts.</li> </ul>
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Table 1: Summary of Industry Consultation

## Summary of industry thesis : Government of Karnataka - Point of View

1. The role of ISRO and public sector has been extremely important in the emergence of private enterprises in the space sector. Collaborations and partnerships between Government, public and private sector, academia and investors are mission critical for the success of the sector. Robust models to promote and sustain inter-agency and inter-sectoral collaborations are vital to accelerate growth and innovation in the sector.
2. The mature industrial ecosystem of India and Karnataka indicates that space technology is not an emerging technology. However, given the global shift in sectoral dynamics, technology advancements, financing models and the change in national strategies, NewSpace is an emerging/sunrise sector.
3. As more technology transfers are operationalized by ISRO/IN-SPACe/NSIL, traditional non-space domestic enterprises are expected to invest and drive new business models in the sector.
4. Considering the deep tech involved, the sector will require niche skill sets. The availability of qualified skilled human capital will act as a strong focal point for R&D, investments, and growth.
5. Skills required for the sector in both upstream and downstream segments of the sector are dispersed across several sectors viz., IT and ITeS, telecommunication, electronics, automotive etc. In addition to it, some of the niche expertise required rests with individuals who may not be currently based out of India.
6. Role of academic institutions for research, development and prototyping, mentorship, access to knowledge networks and skill development is extremely pronounced.
7. The sector is characterized by long gestation periods for research, development, and deployment, with operational uncertainties, and risks. To realize the possibilities of much higher returns and newer value propositions, sustained investments and continuous support to all stakeholders is very important.
8. The sector is import dependent for many of its critical systems, particularly in electronics : raw materials, fabrication, machinery, and tooling etc.
9. The liberalization of the FDI regime, clarity on authorized activities in the sector and the proliferation of emerging domestic enterprises improves the attractiveness of Karnataka for global space companies to establish anchor units.
10. Many of the new Start-Ups and enterprises are solving for focused challenges and problem statements through innovative approaches that can unlock substantial value to the state's economy. Access to testing facilities and centers is extremely important for such new Start-Ups and enterprises to quickly test and re-test designs and prototypes for quick scale-up and deployment.

11. Space has always been a global sector. To sustain and grow in the global marketplace, it is imperative that domestic enterprises and Start-Ups strike the right spot in the cost-value equation. At the same time, domestic enterprises need support to effectively breach into global markets.
12. While upstream segment receives a lot of traction and captivates public imagination, ultimate value creation for the sector can accrue only through last mile delivery of space-based insights and connectivity through downstream applications.
13. Stoking demand in the sector is mission critical. In other words, commercial demand for space sector can be augmented and sustained only when non-space sectors consume and adopt space technologies into their routine business functions and realize value through such adoption.
14. Like many sectors, the space sector is also positively disrupted by digitisation. Particularly for downstream applications and products, Karnataka's traditional strengths in IT sector forms natural convergence points. Space technologies along with AI/ML, Big Data, Cloud, and edge computing can create quick, sustained, and cost-effective value propositions that can unlock economic and commercial value.
15. Even in revised realities, Governments will act as strong customers to the sector as many of the on-earth applications of space technologies can improve governance operations and service delivery across focus sectors viz., agriculture, mining, urban development, rural development, infrastructure, environment, and forests etc.
16. Finally, the representation of women in NewSpace sector, especially in leadership positions, needs to be addressed, as not many new-age Start-Ups and enterprises are led by women.

## Overview: Current enabling policies of Government of Karnataka for space sector

The space sector's transformation constitutes multiple technology domains including electronics, mechanical systems, material sciences, propulsion systems, cloud computing, big data analytics, and artificial intelligence/machine learning. These technologies have significant cross-sectoral applications and implications. To that extent, there are several policies and initiatives of Government of Karnataka through which growth and innovation in space sector and space sector enterprises especially Start-Ups are being promoted.

### 1. Karnataka Aerospace and Defense Policy, 2022-27:

Manufacturing for space sector is a focus sub-sector under this policy. Accordingly, the manufacturing units (Micro, Small and Medium Enterprises - MSMEs; Large, Mega, Ultra Mega and Super Mega Enterprises) and industrial parks (private industrial parks, international industry parks) set-up to enable the manufacturing of the following components receive clear benefits:

- a. Building of facilities and equipment on earth for satellite and space craft operations (for example, control centers, telemetry and antennae).
- b. Building of launch vehicles and subsystems, scientific instruments, ground segment systems and equipment.
- c. Building of spacecraft, and any components thereof including propulsion systems, rockets and satellites.
- d. Building of payloads and their components, including but not limited to satellites, subsystems, and scientific instruments.

Subject to the type/size of the unit and the zonal classification (as per Industrial Policy, 2020-25) of district and taluk in which the investments are made/units are set up, the benefits include capital investment subsidy (land, plant and machinery), exemption/reimbursement of stamp duty, concessional registration charges, reimbursement of land conversion Fee, subsidy for ETP, power tariff reimbursement, production linked Incentive (based on annual sales turnover which includes sales within the state, inter-state and exports), incentives for quality certification, exemption from tax on electricity tariff, etc.

Sl.No.	Incentive Head	Quantum for units manufacturing* for space applications including LEO satellites
1	Capital Investment Subsidy	20% on plant and machinery  20% on land upto 50 acres on actual procurement cost.
2	Exemption/ Reimbursement of Stamp Duty	100%
3	Concessional Registration Charges	INR 1/- per INR, 1000 /-
4	Reimbursement of Land Conversion Fee	100%
5	Subsidy for ETP	50% of the cost of Effluent Treatment Plants (ETPs), subject to a ceiling of INR 250 lakhs
6	Power Tariff Reimbursement	-



7	Exemption from Electricity Duty	-
8	Production Linked Incentive (based on annual sales turnover which includes sales within the state, inter-state and exports)	1% of annual turnover for 5 years starting from the first year of commercial operations

Table 2 : List of incentives under Karnataka Aerospace and Defence Policy, 2022-27

In addition to the above Government of Karnataka has also set-up common testing centers, centers of excellence and undertaken skill development initiatives to promote growth and employment in the aerospace and defence sector of which space is a focus sub-sector.

The policy also encourages investments across focus areas within space sector viz., space components manufacturing for flagship projects viz., Chandrayaan-3, Gaganyaan etc., satellite servicing for in-space repair or upgrading satellites in orbit, and multiple space applications viz., satellite-based communication services for broadcasting, forest cover mapping, coastal zone monitoring and space derived inputs for operational weather forecast.

## 2. Karnataka Electronics System Design and Manufacturing Policy, 2017-22:

To develop Karnataka into a global Electronics System Design and Manufacturing (ESDM) hub and promote innovation in the sector, the policy focusses on:

- Skill Development:** Focus on refining and strengthening existing initiatives and introducing new strategic interventions.
- Quality Infrastructure:** Create common infrastructure facilities and Centers of Excellence (CoEs) to support local industry and encourage investments in tier-2 cities.
- Ecosystem Support:** Implement PMA policy to encourage domestic procurement and support next-generation technologies through pilot projects and grassroots entrepreneurship.
- Encouragement to Start-ups and MSMEs:** Strengthen the Semiconductor venture fund, promote market development activities, and support local companies.
- Enhancing Ease-of-doing Business:** Simplify policies and procedures and facilitate faster incentives to attract global investments.

Several incentives viz., patent registration incentive, international marketing incentive, research and development grant, capital subsidy, re-imbursalment of quality certification costs, prototyping costs, interest subsidy etc. are provided to ESDM companies:

Sl. No.	Incentive Head	Quantum for electronic components manufacturing for space sector
1	Capital Investment Subsidy	<ul style="list-style-type: none"> <li>20% on plant and machinery</li> <li>25% on land only in areas other than Bengaluru Urban and Bengaluru Rural districts up to an extent of 50 acres on actual procurement cost.</li> </ul>
2	Exemption/ Reimbursement of Stamp Duty	100%
3	Concessional Registration Charges	-
4	Reimbursement of Land Conversion Fee	100%
5	Subsidy for ETP	
6	Power Tariff Reimbursement	INR 1.00 per unit for 5 years from the month of commencement of commercial production.
7	Exemption from Electricity Duty	100% for 5 years from the month of commencement of commercial production.

8	Production Linked Incentive (based on annual sales turnover which includes sales within the state, inter-state and exports)	1% of annual turnover for 5 years starting from the first year of commercial operations
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Table 3: List of incentives under Karnataka ESDM Policy, 2017-22

### 3. Karnataka Start-up policy, 2022-27

Through several initiatives, Department of Electronics, Information Technology, Biotechnology, Science and Technology, Government of Karnataka has been supporting and enabling the Start-Ups across sectors including space technology Start-Ups.

The overview of initiatives is provided below:

Key Pillars	Initiative	Description	Financial Incentive
<b>Creating and Strengthening of New Age Innovation Network (NAIN)</b>	NAIN 2.0 in Technology Institutions	Establish 50 new NAIN centers in technology institutions outside Bengaluru Urban District	Up to INR.5 Lakhs per student project, max 10 projects/year, for 3 years; Annual financial support of up to INR.12 Lakhs per center
	Strengthening of NAIN 1.0 Centers	Extend financial support to existing NAIN Centers	25% of total cost, up to INR.45 Lakhs for 3 years
	Collaboration with Ecosystem Partners	Connect NAIN centers with external incubators/accelerators	INR.10 Lakhs per year per NAIN center
	Common Infrastructure Facilities (CIFs) 2.0 in Diploma Institutions	Implement CIFs in 50 GTTC/Polytechnics/ITIs outside Bengaluru Urban District	INR.25 Lakhs per year per CIF for student projects; INR.5 Lakhs per year per CIF for external incubators/accelerators
<b>Fostering strong partnerships between Academia &amp; Industry</b>	Technology Business Incubators (TBIs) 2.0	Set up 6 TBIs in IT/Electronics and 3 TBIs in Biotechnology	Up to INR.10 Crore per TBI over 5 years
	Support to TBIs 1.0	Augment existing TBIs	Funding support on a case-to-case basis
<b>Funding for Startups</b>	Idea2PoC Grant-In-Aid Scheme - ELEVATE	Provide early-stage seed funding	Up to INR.50 Lakhs

	Startup Funding through Fund of Funds	Support emerging innovative and deep tech startups	INR.100 Crores
	Beyond Bengaluru Cluster Seed Fund	Support growth stage startups outside Bengaluru Urban District	
	Facilitate Investor Connect/PoCs for Startups	Create an Investor Network platform	
<b>Supporting Mentorship and Creation of Incubation and Acceleration Infrastructure</b>	Facilitation for Setting Up New Incubation centers by Private Entities	Support private incubators/accelerators outside Bengaluru Urban District	One-time capital grant of max. 50% or INR.50 Lakhs
	Incubation centers - Support for Upgradation/Expansion	Augment capacity of established incubation centers outside Bengaluru Urban District	One-time capital grant of 50% of Fixed Cost Investment, max. INR.25 Lakhs
	Acceleration Network	Establish a hub and spoke model for accelerators	
	On Demand Virtual Incubation and Mentorship Connect Platform	Create a virtual incubation platform	
<b>Building Inclusive &amp; Equitable Startup Ecosystem</b>	Women Entrepreneurship	Various initiatives to support women entrepreneurs	Direct loan of up to INR.10 Lakhs; 25% of INR.100 Crore venture capital fund earmarked for women startups
	Social Inclusion	Support startups from diverse sections of society	Funding support for center of Excellence for Assistive Technology (INR.15 Crore)
	Promoting Technologies in Local Language	Establish Center of Excellence for Kannada language tech solutions	Up to INR.5 Crore
<b>Fostering Social and Rural Entrepreneurship</b>	Rural Innovation center	Establish Rural Innovation center	Up to INR.15 Crore
	Experiential Internship Support	Subsidize internship cost for social entrepreneurs	Up to INR.1 Lakh per startup for

			hiring max 3 interns for 6 months
<b>Channelizing Innovation for Societal Impact</b>	Grand Challenges Karnataka (GCK)	Announce challenges for innovative solutions	Initial grant of INR.10 Lakhs; Follow-on funding of INR.50 Lakhs
	Accelerating Transition to Circular Economy	Support circular economy projects	Funding support of up to INR.5 Crore; Resource center funding up to INR.50 Lakhs; Acceleration program funding INR.40 Lakhs/Cohort annually
<b>Enablement and Facilitation</b>	Open Data Access	Leverage Karnataka Open Data initiative	
	Leveraging GCC Environment	Facilitate GCC partnerships with technology institutions	
	Outreach and Awareness	Organize trade shows, webinars, events	
	Global Innovation Alliance Connect	Create strategic partnerships with global economies	
	Ease of Doing Business	Self-certification for startups	
	Preferential Market Access for Startups in Public Procurement	Boost startup participation in procurement	
	Enablement of Karnataka Innovation Authority Act 2020	Support regulatory sandboxes	Reimbursement of 50% of Processing fees; 75% of Application fees
<b>Providing State support in the form of incentives &amp; concessions</b>	Reimbursement of State GST	100% reimbursement of annual SGST for startups with max turnover of INR.1 Crore	

	Marketing Cost Reimbursement	Reimburse 30% of international marketing costs	Max. INR.5 Lakhs per year per startup
	Patents Filing Cost Reimbursement	Reimburse cost of filing and prosecution of patents	Up to INR.2 Lakhs per Indian patent; Up to INR.10 Lakhs per foreign patent
	Quality Certification Cost Reimbursement	Reimburse cost of quality certification fee	50% reimbursement, max. INR.6 Lakhs

Table 4 : Karnataka Start-up Policy 2022-2027

#### 4. Karnataka Biotechnology Policy, 2024-29:

Biomedical research and bioinformatics also have an important place in space exploration and related activities, particularly for the sustenance of routine human spaceflight missions. Department of Electronics, Information Technology, Biotechnology, and Science and Technology, Government of Karnataka has identified space research as one of focus sub-sector under its initiative for fostering high performance biomanufacturing, seeking to benefit from the presence of Human Space Facility center and Institute of Aerospace Medicine in Karnataka.

The biotechnology policy of Government of Karnataka focuses on encouraging activities related to biological experiments in microgravity, bioengineering for long-duration space missions, biomedical research for space exploration, bioinformatics and data analysis in space biology and developing biologics to treat space-related health issues, areas that significantly advance understanding of life in space and drive innovation in the fields of medicine, agriculture, and environmental sustainability.

Additionally, the policy mandate also includes the setting up of greenfield Bio Foundries at Helix Biotech Park, Bengaluru, envisaged through PPP mode with financial co-sharing. This will co-create integrated infrastructure for access by biotech Start-Ups and research communities to undertake space research (such as microgravity and radiation physiology) among other fields. The park is currently operational in Electronic City, Bengaluru.

Funding support for promoting research activities and development of novel solutions in this area will be extended under the existing schemes/programs made available under the startup, research and development and Innovation and Engineering Research and Development policies. Equity investment through KITVEN Fund-5 will also be undertaken to support the startups in the sector.

Initiative	Description	Financial Incentive & Quantum	Duration	Target Demography
State GST Reimbursement	100% reimbursement of annual SGST for startups in Beyond Bengaluru Urban district with a maximum annual turnover of INR 1 Crore	100% reimbursement	2024-29	Startups
Marketing Cost Reimbursement	Reimbursement of 30% of actual costs, up to INR 5 lakhs per year	Up to INR 5 lakhs per year	2024-29	Startups

Patent Cost Reimbursement	Reimbursement up to INR 2 lakhs for each Indian patent and INR 10 lakhs for each international patent, with a cap of INR 50 lakhs for the policy period	Up to INR 10 lakhs per international patent	2024-29	Startups, MSMEs, Large Scale Industries
Quality Certification Cost Reimbursement	50% reimbursement of cost of quality certification fee, with an overall ceiling of INR 6 lakhs per startup	Up to INR 6 lakhs per startup	2024-29	Startups, MSMEs
Capital Cost Reimbursement for Biotechnology Incubation/Acceleration center	One-time capital grant of maximum 50% or INR 1 Crore (whichever is less) for Fixed Cost Investment (FCI) excluding land & building	Up to INR 1 Crore	One-time	Startups
Interest Subsidy	Interest subsidy of 6% for loan up to INR 50 lakhs, not exceeding 8 years, only for new investment	Up to INR 50 lakhs	Up to 8 years	MSMEs, Large Scale Industries
Land Conversion Incentive	100% reimbursement of land conversion fee for MSMEs	100% reimbursement	2024-29	MSMEs
Power Tariff Concession	Recommendation certificate for concession on Industrial Power Tariff	Concession on tariff	2024-29	MSMEs, Large Scale Industries
STP Cost Reimbursement	One-time capital subsidy of maximum INR 1 crore for setting up Sewage Treatment Plants (STPs) in Biotechnology Parks	Up to INR 1 crore	One-time	Large Scale Industries
Production Linked Incentives	Investment promotion subsidy based on turnover from the date of commencement of commercial production	2.25% turnover percentage for maximum 7 years	Up to 7 years	Large Scale Industries

Table 5 : List of incentives under Karnataka Biotech Policy

## 5. Initiatives of Karnataka State Remote Sensing Application Centre (KSRAC)

Karnataka State Remote Sensing Application Center (KSRAC) was set up in 1986. KSRAC has developed applications and services for various line departments, zilla panchayats and other govt. institutions, universities and colleges, Non-Government Organisations, public sector and private sector institutions, including Karnataka GIS and Bangalore GIS projects. The geospatial services developed by KSRAC has become an indispensable tool for decision-making process for various departments of Government of Karnataka.

KSRAC offers the following services to all the line departments of Central and State Governments, public /private sector organizations, NGOs, farmers or any fellow citizens of Karnataka/ India:

- Selection, procurement, and supply of satellite imageries in optical and microwave bands, aerial photos and LIDAR data of both indigenous and foreign origin for the use in various projects would be taken up on request from user agencies through NRSC.
- The DGPS survey and Total Station Survey, are being taken up for Georeferencing of imageries, location mapping, boundary fixing and feature mapping.
- Scanning, digitisation, digital cartography, value addition and printing of hard copy maps.
- Digital image processing of aerial photographs and satellite imageries generation of DEM, DSM and Orthorectification of satellite imageries.
- Interpretation of satellite imageries and preparation of base maps on various scales ranging from one million to 500 scale, utility maps, and thematic maps such as drainage maps, surface water bodies, slope and aspect maps, land use land cover maps, soil maps, geological structures maps, lithological maps, geomorphology maps, and other maps.
- Inventory of natural resources, distribution maps, density maps.
- Using RS , GIS and GPS various interpretative maps that help in developing action plans and site suitability are generated; multi-criteria analysis, impact assessment, change detection, spatial and temporal analysis are carried out.
- Using GIS network analysis and proximity analysis of geospatial data.
- The development of land resource information system, decision support systems, early warning systems etc. are being undertaken by the Centre.
- Preparation of project proposals, Detailed Project Reports, cost and time estimation of RS and GIS projects is also undertaken.
- Training, capacity building, consultation is carried out based on both on request and basis the needs of the user organizations.
- Awareness programmes, refresher programmes for the public or staff are arranged based on need and demand.
- Water Harvesting Structures - KSRAC has prepared Taluka and Gram Panchayat wise maps showing proposed suitable Water Harvesting Structures. Based on these maps concerned authority will conduct suitable site investigation, survey etc., before finalizing and recommending WHSs site for construction.
- Tank Information System for Karnataka - The tanks (lakes and ponds) of Karnataka were delineated using Resourcesat @ LISS IV images and Survey of India topographic maps as a part of generation of Tank Information System. This geospatial database also contains ownership and area information for all the tanks.

In addition, through Karnataka Open Data Policy, KSRAC also makes geospatial data and information available in machine and human readable formats online.

## 6. Engineering, Research and Development (ER&D) Policy 2021-26

The Department of Electronics, Information Technology, Biotechnology and Science and Technology, Government of Karnataka, has identified engineering research and development as a key focus area under its new initiative to enhance technological capabilities and drive economic growth.

The ER&D policy of the Government of Karnataka focuses on encouraging activities related to digital engineering, advanced manufacturing, and technological innovation. The aim of the policy is to leverage the state's strong engineering talent pool and existing infrastructure to attract global research and development investments and foster a robust ecosystem for engineering research and development.

The policy proposes the establishment of research and development centers, innovation labs, and testing infrastructure across the state, with a particular emphasis on areas beyond Bengaluru Urban District. This initiative seeks to decentralize development and promote inclusive growth.

Funding support for promoting research activities and the development of novel solutions in this area will be extended under the existing schemes/programs made available under the Startup, research and development, and Innovation Policies of the State. Equity investment through the Karnataka Innovation and Technology Venture Fund (KITVEN Fund) will also be undertaken to support startups in the sector.

Initiative	Description	Financial Incentive & Quantum
Rental Reimbursement	50% reimbursement of rental costs for R&D centers established beyond Bengaluru Urban District	Up to INR 1 crore per year
Recruitment Assistance	Financial support for hiring new employees in R&D centers beyond Bengaluru Urban District	Up to INR 10 lakhs per year
Investment Subsidy	Subsidy for investments in R&D facilities outside Bengaluru Urban District	Up to INR 5 crores
Engineering R&D Fund	To support technological innovation and development	Variable
R&D Infrastructure Program	To create and strengthen testing and prototyping infrastructure	Up to INR 10 crores
Innovation Labs Program	To encourage open innovation and collaboration	Up to INR 5 crores
Digital Innovation for Services Challenges	To promote digital innovation in services	Up to INR 2 crores
Applied Research in Academia Program	To support the industrial application of academic research	Up to INR 1 crore
Chief Minister (CM) Research Fellowship Program	To promote research and development through fellowships	Up to INR 50 lakhs per year



# Draft Karnataka Space Technology Policy, 2024 - 2029

## 1. Vision

- 1.1. To sustain Karnataka as the number one destination for space technology in India and hold 50% of the national market share i.e. USD 22 billion market by 2033.
- 1.2. To propel Karnataka into a global space technology destination with comprehensive capabilities across the space value chain, targeting five percent of the global market share.

## 2. Mission

- 2.1 Create a highly skilled workforce across the space value chain to pave way for natural agglomeration of industries from the space sector.
- 2.2 To facilitate global and domestic space sector to invest and set-up manufacturing and Assembly, Integration and testing (AIT) units in Karnataka to support the domestic and international markets.
- 2.3 Enable seamless and affordable access to existing testing facilities, test beds and centers for design, manufacturing, assembly and integration of space systems, sub-systems, and components.
- 2.4 Support for international market access, research, development, and prototyping for Start-Ups and MSMEs, to foster product development to achieve a diversified market base.
- 2.5 Improve demand and adoption of solutions offered by space sector for other sectors.

## 3. Strategic pillars

### 3.1 Skill Development:

- a. Taking to cognizance that the skills required for space sector has inter-sectoral applicability for IT and ITeS, telecommunication, electronics, automotive, bio-technology etc. awareness, skilling, and training initiatives for school students, ITI, Diploma, Polytechnic and University students, and working professionals in partnership with ISRO, IN-SPACE, and industry would be designed and rolled out.
- b. Support academic institutions across Karnataka to upgrade curriculum, facilities and incentivize industry exposure to deliver courses and training programs in space technologies.
- c. Support the establishment of training centers and host facilities across the state to deliver skill-building and training programs for space technologies.

### 3.2 Investments

- a. Encourage and incentivise global and domestic investments in the space industrial and technology ecosystem of Karnataka, through greenfield investments and capacity expansion.
- b. Improve the ease of doing business for the enterprises in the sector and support in investments and capacity expansion.
- c. Organize and participate in industry events, and forums to promote Karnataka space ecosystem and overall technology and business environment to attract investments from domestic and international investors.

### 3.3 Infrastructure and Facilities

- a. Establish space manufacturing parks across the state and enable cluster-based development in partnership with industry and Governments to support inter-sectoral synergies.

- b. Enable ease of access to facilities such as the existing testing centers spread across industry, government, and academia at subsidized costs.
- c. Establish new testing centers through Public Private Partnership (PPP) mode to expand upstream and downstream testing capabilities within the state.

### 3.4 Innovation and Facilitation

- a. Establish a Center of Excellence (CoE) in partnership with industry and academia which will be the nerve center and platform connecting industry, academia, startups, and Government to innovate and accelerate the adoption of space technologies.
- b. Facilitate and provide funding support for space sector startups through venture capital funds, grant-in-aid funds, and other relevant modes for disruptive technologies in the space sector.
- c. Encourage innovation in the sector including facilitation of transfer of technology and other collaborative initiatives for technological know-how between industry, academia, ISRO, IN-SPACE, NSIL and DRDO.
- d. Provide structured support for research and development through grants, intellectual property protection, and market access facilitation for innovative space technologies .

### 3.5 Adoption and Awareness

- a. Improve adoption of space technologies and services into governance operations and service delivery; Consider commissioning space constellation as a service for Government of Karnataka
- b. Promote private sector adoption of space technologies and services in key industries such as energy, infrastructure, transportation, finance, and telecommunications through interactive sessions and Proof of Concept/Proof of Value demonstration days, while also fostering inter-sectoral synergies.

## 4. Policy implementation and duration

### 4.1 Policy Implementation

- a. Detailed operational guidelines for implementing the policy and scheme level details will be released after detailed consultation with key stakeholders in the ecosystem.
- b. A space technology cell will be set up under Karnataka Innovation and Technology Society (KITS). The space technology cell will be the single touch point for industry, Start-Ups and MSMEs and act as the single window for implementation of this policy.
- c. A vision group comprising of experts and industry veterans drawn from the space sector (including ISRO, IN-SPACE, NSIL, space related Public Sector Undertakings, Defence Research Development Organisation etc., private sector and academia) will be constituted to advise Government of Karnataka on the implementation and continuous refinement of the policy.
- d. The scope and priority of the initiatives, funding requirements, target group identification, the extent and scope of support for all initiatives mentioned in the policy under various strategic pillars will be decided by a committee headed by the Secretary to Government - Department of Electronics, Information Technology, Biotechnology, and Science and Technology. Representatives of the vision group will also be part of the committee. The committee further may form Sub-Committee/s or Group/s or Sub-Group/s to provide both technical and non-technical inputs covering priority initiatives, funding requirements, target group identification, the extent and scope of support for each of the initiatives, the target group identification, procedure for call for proposals, evaluation, selection, effective implementation and monitoring of programs and schemes mentioned in the policy under its various objectives.

## 4.2 Policy duration

This Policy shall come into effect from the date of its official notification by the Government of Karnataka and shall remain in force for a period of five years therefrom, unless otherwise revised.

## 5. Scope and Coverage

- 5.1 Unless stated otherwise in this policy, entities and enterprises availing benefits through any other policy of Government of Karnataka, during the period in which this policy is active, will not be eligible to avail any benefits under this policy.
- 5.2 Companies/Entities/Enterprises should carefully read all the provisions listed in the policy and must comply with the requirements listed in this policy and its operational guidelines to avail benefits through this policy. Companies/Entities/Enterprises who wish to avail benefits through this policy must carefully evaluate all policies of the state before choosing to availing benefits through this policy. Support will be extended to companies through campaigns and awareness programmes to explain the policy and incentives structure.
- 5.3 Any company/entity who wishes to avail benefits through this policy shall be registered under The Karnataka Shops and Commercial Establishments act, 1961 and or Factories Act, 196 at the time of applying for benefits.
- 5.4 Karnataka Innovation and Technology Society (KITS) shall operationalize an online registration mechanism to register all space sector companies and entities in Karnataka. Only companies/entities registered with KITS under this mechanism shall be eligible to avail benefits through this policy. Detailed guidelines for registration will be provided in the operational guidelines to this policy.
- 5.5 Any company/entity who wants to avail benefits through this policy shall be:
  - a. Indian entities authorized as Non-Government Entity by IN-SPACe as defined in the Indian Space Policy, 2023 and its Norms Guidelines and Procedures, 2024 to the Indian Space Policy, 2023
  - b. Indian entities who are registered vendor to ISRO and should be able provide documentary evidence to support supply of goods/services pertinent to the focus sectors of this policy over the last 5 years.
  - c. Indian entities who are registered vendor to space Original Equipment Manufacturers (OEMs) / System Integrators (SI) to global space agencies and should be able provide documentary evidence to support supply of goods/services pertinent to the focus sectors of this policy over the last 5 years.
  - d. Non-Indian entities who are globally renowned Original Equipment Manufacturers (OEMs) / System Integrators (SI) /component manufacturers in space sector and should be able provide documentary evidence to support supply of goods/services pertinent to the focus sectors of this policy over the last 5 years. However, their participation in space activities in India will be subject to authorization of IN-SPACe as mentioned in the Norms Guidelines and Procedures, 2024 to the Indian Space Policy, 2023.
  - e. Indian and Non-Indian entities should be able to demonstrate their relevance to the focus sectors of this policy through Chartered Accountant (CA) certificates, work orders, invoices etc. The criteria for qualification and overall documentation required for registration will be provided in the operational guidelines to this policy.

## 6. Focus Areas

The focus area of the policy will include upstream and downstream activities for commercial space, defence space/electronics and space research including astronomy and astrophysics.

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### **Upstream (including space and ground systems) Segment**

This segment refers to all activities, products and infrastructure ensuring the development, testing, launching, operations, and monitoring (including space situational awareness) of space assets and it includes emerging areas of leveraging in situ usage of space viz., space tourism, space-based manufacturing, space mining, etc.

#### **Space Asset Development**

Government of Karnataka shall support the enterprises engaged in the development, testing, launching, operations, and monitoring of space assets, including emerging areas such as space tourism, space-based manufacturing, and space mining.

#### **Launch Infrastructure**

Government of Karnataka shall support the enterprises engaged in the design and manufacture of satellites, launch vehicles, and associated components through specialized facilities and support mechanisms. Focus shall be given to enterprises developing indigenous capabilities in propulsion systems, guidance, navigation, payloads, avionics, control systems, power systems, thermal systems, and structural elements. It shall also include enterprises developing launch pads, telemetry facilities, and tracking stations to create comprehensive launch support infrastructure.

#### **Manufacturing infrastructure and software**

Government of Karnataka shall support enterprises engaged in setting up of space technology parks equipped with research and incubation facilities to foster innovation and manufacturing excellence. It shall include advanced ground support equipment and simulation software capabilities. The development of specialized hardware and software systems for spacecraft launch assistance is also included to ensure comprehensive manufacturing support.

#### **Space stations, space tourism, In-orbit services & space manufacturing activities**

Government of Karnataka shall support enterprises engaged in the development of next-generation space capabilities including space stations and tourism infrastructure, in-orbit manufacturing, and servicing capabilities. This also includes space situational awareness systems that ensures safe and sustainable space operations.

Overall this shall include but not limited to:

- Design, manufacturing assembly, integration and testing of components and sub-systems viz., Structural Systems, Propulsion Systems and Attitude Determination and Control System, Avionics, Telemetry, Tracking, and Command (TT&C) System and Power Systems, Guidance, Navigation and

Control (GNC) Systems, Thermal Control Systems, Separation, Destruct systems and other miscellaneous of launch vehicles.

- Design, manufacturing assembly, integration and testing of components and sub-systems viz., Payload Systems, Satellite bus platforms and Structural systems, Propulsion Systems and Attitude and Orbit Control System (AOCS), Avionics, Telemetry, Tracking, and Command (TT&C) System and Power Systems, Guidance, Navigation and Control (GNC) Systems, Thermal Control Systems for satellites.
- Design, manufacturing assembly, integration and testing of components and sub-systems viz., Antenna and Radio Frequency (RF) Systems, Signal processing and control systems, Ground based SSA /SDA stations for Master Control Centres and Ground Stations.
- Design, manufacturing assembly, integration and testing of components and sub-systems for SSA/SDA, Space Debris removal, Space Manufacturing, Space Robotics, Space Refueling missions, Orbital transfer vehicles, Quantum related solutions.

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**Downstream Segment** Primarily sub-segmented into Earth Observation, Satellite Communications and Position Navigation and Timing, this segment refers to all applications, services and devices relying on satellites to create business value. This generally includes dual-purpose services and applications that cater to strategic requirements.

#### **Earth Observation (EO)**

Government of Karnataka shall support enterprises engaged in the development of comprehensive data storage, analysis, and application platforms for satellite imagery. These services shall cater to critical sectors including agriculture, urban development, infrastructure planning, and insurance. Focus shall also be given to enterprises developing solutions that can derive actionable insights from satellite data.

#### **Satellite Communications (Satcom)**

Government of Karnataka shall support enterprises engaged in the development and deployment of advanced ground segment equipment including user terminals, modems, and network management components. Special emphasis shall be placed on establishing gateway operations and direct satellite-to-phone connectivity solutions. The Government shall also support enterprises engaged in the creation of satellite broadband platforms, IoT connectivity solutions, and emergency communication systems to enhance connectivity across remote regions.

#### **Positioning, Navigation & Timing Services (PNT)**

Government of Karnataka shall support the enterprises engaged in the establishment and development of precision timing solutions and synchronization platforms critical for various industrial applications. Focus shall be given to enterprises developing integrated systems for transport and logistics, asset tracking, and emergency response mechanisms.

**Overall this shall include but not limited to:**

- Data processing techniques and analytics infrastructure, visualization tools and sector specific solutions for earth observation
- **Ground segment equipment and service delivery platforms for satellite communication**
- **Navigation systems, Timing systems and Integration systems for positioning, navigation and timing**

In addition to it, a digital public infrastructure approach shall be mooted to facilitate the required development tools, data infrastructure and integration systems required for Government, Public and Private Sector enterprises in the state to discover and consume the data and services being produced by the space industry. This shall include development and access to data infrastructure, development tools, integration systems and research platforms.

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*Table 6 : Overview of the focus areas of the policy*

## 7. Interventions, initiatives, and incentives for strategic pillars

### 7.1 Skill Development

To ensure availability of skilled professionals who can serve needs of both domestic and international sector, efforts will be undertaken to educate, up-skill and re-skill students and young professionals through focused interventions in partnership with ISRO, IN-SPACe, academia, industry.

#### Goals:

- Leveraging NIPUNA and other initiatives of Government of Karnataka, during the policy period, 5,000 professionals and students will be trained/up-skilled upto industry standards and are ready to be employed by domestic and global companies.
- This shall include at least 1,500 women professionals and students who will be trained/up-skilled upto industry standards and are ready to be employed by domestic and global companies.

#### 7.1.1 For school students

- To nurture young talent initiatives will be undertaken to foster an interest in the space sector among school students, particularly secondary stage school students: Class 8 - Class 12.
- Students from Karnataka have been beneficiaries of ISRO's YUVIKA programme. Efforts will be undertaken to deepen partnership with ISRO for increasing participation from Karnataka school students.
- In partnership with industry and Start-Ups, industry visits and tours will be organized for school students to capture their imagination and catalyse early orientation into science and technology.
- A network of senior scientists, entrepreneurs and industry veterans will be created to provide awareness talks and 'Career in space technologies' sessions for school students across the state.
- Karnataka shares and celebrates the rich legacy of achievements of the Indian space sector. State of the art space galleries will be set-up across the state which will demonstrate the achievements of this sector, with the intent of furthering scientific temper among school students.

#### 7.1.2 For students in higher education

- To ensure college students are skilled, trained and are employable by the domestic and global space sector across the space value chain, the policy coverage will include ITI, Diploma, Polytechnic and University students.
- Support will be provided to academic institutions of Karnataka to enter into partnerships with IN-SPACe/ ISRO for delivering space technology courses to students.
- Technical Universities will be encouraged and supported to adopt and deliver AICTE-prescribed model curriculum for minor degree in space technology for students.
- Support will be provided to universities and colleges to set-up space technology labs and facilities. This will include support for acquiring licenses to specialized software required to train students in space technologies.
- End use of space applications is spread across several sectors viz., agriculture, forestry, urban development, rural development. Universities specializing in such sectors viz., University of

Agricultural Sciences, Bangalore & Dharwad, Karnataka State Rural Development and Panchayat Raj University, Gadag , Keladi Shivappa Nayaka University of Agricultural and Horticultural Sciences, Shivamogga, Mangalore University , Bangalore University, University of Mysore, Institute for Social and Economic Change, Bangalore etc. will be supported through NAIN 2.0 and other initiatives to augment their geospatial, geoinformatics, remote sensing programs and research.

### 7.1.3 For young professionals

- a. Any person who is a domicile of Karnataka and is between 18 -35 years and has completed ITI/Diploma/ Under-Graduate degree will be considered as a young professional.
- b. In consultation with IN-SPACe, ISRO and industry, skill training courses required for space technology sector, which are in alignment with NSQF-aligned job roles will be identified and rolled out through NIPUNA and other skill development programmes of Government of Karnataka viz., Chief Minister’s Kaushalya Karnataka Yojane (CMKKY).
- c. Universities will be encouraged and supported to deliver space technology programmes for up-skilling and re-skilling young professionals and course fees will be subsidised for socially and economically backward professionals.
- d. MSMEs and Start-Ups in the sector will be encouraged to up-skill/re-skill their full-time employees through training programmes and courses of nationally and globally accredited institutions. During the policy period, the cost incurred by the MSME/Start-Up on training of full-time employees shall be re-imbursed with a ceiling of INR 10 lakh per enterprise for a maximum of 20 full time employees. The list of such programmes and courses will be published after consultation with industry, ISRO and IN-SPACe.

## 7.2 Investments

To attract the capital required to innovate and grow a sector that is characterized by long gestation periods of research, prototyping, development and testing along with operational risks and uncertainties, efforts will be undertaken to incentivize domestic and international companies, MSMEs, Start-Ups, institutional investors, PE/VC firms to invest in Karnataka and Karnataka based companies.

### Goals:

- **Attract and generate a cumulative investments of USD 3 billion into the space ecosystem of Karnataka during the policy period.**

### 7.2.1 Investment incentives

- a. Space sector comprises of enterprises and actors of varying size, investment capacity and business needs. While the MSMEs and Start-Ups constitute a majority of the industrial base of the sector, large OEMs and SIs enable the overall commerce in the sector. Hence, the incentives are designed to encourage and support all enterprises.
- b. Several space sector companies have benefitted from the Karnataka Aerospace and Defense Policy, 2022-27. Companies/Entities shall evaluate all policies of the state.
- c. For investments above INR 100 Crore, special package of incentives shall be designed and provided based on the project proposal.
- d. The incentives for investments upto INR 100 Crore are provided below:



Sl. No.	Type of incentive	For investment proposals upto INR 100 Cr.
1	Capital Investment Subsidy	<ul style="list-style-type: none"> <li>• 20% on plant and machinery</li> <li>• 25% on land extent of 5 acres on actual procurement cost.</li> </ul>
2	Exemption of Stamp Duty	100%
3	Concessional Registration Charges	INR 1/- per INR, 1000 /-
4	Reimbursement of Land Conversion Fee	100%
5	Subsidy for ETP	50% of the cost of Effluent Treatment Plans (ETPs), subject to a ceiling of INR 250 lakhs
6	Power Tariff Reimbursement	INR 1.00 per unit for 5 years from the month of commencement of commercial production.
7	Exemption from Electricity Duty	100% for 5 years from the month of commencement of commercial production.

*Table 7: Details of fiscal incentives and capital subsidy*

**Note:**

- Capital investment subsidy on land will be provided for land area up to and not exceeding the specified amount mentioned. The exact amount will also be subject to the zonal classification as per the Karnataka Industrial Policy, 2020-25. It will be on actual procurement cost if procured from KIADB and other agencies of Government of Karnataka. The subsidy for land procured from other sources will be as per the guidance value of land at the time of procurement. Cap on the maximum amount of land subsidy for every proposal will be prescribed in the operational guidelines of the policy.
- Capital investment subsidy on plant and machinery will include expenditure on used/second hand/refurbished plant, machinery, and equipment (including for associated utilities and R&D), whether imported or procured domestically.
- Incentives will be provided only to new investments or for capacity expansion. The cut-off date for deciding new investments or capacity expansion will be provided in the operational guidelines of the policy.
- Total quantum of incentives for each proposal shall not exceed 100% of the total value of fixed assets envisioned to be created under the proposal.

*7.2.3 Investment promotion*

- Efforts will be undertaken to organize/partner with leading industry associations, ISRO, IN-SPACE to anchor dedicated space industry meets in Karnataka with participation from global and domestic stakeholders of the space ecosystem.
- Efforts will be undertaken to participate in global and domestic industry conferences and investor meets to position Karnataka as the leading destination for investments, growth and innovation in space sector.
- Dedicated efforts will be undertaken to reach out to target companies, enterprises, and investors for positioning the advantages of Karnataka and provide support for seamless investment journey into Karnataka.
- Focused country specific channels will be leveraged and activated for discussions and feedback, demonstration of success stories etc., to create large investment opportunities.

- e. Regular investors meet-ups and knowledge sessions will be anchored through online and offline channels for discussing opportunities, trends and regulatory frameworks required for the industry.
- f. Global Innovation Alliance of Government of Karnataka shall be leveraged for focused investment promotion in select countries.

### 7.3 Infrastructure and Facilities

Enabled by world class roads, ports, airports and connectivity, Karnataka has a robust industrial, physical and digital infrastructure network. The state happens to be India’s largest IT and ITeS hub for years and with 65% of India’s Aerospace related exports originating from Karnataka, the state is also the preferred investor destination for Aerospace & Defence companies. The state has a wide range of testing facilities and centers spread across Government, academia and private enterprises.

**Goals:**

- **Dedicated space manufacturing park(s) with required common infrastructure for the sector will be set-up.**
- **Ensure testing needs of the sector are met through test centers and facilities in the state.**

#### 7.3.1 Space Manufacturing Parks

Dedicated space manufacturing parks will be set-up across the state to enable cluster-based development and agglomeration of space industries and enterprises. The proposed manufacturing parks will be set-up through public-private partnership models. Manufacturing park will host ready to use plug and play facilities, common testing facilities etc. which will be made available to space sector enterprises, Start-Ups and MSMEs.

Public Private Industrial parks – Developer	
Type of Support	Support
Investment promotion subsidy	5% of eligible fixed capital investment on building and infrastructure facilities in all zones.
Exemption from stamp duty and concessional registration charges	Stamp duty to be paid shall be exempted and concessional registration charges of INR 1/- per INR 1,000 / in respect of loan agreements and for lease deeds, lease-cum-sale deeds, absolute sale deeds executed by developer in respect of land purchased for industrial parks.
Subsidy for setting up Common Effluent Treatment Plant (CETP) / Industrial hazardous waste disposal projects	One-time capital subsidy up to 50% of the cost of Common Effluent Treatment Plant (CETP) subject to a ceiling of INR 500 lakhs in all zones.  The subsidy on CETP shall also cover other green production measures including Waste Management Systems, Common Spray Dryer, Common Multiple Effect Evaporator, Zero Liquid Discharge plants etc.
Capital subsidy for setting up STP	One-time capital subsidy up to 50% of the cost of secondary treatment plants (STPs), subject to a ceiling of INR 100 lakhs in all zones.

*Table 8: Details for setting up of space manufacturing park*

**Note:**

- a. Details on the location, mode of development and timelines will be issued in the detailed guidelines to this policy.

*7.3.2 Testing Infrastructure*

- a. Testing facilities and centers required for testing various systems, sub-systems and components are available across the state. However, they are spread across ISRO centers, Public Sector Undertakings, academic institutions, private sector enterprises, Government of Karnataka establishments etc. Efforts will be undertaken to develop a catalogue of facilities available in the state and partnerships will be forged with owners/operators of the testing centers and create common channel for Start-Ups and MSMEs to access testing facilities, beds, and centers across the state.
- b. It is understood that the existing capacity will be made available for nationally important strategic missions on priority basis. Hence, timely availability to private sector enterprises particularly Start-Ups may not be assured. Efforts will be undertaken to spearhead the setting up or financing integrated common testing facilities, beds and centers for design, manufacturing, assembly and integration of systems, sub-systems, and components for space sector. Such new testing centers and facilities will be developed through public partnership mode and efforts shall be undertaken to make such project(s) eligible for viability gap funding of Government of Karnataka i.e., Karnataka - Viability Gap Funding (K-VGF).

**7.4 Innovation and Facilitation**

The pace and path of value creation shall be accelerated and made seamless through knowledge and mentorship networks within a facilitation ecosystem comprising investors, entrepreneurs, and prospective customers. Efforts will be undertaken to deepen the network and ecosystem in Karnataka and ensure its accessibility across all regions of the state. The focus will be on fostering research, creation of IP and development of indigenous products and applications with global market value.

**Goals:**

- During the policy period, at least 500 space sector Start-Ups and MSME will be supported to grow and innovate.
- During the policy period, 50+ satellites with substantial indigenization shall be designed, manufactured, assembled, integrated, tested, launched and operated by Karnataka based NewSpace enterprises for commercial/defence-space/research purposes.

*7.4.1 Center of Excellence for Space Technology*

- a. Karnataka Innovation and Technology Society (KITS) shall establish a Center of Excellence (CoE) for space technologies through partnerships with industry, academia and space industry associations.
- b. The CoE will act as a nerve center and focus on both innovation and facilitation by fostering research, development and collaborative networks for the sector in the state.
- c. The CoE will provide support fundamental research in the sector through grants for academic and research institutions and will help in lab-market journeys for technologies. The CoE will also facilitate market-lab approach by sourcing focus areas requiring research support for the industry.

- d. As knowledge support, the CoE will facilitate:
  - i. Regular technology transfer workshops with ISRO and IN-SPACe
  - ii. Partnership with global space technology institutes for guest lecture series and workshops
  - iii. Repository of space technology patents and access to research journals
- e. The CoE will foster a network of space sector experts including academicians, scientists, entrepreneurs and investors for extending mentorship and guidance to Start-Ups and MSMEs.
- f. The CoE will have special focus on defence-space and defence-space electronics and in partnership with DRDO and relevant institutions will organize industry-connect conferences for the benefit of MSME/Start-Up ecosystem in the state.

#### *7.4.2 Investment Support*

- a. Government of Karnataka has been supporting Start-Ups and enterprises through direct grant support funding through Idea 2 PoC grant-in-aid funds such as ELEVATE and equity funding through SEBI registered venture funds viz., KITVEN 2, KARSEMVEN fund etc.
- b. Several space sector Start-Ups have been winners and beneficiaries of ELEVATE. To further the same, space will be categorized as a separate sector under ELEVATE to ensure ELEVATE benefits early-stage space sector Start-Ups.
- c. Efforts will be undertaken to include space sector as a target sector under KITVEN 2 to ensure space sector Start-Ups can receive direct equity support from Government of Karnataka, particularly for Start-Ups winning national challenges and programmes viz., Innovations for Defence Excellence (iDEX), Technology Development Fund (TDF) of DRDO etc. .
- d. Over the policy period, efforts will also be undertaken to launch a separate SEBI registered fund on INR 250 Cr. to support space sector Start-Ups and enterprises.

#### *7.4.3 Facilitate Transfer of Technology*

Efforts will be undertaken to facilitate technology transfer from recognized research labs, academic institutions, and private sector enterprises. Financial support for technology acquisition shall be provided to eligible Start-Ups and MSMEs, subject to a ceiling of INR 75 lakh per enterprise during the policy period. This financial support shall be provided in stages:

- a) Up to INR 15 lakh for technology evaluation and due diligence
- b) Up to INR 15 lakh for technology acquisition and transfer
- c) Up to INR 45 lakh for implementation and validation

#### *7.4.4 Quality and Standards certification*

Enterprises, particularly startups and MSMEs shall be encouraged to obtain necessary quality certifications and standards compliances and financial support shall be extended. The support shall be subject to a ceiling of INR 75 lakh per enterprise during the policy period. These certifications will include, but not be limited to, relevant ISRO prescribed standards, procedures etc. In the operational policy guidelines to this policy, detailed list of standards and quality certification shall be published in consultation with industry, ISRO/IN-SPACe.

#### *7.4.5 Facilitate access to testing*

In conjunction with Section 7.3.2(a), the Government shall support testing requirements of eligible Start-Ups and MSMEs. The support shall be subject to a ceiling of INR 75 lakh per enterprise during the policy period.

Support shall be provided for environmental testing, functional testing, performance testing etc. In addition to it, efforts shall be undertaken to usher in standardised costing for testing.

#### *7.4.6 Support for Intellectual Property registration*

Dedicated support will be provided to access Intellectual Property lawyers and practitioners for seamless registration of intellectual property. Cost incurred for intellectual property registration will be re-imbursed for Start-Ups/MSMEs/academic institutions subject to a ceiling of INR 75 lakh/enterprise over the entire policy period.

#### *7.4.7 Global market access and marketing cost re-imburement*

- a. Space sector Start-Ups will be part of delegations of Global Innovation Alliance led Market Access Programme for corridor visits and discussions across the world.
- b. For eligible Start-Ups and MSMEs, financial support will be extended to reimburse 50% of costs towards:
  - i. Registration fees
  - ii. Travel expenses
  - iii. Accommodation expenses
  - iv. Exhibition stall rentals
- c. Support will be limited to INR 1 Crore per enterprise during the policy period.

#### *7.4.8 Technology Business Incubator*

Technology Business Incubator will be set up for space technologies in a leading academic institution of the state.

#### *7.4.9 Research and Development*

Efforts will be undertaken to encourage research and development by enterprises for innovation and growth. Financial support for research and development shall be provided to eligible enterprises, subject to a ceiling of INR 75 lakh per enterprise during the policy period.

#### *7.4.10 Provident fund re-imburement*

Startups and MSMEs will be reimbursed Provident Fund (PF) or Employee's State Insurance (ESI) of INR 1,800 per employee per month for two years subject to total reimbursement of up to INR 12 Lacs. This is only applicable for all new employment created during the policy period, provided the employment is for a continuous period of two years.

This subsidy will only be applicable to a new company, registered within the last two years, as on the date of application. Companies who have started a new subsidiary or branch office in Karnataka will also be eligible, provided the new setup has been established within the last two years as on the date of application.

In case the employer's contribution is less than INR 1800, the actual amount of employer's contribution will be reimbursed. Reimbursement will be made only once per company during the policy period. Employee data will be verified through PF/ESI departments.

## 7.5 Adoption and Awareness

Until revenue generation is possible through emerging areas of in-situ space operations viz., tourism, manufacturing, mining, energy generation etc., commercial value creation for space technologies can be realized only through on-earth adoption of space technologies. Efforts will be undertaken to improve awareness about possibilities through space technologies for non-space sectors including Government to improve adoption of space technologies into business and governance operations.

### Goals:

- Improve awareness about possibilities through space technologies among non-space entities i.e. private sector enterprises of Karnataka in a focused manner.
- Improve the adoption of space technologies for governance operations and service delivery.

### 7.5.1 Adoption

- a. Established in 1986, Karnataka Remote Sensing and Application Center (KSRAC) is the nodal agency for implementing remote sensing, GIS and photogrammetry programmes in the state. As one of the leading state remote sensing agencies of the country, KSRAC has developed web and mobile applications for several sectors of the state including K-GIS and Bangalore-GIS applications. In addition, through Karnataka Open Data Policy, KSRAC also makes geospatial data and information available in machine and human readable formats over web.
- b. To further adoption of space technologies into governance operations and service delivery as well as to streamline the adoption, **an inter-departmental committee** constituting of key officials from various Departments of Government of Karnataka viz., agriculture, urban development, rural development, mining, disaster management etc., and KSRAC will be constituted to identify problem statements, define impact creating use-cases, anchor solution demonstration initiatives, outline training needs, develop adoption roadmap etc. and anchor roll-out adoption in a holistic manner. Prototypes and solutions for the finalized use-cases from Karnataka based Start-Ups and MSMEs will be eligible for Preferential Market Access Framework of Government of Karnataka. This will cover all space downstream applications viz., earth observation, satellite communications etc.
- c. Revenue-based incentive for downstream applications: During the policy period, 15% of the revenue realized by Start-Ups/MSMEs through deployment and adoption of downstream space technologies applications by users in Karnataka and which has resulted in positive socio-economic benefits in specific sectors viz., agriculture, forest management, fisheries, mining, urban development and rural development will be provided to the Start-Ups/MSMEs. To be eligible for the revenue-based incentive, the solution/application should have been designed, developed and deployed by the Start-up/MSME applying for the benefits. The details will be provided in the operational policy guidelines of the policy.
- d. Given the overall positive socio-economic benefits generated by adoption of geospatial technologies, there is emerging global consensus that geospatial data and models can be foundational Digital Public Infrastructure/Digital Public Goods. Efforts will be undertaken to anchor the roll-out a DPI/DPG approach for geospatial technologies. By bringing Karnataka geospatial data and models with Government of Karnataka into the fold of a DPI/DPG approach, Start-Ups, academia, researchers can further unlock value through downstream space technologies.
- e. Special research grants will be provided to leading academic and research institutions in the state to develop foundational earth observation models leveraging artificial intelligence for critical governance

use-cases viz., agriculture, mining, water resource monitoring, forest management, carbon credit measurement, topographic surveys, infrastructure monitoring, urban and rural development etc. Additional grants will be provided for application development leveraging the developed foundational model in partnership with Start-Ups.

#### *7.5.2 Awareness*

- a. Karnataka has a very mature industrial ecosystem comprising of large enterprises spanning across manufacturing, mining, steel, automobile, IT and ITeS, aerospace & defence, travel and hospitality etc. In addition to it, Karnataka is also India's leading innovation hub housing the maximum number of unicorns and Start-Ups, both Business to Business and Business to Consumer businesses across retail, digital commerce, agri-technologies, health technologies etc.
- b. Government of Karnataka has undertaken several initiatives to connect the established ecosystem with the emerging ecosystem through industry conclaves, mentorship networks, business and solution demonstrations, marketplaces etc. Space sector Start-Ups and MSMEs will be embedded into all the on-going initiatives to improve all round awareness around the offerings and technologies for possible inter sectoral synergies and partnerships.
- c. There will be dedicated initiative where key enterprises from focus non-space enterprises will be given an overview of solution walk throughs and demonstrations by Karnataka space sector Start-Ups and MSMEs on emerging possibilities through space technologies.

## 8. Consolidation of fiscal incentives and concessions for industry and academia

### 8.1 For higher academic and research institutions

Strategic Pillar	Support and Incentives
<b>Skill Development</b>	Support will be provided to universities and colleges to set-up space technology labs and facilities. This will include support for acquiring licenses to specialized software required to train students in space technologies.
	Support will be provided through NAIN 2.0 and other initiatives to augment their geospatial, geoinformatics, remote sensing programs and research
<b>Innovation and Facilitation</b>	Support will be provided through Centre of Excellence for space technologies to promote academic research in space technologies.
	Support will be provided to a leading academic institution in the state to set-up Technology Business Incubator.
<b>Adoption and Awareness</b>	Special research grants will be provided to leading academic and research institutions in the state to develop foundational earth observation models leveraging artificial intelligence for critical governance use-cases viz., agriculture, mining, water resource monitoring, forest management, carbon credit measurement, topographic surveys, infrastructure monitoring, urban and rural development etc. Additional grants will be provided for application development leveraging the developed foundational model in partnership with Start-Ups.

Table 9 : List of incentives for academic and research institutions

### 8.2 For space sector enterprises including Start-Ups and MSMEs

Strategic Pillar	Support and Incentives
<b>Skill Development</b>	MSMEs and Start-Ups in the sector will be encouraged to up-skill/re-skill their full-time employees through training programmes and courses of nationally and globally accredited institutions. During the policy period, the cost incurred by the MSME/Start-Up on training of full-time employees shall be re-imbursed with a ceiling of INR 10 lakh per enterprise for a maximum of 20 full time employees. The list of such programmes and courses will be published after consultation with industry, ISRO and IN-SPACE.
<b>Investments</b>	<p>Several space sector enterprises have benefitted and are availing benefits from Karnataka Aerospace and Defense Policy, 2022-27 and Karnataka Electronic System Design and Manufacturing Policy, 2017-22. These policies will continue to operate, and enterprises can continue to avail benefits through these policies.</p> <p>In addition to the above, incentives envisioned under this policy are below:</p> <ul style="list-style-type: none"> <li>For investments above INR 100 Crore, special package of incentives shall be designed and provided based on the project proposal.</li> </ul>



- For investments upto INR 100 Crore, the following incentives are envisioned:

Sl. No.	Type of incentive	For investment proposals upto INR 100 Cr.
1	Capital Investment Subsidy	<ul style="list-style-type: none"> <li>• 20% on plant and machinery</li> <li>• 25% on land extent of 5 acres on actual procurement cost.</li> </ul>
2	Exemption of Stamp Duty	100%
3	Concessional Registration Charges	INR 1/- per INR, 1000 /-
4	Reimbursement of Land Conversion Fee	100%
5	Subsidy for ETP	50% of the cost of Effluent Treatment Plans (ETPs), subject to a ceiling of INR 250 lakhs
6	Power Tariff Reimbursement	INR 1.00 per unit for 5 years from the month of commencement of commercial production.
7	Exemption from Electricity Duty	100% for 5 years from the month of commencement of commercial production.

Note: Above incentives are subject to conditions laid down in the policy.

#### Innovation and Facilitation

- Funding support through Government of Karnataka programmes viz., Elevate and funds viz., KITVEN, KARSEMVEN etc.
- Financial support for technology acquisition through technology transfer routes and initiatives shall be provided to eligible Start-Ups and MSMEs, subject to a ceiling of INR 75 lakh per enterprise during the policy period.
- Financial support for acquisition of standards and quality certification shall be provided to eligible Start-Ups and MSMEs, subject to a ceiling of INR 75 lakh per enterprise during the policy period.
- Financial support for testing shall be provided to Start-Ups and MSMEs, subject to a ceiling of INR 75 lakh per enterprise during the policy period.
- Financial support for intellectual property registration shall be provided to Start-Ups and MSMEs, subject to a ceiling of INR 75 lakh per enterprise during the policy period.
- Financial support for marketing efforts, including global marketing, shall be provided to Start-Ups and MSMEs, subject to a ceiling of INR 1 crore per enterprise during the policy period.
- Financial support for research and development shall be provided to Start-Ups and MSMEs, subject to a ceiling of INR 75 lakh per enterprise during the policy period.
- Startups and MSMEs will be reimbursed Provident Fund (PF) or Employee's State Insurance (ESI) of INR 1,800 per employee per month for two years subject to total reimbursement of up to INR 12 Lacs.

<b>Adoption and Awareness</b>	<ul style="list-style-type: none"> <li>• Revenue based incentive for downstream applications: During the policy period, 15% of the revenue realized by Start-Ups/MSMEs of Karnataka through deployment and adoption of space technologies downstream applications by users in Karnataka and which has resulted in positive socio-economic benefits in specific sectors viz., agriculture, forest management, fisheries, mining, urban development and rural development will be provided to the Start-Ups/MSMEs.</li> </ul>
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*Table 10 : List of incentives for space sector enterprises including Start-Ups and MSMEs*

## ANNEXURES

## Annexure A: ISRO facilities and programs in Karnataka

ISRO Facility	Year of Establishment	Functions
<p><b>1. ISRO Headquarters</b></p>	<p>1972</p>	<p>As the country's national space agency, Indian Space Research Organisation (ISRO) is involved in science, engineering and technology to harvest the benefits of outer space for India and the mankind. ISRO is a major constituent of the Department of Space (DOS), Government of India.</p> <p>Formed on August 15, 1969, and superseded INCOSPAR with an expanded role to harness space technology, ISRO was brought under DOS in 1972.</p> <p>The prime objective of ISRO/DOS is the development and application of space technology for various national needs. In line with Indian Space Policy, 2023, ISRO's focus will be deepened on outer space research and missions viz., missions to moon, mars, manned space missions, national lunar base etc.</p> <p>To fulfil its objective, ISRO has established major space systems for communication, television broadcasting and meteorological services; resources monitoring and management; space-based navigation services. ISRO has developed satellite launch vehicles, PSLV and GSLV, to place the satellites in the required orbits. While the headquarter of the organisation is in Bangalore, ISRO executes missions and realizes specific technologies and components through its various centres spread across the country with Karnataka having major centres for satellite manufacturing, telemetry and tracking, human space flight programmes etc.</p> <p>Alongside its technological advancement, ISRO contributes to science and science education in the country. Various dedicated research centres and autonomous institutions for remote sensing, astronomy and astrophysics, atmospheric sciences and space sciences in general function under the aegis of Department of Space. ISRO's own Lunar and interplanetary missions along with other scientific projects encourage and promote science education, apart from providing valuable data to the scientific community which in turn enriches science.</p>

<p><b>2. U R Rao Satellite Centre (URSC)</b></p>	<p>1972</p>	<p>U R Rao Satellite Centre (URSC), Bengaluru, formerly known as ISRO Satellite Centre (ISAC) is the lead centre for building satellites and developing associated satellite technologies. These spacecraft are used for providing applications to various users in the area of Communication, Navigation, Meteorology, Remote Sensing, Space Science and interplanetary explorations. The centre is also pursuing advanced technologies for future missions. URSC is housed with the state-of-the-art facilities for building satellites on end-to-end basis.</p>
<p><b>3. ISRO Telemetry Tracking and Command Network</b></p>	<p>1976</p>	<p>ISRO Telemetry, Tracking and Command Network (ISTRAC), Bengaluru is entrusted with the major responsibility to provide tracking support for all the satellite and launch vehicle missions of ISRO. The major objectives of the centre are carrying out mission operations of all operational remote sensing and scientific satellites, providing Telemetry, Tracking and Command (TTC) services from launch vehicle lift-off till injection of satellite into orbit and to estimate its preliminary orbit in space and hardware and software developmental activities that enhance the capabilities of ISTRAC for providing flawless TTC and Mission Operations services.</p>
<p><b>4. National Natural Resource Management System (NNRMS)</b></p>	<p>1985</p>	<p>The National Natural Resources Management System (NNRMS) is an integrated system in India that aggregates data about natural resources from remote sensing satellites and other conventional techniques.</p> <p>A key component is the National Resource Information Systems, which feeds into the larger government information system, including socioeconomic data and models. NNRMS activities are coordinated nationally by the Planning Committee of NNRMS (PC-NNRMS), which sets guidelines for system implementation and oversees the progress of remote sensing applications for natural resources management across the country.</p>
<p><b>5. Laboratory for Electro-optics Systems</b></p>	<p>1993</p>	<p>The laboratory has developed sensors for tracking Earth and Stars for satellites launched during the early days of space research in India. Satellites such as Aryabhata, Bhaskara, Apple, IRS, SROSS, and INSAT-2 have been equipped with these sensors. The lab also contributed to India's first Moon mission, Chandrayaan-1, and has an instrument in ISRO's mission to the Sun, Aditya-L1, designed to measure magnetic fields around LaGrange points.</p>

<b>6. ISRO Satellite Integration and Testing Establishment (ISITE)</b>	2006	<p>ISRO Satellite Integration and Test Establishment (ISITE) is equipped with state-of-the-art clean room facilities for spacecraft integration and test facilities including a 6.5-meter thermo vacuum chamber, 29-ton vibration facility, Compact antenna test facility and acoustic test facility under one roof. Assembly, Integration and Testing of all Communication and Navigation Spacecraft is carried out at ISITE.</p>
<b>7. Indian Space Science Data Center</b>	2008	<p>The Indian Space Science Data Center (ISSDC) serves as the primary data repository for the payload data archives of India’s space science missions. Located at the IDSN campus in Bangalore, ISSDC is tasked with the ingestion, processing, archiving, and dissemination of payload data and related ancillary data for missions such as Chandrayaan-1, Mars Orbiter Mission, and AstroSat. Each mission’s archive encompasses raw and reduced data, calibration data, auxiliary data, higher-level derived data products, documentation, and software.</p> <p>The data center adheres to the well-established archive standards of the Planetary Data System (PDS) and follows the guidelines set by the International Planetary Data Alliance (IPDA). This ensures compliance with global standards for the long-term preservation of data, maintaining their usability, and providing the scientific community with high-quality data for analysis.</p> <p>By adhering to these standards, ISSDC ensures that the data remains accessible and useful for future scientific research and analysis, thereby supporting the broader goals of space science and exploration.</p>
<b>8. Human Space Flight Centre</b>	2019	<p>The Human Space Flight Centre (HSFC) is a body under the Indian Space Research Organisation (ISRO) to coordinate the Indian Human Spaceflight Programme. The agency will be responsible for implementation of the Gaganyaan project. The first crewed flight is planned for 2024 on a home-grown LVM3 rocket.</p>
<b>9. NewSpace India Limited</b>	2019	<p>NewSpace India Limited (NSIL) is a Public Sector Undertaking (PSU) under the Department of Space, Government of India. Established under the administrative control of the Department of Space (DoS) and the Company Act 2013, NSIL is responsible for producing, assembling, and integrating launch vehicles with the help of an industry consortium. Its main objective is to scale up private sector participation in Indian space programmes.</p>

Table 11 : List of ISRO centres and facilities in Karnataka

## Annexure B: Public Sector Units key for space sector growth in Karnataka

Organization	ISRO and space sector Collaborations
1. Hindustan Aeronautics Limited (HAL)	A Maharatna HAL collaborates with ISRO on various projects, including the manufacturing of satellite launch vehicles and components for space missions.
2. National Aerospace Laboratories (NAL), CSIR	NAL works closely with ISRO on aerospace research and development, including projects like the SARAS aircraft and contributions to space missions.
3. Bharat Heavy Electricals Limited (BHEL)	BHEL collaborates with ISRO in the development of space-grade solar panels and other critical components for satellite missions.
4. Bharat Electronics Limited (BEL)	BEL partners with ISRO in the development of satellite communication systems, radars, and other electronic systems for space applications.
5. Defence Space Agency (DSA), Ministry of Defense	The DSA collaborates with ISRO on space warfare and satellite intelligence operations, integrating capabilities from all three branches of the Indian Armed Forces.
6. Defense Research Development Organisation – LTRE, ECS etc.	<p>As the country’s nodal and premier agency for defence research and development, Defence Research and Development Organisation (DRDO) has been spearheading research, prototyping and development across the defence value chain of systems, sub-systems, components and sub-components.</p> <p>In line with ‘Aatma Nirbhar Bharat’ vision of Government of India, DRDO is also anchoring development of capabilities of the domestic defence manufacturing and industrial ecosystem through a robust partnership model.</p> <p>DRDO has several labs and facilities in Karnataka viz., ECS cluster : LTRE, CASDIC etc. with focus on space sector around radars (particularly synthetic aperture radars), space electronics (detectors and other sensors), control systems for satellites etc.</p>
7. Central Manufacturing Technology Institute (CMTI)	<p>CMTI is an autonomous R&amp;D institute under Ministry of Heavy Industries, Government of India. It has evolved as a CoE for machine tool and manufacturing process development, special purpose machines for MSMEs.</p> <p>The focus domains include Ultra-Precision Machine Tools, Micro Nano Manufacturing, Sensors and Machine Controls, Smart Manufacturing and Industry</p>

	<p>4.0 enabled technologies and skilling and re-skilling industry ready manpower training.</p> <p>As a partner to ISRO, CMTI helps ISRO in realization of Vertical Planetary Mixer. CMTI is also involved in development of Laser-based Directed Energy Deposition Additive Manufacturing Machine.</p> <p>Some of the space Start-Ups benefitting from CMTI include Manastu Space, Bellatrix Aerospace, Dhruva Space etc.</p>
<p><b>8. Indian Telephone Industries</b></p>	<p>As Government of India’s first public services undertaking, Indian Telephones Industries limited is a public sector undertaking under Department of Telecommunication, Ministry of Electronics and Information Technology, Government of India.</p> <p>With the following capabilities i.e. EMI/EMC and Environmental testing of electronic products, 3D Printing, mechanical fabrication, reliability engineering lab Installation, electronic contract manufacturing, Printed Circuit Board (PCB) manufacturing, component Screening for mission critical components, ITI is an important player in defense electronics and space sector.</p>

*Table 12 : List of space sector related PSUs in Karnataka*



Annexure C: List of key academic and research institutions relevant for space sector skilling and talent growth in Karnataka

Name of the institute	Type	Relevant details and possible convergence points
<b>1. Indian Institute of Science (IISc), Bangalore</b>	Public funded research institute (Government aided)	<ul style="list-style-type: none"> <li>As the leading science and technology research institute of the country, Indian Institute of Research Bangalore has several centres and programmes that focus on space research and innovation viz., Aerospace, Astronomy and Astrophysics etc. It also houses ISRO's space technology cell.</li> <li>Centre for Continuous Learning, IISc administers The Advanced Certification Programme in Space Technologies with the objective to upskill professionals and students for the space sector.</li> <li>With incubation facilities viz., Society for Innovation and Development (SID/FSID), IISc has already incubated several Start-Ups in space sector viz., Digantara, Bellatrix Aerospace, Astrome etc.</li> </ul>
<b>2. International Institute of Information Technology, Bangalore (IIIT B)</b>	Not for Profit Deemed University jointly owned by Government of Karnataka and IT industry through PPP model	<ul style="list-style-type: none"> <li>Although the entirety of space value chain may not be the focus of the institute, several research and innovation focus areas viz., AI/ML, Data Analytics and Quantum computing have bearing for the space sector particularly in the downstream segment.</li> <li>As IN-SPACE predicts major value unlock for the space sector in the downstream segment, research and prototyping facilities (Spatial Computing Laboratory) of IIIT-B will be very helpful for Start-Ups.</li> <li>In addition to the above, Orbit Program (Start-Up incubation program) of IIIT-B focusses on defence technologies in partnership with Innovations for Defence Excellence (iDEX) which includes space technologies.</li> </ul>
<b>3. Indian Institute of Astrophysics (IIA), Bangalore</b>	Autonomous institute under Department	<ul style="list-style-type: none"> <li>While the institute's core focus is on astronomical research through observatories, IIA also focusses on satellite payload assembly and testing.</li> </ul>

Name of the institute	Type	Relevant details and possible convergence points
	of Science and Technology, Government of India	<ul style="list-style-type: none"> <li>Centre for Research and Education in Science and Technology (CREST), under IIA has several assembly and testing facilities for end-end requirements of satellite assembly and testing including clean rooms (ISO 9-4), vibration interferometer, spectrometer, vacuum chamber, thermal conditioning unit, thermo-vacuum chamber, vibration shaker etc.</li> <li>IIA with University of Mysore is establishing Cosmology Education and Research Training Center (COSMOS), a state-of-the-art planetarium in Mysuru along with a data analysis training and resource centre for students and teachers.</li> </ul>
<b>4. Raman Research Institute</b>	Aided Autonomous Institute under Department of Science and Technology, Government of India	<ul style="list-style-type: none"> <li>With astronomy and astrophysics as a core focus area, the institution anchors and conducts research on: <ul style="list-style-type: none"> <li>➤ Theoretical astrophysics : Development of analytical models and numerical simulations</li> <li>➤ Observational astronomy : Uses telescopes built across the globe to study radiation from space across the entire electromagnetic spectrum</li> <li>➤ Experimental astronomy : Design, construction and operation of telescopes for very specific purposes to address key unsolved problems</li> <li>➤ Algorithms and signal processing : Methods and modelling to amplify and or isolate the required astronomy signal from other foregrounds, backgrounds and unwanted interference and confusion.</li> </ul> </li> </ul>
<b>5. NIT Surathkal</b>	Public/ Government University	<ul style="list-style-type: none"> <li>NIT Surathkal is the Regional Academic Centre for Space under ISRO's Regional Academic Centre for Space (RACS) programme. Through the RACS, NIT Surathkal executes joint research programmes of common interest and promote collaborative activities between the partner institutions of southern states.</li> </ul>
<b>6. Visveswaraya Technological University (VTU)</b>	Public/ Government University	<ul style="list-style-type: none"> <li>There are several affiliated (including autonomous) colleges under VTU that have facilities and research programmes relevant for space technologies. Some of the colleges include</li> </ul>

Name of the institute	Type	Relevant details and possible convergence points
	under Government of Karnataka	<p>NITTE Meenakshi Institute of Technology, Dayananda Sagar College of Engineering, ACS College of Engineering etc.</p> <ul style="list-style-type: none"> <li>• Through its industry incubation centre, Visveswaraya Research and Innovation Foundation (VRIF), VTU is setting up several CoEs for collaborative research and innovation including deep-tech sectors.</li> <li>• Centre for Online Education, VTU administers a program on space flight dynamics and other space related courses viz., analytics, remote sensing etc.</li> <li>• As the academic partner to KITS for CoE for Aerospace and Defense, VTU Regional centre houses the CoE in association with Dassault Systems.</li> </ul>
<p><b>7. Domain specific Universities under Government of Karnataka</b></p>	Public/ Government University under Government of Karnataka	<ul style="list-style-type: none"> <li>• Although these universities do not administer research and academic programmes covering the entire value chain of space, several focus areas of research and training in the following universities is aimed to use space technologies for their focus domains: <ul style="list-style-type: none"> <li>➤ University of Agricultural Sciences, Bangalore : Some centres viz., Zonal Agricultural Research Station have focus on remote sensing/GIS for agriculture</li> <li>➤ Karnataka State Rural Development and Panchayat Raj University, Gadag : University administers a M.Sc. program in geoinformatics</li> <li>➤ Keladi Shivappa Nayaka University of Agricultural and Horticultural Sciences, Shivamogga : College of forestry focusses on remote sensing for forest management</li> <li>➤ Mangalore University : Department of Geography administers several academic courses in GIS/remote sensing</li> <li>➤ Bangalore University : Apart from administering courses, university has dedicated labs for GIS/remote sensing</li> <li>➤ University of Mysore : Centre for Geoinformatics focusses on GIS/Remote sensing research</li> </ul> </li> </ul>

Name of the institute	Type	Relevant details and possible convergence points
<b>8. Private Universities of Karnataka</b>	Privately owned Deemed Universities	<ul style="list-style-type: none"> <li>Several private universities of Karnataka viz., Manipal Academy for Higher Education (MAHE), People's Education Society University (PES), Christ University, Jain University etc. administer programmes in space technologies particularly in downstream segment (GIS/remote sensing/image processing and analytics etc.)</li> </ul>

*Table 13 : List of key space related academic and research institutions of Karnataka*