RESEARCH & DEVELOPMENT BUDGET 2026-2027

Finance Department
Government of Kerala

GOVERNMENT OF KERALA

Research & Development Budget

2026-27

FINANCE DEPARTMENT

FOREWORD

Kerala has placed unprecedented emphasis on Science, Technology and Innovation (STI) as the principal drivers of the State's development path. For the first time in Kerala's history, knowledge-driven development has been articulated not merely as a supportive component of economic growth, but as its central engine. This strategic reorientation reflects the Government's conviction that long-term prosperity, resilience, and social equity can best be secured through sustained investment in knowledge, research, and innovation.

A defining feature of Kerala's development strategy is its emphasis on inclusiveness and social transformation. State's approach to research and innovation is firmly anchored in a people-centred development paradigm that seeks to bridge digital divides, democratise access to knowledge, and ensure that the benefits of technological change are widely shared.

The Kerala Fibre Optic Network (K-FON) stands out as a unique public digital infrastructure initiative. By providing high-speed broadband connectivity as a basic public utility, K-FON represents a bold and visionary intervention to eliminate the digital divide and guarantee digital inclusion as a fundamental right of citizenship.

Special emphasis has been placed on preparing the youth to thrive in an era shaped by Artificial Intelligence, Industry 4.0, and the data-driven economy. Agencies such as the Additional Skill Acquisition Programme (ASAP) and the Kerala Development and Innovation Strategic Council (K-DISC) have played a pivotal role in advancing skill development, addressing skill gap for employment generation, research promotion, and innovation-led entrepreneurship, thereby strengthening the State's human capital base and innovation ecosystem.

Pioneering initiatives such as Space Parks, Science Parks, the Digital University, the Medical Technology Consortium, Software Technology Parks, and innovation hubs across universities and research institutions have created a vibrant knowledge and innovation architecture.

Kerala has a growing start-up ecosystem, specialised research institutions, world-class digital infrastructure, and an enabling policy environment. The State has consistently secured high rankings in NITI Aayog's India Innovation Index, the State Start-up Ecosystem rankings, and other national research and innovation assessments, reflecting the effectiveness of its knowledge-driven development strategy.

A landmark in this journey was Kerala's pioneering decision to introduce a dedicated Research and Development Budget in 2023–24. The Research and Development Budget for 2026–27 continues this tradition by presenting comprehensive data on public

expenditure in STI, along with key sectoral indicators that support evidence-based policymaking and strategic planning.

The R&D allocation in the Budget Estimates for 2026–27 amounts to approximately 0.3 per cent of the State's Gross State Domestic Product (GSDP), distributed across priority sectors and strategic programmes. It is hoped that this document will serve as a valuable reference for policymakers, researchers, academic institutions, industry, and development practitioners in designing, implementing, and prioritising R&D initiatives for Kerala's progressive transformation into a globally recognised knowledge economy.

K. N. Balagopal

Minister for Finance

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List of Abbreviation and Acronyms

ABCD	Accelerated Blockchain Competency Development
ACSTI	Agricultural Co-operative Staff Training Institute
AGNIi	Accelerating Growth of New India's Innovations
AHIZ	Animal Husbandry Innovation Zone
ANERT	Agency for New and Renewable Energy Research and Technology
AR/VR	Augmented Reality (AR) and Virtual Reality (VR)
ASD	Autism Spectrum Disorder
ASU & H	Ayurveda, Siddha, Unani, and Homeopathy
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy
BAMS	Bachelor of Ayurveda, Medicine and Surgery
BRICS	Brazil, Russia, India, China, and South Africa
BSL	Biosafety levels
BT	Biotechnological Techniques
CAI-K	Centre for Analytical Instrumentation Kerala
CARE	Centre for Advanced Research in Engineering
CERD	Centre for Engineering Research and Development
C-DIT	Centre for Imaging Technology
CLRACS	Centre for Lightning Research and Alternative communication Systems
C-MET	Centre for Materials for Electronics Technology
CoE	Centre of Excellence
CSCRR	Centre for Safety and Crowd Risk Research
CWRDM	Centre for Water Resources Development and Management
CDC	Child Development Centre
CUSAT	Cochin University of Science and Technology
CORaL	Collaborative Research and Learning
CET	College of Engineering, Trivandrum
CGA	Controller General of Accounts
CAPE	Co-operative Academy for Professional Education
COVID 19	Coronavirus Disease 2019
CFRD	Council for Food Research and Development
CSIR	Council of Scientific & Industrial Research
cGMP	Current Good Manufacturing Practice
DAE	Department of Atomic Energy
DCS	Dairy Co-operative Societies
DUK	Digital University Kerala
DoECC	Directorate of Environment and Climate Change
DHS	Directorate of Health Services
Ph.D	Doctor of Philosophy
EPIRB	Emergency Position Indicating Radio Beacon
EV	Electric Vehicle

FDI	Foreign Direct Investment
FLAIR	Fostering Linkages in Academic Innovation and Research
GIA	Grant-in-aid
GII	Global Innovation Index
GIS	Geographic Information System
GEC	Government Engineering College
GEMS	Grants for Education, Merit and Strategic Initiatives
GPIRF	Grant for Promotion of Inter Disciplinary Research among Faculty
GERD	Gross Domestic Expenditure on R&D
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HPLC	High-performance liquid chromatography
I-YwD	The Innovation for Youth with Disability
IAV	Institute of Advanced Virology
ICAR	Indian Council of Agricultural Research
IICG	India Innovation Centre for Graphene
IIITMK	Indian Institute of Information Technology and Management Kerala
IIT	Indian Institute of Technology
ICT	Information and Communication Technology
IT	Information Technology
IEDCs	Innovation and Entrepreneurship Development Centres
ICCS	Institute for Climate Change Studies
ICCONS	Institute for Communicative and Cognitive Neurosciences
IAH&VB	Institute of Animal Health and Veterinary Biologicals
III	India Innovation Index
ILDB	Institute of Land and Disaster Management
IMHANs	Institute of Mental Health and Neurosciences
IPR	Intellectual Property Rights
IUCIPRS	Inter University Centre for Intellectual Property Rights
ICFOSS	International Centre for Free and Open-Source Software
IMF	International Monetary Fund
IRIA	International Research Institute of Ayurveda
IoT	Internet of Things
JNTBGRI	Jawaharlal Nehru Tropical Botanic Garden and Research Institute
KAU	Kerala Agricultural University
K-CDC	Kerala Centre for Disease Control and Prevention
KCHR	Kerala Council for Historical Research
K-DISC	Kerala Development and Innovation Strategy Council
KFP	Kerala Food Platform
KFRI	Kerala Forest Research Institute
KGDC	Kerala Genome Data Centre
KHRI	Kerala Highway Research Institute (KHRI)

KIAS	Kerala Institute for Advanced Studies for Social Science and Humanities
KIRTADS	Kerala institute for Research Training & Development studies of Scheduled Castes and Scheduled Tribes
KISTI	Kerala Institute for Science, Technology and Innovation
KILA	Kerala Institute of Local Administration
KKEM	Kerala Knowledge Economy Mission
KLN	Kerala Language Network
KLDB	Kerala Livestock Development Board
KMTC	Kerala Medical Technology Consortium
KNRSHE	Kerala Network Support in Higher Education
KRL	Kerala Rubber Limited.
KSREC	Kerala State Remote Sensing & Environment Centre
KSIDC	Kerala State Industrial Development Corporation
KSITM	The Kerala State Information Technology Mission
KSoM	Kerala School of Mathematics
K-Space	Kerala Space Park
KSUM	Kerala Startup Mission
KSCSTE	Kerala State Council for Science, Technology and Environment
KSEB	Kerala State Electricity Board
KUFOS	Kerala University of Fisheries and Ocean Studies
KUHS	Kerala University of Health and Allied Sciences
KVASU	Kerala Veterinary and Animal Sciences University
LCD	Liquid Crystal Display
LSG	Local Self Government
MBGIPS	Malabar Botanical Garden and Institute for Plant Sciences
MCC	Malabar Cancer Centre
MPhil	Master of Philosophy
MTEFs	Medium Term Expenditure Frameworks
MSME	Micro, Small and Medium Enterprises
MAS	Molecular marker assistant selection
NIPMR	National Institute of Physical Medicine and Rehabilitation
NISH	National Institute of Speech and Hearing
NRSA	National Remote Sensing Agency
NATPAC	National Transportation Planning and Research Centre
NUALS	National University of Advanced Legal Studies
NRW	Non-Revenue Water
NGOs	Non-Governmental Organizations
NWFP	Non-Wood Forest Product
NTFP	Non-timber forest product
ODOI	One District One Idea
OLOI	One Local Government One Idea Programme
OFET	Organic Field Effect Transistor

OPV	Organic photovoltaic
OECD	Organization for Economic Cooperation and Development
PAIR	Partnering Academic and Industrial Research
PLEASE	Performance Linked Encouragement for Academic Studies and Endeavour
PSUs	Public Sector Undertakings
RIT	Rajiv Gandhi Institute of Technology
RCC	Regional Cancer Centre
R&D	Research & Development
RINK	Research and Innovation Network Kerala
SPIIRC	Scheme for Promotion of Inter institutional Research Collaboration
S&T	Science and Technology
STIP	Science Technology and Innovation Policy
SARD	Selective Augmentation of Research & Development
SMIC	State Institute for the Mentally Challenged
SMEs	Small and Medium Enterprises
SRIBS	Srinivasa Ramanujan Institute for Basic Sciences
SASA	State Academy on Statistical Administration
SAPCC	State Action Plan on Climate Change
SCERT	State Council of Educational Research and Training
SEARC	State Excise Academy and Research Centre
SHRESTA	State Higher Research Centres of Excellence in Science and Technology
SIEP	State Institute of Encyclopaedic Publications
SEBI	The Securities and Exchange Board of India
SOLAS	International Convention for the Safety of Life at Sea
SRG	Start-up Research Grant
SUP	Single-Use Plastics
TFP	Total Factor Productivity
TrEST	Trivandrum Engineering Science and Technology Research Park
UAV	Unmanned Aerial Vehicle
UN	United Nations
UTs	Union Territories

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Executive Summary

This document seeks to lay the foundation required to build a sound databank to support and help in prioritizing the allocation of funds and formulation of schemes in the Research, Development and Innovation sector. The compiled data on R&D estimates given in the document represent the extent of research and development activities carried out in the State through the allocations provided in the State budget to various sectors. Emphasis is also placed on important statistics of current R&D trends, main R&D institutions in the State and the areas of research, priority or trust fields of focus, etc., to exhibit the overall R&D scenario and ecosystem in the State. The details of the R&D allocations and the schemes in the Budget 2026-27 are given as a separate chapter.

Chapter One presents technological capability and development as the main parameters for competitiveness in the modern world with fast changing technologies. It is emphasised that substantial investment is inevitable for adaptive R&D by the devoloping economies to make the technologies available in the world market to work in the local context, while concentrating on creative R&D for developing new products and process. Focus is also given on the role of synthetic or experience based knowledge in an ideal ecosystem for innovation driven development. It details Kerala's strategic shift towards a 'Knowledge Economy,' guided by the vision of the Kerala Development and Innovation Strategic Council (K-DISC) and people-centric initiatives like 'Vijnana Keralam'. The chapter also discusses the critical role of subnational R&D systems and affirms the necessity of a dedicated State R&D Budget for a comprehensive budgetary framework to formulate and implement programmes aimed at addressing region-specific development challenges and bridge gaps in the national innovation framework.

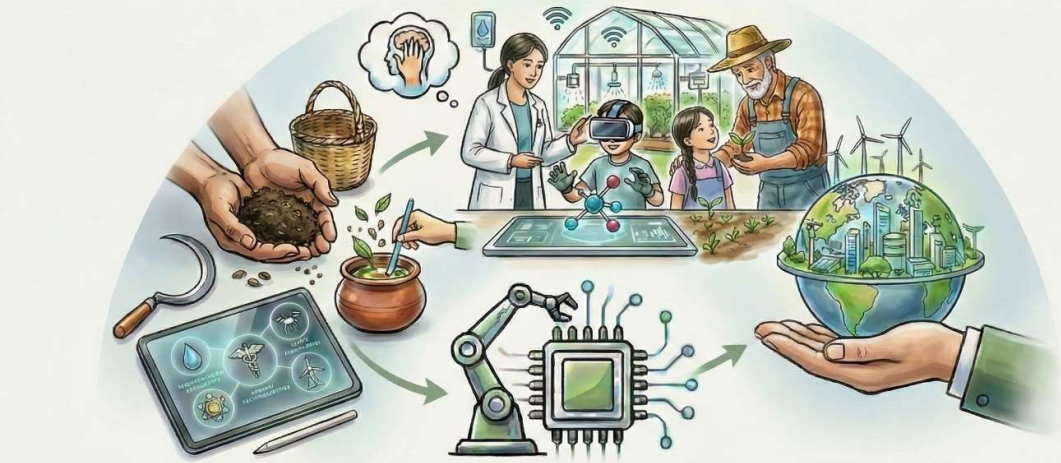
Chapter Two examines global, national, and sub-national trends in R&D based on the latest available statistics. It highlights the 'Indian Paradox,' noting that India boasts high economic growth and a vibrant start-up ecosystem despite its low formal R&D expenditure compared to other BRICS nations, which gives a picture about the reliance on the informal sector reckoned out of conventional metrics. It analyses sector-wise participation, pointing out the critical need for greater private and State-level engagement. Drawing on global lessons, the chapter discusses the potential of engaging the scientific diaspora—similar to China's 'Chunhui Program'—to rejuvenate the State's research capabilities through platforms like the Lok Kerala Sabha. It is also explained that Kerala has distinguished itself within the national framework with an impressive increase in its share of State-level R&D expenditure and a consistent upward trend in patent applications.

The R&D ecosystem of the State is detailed in Chapter Three with a brief description of the major R&D institutions in the State. The institutions and their areas of research activities are categorized mainly under Universities, Higher Education, Health Research, Information Technology, etc. Some of the novel institutions such as K-DISC, Digital University Kerala, and the Kerala Startup Mission, initiated by the State for coordinating and encouraging research and innovation across various sectors are also elaborated here.

Chapter Four details the estimations in the State Budget 2026-27 for the R&D activities, which are accounted either explicitly or implicitly under different scheme heads of account under various Government departments and institutions of the State. The chapter provides the sector-wise distribution of R&D under the State's plan and non-plan provisions. And the annexure to the chapter list out the scheme-wise estimation along with brief descriptions on the R&D component of each scheme.

Chapter Five gives a general idea of the way forward in R&D, attempting to identify the thrust areas where the State should concentrate its efforts. In addition to the traditional focus areas, this edition emphasizes 'Future Frontiers' such as digital technology, quantum computing, critical materials, and Industry 4.0 to ensure that the State remains competitive in emerging high-technology domains. The areas and focus of various sectors are explained to stress the importance of focused and targeted spending to invigorate R&D in the State.

Chapter 1
Introduction
R&D, Technological Capability, and Development



In the globalized context the only means to survive is to be internationally competitive. In the modern world with fast changing technologies, international competitiveness is contingent on the country's technological capability. However, it is often argued that developing countries need not "reinvent the wheel". In an open world there are a wide range of technologies available in the world market, which the developing countries could import for domestic use. Hence is often argued that the developing economies have the latecomer advantage by way of access to a wide range of technologies and technological knowledge available internationally and, therefore, need not "reinvent the wheel". In the contemporary digital era, this argument has gained further strength with the expansion of the Internet, digital platforms and social media, which provide near-free access to vast repositories of scientific publications, technical documentation, design blueprints, software, standards, and best-practice manuals-much of which, in an earlier era, had to be accessed through costly imports, licensing arrangements, or restricted channels. In addition, the Internet and digital marketplaces have enabled access to a wide array of sophisticated equipment and capital goods embodying high levels of technology, often accompanied by detailed technical specifications, user manuals, and online support. Such access substantially lowers entry barriers to embodied technology and creates significant scope for reverse engineering, incremental innovation, and context-specific adaptation. However, economic history and innovation studies consistently show that technology, by its very nature, cannot be transferred in its entirety. What is made available through markets or digital platforms represents only a partial and codified form of knowledge, while a substantial component remains tacit, context-specific, and embedded in persons, routines, and organizational practices. Thus, the purchaser of technology always receives a less complete information than what the producer has. Hence, even with an open technology market the importing/receiving country/firm will have to invest

substantially in adaptive R&D to make the technology work for the new context along with creative R&D for the development of new products and processes.

No wonder, going by the available evidence, there is hardly any economy that has achieved economic development without investment in R&D. A very often used indicator of a country's capability in the sphere of innovation in general, and science and technology in particular is Research and Development (R&D) expenditure. At the same time, we need to recognize that R&D captures only a part of the process involved in technological or innovation capability. As rightly noted by the Science, Technology and Innovation Policy 2013, viewed from development perspective, "while we do need to increase R&D investment and efforts, this view of innovation is based on a myopic perception that restricts it to the confines of formal R&D".

In the policy parlance of most of the economies the focus, therefore, has shifted from narrow R&D based approach to a broader process of innovation system building. The innovation systems approach, which by now has emerged as the most popular approach in innovation studies, refers to the relationships and interaction between actors engaged in the production, diffusion and use of new, and economically useful, knowledge. Here innovation is seen as a process of generation of knowledge through interactive learning of different actors which is governed by the institutional architecture within which such interactions take place. The interactive learning space could be intra country, involving different stakeholders within the country. Of much potential in an open world is for inter-country interactive learning space that involves interactions between different stakeholders across countries. According to this perspective knowledge is the most important resource and learning is the most important process in the modern economy. Therefore, any inquiry into the development divide, both within and between countries, would invariably lead us the door steps of knowledge divide and learning divide.

Kerala's pioneering effort among Indian States towards transforming the State to a knowledge economy deserves attention. Here, knowledge has been seen in terms of a) scientific knowledge resulting from STI mode of interaction and b) synthetic or practical knowledge also called experience based knowledge resulting mainly from Doing Using Interacting (DUI) mode of learning. The former is primarily an outcome of organized research and development and other learning initiatives by various actors in the sphere of knowledge generation. As is evident from the previous budgets there has been an unprecedented focus in the promotion of all such actors in the sphere of scientific knowledge. Synthetic (practical) knowledge/experience-based knowledge, is most pertinent in the case of those operating in the rural, agrarian and the informal sector in general like the artisans. The primary output of a farmer who cultivates different crops is the farm products not the knowledge that emanates from it. But it is common knowledge that our farmers are often compelled to undertake experiments on a daily basis in their farms because they don't have the financial resources to adopt fully the package practices prescribed by the scientists. Their experiments lead to innovations based on experience-based knowledge. No wonder, so far 34 people from Kerala, operating in the farm and non-

farm sector of rural areas, have received innovation awards from the President of India instituted by the National Innovation Foundation. The recognition was for the innovations by way of new varieties that they have developed or new processing practices based on their experience based knowledge. Therefore, for innovation driven development to be equitable, we need to promote both interactive learning that contributes mainly to synthetic knowledge and those results mainly in scientific knowledge.

It is generally held that in India, there is an urgent need for making the innovation system more vibrant at the national, sub-national (regional) and sectoral level by strengthening the institutional architecture that facilitates learning, innovation and competence building systems at all levels. Here the role of States could be articulated at two different but inter-related levels. First, effectively discharge its direct role through increased R&D for the creation of scientific knowledge and create indicators to capture the synthetic knowledge generated at the instance of all the actors in the regional innovation system. Secondly, creating a vibrant innovation system at the sectoral levels for the generation and use of both scientific and synthetic knowledge to facilitate an innovation driven development. It is in this context that Science, Technology and Innovation Policy (STIP) 2013 made the case for establishing regional innovation councils in all the States in the Country.

Kerala has the credit of being the first to form a State Committee on Science and Technology (STEC) as early as in 1972 and announcing a Science and Technology Policy resolution at the regional level in 1977. Sustaining its effort in building a vibrant innovation system, Kerala State Council for Science, Technology and Environment (KSCSTE) was established in 2002. In sync with STIP 2013, Kerala also established a regional innovation council. While such councils were dismantled under the policy regime that followed, Kerala rechrisined the Regional Innovation council as Kerala Development and Strategic Innovation council (K-DISC). Kerala's recent initiatives towards building a knowledge economy have been significantly shaped by the strategic vision and coordinating role of the Kerala Development and Innovation Strategic Council (K-DISC). Conceived as a high-level think tank and action-oriented platform, K-DISC has sought to reposition knowledge, innovation, and skills as central drivers of the State's development trajectory. Its interventions span the strengthening of the higher education and research ecosystem, promotion of start-ups and knowledge-based enterprises, and facilitation of closer linkages among universities, research institutions, industry, and government. Flagship initiatives such as innovation fellowships, problem-driven research programmes, and support for deep-tech and social innovation are designed to improve the relevance and impact of R&D while enhancing Kerala's absorptive capacity.

Equally important is K-DISC's emphasis on talent retention, re-skilling, and diaspora engagement, aligning global knowledge flows with local development priorities. By fostering mission-oriented innovation, encouraging inter-institutional collaboration, and embedding innovation within governance processes, K-DISC has provided an institutional architecture for translating Kerala's long-standing social investments into a

dynamic knowledge economy. The strategy mark a shift from welfare-led development towards an innovation-led and productivity-enhancing growth strategy, while remaining grounded in Kerala's inclusive development ethos. This strategy is manifested most effectively in the Vijnana Keralam – a people's campaign launched by the Government of Kerala at the instance of K-DISC. It is designed to transform the State's socio-economic landscape by directly addressing the twin challenges of skill deficits and unemployment among educated youth. Conceptualised as a knowledge economy movement, the initiative mobilises community participation and integrates skill development with employment creation at scale, making it one of the most significant socio-economic reforms in Kerala since the literacy campaign and the People's Planning movement.

We recognize that R&D is only an important aspect of innovation, and innovation which brings about development is a progeny of the underlying innovation system. Hence ideally what is needed is a Science Technology and Innovation (STI) Budget. However, while affirming our commitment to adopt such a broader approach in future, our focus at this juncture will be on R&D.

1.2 Role of R&D at the Subnational Level

It goes without saying India becomes innovative if and only if the States are innovative. In large and diverse economies, national innovation and technological advancement are increasingly shaped by the performance of subnational entities. While the overall direction of science, technology, and innovation (STI) policy is anchored at the level of the Union Government, the effective realization of innovation-led growth depends critically on the active participation of States and regions. Subnational R&D performance plays a decisive role in translating national priorities into context-specific solutions that promote inclusive growth, regional balance, and socio-economic transformation.

In India's federal system, States occupy a central position in sectors that are both developmentally significant and innovation-intensive, such as agriculture, health, education, environment, water management, small and medium enterprises, and local infrastructure. These sectors are characterized by pronounced spatial heterogeneity in terms of resource endowments, institutional capacities, and socio-economic conditions. As a result, strategies for technological development and innovation must be tailored to local contexts, drawing upon region-specific knowledge, capabilities, and development priorities. Subnational R&D systems are therefore indispensable for designing, testing, and scaling innovations that respond effectively to local challenges while contributing to national development objectives. Hence attempts to address persistent challenges in socio-economic sectors through innovative and technological solutions require that R&D and innovation-oriented programmes receive systematic and enhanced representation in planning and budgeting frameworks. However, public budgeting in India at the State levels has not explicitly recognized R&D as a strategic investment with long-term developmental returns.

In this context, the case for a dedicated R&D budget at the subnational level assumes particular importance. A clearly articulated R&D budget enables States to prioritize resources for research, experimentation, and innovation in areas of local relevance, while also enhancing transparency and accountability in public spending on knowledge creation. Such a budgetary framework can support the formulation and implementation of programmes aimed at addressing region-specific development challenges-ranging from agricultural sustainability and public health to climate resilience and industrial upgrading. Despite its potential, the importance of dedicated subnational R&D budgeting remains inadequately recognized within India's public finance architecture.

The role of the Union Government in this context is primarily that of an enabler and coordinator. Central support is essential for incentivizing and promoting R&D programmes at the subnational level, particularly in advanced and emerging technological domains that require significant initial investment, long gestation periods, and risk-sharing. This requirement assumes heightened importance in the Indian fiscal federal context, where R&D does not yet find explicit recognition either in the devolution of tax revenues or in the design of grants to States recommended by successive Finance Commissions. While Finance Commission transfers have appropriately focused on correcting vertical and horizontal fiscal imbalances and strengthening social and physical infrastructure, the absence of R&D as a distinct criterion or grant component has constrained the fiscal space available to States for systematic investment in knowledge creation and technological capability building. As India articulates its long-term ambition of becoming a developed country under the Viksit Bharat 2047 vision, this gap becomes increasingly consequential. Achieving developed-country status necessarily requires a strong, decentralized, and regionally diversified innovation base, which cannot be realized without empowering States as active sites of R&D, experimentation, and innovation. By providing clear policy direction, targeted financial incentives, and enabling institutional frameworks, the Centre can help bridge this structural gap, foster collaboration among States, research institutions, industry, and civil society, and strengthen the national innovation system. Such coordination is critical to avoid fragmentation, ensure complementarities across regions, and enable effective diffusion of knowledge and technologies across State boundaries.

However, the Government of Kerala stands apart in its sustained and deliberate efforts to build an effective and efficient R&D ecosystem, reflecting a conscious policy choice aligned with its long-term vision of transforming the State into a knowledge-driven economy. As illustrated in Fig. 1.1, public investment in R&D in Kerala is guided by a clearly articulated and multi-dimensional set of objectives that seek to strengthen the entire science, technology, and innovation (STI) system rather than merely expand research spending. Central to this approach, however, is the development of a robust R&D ecosystem that promotes excellence in scientific research, provides attractive career pathways for researchers, and strengthens publicly funded research institutions through improved evaluation, accountability, and mission orientation.

Equally important is the emphasis on enhancing collaboration among academia, research institutions, industry, and government, including Centre-State cooperation and private sector participation, to address complex and interdisciplinary development challenges. Public investment is also directed towards building world-class R&D infrastructure and supporting science and technology start-ups, thereby ensuring that research efforts translate into societal and commercial applications. By fostering scientific temper, nurturing young researchers, and promoting the creation of knowledge-based industries and employment, Kerala's R&D strategy integrates innovation with development goals, reinforcing the critical role of subnational innovation systems within India's broader national innovation framework.

Objectives of public investment in Kerala's R&D Sector

1 Developing an R&D ecosystem

- *Developing an R&D ecosystem which facilitates sustainable growth of Science, Technology and Innovation.*
- *Strengthen science & technology innovations and provide attractive research opportunities to pursue career in science.*
- *Strengthen the directly funded research institutions under Government by adopting best practices to evaluate the impacts and fine-tune their mandates and focus.*
- *Identify and bridge the current gaps in the R&D ecosystem and take it to the next level of development.*

2 Enhancing collaboration

- *Enhancing collaboration among academy, research institutions, industry and Government.*
- *Promoting collaborative research on complex inter-disciplinary issues through funding from reputed institutions/agencies, both national and international.*
- *Promoting Centre-State collaboration in deploying developed technologies in various sectors.*
- *Providing an enabling environment for private sector participation in R&D.*

3 Ensuring Investments in R&D

- *Provide attractive funding/incentives for Science and Technology start-ups.*
- *Invest in world-class R&D infrastructure and facilitate the accessibility of the infrastructure among various research and educational institutions.*

4 Igniting Curiosity and Empowering New Minds

- *Develop research aptitude and promote scientific temper among youth and students through well informed programs and conferences.*
- *Formulate specific schemes for providing research facilities for novice researchers*

5 Promoting conversion of R&D inputs into societal and commercial applications

6 Creating Knowledge Industries and Knowledge Jobs

Figure 1.1: Objectives of public investment in Kerala's R&D Sector

1.3 The Context of Subnational R&D Budget

Although India's efforts at promoting science and technology have a longer history, initiatives in independent India towards building national innovation system started with the adoption of the Scientific Policy Resolution by the Union Government in 1958. This endeavor was subsequently reinforced through successive policy directives, notably the Technology Policy Statement of 1983, Science and Technology Policy of 2003, the Science Technology and Innovation Policy (STIP) of 2013, and STIP 2020.

India's endeavors in fostering a dynamic national innovation system have yielded substantial dividends, particularly evident in pivotal achievements. These achievements encompass significant structural shifts in the economy, marked by a decline in the agricultural sector's share and a concurrent rise in manufacturing and services. Noteworthy milestones include the establishment of a diversified industrial structure, self-sufficiency in food production facilitated by innovation-driven initiatives such as the green revolution and white revolution. Additionally, foundational efforts led to the emergence of a globally acclaimed pharmaceutical sector, pivotal during the COVID-19 pandemic, facilitated in part by an Indianized patent paradigm. Furthermore, groundwork laid the foundation for the vibrant automobile sector and propelled India to IT superpower status through substantial contributions to software service exports, alongside notable strides in atomic energy, emergence as a global player in space and significant strengthening of defense capabilities.

Historically, development objectives in India have primarily been delineated within the framework of Five-Year Plans, supported by targeted schemes aimed at holistic sectoral development. The domain of science, technology, and innovation largely resided within the purview of the Central Government, which initiated various policies and programs to promote research and development (R&D)-based innovation by various stakeholders within the innovation ecosystem. Despite these national-level initiatives, there persists a significant deficit in nurturing innovation systems at the regional level. Comprehensive efforts, coupled with a clear roadmap for R&D, have been notably absent at the subnational level, resulting in limited provision for R&D in State budgets. While the government allocates grant-in-aid to numerous departments and institutions engaged in R&D, specific targets or Medium- Term Expenditure Frameworks (MTEFs) remain elusive, both at the governmental and subsidiary levels.

Budgetary allocations for R&D predominantly follow historical expenditure trends and project importance, with a lack of clear delineation for R&D-specific funding. The available data on R&D expenditure, particularly at the state level, is fragmented and lacks comprehensive classification within budget documents. This underscores the necessity for a dedicated State R&D Budget, aimed at quantifying and enhancing the quality of R&D expenditure across departments and government/aided institutions. Such an initiative not only facilitates the prioritization of R&D objectives, but also ensures accountability and transparency in resource allocation.

The idea of a separate State R&D Budget is envisioned to empower States in aligning their R&D priorities with budgetary allocations. Kerala's pioneering Gender and Child Budget serves as a testament to targeted budgeting, ensuring a specific allocation within the total State plan outlay for gender-responsive schemes. This landmark measure, exemplified by Kerala, not only yields tangible outcomes but also fosters national awareness and sensitivity towards addressing the unique needs of women and children from the project formulation stage onwards.

The initiative for preparing the R&D budget has been rendered by the Union Government through its direction to the Reserve Bank of India to study and report on the R&D ecosystem at the sub-national level. Accordingly, the RBI brought out a Study Report titled "Research and Development Expenditure of States and UTs". The report was shared with the States & UTs to impress upon the need to prepare a separate State/UT R&D Budget which captures the quantum and also the quality of R&D expenditure across all sectors to enable the States/UTs to fix their R&D priorities through their budgets.

The above Study Report was prepared mainly based on a digital search corresponding to the keyword "Research" among the details of provision and expenditure exhibited in the Annual Financial Statement and the budget documents of the sub-national governments. Considering the methodology adopted for assessment, the data cannot be considered to represent the full picture, as we have neither set apart specific percentages of the GSDP for R&D nor have we demarcated any uniform specific minor/detailed head across the sectors/demands to identify the exact provision for the purpose. Besides, non-plan grants are given in lumpsum to the various universities and research institutes, which could be partly/fully utilized by them for R&D. As such, the actual provision/expenditure for R&D would not get captured through the above methodology. Against this background, the State embarked upon an effort to extract and organise all the available data and in the process arrived at a specific methodology for the preparation of its first R&D Budget document, which is followed for the preparation of this year's document and is elucidated later in this chapter.

This document is basically structured to provide an overall view of the R&D efforts currently realized through budgetary support and the outlook for the next year. It contains an analysis of the data filtered through the devised methodology to ascertain the status of the existing R&D ecosystem in the State and a general comparison to that of other States. Going beyond exhibiting the present scenario, the document strives to set the stage for clear demarcation of the R&D related provision and expenditure.

1.4 Conceptual and Analytical Issues

Innovation, the prime mover of development, involves the production of knowledge and is conventionally measured in terms of the expenditure on Research and Development (R&D). Although R&D could be construed as a key input measure of innovation, it has been shown that R&D expenditure very often fails to capture the innovative performance both at the national level and even at the level of firms. Much of the innovative activities are undertaken without any specific financial and managerial resources in the formal R&D expenditures. Hence, informal R&D represents an important part of the total R&D carried out by all the agents involved in knowledge production. In the absence of a proper accounting of such informal R&D for example, India with low GERD of 0.7% appears to have much higher productivity growth as compared to China with a higher GERD of over 2.3%. The major challenge in developing countries, therefore, is to effectively account for the informal R&D as well.

Analytically, one could distinguish between those actors in the innovation system whose primary activity is the production of codified scientific knowledge and therefore the resources expended by them could undoubtedly be treated as formal R&D. At the same time, there are other actors in the innovation system whose primary activity is not knowledge production, but the production of goods and services. Such actors, in discharging their prime function, engage in experimentation leading to generation of significant synthetic knowledge (also called experience- based knowledge) which, although tacit and uncodified, contributes towards improved efficiency and productivity of their primary activity. To the extent that a part of their total spending is used for the production of synthetic knowledge, that part of the spending has to be accounted as informal R&D. Thus viewed, a proper accounting of R&D needs to consider both formal and informal R&D. Yet our approach here is conventional – focusing on R&D while the adoption of broader approach including the generation of synthetic knowledge is reserved for the later editions.

1.5 R&D and Economy

The synergistic relationship between Research and Development (R&D), Science and Technology (S&T), and Economic Development drives societal progress and prosperity. R&D underpins technological advancements, job creation, and global competitiveness, acting as a cornerstone for innovation and growth in a knowledge-based economy. Investment in R&D enhances knowledge, fosters innovation, attracts foreign investment, and creates skilled employment opportunities, boosting consumer spending and economic strength.

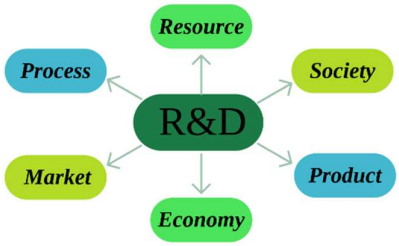


Figure 1.2: Impact of R&D at various levels

Economies investing in R&D gain global competitiveness by producing high-quality, advanced products and services, securing leadership in emerging industries. Government funding plays a critical role, supporting innovation and productivity growth. A sustainable R&D ecosystem requires collaboration among government, industry, NGOs, and academia, with strategic frameworks, policies, and support for start-ups and SMEs.

At different levels, R&D drives resource utilization, process efficiency, product innovation, and industrial growth. It enhances societal well-being by solving complex challenges and improving living standards. Such an ecosystem, enriched with talented researchers, ensures long-term economic success. At the particular level, the impact of R&D can be understood at six levels as shown in Figure 1.2.

1.6 Approach & Methodology

In the State Budget, allocations earmarked for various purposes/activities of departments/institutions are classified as per the instructions in the List of Major and Minor Heads issued by the Controller General of Accounts (CGA), Government of India. As per this arrangement, i.e., function/activity-based reporting of accounts of the Government, separate heads of account, for exhibiting the expenditure towards 'Research' exists only for a limited number of sectors/departments such as Science and Technology, Agriculture Research and Education, etc., But, even for these sectors/departments, the provision under the 'Research' heads of account cannot be considered to convey a holistic picture of the extent of funds essentially allocated and expended for R&D. The nomenclature of these heads of account would only bear the names of the main schemes/functions/institutions while the spending would be on matters not directly related to R&D. Also, a significant portion of the amounts spent on R&D is accounted implicitly under other categories/heads of account not specifically related to R&D. In this context, formulation of specific methods/parameters for identifying and segregating the components of 'Research and Development' in the schemes/projects in the State budget is of prime importance in R&D budgeting.

In the detailed budget estimates, the names of schemes/nomenclature of heads of account which give direct reference to any research activity indicate the presence of R&D component in the allocations made for these schemes/heads of account. Analysing the objective/purpose for which allocation is made in the budget gives the efficacy required to identify the extent of expenditure that support R&D activities. Scrutiny of allocations based on the inputs provided by the respective departments is also essential to measure or estimate the R&D content in the allocations made in the Budget. As part of R&D estimation, verification of all budget outlays is done to quantify the extent of component based on the scheme name/nomenclature of the head of account, objective/purpose, the inputs from other stakeholders, etc., and identified components which fall under the definition of research have been accounted based on the assumptions of probable share for inclusion in the R&D estimates. A pro-rata basis estimation has been adopted in cases where the research and development activities are supplemented with a share of contributions by way of manpower and other facilities which are not directly related to

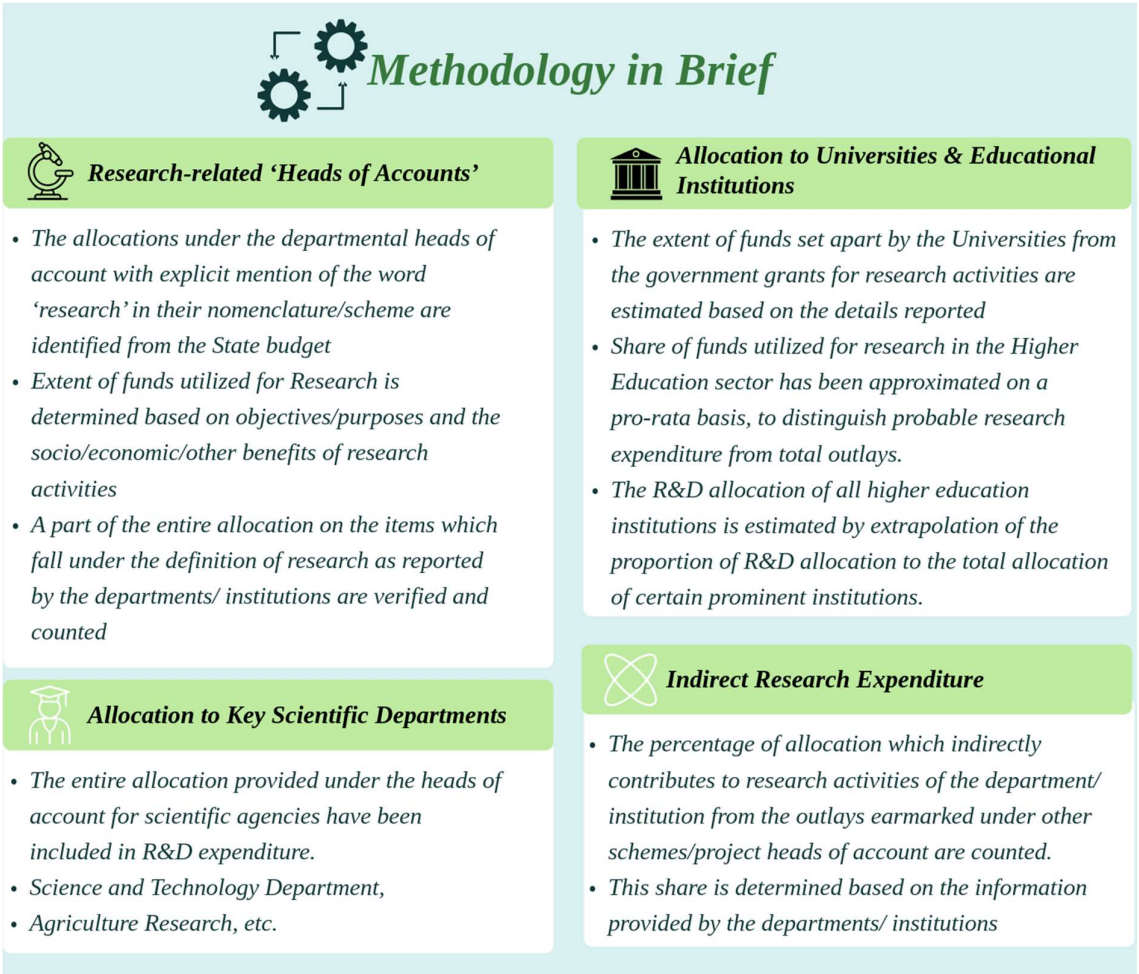
research and funded from other types of budget allocations made under general purpose/services heads of accounts. Tracing out the exact share of research from the budget documents constitutes a cumbersome exercise due to the complexness of the existing classification. As done during the preparation of the previous Research & Budgets, assumptions and inputs of performing departments/ institutions have been taken into consideration for arriving at various pro-rata rates to segregate R&D components.

The following items have been excluded from the R&D estimation:

- Any R&D project conducted within the State by the Central Government and its agencies/institutions/PSUs are kept out of the scope of this document.
- The R&D activities carried out by private enterprises and institutions funded by private organizations/individuals are also not covered.

This document adopts mainly a funder-based reporting of the sums spent towards research by the State Government departments, the State PSUs and the Universities/Educational Institutions/other institutions or organizations aided by the Government. Feedback from the recipient departments/institutions has also been collected so as to ensure that the share of R&D is assessed as accurately as possible.

The methodology adopted for quantifying the R&D expenditure is given below.



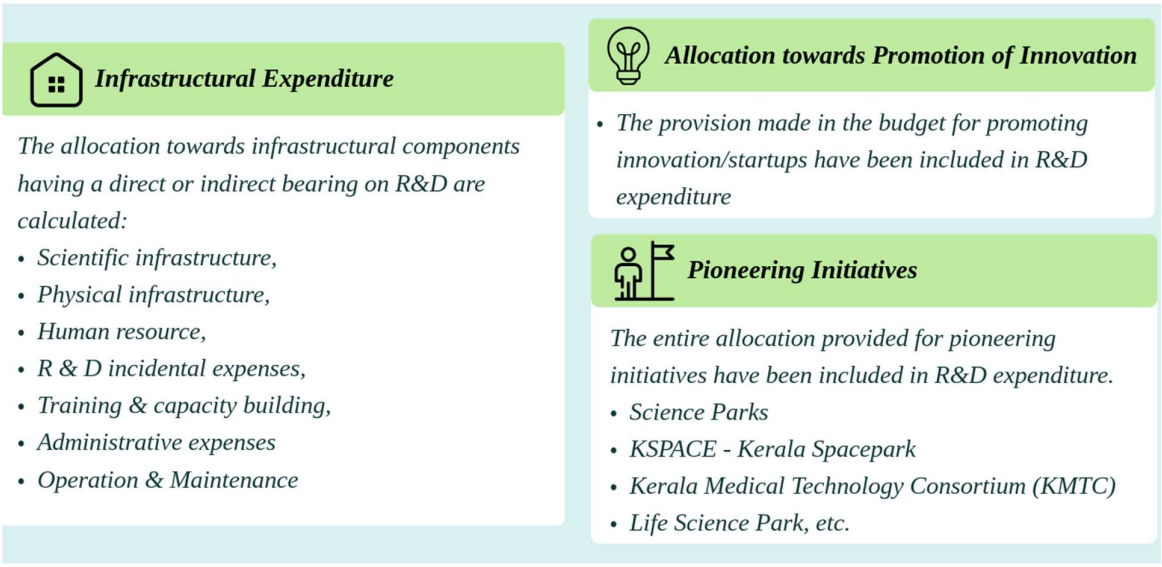


Figure 1.3: Classification of R&D Allocations

1.7 Concluding Observations

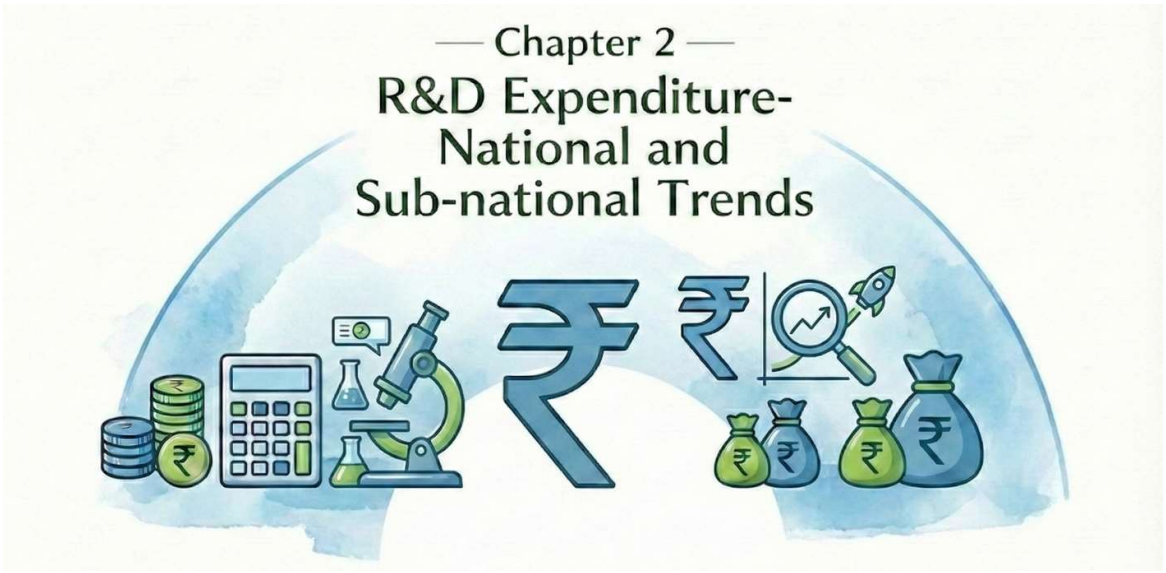
This chapter has situated Research and Development (R&D) within a broader development-theoretic and policy framework, emphasizing that technological capability and innovation are indispensable for sustained competitiveness and inclusive growth in a globalized economy. While latecomer advantages and access to globally available technologies amplified in the digital era can lower entry barriers, the discussion underscores a central lesson from economic history and innovation studies: technology cannot be transferred as a complete, ready-made package. The tacit, context-specific, and experiential dimensions of knowledge necessitate sustained domestic investments in R&D, learning, and capability building. Consequently, R&D emerges not merely as an expenditure item, but as a strategic investment with long-term developmental returns.

The chapter has also highlighted the analytical limitations of viewing innovation narrowly through formal R&D alone. Drawing from the innovation systems perspective, it has emphasized knowledge as the key resource and learning as the key process, encompassing both scientific (codified) and synthetic (experience-based) knowledge. This broader understanding is particularly relevant for developing economies such as India, where significant innovation occurs outside formal laboratories, in farms, workshops, SMEs, and informal sectors. An equitable and development-oriented innovation strategy must therefore recognize, nurture, and integrate both forms of knowledge.

Kerala's long-standing and evolving engagement with science, technology, and innovation stands out. From early institutional initiatives in the 1970s to the establishment of KSCSTE and, more recently, K-DISC, the State has consistently attempted to build a coherent subnational innovation system. Recent initiatives-most notably the articulation of acknowledge economy vision and the launch of people-centric programmes such as Vijnana Keralam-signal a strategic shift towards mission-oriented, inclusive, and

employment-linked innovation. These efforts reflect an understanding that innovation-led development must be socially grounded and institutionally embedded.

Finally, the chapter has made a strong case for recognizing R&D at the subnational level as a core component of India's development strategy. The absence of explicit recognition of R&D in intergovernmental fiscal transfers and State budgeting frameworks represents a critical gap. Kerala's pioneering initiative to conceptualize and operationalize a dedicated State R&D Budget, within many constraints, is therefore both timely and nationally significant. It provides a foundation for greater transparency, prioritization, and accountability in public investment in knowledge creation. The subsequent chapters are build on this conceptual grounding to examine the structure, magnitude, and quality of Kerala's R&D expenditure, and to draw lessons for strengthening subnational innovation systems in India.



2.1. Research and Development: India's Paradox and Prospects

India has long articulated a development vision anchored in science, technology, and innovation (STI). From the early years of independence, the country recognized that sustained economic transformation could not rest solely on factor accumulation or natural resource endowments, but required the systematic building of scientific and technological capability. This recognition was formally enshrined in the Scientific Policy Resolution of 1958, which emphasized that technological progress, more than raw materials or physical capital, would determine national prosperity, social welfare, and strategic autonomy. The Resolution laid the intellectual foundation for a development strategy in which science and technology were treated as core instruments of nation-building rather than residual inputs to growth.

In the decades that followed, India invested heavily in constructing a broad institutional architecture for science and technology. Mission-oriented programmers in atomic energy, space, defense, agriculture, and public health were complemented by the creation of a large higher education and research infrastructure. Institutions such as the Indian Institutes of Technology (IITs), national laboratories, agricultural universities, and sector-specific research organizations played a pivotal role in developing scientific manpower and indigenous technological capabilities. Landmark achievements—including food self-sufficiency through the Green Revolution, advances in pharmaceuticals, the emergence of a globally competitive space programme, and later the rise of the information technology and software services sector—demonstrated the developmental returns to sustained public investment in science and technology. Policy instruments such as the Indian Patent Act, 1970 and calibrated approaches to foreign investment further facilitated domestic learning by balancing access to global knowledge with incentives for local capability building.

This long-standing commitment to STI-driven development has continued into the contemporary period, with renewed emphasis under successive national policy

frameworks. The Science, Technology and Innovation Policy (STIP) 2013, followed by STIP 2020, explicitly sought to strengthen India's innovation system at national, regional, and sectoral levels. A wide range of complementary initiatives—including Start-up India, Accelerating Growth of New India's Innovations (AGNIi), Atal Tinkering Labs, the new Intellectual Property Rights (IPR) Policy, Uchchatar Avishkaar Yojana, and the Smart Cities Mission—were launched to promote entrepreneurship, strengthen research–industry linkages, nurture grassroots innovation, and accelerate technology diffusion. These initiatives, alongside the expansion of public and private innovation institutions, reflect a continued belief that India's future competitiveness must be grounded in knowledge creation and technological capability.

There is considerable evidence that these efforts have yielded tangible outcomes. India has emerged as the third-largest start-up ecosystem globally, with an estimated 50,000 start-ups, following the United States and the United Kingdom. India's performance in the Global Innovation Index (GII) has improved steadily, rising from the 57th position in 2018 to the 52nd in 2019, and then leapfrogging to the 40th position by 2022. This upward trajectory has been sustained, with India retaining its rank in 2023, improving to the 39th position in 2024, and further to the 38th position in 2025. These trends point to a strengthening innovation ecosystem and growing international recognition of India's innovation capabilities.

Yet, this apparent success masks a persistent and troubling structural weakness: India's investment in Research and Development (R&D) has remained stagnant and comparatively low for over three decades. Gross Domestic Expenditure on R&D (GERD) as a share of GDP declined from about 0.85 per cent in 2008–09 to around 0.7 per cent in recent years, a level that compares poorly not only with advanced economies such as the Republic of Korea (over 4 per cent), Israel (over 4 per cent), Japan (around 3.3 per cent), and several European economies but also with emerging economies such as China, whose R&D intensity exceeds 2.3 per cent of GDP, and even with other BRICS countries. India's relatively weak engagement with global technology markets reinforces this picture: only about 9 per cent of Indian firms license foreign technology, compared to nearly 18 per cent in China, while FDI inflows relative to GDP also remain lower than China's.

This coexistence of strong innovation outcomes and weak R&D indicators gives rise to a paradox that lies at the heart of India's development experience. Despite low R&D intensity, limited technology licensing, and modest FDI inflows, India has exhibited relatively strong economic growth and Total Factor Productivity (TFP) performance. Empirical studies suggest that India's TFP growth has, at times, exceeded that of China, even though China invests far more heavily in formal R&D. Moreover, historical evidence indicates that many of today's advanced economies experienced significantly higher TFP growth during their high- growth phases than India has witnessed. Yet, as noted by the Reserve Bank of India, India has been able to sustain relatively high growth with comparatively modest contributions from measured TFP.

This paradox raises two critical issues. First, there are likely conceptual and measurement limitations in using R&D expenditure as a proxy for innovation performance in an economy such as India. Second, the dynamics of innovation in a large, informal, and heterogeneous economy may differ fundamentally from those observed in advanced industrial economies. Much of India's innovation occurs outside formal R&D laboratories—in farms, workshops, construction sites, small enterprises, and service activities—through incremental improvements, problem-solving, and adaptive learning. Such forms of innovation, often based on synthetic or experience-based knowledge, are poorly captured by conventional R&D statistics.

This insight is reinforced by evidence from India's own attempts to measure innovation performance. The India Innovation Index (III) developed by NITI Aayog, while methodologically inspired by the GII, exhibits patterns that diverge sharply from global experience. Whereas the GII shows a strong positive correlation between innovation inputs and outputs, the III reveals a negative correlation, suggesting that higher measured inputs do not necessarily translate into higher outputs within India. This anomaly underscores the need for a more nuanced understanding of the innovation process in India—one that goes beyond narrow R&D metrics and engages with the structure and functioning of the broader innovation system.

Contemporary innovation theory provides a useful lens in this regard. The innovation systems approach conceptualizes innovation as an interactive, cumulative, and institutionally embedded process involving firms, universities, research institutions, users, and intermediaries. Knowledge is treated as the most important resource, and learning as the most critical process. From this perspective, innovation emerges not only through formal research but also through learning-by-doing, learning-by-using, and learning-by-interacting—modes that are especially prominent in developing economies and informal-sector-driven contexts.

India's development trajectory, and Kerala's experience in particular, vividly illustrates this broader conception of innovation. Alongside formal scientific research, Kerala has benefited from widespread experience-based innovations generated by farmers, artisans, and small producers responding to local constraints and opportunities. The recognition of grassroots innovators from Kerala by national institutions attests to the developmental significance of such knowledge. For innovation-driven development to be inclusive and effective, both scientific and synthetic knowledge must be recognized, nurtured, and integrated within policy frameworks.

Despite India's historical commitment to STI, the institutional and fiscal architecture for supporting innovation especially at the subnational level remains underdeveloped. Public R&D expenditure continues to be dominated by Central government institutions, with limited private sector participation and even weaker engagement by State governments. Given India's federal structure and the central role of States in sectors such as agriculture, health, education, environment, and small-scale

industry, this represents a major gap. Strengthening innovation systems at the national level requires parallel strengthening at the regional and sectoral levels.

Enhancing R&D investment in India therefore calls for a dual strategy: increasing public funding for R&D while simultaneously creating an enabling environment for greater industry participation. High uncertainty, long gestation periods, and significant risks deter private investment in research. Addressing these constraints requires coordinated policy instruments, risk-sharing mechanisms, and institutional platforms that foster collaboration among government, industry, and academia. At the same time, innovation policy must move beyond a narrow focus on R&D expenditure to embrace a systems-oriented approach that recognizes diverse sources of knowledge and learning.

In sum, India's development experience highlights both the strengths and limitations of conventional R&D-centric models of innovation. While the country has consistently embraced STI as a driver of development and has achieved notable successes, its low R&D intensity and distinctive growth dynamics point to the need for a more context-sensitive understanding of innovation. Fully realizing India's ambition of becoming a developed economy by 2047 will require not only higher investment in R&D, but also deeper institutional reforms, improved measurement frameworks, and stronger national and subnational innovation systems that reflect the realities of an informal-sector-driven economy. In the context of the challenging international context there is an imperative of learning from China's Chunhui Program.

2.1.1 Lessons from China's Chunhui Program

Figure 2.1: Lessons from China's Chunhui Program

An important, and often underemphasised, pillar of China's technology and innovation strategy has been its systematic engagement with the scientific and professional diaspora through state-led programmes such as the Chunhui Program (Spring Light Programme). Analytically it involved widening inter-country interactive learning space. Initiated in the mid-1990s by the Ministry of Education, the programme was conceived at a time when China was experiencing large-scale outward mobility of students and researchers but had limited domestic absorptive capacity. Rather than viewing this mobility as a permanent "brain drain", the Chunhui Programme institutionalised mechanisms for brain circulation, encouraging foreign-educated Chinese scientists, engineers, and entrepreneurs to return either permanently or on short-term assignments. By the early 2010s, tens of thousands of overseas Chinese professionals had participated in Chunhui and related schemes, contributing to university laboratories, state research institutes, high-technology parks, and start-ups, particularly in electronics, biotechnology, materials science, and information technology. Crucially, the programme

combined financial incentives, assured institutional positions, access to research infrastructure, and policy privileges, thereby embedding returnees within domestic innovation systems rather than leaving engagement to market forces alone. Empirical studies International co-authorship networks, and greater success in linking domestic firms to global knowledge frontiers. This experience offers clear lessons for India—and for knowledge-oriented States such as Kerala, which has already created the ground by the establishment of the **Lok Kerala Sabha**. By creating structured platforms for engagement between expatriate Malayali academics, researchers, professionals and Kerala's universities and public research institutions, Lok Kerala Sabha opens up the possibility of systematic talent circulation rather than episodic collaboration. If operationalised through dedicated programmes, targeted funding, and alignment with priority sectors, this initiative can play a transformative role in rejuvenating Kerala's higher education and research ecosystem and accelerate the State's transition towards a knowledge-based economy within India's broader national innovation framework.

2.2. Global and National Trends

The 2022-23 edition of the biennial document, "Research and Development Statistics at a Glance" published by the Department of Science and Technology, Government of India, gives the latest trends of R&D expenditure on the basis of compiled data on R&D Statistics and Indicators at sub-national, national and international levels. Key graphs and reports in this publication on R&D Statistics are produced below to present the latest R&D scenario at global, national and subnational levels.

In terms of international comparison, India spent only 0.64% of its GDP on R&D in 2020–21, while the same amongst other developing BRICS countries - Brazil (1.3%), Russian Federation (1.1%), and China (2.4%) is at a much higher level. An exception being Mexico where the ratio (0.3%) is lower than India. Most of the developed countries spent more than 2% of their Gross Domestic Product (GDP) on R&D *(Figure 2.2)*.

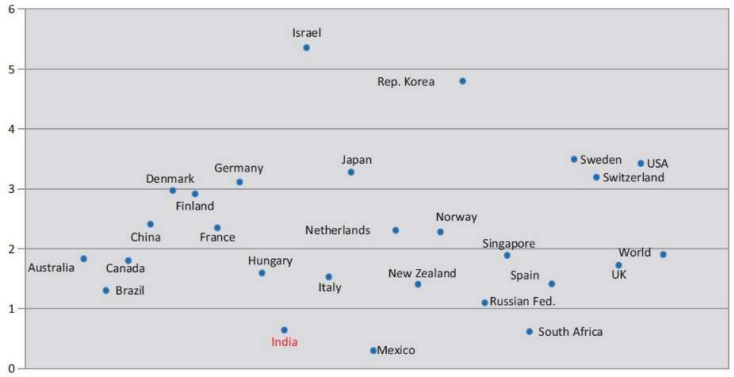


Figure 2.2: R&D expenditure as % of GDP for selected countries, 2020
(Source: Dept of Science & Technology (2023), GoI

India's gross expenditure on R&D (GERD) has been consistently increasing over the years and has more than doubled from Rs. 60,196.75 crore in 2010–11 to Rs. 127,380.96 crore

in 2020–21, which has been consistent and hovered around 0.7% as a percentage of GDP for about a decade *(Figure 2.3)*.

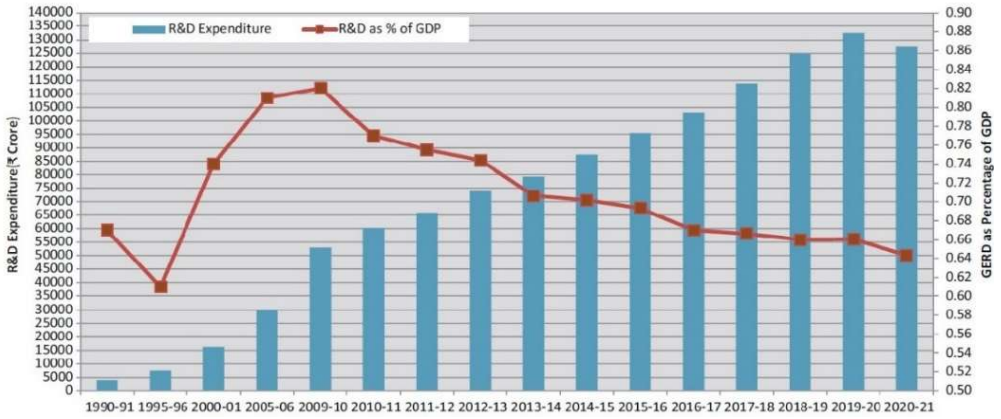


Figure 2.3: National R&D expenditure and its percentage with GDP
(Source: Dept of Science & Technology (2023), GoI

From *Figure 2.4*, it is evident that the annual growth rate of R&D (both at current and constant prices) remained higher than that of GDP prior to 2000–01 while fluctuating thereafter as shown below:

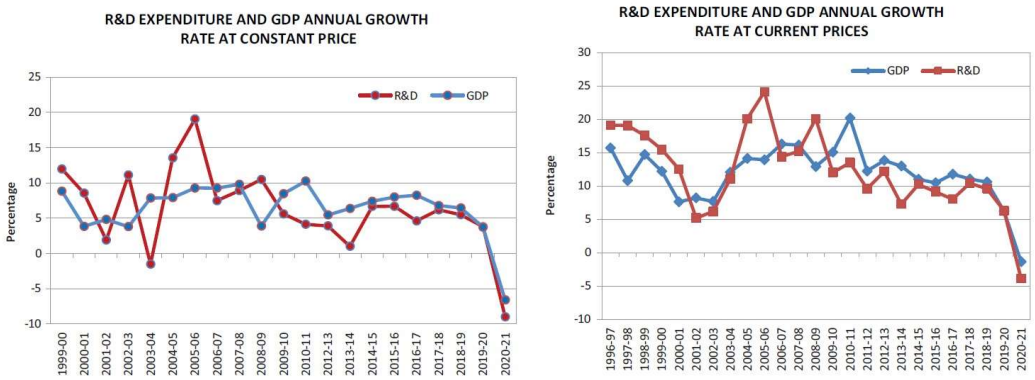


Figure 2.4: R&D expenditure and GDP annual growth rate at constant prices and at current prices
(Source: Dept of Science & Technology (2023), GoI

The data on the pattern of national R&D expenditure for 2020-21 depict that the Government sector comprising Central Government (43.7%), State Governments (6.7%), Higher Education (8.8%) and Public Sector Industry (4.4%) contributes major share and the remaining by the Private Sector Industry with 36.4% during 2020–21 as shown in *Table 2.1*.

Sector	R&D Expenditure Share (%)
Central Government	43.70
Private Sector Industry	36.40
Higher Education Sector	8.80
State Sector	6.70
Public Sector Industry	4.40

Table 2.1: Share of Major Sectors in R&D

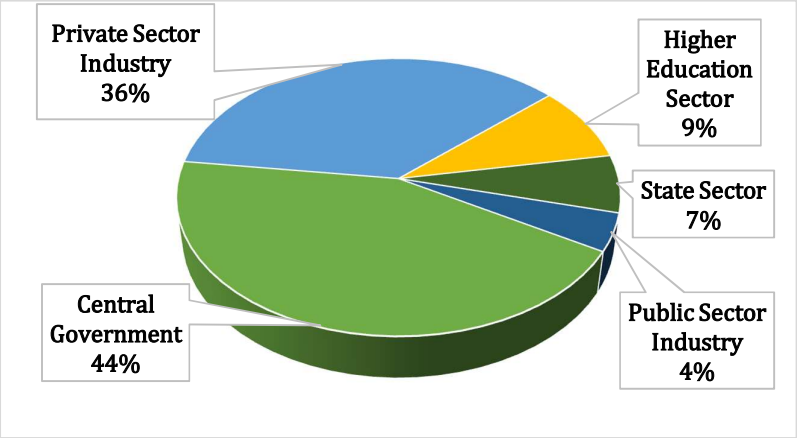


Figure 2.5: Percentage of R&D expenditure borne by different sectors in India
Source: Dept of Science & Technology (2023), GoI

Business Enterprise (Industrial) sector participation in GERD has been around 40% during the last 5 years (See *Figure 2.6*). As reported in the 'Research and Development Statistics at a Glance 2022-23', public sector R&D units spent 0.30% of their sales turnover on R&D as compared to 1.46% by private sector in 2020–21.

Figure 2.6: Percentage share of Government and Business Enterprise Sector in GERD
Source: Dept of Science & Technology (2023), GoI

2.3 R&D expenditure by the state sector in India

The State sector accounted for only 6.7 per cent of the national R&D expenditure. About two thirds of the R&D expenditure was concentrated in a few states (Figure 2.7). In most States, except the more industrialized States, much of the R&D is performed by public research institutes and universities. Kerala accounted for 5.81 per cent of the states' GERD - one percentage point higher in its share compared to that of Karnataka. In fact, Kerala's share of States' GERD has shown an impressive 100 per cent increase between 2017-18 and 2020-21. According to the 'Research and Development Statistics at a Glance 2022-23', expenditure on basic research was 17.98 per cent, experimental development R&D was 28.88 per cent, applied research accounted for 37.31 per cent, while other related S&T activities constituted 15.83 per cent during 2020-21. The major field of research in most States is agriculture.

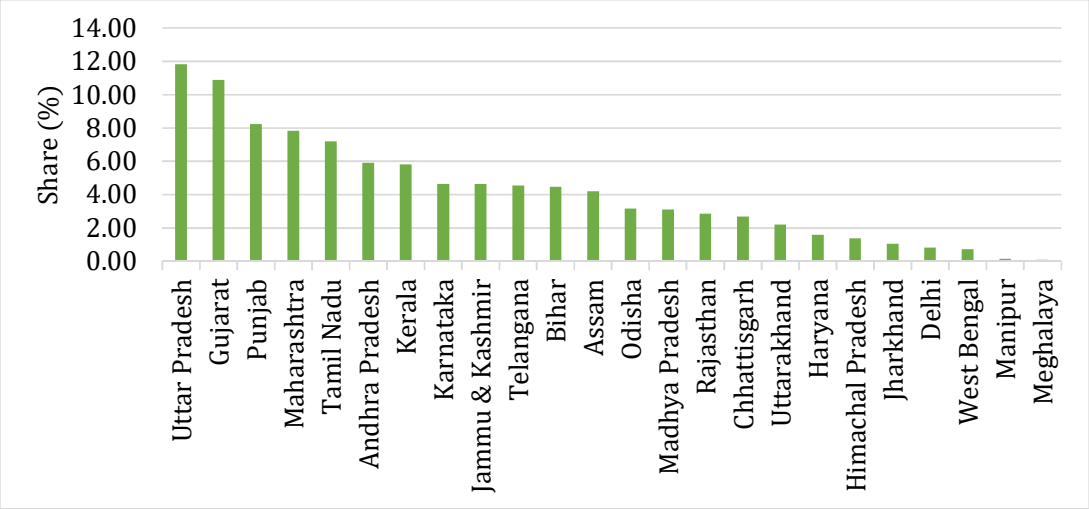


Figure 2.7: State-wise share of R&D expenditure, 2020-21 (in per cent)
Source: Dept of Science & Technology (2023), GoI

Kerala's expenditure for the R&D activities carried out in the Science & Technology sector for the period from 2018-19 to 2020-21 is in the range between Rs. 459.10 crore and Rs. 511.52 crore. *(Figure 2.8)*

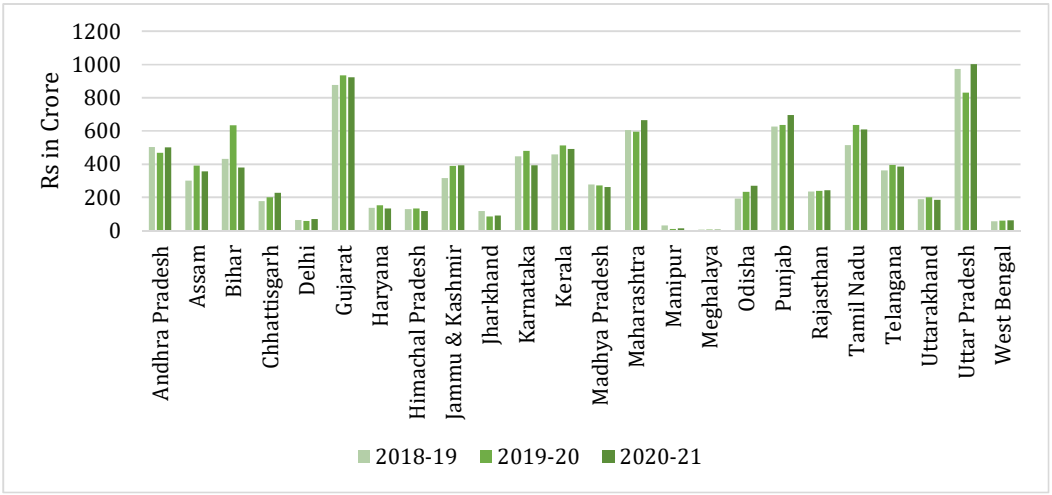


Figure 2.8: GERD incurred by the States
Source: Dept of Science & Technology (2023), GoI

2.3.1 R&D Outcomes

R&D outcomes are normally measured in terms of scientific publications and patents applied for and granted. Consolidated data on scientific publications at the state level are not available. Patents applied for by the states are published by the Indian Patent Office in its annual reports. The number of patent applications from Kerala has shown a consistent upward trend since 2019-20 *(Table 2.2)*.

State/Union Territory	2017-18	2018-19	2019-20	2020-21	2021-22
Tamil Nadu	2742	2391	3546	3945	5262
Maharashtra	3820	4257	4741	4214	4566
Uttar Pradesh	721	972	1176	2317	3622
Karnataka	2022	2185	2230	2784	3222
Others (States/UTs)	1013	1106	1414	1911	2277
Punjab	247	661	1435	1650	2197
Telangana	823	1045	1239	1662	1750
Delhi	1432	1322	1440	1608	1673
Gujarat	712	868	885	921	1067
Haryana	449	520	672	765	998
Andhra Pradesh	276	323	484	709	934
Madhya Pradesh	191	195	285	398	488
Rajasthan	189	305	273	449	465
Kerala	312	277	361	426	454
West Bengal	538	529	612	505	453
Bihar	63	49	50	62	80
Total	**15550**	**17005**	**20843**	**24326**	**29508**

Table 2.2: Trends in patent applications at the state-level
Source: Department of Science and Technology (2023), GoI

2.3.2 'Research and Development Expenditure of States and UTs' (RBI)

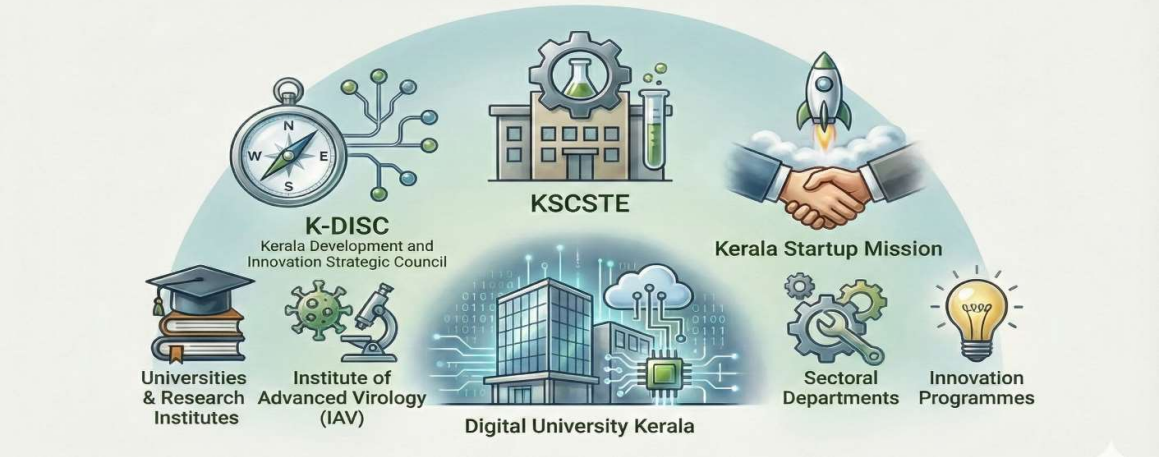
As per the request of the Principal Scientific Advisor to Government of India, the Reserve Bank of India has studied the budget documents of all Indian State Governments and published a report titled 'Research and Development Expenditure of States and UTs', which provided State-wise and Sector-wise data of R&D allocations included in State budgets for the period from Accounts 2018-19 to BE 2020-21. In this report, mainly, the allocations in the budget heads of account which give implicit mentioning of the term 'Research' have been taken into account for the estimation of R&D expenditure. According to this report, Kerala's spending on research as a percentage to the GSDP is 0.3%, which is against the national average of all States at 0.2%.

States	2018-19 Accounts	% to GSDP	2019-20 RE	% to GSDP	2020-21 BE	% to GSDP
Rajasthan	293.30	0.00	310.60	0.00	342.70	0.00
Assam	408.70	0.10	596.90	0.20	479.60	0.10
Maharashtra	3368.30	0.10	4333.70	0.20	4476.90	0.10
Sikkim	66.80	0.20	44.50	0.10	54.80	0.10
Telangana	911.60	0.10	801.30	0.10	938.30	0.10
Tripura	45.70	0.10	51.60	0.10	57.20	0.10
Andhra Pradesh	3303.20	0.40	1356.70	0.10	2187.00	0.20
Gujarat	2560.60	0.20	3160.00	0.20	3706.00	0.20
Jharkhand	860.90	0.30	622.70	0.20	802.20	0.20
Karnataka	3652.50	0.20	3504.80	0.20	3824.70	0.20
Madhya Pradesh	1652.60	0.20	1428.80	0.20	1503.50	0.20
Meghalaya	44.40	0.10	59.60	0.20	84.90	0.20
Punjab	709.10	0.10	772.90	0.10	1160.20	0.20
Tamil Nadu	2314.70	0.10	2968.50	0.20	4504.70	0.20
West Bengal	2265.60	0.20	2146.70	0.20	2342.40	0.20
Chhattisgarh	517.90	0.20	1169.10	0.40	1087.30	0.30
Haryana	1468.80	0.20	2061.70	0.20	2617.10	0.30
Kerala	2581.40	0.30	2527.70	0.30	2954.30	0.30
Mizoram	91.70	0.50	144.00	0.70	71.70	0.30
Odisha	1261.60	0.30	1361.70	0.30	1872.20	0.30
Uttarakhand	639.80	0.30	713.90	0.30	876.40	0.30
Uttar Pradesh	5087.70	0.30	7129.90	0.40	8028.30	0.40
Bihar	2094.60	0.40	3382.00	0.60	3139.70	0.50
Himachal Pradesh	970.40	0.60	979.80	0.60	992.80	0.50
Nagaland	47.80	0.20	104.90	0.30	163.70	0.50
Manipur	32.20	0.10	272.60	0.90	207.80	0.60
Goa	244.60	0.30	374.90	0.50	580.30	0.70
Arunachal Pradesh	82.20	0.30	175.20	0.60	275.90	0.90

Table 2.3: Expenditure on Research as % to Gross State Domestic Product (₹ Crore)

Source: Research and Development Expenditure of States and UTs, Reserve Bank of India (2021)

Chapter 3
R&D Ecosystem in the State



As envisaged in the Science, Technology and Innovation Policy 2013, Kerala has established regional innovation councils at the instance of the Kerala State Council for Science, Technology and Environment (KSCSTE) and the Kerala Development and Strategic Innovation council (K-DISC). Major Research and Development activities in the public sector of the State are being carried out by the Research Institutes under the KSCSTE, the State Universities, Higher Educational Institutions and other novel Institutions set up by the State Government. The Kerala Startup Mission (KSUM) acts as a nodal agency for promoting innovation and entrepreneurship in the state, by supporting the state's start-ups. This chapter sheds light on some of these major institutions and initiatives.

Research Institutions under KSCSTE

- *Jawaharlal Nehru Tropical Botanic Garden and Research Institute*
- *Centre for Water Resources Development and Management*
- *Kerala Forest Research Institute*
- *National Transportation Planning and Research Centre*
- *Kerala School of Mathematics*
- *Malabar Botanical Garden and Institute for Plant Sciences*
- *Srinivasa Ramanujan Institute for Basic Sciences*
- *Institute of Climate Change Studies*
- *Institute of Advanced Virology*
- *Regional Cancer Centre, Thiruvananthapuram*

Universities

- *Kerala Agricultural University*
- *Kerala Veterinary and Animal Sciences University*
- *Kerala University of Digital Sciences, Innovation and Technology*
- *Cochin University of Science and Technology*
- *Kerala University of Health and Allied Sciences*
- *Kerala University of Fisheries and Ocean Studies*
- *Kerala University*
- *Calicut University*
- *Mahatma Gandhi University*
- *Sree Sankaracharya University of Sanskrit*
- *Kannur University*
- *Malayalam University*
- *APJ Abdul Kalam Technological University*

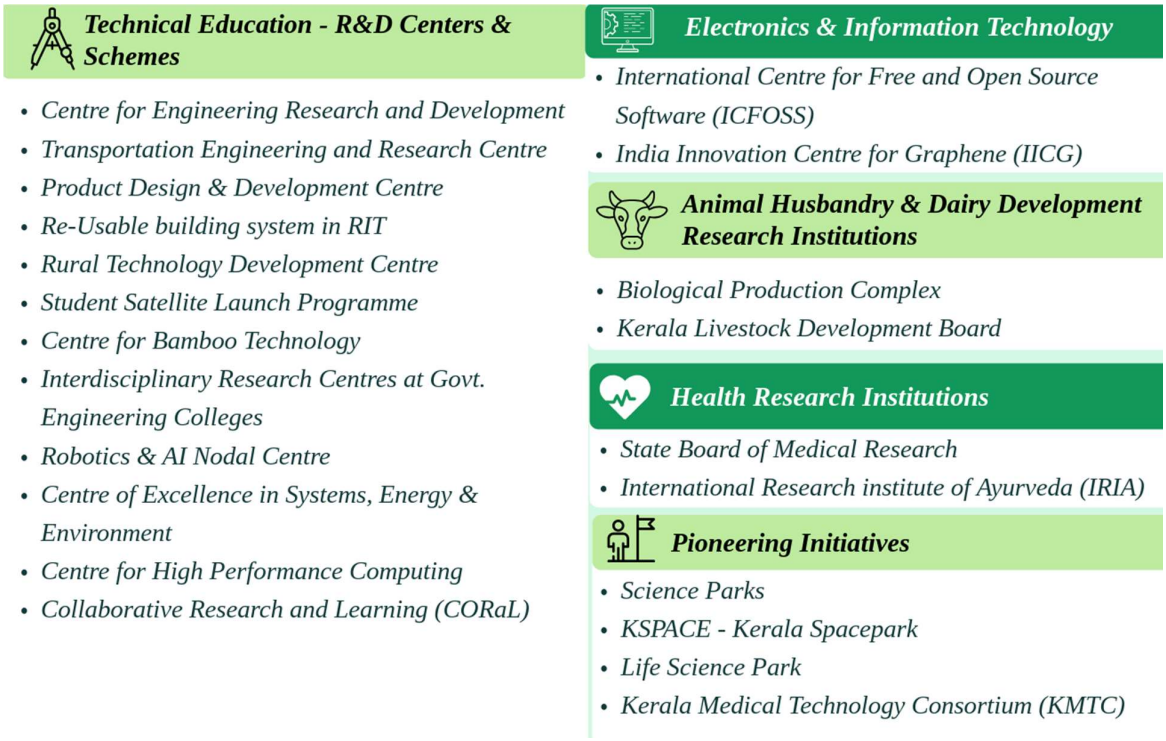


Figure 3.1: Institutions and Initiatives for R&D in Kerala

3.1 Kerala Development Innovation Strategic Council (K-DISC)

The Kerala Development Innovation Strategic Council (K-DISC) has strived to develop a contextual holistic strategy for Kerala's second-generation development problems without sacrificing its inclusiveness and sustainability. K-DISC has crafted various nonlinear innovation programmes to build a holistic Kerala innovation system.

(1). **Young Innovators Programme** aims at democratising innovation and targets student teams in age groups from thirteen to thirty-seven to address the lack of proficiencies of children in critical thinking and resourcefulness despite access to facilities and infrastructure, equity etc. **The Innovation for Youth with Disability** (I-YwD) project ensures innovation methodologies and opportunities for ideation and entrepreneurship reach youth with disabilities.

(2). 'Manchadi - Teach Maths for Kerala' and 'Mazhavillu- Teach Science for Kerala' are programmes designed by K-DISC to address the need for innovation in education to nurture the skills of reasoning, problem-solving, critical thinking, etc.

(3). '**One District One Idea**' (ODOI) is an innovation challenge programme for manufacturing clusters and medium and micro-enterprise clusters. The '**One Local Government One Idea**' programme (OLOI) envisions empowering the Local Governments in Kerala to develop innovative solutions for their problems and also in local economic development, service delivery and governance, going beyond traditional problem-solving approaches and looking at transformation models.

(4). '**Accelerating adoption of Emerging Technology Solutions in Government**' is a programme where K-DISC works with partner departments to identify problems through Application Development Clinics.

(5). K-DISC has developed a strategy of innovation-led development by creating Centres of Excellence in strategic areas like the **Centre of Excellence in Microbiome, Centre of Excellence in Nutraceuticals, Kerala Genome Data Centre, Clean Energy Business Incubation Centre**, and **Kerala Open Talent CoE**.

(6). Consortia involving eminent partners, such as **Accelerated Blockchain Competency Development** (ABCD) programme to make Kerala a Block chain hub, **Electric Vehicle (EV) Consortium** to create an ecosystem for manufacturing electric vehicles and components conducive to Indian conditions and utilising indigenous resources, **Kerala Medical Technology Consortium** (KMTC) to position Kerala as the top Medical Devices and MedTech Hub in the country are the initiatives of K-DISC

(7). Co-ordinated projects initiated by K-DISC are major action research interventions aiming at high-impact community interventions. **Wayanad Smart Coffee project** aims to establish state-of-the-art processing facilities for coffee farmers to access higher value for their produce and provide solutions for problems caused by climate change. The **Miyawaki programme**, a model for rapid urban forest development for Kerala was developed for carbon sequestration, biodiversity improvement, eco-restoration, and urban open space creation. **Atal Community Innovation Centre** is a hub and spoke model innovation centre designed as a living lab for piloting innovation models in real-life contexts prior to scaling. **Kerala Food Platform** (KFP) addresses aggregation for safe-to-eat food products.

(8). **The Vijnana Keralam programme** is a bottom-up people's campaign programme based on mass participation for addressing employability and skilling by leveraging localised systems, higher education systems, and voluntary contributions. It is driven through 4 tracks: 1. Mobilisation of job seekers and conduct of job fairs to provide employment, 2. Strengthen the skill ecosystem in the State and ensure industry-relevant skilling through campus skill centres, public education infrastructure, and community mentorship-based skilling 3. Create a system for the identification of Hyper-local jobs and conduct job fairs 4. Create a system for the identification of International jobs and conduct job fairs for safe, legal migration.

(9). Social Technology & Research for Inclusive Design Excellence (STRIDE) is Kerala's pioneering initiative to create India's first integrated ecosystem for inclusive innovation, focusing on affordable assistive technology development and production as one vertical. By leveraging Kerala's unique strengths engineering talent, community networks, and social infrastructure - STRIDE aims to transform lives while creating sustainable social impact. The programme is implemented in partnership with BUDS schools and the Social Justice Department.

3.2 Digital University Kerala (DUK)

Kerala University of Digital Sciences, Innovation and Technology (Digital University Kerala) was established in 2020 by upgrading the Indian Institute of Information Technology and Management Kerala (IIITMK), for creating talent, conducting research and to develop cutting edge applications to help Kerala to lead in the emerging Knowledge Economy and digital era. It is one of the first digital universities in India.

The University offers 15 Post graduate programs in various facets of Digital Science, Technology and Humanities and developed several cutting-edge applications in the realm of e-Governance. University fostered academic collaboration with leading Universities in the world like Oxford University, Edinburgh University, and Manchester University etc.

Some of the recent major developments in Digital University are detailed below.

- Hon'ble Prime Minister laid foundation stone for the **Digital Science Park** conceived and being developed by Digital University.
- University has created a unique model of industry-institute linkage through which several industries and start-ups are working with university in developing IP and knowledge products.
- Digital University is playing a pioneering role in developing a Graphene and 2D material industrial ecosystem in the State. For establishing the Graphene Ecosystem, University along with CMET Trichur and Tata Steel is establishing the **country's first translational research centre for Graphene and 2D materials.** This **India Innovation Centre for Graphene (IICG)** is developed with the financial assistance from Government of India (Ministry of Electronics and IT), Government of Kerala and Tata Steel.
- In order to further the development of Graphene ecosystem, a large pre-production centre titled **Graphene Aurora** for developing Graphene based products that could be manufactured at scale, is also being developed by the University along with Department of Industries and Carborundum. This centre will be funded by Government of Kerala, Government of India and industry.
- Digital University could become the first University in the State for developing a semiconductor Chip for Al applications. Titled 'Kairali Processor', this Al Chip is expected to play a key role in the development of low power applications in a variety of domains and could help accelerate Kerala's journey to excel in the area of Artificial Intelligence.

3.3 Kerala Startup Mission

The Kerala Startup Mission (KSUM) is the nodal agency of the State Government for promoting entrepreneurship in the State. The mission encompasses expert mentoring, funding support, infrastructure facilities, networking opportunities, and all necessary support to empower entrepreneurs. With over 40,000 entrepreneurs and more than 5,000 startups, Kerala holds the distinction of being the most energetic start-up ecosystem in the country.

Major Highlights

- Venture capital funding of ₹5,500 crores
- creation of 50,000 job opportunities
- granted innovation grants and seed loans to support 778 startups.

Major Programmes implemented at school & college levels

1. Industry on-campus
2. Young Innovators Program
3. Innovation on Campus
4. Samagra Shiksha Kerala
5. STARS Project for girls in Vocational Higher Secondary
6. SHAKTHI Girls Entrepreneurship Empowerment Program
7. 453 Innovation and Entrepreneurship Development Centres (IEDCs)

Research and Innovation Network Kerala (RINK)

RINK is a project that fosters the development of a culture of entrepreneurship and shapes the research ecosystem. It aims to promote technological capabilities, products, and innovations from research institutions to the market. The initiative also facilitates the transfer of technology and intellectual property from research organizations to the marketplace.

Support to startups

- KSUM has initiated various grant schemes for startups to overcome one of the major obstacles in a startup journey which is "capital". These grants viz **Idea Grant, Productization Grant, Scale Up Grant, R&D grant, Seed loans, Patent Reimbursement Scheme** and **Technology Transfer & Commercialization Support initiative** go beyond financial assistance, offering mentorship and support for startups developing viable business concepts.
- The '**Government as a Market Place**' is a scheme to facilitate government departments in directly procuring products from startups. This program serves as a platform for startups to showcase their products or services, allowing government agencies to directly support and procure from these startups.
- The **Fund of Funds**, a SEBI Approved Alternative Investment Funds initiative, launched by KSUM, aims to attract more investments to the startup ecosystem in Kerala.
- An **Emerging Technology Hub** is being set up at Thiruvananthapuram Technocity with an area of 5 lakh square feet. Product designing can be made easier

by availing the services of **Super Fab Lab** in Kochi. There are **23 mini-fab labs** in Kerala and **Future Lab** in Kochi for future technology experiments.

- Apart from this, Kerala Startup Mission provides Startup Research Grant, Nidhi Prayas Grant, Startup India Seed Loan, Research Innovation Challenges, and Market Support Scheme to support startups at various stages.

3.4 Research Institutes under the Kerala State Council for Science, Technology and Environment (KSCSTE)

The Kerala State Council for Science, Technology, and Environment (KSCSTE) spearheads various initiatives in instilling scientific temperament and practices among the public as well as promoting research and innovation. Notable initiatives include the **Pratibha scholarship**, supporting 12th-grade students pursuing Science studies up to Ph.D. level. Other schemes aid Ph.D. and Post-Doctoral research, as well as programs fostering scientific interest among women, resulting in significant research findings, publications, and patents. Accomplished scientists of Kerala origin are recognised with the prestigious "**Sasthra Puraskaram**". Additionally, the '**Science Literature Award**' promotes literary contributions in science. Actively engaging with the academic community, KSCSTE conducts scholarly lectures, talks, and certification programs to cultivate a culture of innovation and entrepreneurship.

The **Kerala Science Congress** is a unique event of the KSCSTE. The last edition of the event focused on 'Technology Transformation for a Green Future'. The focal theme of the upcoming 38th edition is 'Ocean Science for Blue Economy and Ecosystem Restoration'.

KSCSTE propels innovation through unique initiatives like the APJ Abdul Kalam Youth Challenge, Techfest, Rural Innovators' Meet, etc. Supporting over 50 research projects in Science, Engineering, and Technology, KSCSTE facilitates cutting edge research in the State. The organization advocates rural technology, gender-specific science promotion, and aligns with the Green Kerala Initiative, pledging to replant one crore endangered species. It's programme to rejuvenate the polluted Karamana River garnered public appreciation. The KSCSTE has introduced an innovative strategy, called PAIR (Partnering Academic and Industrial Research), to foster collaboration between the industry and academia in addressing industry challenges through research. This initiative has proven successful in recent years. KSCSTE has established the F's Gold Medal to recognize and reward young scientists in the state across various disciplines who have demonstrated excellence through their scientific contributions.

Within the jurisdiction of KSCSTE, eight Research and Development institutes specialize in areas like water, forest, climate change, botany, transport, basic science, and mathematics. In the past five years, they have collectively produced 700 high-quality research publications, graduated 135 Ph.D. students, and secured numerous patents. Externally funded projects have substantially risen, reaching a total of Rs. 250 crores in the last six years. Noteworthy endeavours include establishing dedicated centres of excellence

in water-related disasters and phytochemical nanotechnology. The activities of these institutes along with some of the recently initiated institutions are detailed below.

3.4.1. Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI)

JNTBGRI is a national centre of excellence recognised by the Government of India which undertakes research programmes for the sustainable utilisation of resources. The institute currently conserves more than 4,000 species of flowering plants and about 300 species of nonflowering angiosperms, which is the highest number of plant species conserved among the botanic gardens in Asia.

3.4.2. Centre for Water Resources Development and Management (CWRDM)

CWDRM is a premier R&D institution in the water sector under KSCSTE. It provides research inputs for water resources development and management, especially in the humid tropic areas and has expertise in tackling different problems pertaining to watershed development, wetland management, water management for agriculture, forest and urban hydrology, estuarine management, groundwater development, water quality management, water related environmental issues and irrigation and drainage issues.

3.4.3. Kerala Forest Research Institute (KFRI)

KFRI is a centre of excellence in tropical forestry to provide scientific support for decision-making on matters related to forestry with particular emphasis on conservation, sustainable utilisation and scientific management of natural resources. Working in collaboration with the forest department and other stakeholders, the institute continues to play a key role in improving the scientific foundation of forest management.

3.4.4. National Transportation Planning and Research Centre (NATPAC)

NATPAC undertakes research and consultancy works in the fields of traffic engineering and transportation planning, highway engineering, public transport system, alternate options for transport system, transport energy, inland water transport, tourism planning and rural roads. The activities of NATPAC range from surveying to preparation of techno-economic studies, feasibility analysis, detailed project reports for infrastructure development projects involving multi-modal system of transportation covering road, rail, water, ports/harbours and airports.

3.4.5. Kerala School of Mathematics (KSoM)

Kerala School of Mathematics (KSoM) is a joint venture between the Department of Atomic Energy (DAE), Government of India, and KSCSTE for carrying out advanced learning and research in Mathematics. Talent Nurture Programme is the signature outreach programme of KSoM.

3.4.6. Malabar Botanical Garden and Institute for Plant Sciences (MBGIPS)

An institution dedicated to the conservation and research on aquatic plant diversity, lower group plants, endangered plants of the erstwhile Malabar Region, as well as disseminating knowledge on various facets of plant sciences.

3.4.7. Srinivasa Ramanujan Institute for Basic Sciences (SRIBS)

SRIBS aims to become an internationally known centre for fundamental research in basic sciences and serve as a platform that facilitates capacity building exercise in theoretical sciences.

3.4.8. Institute of Climate Change Studies

The Institute for Climate Change Studies, Kottayam (ICCS) is an autonomous R&D centre registered under Department of Environment. The centre envisions integrated research, technical support and capacity building in all aspects of climate change issues and integrate development policies, plans and programmes at the State level.

3.4.9. Institute of Advanced Virology

The Institute of Advanced Virology established in 2019 in the Bio 360 Life Sciences Park, Thonnakkal, Thiruvananthapuram by the Government of Kerala is envisioned as an institute of global standards, networking with Global Virology Institutes with most modern laboratories focusing on research, diagnosis and management of emerging and re-emerging infectious viral diseases. Its vision is to harness the best and eliminate the worst of viruses for a better human life and to work as a centre of excellence in collaboration with international institutions for training and education in the context of research covering basic science and translational research, providing sufficient scientific inputs to enable the prevention and control of viral infections. With an investment of Rs. 265 crores over five years, the IAV is dedicated to viral research, addressing the State's susceptibility to emerging viral diseases. It has rapidly evolved into an internationally recognized institute equipped with BSL2 and BSL3 facilities, enabling the diagnosis of over 80 viruses, including Nipah, COVID, Zika, and Chikungunya. The IAV is actively involved in the exploration of 'monoclonal antibodies' as a preventive measure against Nipah infection.

3.4.10. Regional Cancer Centre (RCC), Thiruvananthapuram

RCC, Thiruvananthapuram carries out innovative and pioneering work in cancer control, treatment, research and training and is one of the top-rated comprehensive cancer centres in the country offering diagnostic and treatment facilities for cancer. Its main objective is to undertake basic, applied and statistical research in various specialities of oncology.

3.4.11 Science Parks

Acknowledging the importance of advanced science education and innovative research, the government has chosen to set up three Science Parks across the state,

envisioning their potential to draw both international and national institutes for advanced research and industries. The initial investment allocated for these Science Parks is Rs. 600 crores.

3.5 Universities

3.5.1. Kerala Agricultural University

Kerala Agricultural University, functions with a focus on synergizing multi-disciplinary education and strengthening problem-specific research relevant to the state and help build innovative extension systems for sustainable management of natural resources, sustainable agricultural production and overall improvement of rural livelihoods. They play a significant role in innovations and technology development for the sustainable growth of agriculture including entrepreneurship and agribusiness.

3.5.2 Kerala Veterinary and Animal Sciences University (KVASU)

The Kerala Veterinary and Animal Sciences University has been established for the development of education, research and extension in the animal husbandry and dairy development sectors. The major objective of the institution is to promote the livestock economy of the State by fostering quality professionals in the areas of veterinary, animal husbandry and dairy development and assisting in the implementation of research outcomes in field conditions.

3.5.3. Kerala University of Health Sciences (KUHS)

Kerala University of Health Sciences was established as per the Kerala University of Health Sciences Act, 2010 with the aim of ensuring proper and systematic instructions, teaching, training and research in modern medicine, homoeopathy and Indian systems of medicine and allied health sciences in Kerala.

3.5.4. Kerala University of Fisheries and Ocean Studies

The Kerala University of Fisheries and Ocean Studies (KUFOS) is the first university in India exclusively dedicated to studies in fisheries and allied disciplines. It acts as a centre of excellence for human resource development in Fisheries and Ocean Studies. The University carries out research in Fisheries, Ocean Science, Food Science and Technology, Environment Management, Climate Change and Remote Sensing.

3.5.5. Kerala University

The Kerala University was established in 1937. The university has research programmes on diverse fields such as Renewable Energy, Astrophysics, Translational Studies, Material Science, International Relations, International Trade, Rural Management, Cultural Studies, Language and Literature, Education Management, Climate Change and Disaster Management etc.

3.5.6. Calicut University

The University of Calicut came into existence in 1968 with the intention of enhancing the opportunities in higher education and uplifting people in the educationally and socially backward Malabar region of Kerala. The University nurtures excellence in research and development activities in the areas of basic sciences, environmental science, clinical science, etc., through co-localizing fundamental research with society, human health, environment, biodiversity, and sustainable development.

3.5.7. Mahatma Gandhi University

Mahatma Gandhi University was established in 1983 and has 17 University Departments, 1 International and Inter-University Centre, 7 Inter-University Centres, 10 Inter School Centres, 77 Govt. /Aided Affiliated Colleges including 10 Autonomous Colleges, and 200 Unaided Affiliated Colleges. The University carries out research in Chemical Sciences, Pure & Applied Physics, Mathematical Sciences etc.

3.5.8. Sree Sankaracharya University of Sanskrit

Sree Sankaracharya University of Sanskrit was established in 1993 for the promotion and development of the study of Sanskrit, Indology, Indian Philosophy and Indian languages. There are 23 departments functioning at the main centre, Kalady and 8 regional centres in other parts of Kerala. The University nurtures research in the fields of Sanskrit, Indology, Indian Philosophy and languages, Ayurveda, Vastuvidya, Dance, Theatre Arts, Music, Manuscriptology, Translation studies and Comparative Literature.

3.5.9. Kannur University

Kannur University was established in 1995 with the objective of removing educational backwardness in the higher education sector in North Malabar. The University has at present 31 teaching departments, 76 Arts and Science colleges, 8 Oriental title colleges and 20 professional colleges under its administration. The University offers academic research programmes on various arts and science subjects.

3.5.10. Malayalam University

The Thunchath Ezhuthachan Malayalam University established in November 2012 is offering post graduate courses in 10 disciplines and MPhil & Ph. D courses and plans to take up research work to make Malayalam resilient to the possibilities of IT.

3.5.11. Cochin University of Science and Technology (CUSAT)

Cochin University of Science and Technology (CUSAT) Established in 1971, CUSAT is designed to encourage and promote research and innovation in applied science, technology, industry, commerce, and marine sciences. The University fosters an advanced research ecosystem through specialized centres in frontier domains such as atmospheric sciences, biotechnology, nanomaterials, and optoelectronics. By integrating innovative approaches with industrial collaboration, CUSAT undertakes transformative research

addressing contemporary challenges in climate change, environmental studies, and sustainable development.

3.5.12. APJ Abdul Kalam Technological University (KTU)

APJ Abdul Kalam Technological University, established in 2014, aims to provide leadership in technology-related policy formulation and engineering planning for the State. The University emphasizes improving academic standards in graduate, post-graduate, and research programmes in engineering science, technology, and management. Its main thrust areas include promoting interdisciplinary education, fostering research and development, and supporting indigenous technology development to meet the changing infrastructure and industrial requirements of the State.

3.6. Technical Education Institutions

3.6.1. Centre for Engineering Research and Development (CERD)

The Centre for Engineering Research and Development functioning at College of Engineering, Thiruvananthapuram focuses on basic research as well as high end research in the field of engineering.

3.6.2. Research Initiatives

The Scheme is formulated as a combination of the continuing plan schemes related to overall development of research activities under technical education in the state, including infrastructural development. The various research initiatives under technical education institutions are:

- Transportation Engineering and Research Centre
- Product Design & Development Centre in CET
- Re-Usable building system in RIT, Kottayam
- Rural Technology Development Centre
- Student Satellite Launch Programme at CET
- Centre for Bamboo Technology, at GEC, Thiruvananthapuram
- Interdisciplinary Research Centres at Govt. Engineering Colleges
- Robotics & AI nodal Centre
- Centre of Excellence in Systems, Energy & Environment
- Centre for high performance computing at CET and
- Collaborative Research and Learning (CORaL)

3.7. Health Research Institutions

3.7.1. State Board of Medical Research

The State Board of Medical Research has been established to promote, sustain and coordinate medical research.

3.8. Animal Husbandry and Dairy Development

3.8.1. Biological Production Complex

Institute of Animal Health and Veterinary Biologicals (IAH&VB) was established at Palode. Apart from manufacture of vaccines, immuno-biologicals and diagnostic reagents, other activities include research and training for professionals.

3.8.2. Kerala Livestock Development Board (KLDB)

The objective of Kerala Livestock Development Board (KLDB) is to develop a breed of dairy cattle suitable for the prevailing dairy environment of the State. The main functions of the Board are production of breeding inputs, research and development and training.

3.9. Information Technology

3.9.1. International Centre for Free and Open-Source Software (ICFOSS)

Government of Kerala established ICFOSS as an international centre in collaboration with Free Software Organisations in India and abroad to promote development and application of free software and free knowledge. It is a nodal agency in all matters relating to free and open-source software including consultancy, research and development, academics, studies and service, training, publishing, certification, international co-operation and collaboration.

Chapter 4
R&D Budget 2026-27

In the State Budget, separate head of account/classification is not followed now at scheme level for exhibiting the R&D schemes or R&D components of a scheme, which necessitates resorting to a specific exercise to segregate and exhibit the R&D schemes/components in the budgeted programmes with the help of broad assumptions and methodologies. The steps followed for this year's R&D budget estimation is summarized in *Figure 4.1*:

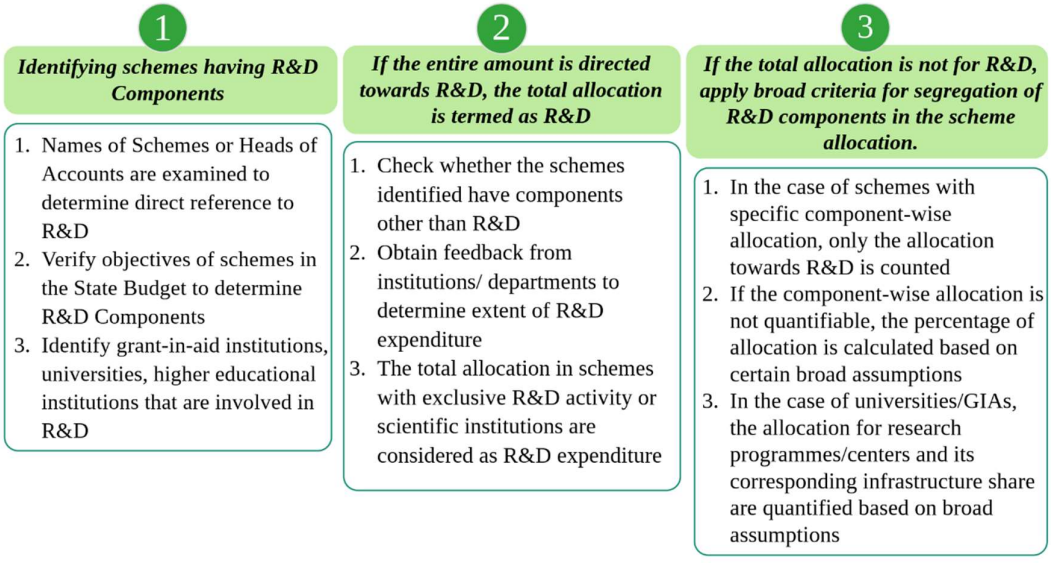


Figure 4.1: R&D Budget Estimation

The methodologies and the process being adopted for R&D budget estimation to prepare this document can't be considered as proven practices and the initiative itself is aimed at facilitating a gradual evolvement of best practices for the reporting of R&D expenditure, the experience and outcome of which are essential for addressing the issues

on data requirement for policy decisions connected with the earmarking of allocations for R&D, bringing positive changes in R&D ecosystem and establishing R&D culture.

In the State Budget 2026-27, it is estimated that approximately ₹ 4745.4 Crore will be utilised for research & development activities, which comes to 0.29% of the estimated Gross State Domestic Product of the State for 2026-27 (*Table 4.1*).

(₹ in Lakh)

R&D Estimation	GSDP*	R&D allocation as a percentage of GSDP
474540.55	162907251.00	0.29

Table 4.1: R&D estimation as a percentage of GSDP 2026-27

**GSDP at current prices projected by the Economics & Statistics Department, Government of Kerala*

State's own plan for 2026-27 (excluding LSG's development expenditure and KSEB's internal resources) is ₹ 24358.82 Crore of which ₹ 1892.74 Crore is towards R&D, which constitutes around 7.77% (*Table 4.2*).

(₹ in Lakh)

R&D Estimation under Plan	Total Plan Outlay	Percentage of Plan Outlay estimated to R&D
189274.32	2435882.00	7.77

Table 4.2: R&D estimated under Plan as a percentage of State's own Plan 2026-27

The sector-wise distribution of R&D under State's plan is given in Table 4.3.

(₹ in Lakh)

No.	Sector	State's Own Plan Outlay*	Estimation for R&D	Percentage of allocation (%)
1	Agriculture and Allied Services	183722.00	40020.11	21.78
2	Rural Development	252698.00	1043.30	0.41
3	Co-operation	14252.00	175.97	1.23
4	Irrigation and Flood Control	62385.00	1817.00	2.91
5	Energy	26766.00	322.30	1.20
6	Industry and Minerals	197351.00	40929.10	20.74
7	Transport and Communications	228505.00	3843.91	1.68
8	Scientific Services and Research	28860.00	26268.60	91.02
9	Social and Community Services	1200040.00	68013.13	5.67
10	Economic Services	223178.00	6649.90	2.98
11	General Services	18125.00	191.00	1.05
	Total	**2435882.00**	**189274.32**	**7.77**

Table 4.3: Sector-wise distribution of R&D under State's plan

**Excluding the outlay for LSGs and KSEB and as per the sectoral classification in State Plan*

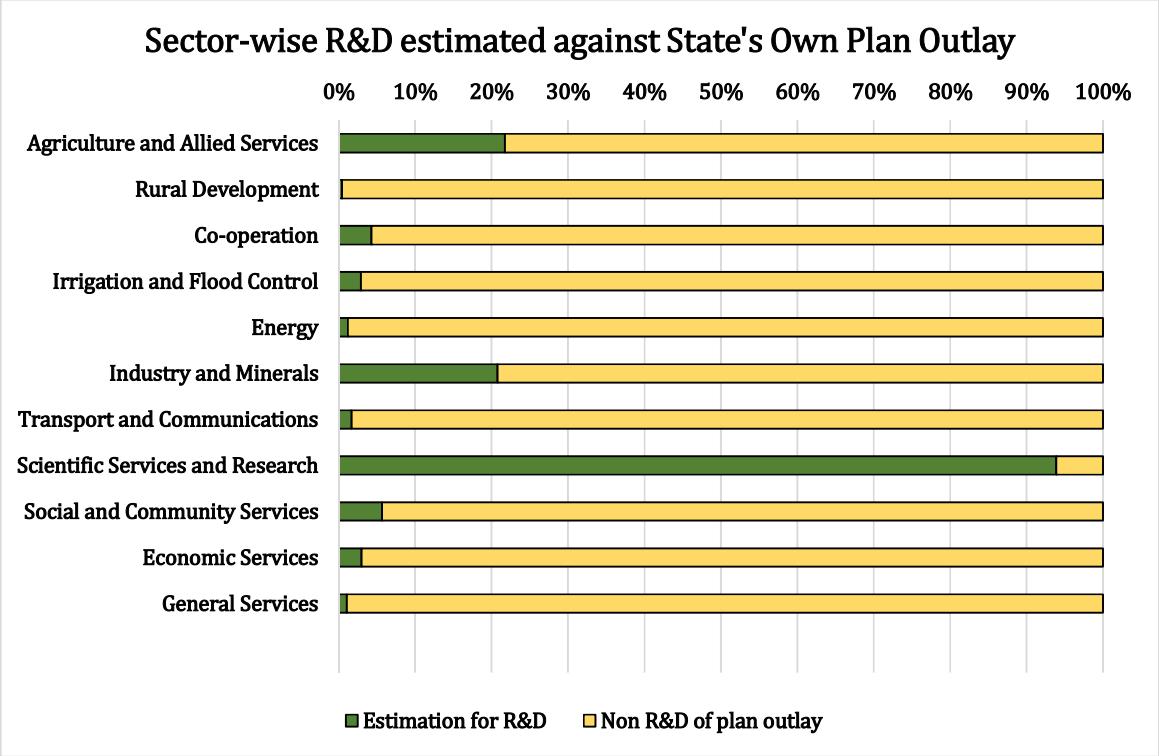


Figure 4.2: Sector-wise R&D estimated against State's Own Plan Outlay

In the non-plan side, the estimation for R&D is ₹ 2852.66 crore, which is around 1.38% of the total non-plan estimates for 2026-27 (*Table 4.4*). The components of R&D under non-plan side include the grant provided to various institutions and Universities for R&D and its share of establishment and infrastructure cost. The salary components of the staff involved directly and indirectly on R&D projects under different Departments/Institutions are estimated on pro-rata basis and included under it.

(₹ in lakh)

R&D estimated under Non Plan	Total Non-Plan Provision	Percentage of Non-Plan Provision estimated to R&D
285266.23	20672365.69	1.38

Table 4.4: Non Plan Estimation for R&D as a percentage of Total Non-Plan Estimates

The estimation of plan and non-plan provisions for R&D under different sectors (as per the classification adopted in the RBI document 'Research and Development Expenditure of States and UTs') is given in *Table 4.5*.

(₹ in lakh)

No.	Sector	Plan	Non Plan	Estimation for R&D	Share (%)
1	Medical Health Family Welfare and Sanitation	32037.92	87337.50	119375.42	25.16%
2	Education R&D	51857.90	167927.57	219785.47	46.32%
3	Labour Research	60.00	51.12	111.12	0.02%
4	Infrastructure Research	5317.85	4053.84	9371.69	1.97%
5	Agricultural Research	39743.41	20853.19	60596.60	12.77%
6	Industrial Research	40929.10	0.00	40929.10	8.62%
7	Social Security and Welfare	5440.85	32.17	5473.02	1.15%
8	Welfare SC/ST	2583.96	656.17	3240.13	0.68%
9	Environmental Research	1434.30	241.29	1675.59	0.35%
10	Housing and Urban Development	1357.30	5.41	1362.70	0.29%
11	Others	7581.97	3787.53	11345.50	2.39%
12	Fiscal Research	929.76	320.45	1274.21	0.27%
	Total	**189274.32**	**285266.23**	**474540.55**	**100.00%**

Table 4.5: Estimation for R&D in the State Budget 2026-27

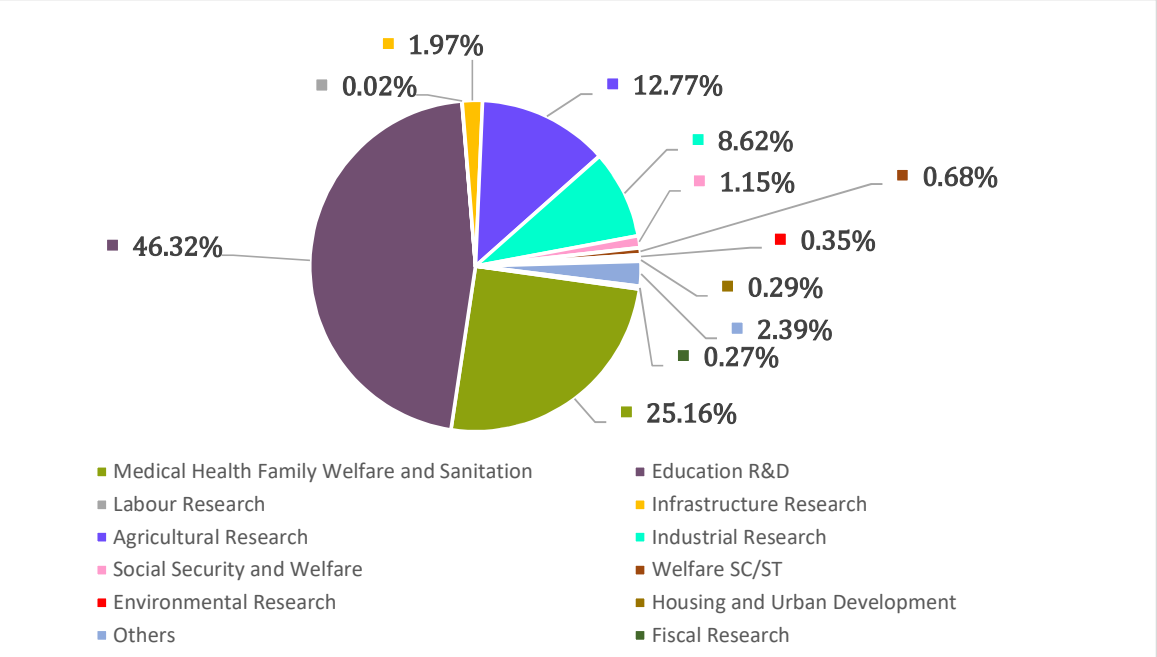


Figure 4.3: Sector-wise R&D Estimation

The R&D allocations in State Budget 2026-27 under various Schemes/Institutions are given in Annexure.

Kerala has, over the decades, laid a strong foundation for a vibrant regional innovation system rooted in its achievements in human development, public institutions, higher education, healthcare, and social infrastructure. The State today possesses a dense network of universities, research institutions, public laboratories, start-ups, technology parks, and sectoral agencies that together form a promising ecosystem for knowledge-driven development. This base provides Kerala with a unique opportunity to transition from a welfare-led development trajectory to an innovation-led growth pathway.

However, this transition must be viewed against the backdrop of persistent fiscal stress and a less conducive Centre-State fiscal environment. Constrained borrowing space, limited revenue autonomy, and declining central transfers have narrowed the State's fiscal room for manoeuvre. In this context, expanding the tax base has become an economic imperative. A broader and more buoyant tax base can only emerge from a more vibrant, diversified, and productive economy. This, in turn, requires sustained investments in research, technology, innovation, and skill formation across key sectors.

R&D therefore assumes a strategic role not merely as a driver of scientific advancement, but as a central instrument of economic transformation. Carefully designed, mission-oriented research programmes can generate solutions to Kerala's second-generation development challenges-ranging from climate vulnerability and demographic transition to productivity constraints and industrial stagnation. Identifying priority research areas enables the State to channel scarce public resources towards programmes with clearly defined outcomes, measurable impact, and strong potential for value creation.

Given Kerala's structural constraints and development aspirations, there is a compelling case for sector-specific innovation strategies with focus on emerging frontier sectors that integrate academia, industry, public agencies, and local institutions.

Strengthening the innovation system at the sectoral level is therefore essential not only for technological progress, but also for expanding economic opportunities, deepening the revenue base, and ensuring long-term fiscal sustainability. Some of the priority/trust areas ideal for intervention of research and development with strategic direction, aimed at reshaping the R&D landscape and transforming the State, are explored in this Chapter.

5.1. Health, Family Welfare and Sanitation

5.1.1. Public Health

Figure 5.1: Focus areas: Public Health Research

Research and Development (R&D) has a vital role in the advancements required in the health sector to face new and emerging health challenges such as the return of infectious diseases, diseases due to environmental degradation, mental health problems, suicide, substance abuse, alcoholism, adolescent health issues, and the rising number of road traffic accidents. R&D has a critical role in the health and wellbeing of society. Recognizing this, the strategic integration of R&D into the healthcare framework of Kerala serves as a cornerstone for sustaining the state's socio-economic growth and public wellbeing. Health facilities must be continuously upgraded to address both persistent and emerging medical threats, and therefore Kerala has opted to earmark a certain portion of the health budget towards R&D, reflecting a developmental philosophy where a healthy society is viewed as a prerequisite for effective economic contribution. Investments in R&D and concerted and committed efforts with proper coordination between different sectors are imperative to conduct in-depth studies and devise innovative solutions. Establishing priority research areas, specifically focusing on improving the health status of marginalized and weaker sections, as well as addressing prevailing lifestyle diseases, is vital to ensure that R&D investments result in a healthy society and socio-economic growth. There is a need for greater participation of the Government and the Private Sector in overall R&D in the health sector. By prioritizing the continuous upgrading of healthcare through the 14th Five-Year Plan, Kerala aims to leverage its robust public health infrastructure to pioneer new standards in curative, palliative, and preventive care, reinforcing its position as a leader in national health outcomes. However, there is no centralized data source on R&D in the state with a reasonable level of disaggregation.

5.1.2. Complementary and Alternative Medicine – AYUSH

Research in the area focuses on finding innovative solutions to address the problems of re-emergence of communicable diseases, second generation health issues like increasing incidence of life-style diseases, health problems of the aged, women and children etc.

Figure 5.2: Holistic Healthcare Research

Ayurveda, especially its Kerala school, is herbal medicine based and has an extensive tradition of empirical trials and experience being used widely by large sections in various age groups and is closely linked dietary practices and lifestyle. Homeopathy is being used widely for addressing specific ailments, especially pediatric healthcare. Unani and Siddha are also being used by certain sections of the community.

5.2. Education R&D

5.2.1. School education

Educational research is crucial in improving teaching and learning methods by empowering with data to assist in teaching and leading more strategically and effectively and also to help students to apply their knowledge to practical situations. Research outcomes have the potential to bring solutions to the second-generation issues such as lack of proficiencies of children in critical thinking, inability in answering reasoning and problem-solving questions, etc. Direct teaching methods have led to students expecting information rather than seeking it. There is a need for educational research for developing knowledge which facilitates critical thinking and enquiry-based, project-based learning with collaborative skills while improving overall teaching and learning practices.

5.3. Infrastructure Research

5.3.1. Aggregation Platforms

The productive sectors in Kerala face major challenges of land fragmentation and small land holdings. This has made conventional economies of scale-based supply chains ineffective. Aggregation solutions that aggregate products, services, and support services become essential for development in the Kerala context. Research is needed to develop app-based or technology-centered solutions to tackle the aggregation problem with a focus on connecting various demographics.

5.3.2. Transport and spatial management

Transport development in Kerala must build on the specific features of its geography and human built resources. The Scope of clean green digital mobility (including e-Mobility) has to be explored to the maximum in the backdrop of increasing carbon emission and air pollution. There is a need for environment friendly and green modes of transport, transit-oriented development across the State with a focus on pedestrian and communal spaces

with better public transport access. Research is a need to develop innovative multimodal transport systems to address the issues in transport and spatial management.

5.3.3. Energy and E-mobility

The growing needs of energy demand R&D initiatives that can increase efficiency in energy generation, storage, transmission and distribution, and generation from solar energy, wind energy, tidal energy, and geothermal energy. Innovation of cost-effective, easy to maintain, waste to energy concepts is necessary to tap energy from renewable sources. Electric Mobility has emerged as a possible intervention area and holds a lot of promise. Advancement of the e-mobility sector through innovative ideas can overcome the issues of limited driving range, high costs, battery issues, long charging time, and inadequate charging infrastructure.

5.4. Agricultural Research

5.4.1. Agriculture

In the context of climate variability and changing cropping patterns, agricultural research is a critical pillar for ensuring sustainable development and resilience in Kerala's agriculture sector. The State's tropical climate, high rainfall, and diverse soil types favour agricultural production, but also expose the sector to risks such as soil erosion, flooding, and increased pest and disease incidence. Agricultural research therefore needs to be adaptive and forward-looking, oriented towards increasing productivity through climatically adapted practices and addressing emerging challenges. With limited scope for expansion of cultivable area due to land fragmentation and declining availability, improving crop productivity remains the primary pathway for increasing farmers' income.

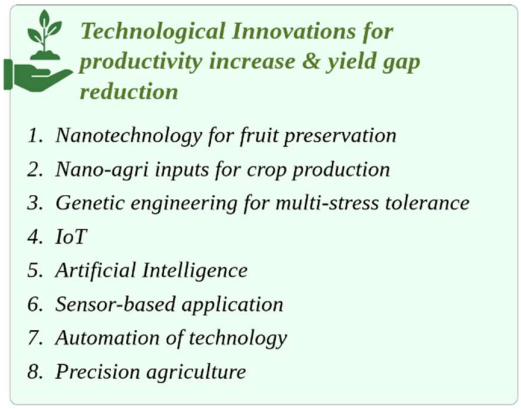


Figure 5.3: Technological Innovations for productivity

In order to bridge the existing yield gap in the State, the development and application of modern technologies are essential to improve yield by stimulating growth, enhancing pest and disease resistance, and improving tolerance to biotic and abiotic stresses. Advanced scientific approaches, including molecular breeding, genetic modification, genome editing, and genetic engineering for multi-stress tolerance-particularly the use of genome editing tools such as CRISPR-offer significant potential to enhance yield, improve crop quality, and reduce dependence on chemical fertilizers and pesticides.

Going forward, agricultural research strategies must prioritize the adoption of emerging technologies such as artificial intelligence, robotics, remote sensing, IoT, sensor-based applications, automation, precision agriculture, nanotechnology, nano agri-inputs

for crop production, and nanotechnology for fruit preservation, which have considerable scope for increasing productivity and reducing yield gaps. Climate-resilient agriculture must be mainstreamed through focused research on drought-, flood-, and salinity-tolerant crop varieties to address increasing climate risks.

Research on secondary agriculture needs to give greater thrust to product diversification, by-product utilization, value addition, and the development of nutritionally improved products to combat lifestyle diseases. Strengthening post-harvest management, processing, storage, cold-chain, and logistics infrastructure is essential to reduce losses and improve sector performance. Establishing robust market linkages with end-to-end traceability, promoting digital agriculture, and leveraging blockchain technologies are ideal areas for research intervention to support the growth and development of the agriculture sector. Capacity building and skill development of farmers, extension personnel, and agri-entrepreneurs in modern technologies and data-driven decision-making need to be strengthened to ensure effective translation of research outcomes at the field level.

5.4.2 Soil & Water Conservation

Innovative methods through research are decisive and vital in the areas of soil fertility assessment for evolving sound soil health management strategy, soil health management support system, creation of spatial and non-spatial data for land use-based plan preparations so as to ensure soil and water conservation in a sustainable manner and formulation of effective land use plans based on land capability. Soil and water conservation in Kerala is of vital importance due to the State's hilly terrain, high-intensity rainfall, and recurring challenges such as soil erosion, water scarcity, and flooding.

Accordingly, research and development efforts in this sector will focus on strengthening scientific and technology-driven solutions, including improved land and water resource assessment, watershed-based planning, wetland and paddy land conservation, and ecological sustainability. The use of advanced tools such as GIS, remote sensing, and drone-based mapping will support better monitoring, planning, and decision-making. Emphasis will be placed on translating research outputs into practical applications through integrated platforms such as K-GIS, while fostering collaboration among research institutions, Government Departments, and Local Self-Governments to promote sustainable, climate-resilient soil and water management practices across the State.

5.4.3. Animal Husbandry and Dairy Development

Figure 5.4: Focus Areas: Meat Production

Mastitis control programme, initiation of cGMP and other support facilities to augment production, production of bacterial and viral vaccines and other biologicals for the use of animals and birds, development of new vaccine, introduction of scientifically reared calves with better production efficiency, increasing milk production and decreasing the age at maturity, reducing inter calving period, Conservation and Improvement of Malabari Goats through Field Performance Recording and Buck Distribution Programme, Assistance for conducting R&D on fodder and fodder seed production, Conservation and dissemination of Germplasm from Vechur, Kasaragod Dwarf Cattle and ND Cattle, Production of High Genetic Merit Crossbred Bulls through Progeny Testing are some of the key fields which demand innovative intervention through R&D for the growth and development of the sector.

The emerging zoonotic diseases threaten human existence on earth and hence state of the art research is needed in zoonosis and its prevention. Further research and skill development in the field of Food Science and Technology and foods of animal origin will definitely be helpful for faster sustainable development and food security of Kerala in line with the UN sustainable development goals. Research on unconventional and traditional feeding of ducks to improve the nutritional base of the area, Duck product technology, etc., will pave way for value addition of duck meat and egg, which will fetch more income to the farmers. Molecular marker assisted selection (MAS) of Ducks to get quick improvement in egg and meat production per generation, improving the facilities for testing the chemical and microbial/quality of milk, strengthening and modernization of infrastructure of DCSs to improve procurement, processing and marketing, activities at various levels to ensure the organoleptic, pysico-chemical and microbiological quality of milk and milk products produced, procured, handled, stored, processed and marketed in the State, collection and processing of data pertaining to various dairy development activities pertaining to the areas like milk production and procurement, indigenous dairy products, Subiksha Keralam, adaptability of milch animals to various types of housing systems, Special Quality drives detection of antibiotic residues in milk, aflatoxin residues

Figure 5.5: Focus Areas: Dairy Development

in milk and feed samples are the areas where study and research are in demands for the transformation of the sector.

5.4.4. Fisheries and Coastal Area Development

The diversity and dynamism of the fisheries sector influence not only its economic dimension but also cast its effect on the social, technological, cultural, and political parameters. Sustainability depends on coordinated, research-backed governance of marine and inland aquatic systems that balance the needs of all stakeholders. Systematic research is essential for conserving aquatic ecosystems, enhancing productivity through natural breeding, managing alien species, and developing rapid disease detection methods.

The sector is strategically important to Kerala's economy, but overfishing, climate change, habitat degradation, and safety risks require focused R&D interventions. Key research areas include sustainable fish stock management, resource mapping, breeding cycles, migration patterns, marine pollution, and fisher safety. Adoption of technologies such as GIS and satellite-based tools, combined with strengthened institutional capacity and collaboration among research institutions, government agencies, and fishing communities, will promote adaptive, climate-resilient, and sustainable fisheries development.

Figure 5.6: Applications of ICT in Fisheries Sector

5.5. Industrial Research

5.5.1. Industry

Investments in industrial research have the potential to bring solutions to the socio-economic issues with growth and development benefiting the economy and society as a whole. Programmes to enhance research on appropriate action for climate change management, tropical forestry, water and environmental management and indigenous knowledge are essential to enhance industrial research in prioritized areas for value addition in the industries sector. The proper integration between R&D Institutions and industry level departmental agencies is highly essential for the betterment of the industry. The area of focus is the strengthening of the interface between industry - R&D - academia and to enhance the level of industry participation, enhancing research output and value

addition, coordination and collaboration between research institutes and the higher education system, providing facility to fellowships and accommodation for young women to work in state-of-the-art research etc. Bringing the field level problems to the notice of the R&D Institutions on a real time basis can provide outcomes which are useful in addressing critical problem in the field.

Figure 5.7: Goals of R&D for Industries Sector

Figure 5.8: Focus Areas: Industrial Research

5.6.1. Data Sciences and Future Technologies

Kerala is facing challenges of providing holistic health care, employment-oriented skilling, enhancing quality of education, high quality social security, continued food and nutrition security with a pro-poor bias, gender justice and inclusion of outliers, infrastructure deficits all within severe fiscal constraints. Data sciences and future technologies are the areas which can be researched/utilized upon for finding solutions to address these issues without infringing upon its fragile environment and impacting adversely upon its biodiversity.

5.6.2. Assistive Technologies and Wearables

The need for research is high in the areas of cognitive aids, mobility aids, educational tools, etc., for a sizeable needy population of differently abled people. Making the cost and maintenance affordable and enhancing the efficiency of the devices will provide an environment for successful implementation of inclusive education, livelihood etc.

5.6.3. Digital, Creative Art Forms, AR/VR & Game Design

In Kerala, there is a lack of all-round creative skills among many professionals who have to adapt & handle new technology art forms and also lack of new capabilities in several artists & cultural workers on new opportunities. In this sector, new platforms can be created for interaction of different artists & cultural workers with skilled resources and exposure in the digital art forms.

Further with the advent of metaverse, the youth of Kerala will need to be prepared to leverage AR/VR technology by not only creating appropriate hardware but also focusing on the right software elements. In the Game Design area, the innovations around game design can be aimed at creating a social change as well as targeting age and focus groups to enhance their cognitive skills.

5.6.4 Building Kerala's Industry 4.0 and Deep-Tech Base

Industry 4.0 technologies offer transformative opportunities across Kerala's priority sectors. In manufacturing, AI-driven automation, robotics, digital twins, and smart factories can enhance productivity, quality, energy efficiency, and global competitiveness, enabling the emergence of high-value manufacturing clusters in electronics, medical devices, aerospace components, and green technologies. In agriculture and fisheries, AI-enabled precision farming, autonomous systems, sensor-based monitoring, and blockchain-enabled traceability can significantly improve yields, reduce costs, strengthen market linkages, and enhance food security.

In healthcare, AI-based diagnostics, robotics-assisted surgery, telemedicine platforms, and digital health records can strengthen Kerala's public health system and create export-oriented med-tech and health-tech industries. In infrastructure and urban management, smart mobility, intelligent transport systems, digital construction, and AI-enabled asset management can improve service delivery while reducing costs and environmental impact. In governance, blockchain-based land records, supply chain tracking, and public finance management systems can enhance transparency, efficiency, and citizen trust.

Quantum technologies, though still emerging, represent a strategic frontier for Kerala's long-term innovation agenda. Applications in secure communication, advanced materials, climate modelling, drug discovery, logistics optimisation, and cryptography hold immense potential. Early investments in quantum research, talent development, and industry collaboration can position Kerala as a national leader in this critical domain.

To realise these opportunities, a coordinated strategy is required that integrates R&D, skilling, infrastructure, and industrial policy. Priority actions include establishing sector-focused Industry 4.0 innovation hubs, expanding testbeds and pilot manufacturing facilities, promoting academia–industry co-creation platforms, strengthening deep-tech start-up financing, and creating regulatory sandboxes for emerging technologies. Special emphasis must be placed on reskilling the existing workforce and preparing youth for future jobs in AI, robotics, quantum, and advanced manufacturing.

By building a strong Industry 4.0 and deep-tech base, Kerala can unlock new engines of growth, generate high-quality employment, expand its tax base, and strengthen its long-term fiscal sustainability-while positioning itself as a leading innovation-driven economy in India and the Global South.

5.6.5 Critical Minerals & Advanced Materials

Critical minerals and advanced materials have emerged as the backbone of the global green energy transition, digital economy, defence manufacturing, and next-generation industrial systems. Minerals such as lithium, cobalt, nickel, rare earth elements, graphite, titanium, and strategic metals are indispensable for electric mobility, renewable energy systems, semiconductors, aerospace, electronics, advanced batteries, and quantum technologies. Simultaneously, advanced materials-ranging from composites, nanomaterials, functional ceramics, smart materials, and biomaterials to high-performance alloys—are transforming manufacturing, healthcare, construction, and electronics. For Kerala, this domain presents a powerful opportunity to build a high-value, technology-intensive industrial base anchored in sustainability and innovation.

Kerala occupies a strategically significant position in India's critical minerals landscape. The State possesses some of the world's richest reserves of beach sand minerals, including ilmenite, rutile, zircon, monazite, garnet, and sillimanite, primarily along its coastal belt. These minerals are essential for titanium metal production, aerospace alloys, defence applications, pigments, nuclear energy, advanced ceramics, and high-performance composites. Kerala also has substantial potential in graphite, silica, clay minerals, and rare earth processing, which are crucial for batteries, electronics, optical fibres, and semiconductor manufacturing.

Despite this natural endowment, Kerala's mineral sector has historically remained limited to extraction and low-value processing, with much of the value addition occurring outside the State. This represents a major missed opportunity. The future lies in moving up the value chain-from mining to materials engineering, component manufacturing, and technology-intensive downstream industries. Establishing an advanced materials ecosystem can transform Kerala from a raw material supplier into a global hub for high-performance materials and strategic manufacturing.

Advanced materials research offers significant cross-sectoral spillovers. In renewable energy and electric mobility, next-generation battery materials, solid-state

electrolytes, lightweight composites, and high-efficiency power electronics can support the growth of EV manufacturing, energy storage systems, and green hydrogen infrastructure. In aerospace, defence, and space technologies, high-strength alloys, carbon composites, and ceramic matrix materials are essential for precision engineering and high-temperature applications. In electronics and semiconductors, ultra-pure materials, specialty chemicals, rare earth magnets, and compound semiconductors are core inputs for high-value fabrication.

Kerala is well-positioned to develop a competitive advantage in this sector due to its strong scientific talent pool, premier research institutions, engineering ecosystem, and industrial infrastructure. Institutions such as IIT Palakkad, IISER Thiruvananthapuram, C-MET, IIST, and leading universities provide a robust foundation for advanced materials research, testing, and product development. The presence of public sector enterprises and emerging deep-tech start-ups further strengthens the innovation ecosystem.

A strategic roadmap is required to harness this potential. Key priorities include setting up a Critical Minerals and Advanced Materials Mission, establishing Materials Innovation Hubs with pilot-scale processing and testing facilities, promoting public–private partnerships in mineral beneficiation and advanced manufacturing, and creating dedicated industrial clusters for battery materials, aerospace materials, electronic materials, and green materials. Strong environmental safeguards, circular economy models, recycling of critical minerals, and responsible mining practices must be integral to this strategy. By building a globally competitive critical minerals and advanced materials ecosystem, Kerala can generate high-value employment, attract large-scale investment, strengthen national strategic autonomy, and emerge as a leader in the materials technologies that will define the future of industry and sustainability.

5.7. Environmental Research

5.7.1. Forest and Wildlife

Important R & D initiatives required under forestry and wildlife include hydrologic and geomorphic approaches in natural forest areas, impact of climate change on forest functions, ecology and regeneration dynamics of natural forests, studies on productivity decline in plantations, evaluation of indigenous fast-growing tree species, studies on plantation nutrition and silvicultural stand management strategies.

The need for scientific management of the forests for their effective conservation and rational utilization is of particular importance. Research and development interventions on issues like human-wildlife conflict, forest fire control, package of practices for selected species, mixed plantation forestry, pest control, soil fertility, agroforestry, carbon sequestration, wildlife related studies, socio-economic dimensions of forest dependent communities, assessment of NTFP resources, hydrologic and geomorphic studies in natural forest areas, impact of climate change on forest functions, ecology and regeneration dynamics of natural forests, phyto-sociological studies and vegetation

distribution modelling, studies on forest disturbances, ecology of invasive species, etc., are essential for transforming the sector.

5.7.2. Ecology and Environment

In-depth scientific studies and research with the technical support and collaboration of various stakeholders are essential to assess the changing climate and environment impacts and to find innovative solutions to the issues which disturbing the balance of the environment. Fruitful R&D intervention can strengthen the environment monitoring and enhance biodiversity and livelihood, promote business incubators in biodiversity, strengthen scientific base of biodiversity conservation, decentralized management are the focus areas of research and development under biodiversity conservation. It is also necessary to strengthen the capacity of local institutions for undertaking environmental research for evolution and demonstration of cost-effective and energy-efficient technologies for environmental management.

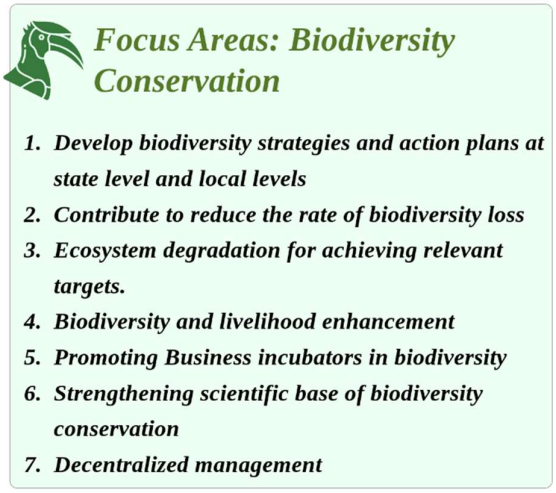


Figure 5.9: Focus Areas: Biodiversity Conservation

Creation of well-informed environmental database management at the DoECC is also part of R & D initiatives. Studies on cost evaluation of climate change adaptation and mitigation measures are to be carried out. A fully developed Climate Change Cell is imperative for inter-departmental coordination and to ensure periodic interactions with the stakeholders and the international institutions for exchange of information on climate change, data sharing and to facilitate real-time monitoring of the plan programs.

5.7.3. Drinking water and water conservation

Non-conventional methods for utilization of water such as artificial recharge of ground water and traditional water conservation practices like rainwater harvesting need to be explored through R&D. This will include the optimum utilization of resources such recycling of greywater, septage processing and desalination. There is a necessity to develop appropriate technologies to cover the uncovered water supply areas located in remote/difficult terrain, develop cost effective, efficient and community manageable water quality mitigation models, smart network management for reducing Non-Revenue Water (NRW) using latest technologies, develop good management models for community lead O&M management, solutions to reduce stress on water sources etc. Focused R&D methods are needed for sustainable water resource management in each river basin. A river basin specific database helps to have inter and intra basin management practices.

5.7.4. Disaster Mitigation

Vulnerability to climate change and subsequent disasters affect the existing social, economic, environmental, and physical conditions of the state. The challenges for the future in disaster management may perhaps be summed up succinctly in the term scientific disaster risk mitigation using soil management technologies, geotagging, and using GIS and satellite studies. There is a need for innovative and effective reservoir operations systems for flood management. Early warning systems and predictive technology is required for timely alerts and evacuation with participation from the local population.

5.7.5. Climate change adaptation and carbon footprint improvement

The scope and scale of the disasters that has been faced were no doubt in part determined by the severity of the climatic or biological extreme events that triggered them. The increase in carbon emission and carbon footprint are increasing concerns in the state.

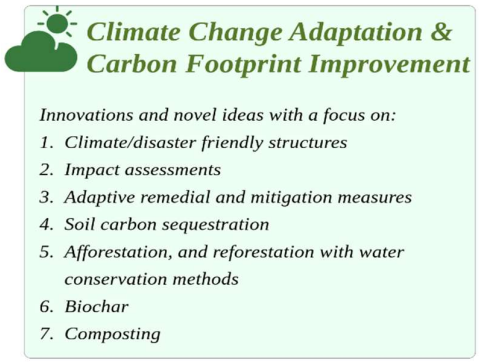


Figure 5.10: Focus Areas: Climate Change Adaptation

5.7.6. Solid, liquid and hazardous waste disposal

Innovative methods for collection, segregation and corresponding recycling or disposal for solid waste is in need over existing low-lying landfill systems and sea dumping process. Some challenges in liquid waste management are the requirement of inadequate pipeline systems, coordination between different government departments and organizations and public awareness of the issues. Due to the low number of recycling units for e-wastes and hazardous waste in the state, the industries must depend on units in other states to dispose of the waste.

Figure 5.11: Innovation in Waste Disposal

5.8. Housing and Urban Development

5.8.1. Shelter

Rising population pressure on land encourages the need to reposition vertically and create innovative solutions to manage transportation and livelihood needs. There is a need to develop disaster resilient structure. New technologies like precast and industrial fabrication methods are to be tried out which requires substantive adaptation of operations and positioning of new skills. Need for

innovation in shelter becomes more important in the context of increasing instances of disasters and rising sea levels.

5.8.2. Urban Planning, Transport, Port and Harbour Engineering

The idea of urban innovation is deeply related to the highly in-fashion term, 'smart'. It refers to solutions, provisions and/or ways of adapting to the challenges surrounding major cities, as the urban setting is becoming increasingly relevant. The new technologies developed in these coincide with offering a horizon of sustainability, social and economic convergence, participation, smart mobility and, in general, improvement in the quality of life in cities that embrace these types of innovations.

Figure 5.12: Features of Kerala's Coastline and Inland Waterways

The idea of urban innovation is deeply related to the highly in-fashion term, 'smart'. It refers to solutions, provisions and/or ways of adapting to the challenges surrounding major cities, as the urban setting is becoming increasingly relevant. The new technologies developed in these coincide with offering a horizon of sustainability, social and economic convergence, participation, smart mobility and, in general, improvement in the quality of life in cities that embrace these types of innovations.

Smart traffic systems, smart urban agriculture and creating a sustainable cost-effective urban infrastructure are area in which ideas and innovations can be encouraged. Innovation in waterway management, smart ports as well as ideas to decongest and improve port traffic can aid the state greatly.

5.9. Cultural Research

5.9.1. Culture heritage, art forms and community spaces

Museums, zoos, and culturally important monuments are not set up to suit the environment they're in and the opportunities they present to local population not fully utilised. There is diminishing interest in local art forms such as Kathakali, Chakyar Koothu, Nangiar Koothu, Mohiniyattam etc., which needs promotion and involvement of the community in order to flourish into art forms that can survive globalisation. Innovations in this area could be looking at retaining riches in these areas looking for creative uses of culture, heritage, and art forms for achieving sustainability, equity and diversity. It can also look at enhancing digital heritage innovation and AR/VR cultural experiences.

5.10. Cooperative Sector

The modern challenges facing the co-operative sector necessitate the integration of technology and trust within a renewed co-operative mindset. Restructuring through the adoption of latest technological advancements is essential to transform co-operative

institutions into user-friendly, youth-oriented establishments, free from antiquated governance laws. As new-age enterprises are increasingly driven by valuation and long-term value creation rather than short-term profits, systematic studies and research are indispensable to enable coordinated reforms, generate value within the sector, and attract diversified investments, including private equity.

In this context, the establishment of a structured and institutionalized Research and Development (R&D) framework shall be a key priority for strengthening and modernizing the co-operative sector in Kerala. Focused R&D initiatives shall promote innovation in financial services, increased participation of youth through improved digital accessibility and tailored financial products and adoption of advanced digital and operational technologies across agricultural and non-agricultural co-operatives. Special emphasis shall be placed on expanding credit and investment support to emerging and high-potential sectors such as agriculture, fisheries, dairy, livestock, inland fisheries, commercial dairy, and high-value poultry farming, to boost economic activity and strengthen rural livelihoods. Research-driven planning shall be prioritized for the development of modern agricultural infrastructure, including multi-tier storage systems, cold chain facilities, and efficient supply-chain linkages, to reduce post-harvest losses and enhance farmers' income.

5.11. Others

5.11.1 Biotechnology, Molecular Biology and Genetics

Genetics is the study of inheritance whereas biotechnology is a field of life science that uses living organisms and biological systems to create modified or useful products. Genetics and biotechnology have importance of its application in the sectors like agriculture, Animal Husbandry, Microbial, Environmental and Health. Research and development in biotechnology and genetics can be contributed to:

- Produce seeds, planting materials with climate resilience, high yield, pest resistance
- Animals & poultry with high produce & disease resistance,
- Genetically modified & bio-fortified varieties,
- Pollution and pollutants less improved environmental management

5.12 Grassroots Innovations

Grassroots innovations refers to the development and implementation of new ideas and solutions at the local level, often at the instance of individuals or communities rather than by formal R&D organizations. Such innovations are shown to be resource conserving and sustainable and can lead to the creation of new opportunities and solutions which are tailored to the specific needs of the state. There are several grassroots innovators from Kerala who have received national innovation awards for their work. However, there is hardly any attempt at promoting such innovations and innovators. Following China, there is the need for promoting grassroots innovations at the instance of LSGs which is bound to give rich dividends.

Annexure

Annexure				
Scheme-wise estimates of R&D in the State Budget 2026-27				
				(Rs. In Lakh)
No.	**Name of the Scheme**	**BE 2026-27**	**Estimation for R&D**	**Key Research Activities**
Medical Health, Family Welfare and Sanitation				
1	Allopathy Medical Colleges and allied institutions	274283.23	88077.25	Plan and non-plan assistance for research activities such as basic research, clinical research, etc., carried out in the Government Medical College. The estimated amount includes the assessed share of establishment and infrastructure utilised for research activities.
2	Regional Cancer Centre	16828.66	9782.87	Regional Cancer Centre is an internationally recognized centre providing facilities for cancer diagnosis, treatment, palliative care, rehabilitation and undertakes major research and development activities in cancer care.
3	Ayurveda Medical Colleges and Allied institutions	21309.37	6863.85	Plan and non-plan assistance for research activities such as clinical research, fundamental research, drug standardisation research, etc., carried out in the Government Ayurveda Medical College. The estimated amount includes the assessed share of establishment and infrastructure utilised for research activities.
4	Cochin Cancer and Research Centre, Ernakulam	3600.00	3060.00	Assistance to the Cochin Cancer And Research Centre, Ernakulam for carrying out research activities in cancer care.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
5	Homoeopathic Medical Colleges and Allied institutions	5675.18	1823.83	Plan and non-plan assistance for research activities such as clinical research, fundamental research, etc., carried out in the Government Homoeopathic Medical Colleges. The estimated amount includes the assessed share of establishment and infrastructure utilised for research activities.
6	Institute of Mental Health and Neuro Science	864.75	864.75	Assistance to the Institute Of Mental Health And Neuro Science for carrying out research activities in neuro developmental disorders, solution-focussed therapies, neuro-psychological studies, qualitative and mixed method research, women's mental health, tribal mental health, community mental health, preventive mental health, genetic basis of psychiatric disorders, etc.
7	Kerala University of Health Sciences (KUHS)	1979.28	1449.37	Consists of grant provided to the University for conducting research under different sectors such as breastfeeding rates, determinants of lactation failure and innovative information sharing solutions for breastfeeding promotion in Kerala. Research on professional health workforce for Kerala, determinants of supply and project demand, etc.
8	State Board of Medical Research	300.00	300.00	The State Board of Medical Research has been established to promote, sustain and co-ordinate medical research. Extending financial assistance to various research programmes under medical education, development of research methodology, etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
9	Research Cell for Indian System of Sports Medicine.	334.07	334.07	Research in Panchakarma and Marma to develop rejuvenation and stamina building among sports people. Research to utilize Ayurveda in different aspects of sports activities to improve the efficiency and performance of sports personnel.
10	Research Institute for Mental Diseases	305.37	305.37	Research on mental disorders including neuro developmental disorders, solution-focussed therapies, neuro-psychological studies,
11	Indian Institute of Diabetes	182.24	182.24	Research on Incidence, Risk factors and Preventive Strategy for Gestational Diabetes Mellitus in Keralite Women, Effect of Partial Substitution of diet with unripe Jack Fruit based recipe on Glycaemic Parameters, Lipid Profile in Indian Patients With Type 2 Diabetes, the Scope for Atherosclerotic Cardiovascular Disease Risk Reduction, High Prevalence of Overweight, Obesity and Clinical Features of Insulin Resistance in Community Dwelling South Indian Youth as Assessed by Multistage Cluster Sampling, Prevalence and Associations of Hypothyroidism in Indian Patients with Type 2 Diabetes Mellitus, High Prevalence of Normoalbuminuric Chronic Kidney Disease in Indian Patients with Type 2 Diabetes Mellitus.
12	Water Supply - Human Resource Development, Research and Development	100.00	100.00	To develop innovative solutions for the modernisation and improving efficiency of the maintenance of water supply and sewerage system.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
13	International Level Laboratory and Education Centre for Research Linking Ayurveda to Modern Biotechnology	250.00	250.00	Establishment of International Level Laboratory & Education Centre for scientific development of Ayurveda based on evidences, standardization of drugs and research linking Ayurveda to modern biotechnology.
14	Ayurveda Research Institute	136.80	136.80	Research works with special emphasis on Life Style Related health care with the support of a sophisticated Biochemistry & Pathology laboratory, Intramural Clinical trial on Uterine Fibroids, life style related Gynaec disorders, Diabetes mellitus, Obesity, etc.
15	State Medicinal Plants Board	64.26	64.26	Research on traceability of raw drugs from harvest to consumption level, collection, compilation, documentation, validation and digitization of published scientific information on various aspects of selected Medicinal Plants and their ASU & H formulations. Research aimed at lowering cost of cultivation and production of extracts, phytochemicals, natural colours, flavours and fragrances by using latest R&D technologies. - Bio-activity Guided Fractionation. - Development of DNA barcoding, spectrometry HPLC methods etc. for phyto-constituents (preferably the bio-actives/marker compounds) and validation of these methods., etc. Development of Biotechnological Techniques (BT) & Information Technology (IT) based tools applications related to Medicinal plants, etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
16	Traditional Knowledge Innovation in Kerala.	47.00	47.00	For protecting the traditional knowledge in Ayurveda by strengthening the activities of patent cell viz documentation, research, registration and enforcement
17	Inter University Centre for Bio Medical Research & Super Specialty Hospital, Thalappady, Kottayam.	25.00	25.00	Development and implementation of technologies across all biomedical and associated technological disciplines that enable prevention of various diseases, with special attention to viral diseases. research on Ayur-informatics – Drug design and modern drug delivery means for native medicinal plants. Translational biomedical research on geriatric and developmental disabilities for clinically relevant diagnostic and therapeutic output to ultimately address solutions for the present day predicament of the developing and ageing population, etc.
18	Research and Development in Rural Water Technologies	6.00	6.00	Development of appropriate and innovative technologies to provide drinking water supply solutions.
19	Malabar Cancer Centre (MCC) - Postgraduate Institute of Oncology Sciences & Research	6369.84	5136.98	The main objective of Malabar Cancer Centre, an autonomous centre under the Government of Kerala is not only to provide comprehensive cancer care, but also to develop as a Research & Training Centre of international standards.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
20	Standardisation and modernisation of Homoeo Department	700.00	49.00	Homoeopathic research and allied activities, studies and scientific journal publication are the components of the scheme.
21	Assistance to Government Homoeo Medical College, Thiruvananthapuram - Research Activities in Homoeopathy	35.00	35.00	Evidence based research in science to provide a basic understanding of material constituents present in Homoeopathic Medicines, advanced analytical characterizations etc. A systematic and organized study of homoeopathic medicines using advanced analytical techniques will help to establish unique standardization of homoeopathic medicine.
22	Kerala Centre for Disease Control and Prevention (KCDC)	50.00	50.00	The K-CDC is expected to address the gaps in the evidence based policy synthesis in all spheres of health in the State. The evidence will be generated from health tracking and surveillance, through technologies like artificial intelligence, machine learning, block chain, big data analytics, Health Technology Assessment etc.
23	Research in Health Services	50.00	50.00	Health research fuels healthcare innovation, resulting in the development of new therapies, medications, vaccines, and medical technologies that can enhance patient care and outcomes. The allocation is for the research initiatives within Health Services and collaborative research with other institutions, Universities and Arts & science Colleges.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
24	Child Development Centre, Medical College, Thiruvananthapuram	557.79	55.78	Child Development Centre (CDC) was established as a nodal referral and training centre for a comprehensive nation-wide prevention of childhood disability programme. It provides support services in early child care and education, adolescent care, premarital counselling, women health and other related issues.
25	Assistance to Kerala Ayuveda Studies and Research Society, Kottakkal	150.00	30.00	The Society promotes Ayurveda studies and research in collaboration with other Institutions and Universities. The courses run under the society are envisaged to impart innovative and functional education in Ayurvedic and allied segments
26	E-health Programme	2760.00	276.00	The scheme uses information and communication technologies for health viz treating patients, conducting research, educating the health workforce, tracking diseases and monitoring public health. It includes unique patient identification across States, exchange of data between different healthcare delivery units at primary, secondary and tertiary levels & across public and private sectors, electronic referral enabling the seamless transfer of patient information from a primary to a secondary treating practitioner's hospital information system, digitalization of medical records etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
27	State Institute of Health and Family Welfare	200.00	20.00	Kerala State Institute of Health and Family Welfare is the apex training institute for providing training to the employees of Kerala Health services. The Institute monitors the training activities across the State and has a mandate for carrying out research and consultancy services
Total (Medical Health, Family Welfare and Sanitation)		**337163.84**	**119375.42**	
Education R&D				
28	Arts and Science Colleges	320727.64	102632.84	Research programmes to encourage the students to explore research possibilities, undertake research, present papers, publish articles, identify research opportunities and funding resources, to evaluate, guide, and monitor research projects on various arts and science subjects. The estimated amount includes the assessed share of establishment and infrastructure utilised for research activities.
29	Kerala University	39578.30	15351.06	Research on Renewable Energy, Astrophysics, Material Science, International Relations, International Trade, Rural Management, Cultural Studies, Language and Literature, Education Management, Climate Change and Disaster Management and Basic Research for the creation of Intellectual Property.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
30	Engineering Colleges and allied institutions	56568.66	18101.97	Provides research seed money to faculty members, support to innovative student projects, funding research promotional activities like exhibitions and conference, fellowship to research scholars, research awards, etc., and funds for initiating research in frontier areas of Engineering and Technology.
31	Calicut University	30583.13	12085.00	Nurtures excellence in research and development activities in the areas of basic sciences, environmental science, clinical science, etc., through co-localizing fundamental research with society, human health, environment, biodiversity, and sustainable development.
32	Mahatma Gandi University	25859.50	11029.04	Research in Chemical Sciences, Basic Science, etc. strengthen the research programmes in Pure & Applied Physics, modernisation of Research Instructional & Infrastructural Facilities, advancement of Scientific Research in Food Science, Interdisciplinary Research centre in Mathematical & Statistical Sciences Advancement of Learning Resource and Research Laboratory Facilities for Integrated Master Science Programmes in Institute for Integrated Programmes.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
33	Kannur University	10992.86	5986.12	Academic Research programmes on various arts and science subjects. Provide Seed Money to encourage Research Projects, Start-up Research Grant (SRG) scheme to assist researchers to initiate their research career, etc. The estimated amount includes the assessed share of establishment and infrastructure utilised for research activities.
34	Research & Development Institutions Under Kerala State Council for Science, Technology and Environment	5840.00	5840.00	KSCTE promotes research and development through various scientific programmes and R&D centres functioning under the Council. The Council plans and formulates Science Technology and Innovation Policy and connected Initiatives and Programmes of the State.
35	Kerala State Council for Science, Technology and Environment	7249.69	6210.69	Grant-in-aid assistance to various research institutions under KSCSTE for carrying out research activities.
36	Institute of Advanced Virology	6000.02	6000.02	The Virology Institute is envisioned as an institute of global standards networking Global Virology Institutes with most modern laboratories focusing research, diagnosis and management of emerging and re-emerging infectious viral diseases.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
37	Institute of Sustainable Development	250.00	250.00	The Institute for Sustainable Development undertakes multidisciplinary research integrating environmental, social and economic aspects, with priority areas including climate resilience, water management, sustainable agriculture, renewable energy, and sustainable urban and rural development. key R&D focus will include: (1) innovative research integrating environmental, social, and economic aspects; (2) development of new technologies and policies for renewable energy, climate change, and sustainable urban and rural development; (3) training programmes and workshops for capacity building and awareness; and (4) engage in policy dimensions of sustainability and foster global corporation.
38	Sree Sankaracharya University of Sanskrit	10789.52	5094.17	Promotion and development of the study of Sanskrit, Indology, Indian Philosophy and Indian languages. The University conducts various Ph.D.research programmes under Sanskrit disciplines and rare subjects associated with Sanskrit like Ayurveda, Vastuvidya, Dance, Theatre Arts, Music, Manuscriptology, Translation studies and Comparative Literature.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
39	Cochin University of Science and Technology (CUSAT)	22034.42	9312.01	Research in core areas of Applied Chemistry, Marine Biology, Microbiology and Biochemistry, Applied Economics, Marine Geology and Geo Physics, Atmospheric Sciences, Marine Sciences, Biotechnology, Chemical Oceanography, Mathematics, Computer Applications, Photonics, Computer Science, Physical Oceanography, Electronics, Physics, Environmental Studies, Industrial Fisheries, Instrumentation, Polymer Science & Rubber Technology, Legal Studies, Ship Technology, Management Studies, Statistics, etc.
40	Dr.A.P.J.Abdul Kalam Technological University	6850.01	3966.80	University takes a lead role in establishing Centres of Excellence in Thrust areas for undertaking research. The major thrust areas identified are Energy and Environment, Fluid Dynamics, Digital Signal Processing Advanced Computing and Nanoparticles.
41	Schemes and Programmes of Kerala State Council for Science, Technology and Environment	3055.00	3055.00	Providing financial assistance for scientific research, human resource and infrastructure development, technology and innovation, environment conservation, science popularization and communication.
42	State Council of Education Research and Training (SCERT)	2125.00	2125.00	Assistance for carrying out research and innovation activities related to school curriculum.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
43	National University of Advanced Legal Studies (NUALS)	1244.00	1244.00	NUALS is poised to emerge as a Centre of Excellence in legal education and research by adopting an inter-disciplinary approach to identify the inadequacies in legislations to suggest changes and to support the enactment of new laws to meet emerging challenges. Areas of research are Parliamentary studies, Police Studies, Law and Development, Women and Family Studies, Intellectual Property Rights, Human Rights, etc.
44	Thunchathezhuthachan Malayalam University	2009.58	1561.07	Research on resilient practices dealing with agriculture and animal husbandry, climate resilient nature resources management and climate resilient traditional medicinal practices, biodiversity conservation of various tribal groups and research on kalarippayattu.
45	Capital outlay on University and Higher Education	10172.00	2034.40	Various infrastructure development projects related to R&D under Universities and Higher Education.
46	Kerala Council for Historical Research	1320.01	1320.01	Assistance to KCHR, an inter-disciplinary social science research centre, to integrate advanced research in history. The areas of research are Cosmos Malabaricus, Floods, Archives, Pattanam archaeological research, visuality, city scapes, etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
47	Research Initiatives under Technical Education	720.00	720.00	The research programmes and centres are, a. Transportation Engineering and Research Centre b. Product Design & Development Centre in CET c. Re-Usable building system in RIT, Kottayam d. Rural Technology Development Centre e. Student Satellite Launch Programme at CET f. Centre for Bamboo Technology, at GEC TVM g. Interdisciplinary Research Centres at Govt. Engineering Colleges h. Robotics & AI nodal Centre i. Centre of Excellence in Systems, Energy & Environment j. Centre for high performance computing at CET k. Collaborative Research and Learning (CORaL) l. Centre for Disaster Management and Mitigation under the Directorate m. Centre for Nano electronics n. CET- Centre for Advanced Research in Engineering (CET-CARE)

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
48	Centre for Development Studies	699.65	699.65	Centre for Development Studies is a social science research & teaching institution, focuses on socio-economic issues. Its research covers six themes : International migration and remittances; education, health and skill development; Innovation and technology development; Governance and decentralization at sub national spaces; ageing and social security and natural resources and livelihood. In addition, the research plans are to undertake advance research on Kerala's developmental issues and promote comparative studies across Indian States and also to undertake comparative studies of India's development experience with those of other countries especially in Asia.
49	Research, Development and Outreach under Collegiate Education	480.00	480.00	Grant for Promotion of Inter Disciplinary Research among Faculty (GPIRF), Support for Students in International Collaborative Degree Programme and Fostering Linkages for Academic Innovation and Research (FLAIR), Performance Linked Encouragement for Academic Studies and Endeavour (PLEASE).

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
50	Special Programmes of Kerala State Council for Science, Technology and Environment	391.00	391.00	i. Centre for Analytical and Instrumentation Facility (CAI-K) aims to create an assemblage of high-end sophisticated instruments to conduct training programmes on analytical instrumentation. ii. APJ Abdul Kalam Youth Challenge Programme targets youth for taking up challenges in specialised sectors and to encourage entrepreneurship for establishing more industrial enterprises. iii. Food Technology Development & Testing Facility focuses on value addition of food, food preservation and testing in the wake of pesticide loads in the vegetables and food products. iv. State Higher Research Centres of Excellence in Science and Technology Applications (SHRESTA) aims to establish centres of excellence in various institutions to enhance their innovative and research capability. v. Scheme for Promotion of Inter Institutional Research Collaboration (SPIIRC) aims to promote interinstitutional research collaboration with a multi-disciplinary approach. vi. Research Centre for STEM Higher Education Kerala Research Centre for STEM Higher Education Kerala (RCSHEK) aims to upgrade the quality of science education to adapt to the rapid changes in science and engineering practices. vii. Visiting Scientist Programme aims to encourage reputed scientists/ academicians working at national/ international S&T institutions to visit and work in Kerala for a 3-12 months.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
51	Academic Excellence In Teaching, Learning And - Collegiate Education	1000.00	1000.00	The scheme is proposed for research on academic development in colleges, Scholar mentorship programmes, Eureka lab (programme envisages creation of a lab in every college which would be used as an incubator of ideas amongst students and local community), Discover Your Potential (programme helping students to discover their potential in different domains) etc
52	Trivandrum Engineering Science and Technology Research Park (TREST)	400.00	400.00	Assistance provided is to enhance Industry- Institute interaction and to promote fundamental and applied research in the fields of Sustainable Energy, electric drives technology for EVs, Trest-ERC advanced RISE-V processors development, etc.
53	Centre for Engineering Research and Development	300.00	300.00	The Centre for Engineering Research and Development functioning at College of Engineering, Thiruvananthapuram creates an intellectually live atmosphere of research among the faculty of engineering colleges in the State. The centre will focus on basic research as well as high end research in the field of engineering. The activities include incentive for research publication, innovative student project, facilitating research paper presentation within India and abroad, research seed money, research fellowship, best researcher award/grant, best research award, research promotion activities, satellite centre, conduct of workshop/ seminar in colleges etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
54	Grant in Aid Support to Science & Technology Institutions	200.00	200.00	The R&D component of the scheme is Selective Augmentation of Research & Development (SARD) - SARD is the programme for upgrading facilities in colleges and universities for augmenting research in specified R&D areas by providing support to strengthen laboratory infrastructure by procuring scientific infrastructure.
55	Development of all Government Engineering Colleges	2125.00	637.50	Expenditure on R&D infrastructure development in Government Engineering Colleges
56	Infrastructure strengthening of Kerala State Council for Science, Technology and Environment	130.00	130.00	Development of basic and advanced infrastructure facilities for ICT and for promoting high quality R&D activities
57	Biotechnology Development	181.00	181.00	Biotechnology research and capacity building, industrial collaboration and entrepreneurship development in biotechnology
58	Institute of Climate Change Studies, Kottayam	239.40	239.40	Institute of Climate Change Studies (ICCS), Kottayam focuses on integrated research on all aspects of climate change issues at regional/state specially the effects of global climate change on biosphere, an ecosystem approach towards biodiversity conservation, sustainable agronomy and disaster risk reduction etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
59	Inter University Centre for IPR Studies, CUSAT	100.00	100.00	Functions as a research hub and resource centre and a think tank in the area of Intellectual Property Rights and related subjects, facilitating interaction among researchers from different universities and research institutions in India and abroad. IUCIPRS aims at facilitating multidisciplinary research in the area of IPR and related subjects.
60	Centre of Excellence in Disability Studies	65.00	65.00	Provides research assistance for differently abled students and faculties, skill development training programmes, counselling services, publications and related activities
61	EMS Chair for Marxian Studies and Research in Calicut University	25.00	25.00	Research in Marxian studies
62	Institute of Diabetic Research	1.00	1.00	Applied research on prevention, management and curing of diabetes through integrated systems of medicine, emphasizing traditional practices and indigenous systems of medicines, collaborative alliance with leading international centres of research through co-operative, philanthropic and academic partnerships.
63	The Erudite – Scholars in Residence Programme	80.00	80.00	This scheme has the objective of providing opportunity to the academic community to interact with outstanding scholars around the world including Nobel laureates. Integration of brain gain is also included under this scheme. Brain game is a scheme to attract non - resident Indian academics to universities in the state for short term teaching and research, during their sabbatical leave and holidays

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
64	State Institute of Encyclopaedic Publications	491.72	491.72	The State Institute of Encyclopaedic Publications (SIEP) is a cultural institution founded in 1961 under the Department of Cultural Affairs, with the objective of disseminating knowledge to the people of Kerala in their pursuit of learning. It was constituted as part of the government policy that Malayalam should be used as the medium of education, administration and judiciary.
65	Kerala - Enterprise Resource Planning Solution (K-REAP) and Centres of Excellences in Higher Education - KSHEC	1500.00	210.00	The scheme aims to implement ERP to automate and streamline its core administrative, academic, human resource, financial, examination and other processes under various universities and colleges and to establish Centres of Excellence viz Kerala Institute for Science, Technology and Innovation (KISTI), Kerala Institute for Advanced Studies for social science and humanities (KIAS), Kerala Network Support in Higher Education (KNRSHE), Institute for Gender Equity, Institute for training to teachers and non-teaching staff, Centre for indigenous people's education and Kerala Language Network (KLN)
66	Teaching-Learning Process Enhancement & Skill Gap Reduction	1350.00	135.00	The Scheme is formulated as a combination of the continuing plan schemes related to teaching learning enhancement and aimed to reduce the skill gap, a major concern in technical education scenario.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
67	Institute of Advanced Crop Breeding	100.00	100.00	The scheme aims to establish an autonomous institute to address issues relating to climate change and crop productivity and to conduct research for developing new insights, technologies and methodologies to address complex agricultural issues in the State.
Total (Education R&D)		**573828.11**	**219785.47**	
Labour Research				
68	Kerala Institute of Labour and Employment	634.68	63.47	Undertakes short term and long term research projects to find out viable solutions on labour-related issues and problems in both organized and unorganized sectors explores the basic needs of different groups of stake holders such as Labourers, Worker's organizations, Labour Administrators, Employers and Government officials and volunteers of non – governmental organizations
69	Labour Department - Research and Statistics	47.65	47.65	The activities of the wing are research oriented. Data are collected through field research and supplied as inputs for various research requirements related to various aspects of the labour force.
Total (Labour Research)		**682.33**	**111.12**	
Infrastructure Research				
70	Irrigation Design and Research Board	2604.92	2604.92	Research activities on Water Conservation, Sustainable Irrigation Management and management of Climate-Induced Disasters

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
71	PWD Roads Wing (Kerala Highway Research Institute)	2699.56	2699.56	KHRI focuses on promoting applied research & piloting projects for innovative technologies, Improvements in Quality of Construction and Material Testing in the Road sector. KHRI is collaborating with several premium institutes like IITs, CSIR Laboratories, etc conducting research and executing pilot studies to impart cutting edge technologies to Kerala Public Works. It also spearheads innovation in the whole public infrastructure in Kerala by organizing National Research Conferences to provide a platform to bring together industrialists, academicians and general public to become a one-stop solution for all public infrastructure challenges.
72	Modernization, Research and Development of Harbour Engineering Department	350.00	350.00	R&D expenses connected with innovative projects, adopting new Technologies in the Harbour Engineering sector
73	Agency for Non-Conventional Energy and Rural Technology (ANERT)	994.00	478.80	New technology development, demonstration, pilots, studies which include support for (i) Evaluation of new technologies in Renewable Energy and in-house R&D projects (ii) Supporting R&D and Innovation and related activities

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
74	Kerala State Energy Conservation Fund	650.00	32.50	The objective of the programme is to support the development/ implementation/ piloting of innovative projects in Energy conservation and Management. Three ongoing schemes viz State Energy Conservation Awards, Energy Conservation Activities and Infrastructure Strengthening & Institutional Strengthening are merged under this scheme
75	Dam Safety Organisation and Dam Safety Measures	500.00	500.00	Research on inundation and sedimentation in reservoirs, preparation of inundation maps, sedimentation reports etc.
76	Modernisation, Research and Development of Harbour Engineering Departments - Research and Development	200.00	200.00	R&D related to hydrographic investigations on all water masses such as sea, ports and harbours, estuaries, lagoons, inland water transport canals, dam reservoirs, rivers, lakes etc., Establishment of quality control lab.
77	Modernisation of Design Wing for Irrigation	100.00	100.00	As part of modernization and research activities in software development, effective automation in online monitoring of dams, online design indent submission, modernization of quality control wing, digitization of drainage systems of each basin, online facility for submission of design proposal and development of software etc. are planned.
78	Specialized Training Programmes and Modernization of the Irrigation Department	190.00	190.00	Setting up of research lab/GIS lab for conducting research activities of the department.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
79	Development of Kerala Engineering Research Station, Peechi Stage II	110.00	110.00	The institute undertakes research activities on project design and irrigation systems. Development of institute, procurement of advanced equipment, modernisation of lab for the research station.
80	Modernisation of Hydrology Information System	110.00	110.00	Hydro meteorological data collection from gauging stations established across Kerala river basins for research purposes.
81	Formation of River Basin Organisations	500.00	500.00	Scientific research for demarcation of rivers, measures to assess the carrying capacity of rivers, conduct of sand budgeting, etc.
82	Study on Coastal Protection Measures	53.00	53.00	Scientific Research for proper construction and maintenance of coastal protection structures.
83	Investigation and Research under Irrigation Sector	37.83	37.83	Establishment expenses towards research activities carried out in the Irrigation Sector
84	Kerala Maritime Institute	550.00	55.00	Kerala Maritime institute is intended to create professionally qualified and skilled human resource in maritime sector through education, research and training with long term perspective of making Kerala a maritime educational hub in India.
85	Sree Chitra Thirunal College of Engineering	400.00	100.00	The college is one among the top few colleges which offers high quality engineering education in all the three levels viz. Graduate level, Post Graduate level and Doctoral level. To convert the institute into a leading research centre, financial support is provided for its activities.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
86	E-Mobility Promotion Fund	861.00	43.05	The scheme intends to push electric mobility in commercial use by providing attractive incentives for various initiatives. It also includes Research & Development in E-mobility, promotional programmes like shared electric and connected mobility and other innovative programmes
87	Feasibility Study for New Schemes/ Projects (Roads)	255.00	84.15	The scheme is for meeting expenditure on research and studies on feasibility, preparing DPR for new schemes, projects/ programmes for road works undertaken by the department as well as through institutions like KHRI, NATPAC and other agencies.
88	E-Governance for Departments (PWD)	300.00	99.00	This Scheme gives more emphasise to e-governance initiatives and bring more services of the department to the online platform.
89	Investigation and Planning Works (Bridges)	305.00	100.65	The scheme is for meeting expenditure on research and studies on feasibility, investigation studies, preparing DPR for new schemes, projects/ programmes undertaken by the department or agencies.
90	Public Works, Design, Investigation, Quality Control and Research Board	2027.97	669.23	The scheme envisages upgradation of KHRI as a centre of excellence (CoE) in infrastructure including Highways.
91	Investigation of Irrigation Schemes	234.00	234.00	This scheme includes investigation works of new major and minor irrigation projects and for the preparation of project reports.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
92	Post Facto Evaluation (Third Party Evaluation of Irrigation Projects)	20.00	20.00	This scheme include Postfacto research and evaluation of major, medium and minor irrigation projects in the State.
Total (Infrastructure Research)		**14052.28**	**9371.69**	
Agricultural Research				
93	Kerala Agricultural University	54010.56	22587.38	The major thrust areas of research are crop production, crop improvement including new breeding techniques, crop management strategies, monitoring the flora/fauna in the crop land system and developing and managing protocols for pests and diseases, bio-formulations and microbes for plant protection, bio molecules, microbial studies, productivity enhancement, processing and value addition, integrated farming systems development including Animal Husbandry and Fisheries, research in improved/exotic/novel fruits, Agricultural Economics and farm studies, marketing, value chain financing, Soil and Water Engineering, Forestry including biodiversity and Interdisciplinary research in climate related fields in the above areas .
94	Kerala Veterinary and Animal Sciences University (KVASU)	17592.86	10321.72	Kerala Veterinary and Animal Science University (KVASU) focuses on promoting researches and development in Veterinary, Animal Husbandry and Dairy Sciences to enhance the livestock economy of the State by fostering quality professional and implementing research outcomes in field conditions.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
95	Special Livestock Breeding Programme	7371.11	5777.11	R & D components under the scheme include scientific rearing of calves through subsidised feeding (Govardhini) and reducing the age of maturity and intercalving period for attaining higher productivity.
96	Kerala University of Fisheries and Ocean Studies	5602.96	4342.95	R&D related to the fields of fisheries, aquaculture, fish processing, fisheries engineering, ocean studies, fisheries and coastal zone management, climate studies and disaster management, food technology, management and Maritime Law. The proposed research projects are related to the issues, especially of the coastal community, fish farmers and fisher women.
97	Assistance to Kerala Livestock Development Board	3046.56	3046.56	Conducts applied livestock genetic researches, research on fodder and fodder seed production, conservation and improvement of Malabari goats, Herd book scheme, strengthening cattle breeding, genetic upgradation of cattle, conservation and dissemination of germ plasm from Vechur, Kasaragod dwarf cattle and Non- dwarf cattle, production of high genetic cross breed bulls through progeny testing, artificial insemination in goats and pig development.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
98	Strengthening of Veterinary Services	16497.25	3207.23	R & D components include Mastitis Control, Upgradation of labs, Disease mapping through GIS, Animal disease control project, etc.
99	Crop Health Management	1300.00	475.00	Scientific crop health management, sustainability of ecosystem and public health through good plant protection practises, pest forecasting and advisory services, ICT based pest surveillance.
100	Assistance to Dairy Cooperative Societies	2255.00	653.95	The major Research and Development activities include, assistance to DCS for the purchase of rapid test kit for detection of antibiotic residues in milk, aflatoxin residues in milk and feed samples, assistance for QA certification, geo mapping of dairy cooperative societies, etc.
101	Vegetable Development	7845.00	784.50	Research on open field precision farming of vegetables, high value fruits and spices. Development of hybrid seed varieties, pesticide residue analysis in vegetables and fruits, etc.
102	Kerala Remote Sensing & Environment Centre (KSREC)	1433.19	1433.19	KSREC implements schemes for generation of satellite data based Land Use Change Detection Reports of plots related to wetland and Paddy Conservation Act, decision support system for spatial planning and empowering Local Governments in spatial governance etc. Research and other related programmes in the field of application of geo spatial technology in land and water resources management, environment monitoring and upkeep.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
103	Scheme on Development of Production Organisations and Technology Support	500.00	500.00	Providing innovative technologies to farmers under the Farm Plan based research and development approach. Technology dissemination and extension by Kerala Agricultural University, refinement and maintenance of digital platform by Digital University, Kerala for development of a comprehensive baseline data of the farms identified and developed under the approach.
104	Farm Information and Communication	400.00	275.00	The scheme aims at disseminating scientific knowledge to farmers and to provide information on the research and development activities of the departments of Agriculture, and Fisheries through various mass and electronic media including web based services. The feedback and data received from the scheme help in further research in the sector.
105	Rice Development	9360.00	468.00	The R&D components under the scheme include 1. Operation Double Kole to encourage double crop in Kole fields 2. Registered Seed Growers Programme for production of certified seeds 3. Field level seed multiplication of Pokkali rice varieties.
106	Scheme on Supply Chain/Value Chain Development and Integration under FPD Programme	500.00	500.00	Develop a hub and spoke model of aggregation of produce from farms developed as part of Farm Plan based development approach. Development of digital platform to disseminate the supply, demand, price and quality related information. Data from the platform can be used as inputs in the research related to agricultural sector.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
107	Modernization of Departmental Laboratories Scheme	400.00	400.00	Modernising the laboratories involved in soil testing for soil fertility assessment, analysis of major inputs like fertilizers including organic, inorganic and bio fertilizers, pesticides and seeds for quality control of these inputs. The data generated are used for research related to agricultural sector.
108	Veterinary Extension	1796.05	484.86	Strengthening of research extension interface, assistance to research studies regarding field related issues and intervention methods, Animal Husbandry Innovation Zone -AHIZ, etc.
109	Strengthening Quality Control Labs - Dairy	800.00	800.00	R&D activity involves strengthening of quality control lab for conducting research as well as extending specialised Quality Control services and Testing Drives for improving hygienic level at farms, detection of antibiotic in milk, quality control related to food safety.
110	Council for Food Research and Development (CFRD)	155.00	155.00	The main objective of the Institute is to do research in the area of indigenous food and beverages with a view to assist food industry and also to facilitate effective linkage between research institutes and academics in food sector and industries in Kerala.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
111	Aquaculture Extension Services	711.00	298.62	The R&D components include technology acquisition, demonstration farming, development of risk mitigation, adoption of new technology & research and to provide necessary technical guidance and monitoring to fish farmers. Objectives of the schemes include transfer of new fish farming and seed production technologies developed by eminent Research Institutes to the Farmers, Diversification of species and farming techniques. adoption of various aspects of scientific technologies for fish culture, fish seed production etc.
112	Biological Production Complex	300.00	300.00	The scheme envisages strengthening of Institute of Animal Health and Veterinary Biologicals with modern facilities and other support facilities for production and research of vaccines and other biologicals.
113	Agro Service Centres & Service Delivery	1000.00	167.50	This scheme includes internship programme in Krishi bhavans for providing opportunity for educated youth for availing service at the grass root level. This helps in disseminating latest scientific knowledge to young farmers and in inculcating a research mindset and an urge to innovate

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
114	Modernisation and e-governance - Animal Husbandry	250.00	250.00	Implementation of electronic herd register and Geospatial database
115	Strengthening of Department Farms of Animal Husbandry	1800.00	155.33	The major focus of the scheme is to modernise and strengthen departmental farms (cattle, goat, pig, rabbit, poultry and duck) as production and breeding units and also to function as centres of demonstration of technologies and training.
116	Animal Husbandry Statistics & Sample Survey	150.00	150.00	The scheme aims to conduct research and seasonal sample surveys to estimate and increase the production of milk, meat and egg. The data obtained will be used as research inputs.
117	Research-cum-Training - Agriculture	171.82	171.82	To carry out research in the area of agricultural engineering and related fields
118	Research Schemes - Fisheries	163.51	163.51	Establishment expenses of the Research Cell in Fisheries Department, which carries out research activities connected to Fisheries as well as the welfare of fishermen community. The Statistics section conducts district-wise inland fish catch assessment survey and prepares species wise inland fish catch data, which are used as inputs for various research and analysis purposes.
119	Soil Testing Laboratories	143.69	143.69	The labs generate valuable data for value addition and further research

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
120	Strengthening Agricultural Extension	1490.00	44.70	Krishipadashala component under the scheme aims to disseminate innovative technical inputs on a regular basis through Block Level Agriculture Knowledge Centres functioning in Blocks, with scientists of Kerala Agricultural University as nodal officers and an advisory body in providing technical guidance to field level offices and farmers in the successful implementation of programmes through Krishi Bhavans. The feedback and data received help in further research in the sector.
121	Surveys, Studies and Investigation for Fisheries Infrastructure	50.00	50.00	The R&D activity includes conducting surveys, studies and investigation works and forming a permanent databank through technical investigation relating to hydrodynamic and socio-economic data
122	Aquatic Animal Health Surveillance and Management	80.00	80.00	The R&D components include setting up of aquatic animal health surveillance and management system for timely identification of disease in the early stage itself, which may reduce the mortality rate and further spread. It envisages establishing a network of Mobile Aqua Laboratories for timely investigation, diagnosis and adopting therapeutic measures.
123	Fisheries Innovation Council	100.00	100.00	To promote collaboration among seafood industry players, research institutions and other stakeholders from all over India and overseas to bring innovation and accelerate the adoption of sustainable practices and promote collective problem solving attitudes.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
124	Laboratories	659.03	220.00	The physical and chemical analysis of soil samples forms an essential component of soil survey as it supplements the field observations and enhances the quality of the soil survey reports.
125	Soil Informatics and Publishing Cell	90.00	90.00	The Soil Informatics and Publishing Cell functions as a consultancy cell in various aspects of integrated management of soil and land resources and a database for micro and macro level planning and related research activities.
126	Land Resources Information System	77.00	77.00	The Land Resource Information System demonstrates and promotes the use of spatial data technologies for local level planning and to provide software support for data management, modelling and operation research.
127	Establishing Kerala State Dairy Management Information Centre at Kerala State Fodder Farm, Valiyathura	50.00	50.00	The Institute carries out data collection and processing activities, engages in R&D activities pertaining to suitability of fodder varieties, development of indigenous dairy products, adaptability of milch animals to various types of housing systems etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
128	International Research and Training Centre for Below Sea Level Farming, Kuttanad	30.00	30.00	Popularizing innovative activities, resolving field problems of Kuttanad region and for operational expenses.
129	Centre for Price Research Kerala	12.00	12.00	Research on price control of essential commodities in the market for protecting the rights of consumers by monitoring the fluctuation in the prices of 13 essential commodities at source of production. The division also assists the Government to frame rules and measures related to the price control of essential commodities.
130	Creation of Data Bank for Classification of Land	10.00	10.00	Research and creation of a digital spatial databank on categorization of land based on land use, land cover and soils and improving the accuracy of soil survey through the use of advanced remote sensing technology. The Land Resource Information System promotes the use of spatial data technologies for local level planning, identification of suitable crops and crops mixtures for LSGIs in different Agro Ecological Units which helps optimum utilisation of soil and water resources for attaining maximum productivity of crops.
131	Development of Spices	1500.00	1200.00	The objective of the scheme is adoption of improved management practices, collaborative program with ICAR Institutions and KAU for field multiplication of newly developed spices varieties.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
132	Human Resource Development	335.00	240.00	Human resource development of technical personnel on the latest updates in agriculture sector is imperative for efficient transfer of technology to the farming community and its adoption, and also in assisting various innovative and research programmes of the department.
133	Extension, Training and Service Delivery	380.00	380.00	The R&D Components include assistance for the promotion of innovative ideas, software development, capacity building for increasing proficiency.
Total (Agricultural Research)		**140418.59**	**60596.60**	
Industrial Research				
134	Kerala State Information Technology Mission (KSITM)	13903.00	13903.00	Research activities in e-governance, development of human resources, disseminating information across citizens and Government, interfacing between Government and Industry, bridging digital divide, investor interactions and achieving speed and transparency in governance.
135	Kerala Space Park (K-Space)	5750.00	5750.00	To make Kerala a production and innovation hub in Space, Aerospace and Defence related products and services
136	Technology Innovation Zone	2000.00	2000.00	To leverage strong change in attitude of the young graduates, Government of Kerala has taken a lead role in creating a new incubation ecosystem through Technology Innovation Zone at Kochi. This zone targets multiple sector incubators, under a single umbrella with focus on Technology, knowledge & infrastructure sharing.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
137	Kerala Life Sciences Industries Parks Limited	6500.00	6500.00	The park has been conceived as a geographical cluster of industries and R&D institutions in key life science sector. This park would address the needs of the rapidly emerging life science/ biotechnology/ nanotechnology sectors.
138	Kerala University of Digital Sciences, Innovation and Technology	1300.00	1300.00	University takes a lead role in establishing Centres of Excellence in Thrust areas for undertaking research. The major thrust areas identified are Energy and Environment, Fluid Dynamics, Digital Signal Processing Advanced Computing and Nanoparticles.
139	Grant for Centres for Research and Development in Coir Technology	700.00	700.00	The objective of the scheme is to support research and development activities which can bring innovations, new products and new services in the Coir sector. The scheme intends to undertake inhouse R&D activities as well as outsource R&D required to improve the coir sector as a whole to enhance productivity in the sector.
140	Kerala University of Digital Sciences, Innovation and Technology - Graphene Arora	380.00	380.00	The Scheme aims at establishing a world class Graphene material lab centre at DUK to launch Graphene research programme in collaboration with industry and academia; build local collaboration with industry players, academia, SMEs, Start ups for targeted research projects; and build commercialization routes etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
141	Kerala University of Digital Sciences, Innovation and Technology - India Innovation Centre for Graphene (IICG)	650.00	650.00	The centre will focus on R&D,innovation and Capacity building activities to act as acknowledge centre in the area of Graphene with the following primary objectives.a) Undertake R&D, Product innovation and Capacity building.b) Establish State of the art Research and Capacity building facilities for micro electronics and semiconductor devices, sensors, thin film devices, Nanoelectrodes, OPVs, LCD's, OFETs, Energy Conservation Devices etc.c) To provide business and membership support to Startups.d) To promote innovation and entrepreneurship.
142	Kerala University of Digital Sciences, Innovation and Technology - International Academic Cooperation with University of Oxford Scholarship Fund	400.00	400.00	This scheme is intended for providing PhD Scholarship/ Doctoral Studentship within the framework of the Oxford University Internal Funding Mechanism (GEMS) for doing Ph.D. programmes at the Oxford University. DUK will assume the cost of scholarships of students who meet the eligibility criteria of the Oxford University
143	Indian Institute of Information Technology and Management - Kerala	1595.00	526.35	IIITM-K was set up as a premier institute of excellence, focussing in the areas of science, technology and management related to IT and emerging as an engine for promoting growth. The mission now is to convert IIITM-K into an institution of excellence in teaching, training and research in Applied Information Technology and Management.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
144	Centre for Development Imaging Technology (C-DIT)	813.00	203.25	C-DIT is an autonomous research and training institute under Government of Kerala. Apart from its initial role as an R&D organization in imaging technology and development of communication, C-DIT has done pioneering work in the State in bringing IT for governance in the State, like the formation of Information Kerala Mission and flagship programme, 'FRIENDS' citizen service centres
145	Kerala Rubber Limited	900.00	45.00	KRL facilitates creation of 'Hub of Latex based products' & Amul model co-operative for procurement of natural rubber. Initial focus is on promoting NR based and allied manufacturing in Micro, Small and medium Enterprises (MSME) sector including primary processing of speciality rubbers.
146	Youth Entrepreneurship	7052.00	7052.00	The key objective of the programme is to harness the latent entrepreneurial spirit among youth through strengthening the startup ecosystem by promoting technology based entrepreneurial activities, entrepreneurial infrastructure & environment, industry institute linkages, R&D and addressing the ecosystem development challenges in enterprise market, product knowledge, idea & culture.
147	International Centre for Free and Open Source Software (ICFOSS)	845.00	845.00	Leverage innovation and advance in free/open Source Software and related domains around the world for the use of the Government, academia, institutions and people of Kerala as well as rest of India

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
148	KSIDC - Innovation Acceleration Scheme	6050.00	544.50	The scheme seeks to streamline the startup support initiatives of KSIDC from the concept stage of a business/project to the expansion/scale-up stage.
149	Climate Smart Coffee Project - Wayanad	100.00	100.00	The project aims to establish state-of-the-art processing facilities for coffee farmers to access higher value for their produce and provide solutions for problems caused by climate change
150	Training & Skill Development	320.00	30.00	Amount is provided for research and development for improvement in technology, process and product throughout the value chain involving pre- loom processing, spinning, weaving, dyeing and printing, garment making, production of value added products etc and market research
Total (Industrial Research)		**49258.00**	**40929.10**	
Social Security and Welfare				
151	National Institute of Speech and Hearing (NISH)	2750.00	2750.00	The objective of National Institute of Speech and Hearing is to rehabilitate the deaf and hard of hearing persons in the State and for providing higher education to hearing impaired. Research in evaluation and detection of hearing loss for early intervention and rehabilitation of individuals.
152	Training, Workshops, Research & New Initiatives - Disability Prevention & Management	150.00	150.00	To carry out research in the area of disability prevention & management

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
153	National Institute of Physical Medicine and Rehabilitation	2250.00	2250.00	NIPMR is an institute dedicated for the state of the art services for children and adults with disabilities including early identification, intervention, management, rehabilitation and research. Major disabilities dealt with the institute include neuro developmental disorders, locomotor disabilities, hearing and speech disabilities, spinal injuries, movement disorders and chronic neurological disorders, especially cerebral palsy.
154	Programmes for the rehabilitation of children with Autism Spectrum Disorders	425.00	42.50	A comprehensive programme SPECTRUM is implemented to provide support and quality services for early identification and early intervention through appropriate therapies, parental awareness and training programmes by preparing a professional team to cater to the diversified needs of persons with ASD
155	Kaval, Karuthal, Saranabalyam, Bhadram, Margajyothi	1100.00	55.00	These programmes aimed to provide rehabilitation and reintegration of children in conflict with law in the State, give support and protection to children in need of care and protection, conducting scientific studies, researches, trainings and would spread awareness about the importance of positive mental health among children etc.
156	Programmes on Gender Awareness and Gender Advisory Council	92.00	4.60	Undertaking research and studies, including monitoring and evaluation of schemes of Women & Child Development Department.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
157	Kerala Women's Commission	968.35	48.42	The objective of the Commission is to improve the status of women in Kerala and to enquire into unfair practices against women and recommend remedial measures. Research/evaluation Studies are included under the Scheme.
158	Gender Park	900.00	45.00	Gender Park was conceived as a platform where State, academia and civil society unite for learning and doing research on gender equality. It also provides innovative and new interventions and directly supports the empowerment of women and promotes gender equality
159	Social Security initiatives for Marginalized Groups/Unorganized Groups	1600.00	80.00	The scheme is implemented for the welfare of differently abled and other vulnerable sections of society and the formation of council to co-ordinate the activities of research organizations in the State working for PwDs viz, IMHANs, ICCONS, NISH, NIPMR, CDC, SMIC, etc.
160	State Commissionerate for Persons with Disabilities	350.54	22.50	State Commissionerate for Persons with Disabilities undertakes Research and Development activities for the welfare of persons with disabilities.
161	Research & Development - ICDS	5.00	5.00	The scheme is for establishing an R&D Wing to ensure the services of ICDS remain relevant, effective and responsive to the changing needs of children, families and communities in Kerala. This will empower frontline workers, improve program outcomes and strengthen the foundation for a healthier and more prosperous future generation.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
162	Strengthening Administrative Infrastructure and Capacity Building under SJD	750.00	20.00	R &D involves impact assessment and evaluation studies of the schemes implemented and action research for conducting social audit of Care Institutions, preparing framework for registration and operation of homecare service institutions, revamping of old age and disability policy and engaging outsourced agencies for the above.
Total (Social Security and Welfare)		**11340.89**	**5473.02**	
Welfare SC/ST				
163	Kerala Institute for Research, Training and Development Studies of SCs and STs (KIRTADS)	2083.13	2083.13	The scheme intends to carry out research activities to accelerate the overall development of the Scheduled Communities. Its main objective is to carry out research that helps to promote development among scheduled communities.
164	Research Fellowships for Minority Scholars	1100.00	1100.00	The Scheme is to encourage students to engage in research programmes by offering three year fellowship in the form of financial assistance to support their PhD programmes.
165	Establishment of Minority Research Institute under the University of Calicut	27.00	27.00	The scheme intends to establish a wing for research on issues of academic concern with respect to minority studies in various Universities. The research wing, which will conduct studies broadly in humanities and social sciences, will be interdisciplinary, and will locate minority studies in a scientific, secular, and democratic context. As the first phase, the outlay provided is for the establishment of a minority research wing under the University of Calicut.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
166	Academic and Research Chair for Tribal Studies	30.00	30.00	The Academic and Research Chair for Tribal Studies is envisioned as a flagship initiative to establish dedicated Chairs for advancing research on Scheduled Tribes. The initiative seeks to foster rigorous, interdisciplinary research and teaching on the histories, cultures, knowledge systems, and contemporary realities of tribal communities in Kerala and function as vibrant academic hubs, nurturing post-graduate scholars, supporting advanced research, and generating critical insights that contribute both to academic discourse and evidence-based policy.
Total (Welfare SC/ST)		**3240.13**	**3240.13**	
Environmental Research				
167	Bio Diversity Conservation	1300.00	407.00	To conduct biodiversity research and awareness programmes, fellowships for biodiversity research, documentation, education programmes and organization of biodiversity congress.
168	Kerala State Pollution Control Board/Environment Monitoring and Management	300.00	138.00	R&D projects for reducing pollution.
169	Climate Change	192.00	192.00	Strengthening of the State Climate Change Cell through improved climate change governance and services linking climate science, policies, and people. Implementation and monitoring of SAPCC with the technical support of research and academic institutions and line departments.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
170	Environment Research and Development	200.00	200.00	Research and development in environment include projects on thematic areas such as ecosystem conservation and management, evaluation of ecosystem services, socio-economic issues related to environment, conservation and management of landscapes and ecologically sensitive areas, sustainable management of natural resources, vulnerability and risk assessment process, and environmental health.
171	Zoological Park, Wild Life Protection and Research Centre, Puthur	600.00	198.00	For research activities of the Zoological Park, Wild Life Protection and Research Centre, Puthur.
172	Forest Research and Training	122.28	122.28	Assistance for forest research and training
173	Working Plan and Research Circle - Forest Department	119.01	119.01	Establishment expenses of the Research Circle which carries out research activities related to Forest Conservation
174	Extension, Community Forestry and Agroforestry/Forestry Information Bureau	600.00	48.00	Functioning of Forestry Information Bureau and development of different types of ecosystem outside forest areas like mangroves and sacred groves.
175	Environmental Awareness and Education	120.00	33.60	To promote responsible entrepreneurships among the students by promoting the production of cloth bags, medicinal plants, nursery, Butterfly Park, rainwater harvesting and recharge pits, nakshathravanam and organic farming.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
176	Conservation of Natural Resources and Ecosystems/Thrust Areas of Research and Monitoring for Agasthyamala & Nilgiri Biosphere Reserves/Scientific Support for Wetland Conservation	300.00	37.20	Thrust areas of research and monitoring for biosphere reserves and scientific support for wetland conservation.
177	Non Wood Forest Products Including Promotion Of Medicinal Plants/ Resources Assessment, Project Planning And Documentation Studies	160.00	6.00	The main objective of the scheme is to ensure improved livelihood to forest-dependent communities through improved value addition techniques and providing a fair market for their produces. Research objectives of the scheme include: 1) To develop sustainable harvesting protocols for NWFP, 2) To develop new value addition techniques, 3) To improve the livelihood of forest-dependent communities including the tribal people through increased production of value added products, and 4) To identify potential buyers for the sale of NWFP and institute a mechanism for sustainable and fair trade
178	Human Resource Development	350.00	17.50	Major objective of the scheme is to improve the organizational health of Kerala Forest Department through capacity building of human resources by adequate training which will also indirectly benefit the research activities of the department.
179	Resources, Planning & Research	100.00	100.00	The scheme intends to establish an international centre for training and research in nature conservation.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
180	Project Elephant - State Share	350.00	17.00	The objective of the scheme is to protect the elephant and to improve its habitats. Research and monitoring are included under the scheme.
181	Conservation of Biodiversity	1829.99	20.00	The scheme components include research, survey, documentation and monitoring for conserving biodiversity by engaging conservation biologists.
182	Climate Resilient Farming	30.00	10.00	The scheme aims to enhance resilience of agriculture sector to climate change through strategic research, technology development and demonstration.
183	State Wetland Authority Kerala (SWAK)	150.00	10.00	The scheme includes awareness activities, wetland conclave, documentation, preparation of integrated management action plan and wetland mapping.
Total (Environmental Research)		**6823.28**	**1675.59**	
Housing and Urban Development				
184	Information Kerala Mission - Strengthening of Local Governance through Information Communication Technology	1000.00	1000.00	Assistance for bringing out innovations in the e-governance project of Government of Kerala thereby strengthening the Local Governance through Information Communication Technology (ICT) applications

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
185	The Laurie Baker Nirmithi Training & Research Institute	300.00	300.00	The Primary objective of the Institution is to focus on research activities in Habitat Development, to organize skill upgradation training programmes, graduate and post graduate level courses in habitat development. Housing park-International Technology Hub by Research Institutions related to the field of Architecture will be established.
186	Kerala Institute of Local Administration	3304.07	34.95	Undertakes action oriented research activities and documents best practices in Local Governance and decentralised planning for dissemination
187	Research and Development in Selected Aspects of Human Settlement - Planning and Development	14.00	14.00	Aims at strengthening research and development to improve the capability of the Town & Country Planning Department, giving special focus on various aspects of human settlement planning and development like housing, heritage and environment conservation, transportation, mobility plans, slum improvements, etc.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
188	Centre for Human Resource Development (KILA-CHRD - Erstwhile SIRD)	75.00	9.75	The objective is to carry on research (operational and policy) to create an awareness of the potentialities of modern management service as a major instrument for Rural Development, to evolve ideas and concepts appropriate for rural development and to formulate policy alternatives; and to bring about development in the sphere of appropriate technology for strengthening the qualitative and quantitative aspects of the production of rural artisans.
189	Silk Samagra-State Share	40.00	4.00	The objective of the scheme is to scale up production of silk, improving the quality and productivity and also to empower socially and economically backward families through various activities of sericulture in the country. The scheme comprises four major components viz. (i) Research & Development, Training, Transfer of Technology and I.T Initiatives, (ii) Seed Organizations, (iii) Co-ordination and Market Development and (iv) Quality Certification Systems (QCS)/Export Brand Promotion and Technology Up-gradation
Total (Housing and Urban Development)		**4733.07**	**1362.70**	
Others				
190	Knowledge Economy Fund	3200.00	3200.00	For skill promotion, technological transformation and strengthening of higher education system

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
191	Development and Innovation Strategic Council of Kerala - (K-DISC)	2358.94	2358.94	The scheme includes R&D activities coming under- the innovation challenge fund and knowledge economy. The objective of the agency is creating and continuously improving an innovative ecosystem in all facets of human life, particularly in education and skill development, entrepreneurship, participative governance, publicly and privately funded R&D etc.
192	Co-operative Training, Research etc	909.81	909.81	Establishment expenses towards research activities carried out in the Cooperative Sector
193	Archival Study and Research Centre	500.00	500.00	Intended to promote archival research culture, facilitating exchange of new views and ideas on archival studies and administration.
194	Archaeological Department	2217.93	2217.93	Scientifically conducting archaeological exploration and excavation
195	State Institute of Hospitality Management	900.00	297.00	For conducting research activities related to travel, tourism and hospitality sector
196	Assistance to Co-operative Academy for Professional Education (CAPE)	1113.58	288.31	Research activities associated with the Higher Education Institutions under CAPE
197	Institute of Land & Disaster Management (ILDB)	370.65	284.57	Includes activities of Centre for Safety and crowd risk Research (CSCRR) and Centre for Lightning Research and Alternative communication Systems (CLRACS), training programmes, River Management Centre, Disaster Management Centre, Centre for Land Governance, Post Disaster Trauma Counselling Centre.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
198	Food Craft Institute	400.00	132.00	For conducting research activities related to hospitality and catering sector
199	Kerala Institute of Tourism and Travel Studies	450.00	148.50	For conducting research activities related to travel, tourism and hospitality sector
200	Field Archaeology	100.00	100.00	Research activities to identify archaeologically important sites and evidences through explorations and excavations
201	Food Craft Institute Kalamassery and Extension Centres	267.71	88.34	For conducting research activities related to hospitality and catering sector
202	Centre for Heritage Studies	90.00	80.00	For carrying out advanced courses as well as research in the fields of Archaeology, Archival Studies, Museology and Conservation
203	Assistance for Cooperative Propaganda	220.00	22.00	In the Scheme the R & D components include Research studies on co-operative Sector.
204	Assistance to Agriculture Co-operative Staff Training Institute (ACSTI)	200.00	30.00	Agricultural Co-operative Staff Training Institute (ACSTI) proposes to start job oriented courses and skill development programmes for strengthening the co-operative sector. It also conducts research activities in the sector.
205	Kerala State Chalachitra Academy	1949.32	97.47	Kerala State Film Academy was established in 1998 to promote good films in Malayalam. Academy acts as a mediator between the film industry and government. Fellowship & research activities are undertaken by it.
206	Kerala Tourism Infrastructure Ltd	270.00	57.86	The institute conducts research and updation programs, events and developments based on earlier initiatives are included under the scheme.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
207	Leveraging Sports Science and Technology for High Performance	901.28	90.13	This scheme includes high performance Facility with Research and Development in Sports
208	Thunchan Memorial Trust	170.00	17.50	The University of Calicut has recognised it as a research centre and students, research scholars from all over the country and those who love the language frequently visit the centre. The Thunchan Literary Museum was set up in 2008 and is the only one of its kind in any Indian language.
209	Post Graduate and Research Centre in Fire and Safety Sciences, under Fire and Rescue Services at Kannur	150.00	150.00	Post Graduate and Research Centre in Fire and Safety Science will be the first in Kerala which gives post graduate course in Fire Science
210	Muziris Heritage and Spice Route Projects	1400.00	30.00	This scheme envisages to preserve our rich heritage acquired in the form of palaces, warehouses, remnants of places of worships, over centuries old historical trade relationship with Arabs, Portuguese, Dutch, British as well as predemocratic era of rule by Provincial Kings of Kerala, spanning over Thiruvananthapuram, Alappuzha, Muziris - Ernakulam & Thrissur, and Thalassery
211	Surveys and Studies, Seminars/ Workshops Conducted by State Planning Board	915.00	245.15	This scheme aims at various research and studies conducted by the State Planning Board on specific areas pertinent to the development of the economy.
Total (Others)		**19054.22**	**11345.50**	

(Rs. In Lakh)

No.	Name of the Scheme	BE 2026-27	Estimation for R&D	Key Research Activities
Fiscal Research				
212	Gulati Institute for Finance and Taxation	970.45	970.45	The activities of institution focus on research, courses, training, consultancy and publications in the fields of Public Finance, Law, Taxation and Accountancy. The institution implementing various activities like conducting studies, trainings, workshops, seminars and fellowship for research scholars
213	Support for Strengthening Statistical Project State Academy on Statistical Administration (SASA)	301.17	225.62	To develop the State Academy on Statistical Administration (SASA) into a premier institute for training and research in Statistics.
214	Surveys and Studies	525.31	24.00	The scheme aims to conduct Ad-hoc surveys and studies regularly to fill data gap on subject on social and economic importance for planning and development purposes.
215	Increasing Facilities to State Excise Academy and Research Centre (SEARC)	1851.07	54.14	Setting up of infrastructure facilities in the State Excise Academy And Research Centre (SEARC)
Total (Fiscal Research)		**3648.00**	**1274.21**	
Grand Total		**1164242.74***	**474540.55**	

***Total Budget Provision of the schemes with R&D component.**

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