Government of Punjab

RESEARCH AND DEVELOPMENT BUDGET 2026 -2027

Punjab State Council for Science & Technology

Department of Science, Technology and Environment, Punjab

CONTENTS

CHAPTER 1
INTRODUCTION

Research and Development (R&D) drives technological breakthroughs and accelerates knowledge driven economic transformation across Global Innovation Ecosystems. R&D strengthens national competitiveness, enhances industrial productivity and improves the quality of life through innovative solutions to address complex Global Challenges. It essentially plays crucial role in addressing emerging National & Regional Priorities pertaining to livelihood systems, climate change mitigation, managing non-communicable and lifestyle-related disorders etc.

International evidence indicates that economies with sustained and high R&D intensity build strong technological capabilities, move up global value chains rapidly, and demonstrate better productivity, growth and resilience. Most of the developed countries invest more than 2% of their GDP in R&D, enabling them to systematically convert research outputs into globally competitive technologies, firms and high-skill employment opportunities. This emphasizes the importance of prioritizing R&D investments as a strategic lever for long-term economic transformation.

India's Gross Expenditure on R&D (GERD) remains between 0.6-0.7% of GDP, which is significantly lower than innovation-led economies. The Government of India is taking initiatives to increase GERD by evolving from Public Sector-driven-grants to private-sector-led-innovation framework. The key flagship programs include setting up of the Anusandhan National Research Foundation (ANRF) and launch of Research, Development and Innovation (RDI) scheme to incentivize private sector participation and industrial research.

The key enablers contributing to R&D include Government bodies, universities, research institutions, industry, and non-formal entities that drive innovation through research, development and knowledge translation. Expenditure incurred by these entities on research and development activities is aggregated to constitute the GERD. The Gross Domestic Expenditure – R&D being internationally recognized indicator evaluates the economic performance of countries in terms of R&D intensity relative to GDP. It serves as a metric by policymakers to gauge innovation capacity, technological advancement and long-term economic sustainability.

The separate documentation of R&D Budget is fundamental to understand nation's technological progress as it provides visibility to R&D trends, analysis of sectoral distributions, identification of key R&D investment contributors and flagging of critical gaps in innovation cycle. The document can be vital for formulation of strategic future roadmaps aimed at strengthening the National Innovation Ecosystem. To take a step forward in this direction, it requires systematic mapping of all R&D performers for comprehensive coverage. This requires standardized reporting mechanisms, simplified accounting methodologies, and data transparency for improved clarity.

As per the Global Standards & Framework availability, Frascati Manual (2015) Guidelines of Organization for Economic Co-operation and Development (OECD) is the internationally standard for defining, measuring and accounting R&D, extensively used for comparable statistics on R&D expenditure and personnel across countries. The Manual outlines five core criteria novelty, creativity, uncertainty, systematic approach, and transferability/reproducibility, which form the basis for identifying R&D activities and estimating key indicators such as GERD across sectors.

'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, Organization for Economic Co-operation and Development (OECD)

In alignment with OECD, Department of Scientific and Industrial Research (DSIR), Govt. of India has recognized R&D as creative and systematic work that expands the stock of knowledge and translates it into new or improved applications and societal benefits. In India, National Science & Technology Management Information System (NSTIMS) conducts National Science & Technology (S&T) Survey to compile data on R&D expenditure and personnel across sectors. NSTIMS covers a broad spectrum of R&D-performing entities over 6,800 organizations across the country including Industrial Enterprises, Academic Institutions and Universities, Scientific and Industrial Research Organizations (SIROs) and Department of Scientific and Industrial Research (DSIR)-recognized private in-house R&D Laboratories. The systematic mapping and data generated through this survey contribute to national R&D indicators such as GERD and strengthen India's ranking in the Global Innovation Index.

'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***

The National S&T Survey also captures expenditures on R&D by State Governments which are broadly based on the information collected by Reserve Bank of India from the States. States contribute significantly to the national R&D ecosystem through expenditure across diverse sectors such as agriculture, science and technology, education, medical and health sciences. A study report prepared by Reserve Bank of India at the request of the Office of the Principal Scientific Adviser (O/o PSA) highlights the growing relevance of state-level investments in strengthening innovation-led development. In order to mainstream research

and development within state economic planning, the O/o PSA recommended States to introduce a dedicated R&D Budget as a distinct component within their respective State Budgets. This initiative aims to improve visibility, accountability and strategic alignment of R&D investments, thereby enabling stronger integration of the R&D ecosystem with state economies.

Punjab's enabling position within India's innovation landscape is reflected in national performance assessments. In the India Innovation Index 2021, Punjab ranked 6th among top major states, indicating strong innovation inputs and performance compared to its peers. Punjab has also been recognized as a 'Top Performer' in Department for Promotion of Industry and Internal Trade (DPIIT) States' Startup Ecosystem Ranking, reflecting sustained excellence in policy framework, institutional support and ecosystem-building for vibrant entrepreneurial culture.

In alignment with the Vision of the Government of India, the Government of Punjab has pioneered systematic mapping of research and development activities. The first State R&D Budget 2025-26 has been consolidated based on Guidelines of OECD, DSIR and pioneering model of Kerala State R&D Budget and presented in State Budget Session.

Punjab is now geared up and developing the second edition of State R&D Budget for the financial year 2026-27. This year's document consolidates R&D activities across line/sectoral departments focused on key priorities and latest emerging opportunities. The Department of Science, Technology & Environment (DSTE) serves as central coordination body bridging gaps between Government Institutions, Universities, Industry, Startups and Research Organizations and is committed to R&D investments contributing to sustainable and knowledge based economy.

CHAPTER 2
THE ECONOMICS OF INNOVATION: R&D ACROSS GLOBAL, NATIONAL AND STATE SYSTEMS

Research and Development (R&D) has emerged as a foundational component of modern economic and technological systems. Across economies at different income levels, sustained R&D investment underpins productivity growth, industrial upgrading, export competitiveness and technological capability. As a measurable economic activity, R&D contributes directly to Gross Domestic Product (GDP), strengthens participation in global value chains and enhances the capacity of economies to attract Foreign Direct Investment (FDI). Beyond immediate economic returns, R&D generates intellectual property i.e. patents, copyrights and proprietary technologies, that create durable economic value and strategic autonomy. In a global environment increasingly shaped by technological capability, R&D functions not merely as a sectoral expenditure but as core economic infrastructure.

2.1 Global R&D Landscape

Global R&D expenditure has expanded steadily over the past decade, reaching nearly USD 3 trillion by 2024 [1]. At the macroeconomic level, global R&D intensity has stabilized at close to 2% of world GDP, indicating that the world economy has become structurally more research-intensive than in earlier decades. This sustained expansion reflects broad recognition that innovation is central not only to long-term growth, but also to economic resilience and technological self-reliance.

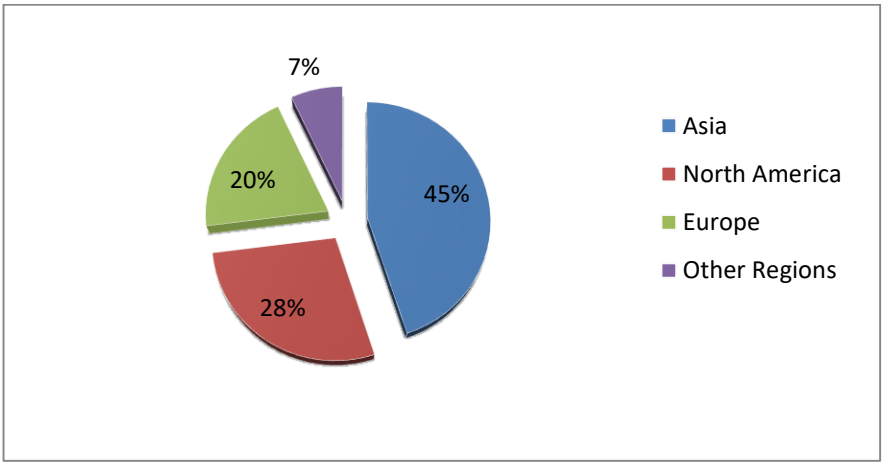

Fig. 2.1 Global Distribution of R&D Expenditure

The global distribution of R&D expenditure remains highly uneven, with innovation capacity concentrated in a limited number of economies and regions as shown in Fig. 2.1. Asia accounts for approximately 45% of global R&D expenditure in 2024 nearly double its share in 2000, driven primarily by China, Japan, and the Republic of Korea. North America contributes around 28%, largely anchored by the United States, while Europe accounts for nearly 20%, supported by Germany, France, Italy, Spain, and the Netherlands [1]. Other regions, including Latin America, Africa and West Asia, remain marginal contributors in aggregate terms.

This concentration indicates that while innovation activity is expanding globally, frontier research capacity remains clustered within a limited number of advanced and upper-middle-income economies, reinforcing cumulative advantages in technological leadership.

Global R&D spending in absolute terms is dominated by a small group of economies. In 2024, China and the United States emerged as near-equal leaders, each investing close to USD 780 billion (PPP terms). Behind these two leaders, there is a marked decline in spending levels. Japan remains a distant third, followed by Germany and the Republic of Korea, which continue to anchor innovation in advanced manufacturing and frontier technologies. Several emerging economies, including India, feature among the top ten globally in absolute R&D expenditure. The widening expenditure gap between the top two economies and the rest suggests that scale itself has become an increasingly important determinant of technological positioning, particularly in capital-intensive frontier domains.

2.2 R&D Intensity and Innovation Outcomes

Absolute spending tells only part of the story. R&D intensity (GERD as a percentage of GDP) reveals how deeply innovation is embedded in economy. As shown in Fig. 2.2, Israel and South Korea lead globally, with R&D intensity above 5%. Advanced economies such as the United States, Japan and Germany consistently invest more than 3% of GDP. China has rapidly increased its R&D intensity to around 2.6%, reflecting strong policy alignment between industrial strategy and innovation funding [1]. In contrast, many emerging and middle-income economies including India remain below the 1% threshold, indicating structural constraints in their innovation systems despite growing absolute spending.

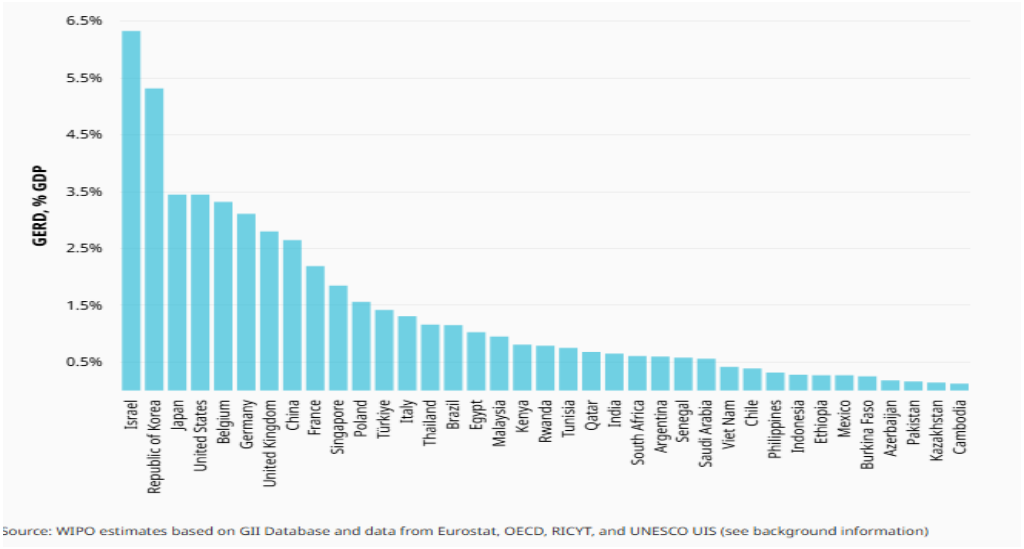

Fig. 2.2 R&D Intensity (% GDP) 2024

International evidence demonstrates a consistent relationship between R&D expenditure and measurable innovation outcomes. Economies with sustained investment above 3-5% of GDP such as the Republic of Korea, the United States and Israel also exhibit high patent stocks, strong innovation

rankings, and substantial high-technology exports.

According to the World Intellectual Property Indicators 2025, global patents in force reached 19.7 million in 2024. The largest stocks were held by China (5.7 million), the United States (3.5 million), Japan (2.1 million), and the Republic of Korea (1.3 million) all major R&D spenders [2]. India, starting from a lower base, has shown strong patent growth, rising from about 58,503 filings (0.058 million) in 2020-21 to 110,375 filings (0.11 million) in 2024-25, reflecting a strengthening innovation capacity [3].

High-technology products account for approximately 36-38% of manufactured exports in the Republic of Korea, around 26% in China and nearly 24% in the United States [4]. These figures illustrate how research expenditure, when aligned with industrial ecosystems, translates into export sophistication. However, with R&D expenditure at approximately 0.64% of GDP**,** high-technology exports account for only about 19% of manufactured exports. The comparative evidence suggests that while expansion in patenting reflects improving knowledge creation, deeper structural transformation in export composition is typically associated with higher and sustained R&D.

Similarly, the Global Innovation Index 2025 shows that high R&D economies such as Switzerland, Sweden, the United States and the Republic of Korea, continue to dominate global rankings [5]. China's entry into the global top ten reflects the cumulative effects of sustained research expansion. India, ranked 38th, performs above expectations relative to income level; however, the gap with top-tier economies highlights the importance of well-funded and continuous research systems in shaping innovation outcomes.

High R&D investment strongly supports startup ecosystems. Progressive R&D economies like Israel and the Republic of Korea, host dense clusters of deep-tech startups in AI, biotechnology, semiconductors, electronics and cyber security, supported by strong venture capital. Similarly, China, with R&D nearing USD 780 billion PPP in 2024, has seen rapid growth of technology startups in AI, electric mobility and advanced hardware. The Global Startup Ecosystem Report 2025 shows that leading ecosystems including Silicon Valley, New York, London, Tel Aviv, Seoul, Beijing, and Shenzhen capture most global startup value, reflecting concentrated research capacity and capital [6].

India, with R&D below 1% of GDP, hosts over 2 lakh DPIIT-recognized startups, with strengths in fintech, SaaS, health-tech and AI-enabled services [7, 8]. However, lower R&D intensity limits research-intensive, frontier-technology startups. Expanding R&D investment and strengthening research–industry links could deepen India's technological capabilities and global competitiveness.

2.3 Financing Innovation: Public and Private Sector Roles

A defining feature of high-performing innovation systems is the dominant role of enterprises in financing R&D. In countries such as Israel, the United States, China, Japan and the Republic of Korea, businesses account for 70% to 90% of total R&D expenditure as shown in Fig 2.3. Public funding

plays a critical enabling role, particularly in basic research and strategic areas, but private firms drive scale, application and commercialization.

In contrast, India's R&D financing structure remains more public-sector oriented, with government funding accounting for nearly 60% of total expenditure. While this configuration supports foundational research capacity and mission-driven programmes, international comparisons suggest that that long-term innovation momentum increasingly depends on policies that encourage private investment, industry-academia collaboration and effective research translation.

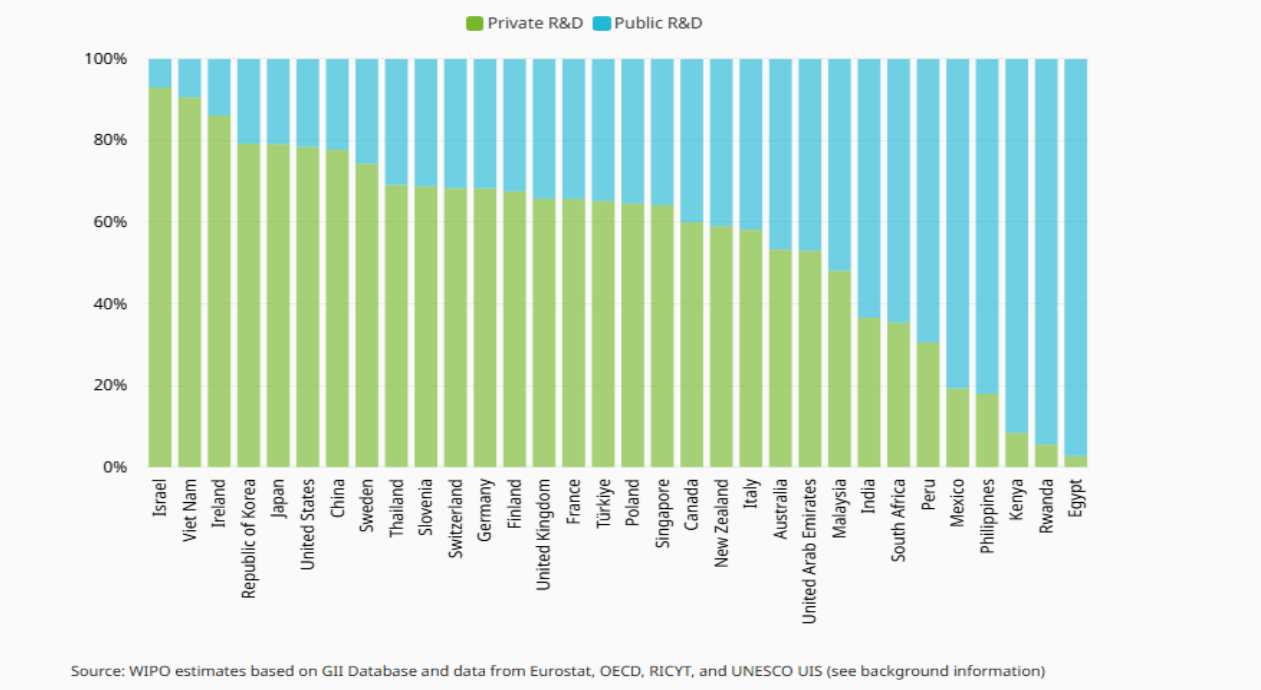

Fig. 2.3 Private and Public R&D Expenditure 2024

Global Models of R&D Strategy

Comparative international experience demonstrates that innovation performance depends not only on expenditure magnitude but also on strategic orientation.

China's R&D intensity reached 2.69% of GDP in 2024, supported by sustained growth averaging over 10% annually in recent years. Enterprises account for more than three-quarters of total spending, complemented by targeted government intramural research in strategic sectors. This balanced expansion across research stages has enabled rapid capability building in frontier technologies [9].

The United States exemplifies a university-led and private-sector-driven model, where stable public funding for basic research, world-class universities, deep capital markets, and strong intellectual property regimes support rapid commercialization. This institutional configuration has proven particularly effective in high-risk sectors such as artificial intelligence and advanced biotechnology.

Israel represents the most research-intensive economy globally, with gross R&D expenditure

reaching 6.35% of GDP in 2023. High-Tech exports accounts for approximately 17% of GDP and 57% of total exports, supported by deep integration between academia, industry, and venture capital. The scale of venture capital investment exceeding 4% of GDP, illustrates how financial ecosystems amplify research intensity [10].

Across these diverse models, common structural features are evident: sustained funding growth, strong enterprise participation, integration between research institutions and industry, and institutional mechanisms that enable commercialization.

2.4 Indian Innovation and R&D Landscape

India's research and innovation ecosystem has expanded steadily over the past decade, supported by policy reforms, increased public investment and growing private sector participation. As per the Research & Development Statistics, Gross Expenditure on Research and Development (GERD) more than doubled from Rs. 60,196.75 crore in 2010-11 to Rs. 1,27,380.96 crore in 2020-21, reflecting a sustained upward trajectory [11]. Government institutions account for 63.6% of total R&D expenditure, while the private sector contributes 36.4%, indicating gradual but increasing industry engagement in research activities.

Industrial R&D in India is concentrated in high-impact sectors such as pharmaceuticals, information technology, biotechnology, transportation, and defense manufacturing. In recent years, there has been growing emphasis on frontier and strategic technologies including artificial intelligence, quantum technologies, semiconductor design, clean energy systems, and advanced manufacturing.

India's strengthening innovation ecosystem is reflected in its improved global standing. The country has made a significant leap in the Global Innovation Index (GII), rising from 81st position in 2015 to 38th position in 2025. India currently ranks 3rd globally in the number of startups, 3rd in science and engineering publications, 4th in the number of PhDs in science and engineering, and 6th in patent filing activity. These indicators demonstrate not only an expansion in research capacity but also improved innovation output and commercialization potential.

To further accelerate private sector participation, the Government has introduced major funding and structural reforms. A landmark step in this direction is launch of Research, Development and Innovation (RDI) Fund Scheme, a Rs. 1 lakh crore corpus designed to boost private sector investment in high-impact research and innovation and catalyze the industry-led research in critical and emerging technology domain. A Deep Tech Fund of Funds further supports next-generation startups working on frontier technologies, signaling a shift toward targeted innovation finance. The BioE3 (Biotechnology for Economy, Environment and Employment) Policy, complements this agenda by fostering industrial biotechnology R&D, establishing bio-foundries and Bio-AI hubs, and promoting commercialization across strategic bioeconomy sectors. The establishment of the Anusandhan National Research Foundation (ANRF), along with missions such as the National

Quantum Mission and National Supercomputing Mission, further strengthens coordinated and mission-oriented research funding.

Building on these measures, the Union Budget 2026–27 reinforces strategic and applied research across priority sectors as shown in Fig. 2.4. It includes support for advanced scientific infrastructure through the setting up and upgradation of major national telescope facilities to strengthen capabilities in astrophysics and observational sciences. The proposed Biopharma SHAKTI initiative, with an outlay of Rs. 10,000 crore, aims to enhance domestic research and manufacturing capacity in biologics and biosimilar, including expansion and upgradation of National Institutes of Pharmaceutical Education and Research (NIPERs) and strengthening of clinical research networks. The India Semiconductor Mission (ISM) 2.0 (Rs. 40,000 crore) focuses on developing semiconductor equipment, materials, and full-stack indigenous intellectual property, with emphasis on industry-led R&D and skilled workforce development. Additionally, a Rs. 20,000 crore Carbon Capture, Utilization and Storage (CCUS) scheme has been proposed to promote research and deployment of advanced clean energy technologies [12].

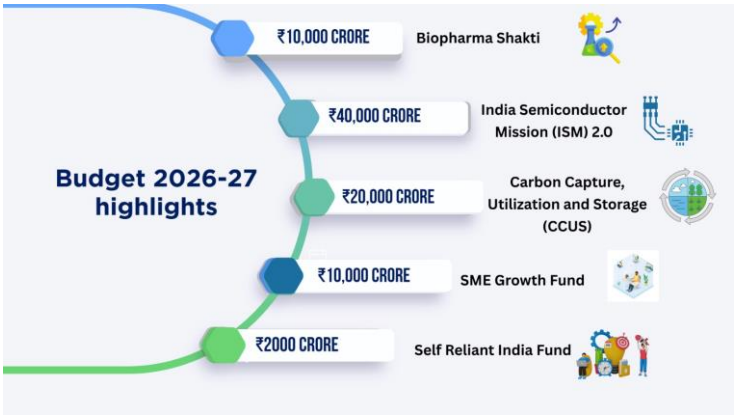

Fig. 2.4 Union Budget 2026-27 Highlights

Complementing these R&D pushes, the Budget delivers significant funding and liquidity support for MSMEs and start-ups with a Rs. 10,000 crore SME Growth Fund and a Rs. 2,000 crore top up to the Self Reliant India Fund to improve access to capital and cash flows for early stage companies. Credit guarantees for invoice discounting and Corporate Mitras to reduce compliance burdens further enhance the entrepreneurial environment. Together, these initiatives reflect a continued shift toward mission-driven, industry-linked, and strategically aligned R&D investment

2.5 State-Level R&D Expenditure and Fiscal Prioritization

Within the overall national R&D framework, the fiscal role of state governments remains limited. Reserve Bank of India's report on *State Finances: A Study of Budgets 2025–26* indicates that state government expenditure on R&D typically ranges between 0.1 and 0.5% of Gross State Domestic Product (GSDP)**.** In most states, allocations for R&D constitute below 1% of total budgetary expenditure, underscoring the structurally centralized nature of India's innovation ecosystem,

wherein strategic, mission-oriented and frontier research is predominantly financed by the Union Government.

The RBI's comparative assessment of ten States and Union Territories in the F.Y. 2025-26 Budget (BE) reveals significant variation in R&D allocations across states, with Arunachal Pradesh allocating about 4.0% of GSDP to R&D, Rajasthan 0.42%, Kerala 0.28% and Odisha allocating around 0.1% of GSDP [13]. These figures highlight methodological inconsistencies in budgeting approaches and show that economic scale does not automatically translate into proportionate public research spending. In several cases, technologically advanced states appear to rely more heavily on private-sector R&D investment, enterprise ecosystems, and centrally funded institutions rather than direct state budgetary outlays. The variation suggests that R&D allocation at the state level remains a matter of strategic fiscal choice rather than uniform policy commitment.

Sectorally, RBI data indicate that between F.Y. 2021-22 and F.Y. 2025-26, states have increased allocations toward health and education-related research, reflecting post-pandemic emphasis on public health resilience and human capital development. At the same time, expenditure on agriculture-related research has shown relative moderation in several states. Overall, state-level R&D spending across India remains fiscally constrained and development-oriented, underscoring the continued importance of Union-led funding mechanisms in driving large-scale scientific and technological advancement

Taken together, the national and state-level patterns underscore a broader structural insight: sustained R&D intensity is closely associated with measurable innovation outcomes, including patent activity, global innovation rankings, high-technology production and the depth of startup ecosystems. However, international and inter-state comparisons also demonstrate that the impact of R&D expenditure depends not only on its scale, but on the structure of financing, institutional coordination, and alignment with industrial strategy. R&D budgets therefore operate not merely as fiscal allocations, but as strategic economic infrastructure. Their long-term effectiveness rests on continuity of funding, stronger private-sector participation, robust academia-industry linkages, and the institutional capacity to translate research into commercialization, productivity gains, and export competitiveness. For economies and states seeking deeper integration into knowledge-intensive value chains, aligning R&D investment with sectoral priorities and industrial transformation remains central to sustained competitiveness.

CHAPTER 3
RESEARCH DEVELOPMENT AND INNOVATION ECOSYSTEM PUNJAB

Punjab's development approach increasingly recognizes the role of research, technology and innovation in driving sustainability, productivity and social inclusion at the State level. This orientation is intrinsically linked to the State's unique economic structure. While the Manufacturing and Services Sectors contribute nearly 28% and 47% to State's Gross State Domestic Product (GSDP) respectively, Agriculture remains a key driver of Punjab's economy with Allied sectors such as Livestock and Forestry are also emerging as important sources for supplementary farm income and rural development.

Punjab has demonstrated notable progress in fostering a vibrant Innovation and Entrepreneurial Ecosystem. The State with more than 2200 DPIIT recognized startups has been ranked as a Top Performer (Category A) in the 5th Edition of the State Startup Ranking released in January 2026. The State scored 83% in focus towards Innovation and Sustainability, 71% in Infrastructure Support and 67% in Funding Opportunities. Startups in Punjab are increasingly prioritizing solutions towards renewable energy, climate resilience, resource efficiency, waste management and other sustainability-oriented domains, reinforcing innovation as critical driver for addressing the State's developmental challenges.

Despite the advancements, several emerging challenges remain that require proactive attention at the State level, addressal of which requires collective and coordinated action across the entire Research, Development and Innovation (RDI) Ecosystem. RDI Ecosystem of Punjab is evolving towards a problem-driven, translation-oriented and impact-focused framework that links knowledge generation with deployment and societal outcomes.

3.1 Sectoral Research & Innovation Priorities

Punjab's sectoral priorities are shaped by persistent structural challenges such as resource stress in agriculture, skill-industry mismatch, weak industrial technology adoption, rising healthcare demands and increasing environmental pressures. In this context, research, development and innovation is positioned as a strategic enabler rather than a standalone activity. The State's priority-setting framework therefore adopts a mission-oriented, problem-driven and technology-enabled approach, wherein sectoral priorities are identified based on (i) productivity enhancement, (ii) sustainability and resource efficiency, (iii) service delivery improvement, and (iv) long-term economic resilience. Accordingly, focused RDI interventions are aligned to sector-specific needs while leveraging cross-cutting technologies and institutional capacities to ensure convergence, scalability and impact.

i. Agriculture

Compared to its geographical region, Punjab accounts for a large portion of national wheat and rice production. The wheat-paddy cycle has overburdened the state's resources and

leads to pressing challenges such as depleted ground water, degraded soil health, stubble burning, etc. Accordingly, the Government of Punjab is focusing on crop diversification, with efforts to introduce new technologies and encourage shift towards allied sectors. Other priorities include improvement in water-use efficiency, restoration of soil health, development and adoption of high-yielding and climate-resilient crop varieties, cost-effective farm mechanization, precision agriculture, post-harvest management technologies, value addition, agri-logistics, cold chain infrastructure and market intelligence systems to improve farmer incomes and resilience.

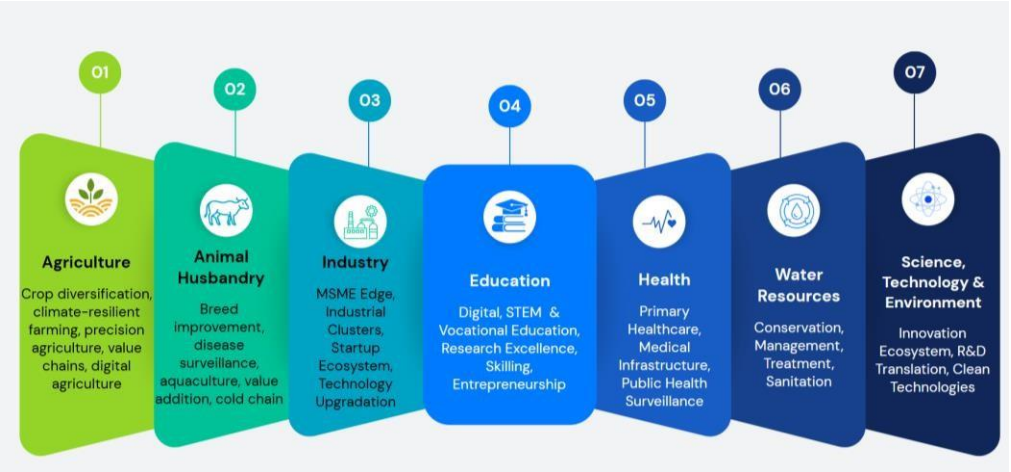

Fig. 3.1 Sectoral Priorities of Punjab

ii. Animal Husbandry, Dairy and Fisheries

Key focus areas include genetic improvement, disease surveillance and diagnostics, veterinary healthcare infrastructure, feed and fodder management, productivity enhancement, sustainable aquaculture practices, cold chain and processing infrastructure, and technology-driven livestock management systems.

iii. Industry and Commerce

Sectoral priorities emphasize MSME-led innovation, technology upgradation, adoption of Industry 4.0 solutions, clean and resource-efficient manufacturing, product quality enhancement, cluster-based R&D, startup-driven industrial innovation and strengthening industry-academia collaboration to improve competitiveness and export potential.

iv. Education (School, Higher and Technical)

Priorities include digital education platforms, strengthening STEM education, vocational and skill-based learning, research capacity building in higher education institutions, entrepreneurship development, industry-aligned curricula and promotion of innovation and incubation ecosystems within educational institutions.

v. Health and Medical Education & Research

Focus areas include affordable and accessible healthcare solutions, medical research, public health surveillance, digital health technologies, diagnostics, biomedical innovation, capacity building in medical education, and strengthening translational research for healthcare delivery.

vi. Water Resources, Water Supply and Sanitation

Priorities include integrated water resource management, waste water treatment and reuse, water conservation technologies, monitoring of groundwater quality and quantity, smart water systems, and sustainable sanitation solutions.

vii. Rural Development and Employment Generation

Key areas include technology-enabled rural livelihoods, skill development aligned with emerging industry needs, promotion of agri-based and rural enterprises, social innovation, and support systems for entrepreneurship and self-employment.

viii. Forests and Environment

Priorities focus on biodiversity conservation, climate change mitigation and adaptation, pollution monitoring and control, waste management, ecosystem restoration, and nature-based solutions.

ix. Science, Technology and Environment

Cross-cutting priorities include promotion of innovation and startups, clean and green technologies, renewable energy, artificial intelligence and digital technologies, research translation, technology commercialization, and strengthening the overall RDI ecosystem to support evidence-based policymaking and sustainable development.

Across sectors, the focus remains on leveraging cross-cutting enablers such as digital technologies, intellectual property generation, startup-led innovation and institutional collaboration to ensure convergence and scalability of research, development and innovation interventions.

3.2. State's Institutional Strength

Meeting socio-economic goals across key priority areas of the State requires stakeholder interconnectedness and collaborative working approach to innovate and co-develop economic, green and sustainable solutions. Gaps in academic research to deployable solutions, skill mismatch across sectors, ineffective infrastructure utilization are some noted challenges in every economy. To give impetus to translational research, innovation and entrepreneurial activities, the State has taken up several initiatives to strengthen linkages among Academia, Industry, Startups and the Government.

Under the Department of Science, Technology & Environment (DSTE), the Punjab State Council for Science & Technology (PSCST) is taking lead in strengthening the State's STI Ecosystem through systematic mapping of technological challenges faced by industry and line departments, fostering application-oriented research to address identified challenges in partnership with Research Institutions and Universities, supporting grassroots innovations and encouraging entrepreneurial initiatives. The Council acts as a State-level coordination mechanism for all ecosystem enablers leading to technology development, deployment & demonstration; enhancing industrial tech-competence; promoting research translation and technology transfers, facilitating researcher-industry interaction for knowledge exchange and identification of pathways for deployment of research outcomes.

Fig. 3.2 Research & Development Ecosystem Punjab

An important element of this ecosystem strengthening is the emphasis on intellectual property creation, protection and utilization. Research outcomes emerging from universities and public-funded institutions are being supported through structured mechanisms for patent filing, technology assessment and identification of commercialization pathways. This enables smoother transition of research outputs into licensable technologies, startup ventures and industry adoption, thereby strengthening the research-to-market continuum.

The state universities, institutions and colleges across agriculture, engineering, medical sciences, veterinary, law and sports serve as key drivers for human resource development, enables sector-focused research and facilitates alignment of academic efforts with State development priorities across health, manufacturing, energy, infrastructure and emerging digital domains. These institutions act as nodes for multidisciplinary research, innovation projects and startup incubation, supporting the State's broader industrial and employment objectives.

There is presence of 35+ business incubators across the universities/research institutions which play significant role in identifying innovative ideas, nurturing talents, promoting technology development, validating early- stage entrepreneurship, thereby supporting the translation of research outcomes into practical applications. Mission-oriented initiatives, such as Startup Punjab, Innovation Mission Punjab and Mission Innovate provide impetus to startup ecosystem by encouraging problem-driven innovation, institutional collaboration and development of technologies aligned with priority sectors. This evolving research, innovation and entrepreneurial culture in universities requires regional degree and technical colleges to move in parallel, enabling wider participation, early exposure and effective translation of academic efforts into locally relevant solutions. This is essential to build early awareness of innovation processes, problem-solving approaches, intellectual property concepts and to expand the pipeline of ideas, talent and solutions feeding into the State's STI ecosystem.

3.3. Punjab leveraging State-based Centrally-supported Premier Institutions

The State strongly leverages the presence of premier centrally-supported research institutions located in Punjab. The state-of-the-art Innovation Cluster spread over 400 acres, set up at Knowledge City-Mohali, comprises of renowned institutions and organizations, creating an ecosystem that nurtures research, innovation and entrepreneurship. The leading institutions in the State such as IIT Ropar, NIT Jalandhar, AIIMS Bathinda, IISER Mohali, NIPER Mohali, INST Mohali, CDAC Mohali, BRIC-NABI Mohali, IIM Amritsar, SSS-NIBE Kapurthala and ICAR-CIPHET Ludhiana provides diverse infrastructure, enabling ecosystem, knowledge exchange and linkages across state universities, industry, startups and business enterprises. These institutions play a catalytic role by anchoring high-end research, shared facilities and national programmes, while also enabling collaboration with State universities, startups and industry to address Punjab-specific developmental challenges.

CHAPTER 4
STATE RESEARCH & DEVELOPMENT BUDGET

Recognizing Research and Innovation as primary catalyst for Innovation Economy, the Government of Punjab has taken a pro-active step for development of dedicated R&D Budget. The Department of Science, Technology & Environment (DSTE) Punjab is a Nodal Agency and Punjab State Council for Science & Technology under Department's guidance has been assigned the work for preparation of Budget.

The developed Research & Development Budget Document serves as a consolidated financial roadmap highlighting expenditures across research, innovation, technology development, skill building, entrepreneurship and enabling infrastructure. The Document reflects comprehensive budgetary allocation under the departmental schemes for F.Y. 2025-26 (Revised Estimates) and strategic allocation for upcoming F.Y. 2026-27 (as per Budget Estimates). The primary drivers of R&D activity include Departments of Agriculture & Farmers Welfare, Animal Husbandry, Employment Generation & Skill Development, Education and Science Technology & Environment and others.

4.1 Methodology and Approach

Quantifying Research and Development Expenditure at the organizational level remains a challenging task. This is primarily due to the absence of a dedicated R&D head in their accounting structures, with R&D expenditures dispersed across multiple accounting heads. At a macro level, these are reflected under salary, non-salary and capital components, while at more granular level they are distributed across operational heads such as consumables, lab equipments, infrastructure/building, contingencies, printing and stationery, honorariums, travel, and others. Hence, expenses related to research activities are difficult to map combined with varying levels of awareness regarding R&D quantification. This fragmented accounting structure makes it difficult to accurately identify, aggregate and attribute R&D related spending. Subsequently, the process of quantification of research & development expenditure yields only the estimates which ultimately flow to GERD of the country.

To address the above challenges, Punjab adopted a structured and consultative methodology to estimate research and development expenditure across implementing agencies. The approach began with the identification of relevant schemes from the State Demand for Grants using carefully selected keywords, the definition of R&D expenditure prescribed by the Department of Scientific and Industrial Research (DSIR), and insights emerging from detailed discussions with concerned Departments. This initial screening was followed by a series of consultations and meetings with Nodal Officers of State Development Departments to clearly understand the objectives, scope, and activities of the identified schemes and to ascertain the extent to which these activities qualify as R&D.

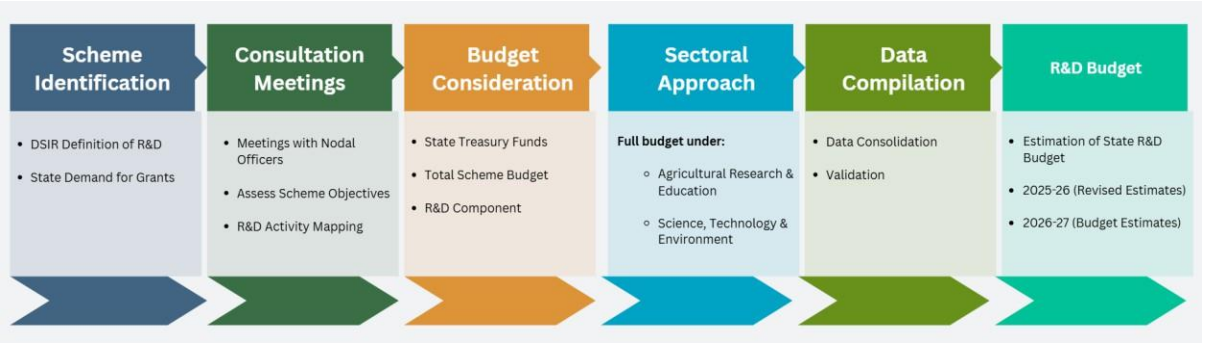

Fig. 4.1 Approach for Preparation of State R&D Budget

The present budget provides consolidated analysis for schemes reflecting in State Demand for Grants. The total approved budget of each identified scheme and its corresponding R&D component have been considered, since the entire expenditure under these schemes is routed through the State's Treasury. In parallel, Higher Education Institutions, including universities and colleges, were on boarded to assess and report their R&D expenditure in accordance with the guidelines and classifications prescribed in the OECD manuals, ensuring methodological consistency and international comparability. The present budget does not include the expenditure spent by implementing agencies out of their own generated resources. Further, activities and projects supported by Central Government and private enterprises have not been included anywhere. The document adopts mainly a funder-based reporting of the sums spent towards research by the State Government departments, and the Universities/Educational Institutions/other institutions or organizations aided by the Government. The data received from Departments and Institutions was systematically compiled and consolidated. The identified schemes and their allocated budgets were further verified in close coordination with the Department of Finance to ensure accuracy and alignment with official budgetary provisions. In line with the practices adopted by the Reserve Bank of India and the Government of Kerala, the complete budget allocations under the sectors of 'Agricultural Research & Education' and 'Science, Technology & Environment' have been considered as R&D expenditure. This is based on the strong alignment of their activities with research, innovation, technology development, technology transfer and startup promotion. The estimates derived through this method form the basis for assessing the State's R&D expenditure and its contribution to the country's Gross Expenditure on Research and Development.

4.2 R&D Budget: 2025-26 (Revised Estimates) and 2026-27 (Budget Estimates)

In alignment with State Demand for Grants, the analysis for Research and Development Budget has been conducted for F.Y. 2025-26 (Revised Estimates) and F.Y.2026-27 (Budget

Estimates). It has been estimated that Rs. 1081.98 cr. will be been spent towards research, innovation, skill development, entrepreneurship, infrastructure etc. in F.Y. 2025-26. Further, for F.Y. 2026-27, Rs. 1220.98 cr. have been estimated to be spent towards these activities.

The departmental budget estimates and their respective R&D allocations for 2026-27 are detailed in Table 4.1. The analysis indicates that most of the Departments spend more than 1% of their total allocated budget towards research activities.

Table 4.1 Department-wise distribution of R&D Budget for F.Y. 2026-27

S. No.	Department	F.Y.2026-27 (Rs. in thousands)		% R&D Allocation within Dept. [% of (4) w.r.t. (3)]	Sectoral Contribution [% of (4) w.r.t. Total of (4)
		Total Budget Estimates of Departments	Estimated R&D Component		
(1)	(2)	(3)	(4)	(5)	(6)
1	Animal Husbandry, Dairy Development & Fisheries	6,93,26,82	1,00,10,60	14.44	8.20
2	Industries & Commerce	28,05,31,11	11,00,00	0.39	0.90
3	Forest & Wildlife Preservation	4,85,22,00	3,50,00	0.72	0.29
4	Rural Development & Panchayats	42,46,11,19	2,50,00	0.06	0.20
5	Technical Education & Industrial Training	5,68,79,88	13,84,82	2.43	1.13
6	Science Technology & Environment	61,14,51	55,05,86	90.05	4.51
7	Employment Generation, Skill Development and Training	2,87,06,37	1,76,38,00	61.44	14.45
8	Health & Family Welfare	68,79,14,69	6,85,84	0.10	0.56
9	Education (Higher Education And School Education)	1,92,79,01,78	12,21,68	0.06	1.00
10	Medical Education and Research	12,19,96,21	48,37,00	3.96	3.96
11	Agriculture & Farmers Welfare	1,34,33,22,01	6,59,29,97	4.91	54.00
12	Horticulture	78,05,48	85,00	1.09	0.07
13	Water Supply and Sanitation	14,86,66,39	1,31,00,00	8.81	10.73
Total		**5,15,22,98,44**	**12,20,98,77**	**2.37**	**100**

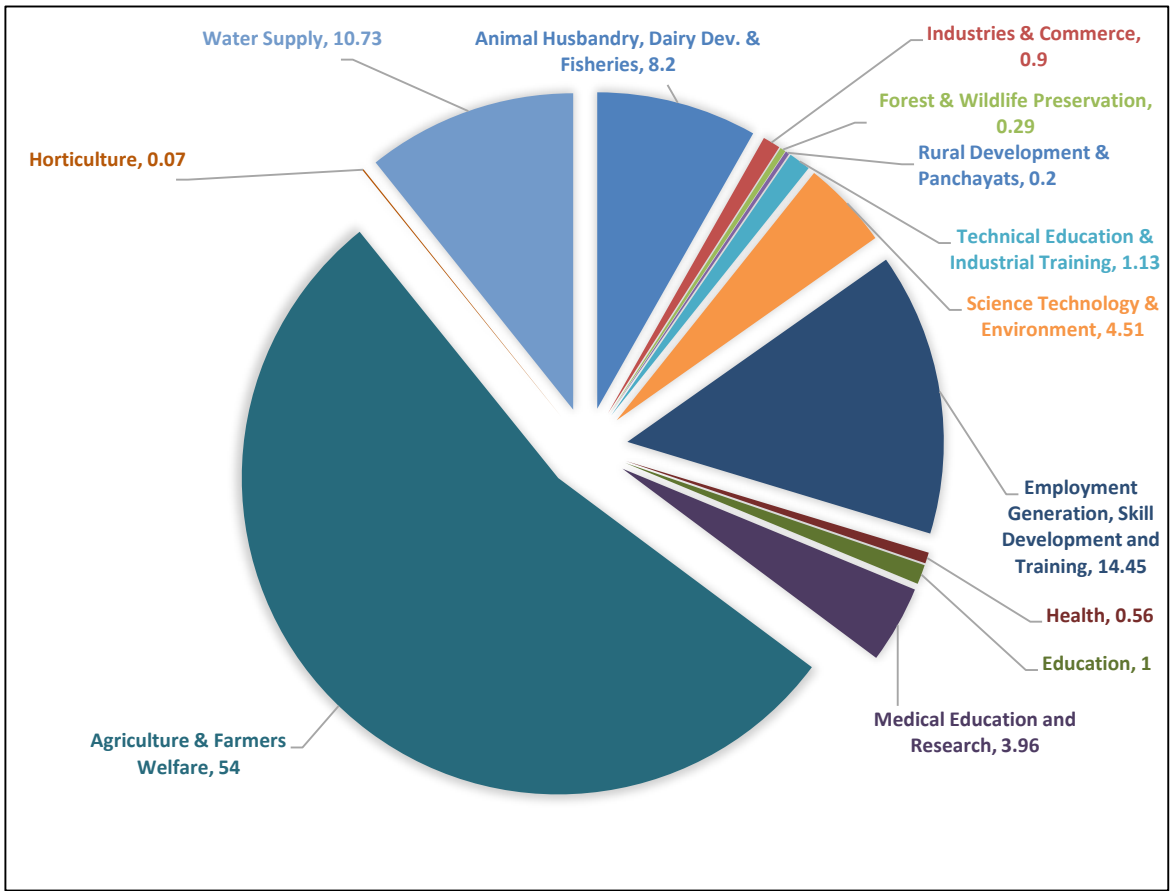

Fig. 4.2 Sectoral Percentage of Estimated R&D Budget for F.Y. 2026-27

Further, Fig. 4.2 shows contributions by Departments in total R&D spent, such as, 54% in Agricultural Research, 14.45% in Skill Development, 10.73% in Water Supply & Sanitation, 8.2% in Animal Husbandry, 4.51% in Science Technology & Environment, 3.96% in Medical Education & Research, and 1.13% in Technical Education. The details of the schemes of the Departments along with their budget and corresponding R&D components are given in Annexure-1.

CHAPTER 5
R&D INVESTMENT PUNJAB – WAY FORWARD

Punjab has made significant strides in Research & Development with leadership role in making Punjab hub of innovation and startups. However, there is a need to maintain competitive edge and contribute towards National R&D and to achieve self-reliance. Punjab therefore needs to adopt a phased and annually implementable framework to strengthen R&D budgeting and reporting, with the following imperatives:

i. Constitute a State R&D Vision/Coordination Group comprising members from key Development Departments, Finance, Universities/Research Institutions and Industry to develop R&D blueprint for the State.

ii. Designation specific posts as Ex-Officio Nodal Officers for departmental R&D budgeting, with defined responsibilities for R&D tagging, data submission and coordination with Finance and Department nominated for preparation of State R&D Budget.

iii. Undertake regular capacity-building for finance/planning officials and research administrators on R&D budgeting, tagging, utilization and reporting best practices.

iv. Establish a phased State R&D funding instrument i.e. dedicated budget line/fund, scalable to a State Research Foundation model to support competitive research, technology development and deployment aligned to state priorities.

v. Prepare State R&D Roadmap, provide policy recommendations and plan Mission-Mode Programs to augment research, development and innovation in the State.

References:

[1] End of Year Edition – Despite the Odds, Global R&D Spending Grew Again in 2024, Inching Closer to the USD 3 Trillion Mark - https://www.wipo.int/en/web/global-innovation-index/w/blogs/2025/end-of-year-edition

[2] In 2024, Innovators from around the world submitted a record breaking 3.7 million patent applications, up 4.9% on 2023 - https://www.wipo.int/web-publications/world-intellectual-property-indicators-2025-highlights/en/patents-highlights.html

[3] Annual Report-2024-25 Intellectual Property India- https://ipindia.gov.in/writereaddata/Portal/Images/pdf/English_Annual_Report_2024-25.pdf

[4] High-technology exports (% of manufactured exports) https://data.worldbank.org/indicator/TX.VAL.TECH.MF.ZS

[5] GII 2025 results- https://www.wipo.int/web-publications/global-innovation-index-2025/en/gii-2025-results.html

[6] The Global Startup Ecosystem Report 2025- https://startupgenome.com/report/gser2025/introduction

[7] DPIIT Recognized Startups- https://www.startupindia.gov.in/

[8] 77% Indian start-ups invest in AI and advanced technologies, 40% tech start-ups originate in Tier II, III- https://www.businesstoday.in/entrepreneurship/story/77-indian-start-ups-invest-in-ai-and-advanced-technologies-40-tech-start-ups-originate-in-tier-ii-iii-437710-2024-07-18

[9] China's R&D spending reports steady growth in 2024- https://english.www.gov.cn/archive/statistics/202509/29/content_WS68da7d8ec6d00ca5f9a06888.html

[10] Israel Trade Missions In India-Ministry of Economy and Industry (Foreign Trade Administration)- https://itrade.gov.il/india/2025/08/01/strong-rd-backbone-of-israel-2/

[11] Parliament question: gross expenditure on research and development- https://www.pib.gov.in/PressReleasePage.aspx?PRID=2198306&reg=3&lang=1#:~:text=In%20the%20industrial%20R&D%2C%20the,of%20private%20sectors%20is%2036.4%25

[12] Highlights of union budget 2026-27- https://www.pib.gov.in/PressReleasePage.aspx?PRID=2221455&reg=3&lang=2

[13] State finances- a study of budget of 2025-26- https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/0SF23012026877D47254C4F4B0793B2C38F05FB7EC5.PDF

Annexure-1

Scheme-wise R&D Budget for F.Y. 2025-26 (Revised Estimates) and F.Y. 2026-27 (Budget Estimates)

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Department of Animal Husbandry, Dairy and Fisheries							
1	2403-101-13	Assistance to States for Control of Animal Diseases - Creation of Disease Free Zone 60:40 (ASCAD)	3,28,21	4,01	3,10,01	2,64	Supports collaborative research to strengthen disease surveillance, early warning systems and control strategies for livestock and poultry diseases. Promotes applied research, innovation, capacity building, and crisis management through studies, pilot interventions, and mock drills aimed at preventing emergent, re-emergent and zoonotic animal diseases.
	2403-789-29		1,54,46	1,89	1,54,17	1,60	
2	4403-101-19	Upgradation of Veterinary Institution and Farms	3,00	3,00	5,00	5,00	Upgradation of veterinary institutions and farms to strengthen research facilities, diagnostics, applied studies and technology-enabled animal health services.
3	2403-190-01-01	Assistance to GADVASU	1,23,67,01	83,67,01	1,29,85,36	87,85,36	Strengthening veterinary education, advanced research, faculty development, specialized clinical services and extension programmes to enhance livestock health and productivity.
4	2403-190-01-04	Establishment of Multispeciality Veterinary Hospital and Regional Research Centre District Fazilka	2,00,00	2,00,00	10,10,00	10,10,00	Setting up a state-of-the-art veterinary hospital and research facility to provide advanced animal healthcare, disease diagnostics, and research support for livestock development.

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5	2403-190-01-03	Establishment of Regional Research and Training Centre for Buffaloes in Tarn Taran District	25,00	25,00	1,00,00	1,00,00	To establish a research and training center focused on improving buffalo breeding, health management, and enhancing milk production techniques for local farmers.
6	2404-789-09	Promotion of Dairy Farming as livelihood for SC Beneficiaries under SCSP	70,00	70,00	70,00	70,00	Supports Scheduled Caste beneficiaries by providing training, financial aid, and resources to promote dairy farming technology as a sustainable livelihood option.
7	2404-191-01-01	Assistance to Punjab Dairy Development Board - Dairy Extension, Training and Awareness	25,00	25,00	25,00	25,00	To conduct training programs, workshops, and awareness camps to educate farmers on modern dairy farming practices, productivity enhancement, and animal health management.
	2404-789-13-01		11,00	11,00	11,00	11,00	
Subtotal			**1,31,83,68**	**87,06,91**	**1,46,70,54**	**1,00,10,60**	
(2) Department of Industries & Commerce							
8	2851-111-01 2851-190-07	Financial Assistance to Punjab Information and Communication Technology Corporation for Startups	2,72,00	2,72,00	4,08,00	4,08,00	To build a strong startup and entrepreneurial ecosystem for nurturing innovations in the State. Supports Higher Education Institutions, Universities and Engineering Colleges for conducting awareness and capacity-building activities for students, young entrepreneurs, (including Scheduled Castes) towards entrepreneurship, promoting economic upliftment and social equity. Supports state-recognized startups (including SC entrepreneurs) to validate ideas, scale enterprises, and generate employment for the youth of Punjab.
	2851-789-11		1,28,00	1,28,00	1,92,00	1,92,00	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
9	2851-190-03-01	Assistance to PSIEC - Assistance for promotion of Micro and Small Enterprises Cluster Development Programme	1,42,77	1,42,77	3,40,00	3,40,00	To improve sustainability, competitiveness and growth of Micro and Small Enterprises in terms of technology upgradation, skill & quality enhancement, market access, etc. Set up common facility centres to cater to industrial clusters for testing, training, raw material sourcing, effluent treatment, complementing production processes, etc.
	2851-789-15-01		16,00	16,00	1,60,00	1,60,00	
Subtotal			**5,58,77**	**5,58,77**	**11,00,00**	**11,00,00**	
(3) Department of Forests & Wildlife Preservation							
10	2406-01-102-35	Green Punjab Mission	28,95,00	40,00	39,50,00	1,00,00	To conduct forestry research for improving plantation techniques, species selection, nursery practices, survival rates, and ecological restoration, along with training and awareness to support sustainable green cover expansion in Punjab.
11	2406-04-103-01-01	State Authority - Compensatory Afforestation	68,11,99	3,00,00	95,58,01	2,50,00	The initiative involves conservation and regeneration of forests and wildlife through compensatory afforestation, ecosystem service management, applied forestry and biodiversity research and capacity building.
Subtotal			**97,06,99**	**3,40,00**	**1,35,08,01**	**3,50,00**	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(4) Department of Rural Development and Panchayats							
12	2501-06-102-02-02	National Rural Livelihood Mission - Startup Village Entrepreneurship Programme (SVEP)	8,26,17	3,82,00	4,00,00	2,50,00	The Scheme provides support for capacity-building activities to promote entrepreneurship in rural areas. It includes training, funding for startups, and CRP development.
Subtotal			**8,26,17**	**3,82,00**	**4,00,00**	**2,50,00**	
(5) Department of Technical Education & Industrial Training							
13	2203-102-02	Assistance to Maharaja Ranjit Singh Punjab Technical University Bathinda	15,00,00	2,58,70	25,00,00	7,05,41	Supports research-related activities carried out by faculty and PhD/Masters students and equipment procurement for Research labs and Departments
14	2203-102-03	Grant in Aid for Campus University/Engineering College	56,44,00	1,78	61,44,00	6,79,41	Supports research-related activities carried out by faculty and PhD/Masters students; Infrastructure set-up for R&D Cell; equipment & computer-based simulation software for research labs, etc.
Subtotal			**71,44,00**	**2,60,48**	**86,44,00**	**13,84,82**	
(6) Department of Science, Technology & Environment							
15	3435-04-103-01	Grant-in-Aid to Society for Mission for Activities of Revamped Mission Tandrust Punjab	65,00	65,00	-	-	The Scheme supports special activity projects focusing on Environment and Health related issues.
16	3425-60-200-52	Biotechnology Incubator - Agri Food Testing Laboratories	3,64,00	3,64,00	3,64,00	3,64,00	Utilize validated analytical methods for testing domestic and export samples through Analytical Facility, Stakeholder Departments, and Regulatory Agencies. The scheme includes

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
17	3425-60-200-37	Setting up of Biotechnology Incubator in Punjab	1,95,00	1,95,00	2,05,00	2,05,00	expenditure on R&D infrastructure development, establishment of the Global Innovation Hub (GIH), and a survey to collect and analyze approximately 1500 organic samples for pesticide residues, followed by data analysis and report preparation.
18	5425-600-02	Biotechnology Incubator - Agri Food Testing Laboratories	1,00	1,00	15,00,00	15,00,00	
19	3425-60-200-59-01	Assistance to Punjab Biotechnology Incubator - Assessment of Organic Agri-Produce and products in Punjab Certified V/s Non-Certified	40,00	40,00	25,00	25,00	
20	3425-60-200-48	SR-01 Pushpa Gujral Science City at Kapurthala	5,00,00	5,00,00	5,00,00	5,00,00	Supports scientific manpower engaged in conducting and exhibiting educational programs, supporting scientific research, scientific demonstrations, organizing workshops and events to promote science awareness and innovation.
21	3425-60-200-56	Mukh Mantri Vigyan Yatra Pushpa Gujral Science City Kapurthala	5,00,00	5,00,00	5,00,00	5,00,00	Organize educational visits for government school students from 9th to 12th grade to the Pushpa Gujral Science City, enhancing their exposure to scientific learning and innovation.

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
22	5425-208-41	SR-01 Pushpa Gujral Science City at Kapurthala	-	-	11,00,60	11,00,60	The scheme involves upgradation of the Dome Theatre, installation of a Capsule Simulator, and the construction of new gallery buildings to enhance the visitor experience and expand scientific exhibits at Pushpa Gujral Science City.
23	3425-60-200-44	SR-07 Students of Government Schools visiting the Science City	25,00	25,00	50,00	50,00	Organize educational visits for government school students from 6th to 8th grade to the Science City, providing them with hands-on learning experiences in science and technology.
	3425-60-789-01		25,00	25,00	50,00	50,00	
24	3425-60-200-51	Financial Assistance for Punjab State Innovation Council	1,30,00	1,30,00	1,70,96	1,70,96	The Program supports to strengthen and accelerate innovation ecosystem of Punjab through novel initiatives viz. Promoting tech-led women entrepreneurs and Startups, Grassroots Innovators Program Punjab; Rural Milieu Accelerator to boost rural enterprises, Translational Research Cohorts, Research Skill Accelerate Program, Mapping Research & Innovation Landscape Punjab, Capstone Project, etc.
25	3425-60-200-66	Green Punjab - Innovation Issues	50,00	50,00	50,00	50,00	Gap analysis studies for different industrial clusters (Plywood, Jaggery, Textile) and development/ demonstration of technologies based on need analysis.

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
26	3425-60-200-53	Gainful Utilization of Paddy Straw	37,50	37,50	50,00	50,00	Demonstration of technologies for management of paddy straw.
27	3425-60-200-58	Financial Assistance for Schemes for STEM Outreach in Punjab	31,94	31,94	65,00	65,00	Support initiatives that promote science, technology, engineering, and mathematics among students and researchers. Scheme also facilitates workshops, innovation programs, and capacity-building activities to enhance STEM education and engagement.
28	5425-600-04	Setting up Centre for Research Technology and IP Acceleration (CRIPTA)	1,00	1,00	5,00,00	5,00,00	The Centre for Research, Technology, and IP Acceleration (CRIPTA) aims to enhance research commercialization, technology transfer, and intellectual property (IP) protection. The Centre will support innovators, startups, and industries in accelerating technology development and IP-driven growth.
29	3425-60-200-10	Technical Secretariat for Punjab State Council for Science and Technology	2,50,00	2,50,00	2,58,80	2,58,80	Scientists & Engineers of PSCST are supported under this scheme for mapping critical STI needs of the State; development, demonstration and replication of cleaner technologies; synergizing with academic institutions for aligning their research priorities for state's needs; support to startups & innovators, skill-development and outreach.

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
30	3425-60-200-22	Setting up of Patents Facilitating Cell	14,00	14,00	14,50	14,50	Strengthening Intellectual Property (IP) Ecosystem by promoting and supporting tech-led innovations and augmenting IP Capacity of the innovators of the State.
31	3435-03-800-12	Strengthening of Technical Staff/ Setting up of Environment Wing	1,40,00	1,40,00	-	-	Supports scientific and policy initiatives by providing technical expertise, research facilitation, and strategic guidance. Scheme also assists in the implementation of various science, technology, and innovation programs in Punjab.
32	3435-03-800-25	Salary and Establishment for the Punjab Biodiversity Board Secretariat Technical Staff	13,50	13,50	-	-	Punjab Biodiversity Board (PBB) works towards the conservation, sustainable use, and documentation of biodiversity in Punjab. It implements the Biological Diversity Act, promotes awareness, and facilitates biodiversity management through People's Biodiversity Registers and conservation initiatives.
33	3435-03-188-02	Punjab Biodiversity Board	51,80	51,80	1,02,00	1,02,00	
Subtotal			**24,34,74**	**24,34,74**	**55,05,86**	**55,05,86**	
(7) Department of Employment Generation, Skill Development and Training							
34	2501-06-102-01-01	Deen Dayal Upadhyaya Grameen Kaushalya Yojana	31,50,00	31,50,00	63,00,00	63,00,00	Supports placement-linked skill training for rural youth through need-based sectoral skilling, employer linkages, job fairs, post-placement assistance, and monitoring.
	2501-06-789-01-01		13,50,00	13,50,00	27,00,00	27,00,00	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
35	2230-03-003-66-03	Pradhan Mantri Kaushal Vikas Yojana (PMKVY)	7,50,00	7,50,00	46,02,75	46,02,75	The Scheme includes Short-term training aligned with National Skill Standards, on-the-job training, assessment and certification, recognition of prior learning, special projects, and placement support.
	2230-03-789-20-03		2,50,00	2,50,00	15,34,25	15,34,25	
36	2230-03-003-66-11	Punjab Hunar Vikas Yojana	9,85,50	9,85,50	18,75,00	18,75,00	Supports life and soft skills training, employability and entrepreneurship skilling, recognition of prior learning, and competency-based assessment including psychometric evaluation of candidates.
	2230-03-789-20-05		3,28,50	3,28,50	6,25,00	6,25,00	
37	2230-03-003-66-05	Skill Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP) Scheme	75	75	75	75	Skill gap analysis; awareness campaigns; skill training for jail inmates, border youth and armed forces; centres of excellence with industry bodies; trainer training; communication labs; and institutional capacity building.
	2230-03-789-20-04		25	25	25	25	
Subtotal			**68,15,00**	**68,15,00**	**1,76,38,00**	**1,76,38,00**	
(8) Department of Health & Family Welfare							
38	2211-003-01	Training of Multi-Purpose Worker (F) Schools at Gurdaspur, Hoshiarpur, Sangrur, Nangal, Bathinda and Moga	1,87,55	1,87,55	1,96,70	1,96,70	Enhance skills and competencies of Multi-Purpose Health Workers through classroom training, practical sessions, and certification to strengthen healthcare services in Gurdaspur, Sangrur, Nangal, Hoshiarpur, Bathinda, and Moga.
	2211-789-02		70,45	70,45	73,95	73,95	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
39	2211-003-08	Strengthening of Training School Building	94,50	94,50	99,23	99,23	Upgrade and enhance the infrastructure of training schools to provide better facilities for skill development and capacity building of healthcare workers
	2211-789-03		17,00	17,00	17,85	17,85	
40	2211-003-05	Special Training to Scheduled Castes Candidates Multi-Purpose Workers (Male) at Mohali, Amritsar and Nabha	1,90,55	1,90,55	1,99,98	1,99,98	Enhance skills and competencies of Multi-Purpose Health Workers through classroom training, practical sessions, and certification to strengthen healthcare services in Mohali, Amritsar & Nabha.
	2211-789-04		89,05	89,05	93,40	93,40	
41	2210-01-110-56	National Health Mission	5,25,87,21	4,73	5,10,00,00	4,73	Flexible Pool for RCH & Health System Strengthening National Health Program and National Urban Health Mission - Epidemiological research to assess prevalence of central auditory processing disorder among school-going children, including screening, diagnosis, data analysis, and evidence generation for early intervention strategies.
	2210-01-789-06		2,47,46,92		2,40,00,00		
Subtotal			**7,79,83,23**	**6,53,83**	**7,56,81,11**	**6,85,84**	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(9) Department of Higher Education & Languages							
42	2202-03-103-21	Rashtriya Uchchatar Shiksha Abhiyan (RUSA)	65,75,41	72,94,00	27,63,77	-	Improve the quality, accessibility and equity of higher education through infrastructure development, research promotion and reforms, entrepreneurship, skilling, technology, etc. in state universities and colleges.
	2202-03-789-08		21,91,80		9,21,26		
43	2202-03-102-01-01	Grant to Punjab University and its Constituent Colleges - Punjab University	99,92,06	95,93	95,02,07	1,01,68	Salary of University Professors/Scientists (i.e. Teachers involved in Research)
Subtotal			**1,87,59,27**	**73,89,93**	**1,31,87,10**	**1,01,68**	
(10) Department of School Education							
44	2202-02-109-68-01 2202-02-105-07	Skill Upgradation Programme for Teachers/ School Heads/ Educational Administrator	9,00,00	9,00,00	10,50,00	10,50,00	Enhance teacher and school leader capacities through advanced training, leadership development, pedagogical skill building and exposure to international and national best practices.
45	2202-02-109-68-02	EDS 78 Outsourcing of conduction of Research Studies/ Programme Evaluation/ Impact analysis of various schemes and programmes of the Department of School Education	35,00	35,00	70,00	70,00	Supports ecosystem to conduct research/ impact assessment with the help of DIET/SCERT faculty/ research institutions/university, etc.
Subtotal			**9,35,00**	**9,35,00**	**11,20,00**	**11,20,00**	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(11) Department of Medical Education & Research							
46	4210-03-105-22-99	Upgradation of Infrastructure in Government Medical College and Hospital, Patiala	37,40,00	17,68,00	17,00,00	12,24,00	Supports strengthening of teaching-clinical-research ecosystem through infrastructure creation and modernization - skill/simulation lab for PG & MBBS training, upgrades to academic spaces, strengthening clinical service units like the Trauma Centre and ENT audiology facility, improving clinical readiness, training quality, and applied healthcare R&D enablement.
	4210-03-789-23-99		17,60,00	8,32,00	8,00,00	5,76,00	
47	4210-03-105-25-00	Upgradation of Infrastructure in Guru Gobind Singh Medical College and Hospital, Faridkot (under the Control of Baba Farid University of Health Sciences)	1,02,00,00	6,18,80	17,00,00	4,76,00	
	4210-03-789-06		48,00,00	12,80,00	8,00,00	2,24,00	
48	4210-03-105-28	Establishment of Guru Ravidas Ayurvedic University, Hoshiarpur	1,01,32	87,72	4,59,00	4,12,76	Infrastructure development
	4210-03-789-10		47,68	41,28	2,16,00	1,94,24	
49	4210-03-105-29-00	Upgradation of State Government Medical College Amritsar	29,24,00	18,70,00	17,00,00	11,56,00	Upgrading clinical teaching-research platform through creation of Emergency & Advanced Trauma Centre, specialized disease-care infrastructure and hospital support systems.
	4210-03-789-02-00		13,76,00	8,80,00	8,00,00	5,44,00	
50	4210-03-105-22-02	Upgradation of Infrastructure in Government Medical College and Hospital, Patiala - Burn Injuries Ward	5,00	5,00	15,00	15,00	Dedicated Burn Unit wards to strengthen specialized critical care and improve outcomes through standardized burn management, infection control and advanced wound care. The facilities will also enable clinical training and

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
51	4210-03-105-25-01	Upgradation of Infrastructure in Guru Gobind Singh Medical College and Hospital, Faridkot - Burn Injuries Ward	70,00	70,00	55,00	15,00	applied research on burn treatment protocols, rehabilitation and patient-safety practices.
Subtotal			**2,50,24,00**	**74,52,80**	**82,45,00**	**48,37,00**	
(12) Department of Agriculture & Farmers Welfare							
52	2415-01-120-02	Grants in aid to the Punjab Agricultural University for Constituent College of the University	6,95,25,00	6,95,25,00	6,54,16,58	6,54,16,58	Research on crop improvement, production & protection technologies, farm mechanization, including development of improved crop varieties and resource-efficient agronomic practices. Emphasizes on climate-resilient and specialty-trait crops using advanced breeding and AI tools, crop diversification, organic & conservation agriculture, precision water & nutrient management, eco-friendly pest management, post-harvest value addition, renewable energy applications, strengthened market intelligence and technology dissemination.

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
53	2401-109-16	Assistance to Punjab Remote Sensing Center Ludhiana	5,25,00	5,25,00	5,13,39	5,13,39	PRSC, an autonomous organization under the Department of Agriculture, Punjab, conducts all Remote Sensing, Geographical Information System (GIS). State apex body for Global Positioning System (GPS) and serves as a central hub for geospatial requirements of the state and for geospatial data to all user departments.
Subtotal			**7,00,50,00**	**7,00,50,00**	**6,59,29,97**	**6,59,29,97**	
(13) Department of Horticulture							
54	2401-119-11-01	Diversification through Flower Seed Production in Punjab	34,70	1,00	42,00	1,00	Supports adaptive on-field demonstrations and standardization of flower-seed production packages using Punjab's established floriculture production know-how to improve seed yield and quality.
55	2401-119-61	Punjab Horticulture Advancement and Sustainable Entrepreneurship (PHASE)	80	20	2,76,00	20,00	Cluster-led intervention to improve product quality and strengthen horticulture value chains in major production zones by identifying and bridging gaps in value chain and marketing.
56	2401-102-11-03	Krishionnati Yojana Scheme - National Horticulture Mission	49,70,00	58,00	58,48,00	64,00	Supports applied, field-linked R&D and technology diffusion through area-based strategies that integrate research, technology promotion and extension, along with post-harvest management/ processing/ marketing to improve productivity and farmer incomes.
Subtotal			**50,05,50**	**59,20**	**61,66,00**	**85,00**	

S. No.	Head Structure	Scheme/Programme	Revised Estimate F.Y. 2025-26 (Rs. in Thousands)		Budget Estimate F.Y. 2026-27 (Rs. in Thousands)		Key Activities
			Total Budget	R&D Component	Total Budget	R&D Component	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(14) Department of Water Supply & Sanitation							
57	4215-01-102-32	National Rural Drinking Water Programme renamed Jal Jeevan Mission	12,30,00	12,30,00	72,00,00	72,00,00	Procurement and maintenance of lab equipment, training of staff, chemical consumables management, NABL audits, and facilitation of experimental research.
	4215-01-789-16		8,20,00	8,20,00	48,00,00	48,00,00	
58	4215-01-102-35	Special assistance for mitigation of drinking water problems in the habitations affected with arsenic and fluoride	6,00	6,00	4,80,00	4,80,00	Providing water supply schemes in habitation affected with arsenic and flouride.
	4215-01-789-18		4,00	4,00	3,20,00	3,20,00	
59	4215-02-102-02-08	Swachh Bharat Mission (Gramin) - Information Education & Communication (IEC) and Capacity Building Activities	51,07	51,07	1,80,00	1,80,00	Supports awareness programs on sanitation practices, encouraging behavioral change, promoting use of toilets through various communication channels like community meetings, posters, street plays training programs, etc.
	4215-02-789-01-08		48,93	48,93	1,20,00	1,20,00	
Subtotal			**21,60,00**	**21,60,00**	**1,31,00,00**	**1,31,00,00**	
Grand Total			**24,05,86,35**	**10,81,98,66**	**24,48,95,59**	**12,20,98,77**	