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NITI Aayog

# A ROADMAP FOR
# STRENGTHENING STATE S&T COUNCILS

SCIENCE AND TECHNOLOGY DIVISION
**NITI AAYOG, NEW DELHI | JULY 2025**

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NITI Aayog

# A ROADMAP FOR
# STRENGTHENING STATE S&T COUNCILS

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## MESSAGE

India's emergence as a knowledge economy will depend not only on the strength of its premier national institutions, but also on the vitality and resilience of its regional science and technology ecosystems. In this context, State Science & Technology (S&T) Councils deserve far greater recognition – not as peripheral agencies, but as central actors in enabling development from the ground up. These Councils have long played a quiet yet vital role in adapting scientific knowledge to local needs – whether in promoting renewable energy in underserved areas, preserving traditional knowledge systems, advancing farmer-centric technologies, or enabling digital inclusion. Despite significant contributions, they have often operated with limited visibility and under serious institutional constraints. It is time we acknowledged their role more fully and invested in their transformation.

This Roadmap is a timely and much-needed intervention. It presents both a thoughtful institutional review and a bold framework for reform. Anchored in extensive field engagement and broad-based consultation, the document identifies pathways for evolving State S&T Councils into strategic enablers of innovation, aligned with the national vision of Viksit Bharat by 2047. Importantly, it urges a transition from fragmented, project-oriented approaches to integrated and mission-driven scientific governance. It recognises that Councils must be empowered not just to implement, but to convene, collaborate, and catalyse. For this, systemic reforms are essential—not only in funding or staffing, but in how mandates are framed, outcomes are measured, and partnerships are forged across academia, industry, and civil society.

What stands out in this effort is its clarity of vision and its commitment to institutional development. It makes a persuasive case for repositioning S&T Councils as core nodes in the national innovation fabric—entities that can guide and scale locally relevant scientific solutions while feeding into national priorities. I commend the Science & Technology Division, NITI Aayog, behind this Roadmap for conducting a process marked by integrity, inclusiveness, and intellectual depth. This document is not merely a report—it is a strategic instrument to reimagine how science can serve society at all levels of governance.

Let this be the start of a renewed compact – where State Science & Technology Councils are enabled not only to support innovation but to shape it, lead it, and sustain it, in pursuit of a more inclusive, resilient, and scientifically empowered India.

**Suman Bery**

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**DR. JITENDRA SINGH**
Minister of State (Independent Charge),
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Ministry of Earth Sciences,
Minister of State, Prime Minister's Office,
Ministry of Personnel, Public Grievances and Pensions,
Department of Atomic Energy & Department of Space,
Government of India

**Message**

I am glad to learn that the NITI Aayog is coming out with a report titled "A Roadmap for Strengthening State Science and Technology Councils".

Under Prime Minister Shri Narendra Modi, as we chart a course toward a Viksit Bharat – a developed, self-reliant, and resilient India, it is imperative that our institutions at every level are empowered to drive this transformation. The State Science & Technology Councils, in this regard, hold a unique and powerful mandate: to localise innovation, democratise scientific opportunity, and embed technology into the everyday lives of our citizens.

Over the years, these Councils have contributed significantly, often quietly, yet meaningfully, to advancing region-specific priorities through scientific interventions. The Councils, with their knowledge of local contexts, challenges, and potential, are well-positioned to ensure that the benefits of science and innovation are equitably distributed and sustainably applied.

At a time when the science and technology landscape is evolving rapidly, with emerging frontiers, our state-level institutions must be equipped not only with resources but with the strategic agility to respond, adapt, and lead. This will require deliberate efforts to strengthen institutional capacities, foster talent, and build robust linkages across sectors and geographies.

This government has consistently placed emphasis on cooperative federalism, data-driven governance, and inclusive growth. Strengthening the State S&T Councils aligns seamlessly with this vision. Whether it is through the promotion of grassroots innovation, the application of emerging technologies in sectors like health and agriculture, or the fostering of talent across India's districts, these Councils can become instruments of transformation that work from the ground up.

As we move ahead, I urge all stakeholders to come together. Let us reaffirm our commitment to building a nation where innovation is inclusive, science is celebrated, and technology is harnessed not only for prosperity, but also for equity, dignity, and sustainability.

I hope the report will achieve its avowed objective of accelerating innovation, foster collaboration and strengthen institutional frameworks in the science, technology and innovation landscape.

**(Dr. Jitendra Singh)**

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## MESSAGE

Over the years, State Science & Technology (S&T) Councils have emerged as vital nodes within India's decentralized science governance framework. Despite their relatively modest resources and visibility, they have championed a diverse array of initiatives. Their ability to contextualize scientific inquiry within the socio-economic realities of each state has played a crucial role in bridging the gap between research and real-world application. Yet, as India strides toward a new era of technology-led growth and self-reliance, it is evident that the potential of these Councils remains significantly underutilized. There exists a wide disparity in how State S&T Councils function across the country. While some states have succeeded in positioning their S&T Councils as engines of innovation and growth, others grapple with systemic challenges.

This Roadmap has been developed through an intensive process of stakeholder consultations, national-level workshops, and in-depth assessments of structural strengths and weaknesses across the spectrum of State S&T Councils. It is anchored in the belief that revitalizing these Councils is not just a matter of administrative reform, but a strategic imperative for India's long-term development goals. The document lays out a coherent and comprehensive set of reform recommendations aimed at transforming State S&T Councils into agile, responsive, and future-ready institutions. A special emphasis is placed on leveraging STI (Science, Technology, and Innovation) data more effectively and creating robust feedback mechanisms to ensure adaptability and learning. It is this collaborative ethos embedded throughout the document that offers the clearest pathway toward an integrated and high-impact S&T governance model.

The successful realization of this vision will depend on a sustained commitment to coordination and cooperation across ministries, state governments, funding bodies, research institutions, and the private sector. If implemented effectively, the Roadmap can catalyze a transformation wherein State S&T Councils are no longer seen as peripheral bodies, but as strategic enablers of innovation, inclusive development, and technological self-sufficiency.

As India marches toward the vision of Viksit Bharat, a developed, resilient, and self-reliant nation science and technology must be placed at the heart of policymaking and governance. The localized innovation ecosystems facilitated by State S&T Councils will be crucial to achieving this goal, ensuring that the benefits of scientific progress reach every corner of the country and every segment of our society. This Roadmap is a clarion call for reimagining the future of India's science and technology at the grassroots. Together, we have an opportunity to redefine the role of science in nation-building and position India as a global leader in innovation-driven growth.

V K Saraswat.

**(Dr. V K Saraswat)**

**New Delhi**
**22.05.2025**

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अजय के. सूद
भारत सरकार के प्रमुख वैज्ञानिक सलाहकार
**Ajay K. Sood**
Principal Scientific Adviser to the Govt. of India

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# MESSAGE

It gives me great pleasure to share this important Roadmap that reflects a timely and necessary rethinking of the role, structure, and future trajectory of State Science & Technology (S&T) Councils in India. As someone engaged closely with India's S&T and innovation ecosystem, I have long believed that these Councils are uniquely positioned to channel the power of science towards region-specific development priorities, but only if we empower them with the institutional tools and systemic support they need.

This document, thoughtfully developed through extensive consultations, cross-sectoral inputs, and a participatory approach, offers a comprehensive assessment of where we stand and where we must go. I commend NITI Aayog for taking on this task with clarity, sensitivity, and strategic depth. Their efforts in convening a wide range of voices, capturing on-the-ground realities, and synthesizing diverse perspectives into a coherent vision are evident in the quality of this Roadmap.

What makes this initiative significant is its recognition that scientific governance at the state level cannot remain fragmented or reactive. Across states, we see inspiring examples of S&T Councils spearheading work in grassroots innovation, geospatial intelligence, digital infrastructure, and translational research. Yet, these successes are often achieved despite structural constraints. This Roadmap rightly moves the conversation forward from isolated interventions to systems thinking, from sporadic support to sustained capacity-building, and from uniform models to context-sensitive pathways for reform. While it stops short of prescribing a singular blueprint, it provides a clear strategic compass for what could become a generational transformation in how states leverage science and technology for the public good.

As we look ahead, I believe that the real test lies in execution. It will require ongoing commitment, collaborative governance, and alignment of priorities across institutional boundaries. For that, this document offers both a framework and a foundation.

I extend my appreciation to all the contributors, especially the state-level actors whose forthrightness and insights have shaped this effort. And once again, my sincere compliments to NITI Aayog for enabling this much-needed exercise. I look forward to supporting the next phase of this journey as we work collectively towards a more dynamic, inclusive, and future-ready science and technology ecosystem in India.

Ajay K Sood

**(Prof. Ajay Kumar Sood)**

**Dated : 21st May 2025**

बी. वी. आर. सुब्रह्मण्यम
B.V.R. Subrahmanyam
मुख्य कार्यकारी अधिकारी
Chief Executive Officer

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# MESSAGE

The formulation of this Roadmap has been a deeply reflective and collaborative journey. It is shaped by the voices and experiences of State Science & Technology (S&T) Councils across the country – institutions that, despite operating under diverse conditions and resource limitations, continue to demonstrate immense potential in driving localized innovation and science-led development.

As we engaged with the stakeholders, one insight became increasingly clear: the future of India's innovation landscape depends not only on national ambitions but equally on our ability to unlock the capacities of our state-level institutions. The Councils are often the first responders in translating scientific ideas into regional impact, and their revitalization is both urgent and necessary.

In preparing this Roadmap, our focus was not merely diagnostic but transformational. We sought to go beyond identifying challenges to outlining a strategic path that is inclusive, context-sensitive, and action-oriented. We were conscious that reform must be built on what already works, the best practices and success stories that many States have championed, while also enabling bold shifts in how we think about governance, partnerships, and delivery mechanisms in the S&T domain.

This document does not offer a one-size-fits-all solution. Rather, it provides a flexible framework within which Councils can evolve with greater autonomy, stronger institutional capacities, and enhanced linkages with academia, industry, and civil society. Importantly, it advocates for mechanisms that can ensure accountability, continuity, and responsiveness in implementation, recognizing that the success of this initiative will depend on sustained coordination among multiple actors.

I believe this Roadmap arrives at a pivotal moment when the country's aspirations for Viksit Bharat through technological self-reliance, inclusive growth, and regional empowerment are converging. Strengthening State S&T Councils is not a peripheral concern; it is central to building a resilient innovation ecosystem that reflects the diversity, ingenuity, and dynamism of India.

I extend my sincere appreciation to all who contributed to this effort, and reaffirm our commitment to supporting the next phase: translating this vision into measurable change on the ground. Together, we can ensure that science and technology become not just tools of advancement but instruments of equity, empowerment, and enduring progress.

16/5

**Dated: 16th May, 2025**

**[B.V.R. Subrahmanyam]**

स्वच्छ भारत

एस. कृष्णन, आई.ए.एस.
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**S. Krishnan**, I.A.S.
**Secretary**

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भारत सरकार
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Information Technology (MeitY)
Government of India

# MESSAGE

Science and technology drive the aspirations of a *Viksit Bharat*, fostering innovation-led growth and societal progress. Strengthening State Science & Technology Councils (SSTCs) is pivotal to unlocking India's diverse regional scientific potential and ensuring inclusive, technology-driven development across all states. This roadmap, developed through extensive consultations with states, scientific institutions, and policy experts, provides a structured framework to enhance governance, diversify funding models, and build resilient innovation ecosystems.

Aligned with these goals, MeitY propose to work closely with the Department of Science & Technology (DST), state governments, and other stakeholders to implement key digital enablers, such as Performance Dashboard and Public Innovation Interface. These tools will be able to provide real-time monitoring of inputs and outcomes, while integrating the exiting ecosystem. MeitY is willing to further support up skilling and harmonized policies to address on-ground operational challenges.

Together, with sustained collaboration with all stakeholders, we aim to translate this roadmap into measurable outcomes that empower states, attract investments, and accelerate India's journey towards a resilient, knowledge-driven, and self-reliant economy. MeitY remains dedicated to reinforcing India's science and technology landscape as a cornerstone for national prosperity and global leadership in the digital era.

(S. Krishnan)

Place: New Delhi
Date: 18th June, 2025

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## Message

Science and Technology (S&T) will be among the most powerful enablers of India's transformation into a Viksit Bharat by 2047. From addressing critical national challenges to accelerating innovation-driven, inclusive growth, S&T must be central to shaping a prosperous, equitable, and sustainable future.

India's vast diversity ecological, socio-economic, and technological necessitates a cohesive, coordinated approach to scientific advancement. Technology development is inherently complex and multidisciplinary, requiring convergence across institutions, sectors, and geographies. The only way to fully unlock our potential as a global innovation leader is through strong collaboration and alignment across the Centre and the States.

In this context, strengthening State S&T Councils is not only timely but imperative. These Councils serve as crucial institutional mechanisms to promote region specific innovation and translate scientific knowledge into locally relevant solutions. They are uniquely positioned to identify priority areas across diverse domains of agriculture, environment and public health and catalyze need-based R&D that resonates with local development goals. Biotechnology, in particular, is going to play a transformative role in India's development journey. Beyond being a sunrise sector, it is now a strategic pillar driving progress in healthcare, agriculture, environment, and industrial transformation. The Department of Biotechnology is committed for advancing this vision through investments in frontier research, infrastructure, and human capital.

India is also undergoing a transformational shift from being a hub of generic production to emerging as a global leader in sustainable biomanufacturing. Anchored in the BioE3 policy, this shift places biotechnology at the heart of India's economic, environmental, and employment goals. The successful implementation of BioE3 Policy will require empowered State S&T ecosystems that can nurture bioeconomy, enable public-private partnerships, and deliver scalable solutions. Centre-State convergence, therefore, must be a cornerstone of India's S&T roadmap. DBT Initiatives such as the establishment of BioE3 Cells envisioned as regionally tailored nodes for technology adoption and knowledge exchange are steps in this direction. These Cells will enable states to align with national priorities while leveraging local strengths, resources, and institutional capacities.

This Roadmap by NITI Aayog offers a timely, forward-looking framework to strengthen the institutional, financial, and strategic capacities of State S&T Councils. The Department of Biotechnology is fully committed to working with States as partners to realize the shared vision of a self-reliant, innovation-led India. Let us together build a future where science and technology is the bedrock of India's inclusive and sustainable development.

**(Dr. Rajesh S. Gokhale)**

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## Message

I extend my heartfelt congratulations to NITI Aayog for spearheading the national workshop on "Empowering State S&T Councils: Towards a Collaborative Approach for Improving India's R&D Ecosystem", and for preparing this visionary roadmap document.

The report titled "A Roadmap for Strengthening State S&T Councils" comes at a critical juncture in India's growth story—where innovation, research, and technology are key levers of national progress. The roadmap not only captures the key insights and forward-looking deliberations from the national workshop but also lays out a clear and actionable path for strengthening the role of State Science and Technology Councils.

As Chairman of the All India Council for Technical Education (AICTE), I deeply resonate with the report's call for enhanced capacity, robust institutional linkages, and dynamic policy frameworks that empower S&T Councils to drive region-specific innovation and contribute meaningfully to the national R&D landscape. In particular, the emphasis on fostering collaborative ecosystems between academia, industry, and government aligns closely with AICTE's mission to nurture innovation and applied research in technical education institutions across the country.

AICTE remains committed to working hand in hand with S&T Councils to enhance research infrastructure, promote faculty-industry collaboration, support indigenous technology development, and catalyze entrepreneurship among young technologists. Together, we can build a future-ready India, rooted in scientific excellence and driven by inclusive innovation.

I commend all stakeholders who contributed to this important initiative and look forward to continued collaboration toward realizing India's ambition of becoming a global R&D powerhouse.

With warm regards.

T.G. Sitharam
**(Prof. T.G. Sitharam)** 19/5/25

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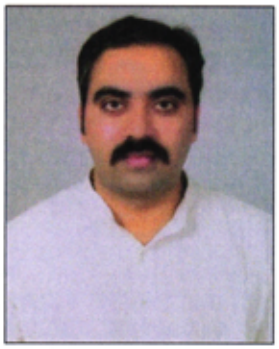
# Foreword



The preparation of this Roadmap has been an intensive and enlightening journey, not merely as an academic or policy exercise, but as a deep exploration into the institutional landscape of science and technology governance at the state level in India. It was motivated by a growing recognition within the ecosystem that while India has made considerable national progress in science and innovation, the institutional architecture at the sub-national level, particularly the State Science & Technology (S&T) Councils, remains uneven, under-leveraged, and insufficiently integrated into the broader developmental agenda.

From the outset, our aim was to go beyond surface-level assessments. This Roadmap results from sustained engagement with State Councils. We encountered inspiring practices being carried out under constrained conditions, a deep sense of commitment among Council personnel, and a strong desire for institutional renewal. At the same time, we also saw systemic bottlenecks that have persisted for far too long, fragmented mandates, inconsistent funding, staffing challenges, and weak mechanisms for collaboration, especially with the national science system and the private sector.

One of the fundamental insights that emerged during this process is the extent of heterogeneity among State S&T Councils, not just in terms of capacity or resources, but also in how they are conceptualized and positioned within their respective state ecosystems. While some function with relative autonomy and have a strategic role in state development planning, others remain peripheral, lacking policy clarity and operational authority. Any reform effort, therefore, must be sensitive to this diversity.

This Roadmap seeks to provide exactly that: a guiding framework which is both structured and adaptive. It captures the key thematic challenges that State S&T Councils face today and outlines potential levers for systemic strengthening. At its core, the document calls for a shift from viewing the Councils as programme-implementing units to enabling institutions that can shape, support, and steer innovation ecosystems at the regional level. Importantly, it places emphasis not only on "what" needs to be done, but also on "how" – through institutional reforms, improved coordination, capacity-building, and knowledge-sharing.

Throughout this process, we have been guided by a simple but powerful principle: that strengthening science and technology governance at the state level is not just about enhancing scientific capacity, it is about building the foundations of more responsive, inclusive, and future-ready development. The Councils have a unique mandate to localize national priorities, amplify regional strengths, and bring science closer to citizens. For them to play this role effectively, we must invest not only in projects but also in institutions.

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I extend my sincere appreciation to all the stakeholders who engaged with us openly and constructively, sharing insights, experiences, and recommendations. Their role has been instrumental to the depth and quality of the outcome.

This Roadmap is not intended to be the final word, but a strategic starting point, a reference for dialogue, a framework for reform, and a tool for shared progress. As we look to the future, we hope that this document will support a stronger, more collaborative, and coherent S&T ecosystem across Indian states – one that reflects the ambitions of Viksit Bharat where innovation and scientific thinking are embedded in governance at every level.

**(Prof. Vivek Kumar Singh)**

FUTURISTIC HUD
TEST
70%
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# Table of Content

# Executive Summary

This Roadmap outlines a strategic vision for strengthening the role and functioning of State Science & Technology (S&T) Councils across India. Based on extensive consultations, a national workshop, and multi-stakeholder engagement facilitated by the NITI Aayog, it captures the structural gaps, opportunities, and reform priorities necessary to transform State S&T Councils into robust enablers of regional innovation, scientific advancement, and sustainable development.

The State S&T Councils, with their limited resources, have significant contribution in supporting patent facilitation, remote sensing applications and GI mapping, grassroots innovation, science popularization, capacity-building programs and various other best practices on the basis of their regional strengths such as development of Digital Heritage Centres, strides in healthcare equipments, farm to food products, lab to market initiatives amongst other initiatives at the state level. They have also played a vital role in bridging the gap between research and application, especially in areas like agriculture, renewable energy, disaster management, and local entrepreneurship.

The State S&T Councils, though functioning within a shared national model framework, demonstrate significant heterogeneity in their governance models, funding structures, manpower capacities, and programmatic focus. While some states have leveraged S&T institutions to drive innovation and technology-led growth, others face several challenges related to fragmented mandates, irregular funding flows, and weak institutional capacities. Many councils are constrained by non-regularised manpower, absence of performance-linked incentives, and limited autonomy in decision-making, impeding long-term planning and execution.

This Roadmap attempts to identify major challenges faced by the State S&T Councils and underscores a critical shift from isolated, ad-hoc initiatives to a forward-looking ecosystem designed to empower State Science & Technology (S&T) Councils. It calls for a comprehensive blend of structural reforms, capacity-building efforts, and strategic partnerships to enhance the effectiveness and responsiveness of these Councils. Key issues addressed include inadequate financial resources and diversification, lack of state-specific S&T need mapping, weak institutional substructures, limited collaboration with industry and academia, fragmented R&D support, underutilization of STI data, insufficient recognition of scientific talent, and weak interlinkages with central agencies and other institutions. By harmonizing efforts across various stakeholders, the Roadmap seeks to eliminate redundancies and unlock synergies that can significantly elevate the role of science and technology in state-level governance and development.

**Table 4** outlines a detailed summary of the proposed recommendations, paired with related policy implementation roles. To ensure coherent implementation, the Roadmap recommends the establishment of a Key Coordination Group composed of senior representatives from relevant stakeholder organizations. This group will be charged with evaluating the recommendations, prioritizing action items, and devising clear, time-bound implementation strategies. Furthermore, the group will serve as the central body for progress monitoring, enabling a dynamic feedback loop to adapt and recalibrate efforts as needed.

The success of this initiative hinges on robust coordination among ministries, state governments, funding bodies, academic and research institutions, and industry partners. If executed well, the Roadmap has the potential to transform State S&T Councils into high-impact, innovation-driven engines of growth. It will not only bolster their administrative and technical capacities but also create a fertile ground for emerging industries, technological self-reliance, and knowledge-based economic development of the state.

Ultimately, this integrated approach will play a foundational role in achieving India's long-term strategic objectives, such as a resilient, and self-reliant Viksit Bharat, where science and innovation are central to societal progress, economic prosperity, and national strength. The Roadmap thus represents not merely a set of reforms but a pivotal opportunity to shape India's future in the global research, development and innovation landscape and position India as a leader in Science and Technology, through a collective approach.

# Background

India has several programmes to promote Science and Technology (S&T) activities and encourage innovations. The central and state governments regularly provide support to programmes such as extramural research grants, capacity building, science fairs, workshops, competitions etc., and have also encouraged businesses and entrepreneurship. Starting in the 1970s, States have established their State Science and Technology Councils to decentralize scientific governance, ensuring that each state can develop its own policies, research priorities, and innovation ecosystem, in alignment with its unique socio-economic and geographical characteristics.

In the recent decades, the State S&T Councils have been facing an uphill task of keeping pace with the rapid changes in the research and development (R&D) landscape. A task which requires significant upgrades in the capacity (manpower, expertise, infrastructure), coordination (among councils and across national as well as international organisations), and support (from state, central as well as industry and academic leaders). As evident from some recent reports[1,2], a significant part of India's S&T research outcomes come from central government institutions, and the state administered institutions are yet to make a meaningful contribution. India's advances in S&T can be significantly accelerated through collective effort of all the institutions in the country, both central and state institutions. The State S&T Councils may play a major role here.

Recognizing these needs and to coordinate their efforts and enable them in achieving higher goals in promoting Science, Technology and Innovation activities, a structured consultation process was undertaken by the NITI Aayog with the representatives from the State S&T Councils held over January and February 2025. The purpose of these consultations was to facilitate knowledge exchange, recognize best practices, identify major issues, and to work towards developing collective solutions to address the systemic challenges across the councils. This was followed by a Workshop titled "Empowering State S&T Councils: Towards a Collaborative Approach for Improving India's R&D Ecosystem" held in Vigyan Bhawan, New Delhi on March 18, 2025. These deliberations resulted into this well-structured Roadmap document. It encapsulates key observations and findings, highlights the defining features of the State Science & Technology Councils (State S&T Councils), showcases notable initiatives by selected councils, identifies prevailing challenges, and outlines strategic directions to strengthen and support the ongoing efforts of the State S&T Councils.

1 Kanaujia, A., Singh, P., Nandy, A., & Singh, V.K. (2022). Research Contribution of major Centrally Funded Institution Systems of India. *Current Science*, Vol. 123, No. 09, pp. 1082-1088.

2 Kanaujia, A., Nandy, A., Singh, P., & Singh, V. K. (2023). Mapping the research output from Indian states. *Current Science*, Vol. 124, No. 11, pp. 1245-1255.

# 1

# Introduction

The scientific research and technological development (R&D) ecosystem of a country has a crucial role in its prosperity and economic growth. In this ecosystem, different agencies and organisations play important roles. These include Universities, the centres of knowledge generation, Industries, where technological upscaling and commercialisation happen, and Government, which primarily facilitates and enables the Science, Technology and Innovation activities. In India, the coordination between these three players so as to ensure that the benefit of their actions reach the ground has been a major challenge. Ministries and Government Departments such as Department of Science and Technology (DST), Ministry of Education (MoE), NITI Aayog etc. have often deliberated on linking Universities, Civil Society Organisations or Other State level agencies in order to achieve this cause.

In recent years, India's R&D ecosystem has witnessed significant expansion in absolute terms, with Gross Expenditure on Research and Development (GERD) increasing from ₹60,196.75 crore in 2010-11 to ₹127,380.96 crore in 2020-21. As India strives to further strengthen its position as a global knowledge economy, it is crucial to continuously evolve its existing R&D ecosystem in tune with global technology trends. It is noteworthy that India's R&D funding structure is still largely government-driven, with the Government of India contributing a major share. GERD during 2020-21 was primarily supported by the government sector, with contributions from the Central Government (43.7%), State Governments (6.7%), Higher Education Institutions (8.8%), and Public Sector Industry (4.4%)[3].

Given this context, the role of key stakeholders, particularly state governments and other agencies, is critical in enhancing research productivity and impact. While centrally funded institutions continue to drive a significant portion of R&D output, it is imperative that state governments increase their contribution to research and innovation. Strengthening the participation of state-funded institutions, alongside private sector investment, will be essential for building a more robust and decentralized R&D ecosystem. At the level of States, the *Science and Technology Councils of States and UTs* (State S&T Councils) are an instrumental linkage in building the R&D ecosystem in individual states and the country in turn. This document looks at the State S&T Councils, their roles and activities, and presents the challenges faced by them in fulfilling their roles, and proposes a set of recommendations to strengthen the State S&T Councils in terms of capabilities and functions.

## 1.1 State Science & Technology Councils in India

Science and Technology (S&T) have long been recognized as key pillars of economic progress, industrial growth, and social development. In India, the promotion of scientific research and technological advancement has been central to national policies, ensuring that innovation plays a transformative role in addressing societal challenges. While the central government has historically played a prominent role in shaping the country's S&T landscape, it has been increasingly acknowledged that state-level initiatives are crucial for fostering region-specific innovation, localized research, and grassroots technological applications.

3 DST R&D Statistics 2022-23 available at https://dst.gov.in/sites/default/files/R%26D%20Statistics%20at%20a%20Glance%2C%202022-23.pdf

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The idea of State S&T Councils emerged from this need to decentralize scientific governance, ensuring that each state can develop its own policies, research priorities, and innovation ecosystem in alignment with its unique socio-economic and geographical characteristics. The initiative to establish State S&T Councils was first taken in 1970s, which marked the beginning of a structured approach to regional scientific development. A more formal push for establishing State S&T Councils came in the 1980s when the Department of Science and Technology (DST), Government of India, launched the State Science & Technology Programme. This initiative, aimed at strengthening scientific research at the state level, promoting collaboration between academia, industry, and government, and ensuring that technological solutions were tailored to address regional needs. Over the time, the State S&T Councils have been set-up in various States and Union Territories, and with passage of time evolved into multi-functional entities, driving state-specific research, technology transfer, and capacity building. Some of these councils also manage *science cities*, *patent information centres*, *planetariums* and have even been responsible for *establishment and management of autonomous institutions* etc. Most of the states have the councils as the major constituent of their State Department of Science & Technology. **Table 1** provides a list with names of these councils in chronological order of their year of establishment.

*Table 1. Establishment of State S&T Councils in India*

| Year | State/UT | Name of the SSTC |
|---|---|---|
| 1975 | Uttar Pradesh | Council of Science and Technology Uttar Pradesh |
| | Karnataka | Karnataka State Council for Science and Technology (KSCST) |
| 1981 | Madhya Pradesh | Madhya Pradesh Council Of Science and Technology (MPCOST) |
| 1983 | Punjab | Punjab State Council for Science and Technology (PSCST) |
| | Rajasthan | Department of Science & Technology, Rajasthan |
| | Goa | Goa State Council for Science & Technology (GSCST) |
| | Haryana | Haryana State Council for Science and Innovation Technology (HSCSIT) |
| 1984 | Bihar | Bihar Council on Science & Technology |
| | Tamil Nadu | Tamil Nadu State Council for Science and Technology |
| | Tripura | Tripura State Council for Science & Technology |
| 1985 | Manipur | Manipur Science and Technology Council (MASTEC) |
| | Mizoram | Mizoram Science, Technology & Innovation Council (MISTIC) |
| | Odisha | Science & Technology Department, Odisha |
| | Himachal Pradesh | Himachal Pradesh Council for Science, Technology & Environment (HIMCOSTE) |
| 1986 | Telangana (2014) | Telangana State Council of Science and Technology (TGCOST) |
| | Gujarat | Gujarat State Council on Science and Technology (GUJCOST) |
| | Andhra Pradesh | Andhra Pradesh State Council of Science & Technology (APCOST) |
| 1987 | Assam | Assam Science Technology & Environment Council (ASTEC) |
| | Jammu & Kashmir | State Science, Technology, and Innovation Council of Jammu and Kashmir |
| 1988 | West Bengal | West Bengal State Council of Science and Technology (WBSCST) |
| 1991 | Chandigarh | Department of Science & Technology & Renewable Energy (S&T&RE), Chandigarh |
| | Nagaland | Nagaland Science and Technology Council (NASTEC) |
| 1992 | Arunachal Pradesh | Arunachal Pradesh State Council of Science and technology (APSCS&T) |
| 1994 | Meghalaya | State Council of Science Technology & Environment (SCSTE) |
| 1996 | Sikkim | Sikkim State Council of Science and Technology |
| 1998 | Puducherry | Puducherry Council for Science & Technology |
| 2001 | Chhattisgarh | Chhattisgarh Council of Science & Technology (CCOST) |
| | Jharkhand | Jharkhand Council on Science, Technology & Innovation (JCSTI) |
| 2002 | Kerala | Kerala State Council for Science, Technology and Environment (KSCSTE) |
| 2004 | Maharashtra | Rajiv Gandhi Science and Technology Commission |
| 2005 | Uttarakhand | Uttarakhand State Council for Science and Technology (UCOST) |
| 2023 | Ladakh | Ongoing discussions for State Science and Technology council for Ladakh |

## 1.2 Commonalities and Distinctiveness

State S&T Councils operate within a shared national framework, but their capacities and priorities are shaped by the regional requirements of the state, resources available to them, and institutional support they have available to them. State S&T Councils in some states, (such as, Assam, Punjab, Gujrat, Madhya Pradesh etc.) have received substantial financial support, allowing them to undertake large-scale projects and initiatives. However, the funding and manpower resources available to different councils vary significantly, which often determine the scale and scope of their STI initiatives.

The governance structure of the councils also varies significantly. While some are following a highly centralized model with senior bureaucrats or ministers having the decision-making authority, others have adopted a more decentralized approach, empowering scientific advisory boards and regional offices to take initiative. It is worth noting that the states where a dedicated executive leadership in the council exists, there is a stronger overall presence, both in terms of impactful activities as well as advocacy for S&T initiatives within the government. In some states, S&T responsibilities are merged with broader portfolios like industry, education, or environment, leading to competing policy priorities.

In spite of these differences, the councils share common objectives in areas such as STI- driven growth, and interventions towards natural resource management, biotechnology applications, renewable energy etc., and capacity building for R&D. However, the execution of these activities vary, with some councils better placed in terms of developing relevant STI interventions for the state supporting accelerated technology development, while others prioritize supporting basic research, capacity building, grassroots innovation, or the integration of traditional knowledge systems into modern scientific frameworks.

These variations also highlight the potential for cross-learning and collaboration, as many of the challenges faced by the State S&T councils - such as limited industry engagement, funding constraints, inter-departmental coordination issues, and inefficiencies in technology development, are shared across multiple states. Given this context, structured peer-to-peer learning initiatives can play a transformative role in strengthening S&T governance at the state level. Successful models of research funding, technology incubation, and industry-academia collaboration from high-performing states can be adapted to suit the needs of others, fostering a more balanced and cohesive national S&T ecosystem.

Recognizing this need, a structured consultation process was undertaken to facilitate knowledge exchange, identify best practices, and brainstorm collectively to develop effective solutions to systemic challenges. The consultation process is detailed further in the next section. Through these discussions, it became evident that a more integrated approach to S&T policy formulation and implementation, driven by collaboration rather than isolated efforts, can significantly enhance the impact of the State S&T councils. By leveraging each other's strengths, addressing common bottlenecks, and sharing successful governance and funding strategies, states can ensure that their S&T initiatives contribute meaningfully to regional and national development.

## 1.3 Objectives

This roadmap aims to:

1. Carry out an in-depth assessment of the current functioning of the State S&T Councils,
2. Identify the major issues and challenges faced by the State S&T Councils, and
3. Provide a set of actionable recommendations for strengthening the State S&T Councils.

# 2

# Process for Identifying Key Issues and Challenges

## 2.1. Consultative Meetings

In order to document the current functioning of the State S&T Councils, and to identify the major issues and challenges faced by the councils, the NITI Aayog undertook a systematic approach, organizing a structured sequence of meetings with representatives from the State S&T councils. This comprehensive outreach covered a spectrum of stakeholders from almost all the States and Union Territories (UTs) of India. **Appendix I** provides details of participants.

The primary objective of these consultative meetings was to evaluate the status of ongoing initiatives, examine the governance structure, and identify key challenges such as manpower constraints, infrastructure limitations, and operational inefficiencies. Through these structured engagements, a broad range of perspectives were captured, enabling a holistic understanding of the systemic and operational challenges faced by the State S&T Councils. The meetings involved the State S&T Council members making a presentation followed by discussion and brainstorming activity. This dialogue aimed to enable NITI Aayog to explore potential avenues of support and strengthen the effectiveness of these councils.

*Image 1. Photographs from the consultative meetings with the State S&T Councils*

## 2.2 National Workshop on empowering State S&T Councils

To further deliberate on the key issues highlighted during the consultative meeting sessions and to explore ways to empower State S&T Councils in driving innovation and scientific advancement at the state level, the S&T Division of NITI Aayog organized a national workshop titled ***"Empowering State S&T Councils: Towards a Collaborative Approach for Improving India's R&D Ecosystem"*** on March 18, 2025 at Vigyan Bhawan, in New Delhi.

The workshop convened senior government officials, policymakers, and domain experts to assess the current state of the State S&T ecosystem, share best practices, and explore ways to strengthen governance, funding mechanisms, and industry linkages. The event was graced by distinguished dignitaries, including Dr. V.K. Saraswat, Member, NITI Aayog; Prof. Ajay Kumar Sood, Principal Scientific Adviser to the Government of India; Dr. Rajesh Gokhale, Secretary, Department of Biotechnology; Shri S. Krishnan, Secretary, Ministry of Electronics and Information Technology; and senior representatives from various scientific ministries and departments. Over 25 States and Union Territories were represented at the workshop.

The day-long event featured five thematic sessions covering a broad range of topics, including *STEM-driven R&D and innovation, development of science centres and planetariums, the role of remote sensing, technology transfer through Patent Information Centres (PICs), and best practices for inclusive S&T development.* The concluding session focused on expanding the mandate of State S&T Councils, strengthening institutional linkages, and fostering innovation-led growth. **Appendix II** provides details of agenda and sessions of the workshop.

The workshop served as a platform for meaningful dialogue and collaborative engagement, bringing together key stakeholders from government, industry, and academia. It facilitated a comprehensive evaluation of existing frameworks and identified opportunities to enhance the effectiveness and impact of State S&T Councils. Importantly, the workshop concluded with the announcement of the upcoming roadmap document by the S&T Division at NITI Aayog.


*Image 2. Photographs from the workshop 'Empowering State S&T Councils:Towards a Collaborative Approach for Improving India's R&D Ecosystem'*

# 3

# State S&T Councils: Framework and Functions

## 3.1 Governance Structure

The various State S&T Councils are organised in a hierarchical structure, designed to facilitate policy formulation, implementation, and oversight. The current governance structure follows a top-down approach, with decision-making and execution cascading from senior leadership to implementation teams.

Each State S&T Councils is typically headed by a President or Chairman, who is supported by key officials including, Secretaries, Officers, and Supporting Staff. The organisation of State S&T Councils primarily consists of three main tiers, namely:

1. Governing Body
2. Executive Committee
3. Member Secretary/ Executive Director and Scientific Staff

This tiered system is designed to enable a clear distribution of responsibilities among the officials, and ensure that policy decisions are made at the highest level, while execution and day-to-day operations are managed effectively.

**Governing Body: Apex Decision-Making Authority:** The Governing Body is responsible for overseeing policy formulation, granting budget approvals, and providing strategic direction. The Hon'ble Chief Minister (CM) usually serves as the President of the Council in the majority of the states, holding the highest authority in decision-making, strategic direction, and policy oversight. The CM plays a pivotal role in ensuring that science and technology policies align with the broader developmental agenda of the state and national priorities. The other members of the Governing Body often include:

- Vice President: appointed by the CM, to assist in the leadership and smooth functioning of the Council.
- Senior government officials from science, technology, and finance departments.
- Academic experts from universities and research institutions.

The Governing Body plays a pivotal role in defining the scientific roadmap of the state by identifying focus areas, approving large-scale projects, and setting financial guidelines. It ensures that the Council's activities contribute to the overall development of science and technology in the region. The decisions taken by the Governing Body are binding and serve as the guiding principles for the subsequent operational and administrative functions of the Council.

**Executive Committee: Implementing Policies and Programs:** The Executive Committee is responsible for implementing the policies and programs approved by the Governing Body. The Executive Committee is chaired by either the Hon'ble Minister, Science & Technology, State Government or the Principal Secretary of the State Government, maintaining a streamlined approach to governance. Its primary functions include:

- Overseeing project execution, ensuring that research and innovation programs run efficiently.
- Managing funding allocations, ensuring judicious distribution of financial resources.
- Facilitating collaborations with universities, research institutions, and industries.
- Monitoring progress on approved initiatives and addressing operational bottlenecks.

The Executive Committee acts as the bridge between policy formulation and execution, translating high-level decisions into actionable plans. Regular review meetings help track the effectiveness of implemented programs and address challenges in real-time.

**Member Secretary/ Director General/ Executive Director: Administrative and Operational Leadership:** The Member Secretary (or equivalent) plays a crucial role in the day-to-day administration of the S&T Council. This position is instrumental in ensuring that governance decisions and scientific programs are executed smoothly. The responsibilities of the Member Secretary include:

- Coordinating between the Governing Body, Executive Committee, and operational teams.
- Managing human resources, including recruitment and capacity-building programs for scientific and technical personnel.
- Facilitating inter-departmental coordination within the state government to streamline approvals and resource mobilization.
- Acting as the custodian of official records, project reports, and council-related documentation.

The Member Secretary functions as the operational backbone of the Council, ensuring that approved projects are not just conceptualized but also successfully implemented within stipulated timelines. The Member Secretary (or equivalent) is supported by scientific and non-scientific manpower in the Council. However, in many councils the Member Secretary (or equivalent) is not suitably empowered to direct and manage executive functions of the Council.

## 3.2. Human Resources

The workforce within State S&T Councils plays a pivotal role in driving research, innovation, and policy implementation. The organizational structure primarily consists of scientific and administrative personnel, with key positions such as Project Director, Project Officers, Field Officers, Office Assistants, Senior Assistants, Junior Assistants, Record Assistants, Field Assistants, and Office Subordinates. Each of these roles is essential in ensuring smooth operations, effective governance, and the successful execution of various initiatives.

While the sanctioned cadre strength of these councils is proposed to be sufficient, a significant number of positions remain vacant, creating operational challenges. This shortage of manpower can impact the council's ability to expand their programs, implement new initiatives, and strengthen collaborations. A well-staffed council is essential for sustained growth, effective coordination with stakeholders, and the successful translation of scientific research into impactful projects.

A key area that requires attention is the workforce engaged in Government of India supported projects. Many of these professionals work on project-based contracts, which often do not provide long-term job security, structured pay scales, career advancement and terminal benefits. Ensuring fair compensation and career growth opportunities can enhance workforce motivation, improve project execution, and contribute to better retention of skilled personnel.

To strengthen the council's human resource capacity, a structured approach to employment continuity and career progression is needed. The continued engagement of experienced personnel under government-supported projects would allow councils to build expertise, ensure consistency in implementation, and support the development of new initiatives. A well-supported workforce fosters greater accountability, commitment, and institutional efficiency, ultimately enabling state S&T councils to achieve their objectives more effectively.

## 3.3 Financial Resources and Budget

Key insights from these meetings revealed significant variations among councils in terms of financial and human resources, activities, and operational efficiency. While some councils benefit from substantial annual budgets and high engagement, others operate with limited funding and restricted activities. **Table 2** provides a comparative analysis of the annual budgets of various councils over the past two financial years, including the breakdown of central and state funding contributions, illuminating the existing disparities.

The comparative budget analysis of State Science & Technology (S&T) Councils for 2023-24 and 2024-25 reveals a 17.65% increase in total funding, reflecting growing investment in scientific research and innovation at the state level. However, the disparity in allocations raises concerns about regional imbalances in S&T development. **Kerala** (₹173.34 crores), **Haryana** (₹130 crores), and **Uttar Pradesh** (₹140 crores) utilize higher budgets. While **Maharashtra's** budget surged by 130%**,** states like **Sikkim** (-16.16%)**, Tamil Nadu** (-4%)**, and Uttarakhand** (-5%) saw budget cuts, potentially hindering ongoing projects and indicating a stark neglect of S&T infrastructure in some regions. The share of central and state core funding also varies significantly across the councils. Although some states receive better partial central assistance, the overall allocation from the central government (mainly from DST) is quite small. The State S&T Councils have not been able to tap the various other funding support structures at the central government. Over reliance on core grants and inadequate efforts to attract project-based grants from various ministries, departments and agencies of the central government has been a major weakness of most of the State S&T Councils. Some councils have established linkages with the National Council of Science Museums, Ministry of Culture to set up Science Parks and Science Cities. There is, however, a great scope of improving them further in capacity and relevance.

*Table 2: Annual Budgets of S&T council indicating State & Centre funding.*

| DST State S&T Councils | | | | | |
|---|---|---|---|---|---|
| (In & Crores) | 2023-2024 (In & Crores) | 2024-2025 (In 7 Crores) | Change in Budget (%) | Centre Funding (In & Crores) | State Funding (In & Crores) |
| Arunachal Pradesh | 15.63 | 28.17 | 10 | 1.32 | 14.31 |
| Andhra Pradesh | 4.84 | NIL | -- | 0.81 | 5.79 |
| Assam | 18.33 | 22.54 | 22.96 | 7.98 | 14.56 |
| Bihar | 10.70 | 11.2 | 4.66 | 0.06 | 11.14 |
| Chandigarh | 0.0145 | 0.0225 | 55 | 0.00 | 0.0225 |
| Chhattisgarh | 14.43 | 15.2 | 5.3 | 0.00 | 6.232 |
| Goa | 3.12 | 2.34 | -25 | 1.84 | 0.5015 |
| Gujarat | 300.86 | 161.02 | 20 | 1.07 | 159.95 |
| Haryana | 113.04 | 130 | 15 | 0.21 | 129.79 |
| Himachal Pradesh | 11.32 | 10.75 | -5.01 | 0.90 | 5.93 |
| Karnataka | 54.33 | 59.76 | 10 | 2.39 | 2.15 |
| Kerala | 150.87 | 173.34 | 14.89 | 0.00 | 173.34 |
| Madhya Pradesh | 46.19 | 61.38 | 32.89 | 1.83 | 59.55 |
| Maharashtra | 21.74 | 50 | 130 | 1.00 | 49.00 |
| Manipur | 5.06 | 6.05 | 19.56 | 5.85 | 0.20 |
| Meghalaya | 0.058 | 0.064 | 10 | 0.0064 | 0.0576 |
| Mizoram | 9.33 | 10.17 | 9 | 1.93 | 8.24 |
| Nagaland | 1.17 | 1.17 | 0 | 0.936 | 0.234 |
| Puducherry | 0.963 | 1.18 | 22.55 | 0.282 | 0.8968 |
| Punjab | 12.93 | 13.42 | 3.8 | 6.77 | 6.074 |
| Rajasthan | 22.39 | 26.58 | 18.71 | 1.44 | 25.14 |
| Sikkim | 11.18 | 9.37 | -16.16 | 6.65 | 2.637 |
| Tamil Nadu | 10.53 | 10.49 | -0.4 | 1.75 | 8.74 |
| Telangana | 8.40 | 19.23 | 129 | 0.962 | 18.27 |
| Uttar Pradesh | 147.37 | 140 | -5 | 0.910 | 139.09 |
| Uttarakhand | 48.60 | 52.09 | 7.18 | 1.042 | 51.05 |
| West Bengal | 16.25 | 13.5 | 20.37 | 2.50 | 11 |

*(Source: Information as received from Councils)*

**Andaman and Nicobar, Dadra & Nagar Haveli and Daman & Diu, Delhi, Jammu & Kashmir, Ladakh, Lakshadweep, Odisha and Tripura)*

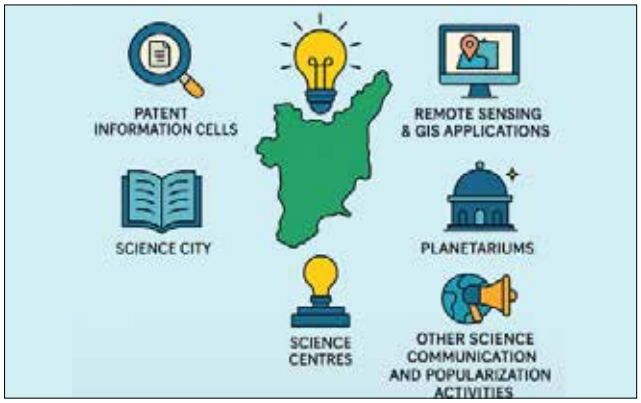
To address the uneven distribution of funds and strengthen State S&T Councils, a multi-pronged strategy is required. Steps such as performance-based funding models, where states with lower allocations but high potential, receive special grants, may be instituted. Besides this, enhanced central support and policy reforms are required.

## 3.4 Linkages with Central Institutions and Other Stakeholders

The success of State S&T Councils depends significantly on their collaboration with central institutions and other relevant key stakeholders at central as well as state level, including government agencies, research organizations, industries, and academic institutions. These interactions may facilitate knowledge exchange, financial support, policy alignment, and the commercialization of research and innovation. Strengthening these engagements is crucial for ensuring that state-level S&T initiatives remain aligned with national priorities and global scientific advancements. However, at present such linkages are not well developed and properly structured. Some State S&T Councils have been able to establish linkages with different departments and agencies at central level to get support for different initiatives and projects of the Councils. These include the Department of Biotechnology (DBT), Ministry of Culture and Ministry of Environment, Forests and Climate Change (MoEFCC), and National Council of Science Museums, Ministry of Culture. Some councils have also established preliminary linkages with universities and academic institutions in the state. In a few cases, engagement with industry for projects in the PPP model, for CSR projects has also happened. However, these interactions are very primitive and are limited to a few councils only, and as a result has led to only small and few benefits for State S&T Councils.

## 3.5 Major Functions and Activities

The State S&T Councils play an important role in fostering scientific research, innovation, and technology-driven development at the regional level. Established across all states, these councils function as key agencies to promote **scientific temper, innovation, and socio-economic development** by leveraging advancements in science and technology. Their activities broadly focus on supporting research projects, capacity building, policy advisory, and implementation of S&T initiatives through initiatives such as Patent Information Cells, Remote Sensing Centres & GIS Applications, Planetariums, Science City, Regional Science Centre along with other Science Communication and Popularization activities.




### 3.5.1 Research & Development Grants

Many State S&T Councils provide research and development grants on various scientific and technological problems. In general, these grants are provided to researchers working in institutions located within the state. However, the quantum of grant is not very significant, due to insufficient funds available for the purpose. Further, often the majority of such grants land on to researchers working in centrally funded institutions within the state, with very little left for those in state Universities. There is a need to expand these grants and also to rationalize the way these grants are allocated. At present, there is no mechanism to prioritize award of grants to state specific S&T needs. Further, the fellowships awarded as part of these projects are insufficient and are often not in accordance with the central government prescribed fellowship amounts.

The **KSCSTE Back to Lab Post-Doctoral Fellowship**, launched by the **Kerala State Council for Science, Technology and Environment**, supports qualified women scientists in resuming research careers after a break. Since 2014, 83 fellowships have been awarded, enabling women researchers to work in over 65 premier R&D laboratories across Kerala. The program has led to 438 peer-reviewed publications, 5 patents, and the launch of 5 entrepreneurship initiatives by women researchers.


*Box 1: The Back to Lab Post-Doctoral Fellowship by Kerala State Council for Science, Technology and Environment*

### 3.5.2 Patent Information Centre

**Patent Information Centres (PICs)** were established by the State S&T Councils across India to promote IP awareness, protect innovations, and facilitate patent filing. Initially supported by TIFAC under DST, Government of India, PICs support researchers, startups, academic institutions, and industries in securing intellectual property, fostering technological growth and commercialization. Their key functions include IP awareness programs, patent search and advisory services, patent filing support, and technology commercialization through industry collaborations. PICs have played a significant role in patent awareness and helped increase patent filings, and protected indigenous knowledge through GI registrations.

Key councils like **KSCST, TNSCST, MISTIC, PSCST, UPCST,** and others have created well-developed mechanism to support patent filing, research commercialization, and policy implementation in fields such as Biotechnology, AI, nanotechnology, pharmaceuticals, and agro-tech. These centres assist universities, startups, and innovators through training programs, advisory services, and financial incentives, fostering economic growth and innovation-driven development.

Since 2005, the Patent Information Centre (PIC) has been operating under the Tamil Nadu State Council for Science and Technology, with funding from TIFAC-DST, Government of India. PIC offers state-level facilitation for various forms of Intellectual Property (IP), including patents, trademarks, copyrights, industrial designs, and geographical indications. Prior to 2015, Tamil Nadu had only 6,034 published patent applications. Over the past decade, this number has increased eight-fold, reaching 53,200. The districts of Chennai, Coimbatore, Erode, Salem, and Namakkal lead in patent filings. University IPR cells across Tamil Nadu play an active role in technology transfer. For example, the IPR cell at TANUVAS, Chennai, has transferred 10 technologies to various companies.

Some notable innovations include:

- **BMD Digitometer** for diagnosing osteoporosis in postmenopausal women (Patent No. 356735)
- **Cuffed Steth** for hearing-impaired doctors (Patent No. 536707) Developed by the IPR Cell at Sri Balaji Medical College and Hospital, Chennai.

In recognition of its contributions, the PIC received the **National Intellectual Property Award 2023** (Special Citation for PIC) from the Ministry of Commerce and Industry, GOI.

According to the Indian Patent Office Annual Report 2022–23:

- Tamil Nadu ranks 1st in patent filings and GI registrations nationwide
- 3rd in industrial design filings
- Additionally, the IPR cells at Hindusthan College of Engineering & Technology and Kalasalingam Academy of Research & Education rank among the top 10 Indian applicants under the scientific R&D category.


*Box 2: Milestones of IPR Cells and notable innovations in the Tamil Nadu State S&T Council*

In addition to facilitating patent filings and intellectual property protection, these PICs actively engage in capacity building, research collaboration, and knowledge dissemination. They conduct workshops, establish IPR cells in educational institutions, and promote technology transfers to bridge the gap between research and industry. Their role in strengthening the state's intellectual property ecosystem is crucial, ensuring sustained scientific progress and technological advancements.

The **Innovation Facility Centre (IFC)** in Mizoram, inaugurated on December 9, 2020, promotes grassroots innovation by supporting indigenous innovators with technical assistance, institutional backing, and IP filing. Focused on inclusive growth, the IFC has developed 82 innovation-related and 93 non-innovative products. It has conducted 20 capacity-building initiatives such as training programs, internships, and industrial visits, and has facilitated 15 innovators and 20 entrepreneurs. To date, three IPs have been filed for innovations developed under the IFC. The Centre collaborates with key institutions such as the National Innovation Foundation (NIF), SCERT, NIT Mizoram, and AIC SELCO to further its mission.

*Box 3: Innovation Facilitation Centre in Mizoram*

However, the level of activities of different councils in this respect vary significantly, with some being active enough to establish IPR cells in educational institutions to others being a mainly a passive entity. Expanding PICs, increasing funding, and strengthening policy frameworks will be crucial to positioning India as a global innovation hub. It is also desirable that PICs be augmented with additional sub-structures for Technology Readiness Assessment and Technology Commercialization.

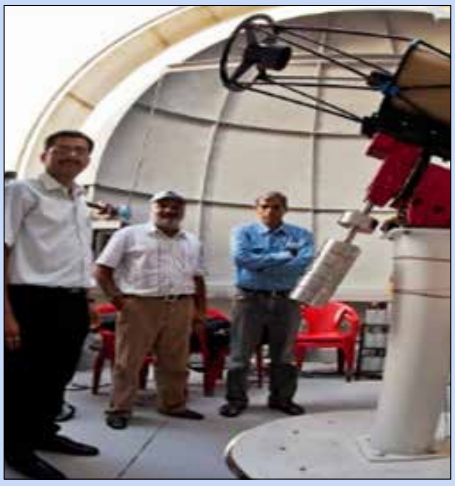
### 3.5.3 Planetariums

Planetariums play a critical role in science education, public engagement, and astronomical research. Established by various State Science & Technology Councils, these institutions serve as interactive learning centres that bridge the gap between complex scientific concepts and public understanding. Their key roles include STEM education through workshops, astronomy camps, and celestial observation sessions, making space science engaging for students and educators. They also host immersive digital shows, multilingual presentations, and science fairs to promote public outreach and participation. Additionally, planetariums support astronomical research, collaborate with institutions, and inspire careers in space science and astrophysics. They also highlight India's contributions to space technology, foster public-private partnerships, and integrate with science parks and museums to drive innovation and technological advancement. It is welcome to note that the majority of the State S&T Councils have established planetariums in the respective states, some of which are being upgraded with modern systems.

The Hybrid Planetarium at Ujjain, located at the Vikram Sarabhai Space Exhibition Centre in Madhya Pradesh, is a cutting-edge facility that blends traditional optical-mechanical projection with advanced digital technology. Inaugurated to enhance scientific curiosity and astronomical education, the planetarium serves as a significant hub for public outreach and STEM learning.

As one of the first hybrid planetariums in India, it offers an immersive and interactive experience of the cosmos, showcasing celestial phenomena such as star formations, planetary motions, eclipses, and space exploration missions. The hybrid system allows for real-time sky simulation along with digitally rendered visual content, providing visitors with an engaging and educational journey through space.

Equipped with high-resolution digital projectors and an optical star ball, the planetarium caters to students, researchers, and the general public, fostering interest in astronomy and space science. The initiative is aligned with the broader national mission to promote scientific temper and encourage young minds to pursue careers in science and technology.



*Box 4: The Hybrid Planetarium at Ujjain with a dome size of 12m and seating capacity of 124 individuals*

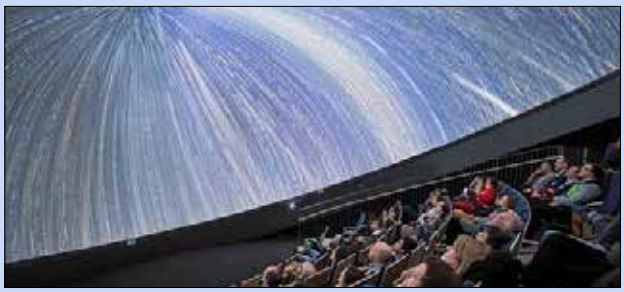
### 3.5.4 Science Cities

Science Cities Operated by the State S&T Councils serve as dynamic hubs for science education, innovation, and public engagement across India. These centres are developed and managed by various State Science and Technology Councils in collaboration with national agencies like the National Council of Science Museums (NCSM) under the Ministry of Culture and Department of Science and Technology (DST), Government of India.

The Science Cities aim to promote scientific temper, foster curiosity, and enhance public understanding of science through interactive exhibits, thematic galleries, planetariums, science parks, and innovation labs. They host hands-on experiments, science demonstrations, robotics and astronomy workshops, innovation festivals, and school outreach programs that cater to students, educators, and the general public.

The Pushpa Gujral Science City, Kapurthala managed by PSCST is one of the largest science cities in India, offering immersive experiences in biotechnology, space science, and renewable energy. The Patna Science City, Bihar has recently upgraded with new galleries on earth science, human evolution, and a state-of-the-art planetarium. The Kolkata Science City in West Bengal is one of Asia's largest science centres, it includes a Space Odyssey, Dynamotion Hall, and 3D theatre.

The Pushpa Gujral Science City or PGSC is located on the outskirts of Kapurthala on the Kapurthala-Jalandhar Road. The foundation stone of PGSC was laid by the then prime minister Inder Kumar Gujral on 17 October 1997. The major objective of the Science City is to supplement formal science education, to create excitement among the students about science & technology and to enthuse them to take up careers in science & technology.



*Box 5: A Picture of Pushpa Gujral Science City, Kapurthala*

**Gujarat Science City**, located in Ahmedabad and managed by the Gujarat Council of Science & Technology (GUJCOST), is a premier science and education hub aimed at promoting scientific awareness and experiential learning among people of all ages. It is known for its cutting-edge facilities like the Robotics Gallery which is one of the largest in India, showcasing humanoid robots, robotic arms, and interactive exhibits to demonstrate real-world applications of robotics in industry, healthcare, and daily life. The Aquatic Gallery features India's largest public aquarium, with 188 species and immersive experiences such as a walk-through tunnel. The science centre also houses a Nature Park, a hall of space and science, 3D imax theatre and Planetarium, Energy Park and Earth Pavillion which focuses on sustainable energy and geoscience, featuring solar energy installations and earthquake simulators.

Gujarat Science City also hosts regular workshops, science fairs, and innovation contests, making it a vibrant platform for science communication, learning, and discovery.

*Box 6: A Picture of Gujarat Science City managed by GUJCOST*

These initiatives reflect a decentralized yet coordinated effort by the State S&T councils to democratize science learning, encourage grassroots innovation, and align with the broader national goal of building a scientifically informed society. It would be desirable to have such Science Cities and parks across all the states of the country.

### 3.5.5 Remote Sensing Centre

Remote Sensing Units were established by some State Science & Technology (S&T) Councils to harness space-based technologies for regional development. These centres play a crucial role in utilizing satellite imagery, Geographic Information Systems (GIS), and remote sensing applications to address state-specific challenges. The key reasons for their establishment include: (a) these centres support natural resource management by monitoring land use, water resources, and forests while also aiding in disaster management through early warning systems and damage assessments; (b) they play a vital role in urban and rural planning by tracking infrastructure development and land encroachments; and these units contribute to environmental monitoring, studying pollution levels, climate change, and glacier melting. These centres also drive skill development and research by offering training in geospatial technologies, strengthening human capital.

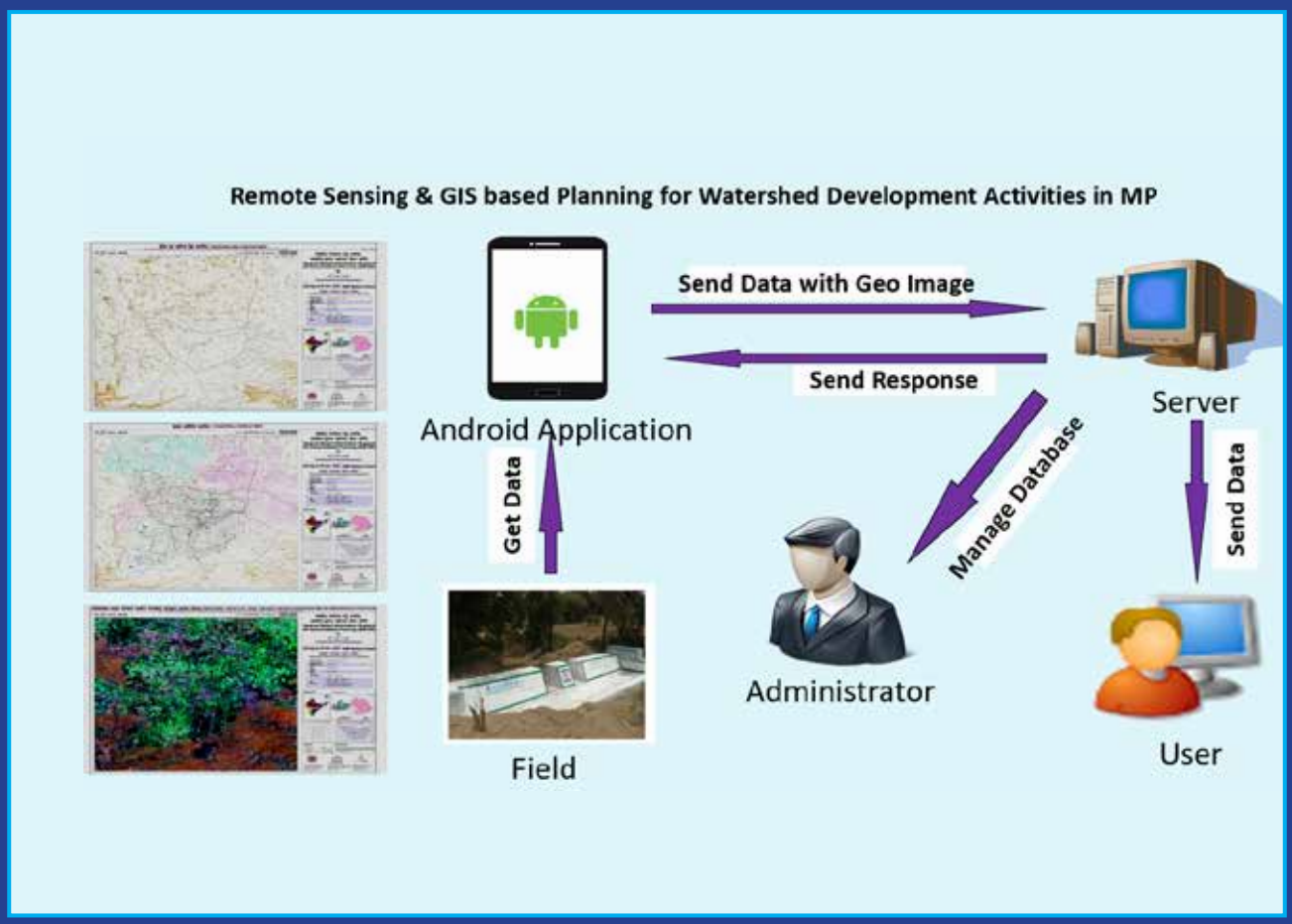



*Image 4: Illustration showcasing the operational workflow of the Remote Sensing Unit in Madhya Pradesh*

Several State S&T Councils have a remote sensing unit establishment, with Gujarat, Madhya Pradesh and Rajasthan making good use of such facilities. **BISAG-N (Gujarat)** specializes in geo-spatial systems and satellite communication, aiding agriculture, water management, and infrastructure. **Madhya Pradesh's RSAC** focuses on GIS-based planning, crop monitoring, Planning for Watershed Development activities and data management, while **Rajasthan's RSRSAC** integrates remote sensing for natural resources and infrastructure, including PMGSY road mapping.

Some other State S&T Councils have also initiated efforts in this direction. For example, **Kerala's KSREC** developed K-GIS and GRAMAM for sustainable agriculture, and **Odisha's ORSAC** utilizes GIS and GPS to tackle developmental challenges and education programs. **Punjab's PRSC** leads in geospatial analytics and stubble-burning monitoring. **Meghalaya's NESAC** supports North-Eastern development, **Uttarakhand's IIRS (ISRO)** offers training in remote sensing and disaster management, and **Telangana's NRSC (ISRO)** handles satellite data processing and disaster response. These centres drive innovation, governance, and sustainability through geospatial technology.


*Image 5: Picture depicting the BISAG-N centre at Gujarat*

All in all, these centres play a pivotal role in climate action, pollution monitoring, and glacier studies, supporting evidence-based policymaking for sustainable governance**.** By fostering technological advancements in GIS and satellite applications, they drive research collaborations with institutions like ISRO and strengthen India's innovation ecosystem in relevant areas.

### 3.5.6 Science Popularization and Other Activities

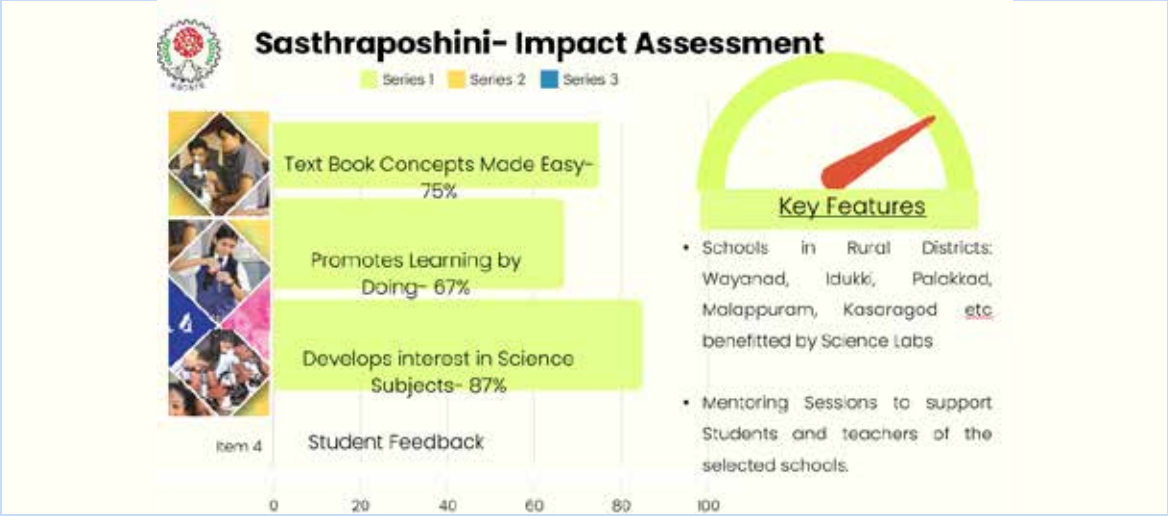
State S&T Councils actively engage in various science popularisation activities to foster scientific temper and awareness among the public. These initiatives mainly run under the overall direction and support of the National Council for Science and Technology Communication (NCSTC), a division of DST.

Key activities undertaken by various State S&T Councils included:

- Organising Science Exhibitions and Festivals to showcase scientific innovations and engage the public, Workshops and Training Programs for students, teachers, and science communicators, Competitions and Awards to actively promote scientific curiosity and innovation among students, researchers, and the general public.

- Provide Internship, scholarship support to school and college students, and
- Developing and distributing science magazines, newsletters, and digital content to disseminate scientific information.
- Mobile Bus and Vans are used to demonstrate S&T concepts to school students.
- Events like Children Science Congress, National Science Day, and National Mathematics Day.

**Sasthraposhini** is a science popularization program launched by the **Kerala State Council for Science, Technology and Environment (KSCSTE)** with the goal of nurturing scientific curiosity and awareness among school students. The initiative focuses on strengthening science education at the grassroots level, particularly in government and aided schools across Kerala. Through activities such as science clubs, hands-on experiments, exhibitions, and student-scientist interactions, Sasthraposhini encourages critical thinking and experiential learning. The program also provides training and resource support to science teachers, helping improve classroom practices and foster a scientific temper among young learners. By promoting early interest in science and technology, Sasthraposhini plays a key role in building a future-ready, scientifically literate generation.




***Box 7: Science Popularization Initiatives by the Kerala State Council for Science, Technology and Environment***

These programs collectively aim to foster a robust scientific research environment in India by providing financial support and resources to researchers, educators, and students aiming to make a difference in the scientific world.


*Image 6: India International Science Festival 2022*


*Image 7: National Children Science Congress 2017*

An example of such an initiative is the India International Science Festival (IISF), initiated by the Ministry of Science and Technology and the Ministry of Earth Sciences in collaboration with Vijnana Bharati, brings together students, researchers, and the public to celebrate and promote innovation. It is rightful to say that the State S&T Councils play a pivotal role in making science accessible, engaging, and integral to societal development.

### 3.5.6 Some Best Practices

Several State S&T Councils have instituted new initiatives and innovative activities to address S&T needs of the state. Some selected examples are presented here for illustrating the potential that the State S&T Councils have. The Manipur Science and Technology Council (MASTEC), in collaboration with Institute of Bioresources and Sustainable Development (IBSD) and Fragrance & Flavour Development Centre (FFDC), has launched a project to promote the cultivation and value addition of aromatic plants such as lemongrass, citronella, and patchouli. The initiative focuses on training farmers and entrepreneurs in sustainable cultivation, distillation, and product development to enhance rural incomes and livelihood opportunities. The project also aims to create market linkages and promote the use of indigenous aromatic species, supporting biodiversity conservation and aligning with the National Mission on Medicinal and Aromatic Plants. It positions Manipur as a potential hub for natural aroma-based products, contributing to local entrepreneurship and rural development.

*Image 8: Pictorial depiction of MASTEC-IBSD-FFDC Project on Aromatic Plant*

The **Rural Appropriate Technology Demonstration Centre** has been set up at Kimin, Papumpare district of **Arunachal Pradesh** with the aim to impart skill, training and providing Economic Sustainability to the rural population of the state. Procurement of instruments, training of the technical staff, cultivation of citronella and technology transfer from respective CSIR Institutes has been carried out. The future prospects of the project involve training the farmers, entrepreneurs and women of the state on different aspects of entrepreneurial skills using science and technology interventions for economic sustainability.

*Image 9: Preparation of Citronella and Lemon grass nursery*

The **Karnataka Digital Heritage (KDH)** project is a technology-driven initiative to digitally document and preserve the state's rich cultural heritage. Using advanced tools such as **3D laser scanning, geo-spatial mapping, drones, AR/VR**, and photogrammetry, the project creates **high-resolution 3D models** of monuments for virtual walkthroughs and academic use. The initiative has successfully completed the 3D scanning of 844 state-protected monuments and 80 monuments from the Hampi World Heritage Site. It also generates 3D point cloud data, mesh models, CAD engineering drawings, and geo-tagged spatial and non-spatial datasets with photographs. These digital assets support virtual tourism, conservation, restoration, and reconstruction efforts. Complementing this, the Karnataka Digital Museum focuses on the digital documentation of antiquities in government museums under the Department of Archaeology, Museums, and Heritage, using similar cutting-edge technologies. Together, KDH and the Digital Museum by combining technology and culture not only protects the state's legacy but also makes it accessible to a global audience through interactive and immersive experiences.

*Image 10: Depiction of 3D models of monuments*

In a collaborative effort, the **CSIR-Indian Institute of Petroleum (CSIR-IIP)** and the **Uttarakhand State Council for Science and Technology (UCOST)** have established a briquetting unit in Champawat, Uttarakhand. This unit converts fallen pine needles into bio-briquettes, providing an eco-friendly alternative to traditional fuels. Located in the Energy Park of Champawat, the facility has a production capacity of 50 kgs per hour. The initiative also includes the distribution of 500 improved cookstoves to rural households, aiming to reduce household pollution by 70% and promote energy efficiency. By utilizing pine needles, the project addresses forest fire risks and offers livelihood opportunities particularly empowering local women.


*Image 11: Aadarsh Champawat Initiative by UCOST*


*Image 13: Paddy Straw Management Initiative by PSCST*

**TSCOST's Bio-Waste Digester Reduces Costs and Carbon Footprint in Schools-** TSCOST has developed a bio-waste digester that converts 75 kg of daily food and vegetable waste into methane gas for cooking in hostels. With a 15 cubic metre capacity, it can save 7-8 LPG cylinders or 2-3 tons of firewood per month, reducing both costs and carbon emissions. Initially seeded with cow dung, the digester uses hostel bio-waste to generate gas. Each school can save ₹40,000-₹50,000 monthly. After successful pilots at National Institute of Rural Development & Panchayati Raj (NIRDPR), National Institute of Technology (NIT) Warangal, and Centre for Cellular and Molecular Biology (CCMB) Hyderabad, the State government has approved installation in 18 more welfare schools and hostels.


*Image 12: Visual of Biodigester System at Work*

The **Paddy Straw Management Initiative** by the **Punjab State Council for Science & Technology (PSCST)** is a pioneering effort to address stubble burning through sustainable resource utilization and technological innovation. Punjab became the first state to establish dedicated paddy straw briquetting and pelletization plants and to mandate the partial replacement of coal with paddy straw pellets (minimum 20%) in select industries. This initiative supports India's sustainable energy goals by facilitating the use of paddy straw pellets in industrial applications, particularly brick kilns and thermal power plants. Currently, 42 pelletization plants are operational or in development, meeting a demand of 12 lakh tonnes per annum (TPA) and supplying 9.5 lakh TPA. Complemented by resource guides, an FAQ booklet, and expert contributions to the Central Pollution Control Board (CPCB) Appraisal Committee, the program also emphasizes skill development through worker training and engages in international collaborations with International Centre for Integrated Mountain Development (ICIMOD) for regional technology demonstration. The initiative has generated significant socio-economic benefits, including local employment, enhanced farmer income, a ₹1000 crore boost to the state GDP, and reduced carbon emissions—positioning Punjab as a leader in climate-resilient agricultural waste management.

# 4

# Major Issues and Challenges

The consultations conducted by the NITI Aayog have highlighted several critical challenges faced by the State S&T Councils. These challenges encompass funding constraints, governance inefficiencies, workforce shortages, and limited collaboration with key stakeholders, to name a few. Addressing these issues is essential for enhancing the effectiveness of S&T Councils and ensuring that they contribute meaningfully to the scientific and technological progress of their respective states.

The major issues identified during the NITI Consultative meetings and the Workshop are as follows:

## 4.1 Weak Governance Structure and Delays in Decision-Making

One of the major challenges confronting State S&T Councils is the governance structure. Many states fail to convene regular meetings of their governing councils, leading to delays in decision-making and sluggish implementation of key initiatives. The **absence of a well-defined governance framework** has resulted in fragmented policy execution, with considerable variations across different states. Additionally, **prolonged timelines** further hamper the efficiency of councils, as bureaucratic delays in processing approvals often result in missed opportunities for timely scientific advancements. Central government approval processes for projects and funding disbursements are also frequently delayed, impacting the ability of state councils to execute their mandates effectively. Further, only some of the councils have dedicated executive leadership to steer the various activities, which is an essential component for efficiency and accountability. The absence of a dedicated, result-oriented and accountable scientific leadership is a major weakness of majority of the State S&T Councils.

## 4.2 Inadequate Financial Resources and Utilization Issues

Financial resources pose another significant hurdle for State S&T Councils. The disparity between the state and central share of funding, over reliance on core grants creates an uneven landscape, limiting the resources. In some councils, there is also a notable discrepancy between sanctioned funds and their actual utilization, often caused by procedural inefficiencies and cumbersome approval processes. The irregular and delayed release of budget allocations has further restricted the operational capabilities of the State S&T Councils, affecting their ability to launch and sustain critical research programs. Those states where the state funding has been better, the councils could do a much better job in promoting Science and Technology advancements. The absence of suitable opportunities for project-based grants further limit the capabilities of the State S&T Councils.

## 4.3 Shortage of Skilled Manpower and Work Culture Concerns

Limited manpower is a persistent issue affecting the efficiency of State S&T Councils. Many states struggle with a shortage of primarily scientific personnel, as numerous sanctioned positions remain unfilled due to financial constraints or administrative bottlenecks. This **lack of adequate staffing** not only affects research output but also limits the ability of councils to undertake large-scale initiatives. Some councils have stated that the work culture in smaller research institutions and colleges remains a concern, as the quality of submitted proposals is often suboptimal due to the lack of skilled personnel and research-oriented training. Therefore, in order to build a stronger research ecosystem in the state institutions, there is a pressing need to empower the State S&T Councils with suitable and competent scientific manpower to make necessary interventions. Additionally, capacity-building programs aimed at enhancing technical skills and research methodologies must be prioritized to improve the overall effectiveness of state-led initiatives.

## 4.4 Weak Inter-Institutional Linkages and Collaboration Gaps

Poor inter-institutional linkages further exacerbate the challenges faced by the State S&T Councils. The State S&T councils have not harnessed the potential support structure available with various central government departments in an effective way. International collaborations also remain underdeveloped, limiting exposure to global best practices and cutting-edge technological advancements. The inability to secure substantial funding for research and innovation initiatives further restricts the scope of work undertaken by these councils. Without strong linkages with institutions at various levels, many promising research projects fail to reach their full potential, remaining confined to academic circles rather than being translated into practical applications. Lack of relevant linkages also restrict the ability of the State S&T Councils in making relevant STI interventions in the state.

## 4.5 Lack of Industry Engagement and Relevant Sub-structures

A key shortfall in the current system is the poor industry connection of State S&T Councils. Unlike centrally funded research institutions that maintain better engagement with private sector players, many state councils have minimal involvement with industries. This results in lost opportunity for knowledge sharing, attracting resources, and working collaboratively for state specific S&T needs. The absence of state-based tech-transfer facilitation centres has only exacerbated the issue, as many councils lack the necessary infrastructure to bridge the gap between research and industry needs. This disconnect has led to an underutilization of scientific capabilities and advancements in the state, limiting their potential impact on economic and technological growth.

## 4.6 Regulatory and Administrative Bottlenecks

Structural and regulatory bottlenecks also hinder the seamless functioning of State S&T Councils. The **financial rules and regulations governing fund utilization need to be streamlined**, as many councils face rigid bureaucratic procedures that slow down expenditure approvals. There is a **need for a common enabling operational framework for all State S&T Councils**, which can provide uniform standards, improve efficiency, and ensure better coordination across states. Furthermore, the irregular convening of governing council meetings continues to stall decision-making processes, impacting the timely implementation of initiatives. A more efficient and transparent administrative mechanism, with clearly defined roles and responsibilities, and performance oriented and accountable leadership, is essential to ensure the smooth operation of State S&T Councils.

# 5

# Need for a Long-Term Strategy and Policy Continuity

Building on the insights from the consultations held, and the deliberations in the national workshop, the NITI Aayog has developed a **comprehensive roadmap** to address these challenges and strengthen the State S&T Councils, in terms of their capabilities and functions. It focuses on a multi-pronged approach, including governance reforms, enhanced financial resources and autonomy, improved manpower planning, and stronger institutional linkages. A structured, long-term strategy will be key to reinforcing the role of State S&T Councils in fostering innovation and technology-led development.

Moving forward, targeted efforts should be made to ensure sustained funding, policy continuity, enhanced industry engagement, and capacity-building initiatives to unlock the full potential of statedriven S&T initiatives. Furthermore, there is a pressing need for a standardized operational framework across all S&T Councils to streamline operations, improve efficiency, and establish uniform standards. By addressing these issues holistically, the State S&T Councils can evolve into more dynamic institutions, fostering scientific research and driving socio-economic progress of the respective states as well as the country. The recommendations outlined the next section can help the councils significantly in their journey towards becoming more effective.

# 6

# Recommendations for Strengthening the State S&T Councils

Through a comprehensive process of stakeholder meetings, one-on-one discussions, and the S&T Council workshop, NITI Aayog has identified possible steps to be taken by different stakeholders to strengthen State S&T Councils. These recommendations cover various aspects of structure, functioning and support mechanisms for State S&T Councils. These recommendations will help transform the functioning, role, and capabilities of the State S&T Councils, so that they are empowered and play a more relevant role in the overall growth of the S & T ecosystem of the respective states.

## 6.1 Structural Reforms in Governance Structure

A major area of concern identified through discussions in consultative meetings and the workshop relates to structuring and functioning of the Governing body of the councils. Not only are their meetings in general irregular, their composition also needs to change so as to make them more effective. Similarly, some changes are also required in the composition and role of the executive committee of the councils. The major recommendations are as below:

### Governing Council

The **Governing Body of the councils must be slightly restructured and expanded** so as to make it more capable of taking informed policy decisions and strategic planning. The Governing Council may continue to be chaired by the Chief Minister or the S&T Minister of the state, as the case may be; however, it must be expanded to include more expertise.

It is recommended that the Governing Council, in addition to relevant senior officials from the state government, including the Chief Secretary of the state, and others senior officers, preferably those heading departments like S&T, Information Technology, Environment and Forest, Education, Planning, Finance etc., must include:

a. at least two directors/ Heads of a central government institution/ laboratory located in the state, such as those administered by DST/DBT/CSIR/ MEITY, etc.
b. at least two Vice Chancellors of a central or state university located in the state,
c. at least one head of a relevant PSU located in the state,
d. at least one representative from the state chapter of any major industry association like CII/ FICCI/ ASSOCHAM/ NASSCOM,
e. at least two distinguished/ eminent scientists residing in the state who are preferably also fellows of any of three national science academies,
f. at least two senior officers from central government organizations like NITI Aayog/ DST/ DBT, and
g. a full-time executive director appointed for a fixed tenure of 3 to 5 years as member secretary.

The diverse representation in the Governing Council will not only enrich it, but will also help establish linkages and foster collaboration with relevant departments at central level as well as academia and industry. The expanded body will also provide for better understanding of state specific S&T needs and priorities, and at the same time better aligning the state initiatives with national priorities. Representation from Industry and other relevant departments/ institutions will help attract additional resources to support various activities of the councils.

The Governing Council must meet at least once every year, though one meeting every six-months would be more effective.

### Executive Committee

The executive committee of the councils must function with a performance-driven approach, emphasizing measurable outcomes, strategic execution, and accountability. Strong, visionary leadership is crucial to driving innovation, fostering collaboration, and ensuring that the council effectively contributes to the state's scientific and technological progress. However, this calls for a slight restructuring of the composition of the Executive Committee.

It is recommended that the Executive Committee:

a. must be chaired by a full-time Executive Director, appointed for a fixed tenure of 3-5 years. The Executive Director must be a distinguished scientist/ academician/ Science administrator/ Industry leader having expertise in the area of S&T. The position of Executive Director must be equivalent in pay and rank to Vice Chancellor of a University, and must be filled through an appropriate search/ selection committee constituted for the purpose by the chairman of the Governing Council,

b. should have at least 5 external members, preferably from S&T/ academic institutions located in the state, having special knowledge in different areas of S&T,

c. up to 5 officers from the state government representing relevant departments like planning, finance, etc., and

d. up to 5 senior scientific officers working full time in the council.

The role of Executive Director is crucial as s/he is expected to provide scientific and administrative leadership to the council. The existing practice, in many states, of manning the position of Executive Director/ Member Secretary by a career bureaucrat of the state, having no expertise in the area of S&T, must be avoided. The Executive Committee, composed as above, will help foster a multidisciplinary, holistic, and accountable approach to decision-making and execution of major activities of the council.

The Executive Committee must meet at least once every six months so as to ensure timely and effective planning and execution of different programs and schemes.

## 6.2 Financial Support and Resources

The different councils across the country have varied budgets and resources available to support different activities. Appropriate funding is crucial to successful and effective execution of different initiatives and activities. The consultation process helped in identifying the need for a strategic re-look on the provisions of financial support from state government and central departments/ agencies.

The following are the major recommendations in this regard:

a. **Adequate Financial Resources:** State governments should provide adequate financial resources to the councils to enable them carry out the regular activities effectively and to initiate new activities in advanced and emerging areas of S&T. It would be desirable that each state allocates at least 0.5% of GSDP on S&T.

b. **From Core to Project-based grants:** The Department of Science and Technology, Govt of India, should only provide project-based grants to different councils, based on their capabilities and performance. The provision of core annual grants may be discontinued, except for continued support to smaller councils in NE region and UTs.

c. **Widening the Financial Support Structure:** The Councils must explore wider funding opportunities available with different departments of the central government for activities related to the overall mandate/ allocation of the respective departments. The NITI Aayog can help councils in establishing such linkages with departments/ agencies in the central government.

d. **Linkages with Industry & PSUs:** The Councils should also explore establishing linkages with Industry bodies, PSUs, and other possible support agencies in the state for attracting support and financial resources for different activities. Such linkages will indirectly help promote university-industry interaction in different activities of the councils.

e. **Collaboration with Universities and Institutions:** The Councils should strive to foster collaboration with Universities and R&D institutions within the state to carry out collaborative activities and attract financial resources from various such agencies. Such collaborative projects will not only strengthen the academia and government collaboration, but will also provide for greater opportunities for collective efforts towards overall scientific and technological growth of the state.

f. **Performance Based Grants:** To promote accountability, encourage innovation, and catalyse excellence across State S&T Councils, a provision of performance-based grants may be introduced. These grants may be allocated based on well-defined performance indicators that assess both quantitative and qualitative outcomes of each Council's activities. To operationalize this, a robust performance evaluation framework can be developed by the NITI Aayog in consultation with the States/ UTs.

The recommendations will not only help strengthen the councils in terms of financial resources but will also open newer opportunities of establishing different linkages and collaborations for joint activities and long-term financial sustenance. Over time, it can also support a more balanced national ecosystem by helping underperforming states identify and adopt best practices from others, thus reducing regional disparities in science and technology development, and ensuring overall accelerated scientific and technological growth of the state.

## 6.3 Human Resources

It has been observed that councils not only have varied manpower policies, but many of them are often understaffed, including many sanctioned positions not filled for long. Promotional avenues for scientific staff are also very limited and irregular. It will be inconsistent to expect the highest level of performance from the staff in such circumstances. Therefore, there is a definite need of addressing these issues. The wider consultation has helped to arrive at following major recommendations in this regard:

a. **Suitable Scientific and Non-scientific Manpower**: The Councils must maintain a 70:30 ratio of scientific to non-scientific personnel, ensuring a research-driven workforce while maintaining necessary administrative and operational support.

b. **Regular Positions**: The councils should have a core manpower strength to drive the major activities of the councils in an effective and accountable manner. All such positions should be fully supported by the state government, ensuring financial stability and commitment.

c. **Career Progression Opportunities**: The Councils must work towards creating well-defined career progression opportunities for regular manpower of the council, through an appropriate policy. The existing models in scientific departments in central government may be pursued and adapted by the councils. Adopting such a policy will provide clear growth pathways, performance-based advancements, and competitive incentives to ensure a dynamic and committed workforce. A suitable career progression policy is essential to attract, retain, and motivate skilled professionals within the council.

d. **Project-based Positions:** The Councils may maintain additional manpower specific to funded projects for specific purposes, to augment overall execution capabilities. Efforts towards wider funding from different agencies will help significantly augment project-based positions in the councils.

e. **Transitory Provision:** The Councils may take suitable actions for transition of manpower currently supported by central government departments/ agencies as a regular staff of the council/ state government. This will help maintain continuity and institutional memory. The dependence on support from central government departments/ agencies should be minimized over the next few years, except possibly in the NE region and UTs.

f. **Faculty & Researcher Secondment:** To enhance expertise and collaboration, 10-20 faculty members and researchers from universities and research institutions in the state and outside should be seconded to the council for periods of 1-3 years. This will not only help in having a bigger human resource pool to drive different initiatives and activities, but will also facilitate knowledge transfer and interdisciplinary collaboration, and strengthen the link between academia and government. These interactions and coordinated efforts may also help in better understanding the S&T needs of the state and a more effective planning and execution.

g. **Short-term and Honorary Engagements:** To leverage experience, expertise, the council may engage retired scientists, preferably Director level and above, from premier research institutions such as CSIR, DRDO, DAE, DST, DBT laboratories for fixed-tenure roles. These professionals may bring vast technical knowledge, mentorship capabilities, and strategic insights, enhancing the council's research and policy initiatives. By integrating expertise of retired scientists into the council's ecosystem, the state can harness their wide experience to accelerate scientific progress of the state.

## 6.4 State-Focused Role & Institutional Sub-structures

To maximize impact, S&T Councils should adopt focused roles and interventions tailored to the specific needs, priorities, and strengths of the state. There is a clear opportunity as well as need for state councils to position themselves as the central point for all STI initiatives and interventions in the state, so that coordinated actions can be taken for most effective outcomes. This approach will ensure organic growth, strategic collaborations, and synergy-building across different sectors. The key recommendations in this regard are as follows:

a. **S&T Need Mapping of the State:** Each council should make efforts to identify state-specific S&T needs of the state. Identification of state specific S&T interventions will help instituting more focused initiatives and efforts which will address local needs. State-specific sectoral policies may be developed for overall development of the state. Such an approach will foster bottom-up innovation by supporting grassroots initiatives, local startups, and indigenous knowledge systems.

b. **Institutional Substructures:** Each council must work towards setting up relevant institutional sub-structures to initiate, guide and support relevant activities in different S&T sectors. These substructures may include a network of Patent Facilitation Centre, Technology Readiness Level (TRL) Assessment Cell, Technology Transfer Cell, Incubation Cell, Natural Resource and Biodiversity Cell, Emerging Technology Cell, etc. These sub-structures in the council will provide the necessary support to scientists, researchers, and entrepreneurs in the state to contribute effectively towards overall scientific and technological growth of the state.

c. **Connecting the Dots:** The sub-structures proposed above should link with similar structures in R&D institutions and labs, and Universities located in the state to create a comprehensive and integrated effort supporting the whole STI ecosystem in the state. These linkages will also act as a bridge between academia, industry, and government to drive innovation in the state and build synergies.

d. **STI Information Cell:** The councils should develop a STI Information Cell to create, manage and maintain relevant STI databases and repositories. This Cell may be the main focal point for providing data to state, central and other agencies about the STI indicators of the state. The NITI Aayog in coordination with NSTMIS, DST may help building capacity in councils in this regard. Creating such cells may provide opportunity to generate evidence for policy making and making focused interventions at various levels.

e. **Scientific Social Responsibility (SSR) and Corporate Social Responsibility (CSR) Cell**: The councils should play a lead role in effective implementation of the SSR and CSR initiatives in the state. The councils should coordinate and integrate the resources and capabilities of various institutions and stakeholders to address the state-specific challenges/ needs through S&T intervention while also promoting scientific awareness and thinking among the general public. This will foster a sense of collective ownership among various stakeholders and institutions, encouraging them to rise above individual interests and work collaboratively for the greater good of the state.

The role update of state councils may play a key role in establishing linkages and collaboration with relevant stakeholders and instituting coordinated efforts for accelerated growth of the STI ecosystem of the state.

## 6.5 Redefining Programs and Activities

The councils at present engage in a variety of activities, ranging from supporting R&D projects to science popularization and awards and fellowships. With change in time, overall improvement in education and awareness of citizens, and changing national and state priorities; it is necessary to have a relook at the ongoing activities. The most relevant activities may be continued, and some newer ones may be initiated. This will help the councils in playing a relevant and effective role in the STI ecosystem of the states. These activities may be coordinated by the relevant cells of the council. The major activities that may be considered by the councils for initiation/ execution are as follows:

a. **R&D Project Support:** Many councils provide financial support to different institutions for carrying out R&D projects in different areas of S&T. However, often the fund available for the purpose is not adequate and as a result only few projects are supported and that too with small grants. It is recommended that R&D project support should preferably be provided only to state government and private academic and R&D institutions of the state, to provide greater opportunities to researchers in these institutions. Support to central government institutions (such as IITs, NITs, CUs, Central Govt institutions etc.) should be extended only for projects that are specific to the needs of the state.

b. **Awards:** Some state councils have a provision of awards to recognize significant accomplishment and contribution of scientists and researchers in the state. These awards may be made annual and included as a regular feature of the activities of the council. Appropriate number of state level awards, preferably at three levels (on the lines of Rashtriya Vigyan Puraskar) may be instituted by each council.

c. **Fellowships, Scholarships, Internships and Travel Grants:** The Councils may earmark a part of their grants to provide an appropriate number of fellowships/ scholarships to selected meritorious young researchers. A small program of summer internship may also be considered, largely in collaboration with R&D institutions and Academic Institutions in the state. A limited number of travel grants may also be instituted to partially support bright young researchers to present their research work at relevant forums.

d. **State level STI Conclave:** Many councils are currently organizing National Science Day, National Mathematics Day. It is recommended to consolidate the resources to organize a state level STI Conclave, possibly around national science day or national technology day. Such a conclave may be organized either at a central location in the state or in a decentralized manner as a set of coordinated activities across the states. The Council must collaborate with relevant departments in the state (such as Education, Information Technology etc.) to mobilize sufficient resources and ensure wider participation of institutions in the state.

e. **Science Popularization Activities:** Several councils are currently organizing a wide range of science popularization activities. These include Community Radio & Podcasts, Lab on Wheels, Astronomy camps etc. These activities may be continued subject to the level of interest shown by participants. The Councils should plan and coordinate an appropriate social media engagement strategy to widely disseminate such activities, along with regular updates on scientific and technological advances made by different actors in the state, particularly to engage the young generation.

f. **Science City and Science Centres:** Many state councils are instituting and managing science cities, regional science centres across different locations of the state. These efforts no doubt play an important role in catalysing interest of the young generation in Science and Technology. Efforts may be made to standardize the content/ exhibits of such centres, at the same time keeping enough provision for state specific material. Some possible improvements may include creating 3-d landform models of the state, 3-d maps of natural resources of the state etc. The content/ exhibits should be reviewed at regular intervals to maintain their relevance with changing time.

g. **Collaborations and Linkages for newer activities:** The councils can play a more effective role through increased collaboration and wider linkages with different institutions. Efforts may be made to do collaborative R&D Projects with institutions in the state, to organize capacity building activities in the areas of patent awareness, TRL assessment and technology commercialization. The Councils may also work with institutions to start innovative activities like University/Institute Open Day, Walk with Scientists etc.

h. **Mapping Activities for Natural Resource Management:** The Councils may actively work towards activities related to mapping landforms, forest and agriculture cover, water bodies, biodiversity, and other critical systems of the state. These activities may seek support from relevant central and state departments and must involve collaboration with relevant institutions.

## 6.6 Collaboration and Linkages

In the present STI ecosystem, collaboration and team efforts are a crucial requirement for accelerated growth and impactful outcomes. Instituting collaboration and linkages with multiple stakeholders, ranging from central departments and agencies to academia, Industry and enterprises in the region can help in coordinated efforts and multiplied benefits. It is, therefore, recommended that state councils should institute linkages and collaboration with following entities:

a. **Central Govt Departments and Agencies:** STI activities and resources are no longer confined to a specific department or agency. The state councils in their role as central point for coordinated STI ecosystem growth of the state should foster collaboration with all major relevant agencies at the central level. These may include linkages with DBT, MEITY, CSIR, MOEFCC, MOC, MOE, DPIIT etc., in addition to the existing strong linkage with DST. Relevant connections with RuTAG, MANTHAN and PSA Clusters may also be explored. Such links can help create a significant resource as well as knowledge pool in the councils. The NITI Aayog, as a body working closely with states, can play a coordination role in this regard.

b. **Industry and PSUs:** The Councils should establish greater connections with Industrial units and PSUs located in the states and should also set up ties with relevant Industry associations. These connections can help generate additional financial and material resources for the councils to support the different activities.

c. **R&D Institutions and Universities:** The Councils must actively engage with R&D institutions located in the state as well as collaborate with universities situated in the state. These collaborations can be in the form of knowledge exchange as well as working collaboratively on research and development projects. These collaborations can bring in ideas, knowledge, manpower, and enhanced resources for overall STI growth of the state.

The proposed linkages and collaborations can play a major role in enhanced resources and capabilities of the councils, thereby accelerating the coordinated growth of the overall STI ecosystem of the state and country. Further, the proposed substructures in State S&T Councils should play an active role in organizing relevant activities in a collaborative manner for the overall STI growth of the state.

*Table 4: Summary of Recommendations*

| S. No. | Topic | Recommendation | Action/ Implementation By |
|---|---|---|---|
| 1. | Structural Reforms in Governance (Reference section 6.1) | To expand the Governing Council by including representation from central government departments, R&D institutions/ laboratories, Universities in the state, industry associations in the state, PSUs in the state, and Science Academies. | State Government and State S&T Councils |
| | | State S&T Councils must have a full-time executive director appointed for a fixed tenure of 3 to 5 years. The position should be equivalent to Vice Chancellor of a state university and the incumbent must provide scientific and administrative leadership in an accountable manner. The practice of giving charge to career Bureaucrats should be avoided. | State Government and State S&T Councils |
| | | The Executive Committee may also be expanded to include relevant officials from the state government as well as external members. | State Government and State S&T Councils |
| | | The Executive Committee must meet at least twice a year. | State Government and State S&T Councils |
| 2. | Financial Support and Resources (Reference section 6.2) | State S&T Councils must be provided with adequate financial resources to carry out various activities and make meaningful interventions in the STI ecosystem of the state. It is desirable that each state should allocate at least 0.5% of GSDP as S&T budget. | State Government |
| | | The practice of core grants by the central government should be replaced with Project-based grants, except in case of State S&T Councils in NE region and UTs. | Department of Science & Technology (DST), GOI. |
| | | The financial resources available with councils can be enhanced significantly by widening the support structure. State S&T Councils may approach different central government departments for project-based grants, can collaborate with PSUs in the state and establish linkages with Industry and Academic Institutions in the state to explore tapping resources in a collaborative manner. | State S&T Councils, Central Govt Departments, Industry Associations and NITI Aayog |
| | | A provision of performance-based grants for State S&T Councils may be introduced. | DST, GOI and NITI Aayog |

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| 3. | Human Resources<br>(Reference section 6.3) | State S&T Councils must maintain a minimum number of scientific and administrative/ support staff, preferably in a 70:30 ratio of scientific to non-scientific staff. | State S&T Councils, and DST, GOI |
| | | The regular positions in State S&T Councils must be fully supported by the state. Additional project-based positions may be created as per the need and financial support available for various externally supported projects. | State Government and State S&T Councils |
| | | A well-defined career progression plan for regular manpower of the State S&T Councils must be instituted. | State Government, State S&T Councils, and DST, GOI |
| | | Suitable actions may be taken for transition of manpower currently supported by the central government (mainly by DST, GOI) as a regular staff of the council/ state government. DST, GOI should not support any regular manpower in the State S&T Councils except in case of councils in NE region or UTs. | State Government, State S&T Councils, and DST, GOI |
| | | The scientific capabilities of State S&T Councils may be significantly expanded by using methods like Faculty and Researcher secondment, and utilizing the services of senior level retired scientists from central govt and R&D/ Academic Institutions in the state. | State Government, State S&T Councils, |
| 4. | State-Focused Roles & Institutional Substructures<br>(Reference section 6.4) | State S&T Councils should make active contributions to identify state-specific S&T needs and may act as a central focal point for guiding and enriching the STI ecosystem of the state. | State Government,<br>State S&T Councils |
| | | State S&T Councils must establish relevant cells (e.g., Patent Facilitation, TRL assessment, Tech Transfer, Second Level Incubation, BioDiversity, CSR/SSR etc.) and must establish active linkages and integration with academia, R&D institutions, and industry bodies in the state. | State Government, State S&T Councils, NITI Aayog |
| | | The councils should develop a STI Information Cell to create, manage and maintain relevant STI databases and repositories. This Cell may be the main focal point for providing data to state, central and other agencies about the STI indicators of the state. | State Government, State S&T Councils, DST, GOI and NITI Aayog |

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|---|---|---|---|
| 5. | Redefining Programs and Activities<br>(Reference section 6.5) | State S&T Councils should provide suitable financial support to R&D and academic institutions of the state to carry out R&D projects in relevant areas. R&D project grants should preferably be provided to state institutions. Support to central government institutions in the state should be considered only when the project concerned is on a state specific subject. | State S&T Councils, State Government |
| | | Appropriate number of state level awards at three levels (on the lines of Rashtriya Vigyan Puraskar) may be instituted by each council. Similarly appropriate fellowships may be considered subject to availability of funds. | State Government, State S&T Councils |
| | | Each SSTC should host an annual STI Conclave, in a collaborative manner, possibly by pooling resources from multiple sources. The ongoing science outreach programs may be updated with time to make them more relevant and expand their reach. Each Council should actively use social media platforms to reach the young audience. | State Government, State S&T Councils, DST, GOI |
| | | State S&T Councils should partner with relevant institutions in the state for mapping natural resources in the state and provide other S&T specific information to relevant stakeholders. | State Government, State S&T Councils, cc, GSI, ISRO, |
| | | The Science City and Centres in the state are a very relevant resource for science popularization and attracting young children to science. However, the content and exhibits in such centres must be regularly updated, keeping in mind state specific aspects. Possibilities of running them in PPP mode may be explored. | State S&T Councils, NCSM and Ministry of Culture |
| | | States can document Traditional Knowledge (TK) by engaging local communities, collaborating with academic institutions, and creating digital repositories. Field surveys and technology like mobile apps can aid in capturing and preserving TK. Legal protections, such as Geographical Indications (GI) and Patents, can safeguard and provide economic benefits to knowledge holders | State S&T Councils, AYUSH, MOEFCC |

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| 6. | Collaboration and Linkages<br>(Reference section 6.6) | The state councils in their role as central point for coordinated STI ecosystem growth of the state should foster collaboration with all major relevant agencies at the central level. These may include linkages with DBT, MEITY, CSIR, MOEFCC, MOC, MOE, DPIIT etc., in addition to the existing strong linkage with DST. Relevant connections with RuTAG, MANTHAN and PSA Clusters may also be explored. | State S&T Councils, and Suitable Ministry/ Department as per project alignment (such as DST, DBT, MEITY, DSIR, DAE, MoES, DPIIT, PSA Office etc.) |
| | | The Councils should establish greater connections with Industrial units and PSUs located in the states and should also set up ties with relevant Industry associations. | State S&T Councils, PSUs and Industry Associations |
| | | The Councils must actively engage with R&D institutions located in the state as well as collaborate with universities situated in the state. These collaborations can be in the form of knowledge exchange as well as working collaboratively on research and development projects. | State S&T Councils, R&D and Academic Institutions in the state. |

# 7

# Charting the Road Ahead: Towards a Robust and Future-Ready S&T Ecosystem

NITI Aayog in its pivotal role of collaborating with state governments under the principle of cooperative and competitive federalism, drives various initiatives for the growth and development of the States. Within the Science and Technology (S&T) division, these initiatives include the development of performance indices, strengthening state councils through the Roadmap Initiative, and promoting the ease of conducting scientific endeavors at both the national and state levels along with others. By focusing on all these measures, NITI Aayog aims to bolster state-level capabilities, thereby enabling the nation to advance collectively.

The key focus should be to transform State S&T Councils from a conventional government department to a dynamic and capable professional S&T ecosystem. To translate this roadmap into meaningful action, a structured and collaborative implementation strategy must be adopted. A key enabler in this regard may be formation of a core group comprising senior-level officers from relevant stakeholder ministries, scientific institutions, and state governments, and coordinated by NITI Aayog, to facilitate, coordinate and oversee the implementation of the recommendations. This group could be entrusted with the role of prioritizing actions, developing coordinated efforts for execution, and overall monitoring and evaluation.

As a next step, efforts may also be directed toward developing model guidelines and standard frameworks for performance evaluation, resource utilization, and institutional governance. These will help reduce administrative asymmetries and improve consistency across State S&T Councils. In parallel, capacity-building initiatives and peer-to-peer learning mechanisms should be institutionalized to enable councils to learn from successful models in funding, innovation management, and industry-academia collaboration. A dedicated strategy for mobilizing and blending resources from central and state governments and private sector contributions will be essential to ensure financial sustainability and programmatic continuity.

Importantly, a dynamic and responsive monitoring mechanism must be put in place to assess progress, identify challenges, and incorporate mid-course corrections. This forward-looking and integrated approach will not only strengthen the institutional foundations of State S&T Councils but also unlock their full potential in contributing to regional innovation, strategic capability development, and national transformation. NITI Aayog remains committed to growth and development of the STI ecosystem in the state and their application and will be doing its best to work with S&T council and deliver its best. By doing so, India can build a resilient, inclusive, and innovation-driven economy aligned with the vision of a Viksit Bharat.

# APPENDIX

# Appendix I:
# Details of the Consultative Meetings at NITI Aayog

| Date | Zone | Name of the Council | Represented by |
|---|---|---|---|
| 31.01.2025 | West | Rajiv Gandhi Science and Technology Commission, Maharashtra | **Dr. Narendra Shah,** Member Secretary |
| | | Department of Science & Technology, Rajasthan | **Shri Rakesh Parihar**, Research officer |
| | | Gujarat Council for Science and Technology (GUJCOST) | **Dr. Narottam Sahoo**, Advisor & Member Secretary |
| | | Goa State Council for Science & Technology (GSCST) | **Mrs. Brenda Fernandes**, Chief Scientist & Member Secretary |
| 13.02.2025 | Central | Bihar Council on Science & Technology | **Dr. Anant Kumar**, Project Director |
| | | Madhya Pradesh Council of Science and Technology (MPCOST) | **Shri Tasneem Habib**, Advisor, Former Chief Scientist & ED, MPCST |
| | | Uttarakhand State Council for Science Technology | **Prof. Durgesh Pant**, Director General |
| | | Council of Science and Technology Uttar Pradesh | **Shri Radhey Lal**, Joint Director |
| 14.02.2025 | South | Karnataka State Council for Science and Technology (KSCST) | **Dr. U T Vijay**, Executive Secretary |
| | | Tamil Nadu State Council for Science and Technology | **Prof. Dr. S. Vincent**, Member Secretary |
| | | Telangana State Council of Science & Technology | **Dr. Sunke Rajendra Prasad**, Member Secretary |
| | | Puducherry Council for Science & Technology | **Shri Laxminarayana Reddy,** Director |
| 24.02.2025 | North | Haryana State Council of Science & Technology | **Dr. Deepak Gupta,** Chief Scientific Engineer |
| | | Himachal Pradesh Council for Science Technology and Environment (HIMCOSTE) | **Shri Shubham Dhiman**, Sr. Technical Assistant |
| | | Punjab State Council for Science and Technology (PSCST) | **Dr. Dapinder Kaur Bakshi**, Joint Director |
| | | Department of Science & Technology & Renewable Energy (S&T&RE), Chandigarh | **Shri T C Nautiyal**, Secretary |

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|---|---|---|---|
| 25.02.2025 | East | Arunachal Pradesh State Council for Science & Technology (APSCS&T) | **Shri C D Mungyak,** Director cum Member Secretary |
| | | Manipur Science and Technology Council (MASTEC) | **Dr. Kh. Rakesh,** Director |
| | | State Council of Science Technology & Environment (SCSTE), Meghalaya | **Shri Gunanka D.B.,** IFS, Member Secretary |
| | | Nagaland Science and Technology Council (NASTEC) | **Shri Kekuneil LTU,** Scientist B |
| | | Assam Science Technology & Environment Council (ASTEC) | **Shri. Jaideep Baruah,** Director, ASTEC |
| | | Mizoram Science, Technology & Innovation Council (MISTIC) | **Shri Samuel Lalmalsawma,** Senior Scientific Officer |
| | | Sikkim State Council of Science and Technology | **Shri D G Shrestha,** Principal Director, DST Sikkim |

The councils which could not participate in the consultative meetings include:

Dadra and Nagar Haveli
Daman & Diu
Chhattisgarh
Jharkhand
Kerala
Andhra Pradesh
Lakshadweep
Andaman & Nicobar
Delhi
Jammu & Kashmir
Odisha
Tripura
West Bengal

## Appendix II:

## Details of the Workshop on 'Empowering State S&T Councils held at Vigyan Bhavan'

| Time | Session Name | Time Slot | Speaker | Role |
|---|---|---|---|---|
| 09:30 – 10:30 | Inaugural Session | 09:30 – 09:42 | Prof. Vivek Kumar Singh, Sr. Adviser (S&T), NITI Aayog, GoI. | Welcome Address and Theme |
| | | 09:42 – 09:57 | Dr. Rajesh S Gokhle, Secretary, Department of Biotechnology, GoI. | Remarks |
| | | 09:57 – 10:12 | Prof. Ajay Kumar Sood, Principal Scientific Adviser, GoI. | Remarks |
| | | 10:12 – 10:30 | Dr. V.K. Saraswat Member (S&T), NITI Aayog, GoI | Chairperson's Address |
| 10:30 – 10:35 | Release of the Discussion paper "Towards a Roadmap for Strengthening State S&T Councils" | | | |
| 10:35 – 10:45 | Group Photograph | | | |
| 10:45 – 11:15 | High Tea | | | |
| 11:15 – 12:15 | Technical Session I<br>STEM at the Core: Cultivating Statewide Research and Innovation | 11:15 – 11:30 | Prof. T.G. Sitharam, Chairman, AICTE | Session Chair |
| | | 11:30 – 11:45 | Dr. Anita Aggarwal, Head, SEED and State S&T Programme, DST | Special Address |
| | | 11:45 – 11:55 | Dr. Narendra Shah, Member Secretary, Rajiv Gandhi Science and Technology Commission, Maharashtra | State S&T Council - Maharashtra |
| | | 11:55 – 12:05 | Shri Radhey Lal, Joint Director, Council of Science and Technology, Uttar Pradesh | State S&T Council - Uttar Pradesh |
| | | 12:05 – 12:15 | Dr. Biman Chandra Barua, Executive Director, Assam Science Technology & Environment Council | State Council-Assam |

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| 12:15 – 13:00 | Technical Session 2<br><br>Science for All: Engaging Minds Through Science Centres, Planetarium, and Remote Sensing | 12:15 – 12:25 | Shri U N Sharma, Additional Surveyor General of India | Session Chair & Speaker |
| | | 12:25 – 12:35 | Shri Sanjay Kaul, Joint Secretary, Ministry of Culture, GoI. | Special Address |
| | | 12:35 – 12:44 | Dr. Narottam Sahoo, Advisor & Member Secretary, Gujarat Council for Science and Technology | State Council - Gujarat |
| | | 12:44 – 12:53 | Shri Tasneem Habib, Advisor, Former Chief Scientist & ED, Madhya Pradesh Council of Science and Technology | State Council - Madhya Pradesh |
| | | 12:53 – 13:00 | Prof. A Sabu, Member Secretary, Kerala State Council For Science Technology and Environment | State Council- Kerala |
| 13:00 – 14:00 | Lunch | | | |
| 14:00 – 15:00 | Technical Session 3 Advancing Innovation: The Role of Patent Information Centres and other structures | 14:00 – 14:12 | Prof. Manoj Singh Gaur, Director, Indian Institute of Technology, Jammu | Session Chair |
| | | 14:12 – 14:22 | Shri Unnat Pandit, Controller General of Patents, Designs and TradeMarks | Special Address |
| | | 14:22 – 14:32 | Cdr. Amit Rastogi (Retd), Chairman & MD, National Research Development Corporation | Special Address |
| | | 14:32 – 14:41 | Prof. Dr. S. Vincent, Member Secretary, Tamil Nadu State Council for Science and Technology | State Council - Tamil Nadu |
| | | 14:41 – 14:50 | Shri Samuel Lalmalsawma, Principal Scientific Officer, Mizoram Science, Technology & Innovation Council | State Council - Mizoram |
| | | 14:50 – 15:00 | Dr. U T Vijay, Executive Secretary, Karnataka State Council for Science and Technology | State Council- Karnataka |

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| 15:00 – 15:50 | Technical Session 4 Connecting the Dots: Linkages and Best Practices for Inclusive Development | 15:00 – 15:12 | Dr. Parvinder Maini, Scientific Secretary, PSA Office | Session Chair |
| | | 15:12 – 15:22 | Dr. Rashmi Sharma, Head, NCSTC & SHRI Cell, DST | Special Address |
| | | 15:22 – 15:32 | Prof. Durgesh Pant, Director General, Uttarakhand State Council for Science Technology | State Council - Uttarakhand |
| | | 15:32 – 15:42 | Shri Pritpal Singh, Executive Director, Punjab State Council for Science and Technology | State Council - Punjab |
| | | 15:42 – 15:50 | Dr. Deepak Gupta, Chief Scientific Engineer, Haryana State Council of Science & Technology | State Council – Haryana |
| 15:50 – 16:55 | Discussion and Engagement Session Widening the Horizon: Expanding the Activities and Linkages for Sustained Growth | 15:50 – 15:55 | Prof. Vivek Kumar Singh, Senior Adviser, NITI Aayog | Session Chair |
| | | 15:55 – 16:05 | Prof. Vd. Rabinarayana Acharya, Director General, CCRAS, M/o AYUSH | Expert Remarks |
| | | 16:15 – 16:25 | Ms. Khushboo Mirza Sci/Engr-SF, Regional Remote Sensing Centre, Department of Space | Expert Remarks |
| | | 16:25 – 16:35 | Dr. R S Maheskumar, Scientist G, MoES | Expert Remarks |
| | | 16:35 – 16:45 | Shri Siva Prasad Polimetla Head, ER&D Initiative, NASSCOM | Expert Remarks |
| | | 16:45 – 16:55 | Dr. Ashish Mohan, Executive Director, CII | Expert Remarks |
| | | 16:55 – 17:05 | Dr, Parveen Arora Associate Head and Scientist G | Expert Remarks |

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|---|---|---|---|---|
| 17:05 – 17:30 | Closing Session | 17:05 – 17:15 | Shri S. Krishnan,<br>Secretary, Ministry of Electronics and Information Technology (MeitY) | Remarks |
| | | 17:15 – 17:27 | Dr. V.K. Saraswat<br>Member (S&T), NITI Aayog | Valedictory Address |
| | | 17:27 – 17:30 | Dr. Thyagaraju B.M.<br>Deputy Adviser, NITI Aayog | Vote of Thanks |
| 17:30 onwards | High Tea | | | |

NOTE

## ACKNOWLEDGEMENT

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