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Finance Department
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RESEARCH & DEVELOPMENT

BUDGET 2025-2026

GOVERNMENT OF KERALA

Research & Development Budget

2025-26

FINANCE DEPARTMENT

FOREWORD

I am happy to state that a State level R&D Budget in India, for the first time, was prepared by the second LDF government led by Shri Pinarayi Vijayan in 2023-24.

It was a manifestation of the LDF Government's recognition of the role of Science, Technology, and Innovation (STI) for achieving faster growth and development. This maiden initiative by the LDF government has to be seen in a context wherein, Research and Development (R&D) has almost entirely been the prerogative of the Union Government. Such an approach has serious limitation because in a vast and highly diverse economy like ours with significant variations in the needs and capabilities of States. It is only through R&D at the State level that such issues could be effectively addressed by harnessing the capabilities at the sub national

The last budget of the first LDF government (2021-22) announced, for the first time in the country, a strategy of transforming a state to a knowledge economy. The second LDF government ensured significant increase in the budgetary allocation for various knowledge and skill building related activities at the instance of K-DISC and other agencies engaged therein. Apart from that, the second LDF Government took a step forward with its focus on harnessing the knowledge and skill for setting the stage for an innovation driven development. Further, to ensure that the innovation driven development leads to more equitable outcomes, we adopt a strategy of promoting both the scientific knowledge through R&D and syntactic knowledge (experience-based knowledge) of the rural and the agrarian. They are known to be highly innovative and 28 such innovators from Kerala by now have received the national innovation awards from the President of India.

The strategy of innovation driven development got manifested in the establishment of Space Park, Science Park, Fab Lab, Innovation Centre Graphene, Digital University, Kerala Genome Data Centre, Kerala Medical Technology Consortium, Institute of Advanced Crop Breeding, among others. These initiatives turned out to be the pioneering attempts by the government of Kerala towards creating a vibrant regional and sectoral innovation system. More importantly, while Kerala was the first to establish a Software Technology Park in the country, we have, by now, created all the necessary background for enabling the State to emerge as a pioneering hub of Industry 4.0 which is a constellation of innovations in the digital technology like Artificial Intelligence, Internet of things, Blockchain, Robotics etc.

The Research and Development Budget 2025-26 continues to chart an ambitious course for the state, identifying priority areas and fostering synergies between academia, industry, and government. By investing approximately 0.3% of its Gross State Domestic Product in R&D, Kerala reaffirms its commitment to advancing knowledge creation and application. This budget document is intended to assist various stakeholders to plan and implement endeavors and initiatives aiming to inspire transformative change and long-term prosperity through technological and innovative ways.

As Kerala strives to become a knowledge and innovation economy, this document underscores the importance to continue the ongoing efforts to transform the economy into a sustainable and inclusive one through innovative and technological interventions in various sectors with collaboration, investments and knowledge generation. I hope that these efforts will not only address contemporary challenges in the sector, but also lay the foundation for a resilient and prosperous future.

At the same time, I am aware that while we do need to increase R&D investment and efforts, this way of viewing innovation driven development is based on a myopic perception that restricts it to the confines of formal R&D. Hence our future efforts will be to come up with a more comprehensive Science, Technology and Innovation (STI) Budget.

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

KSIDC	Kerala State Industrial Development Corporation
KSITM	The Kerala State Information Technology Mission
K-Space	Kerala Space Park
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	Innovation Index for India
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
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 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 (R&D) 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 2025-26 are given as a separate chapter.

While emphasizing the role that investments in Research and Development play in bringing prosperous to economies, the opening chapter recognizes the focus that economies now give to build a broader innovation system for technological advancement and global competitiveness. The efforts taken by the State in establishing an institutional architecture facilitating learning, innovation and competence building systems at all levels for spearheading the vision of building a competitive and inclusive State are also highlighted. The major objectives of public investments in R&D in Kerala are also stated to give an idea of the activities that are required to identify and bridge the current gaps in the R&D ecosystem, strengthen R&D institutions in the State and initiate other prioritised activities. Important definitions of R&D set forth by leading national and international agencies are stated along with the core criteria for identifying and distinguishing R&D activities.

The initiative and importance of a separate R&D budget are pointed out in Chapter Two with a view to capture the quantum, as well as the quality of R&D budgetary expenditure across the government departments and allied organisations and institutions. The conceptual as well as analytical issues encountered to identify and segregate the R&D expenditure are briefly stated with a view to the need for rectification of limitations and shortfalls in future and to enable the State to fix its R&D priorities in preparing the State budget. Thereafter, the approach and methodology adopted in this document for identifying, segregating and compiling the R&D allocations of departments and institutions of varying nature are elucidated.

Chapter Three examines the national and sub national trends in R&D on the basis of the data provided in the 'Research and Development Statistics' of Science and Technology Department, GoI and 'Research and Development Expenditure of States and UTs' by the Reserve Bank of India. The share of contributions of Central Government, State Governments, Public Sector Industry, Private Sector Industry and the Higher Education sector to the R&D ecosystem of the Country is shown based on the comparisons done in the Research and Development Statistics of S&T Department. The dominance of Public Sector with the Centre performing major part of the R&D is visible as per this trend. The State-wise statistics on government spending on R&D prepared based on the State Budget documents by the RBI is also given.

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

Chapter Five details the estimations in the State Budget 2025-26 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 annexure to the chapter lists out the scheme-wise estimation along with brief descriptions on the R&D component of each scheme.

Chapter Six gives a general idea of the way forward in R&D, attempting to identify the thrust areas where the State should concentrate its R&D efforts so that the economy and the people can benefit equally. 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
Setting the Stage

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 county'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 However, by its very nature, technology cannot be transferred in its entirety. Hence, the purchaser of technology always receives a less complete information than what the producer has. Hence, even if the technologies are available in the world market, the importing country/firm will have to invest substantially to make the technology suitable to the local context. This is because the imported technology has been developed in altogether different context. For example, the raw material and its quality may be different or designed for a larger scale as compared to the developing country context.

Hence the economic history teaches us that hardly any economy 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. 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 needs to be seen against this background. Here, knowledge could be seen in terms of a) scientific knowledge which is primarily an outcome of organized research

and development and b) synthetic knowledge/experience-based knowledge, which not confined to scientific organizations, instead it is most pertinent in case of those operating in the rural, agrarian and the informal sector in general like the artisans. The primary output of a farmer who cultivate different crops is the farm products not knowledge. 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.

It is important to note that so far 28 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 practises based on their experience based knowledge. Therefore, for innovation driven development to be equitable, we need to promote both synthetic knowledge and scientific knowledge

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 all the actors in the innovation system. Secondly, creating a vibrant innovation system at different 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 2013 made the case for establishing regional innovation councils in all the states in the country. Kerala has established such an institutional architecture at the instance of The Kerala State Council for Science, Technology and Environment (KSCSTE) Kerala Development and Strategic Innovation council (K-DISC). KSCSTE promotes and activates programmes for increasing the stock of knowledge in science, and fine tunes policies which are significant and for the sustained development of humanity. K-DISC has the mandate of spearheading the vision of building a competitive and inclusive Kerala through the creation of a healthy, conducive ecosystem for transformative and bold innovations through new directions in technology, product, and process innovations.

We recognize that R&D is only an important aspect of innovation, and innovation which brings about development is a progeny of the underlying. 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 only on R&D.

1.1 Definition of Research & Development

Some of the notable definitions given for R&D by leading organisations/institutions working in the field of science and technology are reproduced in Figure 1.1.

'Creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.'

- Frascati Manual, Organisation for Economic Co-operation and Development (OECD)

'Creative work undertaken on a systematic basis to increase the stock of knowledge and use this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production. Research and development is not an ancillary activity, and a separate establishment should be distinguished for it when possible.'

- System of National Accounts 2008, a statistical framework prepared jointly by the UN, the European Commission, the OECD, the IMF and the World Bank Group

'Activities aimed at innovative research & development such as the development of new technologies, design & engineering, process/product/design improvements, developing new methods of analysis & testing, research for increased efficiency in the use of resources such as capital equipment, materials & energy, pollution control, effluent treatment & recycling of waste products, etc. Research and Development should aim at the extension and creation of knowledge and should benefit society by improving the lives of the people.'

Department of Scientific and Industrial Research, Ministry of Science and Technology, GoI

Figure 1.1: Definitions of R&D

The term R&D covers three types of activities:

a. **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.
b. **Applied research** is an original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective.
c. **Experimental development** is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

1.2 Criteria for identifying R&D

The nature of a developmental activity may give an indication that its purpose is related to research, but in reality, its outcome is unlikely to add any new value to the existing

knowledge or to create new knowledge. A clear distinction between R&D activities and similar types of other activities which are not really 'research' is imperative to measure the extent of actual R&D. Standard criteria have long been formulated by experts to distinguish activities and expenditure relating to R&D from other types of activities with identical nature. The five core criteria accepted in general for identifying R&D by the experts in the field are given in Figure 1.2.

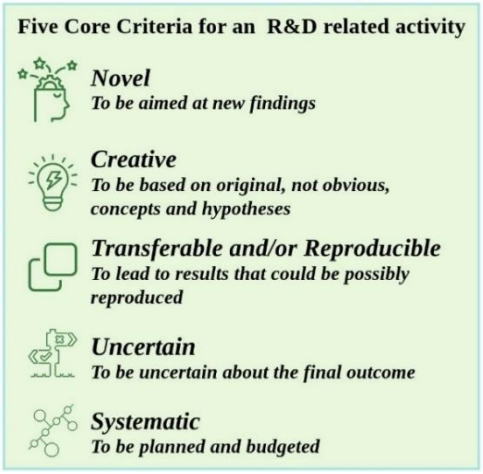

Figure 1.2: Core Criteria for an R&D related activity

1.3 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 1.3: 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 1.1.

1.4 India in the Global R&D landscape

India has long recognized the critical role of science and technology in economic and social transformation, as stated in the 1958 Scientific Policy Resolution. It emphasized that technology, more than raw materials or capital, is key to national prosperity, and that science can provide essential services and promote welfare. India built a robust framework

to support research in fields like atomic energy, defense, and space, alongside initiatives such as the establishment of R&D labs, IITs, engineering colleges, and a focus on self-reliance, especially in agriculture and food security. The 1970 Indian Patent Act and policies on foreign investment facilitated technological development.

Globally, economic growth is linked to science, technology, and innovation, with R&D expenditure often used to measure a nation's capabilities. However, the 2013 Science, Technology, and Innovation Policy highlighted a broader view of innovation, emphasizing not just formal R&D but also the interactive learning and knowledge exchange between actors in the innovation system. Innovation involves both scientific knowledge from organized research and synthetic knowledge from non-formal, experience-based learning. Kerala's transformation into a knowledge economy exemplifies this, as its higher human development stems from both R&D and informal, experience-based innovations.

India's Gross Domestic Expenditure on R&D is low in comparison to the developed nations and even among many of the developing countries. Similarly, the financial expenditure on R&D by the State is also not so promising. Therefore, State's funding on R&D needs to be augmented substantially and also ensure increased participation by the industry including the private sector. Financial constraints, risk aversion, and the uncertain nature of research outcomes can impede investments in R&D. Governments, industries, and academia must work collaboratively to address these challenges, creating an environment that incentivizes R&D and mitigates risks.

1.5 Role of subnational R&D performance

Driving national innovation and technological advancement through local and subnational level participation aimed at promoting inclusive growth and development lies in the realm of the Centre Government. Designing and implementing strategies tailored to suit local context and strength with collaborations of all stakeholders coordinated by the Centre is critical to foster generation of new knowledge and ideas that can deliver various socio-economic benefits to the entire country. Support from the Centre to incentivize and promote subnational level programmes is of paramount importance in shifting the existing policy considerations in favour of advanced technological sectors at subnational level. Integrating the strategies and approach to the budgeting process is also key to garner expected outcomes through sustained efforts in the long run. Attempts to address the challenges and limitations in the socio-economic sectors through innovative and technological solutions need increased representation of suitable programmes in the planning and budgeting process. A dedicated R&D Budget at subnational level can fulfil the resource prioritization to formulate and implement programmes to address specific issues and accomplish the needs identified for the local development of the society, which is yet to be widely acknowledged.

The effort of the State is to develop an effective and efficient R&D eco-system as part of its commitment towards transforming Kerala to a Knowledge Economy by channelizing the research efforts and resources into the priority sectors of the economy and by achieving

excellence in ensuring that these efforts lead to design, development and manufacture of high quality, world-class products, providing significant value addition to the economy.

Figure 1.4 illustrates the objectives drawn up for public investment in R&D in Kerala.

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

Chapter 2
R&D Budgeting

2.1. India's R&D Paradox

From the early days of independence, India has embarked on a journey towards creating an enabling environment by establishing an ecosystem that breeds innovation, starting from the Science Policy resolution in 1958. Different science and technology policy statements have sustained the concerted effort in this direction over time. Initiatives such as the Science, Technology and Innovation Policy 2013 and 2020, as well as various other initiatives, are aimed at further strengthening the innovation system at the national, regional, and sectoral levels to hasten the process of making India an innovation-driven economic superpower. These included, but not limited to, Start-up India initiative, Accelerating Growth of New India's Innovations (AGNIi), Atal Tinkering Labs, new intellectual property rights (IPR) policy, Smart City Mission, Uchchatar Avishkaar Yojana, etc. All these initiatives, coupled with the establishment of a large number of institutions both in the public and private sector, are intending to cement India's position as an innovation and knowledge-driven economy and society. These efforts have had rich returns. With around 50,000 start-ups, it is today the third-largest start-up economy after the United States of America (U.S.) and the United Kingdom (U.K.). As per the Global Innovation Index (GII) in 2019, India was placed at the 52nd position, improving its ranking from the 57th position in 2018. Global Innovation Index 2022 showed that India leapfrogged to 40th position in a short span of 7 years.

At the same time there has been a near stagnation in R&D intensity (share of R&D in GDP) over the last three decades. The share of R&D investment in India's GDP decreased over the last decade from 0.85% of GDP in 2008–2009, remaining stagnant at around 0.7% for the last few years. This is significantly lower than the top five R&D spenders globally in 2017 (4.3% for the Republic of Korea, 4.2% for Israel, 3.3% for Japan, and 3.2% for both Switzerland and Finland) and much lower than China (2.3%) and even lower than other BRICS countries. Further, according to the World Bank Enterprise survey, while 18% of the firms in China go for technology licensing from abroad, only 9% of the Indian companies resort to technology licensing. Further, the FDI inflows to India also fare poorly with China

Yet it is important to note that even with low R&D intensity technology import and FDI, Studies have shown that India's total factor productivity growth is higher than that of China. Secondly, most of today's advanced nations witnessed higher TFP growth during their high-growth phases than what India has experienced. Yet RBI observed that India is able to achieve higher economic growth with comparatively lower levels of TFP. This unique trend in India's poor R&D and high economic growth and total factor productivity growth presents a paradox. It tends to suggest that from the perspective of economic growth and development R&D presents a myopic picture. Further, with respect to the maiden attempt by the NITI Aayog to construct an innovation index for India (III) is based on Indian states, it is observed that although the III is based on the methodology of the GII, the estimated index of India appears to lack robustness. While there is a strong positive correlation

between innovation input indicators and output indicators in the case of Global Innovation Index, we observed a strong negative correlation in case of III, indicating that the process of innovation in India is not in sync with that of other countries calling a more realistic understanding on the process at work in India. Hence it is evident that to fully understand the growth and development we need to go beyond the narrow confines of R&D to the innovation system that breeds innovations.

2.2. Innovation in the Indian Context

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.

2.3. The Initiative

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 budget.

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.

2.3 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, contribute 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.

2.4. 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 vagueness 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.

Methodology in Brief

Research-related 'Heads of Accounts'

- *The allocations under the departmental heads of account with explicit mention of the word 'research' in their nomenclature/scheme are identified from the State budget*
- *Extent of funds utilized for Research is determined based on objectives/purposes and the socio/economic/other benefits of research activities*
- *A part of the entire allocation on the items which fall under the definition of research as reported by the departments/ institutions are verified and counted*

Allocation to Key Scientific Departments

- *The entire allocation provided under the heads of account for scientific agencies have been included in R&D expenditure.*
- *Science and Technology Department,*
- *Agriculture Research, etc.*

Infrastructural Expenditure

The allocation towards infrastructural components having a direct or indirect bearing on R&D are calculated:

- *Scientific infrastructure,*
- *Physical infrastructure,*
- *Human resource,*
- *R & D incidental expenses,*
- *Training & capacity building,*
- *Administrative expenses*
- *Operation & Maintenance*

Allocation to Universities & Educational Institutions

- *The extent of funds set apart by the Universities from the government grants for research activities are estimated based on the details reported*
- *Share of funds utilized for research in the Higher Education sector has been approximated on a pro-rata basis, to distinguish probable research expenditure from total outlays.*
- *The R&D allocation of all higher education institutions is estimated by extrapolation of the proportion of R&D allocation to the total allocation of certain prominent institutions.*

Allocation towards Promotion of Innovation

- *The provision made in the budget for promoting innovation/startups have been included in R&D expenditure*

Indirect Research Expenditure

- *The percentage of allocation which indirectly contributes to research activities of the department/ institution from the outlays earmarked under other schemes/project heads of account are counted.*
- *This share is determined based on the information provided by the departments/ institutions*

Pioneering Initiatives

The entire allocation provided for pioneering initiatives have been included in R&D expenditure.

- *Science Parks*
- *KSPACE - Kerala Spacepark*
- *Kerala Medical Technology Consortium (KMTC)*
- *Life Science Park, etc.*

Figure 2.1: Classification of R&D Allocations

Chapter 3
R&D Expenditure – National and Sub-national Trends

3.1 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 3.1)*.

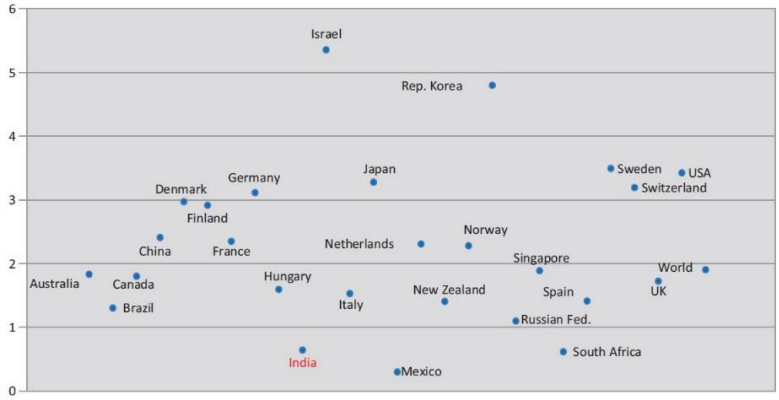

Figure 3.1: R&D expenditure as % of GDP for selected countries, 2020
(Source: Dept of Science & Technology (2023), GoI

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 3.2)*.

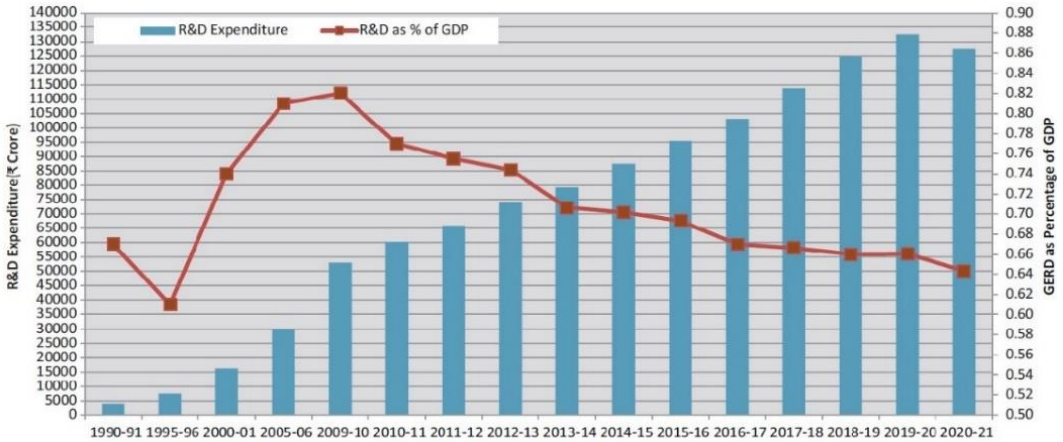

Figure 3.2: National R&D expenditure and its percentage with GDP
(Source: Dept of Science & Technology (2023), GoI

From *Figure 3.3*, 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:

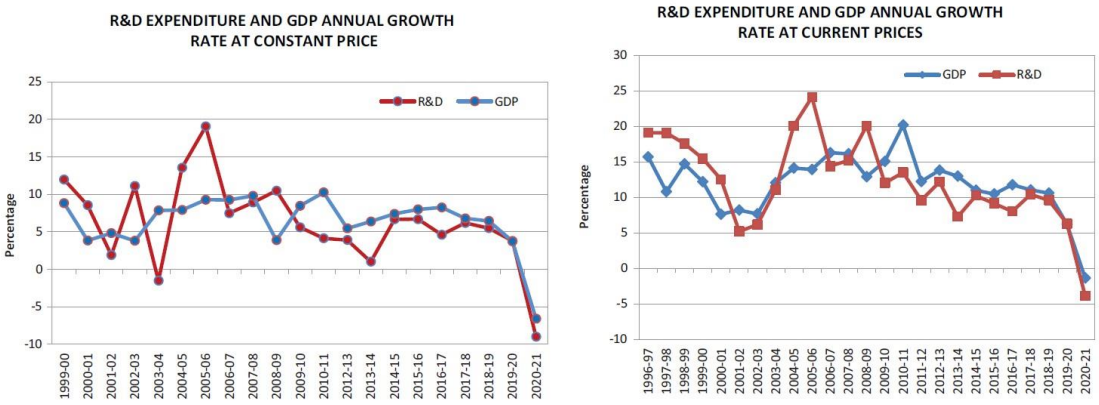

Figure 3.3: R&D expenditure and GDP annual growth rate at constant prices and at current prices
(Source: Dept of Science & Technology (2023), GoI

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 3.1.*

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 3.1: Share of Major Sectors in R&D

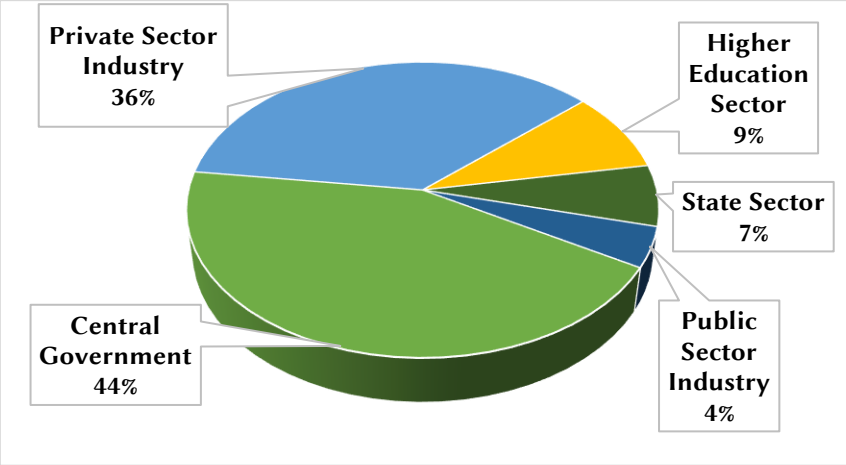

Figure 3.4: Percentage of R&D expenditure borne by different sectors in India
Source: Dept of Science & Technology (2023), GoI

Business Enterprise (Industrial) sector participation in GERD has been around 40% during the last 5 years (See *Figure 3.5*). 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 3.5: Percentage share of Government and Business Enterprise Sector in GERD
Source: Dept of Science & Technology (2023), GoI

3.2 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 4.6). 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.

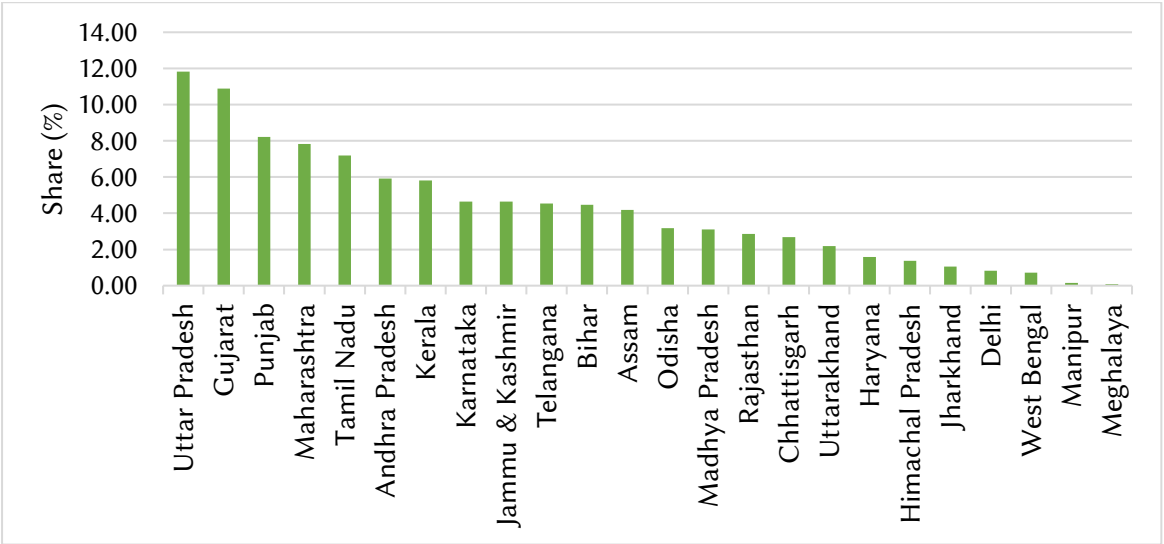

Figure 3.6: State-wise share of R&D expenditure, 2020-21 (in per cent)
Source: Dept of Science & Technology (2023), GoI

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 3.7)*

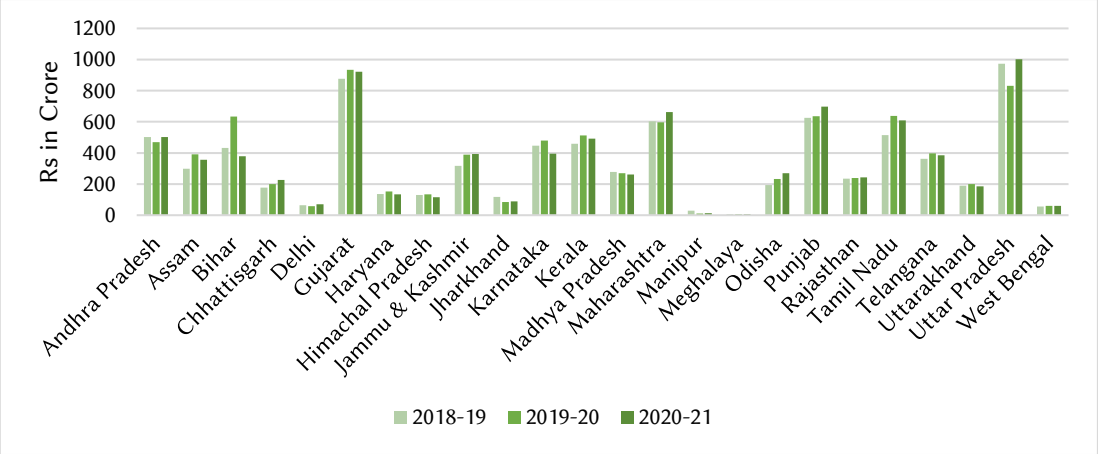

Figure 3.7: GERD incurred by the States
Source: Dept of Science & Technology (2023), GoI

3.2.1 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 3.2)*.

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

3.2.2 '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 3.3: 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 4
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. K-DISC has the mandate of creating a healthy, conducive ecosystem for transformative and bold innovations. 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.

Figure 4.1: Institutions and Initiatives for R&D in Kerala

4.1 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.

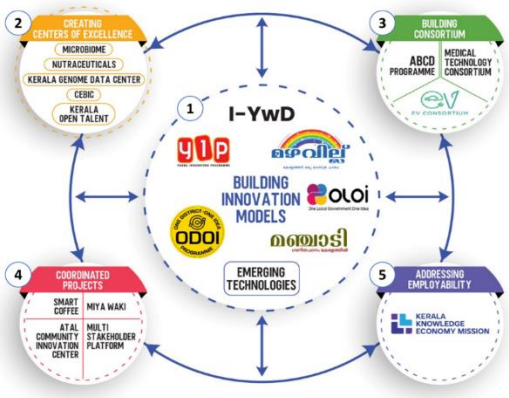

Figure 4.2: The Holistic Innovation Ecosystem Model

Figure 4.3: KDISC – Platform Ecosystem

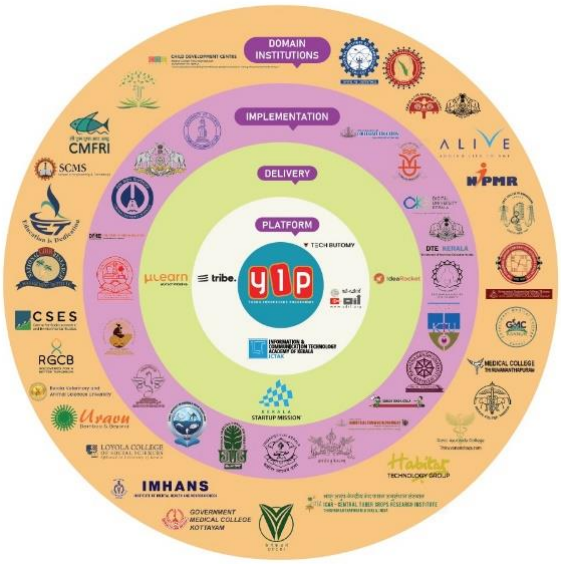

Figure 4.4: Young Innovators Programme

(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). **Kerala Knowledge Economy Mission**, the employability program of K-DISC aims at providing access for educated unemployed to opportunities in the capital-intensive, technology-driven enterprises in the private sector through demand-driven skilling programmes.

4.2 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.

Figure 4.5: Major achievements of the Digital University

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, 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

4.3 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.

Figure 4.6: KSUM Major achievements

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.

4.4 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 'Transforming Kerala's Economy through One Health Approach'. The focal theme of the upcoming 37th edition is 'Technology Transformation for a Green Future'.

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.

4.4.1. 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.

4.4.2. 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.

4.4.3. 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.

4.4.4. 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.

4.4.5. 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.

4.4.6. 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.

4.4.7. 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.

4.4.8. 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.

4.4.9. 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.

4.4.10. 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 specialties of oncology.

4.4.11 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.

4.5 Universities

4.5.1. 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.

4.5.2 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.

4.5.3. 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.

4.5.4. 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.

4.5.6. 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.

4.5.7. 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.

4.5.8. 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.

4.5.9. 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.

4.5.10. 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.

4.5.11. 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.

4.6. Technical Education Institutions

4.6.1. 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.

4.6.2. 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)

4.7. Health Research Institutions

4.7.1. State Board of Medical Research

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

4.8. Animal Husbandry and Dairy Development

4.8.1. 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.

4.8.2. 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.

4.9. Information Technology

4.9.1. 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 5
R&D Budget 2025-26

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 5.1*:

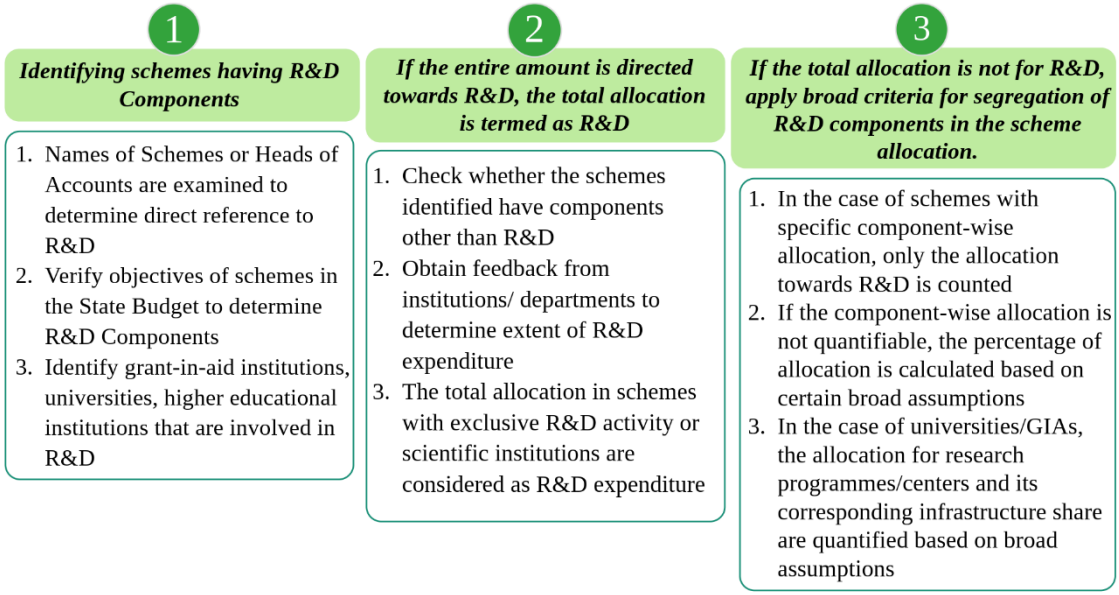

Figure 5.1: R&D Budget Estimation

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 2025-26, it is estimated that approximately ₹ 4039.36 Crore will be utilised for research & development activities, which comes to 0.28% of the estimated Gross State Domestic Product of the State for 2025-26 (*Table 5.1*).

(₹ in Lakh)

R&D Estimation	GSDP*	R&D allocation as a percentage of GSDP
403935.99	142714523.00	0.28

Table 5.1: R&D estimation as a percentage of GSDP 2025-26

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

State's own plan for 2025-26 (excluding LSG's development expenditure and KSEB's internal resources) is ₹ 22242.82 Crore of which ₹ 1723.89 Crore is towards R&D, which constitutes around 7.75% (*Table 5.2*).

(₹ in Lakh)

R&D Estimation under Plan	Total Plan Outlay	Percentage of Plan Outlay estimated to R&D
172389.03	2224282.00	7.75

Table 5.2: R&D estimated under Plan as a percentage of State's own Plan 2025-26

The sector-wise distribution of R&D under State's plan is given in Table 5.3.

(₹ in Lakh)

No.	Sector	State's Own Plan Outlay*	Estimation for R&D	Percentage of allocation (%)
1	Agriculture and Allied Services	176753.00	37802.99	21.39
2	Rural Development	236800.00	941.65	0.40
3	Co-operation	13942.00	223.97	1.61
4	Irrigation and Flood Control	60985.00	1923.00	3.15
5	Energy	11458.00	736.51	6.43
6	Industry and Minerals	181936.00	37020.70	20.35
7	Transport and Communications	245003.00	3686.57	1.50
8	Scientific Services and Research	25115.00	23574.00	93.86
9	Social and Community Services	1047552.00	60540.61	5.78
10	Economic Services	208443.00	5772.03	2.77
11	General Services	16295.00	167.00	1.02
		2224282.00	**172389.03**	**7.75**

Table 5.3: 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*

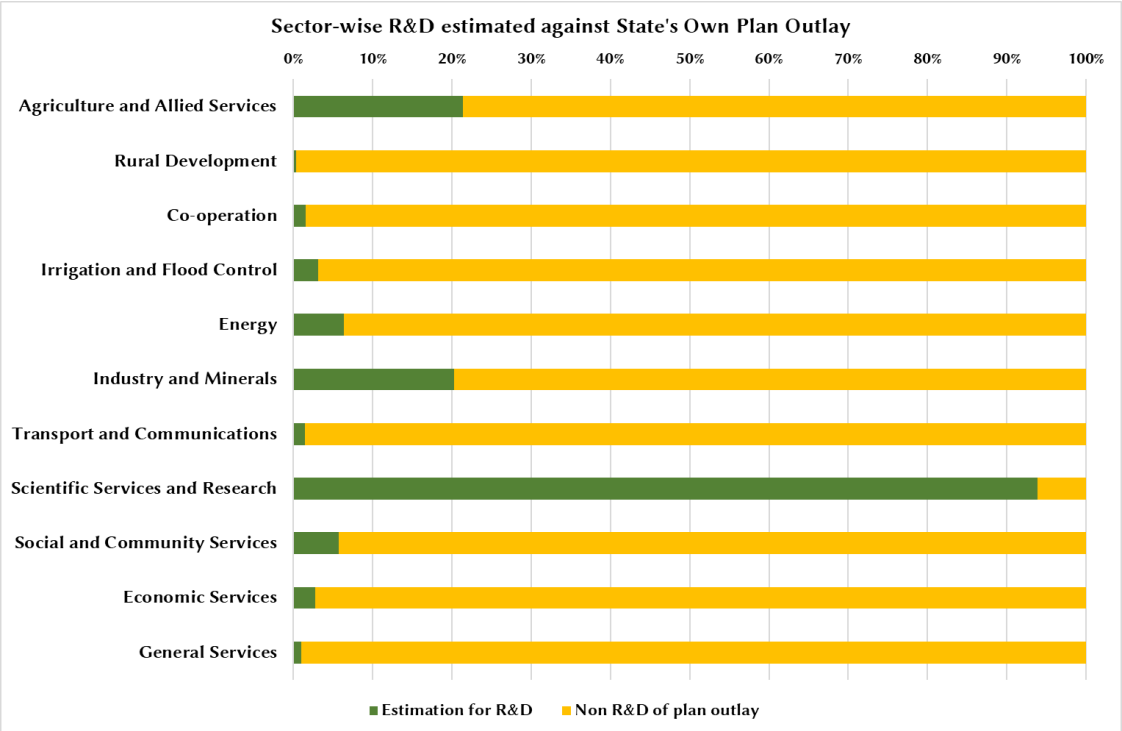

Figure 5.2: Sector-wise R&D estimated against State's Own Plan Outlay

In the non-plan side, the estimation for R&D is ₹ 2315.47 crore, which is around 1.38% of the total non-plan estimates for 2025-26 (*Table 5.4*). 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
231546.96	16718587.38	1.38

Table 5.4: 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 5.5*.

(₹ in lakh)

No.	Sector	Plan	Non Plan	Estimation for R&D	Share (%)
1	Medical Health Family Welfare and Sanitation	28246.70	73252.26	101498.96	25.13%
2	Education R&D	48850.55	132169.92	181020.47	44.81%
3	Labour Research	50.00	39.26	89.26	0.02%
4	Infrastructure Research	5752.46	2984.42	8736.89	2.16%
5	Agricultural Research	37521.48	19170.62	56692.10	14.03%
6	Industrial Research	37020.70	0.00	37020.70	9.16%
7	Social Security and Welfare	3005.35	25.02	3030.37	0.75%
8	Welfare SC/ST	1856.21	438.25	2294.46	0.57%
9	Environmental Research	1439.51	189.56	1629.07	0.40%
10	Housing and Urban Development	1255.65	4.92	1260.57	0.31%
11	Others	6974.98	2980.96	9955.94	2.46%
12	Fiscal Research	415.43	291.77	707.20	0.18%
	Total	**172389.03**	**231546.96**	**403935.99**	**100.00%**

Table 5.5: Estimation for R&D in the State Budget 2025-26

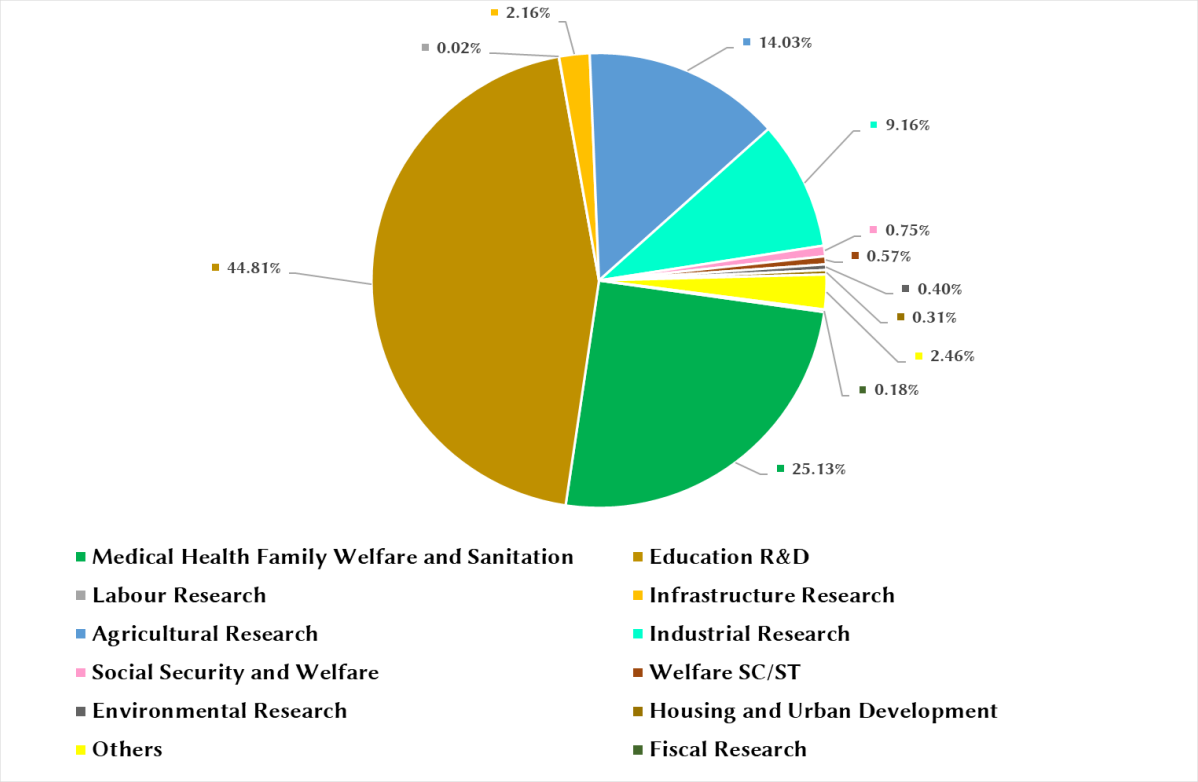

Figure 5.3: Sector-wise R&D Estimation

The R&D allocations in State Budget 2025-26 under various Schemes/Institutions are given in Annexure.

Chapter 6
R&D Way Forward

The role of strategically directed programmes is critical in producing R&D outcomes which have the potential to bring positive transformations and comprehensive advancement across all sectors in the State. Identifying the key priority areas where huge potential of R&D lies will assist in formulation of programmes with clearly defined targets and outcomes and also in judicious allocation of precious resources. 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 listed below:

Figure 6.1: Kerala's Priority Research Areas

6.1. Health, Family Welfare and Sanitation

6.1.1. Public Health

Research & Development has a critical role in the advancements required in the health sector to face new health challenges like the return of Infectious diseases, diseases due to environmental degradation, mental health problems, suicide, substance abuse, alcoholism, adolescent health issues and rising number of road traffic accidents. R&D has a critical role in health and wellbeing of a society. Investments in R&D and concerted and committed efforts with proper inter sectoral co-ordination are imperative to conduct in-depth studies to devise innovative solutions. Establishing Priority Research Areas, specifically focusing on improving the health status of marginalized and weaker sections, as well as addressing the prevailing lifestyle diseases is vital to ensure R&D investments and outcomes for a healthy society and socio-economic growth.

Public Health Research - Focus Areas

1. *Predict and map upcoming diseases*
2. *Equip system with tools to address any medical challenge*
3. *Identifying disease causing micro-organisms*
4. *Controlling the spread of disease vectors*
5. *Resisting mutations*
6. *Information sharing platforms during the pandemic*

Figure 6.2: Focus areas: Public Health Research

6.1.2. 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.

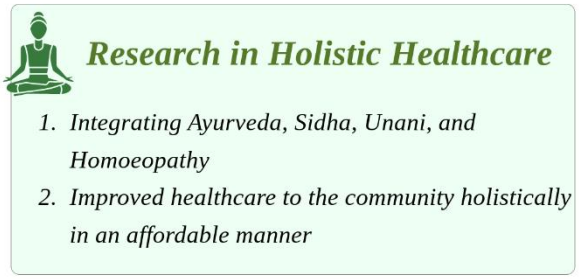

Figure 6.3: Holistic Healthcare Research

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.

6.2. Education R&D

6.2.1. 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.

6.3. Infrastructure Research

6.3.1. 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.

6.3.2. 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.

6.3.3. 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.

6.4. Agricultural Research

6.4.1. Agriculture

In the context of climate variability and changing cropping patterns, research programmes in agriculture sector needs to be oriented towards increasing productivity through climatically adapted practices and meeting emerging challenges. In order to bridge the yield gap existing in the State, development and application of modern technologies are essential to improve yield by way of stimulating growth, pest and disease resistance, biotic and abiotic stress tolerance. It can rationalize the usage of chemical fertilizers and pesticides. New technologies such as artificial intelligence, robotics, nanotechnology for fruit preservation, nano agri-inputs for crop production, genetic engineering for multi-stress tolerance, IoT, Artificial Intelligence, sensor-based application and automation of technology and precision agriculture have scope for increased productivity and yield gap reduction. Research on secondary agriculture needs to give thrust to product diversification, byproduct utilization and methods to develop nutritionally better products to combat lifestyle diseases. Establishment of market linkage with traceability and usage of block chain technologies are the other areas ideal for research intervention for the growth and development of the sector.

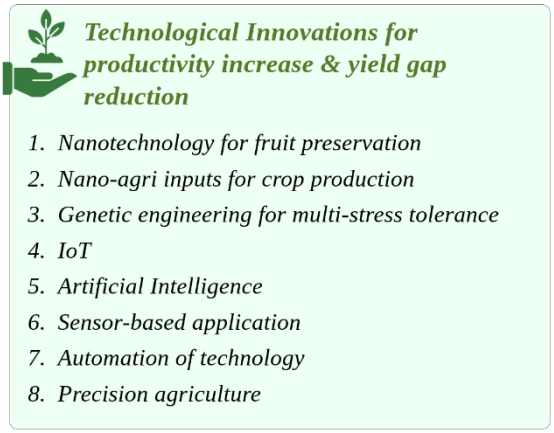

Figure 6.4: Technological Innovations for productivity increase

6.4.2 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.

6.4.3. Animal Husbandry and Dairy Development

Meat Production - Focus Areas

Introduction of scientifically reared calves
- *Mastitis control programme.*
- *Initiation of cGMP and other support facilities*

Increasing milk production
- *Decreasing the age at maturity*
- *Reducing inter calving period*

Augmenting Production
- *Conservation and Improvement of Malabari Goats.*
- *Conservation and dissemination of Germplasm from Vechur, Kasaragod Dwarf Cattle and ND Cattle*

Figure 6.5: 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

Dairy Development - Focus Areas

Subiksha Keralam
- *Strengthening and modernization of infrastructure of DCSs to improve procurement*

Special Quality drives
- *Detection of antibiotic residues in milk, aflatoxin residues in milk and feed samples*

Better Technology Transfer
- *To release newer value-added products*

Figure 6.6: Focus Areas: Dairy Development

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

6.4.4. Fisheries and Coastal Area Development

The diversity, complexity and dynamism, that characterize the fishing sector influence not only the economic aspect but also cast its effect on the social, technological, cultural and political dimensions. Sustainability of the sector lies in coordinated, multi-scale and research-backed governance of ocean and inland aquatic systems that balance the needs and interests of all. Systematic study and research are essential in the areas of aquatic ecosystems including marine, back waters, rivers etc., for the scientific and sustainable conservation and revival of the natural ecological parameters for reducing the adverse environmental effects and boosting the productivity by natural breeding of shrimps and fishes. A systematic study and research on the extent of invasion and damages caused by alien species in our water bodies is also essential to find ways to enhance the inland fish production in the State. Research activities may lead to developing cost-effective rapid detection kits for timely detection of the diseases.

Figure 6.7: Applications of ICT in Fisheries sector

6.5. Industrial Research

6.5.1. 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.

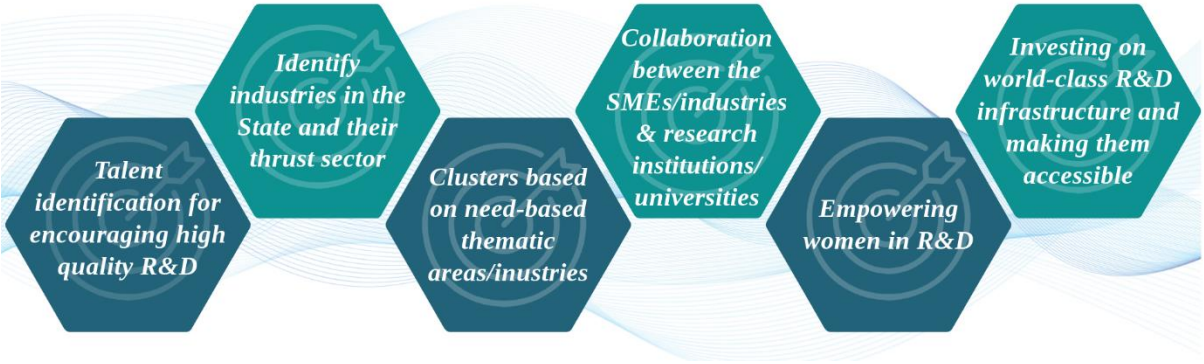

Figure 6.8: Goals of R&D for Industries Sector

Figure 6.9: Focus Areas: Industrial Research

6.6.1. 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.

6.6.2. 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.

6.6.3. 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.

6.7. Environmental Research

6.7.1. 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.

6.7.2. 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.

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.

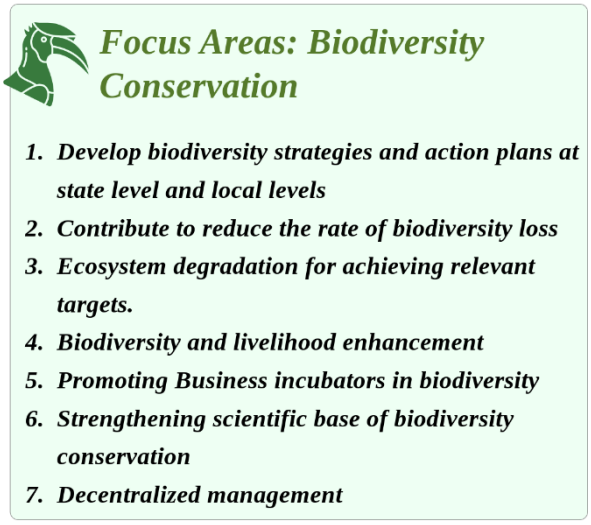

Figure 6.10: Focus Areas: Biodiversity Conservation

6.7.3. 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.

6.7.4. 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.

6.7.5. 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.

Climate Change Adaptation & Carbon Footprint Improvement

Innovations and novel ideas with a focus on:

1. *Climate/disaster friendly structures*
2. *Impact assessments*
3. *Adaptive remedial and mitigation measures*
4. *Soil carbon sequestration*
5. *Afforestation, and reforestation with water conservation methods*
6. *Biochar*
7. *Composting*

Figure 6.11: Focus Areas: Climate Change Adaptation

6.7.6. 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.

Innovations in Waste Disposal

1. *Develop modern techniques for streamlining and optimizing house to house collection of plastics and other non-degradable wastes including e-waste using mobile app*
2. *Bringing in start-ups using innovative technologies for manufacture and sale of alternative materials for plastics especially single use plastics (SUP)*
3. *Development of local specific innovative alternate materials aiming for reduction of plastic waste*

Figure 6.12: Innovation in Waste Disposal

6.8. Housing and Urban Development

6.8.1. 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.

6.8.2. 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

Features of Kerala's Coastline and Inland Waterways

- *590 km Coastline*
- *Major Ports: 1*
- *Intermediate Ports: 7*
- *Minor Ports:12*
- *1900 km of Inland waterways*

Figure 6.13: Features of Kerala's Coastline and Inland Waterways

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.

6.9. Cultural Research

6.9.1. 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.

6.10. Cooperative Sector

The modern age challenges in the cooperative sector necessitate integrating technology and trust with a co-operative mindset. Restructuring with latest technological advancement is essential for the cooperative institutions to become user-friendly establishments free from antiquated governance laws and provide youth-oriented products. The new age enterprises are driven by valuation rather than profits. Studies and research are indispensable to bring changes with coordinated efforts to transform the sector so that value is created in the sector to pave way for additional investment from diverse sources including private equity. Innovations to diversify the short-terms and long-term credits to new and emerging sectors of agriculture, fisheries, dairy, livestock, etc., can result in initiatives to boost the economic activities in these sectors for overall development of rural areas in particular. Research on the changes happening around all sectors of economies and to find solutions to adapt to the changing requirements in successful credits to boost economy are imperative for the co-operative sector to stay poised to utilize the advantages from the new and emerging sectors of the economy.

6.11. Others

6.11.1 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

6.12 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 2025-26

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
Medical Health, Family Welfare and Sanitation				
1	Allopathy Medical Colleges and allied institutions	231185.43	76291.19	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	14666.09	8216.62	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	17704.87	5842.61	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	1800.00	1800.00	Assistance to the Cochin Cancer And Research Centre, Ernakulam for carrying out research activities in cancer care.
5	Homoeopathic Medical Colleges and Allied institutions	4543.54	1499.37	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	691.84	691.84	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)	1871.56	1388.11	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
8	State Board of Medical Research	350.00	350.00	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.
9	Research Cell for Indian System of Sports Medicine.	282.37	282.37	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	242.11	242.11	Research on mental disorders including neuro developmental disorders, solution-focussed therapies, neuro-psychological studies.
11	Indian Institute of Diabetes	167.01	167.01	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.
13	International Level Laboratory and Education Centre for Research Linking Ayurveda to Modern Biotechnology	200.00	200.00	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	91.68	91.68	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
15	State Medicinal Plants Board	61.18	61.18	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.
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	4756.35	3625.64	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.
20	Standardisation and modernisation of Homoeo Department	690.00	50.07	Homoeopathic research and allied activities, studies and scientific journal publication are the components of the scheme.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
21	Assistance to Government Homoeo Medical College, Thiruvananthapuram - Research Activities in Homoeopathy	30.00	30.00	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)	100.00	100.00	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 DHS and collaborative research with other institutions, Universities and Arts & science Colleges.
24	Child Development Centre, Medical College, Thiruvananthapuram	401.64	40.16	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	50.00	10.00	The Society was set up in 1976 with the aim of developing the institution as a model institute in all fields of Ayurveda. The college is affiliated to KUHS and is conducting BAMS courses and seven PG courses.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
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.
27	State Institute of Health and Family Welfare	150.00	15.00	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)		**283023.67**	**101498.96**	
Education R&D				
28	Arts and Science Colleges	222536.60	73437.08	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	36709.17	14606.43	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.
30	Engineering Colleges and allied institutions	41770.74	13784.34	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
31	Calicut University	28568.08	11692.07	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	24038.98	10509.01	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.
33	Kannur University	10217.46	5649.76	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	6420.00	6420.00	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	5836.08	5836.08	Grant-in-aid assistance to various research institutions under KSCSTE for carrying out research activities.
36	Institute of Advanced Virology	5000.02	5000.02	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 2025-26	Estimation for R&D	Key Research Activities
37	Cochin University of Science and Technology (CUSAT)	20448.54	8841.77	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.
38	Sree Sankaracharya University of Sanskrit	9819.11	4717.66	Promotion and development of the study of Sanskrit, Indology, Indian Philosophy and Indian languages. The University conducts 25 Ph.D. research programmes including various Sanskrit disciplines and rare subjects associated with Sanskrit like Ayurveda, Vastuvidya, Dance, Theatre Arts, Music, Manuscriptology, Translation studies and Comparative Literature.
39	Dr.A.P.J.Abdul Kalam Technological University	6448.10	3742.57	University takes a lead role in establishing Centres of Excellence in Thrust areas for undertaking research. The major as thrust areas identified are Energy and Environment, Fluid Dynamics, Digital Signal Processing Advanced Computing and Nanoparticles.
40	Schemes and Programmes of Kerala State Council for Science, Technology and Environment	2522.00	2522.00	Providing financial assistance for scientific research, human resource and infrastructure development, technology and innovation, environment conservation, science popularization and communication.
41	State Council of Education Research and Training (SCERT)	2100.00	2100.00	Assistance for carrying out research and innovation activities related to school curriculum.
42	National University of Advanced Legal Studies (NUALS)	1225.00	1225.00	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
43	Thunchathezhuthachan Malayalam University	1734.62	1332.87	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.
44	Capital outlay on University and Higher Education	10402.00	2080.40	Various infrastructure development projects related to R&D under Universities and Higher Education.
45	Kerala Council for Historical Research	1300.01	1300.01	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.
46	Research Initiatives under Technical Education	694.00	694.00	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)
47	Centre for Development Studies	657.94	657.94	CDS is a social science research & teaching institution, focuses on socio-economic issues in Kerala and India. 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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
48	Research, Development and Outreach under Collegiate Education	470.00	470.00	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).
49	Special Programmes of Kerala State Council for Science, Technology and Environment	370.00	370.00	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.
50	Academic Excellence In Teaching, Learning And - Collegiate Education	975.00	975.00	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
51	Trivandrum Engineering Science and Technology Research Park (TREST)	350.00	350.00	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
52	Centre for Engineering Research and Development	260.00	260.00	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.
53	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.
54	Development of all Government Engineering Colleges	1930.00	579.00	Expenditure on R&D infrastructure development in Government Engineering Colleges
55	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
56	Biotechnology Development	110.00	110.00	Biotechnology research and capacity building, industrial collaboration and entrepreneurship development in biotechnology
57	Institute of Climate Change Studies, Kottayam	230.00	230.00	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 2025-26	Estimation for R&D	Key Research Activities
58	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.
59	Centre of Excellence in Disability Studies	60.00	60.00	Provides research assistance for differently abled students and faculties, skill development training programmes, counselling services, publications and related activities
60	EMS Chair for Marxian Studies and Research in Calicut University	25.00	25.00	Research in Marxian studies
61	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.
62	The Erudite – Scholars in Residence Programme	70.00	70.00	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
63	State Institute of Encyclopaedic Publications	420.11	420.11	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
64	Kerala - Enterprise Resource Planning Solution (K-REAP) and Centres of Excellences in Higher Education - KSHEC	1340.00	191.35	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)
65	Teaching-Learning Process Enhancement & Skill Gap Reduction	1300.00	130.00	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 the technical education scenario.
66	Institute of Advanced Crop Breeding	200.00	200.00	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)		**446989.56**	**181020.47**	
Labour Research				
67	Kerala Institute of Labour and Employment	531.62	53.16	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
68	Labour Department - Research and Statistics	36.10	36.10	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)		**567.72**	**89.26**	
Infrastructure Research				
69	Irrigation Design and Research Board	1892.33	1892.33	Research activities on Water Conservation, Sustainable Irrigation Management and management of Climate-Induced Disasters

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
70	PWD Roads Wing (Kerala Highway Research Institute)	2510.39	2510.39	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.
71	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
72	Agency for Non-Conventional Energy and Rural Technology (ANERT)	980.00	466.81	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
73	Innovation Fund and ESCOT	4122.00	412.20	The objective of the scheme is to promote and practise innovations as well as energy saving activities in the power sector. KSEBL has been providing financial and technical support to selected innovators and entrepreneurs in the Power sector through the Energy Open Innovation Zone in Start-up Village.
74	Kerala State Energy Conservation Fund	754.49	37.72	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
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	200.00	200.00	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 Department	190.00	190.00	Setting up of research lab/GIS lab for conducting research activities of the department.
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	36.03	36.03	Establishment expenses towards research activities carried out in the Irrigation Sector

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
84	Kerala Maritime Institute	371.00	37.10	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.
86	E-Mobility Promotion Fund	856.00	42.80	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)	305.00	100.65	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	250.00	82.50	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)	252.12	83.20	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	1400.45	462.15	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.
92	Post Facto Evaluation (Third Party Evaluation of Irrigation Projects)	26.00	26.00	This scheme include Postfacto research and evaluation of major, medium and minor irrigation projects in the State.
Total (Infrastructure Research)		**16602.81**	**8736.89**	

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
Agricultural Research				
93	Kerala Agricultural University	49609.60	21463.17	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)	15820.78	9307.86	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.
95	Special Livestock Breeding Programme	6214.18	4986.45	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	5265.70	4116.18	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	3246.56	3246.56	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 bred bulls through progeny testing, artificial insemination in goats and pig development.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
98	Strengthening of Veterinary Services	13205.12	2764.70	R & D components include Mastitis Control, Upgradation of labs, Disease mapping through GIS, Animal disease control project, etc.
99	Crop Health Management	1300.00	1300.00	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	663.63	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	785.00	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)	1423.81	1423.81	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.
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	400.00	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
105	Rice Development	9360.00	511.80	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.
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	1403.13	392.81	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 2025-26	Estimation for R&D	Key Research Activities
111	Aquaculture Extension Services	711.00	300.00	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	169.00	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
114	Modernisation and e-governance - Animal Husbandry	250.00	250.00	Implementation of electronic herd register and Geospatial database
115	Strengthening of Department Farms	1800.00	155.33	The major thrust 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	118.26	118.26	To carry out research in the area of agricultural engineering and related fields
118	Research Schemes - Fisheries	124.51	124.51	Establishment expenses of the Research Cell in Fisheries Department, which carries out research activities connected to Fisheries as well as the welfare of fisher 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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
119	Soil Testing Laboratories	88.86	88.86	The labs generate valuable data for value addition and further research
120	Strengthening Agricultural Extension	1489.00	49.17	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.
124	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.
125	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.
126	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 2025-26	Estimation for R&D	Key Research Activities
127	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.
128	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.
129	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.
130	Development of Spices	760.00	151.00	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.
131	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.
132	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)		**127709.51**	**56692.10**	
Industrial Research				
133	Kerala State Information Technology Mission (KSITM)	13403.00	13403.00	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
134	Kerala Space Park (K-Space)	5250.00	5250.00	To make Kerala a production and innovation hub in Space, Aerospace and Defence related products and services
135	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 will have multiple sector incubators, under a single umbrella with focus on Technology, knowledge & infrastructure sharing.
136	Kerala Life Sciences Industries Parks Limited	3792.00	3792.00	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.
137	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.
138	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.
139	Kerala University of Digital Sciences, Innovation and Technology - India Innovation Centre for Graphene (IICG)	450.00	450.00	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
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.
141	Kerala University of Digital Sciences, Innovation and Technology - International Academic Cooperation with University of Oxford Scholarship Fund	200.00	200.00	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
142	Indian Institute of Information Technology and Management - Kerala	1765.00	582.45	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.
143	Centre for Development Imaging Technology (C-DIT)	732.00	183.00	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
144	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
145	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.
146	International Centre for Free and Open Source Software (ICFOSS)	745.00	745.00	Leverage innovation and advance in free/open Source Software and related domains around the world for the use of the Governent, academia, institutions and people of Kerala as well as rest of India
147	KSIDC - Innovation Acceleration Scheme	6340.00	547.34	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.
148	Climate Smart Coffee Project - Wayanad	300.00	300.00	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
149	Training & Skill Development	320.00	90.91	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)		**45629.00**	**37020.70**	
Social Security and Welfare				
150	National Institute of Speech and Hearing (NISH)	1600.00	1600.00	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.
151	National Institute of Physical Medicine and Rehabilitation	1000.00	1000.00	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.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
152	Training, Workshops, Research & New Initiatives - Disability Prevention & Management	125.00	125.00	To carry out research in the area of disability prevention & management
153	Programmes for the rehabilitation of children with Autism Spectrum Disorders	400.00	40.00	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
154	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.
155	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.
156	Kerala Women's Commission	815.39	40.77	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.
157	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
158	Social Security initiatives for Marginalized Groups/Unorganized Groups	1500.00	75.00	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.
159	State Commissionerate for Persons with Disabilities	329.46	20.00	State Commissionerate for Persons with Disabilities undertakes Research and Development activities for the welfare of persons with disabilities.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
160	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.
161	Strengthening Administrative Infrastructure and Capacity Building under SJD	600.00	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)		**8466.85**	**3030.37**	
Welfare SC/ST				
162	Kerala Institute for Research, Training and Development Studies of SCs and STs (KIRTADS)	1684.46	1684.46	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.
163	Research Fellowships for Minority Scholars	600.00	600.00	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.
164	Establishment of Minority Research Institute under the University of Calicut	10.00	10.00	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. After that, it can be extended to all major universities in Kerala.
Total (Welfare SC/ST)		**2294.46**	**2294.46**	
Environmental Research				
165	Bio Diversity Conservation	1050.00	407.00	To conduct biodiversity research and awareness programmes, fellowships for biodiversity research, documentation, education programmes and organization of biodiversity congress.

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
166	Kerala State Pollution Control Board/Environment Monitoring and Management	300.00	138.00	R&D projects for reducing pollution.
167	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.
168	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.
169	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.
170	Forest Research and Training	84.29	84.29	Assistance for forest research and training
171	Working Plan and Research Circle - Forest Department	105.27	105.27	Establishment expenses of the Research Circle which carries out research activities related to Forest Conservation
172	Extension, Community Forestry and Agroforestry/Forestry Information Bureau	600.00	47.00	Functioning of Forestry Information Bureau and development of different types of ecosystem outside forest areas like mangroves and sacred groves.
173	Environmental Awareness and Education	120.00	34.00	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 2025-26	Estimation for R&D	Key Research Activities
174	Conservation of Natural Resources and Ecosystems/ Thrust Areas of Research and Monitoring for Agasthyamala & Nilgiri Biosphere Reserves/ Scientific Support for Wetland Conservation	300.00	38.01	Thrust areas of research and monitoring for biosphere reserves and scientific support for wetland conservation.
175	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
176	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.
177	Resources, Planning & Research	100.00	100.00	The scheme intends to establish an international centre for training and research in nature conservation.
178	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.
179	Conservation of Biodiversity	597.00	25.00	The scheme components include research, survey, documentation and monitoring for conserving biodiversity by engaging conservation biologists.
180	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.
181	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)		**5288.56**	**1629.07**	

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
Housing and Urban Development				
182	Information Kerala Mission - Strengthening of Local Governance through Information Communication Technology	900.00	900.00	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
183	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.
184	Kerala Institute of Local Administration	2981.15	31.57	Undertakes action oriented research activities and documents best practices in Local Governance and decentralised planning for dissemination
185	Research and Development in Selected Aspects of Human Settlement - Planning and Development	14.00	14.00	Aims at strengthening R&D to improve the capability of the 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.
186	Centre for Human Resource Development (KILA-CHRD - Erstwhile SIRD)	75.00	10.00	The objective is to carry on research 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.
187	Silk Samagra-State Share	50.00	5.00	The objective is to scale up production of silk, improving the quality and productivity and to empower socially and economically backward families through various activities of sericulture in the country. The scheme comprises four major components 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)		**4320.15**	**1260.57**	

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
		Others		
188	Development and Innovation Strategic Council of Kerala - (K-DISC)	2273.29	2273.29	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.
189	Knowledge Economy Fund	3000.00	3000.00	For skill promotion, technological transformation and strengthening of higher education system
190	Co-operative Training, Research etc	716.10	716.10	Establishment expenses towards research activities carried out in the Cooperative Sector
191	Archival Study and Research Centre	400.00	400.00	Intended to promote archival research culture, facilitating exchange of new views and ideas on archival studies and administration.
192	Archaeological Department	1725.53	1725.53	Scientifically conducting archaeological exploration and excavation
193	State Institute of Hospitality Management	900.00	297.00	For conducting research activities related to travel, tourism and hospitality sector
194	Assistance to Co-operative Academy for Professional Education (CAPE)	1066.89	278.04	Research activities associated with the Higher Education Institutions under CAPE
195	Institute of Land & Disaster Management (ILDB)	287.40	208.74	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.
196	Food Craft Institute	400.00	132.00	For conducting research activities related to hospitality and catering sector
197	Kerala Institute of Tourism and Travel Studies	330.00	108.90	For conducting research activities related to travel, tourism and hospitality sector
198	Field Archaeology	100.00	100.00	Research activities to identify archaeologically important sites and evidences through explorations and excavations
199	Food Craft Institute Kalamassery and Extension Centres	243.37	80.31	For conducting research activities related to hospitality and catering sector
200	Centre for Heritage Studies	60.00	60.00	For carrying out advanced courses as well as research in the fields of Archaeology, Archival Studies, Museology and Conservation

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
201	Assistance for Cooperative Propaganda	280.00	70.00	In the Scheme the R & D components include Research studies on co-operative Sector.
202	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.
203	Kerala State Chalachitra Academy	1721.44	86.07	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.
204	Kerala Tourism Infrastructure Ltd	120.00	25.72	The institute conducts research and updation programs, events and developments based on earlier initiatives are included under the scheme.
205	Leveraging Sports Science and Technology for High Performance	676.43	67.64	This scheme includes high performance Facility with Research and Development in Sports
206	Thunchan Memorial Trust	40.00	10.00	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.
207	Post Graduate and Research Centre in Fire and Safety Sciences, under Fire and Rescue Services at Kannur	100.00	100.00	Post Graduate and Research Centre in Fire and Safety Science will be the first in Kerala which gives post graduate course in Fire Science
208	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
209	Surveys and Studies, Seminars/ Workshops Conducted by State Planning Board	584.50	156.60	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)		**16624.95**	**9955.94**	

(Rs. In Lakh)

No.	Name of the Scheme	BE 2025-26	Estimation for R&D	Key Research Activities
Fiscal Research				
210	Gulati Institute for Finance and Taxation	391.77	391.77	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
211	Support for Strengthening Statistical Project State Academy on Statistical Administration (SASA)	371.67	278.43	To develop the State Academy on Statistical Administration (SASA) into a premier institute for training and research in Statistics.
212	Increasing Facilities to State Excise Academy and Research Centre (SEARC)	37.00	37.00	Setting up of infrastructure facilities in the State Excise Academy And Research Centre (SEARC)
Total (Fiscal Research)		**800.44**	**707.20**	
Grand Total		**958317.68**	**403935.99**	