KERALA DEVELOPMENT AND INNOVATION STRATEGIC COUNCIL

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ANNUAL ADMINISTRATIVE REPORT 2024-25

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Executive Summary

Kerala stands at a critical juncture in its economic development trajectory, marked by a transition towards a knowledge economy. The state's parameters are not conducive to a conventional investment led growth model. The state has embraced innovation as a key driver of economic growth. Innovation is necessary to address second-generation problems affecting Kerala of high rate of educated unemployed, high social consciousness of environmental rights, ageing population, among others. The transition to a knowledge economy brings to the forefront opportunity to address a myriad of complex socio-economic-behavioural problems that are unique to Kerala.

Investment in innovation programmes and building innovation capability is a long term strategy that aims to transform the state to new paradigms of human development. K-DISC's comprehensive approach integrates education, governance, entrepreneurship, and social innovation to create a robust ecosystem for sustainable development in Kerala. By fostering innovative solutions, empowering marginalized communities, and leveraging emerging technologies, K-DISC continues to propel Kerala towards a resilient and knowledge-driven future.

The Kerala Development and Innovation Strategic Council (K-DISC) Annual Administrative Report 2024-25 highlights transformative initiatives across key sectors to drive innovation, knowledge-based development, and social inclusion in Kerala.

1. Young Innovators Programme (YIP) – moulding a generation of problem solvers

YIP is a flagship initiative designed to cultivate innovative thinking among students aged 13-37. With over 7,70,000 registrations over the past 7 years, YIP has generated 60,000+ ideas and supported 7 patent filings. Structured mentorship and training guide participants through ideation, prototyping, and scaling. YIP Clubs have been introduced across 142 schools to sustain grassroots innovation ecosystems this year.

2. Manchadi – Teach Maths for Kerala – changing Mathematics from foe to friend

The Manchadi program enhances primary school mathematics education through contextual learning. Operating in 104 schools, Manchadi has reached 5,802 students. Key achievements include its expansion to 2,100 classrooms across Kerala, integration into SCERT's curriculum, and extending Malayalam language enhancement through the "Malayalapaima" initiative. Manchadi has facilitated innovation in mathematics education to address the relative poor performance of Kerala students in national mathematics tests.

3. Mazhavillu – Teach Science for Kerala – from textbooks to fingertips

Mazhavillu fosters scientific curiosity through hands-on, thematic science learning. Covering 1,131 students across 12 Model Residential Schools, the program emphasizes exploration and critical thinking. It has earned recognition at the 37th Kerala Science Congress for promoting scientific inquiry - a directive principle enshrined in the Indian constitution.

4. One District One Idea (ODOI) – bringing together academia, industry, government for business innovation

ODOI nurtures district-specific innovation clusters. Out of 63 evaluated clusters, 27 have been shortlisted for targeted support. Prominent projects include the Kanhirode Cluster's integration with Vastra Gramam and NABARD-funded ventures in Kollam's cashew processing sector.

5. One Local Government One Idea (OLOI) – leveraging Innovation to solve complex ground level challenges

The OLOI program aims to empower the LSGIs to implement innovative initiatives that address complex developmental challenges. OLOI creates a local innovation ecosystem based on the quadruple helix model, that brings together representation from local government, academia, industry, and civil society to define local problems and scout innovative solutions. Significant outcomes this year include implementing innovations in decentralized sewage treatment systems, enabling affordable electric waste-collection vehicles, and establishing Block level Innovation Centres in partnership with LSGIs.

6. Accelerating Adoption of Emerging Technology Solutions in Government – introducing innovation in government services

K-DISC actively promotes emerging technologies to improve governance. In 2024-25, 33 projects were initiated, with notable successes including the Blood Bag Traceability System and Wireless Infusion Monitor. Additionally, blockchain-based smart crop insurance, AI-driven healthcare solutions, and IoT systems for continuous drinking water monitoring are in progress.

7. Innovation by Youth with Disability (I-YwD) – ensuring inclusive innovation

I-YwD empowers young innovators with disabilities through mentorship, entrepreneurship training, and inclusive learning. With three active cohorts, the program has achieved notable milestones such as entrepreneurial funding support and the creation of accessible educational content in Indian Sign Language (ISL). There is no similar programme anywhere in the world that fosters innovation among people with special abilities.

8. STRIDE – Empowering Lives through Inclusive Innovation

STRIDE supports the development of assistive technology for persons with disabilities. The initiative combines community-centered innovation, sustainable impact models, and inclusive design practices. Recent achievements include showcasing low-tech assistive devices and fostering partnerships with academic institutions and social organizations.

9. Kerala Knowledge Economy Mission (KKEM) – mobilising employment opportunities and empowering the educated unemployed of Kerala

KKEM aims to provide gainful employment for Kerala's educated youth through digital platforms, skill development, and targeted job placement initiatives. Key achievements include:

- 18.43 lakh job seekers registered.
- 1.29 lakh employment opportunities provided.
- Expansion of 68 job stations to support local employability.

10. Vijnana Keralam

Vijnana Keralam is a campaign mode action plan that aims to provide skill training to 5 lakh students studying in the final year of various courses to equip them for employment and to create physical interface points such as Job Stations and Job fairs in partnership with the Local Self Government Institutions. Tie up with the Local Self Government Institutions and convergence with government departments and partner organisations are a key strategy. The programme is creating a global mentorship network for a community based skilling programme.

11. Work Near Home

The Work Near Home (WNH) Project complements the KKEM and Vijnana Kerala by establishing a network of modern co-working spaces across the state. It is designed to offer flexible, professional work environments closer to home for Kerala's skilled professionals, remote workers, and entrepreneurs. The first Work Near Home project was initiated in Kottarakara this year.

12. Electric Vehicle and Green Energy Programmes – Innovations towards a Greener future

K-DISC is driving Kerala's transition to sustainable mobility solutions. The Electric Vehicle consortium with strategic academic and industry partners have developed a prototype lithium-titanium-oxide (LTO) battery that makes use of the rare minerals present in the Kerala beach sands. An Electric Vehicle Industrial Park (EVIP) is being established to complete the ecosystem for the design and development of EV components in Kerala. The Clean Energy Innovation and Business Incubation Centre (CEIBIC) supported 9 promising startups to scale their clean energy innovations this year.

13. Kerala Genome Data Centre – leading Kerala into the future of Biotech

The Kerala Genome Data Centre (KGDC) is a state-of-the-art platform comparable to the world's most advanced genomic data centers. A cornerstone of the KGDC's mission is the systematic exploration and utilization of Kerala's distinctive genomic data, a resource enriched by the state's diverse population and unique bio-diversity. This genomic diversity, which mirrors Kerala's varied ecosystems and natural history is a rich source of genetic data. This repository is geared to drive research and development across a plethora of domains, including healthcare, plant and animal biology, and microbial ecology. KGDC will set up a high-capacity data centre with investment support of KIIFB, capable of storing and processing this pivotal data, while also facilitating access for researchers.

14. Kerala Medical Technology Consortium

This initiative aims to position Kerala as a leading destination for medical technology investments and projects. KMTC's strategy for achieving its vision revolves around a two-pronged approach: Extensive Marketing & Business Development and Building Interactions Between Stakeholders. KMTC has brought to Kerala INR 207.66 Crores of investments from 5 companies this year. Cumulative investments brought in by KMTC since June 2022 is INR 323.66 Crores from 9 projects.

15. Centre of Excellence in Microbiome

The Microbiome Centre facilitates research and development in microbiology to improve public health, agriculture, and environmental management. It promotes innovations in probiotics, disease prevention, and food security. The Laboratory was established this year at KINFRA Park, Thiruvananthapuram.

16. Centre of Excellence in Nutraceuticals

This initiative aims to enhance Kerala's healthcare and wellness sectors by supporting research in functional foods, dietary supplements, and traditional medicine innovations. Required functionaries were appointed for the centre and initial phase of the centre is underway.

17. Value-Added Products Programmes

The initiative encourages local entrepreneurs to create high-value products from Kerala's agricultural resources. The Climate Smart Coffee Project in Wayanad is working with coffee farmers and international experts to increase the value addition in Wayanad Robusta. The Wayanad India Fine Robusta logo was launched this year and Wayanad coffee was exhibited at the World of coffee at Copenhagen, Denmark.

Conference Presentations and Awards

Member Secretary, K-DISC presented a paper on its building innovation at the 50th IECON Conference, held in Chicago, Illinois, USA. K-DISC functionaries also participated in multiple national and international conferences this year, presenting achievements and learnings from various projects. 8 papers and 3 posters were presented by K-DISC functionaries at the 37th Kerala Science Congress 2025. The Mazhavillu paper presentation by Smt. Amrutha C S won the Best Oral Presentation Award under the Scientific Social Responsibility category. K-DISC was also awarded Project Management Excellence award in two categories by the Project Management Institute (PMI) Kerala chapter.

Innovation led development alternative for Kerala

Innovation is one of the key factors of economic development. Innovation and learning capabilities are vital for growth competitiveness of any region. Therefore, many Governments have tried to steer and foster the development of science, technology and innovation for many years and through many mechanisms, to improve directly or indirectly the wellbeing of their constituents. These efforts are commonly referred to as science policy, technology policy, or innovation policy. Their objectives span from the philosophical view of the enhancement and augmentation of the knowledge to the practical need of the development of the communities of a country.

The Kerala Development and Innovation Strategic Council (K-DISC) was established by the Government of Kerala with a unique focus on innovation policy. Unlike similar councils in other parts of the world that tend to prioritize science and research policy, K-DISC concentrates on non-linear innovation policy with an aim of building a holistic innovation eco system in the state. This makes it possible for Kerala to move away from the traditional linear model (scientific R&D focused model) in innovation policy, which has been replaced by the innovation system approach. An innovation system encompasses not only the innovations themselves, but also encompasses all significant economic, social, political, organizational, institutional, and other factors that impact the development, diffusion, and utilization of innovations.

Innovations emerge from interactions between actors with complementary (technological, managerial, investment or regulatory) competencies, which operate under specific institutional settings. The use of a system metaphor emphasizes the distributed, yet more or less coordinated agency that underpins the innovation process; interaction between firms, universities, policy makers and various intermediaries creates positive externalities that are of key importance in the innovation process, but very difficult to be produced or controlled by any actor on its own.

Kerala stands at a critical juncture in its economic development trajectory, marked by a transition towards a knowledge economy. Kerala's journey towards a knowledge economy is shaped by its historical resource constraints. With limited natural resources, Kerala ranks poorly in per capita land availability and has scanty presence of ferrous minerals, non-ferrous minerals, minor minerals and fuel minerals.

The state's parameters are thus not conducive to a conventional investment led growth model. Kerala's economic base is dominated by low productivity and low value addition units. The transition to a knowledge economy presents opportunities to diversify revenue streams. By channeling remittances towards productive investments in innovation, entrepreneurship, and infrastructure, Kerala can stimulate indigenous economic growth and reduce dependency on external inflows.

Several factors propel Kerala's transition into a knowledge economy. Firstly, the state boasts a well-educated and skilled workforce, providing a solid foundation for knowledge-intensive activities. Additionally, Kerala's robust public education system and high literacy rates foster a culture conducive to learning and innovation. Moreover, the proliferation of digital technologies facilitates the dissemination of knowledge and enables participation in the global knowledge economy.

The state has thus embraced innovation as a key driver of economic growth. Innovation is also necessary to address second-generation problems affecting Kerala of high rate of educated unemployed, high social consciousness of environmental rights, ageing population, among others. The transition to a knowledge economy brings to the forefront opportunity to address a myriad of wicked problems that are unique to Kerala. Challenges such as urban sprawl, social inequalities of the outliers and immigrants, complex micro regional issues demand integrated and innovative solutions. Transitioning from Kerala's low value added low diversification enterprise to high production high productivity requires knowledge input. The growth story of MSME's traced by C. Balagopoal through his book "Under the Radar" emphasizes this. Transforming Kerala economic base from the present low productivity regime to a high productivity knowledge economy holds immense promise for driving sustainable economic growth, fostering innovation, and improving living standards.

Central to Kerala's transition is the adoption of the quadruple helix model, emphasizing collaboration between government, academia, industry, and civil society. This model fosters synergies between knowledge creation, technology transfer, and market dynamics, driving value addition across sectors. By leveraging this collaborative framework, Kerala can accelerate its transition towards a knowledge-intensive economy. Given the limitation of industrial base within the state there is a need to look at a new model integrating startups, sunrise industries, knowledge industries, and local governments.

K-DISC was set up with a vision of "A competitive and inclusive Kerala through creation of a healthy, conducive ecosystem for transformative and bold innovations through new directions in technology, product and process innovations". The mission of K-DISC can broadly be classified as holistic and quality human development in Kerala, a knowledge-centred, technology based local economy with global connect and enhanced inclusion, participation and self-reliance through cutting edge knowledge and technology.

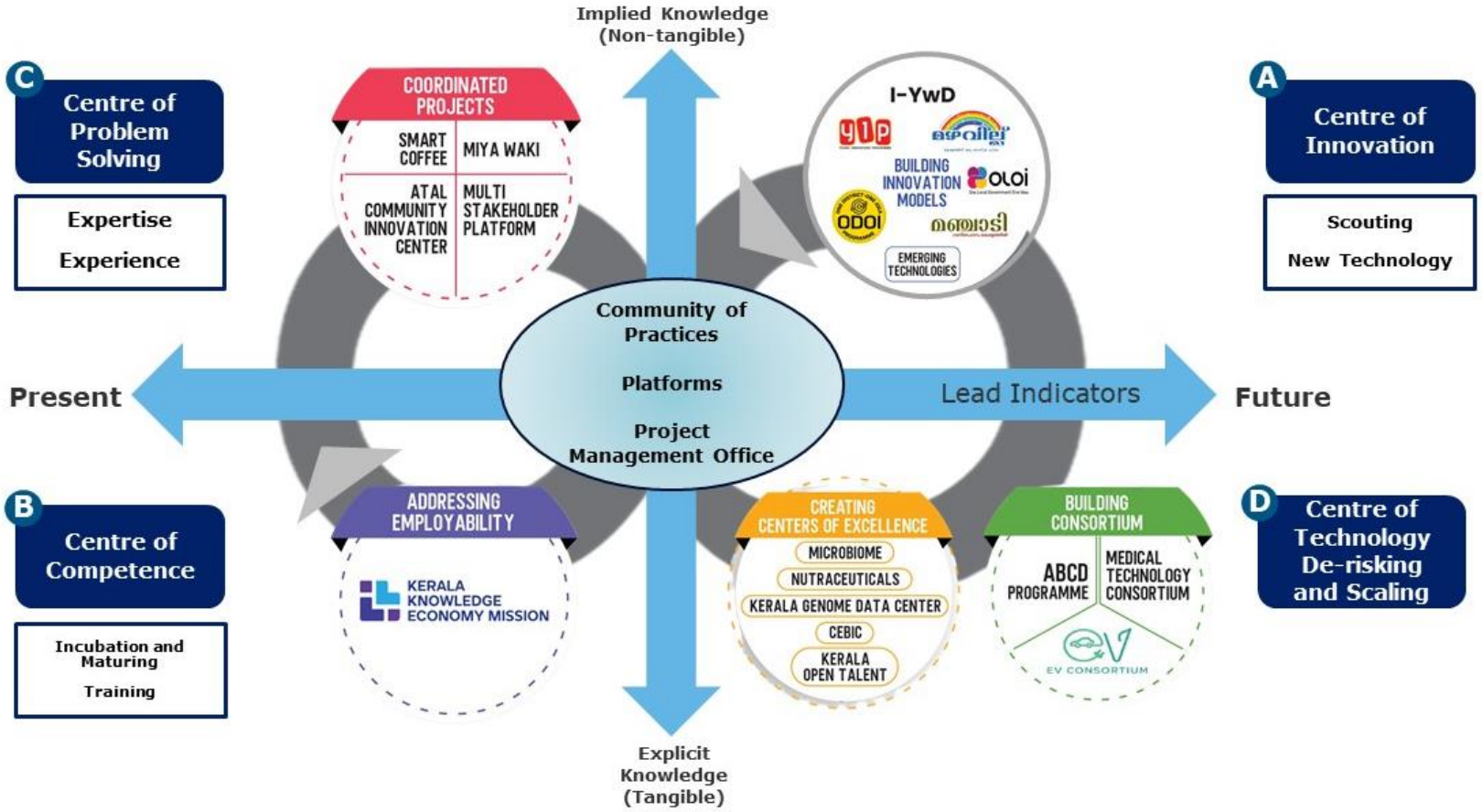

Figure 1 Innovation Ecosystem for Knowledge Co-Production

Centre of Innovation

1. Young Innovators Programme (YIP)

Young Innovators Programme (YIP) promotes innovation among students in school, colleges, University Departments and research institutions in the state aged 13 to 37. The objective of the program is to develop an ecosystem for identifying youth with bright minds for solving real world problems in identified themes, mentoring them, attaching them to domain partner institutions with scholarships and help them build a career around the innovations, researching, re-discovering, incubating and accelerating the innovation. YIP has had seven cohorts so far. Over 8000 educational institutions and 5,00,000 students have been registered in the program and over 60,000 ideas have been submitted by student teams. 7 of the state-level winners' ideas have been filed for patents.

The YIP Process

The Young Innovators Programme (YIP) process is a structured framework designed to guide participants from ideation to implementation, fostering innovation and problem-solving at every stage.

Figure 2 YIP so far

In the preliminary evaluation phase, submissions are assessed for clarity, completeness, feasibility, and alignment with program objectives. Participants then undergo foundation training in Design Thinking (DT), Root Cause Analysis (RCA), and the Problem Canvas, supported by the Voice of Stakeholders (VOS) process, which helps them understand the context and intent of their selected problems, with mentorship provided by domain experts.

During the district-level evaluation, ideas are assessed through a two-tier process involving concept and deck evaluators, focusing on innovation, applicability, and impact. Selected participants move on to immersion training, which provides advanced knowledge on Frontiers of Science, Science, Technology, and Innovation (STI), and Doing Using Interacting (DUI), emphasizing sustainable solutions. At the state-level evaluation, a panel of technology experts, Kerala Startup Mission (KSUM) mentors, and domain experts select the most promising projects, which are refined as state-level winners in preparation for the prototyping phase. Participants then join maker camps for hands-on workshops in rapid prototyping using Fab Labs and other resources, collaborating with academia and industry to turn ideas into functional prototypes. The challenge phase allows participants to present their innovations with experts from various fields, where ideas are tested and validated. Finally, in the exit phase, participants connect with KSUM, research institutions, and industry partners to scale and implement their solutions, ensuring real-world impact. This multi-layered approach equips participants with the skills, resources, and mentorship needed to develop innovative and sustainable solutions.

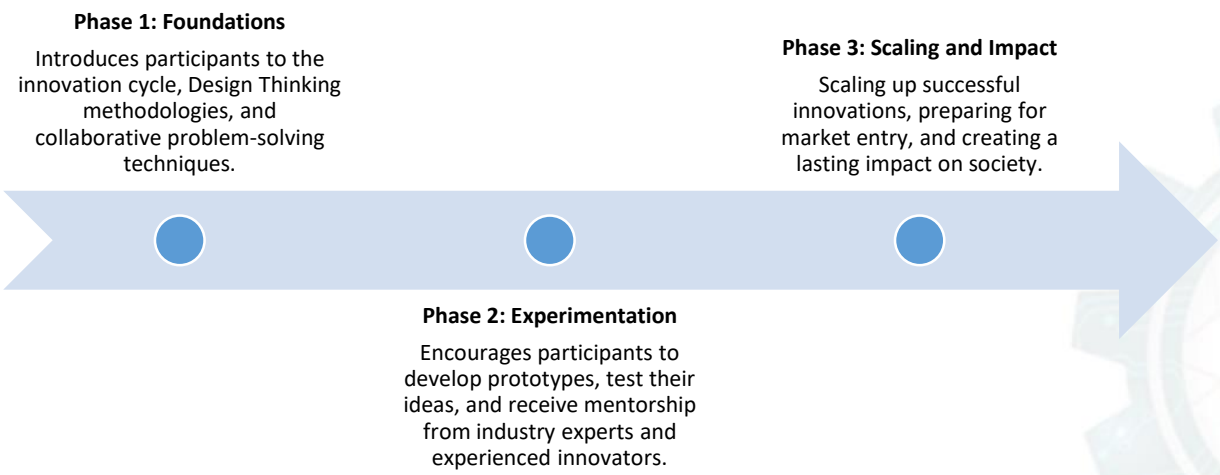

Figure 3 The YIP Process

Unique elements of YIP

1. Students are trained in applying design thinking to develop and prototype solutions.
2. Students are trained in Soft Skills such as communication, empathy, and teamwork.
3. IIM Calicut and other institutions play a critical role in mentoring the program providing expertise and strategic guidance to enhance the overall innovation process.
4. The YIP methodology has been refined with Kerala State Startup Mission (KSUM) and the ICT Academy of Kerala (ICTAK) over six iterations since 2018.
5. The Voice of Stakeholders (VOS) survey is an integral part of YIP that equips the student innovators to uncover the pain points and contextual challenges of beneficiaries.
6. The Problem Shelf is a repository of 1,970 real-world challenges facing Kerala today identified through government departments and research institutions.
7. Mentorship – In YIP, mentors adopt the role of facilitative partners rather than traditional instructors. They guide participants through the innovation process, encourage exploration, and support the development of each participant's unique potential.
8. Problem-Based Learning (PBL) methodology of YIP emphasizes real-life problem solving that require a multidisciplinary approach and creative thinking and not just theoretical knowledge.
9. YIP provides innovators an understanding of Intellectual Property (IP) rights, patents, copyrights, and trademarks. Knowing how to protect one's innovations is crucial for maintaining competitiveness and ensuring that creators can benefit from their inventions.
10. Contextualised Solutions - YIP methodology encourages students to develop solutions that are not only innovative but also contextualised and validated locally, aligning with Kerala's vision for sustainable development.

11. Fostering Higher Order Thinking - The program shifts students from fragmented learning to a contextualised and solution-oriented mindset, promoting Higher Order Thinking Skills (HOTS) essential for addressing complex challenges.
12. Over 8000 institutions form a part of the YIP ecosystem. These include universities, colleges, and vocational institutes.

Impact and Outcomes

Entrepreneurship and Employability: YIP has catalyzed the creation of startups, with skilling programs significantly enhancing employability.

Inclusivity: YIP promotes equity, with 53.67% female participants and 15.45% representation from marginalized communities in YIP 6.0.

Scaling Participation: Registrations have grown exponentially, from 1,320 in YIP 1.0 to over 213,000 in YIP 6.0, with 198,000 school-level registrations in YIP 7.0.

Patents and Startups: YIP has resulted in seven patents and six startups, demonstrating its ability to translate ideas into scalable solutions.

Growth of YIP over years						
YIP Cohorts	Student Registration	Idea Registration	Female Participation %	Female Idea submitted %	Marginalized Community Participation %	Marginalized Community Idea Submitted %
YIP 1.0	1320	204	23.45	21.54	2.73	1.76
YIP 2.0	3950	1003	32.56	31.45	4.67	3.45
YIP 3.0	13002	3747	46.54	43.45	6.54	5.53
YIP 4.0	102512	9404	51.74	52.15	8.63	7.25
YIP 5.0	158965	17877	58.28	54.32	13.25	11.33
YIP 6.0	213473	25352	53.67	57.12	15.45	13.95
YIP 7.0*	198123	17020	59.28	54.44	15.22	16.18
** YIP 7.0 College students registration is under process*						

Total Students Registration (YIP 1.0 to 7.0)	Idea Submission (Teams)	Pre-Winners (Teams)	District Winners (Teams)	State Winners (Teams)
7,70,222	74,607	12,129	2,645	695

Table 1 YIP growth over cohorts

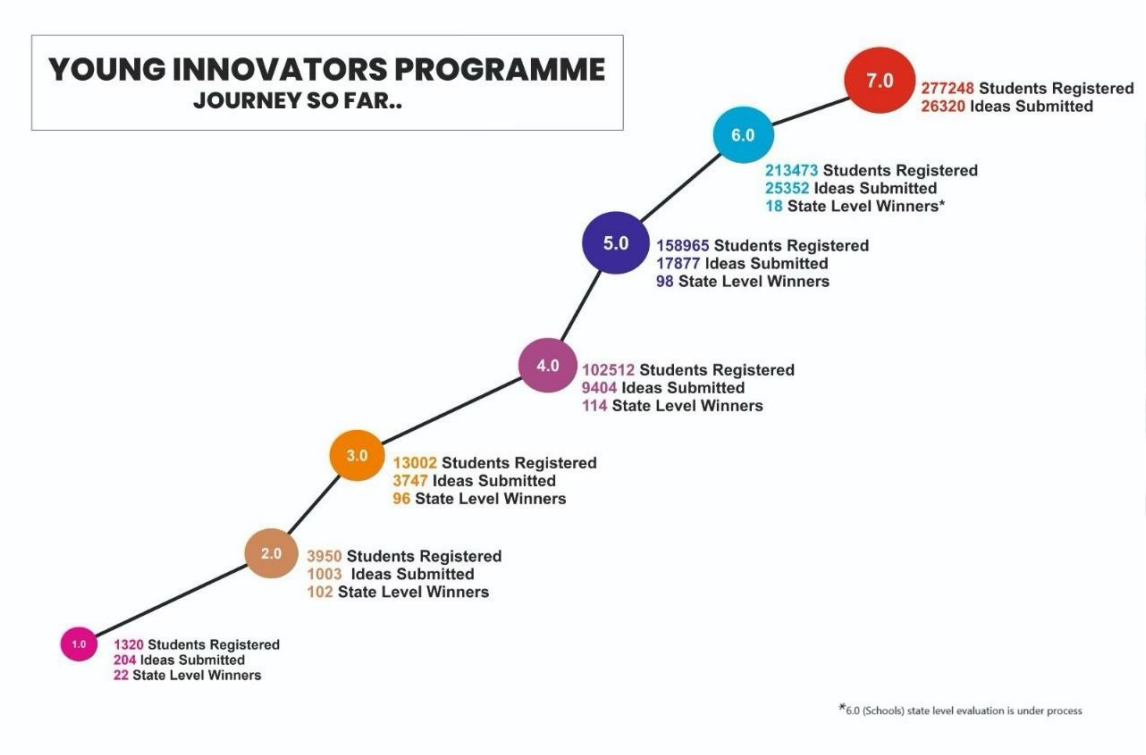

Figure 4 Snapshot of YIP Outputs and Outcomes

Figure 5 School teachers training under Directorate of General Education, May 2024

YIP Shastrapadham

YIP Shasthrapadham is implemented for high school, higher secondary school and vocational higher secondary school student teams in close partnership with the General Education Department. The latest edition of the program saw 1,98,000 students registering and 17,000 ideas being submitted. The ideas are on 30 identified themes related to Kerala's development. The program inculcates skills in real world problem solving while imparting twenty first century skills like collaboration, communication, critical thinking and creative thinking. It has helped students understand the importance of contextual and experienced learning.

District	Number of Schools	Number of Colleges
Thiruvananthapuram	601	454
Kollam	513	374
Alappuzha	387	143
Pathanamthitta	341	141
Kottayam	509	203
Idukki	298	123
Ernakulam	692	307
Thrissur	557	226
Palakkad	439	272
Malappuram	610	294
Kozhikkode	482	319
Wayanad	194	60
Kannur	424	201
Kasargod	318	104
Grand Total	**6365**	**3221**

Table 2 YIP-Shastrapadam District wise distribution of Schools and Colleges

YIP Clubs

The Young Innovators Programme (YIP) Clubs were formally launched on 8th July 2024 at Cotton Hill G.H.S.S, Thiruvananthapuram. The launch event was graced by the Director of General Education, along with representatives from UNICEF, Kerala Development and Innovation Strategic Council (K-DISC), and Samagra Shiksha Kerala (SSK) officials.

As an initial pilot, 142 schools across the state were selected for the rollout of YIP Clubs. The primary objective of these clubs is to foster a culture of innovation within school campuses and enhance the Young Innovators Programme (YIP) by providing a structured environment for students to collaborate, ideate, and develop solutions for real-world challenges. The clubs aim to create a vibrant innovation ecosystem that nurtures critical thinking, problem-solving, and creativity among students, equipping them with essential 21st-century skills. The launch of YIP Clubs marks a significant milestone in creating a sustainable innovation ecosystem within schools, enabling students to develop creative solutions to real-world challenges.

Figure 6 YIP Clubs inauguration

Way Ahead

The Young Innovators Programme (YIP) embodies a visionary approach to cultivating an ecosystem of innovation and creativity across Kerala, tailored to meet the diverse educational and developmental needs of its participants. By integrating distinct methodologies like Problem-Based Learning and Critical Pedagogy, and by differentiating the curriculum for school and college students, YIP ensures a rich, engaging, and comprehensive learning experience. This multifaceted curriculum not only equips young innovators with a broad spectrum of critical skills but also empowers them to become proactive agents of change within their communities. As YIP continues to evolve and expand, its commitment to fostering a culture of innovation and problem-solving promises to make a significant impact on the landscape of education and industry in Kerala, nurturing the next generation of innovators and leaders who are prepared to face the challenges of the future with creativity, resilience, and vision.

YIP is a transformative initiative fostering an inclusive and sustainable innovation ecosystem. By combining problem-solving frameworks, skill-building, and systemic support, it empowers participants to become innovators and societal change-makers. The program's success in scaling participation, driving inclusivity, and fostering enterprise creation highlights its potential as a model for global innovation programs.

2. Manchadi – Teach Maths for Kerala

K-DISC initiated Manchadi – Teach Maths for Kerala Programmme is an innovative educational programme for improving the proficiency of Math education in Children.

Figure 7 Manchadi student activities 1

The Manchadi programme is an initiative aimed at enhancing the mathematical proficiency in children by enabling them to solve real-life problems. This educational program focuses on improving mathematical understanding and its application to everyday situations. By using globally proven techniques, Manchadi helps children in grade 5 and 6 learn mathematics in a way that adapts to their learning pace and style. This ensures that children from different backgrounds and with different learning abilities can progress effectively.

Manchadi project is currently running in:

1. 30 Model Residential Schools under the SC/ST Department
2. 100 schools as an in-school programme, for teaching Mathematics in grade 5.
3. At the Children's home Noornad, Alappuzha.
4. 2 Kendra Koodaram's at Thirunelly, Wayanad and Panangadu, Kannur

The Manchadi project has recently introduced **'Malayalapaima'** initiative to improve **Malayalam language skills** in grade 4 children in 6 Model Residentials Schools under the ST Department. This initiative focuses on language intervention to enhance the proficiency of students in their reading, writing, listening, and speaking abilities, enabling them to express themselves better and understand their subjects more effectively.

Project Achievements

1. The SC/ST Development Department has extended Manchadi to the next academic year based on positive feedback from school authorities and students.
2. Manchadi pedagogy was successfully used to introduce the entire Grade 5 Mathematics syllabus in 100 Manchadi schools under the general education department.
3. The active participation of teachers from the schools has heightened awareness of the project's impact.
4. Samagra Shiksha, Kerala (SSK), State Council of Educational Research and Training (SCERT), and Vidyakiranam have recognized the project's potential and joined the initiative. Activities are on-going to embed the Manchadi approach into the state curriculum.
5. The Block Resource Centre team plays a crucial role in monitoring student progress
6. Nooranad Children's Home, under the Women and Child Development Department, is currently the only children's home implementing Manchadi. Observing the positive impact on the children, they have formally recommended expanding the program to other children's homes across Kerala.

7. Kendra Koodaram centers in Wayanad and Kannur serve as exemplary models for contextualized learning, fostering meaningful teacher-student engagement. These centres continue to witness increasing student enrollment and are now planning to expand their programs to nearby schools with support from local educational leaders.
8. The statewide mathematical seminar, held at various venues to introduce teachers and the public to the innovative learning approach of the Manchadi Project, was warmly received.
9. In the 2025-26 Budget Speech, the Government announced the expansion of the Manchadi in-school program to one block from each district, translating to an average of 150 classrooms per block, reaching a total of 2,100 classrooms across the state.

ഗണിതം മധുരമാക്കാൻ 'മഞ്ചാടി'

കെ കെ ശിവദാസൻ

ഗണിതത്തിന്റെ സാർവത്രികവൽക്കരണത്തിനും ബഹുമുഖ ബുദ്ധി വികാസത്തിനും മഞ്ചാടി ഊന്നൽ നൽകുന്നു. കളിയും അതിന്റെ ആസ്വാദനതലവും പാഠരീതിയിൽ ഉൾച്ചേർന്നിട്ടുണ്ട്. കളിയോടൊപ്പം ചിന്താ പ്രക്രിയയെയും ഒരുമിച്ചു കൊണ്ടുപോകുന്നു എന്നതും സവിശേഷതയാണ്. പിയർ ഗ്രൂപ്പുകളിൽ നിന്ന് കൊണ്ടും കൊടുത്തുമുള്ള അനുഭവങ്ങൾ കുട്ടികളിൽ പഠനതാൽപ്പര്യമുണർത്തുമെന്ന തിരിച്ചറിവും പ്രയോജനപ്പെടുത്തിയിട്ടുണ്ട്. പ്രശ്ന പരിഹാരത്തിന്റെ വിവിധ ഘട്ടങ്ങളെയും അതിന്റെ വികാസത്തെയും ഈ പാഠരീതി ഉൾക്കൊള്ളുന്നു.

ദേശാഭിമാനി Sat, 06 July 2024 https://epaper.deshabhimani.com/c/75385870

Figure 8 Manchadi in News

District/ Centre	No. of schools	No. of students
Kozhikode	42	2835
Kannur	10	727
Trivandrum	10	702
Kasargod	11	524
Model Residential Schools	28	913
Manchadi Kendra Koodaram	2	78
Noornaad Children's Home	1	23
Grand Total	**104**	**5802**

Table 3 Manchadi - distribution of schools and students

Way Ahead

1. Expanding the Manchadi in-school program to one block from each district (average of 150 classrooms per block) reaching a total of 2,100 classrooms across the state.
2. Embedding the Manchadi approach into the school curriculum in partnership with SCERT, SSK, and Vidyakiran.
3. Extending the Manchadi Project to additional children's homes under the Women and Child Development Department.
4. Implementing the Manchadi Project in fisheries schools under the Fisheries Department.
5. Training facilitators of Samoohya Padanamuri under the ST Department to integrate the Manchadi Program.
6. Scaling up 'Malayalapaima,' the Malayalam language intervention, to all Model Residential Schools.
7. Extending the Manchadi Project in Alappuzha district through collaboration with the panchayat.

Figure 9 Manchadi student activities 2

Figure 10 Review by S Shanavas IAS, Directorate of General Education

Figure 11 Review by Dr Jayaprakash R K, SCERT Director

Figure 12 Prof. Ravi Subrahmanyam presenting manchadi report

Figure 13 Meeting with 100 school programme teachers

Figure 14 Manchadi seminar at Vazhoor grama panchayath

Figure 15 Team Manchadi

Figure 16 Presentation of Manchadi to Samagra Shiksha, Kerala

Figure 17 Review by SCERT

3. Mazhavillu – Teach Science for Kerala

Mazhavillu is an innovative, child-centred approach to Science education, designed to transform the current school science curriculum through an integrated, thematic methodology. Moving away from traditional classroom teaching, it emphasizes hands-on activities that foster critical thinking, curiosity, and a spirit of inquiry. The approach also highlights the historical evolution of scientific knowledge while actively promoting the development of scientific temper, in alignment with the values outlined in the Constitution of India. By immersing students in dynamic, engaging learning experiences, Mazhavillu aims to cultivate young minds that are not only scientifically literate but also inquisitive, rational, and equipped for the challenges of tomorrow.

Beneficiaries

No of seventh grade students in 12 Model Residential Schools	328
No of fifth grade students in 28 Model Residential Schools	748
No of students in Integrated Rural Technology Centre (IRTC) Centre	27
No of students in Maharajas College Ernakulam Centre	28
Total No of Beneficiaries	**1131**

Project Innovations

1. Developed a thematically integrated approach to curriculum and presented science as a process rather than a set of facts, figures and definitions.
2. Replaced typical class room teaching with learning by doing, thinking and self-exploration.
3. Treating nature as an integrated whole in learning science.
4. Teaching design with students and teachers as contemporaries and equal citizens.
5. Replacing traditional examinations with continuous and comprehensive evaluation system.

Project Achievements

1. The National Resource Group (NRG) and the State Resource Group (SRG) were formed, incorporating distinguished figures from the field of science education. This initiative is designed to enhance the academic quality of Mazhavillu, promoting excellence and fostering innovation in educational practices.
2. Class-Wise Modules for grades 3-7 were prepared based on SCERT Textbooks, aligned with the Mazhavillu methodology.
3. The baseline and end-line assessments of Mazhavillu's impact on 6th-grade students across 12 MRSs was submitted to SC/ST Directors.
4. The Mazhavillu program was extended to 7th grade at 12 MRSs and initiated for 5th graders across 28 MRSs.
5. The second-phase classes were successfully inaugurated at IRTC and Maharajas College.

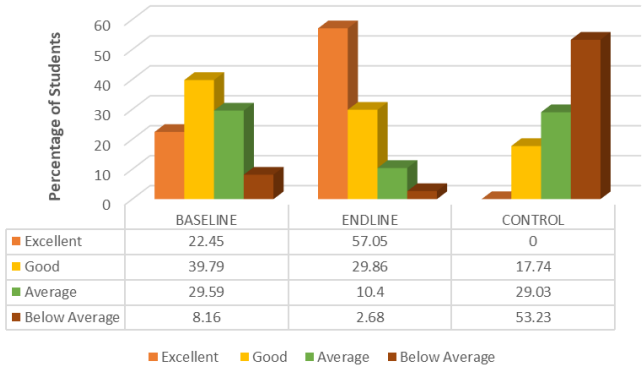

Figure 18 Comparison of Mazhavillu Baseline and Endline Assessment 2024

6. Review meetings were held with stakeholders, including teachers, department directors, and parents, to assess progress and gather feedback.
7. The Mazhavillu newsletter was launched on November 16, 2024.
8. The Mazhavillu paper presentation won the Best Oral Presentation Award at the 37th Kerala Science Congress under the Scientific Social Responsibility category.
9. A column was earmarked for Mazhavillu in Luca@School with the first article published on January 11, 2025.
10. Activities are progressing to launch Mazhavillu for 3rd-grade students in all general schools under one BRC in each district.

Figure 19 Workshop at KILA for content updating and baseline preparation, May 27-28

Figure 20 Content vetting workshop at Maharajas College, Ernakulam, June 12, with eight experts

Figure 21 Inauguration of Second-Phase Classes and Certificate Distribution at IRTC

Figure 22 Certificate distribution and inauguration of second phase at Maharajas College, Ernakulam

Figure 23 Mazhavillu in News

Way Ahead

K-DISC remains dedicated to fostering a deep-rooted scientific spirit among young minds by integrating the history, methodology, and societal relevance of science into education. Through initiatives that encourage critical thinking, inquiry-based learning, and hands-on experimentation, we aim to cultivate a new generation of analytical and innovative thinkers. The Mazhavillu project continues to expand its reach, with strategic presentations to SCERT and key academic groups to embed its methodology into the general education system. As the program extends to 3rd-grade students across districts, K-DISC reaffirms its commitment to making science education more engaging, exploratory, and impactful.

Figure 24 Mazhavillu students across Kerala

4. One District One Idea (ODOI)

The One District One Idea (ODOI) program aims to support clusters in collaboration with academic institutions, seeks to foster innovation through capacity-building and data collection from clusters across districts. Based on the studies, Mentor Institutions (MIs) submitted action plans, which were then evaluated by the Entrepreneurship Development Institute of India (EDII).

The preliminary evaluation by EDII and an expert panel categorized 63 ODOI clusters into Category A, B, and C based on their innovation potential. Categories A and B, with 39 clusters (including DIC-supported ones), were identified as having significant innovation potential. After presentations from Mentor Institutions and Cluster representatives, 27 clusters scored above 50% and were deemed eligible for ODOI support. A workshop refined action plans and explored scale-up possibilities. Following this, EDII conducted a final evaluation to identify the most promising clusters with solid innovation strategies, leading to the preparation of a draft list of champion clusters for further development.

Figure 25 Meeting with the District GMs, DIC, Cluster representatives, MIs, and EDI

Project Achievements

1. The Kanhirode Cluster is being integrated with the Vastra Gramam project in Kannur.
2. Two cluster development projects, Kerala Arts and Crafts Village, and Kollam Cashew Processors Association proposals were accepted by NABARD for funding support for the implementation of these projects.
3. The Primero Apparel Cluster, Punalur, Kollam district proposal was accepted by Kudumbashree for funding support from the Kollam district Panchayat.

The finalised clusters are as follows:

Kerala Arts And Crafts Village Cluster, Kovalam

- **Cluster Type:** Micro Enterprising - Handicraft
- **Academic Institution:** IMK Karyavattam

Venad Poultry Farmers Producer Company

- **Cluster Type:** FPO
- **Academic Institution:** TKM College of Engg.

Kollam Cashew Processors Association (DIC)

- **Cluster Type:** Food
- **Academic Institution:** TKM College of Engg.

Kanhirode Weavers

- **Cluster Type:** Micro Enterprising - Handloom
- **Academic Institution:** Vimal Jyothi Institute of Management & Research, Chemperi

Shornur Agriculture Implements

- **Cluster Type:** Manufacturing
- **Academic Institutions: Jawaharlal College of Engineering & Technology, Ottapalam and Government Engg. College, Sreekrishnapuram**

Kuthampully Handloom

- **Cluster Type:** Micro Enterprising - Handloom
- **Academic Institution:** Jyothi Engg College, Cheruthuruthi

Table 4 ODOI Shortlisted Clusters

5. One Local Government One Idea (OLOI)

The 1997 People's Plan Campaign was a milestone in India's Panchayati Raj system, ensuring the genuine devolution of funds, functions, and functionaries to local governments in Kerala. With 40% of the state's budget allocated to Panchayats, this initiative has strengthened local governance, leading to significant advancements in social health, education, living conditions and disaster response. Over the years, empowered local governments have driven considerable progress, reinforcing the role of decentralized governance in sustainable development.

Traditionally, LSGIs have focused on welfare and regulatory functions, including essential service delivery, infrastructure maintenance, and social welfare implementation. However, their role has evolved in response to emerging challenges and opportunities. In recent years, they have expanded their scope to include employment generation, local economic development (LED), and tackling second-generation development issues that require multi-disciplinary approaches and advanced science and technology solutions. As LSGIs continue to take on these new responsibilities, fostering innovation and capacity-building at the local level remains a key priority.

This section of the annual report provides an overview of the progress made by KDISC as part of its flagship programme **'One Local Government One Idea Programme(OLOI)'** which aims to extend the innovation methodology by operationalising a quadruple helix ecosystem consisting of government, academia, civil society, and industry for second generation problem-solving and creating value to local governments.

Project Achievements

Figure 26 OLOI Partnership with KTU

The pilot phase of OLOI focused on 12 distinct problems falling under 8 thematic areas submitted by 100 LSGIs. The problems included sanitation in water-logged areas, solid and liquid waste management, priorities for the elderly, enhancing the support system of Buds Schools, tackling unemployment, addressing bird flu concerns, reducing carbon footprints, resolving market-related issues related to agricultural products, improving clam processing methods, addressing aqueduct depletion, managing flooding challenges, and ensuring access to safe drinking water.

Detailed problem canvases were developed for ten key issues through an in-depth analysis of the current situation, beneficiary aspirations, and the scope and boundaries of each problem. This process was conducted in collaboration with academic and research institutions, including IIT Bombay, Kerala University of Fisheries and Ocean Studies (KUFOS), Kerala Technological University, Trinity College of Engineering, and the Integrated Rural Technology Centre (IRTC). Subsequently, solutions were identified for seven of these problems in partnership with various academic institutions and startups across the country.

The second phase of OLOI focused on urban issues. It invited problems from urban local bodies in the state. A total of 19 urban local bodies submitted their problems through an online portal. These problems were reviewed at different levels. They were then linked to a start-up challenge for solutions.

Some of those solutions evolved through the two phases are outlined under two major categories

(1) Innovations under implementation and
(2) Innovations in progress, as detailed below.

2.1 Innovations under implementation

A) Decentralized Sewage Treatment Plant (STP) by Electro-Chemical Process:

A Water Battery & Membrane Electrode Reactor that revolutionises wastewater treatment by integrating seven processes—including electrocoagulation, electro-oxidation, and disinfection—within a single, chemical-free compact system. This decentralised, modular reactor significantly reduces energy usage (0.9–1.1 kWh per KL), produces 50% less sludge, and requires 75% less land than traditional methods. Additionally, the compact and modular structure allows for easy installation in space-constrained environments, including underground and rooftop setups. It also effectively handles shock loads of up to 50%, making it a reliable and scalable solution. The treated water is suitable for non-potable reuse, while the non-hazardous sludge can be repurposed as manure. Cutting greenhouse gas emissions and operational costs.

Figure 27 OLOI - Decentralized Sewage Treatment Plant 1

The inaugural plant in Kerala will be launched as a pilot project within the Thiruvananthapuram Municipal Corporation limits. This initiative aims to tackle the persistent issue of septic tank overflow, which affects two residential apartment complexes housing a total of 75 families in the Vizhinjam Mathipuram Colony.

B) Decentralized Sewage Treatment Plant (STP) by Biological Process:

Tellus Habitat has designed R3H2O, a smart, decentralized wastewater treatment system tailored for municipal sewage in the 5–50 KLD range. Featuring an advanced dual biofilter and an energy-efficient batch-fed process (0.7–1.1 kWh per KL), R3H2O reduces operational costs while requiring minimal maintenance. The system eliminates the need for chemicals, produces 30% less sludge than conventional technologies, and can be installed in underground, over ground, or rooftop configurations, requiring just 5–15 sq. m of space. Its treated wastewater can be used for applications like horticulture, car washing, and floor cleaning.

Figure 28 OLOI - Decentralized Sewage Treatment Plant 2

The inaugural plant in Kerala will be launched as a pilot project within the Thiruvananthapuram Municipal Corporation limits. This initiative aims to tackle the persistent issue of septic tank overflow, which affects two residential apartment complexes housing a total of 50 families in the Vizhinjam Mathipuram Colony. Through this pilot, authorities seek to implement an efficient wastewater management solution to improve sanitation and environmental conditions in the area.

C) Energy-efficient space cooling system

Figure 29 OLOI Energy-efficient space cooling system

Albatross Energetics has developed an energy-efficient dehumidification unit utilising liquid desiccant technology, which separates moisture removal from the central AC system. This innovation enables thorough dehumidification of ventilation air while allowing the AC to handle only sensible cooling, resulting in up to 30% energy savings and improved indoor air quality. The system uses organic, non-toxic desiccants, making it a cost-effective and environmentally friendly alternative. It seamlessly integrates with existing HVAC setups and is particularly beneficial for commercial spaces like hotels, hospitals, and data centers. The first installation in Kerala will be launched as a pilot project in the Thiruvananthapuram Municipal Office.

D) Enabling access to affordable motorised waste collection low-speed electric vehicle technologies

Figure 30 OLOI Electric Vehicle for waste collection

Its innovative electric cycles and conversion kits for three-wheelers are designed to offer affordable motorised transportation for delivery personnel, factory workers, and trades people. These e-cycles (three-wheelers) can carry 500–800 kg with a 50 km range. Equipped with a Hi-Ride Heavy Torque Engine, these solutions provide cost-effective, clean mobility that is up to three times cheaper than conventional electric rickshaws. As part of a pilot initiative, 15 units will be distributed to members of 'Harithakarmasena' within the Thiruvananthapuram city corporation. This initiative aims to reduce the physical strain associated with manual labour while simultaneously creating improved income-generating opportunities for the beneficiaries.

E) Innovative solutions to address drinking water scarcity in wards located in elevated areas

Figure 31 Elakamon Panchayat shaft technology

Elakamon Grama Panchayat in Thiruvananthapuram district has a peculiar geographic topography with both low-lying and elevated regions under it. The Project for Elakamon Grama Panchayat addresses the critical issue of drinking water scarcity, particularly in elevated regions which are populated with economically disadvantaged Scheduled Caste (SC) colonies. The proposed solution for addressing water supply issues involves the installation of shaft technology in the existing pipe network. This technology is designed to manage pressure variations effectively, making use of available resources without extensive overhauls. Additionally, level sensors will be installed to monitor water levels and provide automatic shut-off when the water reaches a certain limit, preventing overflow.

F) Building innovative solutions to address the unhygienic practices in clam processing

The Muhamma Grama Panchayat, located in the Aryad block of Alappuzha district, is home to 3 clam cooperative societies with 3,689 registered members, approximately 300 of whom are actively involved in clam harvesting in Vembanad Lake, a vital source of livelihood for these families.

To improve the income for families which have been undertaking clam catching and enhance the value of clam caught from Vembanad lake K-DISC sought appropriate process solutions from academic institutions involved in fishery research. After assessing the identified solutions for technology and community readiness, we arrived at an economically sustainable process solution which can improve the market value of harvested clams of various sizes from the present level to an enhanced level. Cleaning and processing the black clams harvested from Vembanad Lake by depurating them has been found to enhance their economic value substantially. Thus, the solution arrived at requires creating Clam Depuration Plants to enable the cleaning and processing of the clams harvested resulting in the production of high-quality clams with substantially enhanced value.

The Muhamma Clam Depuration Plant is equipped with systems for water quality control, oxygenation, and temperature regulation, all essential for effective purification. However, the plant could benefit from real-time water quality monitoring systems to enhance operational efficiency. With strategic improvements, the Muhamma plant is poised to strengthen its role in the seafood industry. This innovative solution aims to address the challenges faced by the Muhamma Grama Panchayat in clam harvesting and processing, focusing on improving infrastructure, adopting modern technologies, and enhancing hygienic manufacturing methods to expand the export potential of clams.

G) Waste Management Solutions

During the pilot phase of the One Local Government One Idea (OLOI) program, **215** Local Self-Government Institutions (LSGIs) submitted their developmental challenges through the online portal. Among these, 33 LSGIs specifically identified issues related to the handling of low-value plastics and sanitary waste, highlighting a significant area of concern that requires innovative solutions.

Figure 32 Stakeholder meeting on Solid Waste Hackathon

Following this, the K-DISC has organised a comprehensive waste management hackathon, bringing together a core group from various organisations including the Local Self Government Department (LSGD), Kerala Solid Waste Management Project (KSWMP), Suchitwa Mission, Malinya Muktha Navakeralam, Clean Kerala Company, Start-up Mission and Kerala Institute of Local Administration (KILA). This initiative began with a workshop, aimed at identifying gaps and building problem statements in the waste management challenges.

Subsequently, a dedicated platform for start-up registration was launched, which saw the submission of **187** innovative solutions from various start-ups on a pan-India basis. These solutions were categorised into thematic areas such as food and agriculture, organic waste management, poultry waste management, cloth waste management, sanitary pad waste

management, plastic waste management, and micro electric vehicles for door-to-door waste collection.

A diverse panel of 37 evaluators, comprising core group members, academicians, and industry experts, assessed these solutions through a three-tier evaluation process. From the initial submissions, 30 solutions were selected for the final round, with **5** of the most promising ready-to-implement projects focused on converting used sanitary pads into pulp and plastic and four projects proposing technologies for developing wood alternatives and building materials, such as paver blocks, building blocks, and roofing tiles, using low-value plastics, agricultural waste, and construction and demolition waste.

The importance of implementing the above-mentioned five innovative solutions evolved through the KDISC Hackathon is very significant. The hackathon's innovations focus on recycling plastics and sanitary pads into value-added products without incineration and landfill which are unsuitable for Kerala's landscape.

Solution 1 - Converting used sanitary pads into plastic and pulp

Current practice for disposal of used sanitary pads is primarily landfill or incineration. In landfills, these pads cause significant environmental pollution due to their non-biodegradable components, leading to long-term environmental impacts. On the other hand, burning releases harmful gases into the atmosphere which creates health hazards and causes air pollution. Both methods are not sustainable. Hence this highlights the urgent need for more eco-friendly and innovative waste management solutions for sanitary pads.

Figure 33 OLOI - Pad Care solution

Pad Care Labs, a startup comes up with an innovative idea for the said problem. Used sanitary pads can be recycled and separated into plastic and pulp without burning. Granules can be made from the extracted plastic and paper products can be made from the pulp. A unit of this consists of bins for collecting used pads, a centralized treatment unit, and a water treatment plant for treating the used water.

Solution 2 - Converting low value plastic and C &D waste into building materials without incineration

Angirus a start up in Udaipur, Rajasthan has developed a patented technology to transform single-use plastic waste and C&D waste into construction bricks. The process involves blending, heating, and moulding plastic waste at temperatures between 150°C and 200°C.

The "Wricks" are composed of difficult-to-recycle materials, including Multi-Layer Plastics (MLP), Polypropylene (PP), Low-Density Polyethylene (LDPE), and Expanded Polystyrene (EPS). After segregation, the materials are blended, heated, and moulded into durable bricks. These bricks have a green and black appearance, with an estimated lifespan of 60 to 75 years. Their thermal conductivity is rated at 0.127 W/m-K, indicating strong insulation properties.

The model operates with a daily requirement of 4 tons of plastic waste and 10 tons of C&D waste, generating 5,000 bricks per day. The production facility occupies less than one acre of land, with a shed area of 11,000 sq. ft. and electricity consumption of 3,200 units/day.

The process diverts significant quantities of plastic and C&D waste from incineration and landfills, addressing plastic pollution and construction waste management. Each day, the solution can upcycle 4 tons of plastic waste and 10 tons of C&D waste, contributing to sustainable construction practices. The energy-efficient production process, combined with compliance with ambient air quality standards, minimizes carbon emissions and the overall environmental footprint of the manufacturing operations.

Solution 3 - Converting low value plastic and agri waste into wood substitute

Here the innovation focuses on recycling non-recyclable flexible plastic waste and transforming it into eco-friendly wood alternatives for various applications. Their key products, SAFEReCYCLER and P*Lumber (Plastic Lumber), use waste plastics and agricultural residues to create durable, sustainable materials suitable for construction and furniture.

The process involves mixing flexible plastic waste with agricultural residues like coconut dust, rice husk, and bagasse, along with functional materials such as glass fiber, clay, talc, calcium carbonate, iron oxide, and colouring pigments. The result is a wood-alternative material called "Un Wood," which can be used for indoor and outdoor applications like furniture, pallets, and flooring. This innovative material serves as a strong alternative to natural wood.

It requires 5 tons of flexible plastic and agricultural waste daily, producing 12 tons of Un Wood per day. The material is resistant to rot, decay, and insect damage, with an estimated lifespan of 20 to 50 years. Additionally, it remains inactive in air, water, and soil, ensuring no adverse environmental effects. Un Wood is recyclable, promoting a circular economy approach, and can be laminated for aesthetic appeal.

Solution 4 - Biodegradable packaging materials for food packing

Varsya Eco Solutions Pvt. Ltd., based in Thiruvananthapuram, has made a significant breakthrough in the realm of eco-friendly packaging. The startup’s innovation focuses on replacing plastic coatings in food packaging with a biodegradable, bio-based alternative that is both sustainable and safe for food contact. The core product is a bio-coated paper that uses a bio-layer derived from vegetable oil, developed in collaboration with CSIR labs. This eco-friendly coating replaces traditional plastic barriers in food packaging and agricultural cutlery. Enhanced with bio-additives, the material is durable, biodegradable, and safe for direct food contact.

2.2 Innovations in progress

Efforts are underway in collaboration with IIT Bombay to address the chronic drinking water scarcity in Paivalike Grama Panchayat through the implementation of the 'Planned Rainwater Harvesting and Controlled Aquifer Recharging' initiative, accompanied by continuous monitoring to ensure sustainable water availability.

As another initiative, the IIT team conducted an in-depth study of the drinking water challenges faced by Sree Narayanapuram Grama Panchayat. As an immediate relief measure, the installation of a high-TDS reverse osmosis (RO) plant has been proposed to provide safe drinking water to the severely affected population. Furthermore, a detailed study of the area's aquifer has been proposed as part of a long-term strategy, with plans to develop a master plan for 'Controlled Aquifer Recharging' to enhance groundwater sustainability.

KDISC has launched a start-up challenge to gather innovative solutions for addressing **human-wildlife conflict**. This initiative aims to find effective and sustainable strategies to

mitigate conflicts between communities and wildlife. The challenge has been introduced with the support of the Kerala Forest Department, ensuring collaboration with experts and stakeholders in wildlife conservation. Through this initiative, KDISC hopes to encourage startups and innovators to develop creative and practical solutions that promote coexistence between humans and wildlife.

In the social sector, a '**Time Bank**' is being developed in partnership with Wayanad Government Engineering College to support elderly care initiatives. Meanwhile, **Carbon Neutrality** efforts are actively being carried out in 19 panchayats with the assistance of the APJ Abdul Kalam Technology University.

Figure 34 Shri. A.K. Saseendran, Minister for Forests and Wildlife, Kerala inaugurates the hackathon to find innovative solutions for human-wildlife conflicts

Figure 35 Block Innovation Cluster formation meeting with Block Panchayat Presidents

Way Ahead

The **OLOI programme** of K-DISC has successfully demonstrated that the **quadruple helix-based ecosystem** is a strong and effective model for addressing second-generation developmental challenges. By bringing together **local self-government institutions, academia, the public, and the private/local enterprise sector**, this approach has helped in finding innovative solutions to many real-world problems.

Building on this success, K-DISC is now working towards establishing **Block Innovation Clusters (BICs)** to strengthen the local innovation ecosystem. These clusters, based on the quadruple helix model, aim to create a structured platform for **solving real-life challenges** and promoting **Local Economic Development (LED)**. To take this forward, pilot projects have already been initiated in **19 Block Panchayats** covering **116 Grama Panchayats**. These BICs will empower local bodies to drive innovation, foster economic growth, and create a sustainable future for communities across the state.

To augment these efforts, K-DISC has taken the initial step of collaborating with APJ Abdul Kalam Technological University to involve students in real-life problem-solving. The socially relevant projects have been incorporated as mini-projects in the curriculum across all branches under KTU. For this, KDISC will create a problem shelf of socially relevant problems. These problems are derived from issues identified in each local body. KDISC will also collaborate with other universities and academic institutes in the same direction.

6. Accelerating Adoption of Emerging Technology Solutions in Government

K-DISC is mandated by the Government to encourage and facilitate the adoption of Emerging Technology Solutions (ETS) in various Departments and public agencies under the Government of Kerala to enhance efficiency and effectiveness of office systems and processes. Emerging Technologies typically include Artificial Intelligence (AI)/Machine Learning (ML), Blockchain, Internet of Things (IoT), Robotics, Robotic Process Automation (RPA), Big Data Analytics, Augmented Reality (AR)/ Virtual Reality (VR), Electric Mobility and other cutting-edge Technologies.

K-DISC follows a well-defined, transparent approach in project management. Key stages in the Emerging Technology project life cycle are as follows:

Figure 36 Emerging Technology Project Life Cycle

After the successful pilot implementation, the projects are handed over to the End User Departments after benefit evaluation. Based on the benefit evaluation, the end user Department may decide to scale up the project to the entire State of Kerala or a Phase 2 of the pilot project is initiated, with advanced benefits for the End User Department and Citizens. K-DISC has so far undertaken **33 projects** in the Emerging Technology Pilot initiative, which are under various stages of implementation.

Project Achievements

During April 2024-March 2025, the Emerging Technology Program has handled 24 projects including 5 new projects in the Ideation stage.

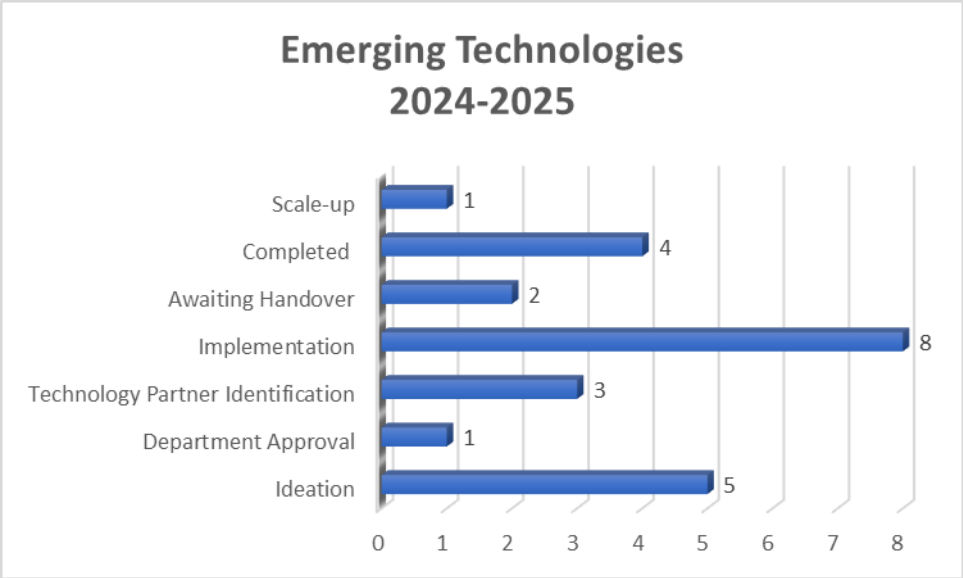

Figure 37 Overview-Emerging Technology Projects 2024-25

The summary of the 24 projects based on the project's stages is given below.

1. Projects undergoing Scale-up

1.1. **Blood Bag Traceability Phase II** - Based on the success of the K-DISC pilot project Blood Bag Traceability implemented at General Hospital, Thiruvananthapuram and THQH, Parassala, Government has issued G.O.**(Rt)No.2644/2024/H&FWD dated 5.11.2024** sanctioning the statewide rollout of **Blood Bag Traceability Phase II** at 98 centres across Kerala. K-DISC is acting as the Programme Management Unit as per the MoU with Kerala State Aids Control Society (KSACS). The project is progressing as planned and will be launched by August 2025.

2. Completed Projects

2.1. **Wireless Infusion Monitor with Dripo** - The Wireless Infusion Monitor with Dripo for the Department of Health and Family Welfare has been successfully piloted at Malabar Cancer Centre, Thalassery, and **officially launched by the Honorable Chief Minister of Kerala** on 25th January 2025.

Figure 38 Wireless Infusion Monitoring with Dripo- Project launch by Hon.Chief Minister at MCC

2.2. **G-Gaiter- The Advanced Gait Rehabilitator** for Department of Health and Family Welfare - Currently operational at General Hospital, Thiruvananthapuram

Figure 39 G-Gaiter installed at General Hospital, Thiruvananthapuram

2.3. **Citizen Satisfaction Survey (Citz Happy)** - Currently in use at 15 State GST Department Facilitation Centres.

Figure 40 QR Code provided at GST facilitation centre for citizen satisfaction survey

2.4. **Remote Monitoring System for Solar Power Plants** - The Proof of Concept (PoC) project for Agency for New and Renewable Energy Research and Technology (ANERT) has been successfully completed at one pilot location.

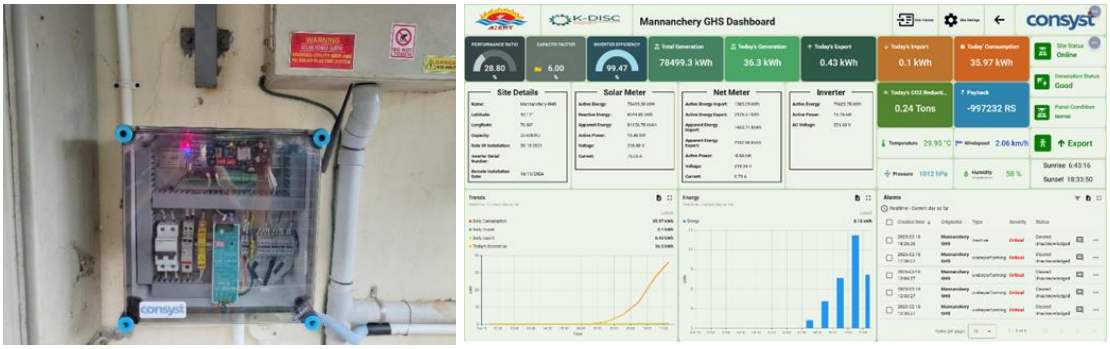

Figure 41 Data Aquisition Panel Installed at GHS Mannanchery, Alapuzha and Remote Monitoring System

3. Projects awaiting Hand-over to Department

3.1. Emerging Technology Driven Continuous Drinking Water Supply Monitoring System for Pandalam Municipality Town (KWA)

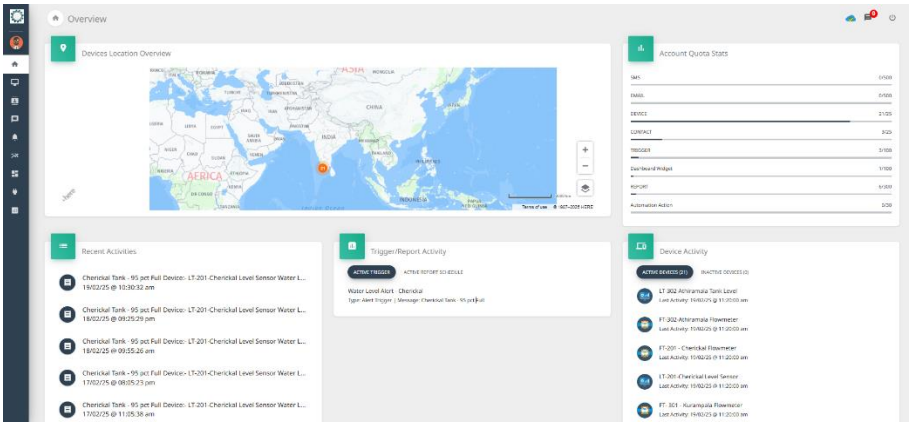

Figure 42 Drinking water supply monitoring dashboard

3.2. Smart Crop Insurance using Block Chain Technology (Agriculture Dept).

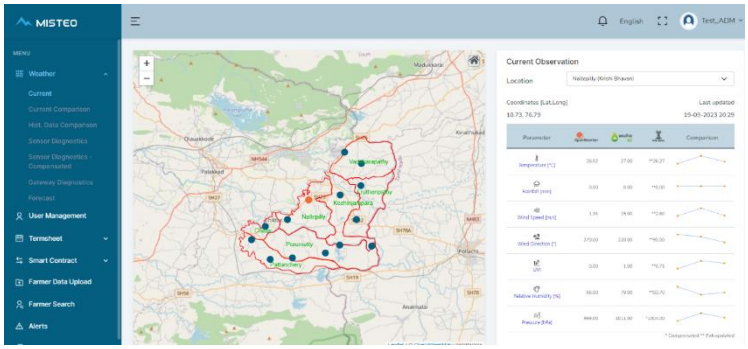

Figure 43 Misteo Dashboard - Smart Crop Insurance

4. Projects undergoing implementation

4.1. Integrated Parking Management System (IPMS) - **Memorandum of Understanding** executed with **Thiruvananthapuram Corporation for** the implementation of the Integrated Parking Management System (IPMS) at Gandhi Park.

4.2. Landslide Early Warning System - K-DISC has identified **Indian Institute of Technology, Roorkee** as a partner organization vide **G.O.(Rt)No.84/2024/PLG&EA(DVPMT&INNOVATION)** dated 23.08.2024. An agreement has been signed with IIT-Roorkee for the implementation of the pilot project - Landslide Early Warning System for Kerala State Disaster Management Authority. The project implementation will kick-start in April,2025.

4.3. Mobile App to Connect the Beneficiaries of KASP-PMJAY Health Schemes

Figure 44 ANPR Camera and Boom barrier installed at Gandhi Park, Thiruvananthapuram

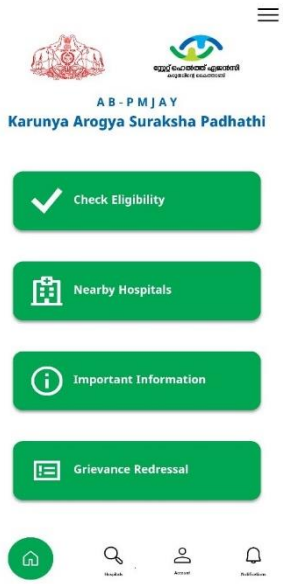

Figure 45 Mobile Application for the Beneficiaries of KASP-PMJAY

4.4. AI based system for automatic screening of Diabetic Retinopathy Phase 2

4.5. Automated Cervical Cancer Screening using Artificial Intelligence

4.6. AI Based OP Token Slot Prediction System for Hospitals

4.7. Block Chain Powered Tissue Culture Traceability system for Biotechnology & Model Floriculture Centre (BMFC)

4.8. Hekaflo-IoT Enabled High Flow Nasal Oxygen Therapy Device

5. Projects in Technology Partner Identification Stage

5.1. Kerala Bone Marrow Registry - Government has issued order No: G.O.(Rt)No.2034/2024/H&FWD Dated 26.08.2024 for the implementation of Kerala Bone marrow Registry for Department of Health and Family Welfare.

5.2. AI Chat bot for eHealth

5.3. Indoor Navigation System in Hospitals for the Public to Track and Use

6. Projects awaiting Department approval

6.1. Administration and Management of Chit funds in Kerala on Block Chain for Registration Department is under the Department approval stage.

7. Ideation Stage

7.1. Innovation for Government (i4G) 2024 initiative has identified 20 products/solutions for gauging interest from various Departments. Demonstrations have been completed for the following Departments.

7.1.1. Kerala Water Authority

7.1.2. Kerala State Disaster Management Authority

7.1.3. Directorate of Agriculture and Farmer's Welfare

7.1.4. Kerala Infrastructure Investment Fund Board

Figure 46 i4G 2024- Demonstration to KWA

7.2. Integrated Health Care Delivery for Department of Health and Family Welfare

7.3. Malabar Cancer Centre, Thalassery – Collaboration with MCC to identify problem statements and possible solutions.

7.4. Kerala Medical Services Corporation Limited (KMSCL) - Identifying and implementing ET interventions to enhance KMSCL's IT systems.

7.5. Initiated a new stream for Emerging Technology Interventions in Public Sector Units.

Way Ahead

As K-DISC continues to drive innovation across Kerala, the upcoming months will focus on launching transformative projects in healthcare, local governance, and disaster management. Emerging Technology supported solutions will be explored in Public Sector Unit of Kerala as well. Key initiatives include AI-powered healthcare solutions, blockchain applications, and IoT-driven monitoring systems, reinforcing our commitment to technology-driven public service. Strategic collaborations with institutions like Malabar Cancer Centre and Kerala Medical Services Corporation Limited will further enhance healthcare innovation. With a strong emphasis on emerging technologies, pilot projects, and stakeholder partnerships, K-DISC is set to make a significant impact on Kerala's development landscape, fostering a future of smarter governance and improved public welfare.

7. Innovation by Youth with Disability

The project implemented by National Institute of Speech and Hearing (NISH) identifies and empowers persons with disabilities who are self-motivated to formulate and implement innovations in society. I-YwD aims to make Innovation learning accessible and inclusive for youth with disabilities. Innovation for the framework of this project is defined as a unique and well-formed idea or solution to a pertinent problem in society. I-YwD project provide resources in the form of training and mentoring for a period of two years or till their ideas have materialized and stabilized, whichever happens earlier. The idea could take the shape of a product, a service, applied research or a combination. In order to actualize the idea, the program offers knowledge, tools, perspective and motivation to the participants. Through a blended learning approach, combining both online and offline engagement, the program ensures comprehensive participation.

The Innovation by Youth with Disabilities (I-YwD) program has continued to grow and make a positive impact over the past year. Through structured mentorship, training and entrepreneurial development, the program has empowered youth with disabilities, equipping them with the skills and confidence to drive meaningful change. A major development this year has been the addition of a new cohort of 20 participants, while Cohort 2 successfully completed their three-year journey with I-YwD. This report highlights the key milestones, achievements and future directions of the program.

Project Achievements

Cohort 2: Progress and Completion

1. Cohort 2 has made significant strides, advancing from the ideation stage to the pitching and prototyping phases of their entrepreneurial journeys. A key milestone in May 2024 was the establishment of an Expert Panel by K-DISC for Cohort 2, offering participants a platform to pitch their ideas. Following their successful presentations, Sravan Vinod, Najela K P, Nibin Mathew and Suhas Mohandas were awarded financial support for the prototyping phase of their projects.
2. Although Cohort 2 officially completed its three-year journey with I-YwD in November 2024, the team continues to assist them in their entrepreneurial endeavors, with the hope of witnessing their continued success as entrepreneurs. A Technical Training Session on entrepreneurship was conducted by subject expert, Sandeep Jayachandran for participants from Cohorts 2, as well as for the I-YwD core team. The session enhanced the knowledge and skills of both mentors and participants, better preparing them for their entrepreneurial journeys.

Cohort 3: Advancing Through Ideation & Prototyping

1. Cohort 3 has made significant progress, with participants like Sajeena, Rahman, Sidharth and Harish advancing toward the prototyping stage, having achieved 20% completion. Monthly synchronous sessions and ongoing mentoring have ensured steady progress. Additionally, plans are underway to onboard expert mentors who will provide specialized guidance to support their development.

Cohort 4: Selection & Initiation

A new batch of participants joined the program this year following a detailed and meticulous collaborative selection process, marking another highlight for the I-YwD program. The application period for Cohort 4 (Aug 15 - Sep 1, 2024) saw a strong response, with 360 inquiries and 133 formal applications. After interviewing 86 candidates, a participatory selection camp was held to assess their potential and alignment with the program's goals.

As a result, 20 promising candidates, driven by a passion to become entrepreneurs, organically formed Cohort 4.

Figure 47 Online meeting of Cohort 3 participants

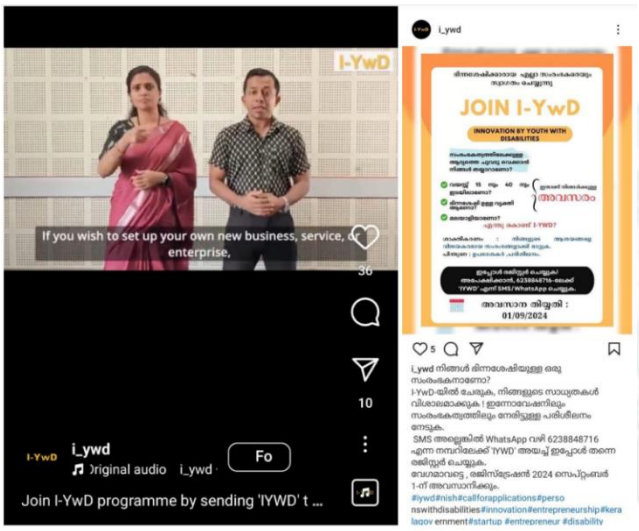

Figure 48 Social media awareness campaign on I-YwD

Training of Trainers (ToT)

Sessions on entrepreneurship and company formation were conducted by subject experts, Sandeep Jayachandran (Company Secretary) and S M Anil Das (Chartered Accountant). These sessions provided in-depth insights into the financial and legal aspects of startups, ensuring that mentors are now better equipped with the skills needed to navigate their entrepreneurial journeys.

Additionally, these sessions have contributed to the development of the entrepreneurship curriculum for I-YwD. To further enhance professional growth, the team is also conducting internal training sessions through book readings, discussions and skill-building, fostering continuous learning and development.

Development of Curriculum Videos

The team is actively engaged in the production of over 150 educational videos covering essential entrepreneurial concepts. These videos include core curriculum content, Indian Sign Language (ISL) interpretation for each lesson and an ISL glossary introducing key entrepreneurship terms.

All videos are made fully accessible with necessary features such as ISL interpretations, English subtitles, on-screen key concepts, and transcripts. Recording sessions take place systematically every Wednesday at the Centre for Communication and Media Development, NISH, maintaining high-quality content standards.

Community Engagement

1. Social Media Outreach: Regular Instagram posts on socially relevant days to spread awareness on disability and inclusion.
2. World White Cane Day Session: Organized an awareness session at NISH led by Tiffany Brar, founder of the Jyothirgamaya Foundation, an organization empowering blind individuals through mobility training and education.

3. Mental Health Awareness Session: Conducted a session on mental well-being for NISH students, facilitated by Sherin Noordheen, founder of Let's Live, an NGO dedicated to suicide prevention.

Way Ahead

This year has been a period of growth, innovation, and impact for the I-YwD program. From the successful progression of Cohorts 2 and 3 to the meticulous selection and initiation of Cohort 4, the program continues to nurture aspiring entrepreneurs with disabilities. Key initiatives such as the Training of Trainers (ToT), development of curriculum videos and strategic discussions with K-DISC have further strengthened the program's foundation.

Efforts to secure CSR funding reflect the team's commitment to long-term sustainability, while the team's engagement goes beyond working with participants. By actively celebrating inclusion and diversity, I-YwD raises awareness on critical social issues through initiatives like social media campaigns, disability awareness sessions and mental health advocacy. These efforts reaffirm the program values and extend the impact beyond the immediate scope of the program.

As I-YwD moves forward, the program continues to expand its impact with a forward-looking approach. The team remains committed to supporting participants beyond their formal engagement, strengthening its initiatives and advocating for a more accessible and inclusive future.

Figure 50 Meeting with Robin Tommy, Executive Director, K-DISC regarding I-YwD

Figure 49 I-YwD curriculum video shoot of the Entrepreneurship module

8. STRIDE: Empowering Lives Through Inclusive Innovation

Building upon Kerala's established frameworks in social development, STRIDE (Social Technology & Research for Inclusive Design Excellence) from K-DISC Social Enterprise and Inclusion Division envisions a comprehensive ecosystem that upholds every citizen's fundamental right to live with dignity and self-reliance. This initiative recognizes assistive technology not merely as devices, but as enablers of independence, dignity, and equal opportunity.

The ecosystem creates a sustainable circle of empowerment where academic institutions, community organizations, and government bodies collaborate to understand human potential first, environmental adaptations second, and technological interventions where essential. This human-centric approach focuses on three core elements: individual capability and will, enabling social environments, and appropriate technological support. Through K-DISC's innovation framework, STRIDE creates a unique design, research and technology ecosystem where students and faculty work alongside community members to develop solutions that emerge from lived experiences. The designs evolve through continuous feedback, ensuring solutions are not just technically sound but deeply rooted in real needs.

By integrating with existing government initiatives, STRIDE strengthens our support systems through:

- Community-centered innovation where engineering institutions collaborate with Kudumbashree and Social Justice networks to understand real needs and co-create solutions
- Sustainable livelihood generation where community members become solution providers and design partners
- Local production ecosystems reducing dependency while ensuring customization and continuous design improvement
- Knowledge networks connecting academia, industry, and community expertise in a collaborative design process

This integrated approach transforms our existing support systems into enablers of independence, creating sustainable livelihoods while ensuring every citizen can participate fully in society. The initiative builds upon our strong foundation in social development, adding new dimensions of technological innovation, participatory design, and community empowerment, ultimately working towards a more inclusive and self-reliant Kerala where solutions emerge from and evolve with the community.

1. Kickstarted the activities of STRIDE on 1st December 2024.
2. 1 MSW intern and 2 interns on 3D printing & design were onboarded on 18th December 2024.
3. Initial meetings/discussions with the proposed partners Viz, Kudumbashree, Kerala Start – Up Mission, APJ Abdulkalam Technological University, Samagra Shiksha Keralam, IEEE and Tinker Hub.
4. Conducted field visits to Kudumbashree Buds schools and based on the need analysis study, some of the Low – Tech assistive devices were designed and printed.
5. Roundtable meeting with partners (Kudumbashree, Kerala Start – Up Mission, APJ Abdulkalam Technological University, Samagra Shiksha Keralam, IEEE and Tinker Hub) and NGOs followed by the Showcasing of Low -Tech Assistive devices on 15th January 2025.

6. Showcasing of Low -Tech Assistive devices on 19.01.2025 at Chilla an NGO at Karakulam, Trivandrum
7. Designathon - K-DISC STRIDE Assistive Designathon 2025 planning
8. Initiated the process for onboarding MSW internship with stipend
9. Participation and showcasing of Low -Tech Assistive devices on the Panchayath Day Celebrations at Guruvayoor from 14th to 19th February 2025
10. Participation and showcasing of Low -Tech Assistive devices on the Kerala at International Congress on Kerala Studies from 22nd to 24th February 2025
11. Logo and brand kit finalised for STRIDE

Current Focus: STRIDE Initiative

The STRIDE program represents our most ambitious initiative to date, aiming to address critical gaps in assistive technology while creating sustainable employment opportunities. This initiative exemplifies our commitment to:

Figure 51 Round Table meeting with Stakeholders on 15.01.2025

Community-Centered Innovation: Ensuring solutions are developed with and for the communities they serve.

Sustainable Impact: Creating models that are financially viable while maximizing social return.

Inclusive Growth: Ensuring that technological advancement benefits all sections of society, particularly marginalized communities.

Figure 52 STRIDE Low-tech assistive devices Demo Day – 15.01.2025

Figure 53 Meeting with Smt. R Bindu, Hon. Minister for Higher Education and Social Justice

Centre of Competence

9. Kerala Knowledge Economy Mission

The Government of Kerala launched the Kerala Knowledge Economy Mission (KKEM) with the goal of providing employment to educated youths of Kerala. The Kerala Development and Innovation strategic council (K-DISC) was entrusted with the implementation of the scheme. As part of the KKEM, the government envisions creating gainful employment opportunities for the jobseekers through local demand generation and employment facilitation at both local and international levels. Leveraging the strengths of these various partners and enhancing their capabilities will enable the mission to achieve the desired scale.

To realize the vision of transforming Kerala into a Knowledge Society, the initiative focuses on knowledge-based jobs, Demand Side Management, skill development, Curation and Counselling Services, and mobilization. A digital platform was developed named Digital Workforce Management System (DWMS) for streamline the activities of KKEM which connects job seekers and employers, offers skilling programmes, curation services. The DWMS is a platform that connects all stakeholders in creating a knowledge-based ecosystem. The job aspirants can fine-tune their career preferences and enrich their profiles to enhance their chances of getting a dream career.

Figure 54 Employers' Conclave, 5th June 2024

Figure 55 Work Near Home Kottarakkara construction inauguration, 23 Nov 2024

Figure 56 Back 2 Work High Level Discussion

Figure 57 Vijnana Keralam Alappuzha Job fair

Project Achievements

Description	Count as on 21.02.2025
Employers Registered	7,377
Job Seekers registered	18,43,068
Vacancies Mobilized	16,14,443
Domestic	6,64,106
International (Onsite and Online)	18,178
International (through NORKA)	784
National	9,31,375
Vacancies Freelancing	3,843
Vaccancies brought by Foundit	4,20,903
Vacancies Third Party(Monster...etc)	4,59,521
Applied (Distinct)	19,73,752 (3,30,866)
Interviewed (Distinct)	55,695 (39,667)
Selected / shortlisted (Distinct)	50,607 (35,325)
Employment provided	1,29,860
Direct (Distinct)	54,644 (50,607)
* Third Party (Employment Exchange, Kudumbashree, KASE, ASAP, NORKA, ODEPC)	75,216
Job Seekers - Skilling provided through DWMS	23,835

Table 5 KKEM Output as on 21.02.2025

District	Registered	Applications	Applications/ Registered (%)	Interview Attended	Interview Attended/ Applications(%)	Hired	Hired/ Interview Attended (%)
Thiruvananthapuram	3,08,368	38,573	12.51	5,006	12.98	4,317	86.24
Kollam	1,39,165	29,302	21.06	4,498	15.35	3,988	88.66
Pathanamthitta	62,933	17,331	27.54	2,341	13.51	2,102	89.79
Alappuzha	1,06,038	21,818	20.58	3,980	18.24	3,423	86.01
Kottayam	95,990	18,346	19.11	2,396	13.06	2,061	86.02
Idukki	44,838	8,645	19.28	1,469	16.99	1,131	76.99
Ernakulam	1,59,551	31,094	19.49	5,410	17.40	4,729	87.41
Thrissur	1,43,989	26,393	18.33	3,736	14.16	3,079	82.41
Palakkad	1,36,248	27,408	20.12	5,479	19.99	5,135	93.72
Malappuram	1,48,187	21,487	14.50	4,226	19.67	3,831	90.65
Kozhikode	1,24,823	21,400	17.14	3,981	18.60	3,299	82.87
Wayanad	33,794	6,678	19.76	1,266	18.96	1,029	81.28
Kannur	1,14,357	20,459	17.89	3,330	16.28	2,809	84.35
Kasaragod	50,147	9,246	18.44	1,659	17.94	1,377	83.00
Total	16,68,428	2,98,180	17.87	48,777	16.36	42,310	86.74

Table 6 District wise hiring status of candidates registered on DWMS as on October 2024

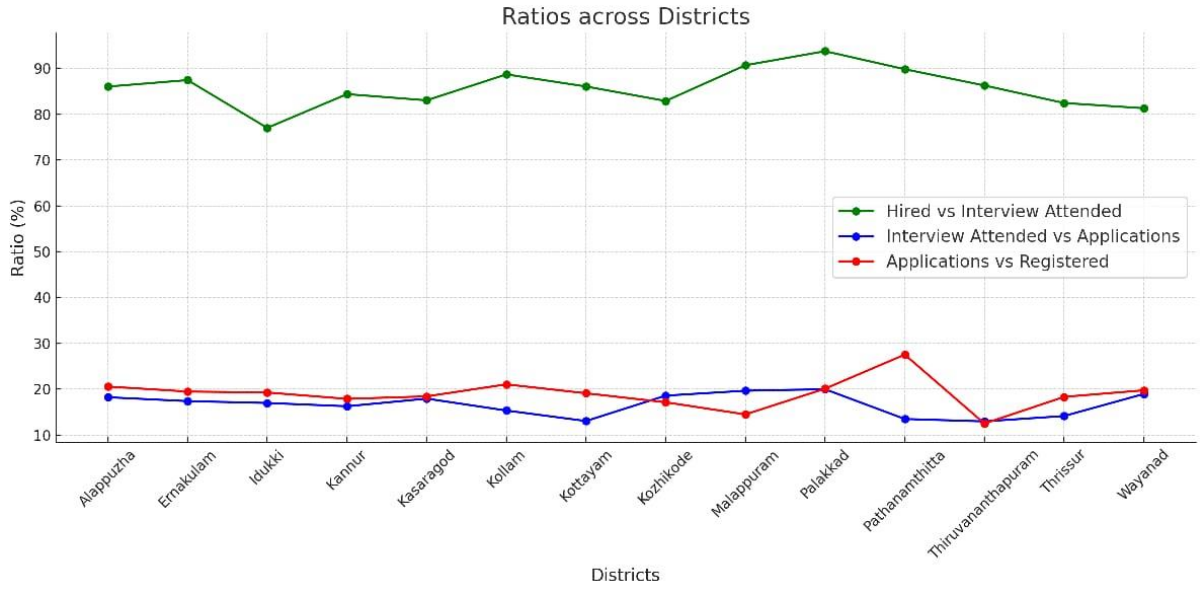

Figure 58 District wise hiring trend of candidates on DWMS as on October 2024

Curation and Counselling of Job Seekers

The Curation and Counselling initiative aims to provide tailored support to job seekers at various stages of their career journeys. With the support of the KKEM, this initiative focuses on building confidence, improving presentation skills, and matching candidates to suitable job opportunities.

Key Metrics

Curation and Counselling Service	Number of beneficiaries
Career Assessment	3,384
Career Counselling	611
Personality Development Training	1,303
Work Readiness Program	556
Robotic Interview	301
English Score Assessment	1,950
Employability Training Enrollment	7,518

Table 7 Key Metrics of Curation and Counselling Services

1. KKEM has launched the Talent Accelerator Program (TAP) in association with Foundit and has designed the assessment of applicants for the banking sector. In this pilot batch at Pathanamthitta, **61 job seekers** attended the assessment and initiated the interview preparation module training.
2. The Talent Accelerator Program (TAP) was successfully launched in collaboration with TCS iON. A total of 1,000 tests were scheduled, **738 candidates** attended the test. Following the assessment, 724 candidates have been effectively mapped to existing job opportunities.
3. LinkedIn and Coursera have also been empaneled for online skilling programmes.
4. Offline Mentor Training of LinkedIn and Coursera Talent Accelerator Programme was conducted at four Locations -Trivandrum, Ernakulam, Thrissur and Kozhikode. Training was offered for **380 mentors** from 178 colleges. Conducted 14 online mentor workshops for the Linkedin and Coursera Talent Accelerator Programme.
5. Conducted faculty development programme for 27 faculties on Employability Training with the support of Wadhwani.

6. A two-day Foundation Training Module to help job candidates refresh their skills and become job-ready before interviews was developed.
7. Two-day foundation training modules were developed for 27 modules.
8. Launched 15 self-paced courses aimed at enhancing employability and a total of 7518 job seekers enrolled across various courses.
9. Sector-specific Work Readiness Program training modules for the IT-ITeS, Banking and Finance, Production and Manufacturing, Sales and Business Development, and Administration sectors were developed.
10. A capacity-building program for community ambassadors as part of creating a mentor pool for the employability training programme was conducted.
11. A 10-hour interview readiness boot camp curriculum to enhance job seekers' interview skills under the Vijnana Pathanamthitta initiative was developed.
12. Steps to develop Language Accelerator Programme for supporting jobseekers in improving the language and Engineering Accelerator Programme for Engineers, Polytechnic Students, and ITI Accelerator Programme for ITI students was initiated.
13. Prepared and finalized a playbook as reference for mentors, equipping them with tools, strategies, and insights to navigate their roles with confidence and support job seekers. Developed training materials for mentor career path orientation.
14. Started association with Government Commercial Institutes (GCI) and initiated the faculty development training program for faculties from GCIS.
15. Organized a career counsellors' workshop to enhance counselling services and initiated the accreditation process for counsellors with support from the Management & Entrepreneurship and Professional Skills Council (MEPSC)
16. Established a long-term collaboration framework with KTU to provide internship opportunities for final-year KTU students.
17. Direct sourcing of **6,500+ internships** across multiple Sectors and Placed over **149 job seekers** in internship roles.
18. Collaboration agreement with State Institute of Technical Teachers Training & Research (SITTTR) for providing internship opportunities to polytechnic students submitted and finalized. Anticipating approval by March 2025.
19. Strengthened engagement with over **250 institutes** spanning from engineering, arts, science, and management colleges for internship mobilization.
20. Conducted regular orientation sessions and webinars to educate students and faculty on the importance of internships.
21. Conducted internship fairs to connect students with potential employers and increase awareness about available opportunities.
22. Established a structured monitoring mechanism in institutions for effective internship participation.
23. Government institutions, including the Chemical Examiner's Laboratory, Kerala Institute for Entrepreneurship Development (KIED), Kerala State Climate Change Adaptation Mission, Suchitwa Mission, Kerala State Lotteries Department, Office of the Joint Director (LSGD), Centre for Management Development, KACV, and Kerala State Statistical Commission, have been on boarded to the DWMS portal and have posted internship vacancies.
24. Approved CSR funding from Terumo Penpol for the conduct of training for women.

Skilling of Jobseekers

The skilling module of KKEM supports jobseekers to fine tune their skills through skill providers such as Government agencies, Training Providers and Higher Education Institutions. Skill partners have been aggregated and their programmes were curated in DWMS.

- Skill Course (HEI & Partner) Candidates Completed: 2678
- Skill Course (HEI & Partner) Candidates Enrolled: 4944
- Skill Course (HEI & Partner) Candidates applied: 8680
- Total Launchpad conducted -2
- Total number of students enrolled in Learning Circle – 1074
- Total Institutions Registered (Talent Accelerator Program): 33 Jobseekers
- Total Mentors Registered (Talent Accelerator Program): 1,141 Mentors
- Total Enrollments (Talent Accelerator Program): 3,244 Jobseekers
- Number of skill programmes catalogued – 85
- MoU Signed with Higher Education Institutions – 10
- MoU signed with Sector Skill Councils - 3

KKEM, in association with Malabar Chamber of Commerce, Calicut Innovation and Technology Initiative, District Employment Centre, and Kerala Academy for Skills Excellence, hosted a HR Managers meet (Udyoga Jyothi) at Kozhikode. July 26, 2024.

Figure 59 HR Managers meet (Udyoga Jyothi) at Kozhikode. July 26, 2024

Figure 60 Foundation Module Development Workshop, Jan 2025

Figure 61 PDT Training for Connecting Taliparamba, January 2025

Figure 62 Work Readiness Programme Batch at Mayyil, Jan 2025

Figure 63 Mentor Training of Trainer, Jan 2025

Figure 64 Talent Accelerator Programme

My Job My Pride

As part of My Job My Pride,several special projects have been commenced and implemented by LSGI with the support of Members of the Legislative Assembly. Special projects have been started in **Varkala, Taliparamb**, **Kalamassery, Ottappalam, Vattiyoorkaavu, Pala, and** Azhicode.

Major Achievements in Assembly Constituencies

- Varkala - 159 placements
- Taliparamba - 9 Job Stations
- Kalamasserry - Job Fair - **609 Participation / 372 shortlisted**

- Ottappalam - 8 Facilitation Centres
- Vattiyoorkaavu – 5600 + Registrants - Job Station Inauguration - March 1, 2025
- Pala – 9,656 registrants
- Azhicode – 8,000 + registrants
- **68 Facilitation Centres** were started in Grama Panchayath and Municipalities during the last one year as part of My Job My Pride Project.

Sl No	District	Number of LSGIs
1	Alappuzha	12
2	Kottayam	7
3	Idukki	5
4	Ernakulam	4
5	Thrissur	15
6	Palakkad	12
7	Kozhikode	4
8	Wayanad	4
9	Kannur	4
10	Kasargode	1
	Total	**68**

Table 8 Facilitation Centres across LSGIs

Professional Mentors

Kerala Knowledge Economy Mission has a very expert and efficient pool of Professional Mentors who are Assistant Professors from higher education institutions, retired professors, HR Professionals, Resource Persons, Language Trainers, Corporate People, and Subject Experts. **630 Professional Mentors** have shown interest in associating with the various activities of KKEM in supporting Job seekers for attaining job of their interest and aspiration.

As part of **Micro Plan Project, one LSGI was selected from each of the 14 districts and registered immediate job seekers**. Out of the total immediate job seekers registered, **25 immediate job seekers** were shortlisted based on their interest in attending Career training sessions and attaining job, from all LSGIs. **One to One Career Counselling** has commenced for these immediate job seekers with the support of Professional Mentors. 29 Professional Mentors intimated their willingness to support candidates from Micro Plan areas in understanding their skill level and job readiness by conducting a Career Assessment Interview. Basic Screening process of candidates are done by Professional Mentors. Separate sessions are also planned in specific areas like Resume Building, Interview Training and Preparation, Stress Management, English communication Skills, Industry Specific Guidance etc.

Resources Persons

Resource persons operate voluntarily in each district. To train them effectively, master trainers are selected. Each district typically has around **10 Key Resource Persons (KRPs)**, under whom **District Resource Persons (DRPs)** work. DRPs primarily function within their assigned districts, coordinating with their respective job stations. **Local Resource Persons (LRPs)** are selected from each ward and serve as the primary point of contact for job seekers. **354 individuals** have registered as Local Resource Persons.

Figure 65 Master trainers training session

Figure 66 District Resource Person training at Thiruvananthapuram

Job Station

Job Stations serve as dedicated physical centers where job seekers engage with KKEM staff, trained counselors, and coordinators to seek guidance on employment, skill development, and career advancement. These stations function as hubs for comprehensive employment-related services, including mentoring, career counseling, job placement assistance, skill training, and career support programs.

KKEM aims to establish functional Job Stations across all Block Panchayats, Municipalities, and Corporations at Constituency level ensuring wider access to employment opportunities and professional guidance. By identifying immediate job seekers and providing structured support, the program will facilitate career growth and skill enhancement for the local workforce.

Job Stations are key components of the *Vijnana Kerala* program, focusing on reducing unemployment and empowering individuals with the necessary skills and resources to secure knowledge-based jobs.

As part of the *Vijnana Keralam* Project, 32 Job Stations have already started operating within LSGI institutions. 74 job stations are planned in the near future.

Figure 67 Job Station Inauguration at Udumbumchola Constituency

Thozhilarangathek

Thozhilarangathek is a special initiative by the KKEM designed to empower women by addressing the challenges they face in securing employment. This project provides comprehensive support throughout their journey, from job search to successful employment.

Women's Skilling in the Film Industry – Kerala State Chalachithra Academy

As part of a collaborative initiative with the Kerala State Chalachithra Academy, a specialized skilling program was launched to support women and transgender individuals in the film industry. An orientation camp was conducted from September 27 to 29, 2024, to facilitate the selection process for the program. A total of 30 candidates participated in the camp, engaging in various sessions to assess their skills and potential.

Figure 68 Women's Skilling in the Film Industry

Virtual Job Drive for Women

Virtual Job Drive for Women was conducted from November 2 to 5, 2024, providing a platform for employment opportunities. The event attracted participation from four employers, offering a total of 1,109 vacancies across various roles.

A total of 251 candidates registered for the job drive, with 51 actively participating in interviews and evaluations. Following the selection process, 19 candidates were shortlisted, and ultimately, 4 candidates secured employment through the initiative.

3. Special Project for Single Women – Collaboration with AIDWA

A collaborative special project for single women has been initiated in partnership with the All India Democratic Women's Association (AIDWA), with Kannur district as the pilot location. The initiative aims to mobilize immediate jobseekers among single women with the support of AIDWA, while KKEM will provide handholding assistance and placement support. The first-level physical meeting is scheduled for the last week of February as part of the project's implementation

4. Entrepreneurship Development Programme – Collaboration with KSWDC

A collaborative project with the Kerala State Women Development Corporation (KSWDC) on Entrepreneurship Development has been successfully launched. As part of this initiative, an Entrepreneurship Development Programme (EDP) has been completed in eight districts, with approximately 80 women participating in the program.

Figure 69 Training Session on Entrepreneurship Development Programme for Registered Women

Employability Training Program – Collaboration with Naandi Foundation

An Intensive Employability Training Program to be organized by the Naandi Foundation of the Mahindra Group, is set to be conducted as a 40-hour intensive training at Government Women's College, Trivandrum. This program aims to enhance students' life skills, soft skills, communication skills, and overall employability, thereby improving their career prospects in the organized private sector.

emPOWER – Career and Leadership Development for Young Women

A newly launched initiative under *Thozhilarangathekku*, designed to equip young women with career clarity and workforce readiness. The program focuses on essential skills such as resume building, interview preparation, leadership development, communication and public speaking, professional etiquette, financial literacy, networking, and problem-solving. These components aim to help female students align their education and skills with suitable career paths and succeed in the professional sector.

As part of this initiative, a *Career and Leadership Development Workshop* was conducted for final-year female students in women's colleges across Kerala, ensuring widespread participation and impact

Digital Design Training for Women

The programme aims to equip women with digital design skills and enhance their career opportunities in the sector. It is conducted in partnership with the Kochi Corporation and the Academy of Media Design (AMD). The program targets 50 women residing within the Kochi Corporation area. The mobilization process for the *Digital Design Training for Women* has commenced. As of today, over 130 women from Kochi have registered for the training.

BACK 2 WORK

A one-day workshop was conducted on February 6, 2024, in Thiruvananthapuram to address the employment challenges faced by women who have experienced career break and to gather insights for effective interventions. The workshop was inaugurated by the Honourable Minister for Health, Women and Child Development, Smt. Veena George, and featured expert speakers from various sectors. The event provided a platform for discussions on strategies to facilitate the re-entry of women into the workforce.

The *Kazhakoottam Special Project* was launched as part of the *Back 2 Work* initiative to support women returning to the workforce after career break. The program provides essential support systems and skill training to enhance employability. By June 20, 2024, a total of 620 women from the Kazhakoottam Assembly Constituency had registered for the initiative. These women were directly contacted with the assistance of community ambassadors, and those requiring additional support were integrated into the program.

Immediate job seekers among the registered women were identified, and dedicated WhatsApp groups were formed to share job opportunities tailored to their qualifications. The project, led by the Honourable MLA Sri. Kadakampally Surendran, is being implemented with active participation from ward councilors, representatives from higher education institutions in the constituency, training partners, and employers.

The initiative spans all 22 wards of Kazhakoottam constituency and is structured across four implementation zones. Based on the specific needs of job seekers, various support sessions are being conducted, including DWMS Registration Orientation, Introduction to Services, Job Orientation and Skill Development, Personal Mentoring and Career Guidance, Resume Building, and Interview Readiness Workshops. This targeted approach aims to equip career-break women with the necessary resources and skills to successfully re-enter the workforce.

Sl.No	District	No. of Women surveyed	Career break Women	Career break Women (%)
1	Thiruvananthapuram	1,41,867	15,921	11.2%
2	Kollam	88,468	12,268	13.9%
3	Pathanamthitta	39,859	7,170	18.0%
4	Alappuzha	81,649	13,010	15.9%
5	Kottayam	57,104	10,010	17.5%
6	Idukki	26,170	4,246	16.2%
7	Ernakulam	1,01,617	20,164	19.8%
8	Thrissur	1,00,326	17,302	17.2%
9	Palakkaad	90,424	12,039	13.3%
10	Malappuram	95,895	13,110	13.7%
11	Kozhikode	85,793	11,963	13.9%
12	Wayanad	20,702	3,398	16.4%
13	Kannur	75,793	12,148	16.0%
14	Kasargod	33,575	4,215	12.6%
	Total	**10,39,242**	**1,56,964**	**15.1%**

Table 9 Estimate of Career Break Women

Jeevanam – Collaborative Project with LIFE Mission

Jeevanam is a special collaborative initiative between KKEM and LIFE Mission, aimed at enhancing employment opportunities for LIFE Mission beneficiaries. The project focuses on registering beneficiaries on the DWMS platform and providing career support programs,

including placement grooming, soft skills training, skill development, and opportunities to participate in job fairs.

As part of this initiative, 56 active block panchayats, with 3-5 blocks from each district, have been selected across Kerala. The beneficiary lists from these selected blocks have been provided by the respective District Mission Coordinators (DMCs) of LIFE Mission. Block-level beneficiary meetings and DWMS registration campaigns are currently in progress.

The career support programs under *Jeevanam* are scheduled to be completed between March and April 2025, followed by special placement drives planned for May 2025.

Figure 70 Training Session Conducted by Ernakulam LIFE Mission DMC for Selected Block Panchayat VEOs

Diversity Inclusion Projects

KKEM is implementing Diversity Inclusion (DI) projects to provide skill development training, soft skill training, employment opportunities to job seekers from marginalized communities through community mobilization and specially designed programmes. These projects are carried out in collaboration with government departments, local bodies, agencies, NGOs, CBOs, and CSR wings of companies.

KKEM ensures that marginalized groups are not excluded from skill training and employment by directly engaging them through community-based organizations, government institutions, and private sector partnerships. The DI schemes have significantly increased registrations from Scheduled Castes, Scheduled Tribes, Persons with Disabilities, Transgender individuals, Fisherfolk communities, Women (including those with career gaps]), and Minority groups.

Unnathi

A special employment scheme implemented in association with the Scheduled Castes and Scheduled Tribes Development Department. In collaboration with the departments working for the upliftment of the SC and ST communities, the Local Self-Government Department and other agencies, job seekers belonging to the Scheduled Castes and Scheduled Tribes are provided opportunities in the field of knowledge employment. This scheme aims to be implemented for the first time at the government level, will be a model for the country.

- The work readiness programme conducted in various batches in the districts under the leadership of Knowledge Mission Community Ambassadors.
- Soft skills training such as career counseling, robotic interview, English score test, personality development training, and work readiness program were also organized.

- The registration activities have been carried out by the promoters and community ambassadors by visiting various SC/ST houses, colonies, and various community living centres.
- The Scheduled Castes Development Department, in association with KKEM has shortlisted **59** candidates from those who participated in the special job fair and career development training organized in Ernakulam on 29.11.2024 and taking steps to provide employment to them.
- As per the Government Order, the training and refreshment training in DWMS is being provided to the promoters appointed in the Panchayats having large SC population.
- Chavakkad Municipality allocated funds for the General Duty Assistant Course in collaboration with KKEM for the employment of the Scheduled Castes and completed the training for 10 people.

Pride

The programme is being implemented by KKEM in association with the Social Justice Department. This scheme is being implemented enabling educated persons of the transgender category get skilled and get employment. Considering the social condition of the transgender community, those who have the basic qualifications, i.e., 10th class are also considered for the scheme. The **Honourable Minister for Social Justice, Dr. R. Bindu**, officially launched the PRIDE initiative on **June 27, 2023**, follow up activities and initiatives are continuing.

- Five career counselor posts have been created for Lifeology, and applications have been invited for the same but no qualified candidates have been identified.
- Meetings have been held with NASSCOM Foundation, Periphery Foundation, Godrej DI Lab, Pride Circle, NAS Foundation, and RANDSTAD to identify job opportunities, and follow-up action is being taken.
- It has been decided to start Airport Operations, Cargo Operations Executive, and Customer Service Agent courses in the aviation sector in three batches of 10 with financial assistance from the Department of Social Justice. Out of 45 applicants, 10 have been identified, and their admission process is underway.
- Conducted Community Based Organization's meeting and group for more mobilization and easy communication with transgender persons.
- A State Level data collection has been initiated to avail the correct data of trans persons for enrolling in DWMS and pride.
- A telephonic confirmation has been taken among all trans candidates who are enrolled in DWMS, and asked to those who are marked their gender wrong in the DWMS portal.
- The arrangements have been made for the job fest **'Pride for All,'** exclusively for transgender candidates, on March 8th at Bharat Mata College, Ernakulam.

Oppara

KKEM in association with the Kudumbasree Mission, is implementing a special employment scheme, piloting in Aralam (Kannur), Noolpuzha, Tirunelli (Wayanad), Attappadi (Palakkad) and Nilambur (Malappuram).

- A virtual job fair for job seekers in the project area was organized in March-April 2024, and 56 candidates were shortlisted.
- Orientation and preliminary screening for Machine Operator-Injection Molding Plastics course was conducted on 27th December 2024 at the Aralam project area.

- 60 learners were identified for the Machine Operator-Injection Molding Plastics course, conducted by the Scheduled Tribes Development Department, ASSAP, and CIPET in collaboration with the Knowledge Mission (Mobilization).
- A mega job fair was conducted in collaboration with Kudumbasree and DDUGKY at Aries Polytechnic College, Attappadi on 2024 February 17 and 18 with 42+ employers and around 600 candidate registrations.

Thozhil Theeram

A special employment scheme being run in association with the Fisheries Department for the fishermen community. The benefit of the scheme will be available to the educated students of the fishermen community in the coastal and inland areas of the state.

- A three-member committee has been formed to implement the plan, with committees led by MLAs.
- On July 7, comprehensive training sessions were conducted for all Deputy Directors and Fisheries Extension Officers (FEOs) of the Department of Fisheries. By July 15, a one-day training was organized at DWMS for fisheries volunteers in association with the Department of Fisheries in all districts.
- Registration camps were organized at the ward level in all local self-government institutions.
- Soft skill trainings, skill orientation, and skill gap analysis were conducted in the districts.
- Job fairs were organized in Alappuzha and Kollam districts, while candidates from other districts were given opportunities to submit job applications through the DI Virtual Job Fair.
- A house-to-house survey was conducted from October 15 to October 30, 2024, to communicate scheme details at the community level, with 25,321 people expressing interest in skill training.
- Various agencies, including Matsyafed, Asap Kerala, Malayalam University, Calicut University, KUFOS, ICT Academy, Odapek, Mahatma Gandhi University, KSCADC, CUSAT, Cavil, Adak, Kerala University, Fishermen Welfare Fund Board, and Kudumbasree, have shown interest in imparting skill training.
- Local WhatsApp groups were created, and DWMS registration was completed for meritorious students from the fishing community in need of skill training and employment, centering all FEO offices in the state.
- A webinar was organized for job seekers as an introduction to skill training, conducted by Harikrishna and Anoop Narayanan.
- Training in Beauty Parlour Management, CCTV Technology, Mobile Phone Technology, Photography, and Videography has started at the Rural Self Employment Training Centre of the Fishermen Welfare Fund Board and Canara Bank in Thrissur. Training was initiated for the first batch of 30, with Fisheries Minister Saji Cherian presiding over the function.
- Employment generation figures: **2,027** persons in 2024.

Samagra

- A total of 65 candidates were shortlisted through the DI Virtual Job Fair in April 2024, and an online short course was conducted in collaboration with Youth for Jobs for those who did not clear the final interview.
- DWMS Orientation was organized by Thiruvananthapuram Nischil (NISH) on 30th August 2024.

- Registration drives are being conducted under the aegis of DPM at local body and district levels.
- In collaboration with Dr. Reddy's Foundation, KKEM has decided to start free skill training for people with locomotor disability, Cerebral Palsy (Mild), Muscular Disability (Mild), Hard of Hearing, Dwarfism, and Speech and Hearing Challenges in the age group of 18 to 35 years. The agency guarantees employment after a two-month training, and the enrollment process is ongoing.
- A one-day workshop on Skill Training and Employment Opportunities for Intellectually Challenged Persons was organized on 9th January 2025 by Thanal-Daya Rehabilitation Centre, Kozhikode, in association with various parent organizations.
- A preliminary understanding was reached to conduct skill training based on artificial intelligence for young people with intellectual disabilities in collaboration with the Inclusys Foundation.
- On 10th January 2025, a meeting was held with the Chairperson of Perinthalmanna Municipality. Visited Simon Britto Santhwanam Centre under the Municipality and steps are being taken to conduct a skill development program in collaboration with the Municipality.
- Till date, 1,235 persons with disabilities have been provided employment as part of the comprehensive scheme.

Institutional Mobilization & Skilling

In the year 2024 the Connect Career to Campus (CCC) campaign was a focused programme formulated by Kerala Knowledge Economy Mission (KKEM) to address the gap between the industry and the academia as well as the low employability skills of the students in Kerala. The programme envisioned to increase the job prospects of the students through the provision of various employability enhancement activities.

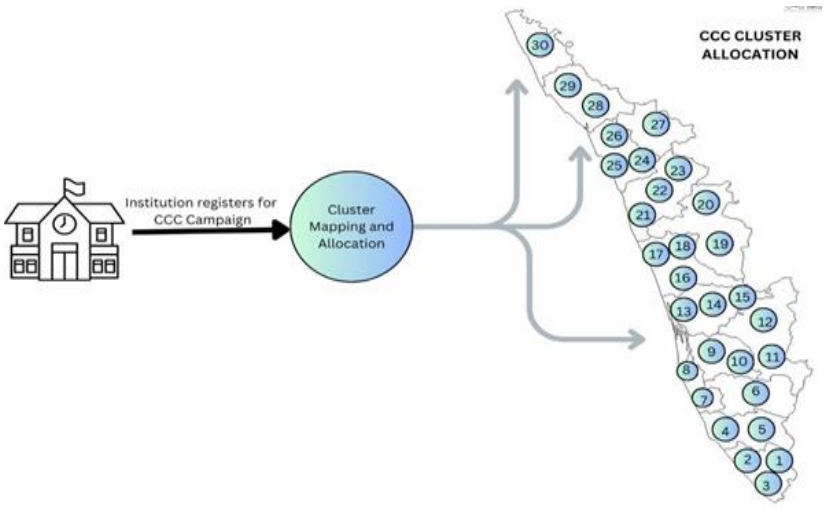

Figure 71 Schematic of CCC Cluster Mapping

The registered institutions were allotted into 30 clusters based on the geographical proximity and a dedicated team of 30 Talent Curation Executives and HQ team were deployed to coordinate the institution level activities in the cluster.

Institution Type	Total Registered	Institutes that conducted DWMS Orientation	Student Registrations on DWMS
Engineering Colleges	122	109	15,954
Polytechnic Colleges	75	74	9,102
Arts and Science Colleges	668	611	38,223
Total	**865**	**794**	**63,279**

Table 10 CCC Institution Type and Student Registration

District	Number of Institutions
Ernakulam	114
Malappuram	95
Thiruvananthapuram	90
Thrissur	87
Kozhikode	74
Kottayam	66
Kollam	59
Kannur	53
Pathanamthitta	49
Palakkad	48
Idukki	46
Alappuzha	34
Kasargod	28
Wayanad	22
Total	**865**

Table 11 District wise distribution of CCC Institutes

Following institution registration, the subsequent step entailed the selection of Career Ambassadors from various departments. Typically, one or two final-year students were chosen from a department, based on the count of final year students. These ambassadors played a critical role in facilitating DWMS registrations and promoting curation services among students within their respective departments.

A substantial number of students actively engaged in the curation services as compiled below:

Curation Services	No. of Students who have utilized Curation services			
	Engineering Colleges	Polytechnic colleges	Arts & Science colleges	Total
Career Assessment	4,305	3,100	9,206	16,611
Career Counselling	3,305	2,412	5,304	11,021
English Score Test	1,577	1,106	832	3,515
Personality Development Training	531	793	447	1,771
Work readiness Programme	3,861	3,901	2,867	10,629
Total	13,579	11,312	18,656	**43,547**

Table 12 Details of Curation Services

Career Clinic

Career Clinics are in-person career counseling sessions which were conducted at various institutions upon request. Through this, students receive personalized guidance to help them navigate their career choices. By addressing individual needs and aspirations, Career Clinics played a crucial role in assisting students in identifying and pursuing their ideal career paths, and thereby enhancing their future prospects and success. As part of CCC institutional campaign, Career Clinics were organized in 29 registered institutions.

Figure 72 Career Clinics

The **Industry Acclimatization Programmes** were designed with the objective of providing students with an understanding of the dynamic industry landscape and preparing them with the essential skills needed to navigate the real job market. 4 online webinars, 19 HR interaction and resume-building workshops, and 12 Profile Visibility Workshops were provided to the students which offered industry insights, and familiarized them with the current trends in the job market.

Figure 73 Industry Acclimatization Programme

In association with various skilling partner agencies and as part of the CCC campaign activities, students from the registered institutions were offered several skilling initiatives. It covered a wide spectra of upskilling activities to equip students with skills to enter the professional space with confidence.

Sl. No.	Skilling Initiatives
1	**Placement Enhancement Training**: It focused on topics such as expectations of employers from fresh graduates, analyzing skill gaps, understanding different types of companies, and reviewing campus placement packages. It was designed primarily for CS and IT students.
2	**Employability Skill Training:** This 60-hour program covered a range of topics, including resume building, social profiling, communication skills, presentation skills, group discussion and interview skills, analytical reasoning, logical problem solving, and quantitative aptitude.
3	**District Skill Fair:** KKEM organized District Skill Fairs across 14 districts, featuring an exhibition of over 100 skill programs, live enrollment for scholarship programs, industry-led master sessions, skill demonstrations, competitions and quizzes, skill-based job registrations, and enrollment opportunities for internships and apprenticeships.
5	**Future Technology Summit:** It featured 14 days of expert sessions on topics such as AI, Machine Learning, Web 3, and Data Science.
6	**Knowledge Webinar Series:** It included expert talk sessions on topics such as Digital Marketing, Career Opportunities in Molecular Genetics, Preparing for Future Jobs in an AI Driven World, and so on.
7	**Virtual Skill Fair:** Monthly Virtual Skill Fairs are organized to introduce a variety of career fields and skill sets relevant to today's age, such as IoT, robotics, creative writing, and more.
8	**Creative Skill Fest:** KKEM and the Palakkad District Panchayat jointly hosted a Creative Skill Fest in Palakkad district which aimed to acquaint young individuals in the burgeoning field, that is the creative sector, and enlighten them about the employment prospects within it.
9	**NASA Space App Challenge:** A hackathon-style event that takes place once every year that focuses on solving real-world challenges. NASA Space App Hackathon Challenge was held at Jyothi Engineering College, Thrissur from October 7 to 8, 2023.
10	**Launchpad Kerala:** Organized by IEEE Kerala Section and GTech MuLearn in association with KKEM, Launchpad Kerala 2024 is an ongoing premier job fair which aims to bring together talented individuals and innovative companies in technical and engineering fields. It features a rigorous 21-day technical challenge and online tests to evaluate the skills of candidates. Successful candidates will be offered employment opportunities in reputed companies.

Table 13 Details of Skilling Initiatives

CCC campaign concluded its activities in the 794 institutions, after the commendable service of curating students for different job roles and facilitating smooth transitions into the professional world. As part of the campaign, conducted 46 offline recruitment drives and 1 virtual drive in technical and arts & science institutions.

Job drive at Technical institutions

Sl. No.	Venue	Total Employers	Total Candidates	Total Interviews	Shortlisted	Hired
1	AKNM Government Polytechnic College, Tirurangadi, Malappuram	20	272	971	406	196
2	St. Josephs College of Engineering & Technology, Palai, Kottayam	18	876	1211	355	20
3	Government Polytechnic College, Kaduthuruthy, Kottayam	14	251	663	459	30
4	University College of Engineering, Muttom, Idukki	10	235	614	481	4
5	MET's School of Engineering, Mala, Thrissur	13	292	449	173	33
6	Mount Zion Law College, Pathanamthitta	12	243	511	289	48
7	Government Polytechnic College, Ezhukone, Kollam	10	282	549	371	18
8	St. Thomas Institute for Science & Technology, Kazhakuttam, Thiruvananthapuram	13	303	585	316	14
9	Government Polytechnic College, Cherthala, Alappuzha	18	280	783	548	64
10	Government Engineering College, Westhill, Kozhikode	22	642	1168	414	57
11	KMEA College of Engineering, Aluva, Ernakulam	34	385	959	249	66
12	Government Polytechnic College, Periya, Kasaragod	14	302	609	321	140
13	Government Polytechnic College, Mattanur, Kannur	10	366	591	369	0
14	Government Polytechnic College, Meenangadi, Wayanad	14	282	590	174	113
15	Al Ameen Engineering College, Palakkad	26	181	535	202	24

Sl. No.	Venue	Total Employers	Total Candidates	Total Interviews	Shortlisted	Hired
16	Nehru College of Engineering & Research Centre, Thrissur	16	214	526	175	6
17	Government Polytechnic College, Kunnamkulam, Thrissur	20	394	677	101	77
18	MES College of Engineering, Kuttippuram, Malappuram	24	329	852	118	81
19	Central Polytechnic College, Vattiyoorkavu, Thiruvananthapuram	14	349	1473	662	45
20	John Cox Memorial, CSI Institute of Technology, Thiruvananthapuram	14	349	1089	518	20
21	MEA Engineering College, Perinthalmanna, Malappuram	19	253	653	221	22
22	Bishop Jerome Institute, Kollam	9	171	418	295	32
		Total	**7,251**	**16,476**	**7,217**	**1,110**

Table 14 Job drive at Technical institutions

Job drive at Arts and Science institutions

Sl. No.	Venue	Total Employers	Total Candidates	Total Interviews	Shortlisted	Hired
1	MES Kalladi College, Mannarkkad, Palakkad	16	145	101	64	24
2	Mar Ivanios College of Arts & Science, Mavelikara, Alappuzha	15	70	269	143	0
3	St Antony's College, Peruvanthanam, Idukki	9	226	123	100	0
4	St Joseph's College, Irinjalakuda, Thrissur	26	263	535	123	45
5	Mar Chrysostom College, Paranthal, Pathanamthitta	17	132	252	153	0
6	Chathamkulam Institute of Research & Advanced Studies, Kanjikode, Palakkad	22	184	629	225	63

Sl. No.	Venue	Total Employers	Total Candidates	Total Interviews	Shortlisted	Hired
7	SNES Institute of Management Studies & Research (IMSAR), Kunnamangalam, Kozhikode	18	320	644	165	54
8	Fatima Mata National College, Karbala, Kollam	15	221	598	362	39
9	Christian College, Kattakada, Thiruvananthapuram	18	168	361	224	11
10	Thunchan Memorial Government (TMG) College, Tirur, Malappuram	30	415	1081	218	80
11	St Mary's College, Manarcaud, Kottayam	22	262	806	356	0
12	Sacred Heart College, Chalakudy, Thrissur	25	621	941	284	12
13	Marian College of Arts & Science (MCAS), Menamkulam, Thiruvananthapuram	25	148	370	190	10
14	Government College, Mokeri, Kozhikode	18	235	425	153	25
15	St Xavier's College for Women, Aluva, Ernakulam	27	405	916	260	12
16	St Joseph's College for Women, Alappuzha	20	376	945	382	0
17	WMO Arts & Science College, Muttil, Wayanad	24	246	369	161	46
18	Taliparamba Arts & Science College, Kanhirangad, Kannur	21	310	303	97	38
19	MES College, Nedumkandam, Idukki	25	272	477	104	18
20	Sree Kerala Varma College, Thrissur	34	370	781	213	27
21	Nehru Arts & Science College, Kanhangad, Kasaragod	22	227	479	202	50
22	Institute of Technology Mayyil (ITM), Kannur	24	171	304	85	16

Sl. No.	Venue	Total Employers	Total Candidates	Total Interviews	Shortlisted	Hired
23	De Paul Institute of Science & Technology, Angamaly, Ernakulam	21	555	302	96	31
24	MES Mampad College, Malappuram	25	272	477	104	18
		Total	**6614**	**12488**	**4464**	**619**

Table 15 Job drive at Arts and Science institutions

- The TCS ION National qualifier test (TCS ION NQT) pilot programme tested the capabilities of job seekers on their readiness for getting a job in their cognitive ability, industry awareness and deep knowledge in specialized skills relevant to the industry, the TCEs conducted the orientation and screening activities and mobilized 939 candidates for the IT-ITes job sectors.
- KDISC has introduced **Project Light house** in partnership with globally renowned online skill providers – LinkedIn, Coursera. The objective of this initiative is to impart placement linked skill training to a selected set of final year students through Talent Accelerator Programme. For the conduct of the programme faculty mentors are needed. The Institutional mobilization division promoted project and mobilized the domain specific mentors for the operations handling from the partner institutions.

The number of district wise mentors mobilized for the “Project Lighthouse” programme is noted below.

Sl. No.	District	Total count of Registrations- Mentors
1	Trivandrum	102
2	Kollam	120
3	Pathanamthitta	27
4	Alappuzha	52
5	Kottayam	131
6	Idukki	103
7	Ernakulam	60
8	Thrissur	209
9	Palakkad	62
10	Malappuram	104
11	Kozhikode	60
12	Wayanad	4
13	Kannur	51
14	Kasargod	22
	Grand Total	**1107**

Table 16 District wise distribution of Project Lighthouse Mentors

Skilling at Local Bodies

Awareness creation and orientation workshops on the importance of skilling and relevance of skill projects were conducted for Local bodies including Municipalities, District Panchayats and Block Panchayats across the state.

Figure 74 Awareness creation and orientation workshops conducted for Local Bodies at different locations.

Figure 75 Skill project implementation events in progress at various Local Bodies with the support of KKEM

Other Skilling Initiatives and Internships

1. Through the 'Nurses to Germany' program offered by KKEM in partnership with M/s. Bloom- Bloom 2 candidates were selected for the German language training.
2. 'Thozhiltheeram' jointly owned by Department of Fisheries and KKEM for Fisherfolk community, Transgender focussed 'Pride' project of KKEM, Scheduled Tribe focussed 'Oppara' project of KKEM etc. are a few domains where KKEM is rendering the support for focussed skilling of different beneficiary groups. Various skilling projects for these communities are in pipeline and are expected to commence soon.
3. In Order to further strengthen the internship portfolio of KKEM, an association has been sought with the Local Self Government Department and is under their consideration.
4. A project to establish 1000 soft-skill training centers across the state has been taken up by KKEM to be implemented jointly with LSGD and is under the consideration of the Department.

Print and Social Media - Documentation

1. Vijnana Pathanamthitta – Special Newsletter

A comprehensive report highlighting the *Vijnana Pathanamthitta* pilot project. The newsletter details the project's objectives, implementation strategies, and impact, offering valuable insights into the initiative's success and learnings.

2. Samanwayam – Special Newsletter - A dedicated edition focusing on the *Samanwayam* initiative, undertaken in collaboration with the Minority Commission. This newsletter captures the significance of the program, its key interventions, and the outcomes achieved.

3. Thozhilarangathekk – Tri-monthly Newsletter

A periodic publication that provides an in-depth overview of KKEM's major activities, milestones, and progress. This newsletter serves as a key communication tool, ensuring regular and informative updates for stakeholders.

4. Thozhilarangathekk – Special Edition

A special edition of *Thozhilarangathekk*, offering a detailed account of KKEM's significant initiatives, activities, and achievements. This edition is designed to provide a holistic view of the mission's key developments.

5. KILA Handbook for Professional Mentors

Contributions to the content development and editorial review of the *KILA Handbook for Professional Mentors*, provides structured insights, best practices, and practical methodologies for professional mentors guiding beneficiaries under KKEM.

6. News Reports

Timely and well-structured news reports covering all initiatives, events, and subprojects under the KKEM mission. These reports ensure transparent communication and facilitate a broad understanding of the mission's impact.

7. Comprehensive Documentation - A systematic and detailed record of all KKEM mission activities to date. This documentation serves as a crucial archive for reference, impact assessment, and future strategic planning.

10. Vijnana Keralam

The Knowledge Mission activities were based on the digital platform DWMS and were created on the basis of the assumption that the job seeker would get a job by submitting the application, training to acquire skills, language training etc. using the digital system. However, based on the realization that it was not as effective as envisioned, the job station system is being formed locally. The aim is to make it more effective by incorporating active interventions at the local government level and active assistance from resource persons. The Vijnana Kerala project has evolved based on a few helpful experiments have been conducted in Kerala in the last one year.

Vijnana Pathanamthitta Programme

To enhance public engagement, Vijnana Pathanamthitta was launched following the Migration Conclave held in January 2024 in Thiruvalla, Pathanamthitta district. This four-day event, attended by thousands both online and offline, focused on "The Role of Migrants in Building a Knowledge Economy." Discussions highlighted that beyond financial investments, expatriates could contribute by identifying global job opportunities, mentoring students , and actively participating in knowledge-based economic development.

Following the conclave, a campaign was initiated in partnership with KKEM to train job seekers in Pathanamthitta and connect them to employment through job fairs. The initiative aimed to promote and expand the Knowledge Economy Mission through community involvement, grassroots planning, and volunteer-led efforts.

Key Activities Undertaken:

- Mobilization of job seekers.
- Establishment of Job Stations
- Organization of Vijnana Seminars and career counselling sessions.
- Conducting screening tests.
- Implementing placement drives under the Recruit-Train-Deploy (RTD) model.

To support job creation, a Professional Resource Group was formed, comprising experienced professionals, retired government officials, educators, returning expatriates, and community ambassadors. The initiative was structured with:

- A District-level Program Management Unit (PMU)
- An Organizing Committee including MLAs and public representatives

Five Job Stations were established across Pathanamthitta, allowing job seekers to engage directly with KKEM programs. This decentralized approach boosted public participation and facilitated job applications. Additionally, implementing the RTD model helped streamline the hiring process, reducing uncertainties associated with traditional job selection methods.

To encourage community participation and volunteer involvement, the state government has introduced the Vijnana Keralam program. This initiative takes a grassroots approach, emphasizing the role of local governments and ongoing interventions to ensure success. By fostering a participatory framework, the program aims to move closer to its employment-generation goals.

Key Focus Areas of Vijnana Keralam:

1. Job Seeker Mobilization & Job Fairs – The initiative aims to provide employment to 500,000 individuals by the end of 2025.

2. Skill Development – The program seeks to enhance the employability of 200,000 students from colleges, polytechnics, and ITIs by equipping them with job-oriented skills alongside their academic studies. It also integrates initiatives such as Recruit-Train-Deploy (RTD) programs, internships, and apprenticeships.

To oversee these activities, State and District Vijnana Councils will be formed, comprising:

- Leadership & Representatives – The district-in-charge minister (Chairperson), MLAs, district and block panchayat presidents, municipal chairpersons, and other local representatives.
- Key Officials – The District Collector, Local Governance Joint Director, District Planning Officer, and District Mission Coordinator (DMC) from the Project Management Unit (PMU).
- Stakeholder Representatives – Members from the Youth Welfare Board, ASAP, KASE, and Professional Community Mentors.

The mobilization of job seekers and job fairs will be coordinated as a joint effort between district, block, and municipal authorities, supported by a dedicated coordinating committee. The PMU will oversee execution, while Job Stations at block, municipal, and corporation levels will lead local mobilization efforts. MLAs will coordinate activities in their respective constituencies with assistance from dedicated coordinators.

Professional Resource Team & Community Engagement

A Professional Resource Team, consisting of experienced professionals, retired educators, and returning expatriates, will volunteer to:

- Identify and screen job seekers.
- Provide training in interview techniques, communication, and career guidance.
- Recommend specialized training if necessary.

At the local level, Community Ambassadors, Volunteers, Resource Persons, and Ward Members will facilitate job seeker engagement. Community Ambassadors, trained in Knowledge Mission activities, will play a key role, while structured training will be provided to new Resource Persons.

Beyond job fairs, the program's flagship initiative is a comprehensive Skill Development Program, with a primary focus on students from colleges, ITIs, and polytechnics. Key elements include:

- Talent Acceleration Programs (up to 3 months) tailored to industry needs and student interests.
- Training through platforms like DWMS, Foundit, LinkedIn Learning, and skill development institutions such as ASAP and KASE.
- Domain-specific, language, and soft skills training aligned with employer expectations.
- Internships, apprenticeships, and job-readiness workshops.
- Digital skill enhancement programs to prepare candidates for freelance opportunities.

To enhance placement efforts, workshops will be conducted for placement officers from engineering colleges, polytechnics, and ITIs. Additionally, alumni associations will contribute to mentorship and networking efforts.

A Hybrid Skill Summit is scheduled for August 2025 in Thiruvananthapuram, Kochi, and Kozhikode, bringing together educational institutions and professional organizations. This event will mark the formal launch of the Vijnana Keralam Skill Development Program. The initiative aims to:

- Facilitate 25,000 job seekers to reach interview stage by August-September 2025.
- Support at least 100,000 students in attending job interviews by the end of 2025.

Vijnana Keralam initiatives at Alappuzha district

The activities of the Knowledge Economy Mission were further disseminated and organized through public participation, people's planning model, and voluntary initiatives under the "Vijnana Pathanamthitta" program. The experiences and lessons from Vijnana Pathanamthitta were incorporated into the newly initiated "Vijnana Alappuzha" project, which was launched via the Job Station.

A Project Management Unit (PMU) was set up to collaborate with the Alappuzha District Panchayat team. Officials from KKEM, K-DISC, ASAP Kerala, and Vijnana Pathanamthitta took on various responsibilities within the PMU. To coordinate the PMU's activities, a control room was established at the District Panchayat Office.

Efforts were made to start Job Station activities by immediately assigning personnel to all job stations, providing guidelines on coordination, and resolving technical issues related to DWMS registration and job applications. Measures were taken to analyze data and ensure necessary data availability in the field. Actions were initiated to operationalize hyper-local job fairs.

To facilitate institutional mobilization and alumni engagement, daily review meetings were conducted with the District Mission Coordinator, PMU members, and District Panchayat representatives. Block-level interventions were discussed under the leadership of Block Development Officers, and job station in-charges were assigned responsibilities accordingly.

WhatsApp groups were created for job seekers based on qualifications at the block level, and arrangements were made for pre-scheduled job interviews. Steps were taken to mobilize vacancies in the PWD category. The process of setting up call centres at job stations was initiated.

The "Recruit-Train-Deploy (RTD)" model, which had been successfully implemented in the Vijnana Pathanamthitta model, was also introduced in this project. Efforts were made to identify hyper-local jobs and verify them in person. Registration campaigns were launched at the panchayat and ward levels.A call center was set up in the control room with NSS/NCC volunteers from various colleges. The Kudumbashree network was utilized to expand the registration process through neighborhood groups via Job Stations. Online meetings were held with Anganwadi workers to ensure the participation of all job seekers in job fairs.Additional training sessions and registration drives were organized under local self-government institutions.

Alappuzha Mega jobfair was conducted on 14’th and 15’th February 2025. Virtual jobfairs were conducted at the 14 SDPK centres and Physical jobfairs conducted at SD College and SDV College Alappuzha.

Figure 76 Vijnana Keralam Mega Job Fair Alappuzha

11. Work Near Home

The Government of Kerala has initiated the Work Near Home (WNH) Project, aimed at establishing a network of modern co-working spaces across the state. It is designed to offer flexible, professional work environments closer to home for Kerala's skilled professionals, remote workers, and entrepreneurs, fostering productivity, innovation, and economic growth.

The project is progressing steadily with the inauguration of the construction of the State's first Work Near Home project in Kottarakara Municipality on 23rd November 2024 at 10:30 AM at BSNL Main Office building, Kottarakkara.

Figure 77 Work Near Home Kottarakkara - Construction Inauguration

Centre of Problem Solving and Centre of Technology De-risking and Scaling

12. Electric Vehicle and Green Energy Programmes

India is progressing towards achieving a 30% Electric Vehicle (EV) market share by 2030. Correspondingly, India's EV market is projected to expand with a compound annual growth rate (CAGR) of 49% over this period. One of the crucial components in deciding the performance of EVs is the battery technology. In recent years, EV battery production has grown in India with several companies investing in this sector. However, India still relies on imported battery packs and battery materials. Achieving the net-zero vision by 2070 will require the development of indigenous technologies and the strengthening of supply chains.

Aligned with this net-zero carbon emission vision, the Government of Kerala, through K-DISC has implemented the State EV Policy, established an EV Consortium, and proposed the development of an EV Park, with the overarching goal of creating a sustainable and comprehensive EV ecosystem in Kerala. As the primary agency driving the state's Innovation-Led Development Model, K-DISC assumes a critical role in shaping the EV landscape. Also, its responsibilities encompass serving as an innovation ecosystem developer, fostering collaboration among key stakeholders, and acting as a builder of the quadruple helix innovation model, which integrates government, academia, industry, and civil society.

Electric Vehicle (EV) Consortium

The initiative aims to foster a comprehensive ecosystem for the development and manufacturing of EVs and their components, tailored to Indian conditions and optimized for the state's indigenous resources. The strategic goal is to ensure that at least 70% of the EV subsystems are manufactured within Kerala, leveraging local expertise, resources, and infrastructure to boost self-reliance and economic growth.

The primary objective of the consortium is to develop in-house Lithium Titanium Oxide (LTO) batteries and advance Drive Train technology for EVs.

K-DISC has constituted a consortium comprising of the following partners viz.

1. Travancore Titanium Products Limited (TTPL)
2. Vikram Sarabhai Space Centre (VSSC)
3. Centre for Development of Advanced Computing (C-DAC)
4. Trivandrum Engineering Science and Technology (TrEST) Research Park

The primary goal of the EV consortium is to manufacture lithium-titanium-oxide (LTO) batteries and drive train development for use in electric vehicles.

Project Achievements

1. **Travancore Titanium Products Limited (TTPL)** successfully manufactured LTO micronized material in accordance with the specifications provided by Vikram Sarabhai Space Centre (VSSC) for the development of LTO-NCA and LTO-NMC cells. The material was supplied as per VSSC's requirements to support ongoing research and development efforts in advanced battery technologies.

In addition to the material supply, 100 prismatic cans were also provided for the assembly of battery cells. These prismatic cans are intended for use in prototype fabrication and performance evaluation of LTO-based cells, ensuring compatibility with VSSC's cell design and testing protocols. This milestone marks a significant step in the collaborative efforts between TTPL and VSSC toward the advancement of high-performance lithium-ion battery technologies.

2. The **Vikram Sarabhai Space Centre (VSSC)** successfully manufactured sample LTO electrodes for the development of 20Ah cylindrical cells as part of ongoing research in advanced battery technologies. The recent advancements include:
   2.1. **Cycling Performance of 20Ah LTO-NCA Cells:** Two 20Ah LTO-NCA cells were assembled and subjected to charge-discharge cycling at a 1C-1C rate. These cells completed 1,180 cycles, demonstrating good capacity retention of approximately 93%, indicating promising long-term performance and stability.

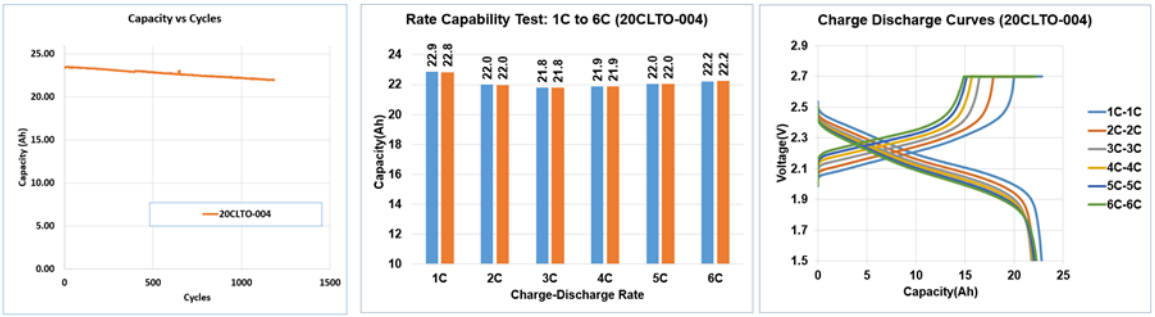

Figure 78 Charge – Discharge cycle of 20Ah LTO-NCA cell

   2.2. **Development of Prismatic LTO-NMC Cells:** Two prismatic cells were assembled and activated, utilizing an NMC-811-based cathode and an LTO-based anode, optimized for higher capacity. The first prismatic cell achieved a capacity of approximately 48Ah with a mass of 1,556g, while the second cell exhibited a capacity of around 40Ah. Both cells have dimensions of 29 mm × 210 mm × 135 mm and were designed to enhance energy storage capabilities.
   2.3. Cycling Tests for 4Ah Cell: Additionally, cycling tests were initiated for a 4Ah cell, which is being evaluated at a 1C-1C charge-discharge rate to assess its performance characteristics. These developments mark significant progress in the fabrication, activation, and performance evaluation of LTO-based cells, further supporting advancements in lithium-ion battery technology.

3. Centre for Development of Advanced Computing Thiruvananthapuram (C-DAC T) has successfully developed two new versions of Battery Management System (BMS) hardware. The functionalities of these systems were tested with both LTO and LFP battery packs. Additionally, the enclosure design for the new BMS version has been completed.

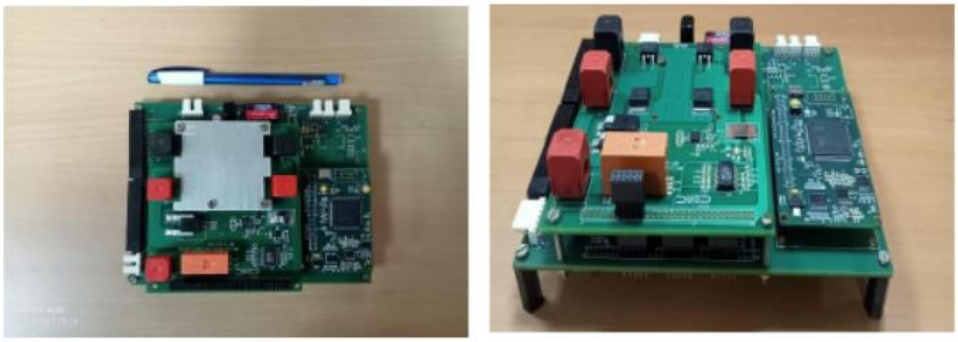

Figure 79 Prototype of BMS Models

4. The **Trivandrum Engineering Science and Technology (TrEST) Research Park** is actively progressing with the establishment of the Drive Train Lab. Vendors have been identified for the supply of key equipment, including battery emulators, and essential equipment such as 30 kW and 150 kW dynamometers have already been procured. As part of the infrastructure development, significant progress has been made, with acoustic works and the first layer of epoxy flooring successfully completed.
   In parallel, the procurement process for equipment for the Electronic Testing Laboratory has been initiated. Keltron is currently assessing the Prequalification (PQ) criteria of the bidders. Once this evaluation is complete, the technical evaluation will be conducted to finalize the selection of vendors.

Figure 80 Electric motor Test system

5. The **Kerala Development and Innovation Strategic Council (K-DISC)** conducts monthly review meetings under the EV Consortium program to assess progress and implement strategic measures for the project's successful execution. During these meetings, experts emphasized the advantages of LTO-NMC (Lithium Titanium Oxide - Nickel Manganese Cobalt) cell chemistry over conventional lithium-ion batteries, particularly in the context of Electric Vehicle (EV) applications. The discussions highlighted the enhanced safety, extended cycle life, and superior high-rate performance of LTO-NMC cells, positioning them as a promising alternative for next-generation EV battery technologies.

   The LTO anode, renowned for its exceptional thermal stability and long operational lifespan, significantly improves cell durability by preventing structural degradation over continuous charge-discharge cycles. Unlike traditional graphite anodes, LTO eliminates the risk of lithium plating, thereby enhancing safety and enabling ultra-fast charging. Concurrently, the NMC 811 cathode—comprising 80% Nickel, 10% Manganese, and 10% Cobalt—delivers high energy density, making it well-suited for applications requiring both high power output and extended lifespan. Additionally, LTO-NMC cells exhibit

superior low-temperature performance, further reinforcing their potential for EV and aerospace applications. K-DISC procured NMC 811 cathode material and delivered it to VSSC to foster the development of high-performance, safe, and long-lasting energy storage solutions for electric mobility and aerospace applications.

6. The Indian Institute of Science Education and Research Thiruvananthapuram (**IISER TVM**), serves as the Advisory Body of the Consortium, actively participates in the EV review meetings and contributes its expertise in battery material research. The institute plays a crucial role in facilitating collaborations by connecting the Consortium with other academic and R&D institutions working in related fields. Additionally, IISER TVM provides significant support to both the Consortium and its industrial partners in identifying and applying for research and development grants and funding opportunities from governmental and non-governmental organizations. These efforts have strengthened the Consortium's ability to drive innovation and advance technological developments in the electric vehicle sector.

Figure 81 Visit to IISER TVM Labs by EV Consortium Partners

7. The K-DISC team, together with C-DAC T, presented a paper titled "Green Grid Kerala: Empowering Government Buildings Through Microgrid Innovation" at the 50th IECON Conference, held in Chicago, Illinois, USA, from November 3-6, 2024.

Figure 82 Representatives of K-DISC and C-DAC T at the 50th IECON Conference 2024, Chicago, USA

8. K-DISC made a Paper presentation entitled "Building Microgrid Models in Highrise buildings towards an approach in Kerala" and a Poster presentation entitled "Developing an innovation ecosystem for EV components in Kerala a Holistic Approach" at the 37th Kerala Science Congress held at KAU, Thrissur from February 7-10, 2025.

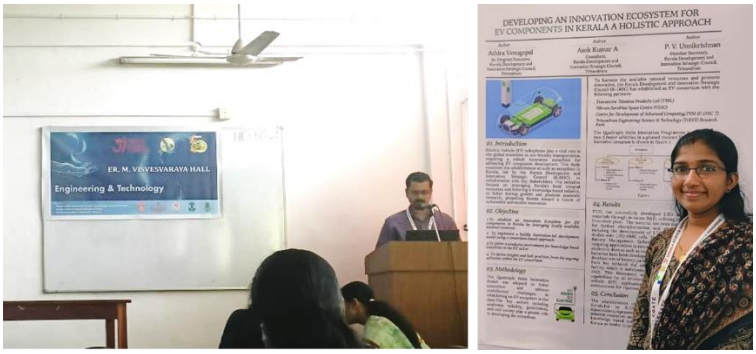

Figure 83 Mr. Abilash and Ms. Athira at the Kerala Science Congress 2025

9. The K-DISC, TTPL and TrEST Park team conducted a site visit to a battery manufacturing facilities in Coimbatore to assess the infrastructure, technological capabilities, and essential requirements for establishing a pilot battery production unit at TTPL.

Figure 84 Visit to Battery Manufacturing Facility, Coimbatore

10. The consortium submitted a proposal titled, “Indigenously Developed Energy-dense Advanced Lithium-ion BATteries for Sustainable EV Solutions (IDEAL-BAT)” to the Mission for Advancement in High-impact Area – Anusandhan National Research foundation (MAHA ANRF) for funding, in December 2024. K-DISC in collaboration with C-DAC submitted a proposal, entitled, “Development of 30kW Compact DC EV Charger with CCS and CMS Interface” to MeitY for funding.

Electric Vehicle Industrial Park (EVIP)

The EV Industrial Park will provide the complete ecosystem for the design and development, manufacturing, R&D, and testing of EV Components which includes batteries, motors, controllers, and charging systems. K-DISC is the facilitator for the establishment of the EV Park. The State EV Consortium along with KSIDC, and the Industries Department are involved in the establishment of an EV Park in Kerala.

The facilities to be established in the EV Park are:

1. Product Design Centres
2. Testing Facilities
3. Research and Development Wing
4. Incubation Centre
5. Innovation Wing
6. Space Allocation for Companies, Startups and OEMs
7. Academic Interface Cell
8. Related Industries
9. Certification Facilities

Project Achievements

Handing over of land at Vilappilsala by the Kerala Technological University (APJAKTU) is in progress with the Higher Education Department. The Government has issued an official order for the transfer of 50 acres of land from APJAKTU to the TrEST Research Park.

TrEST Research Park, in collaboration with K-DISC, has prepared an initial Detailed Project Report (DPR). This report comprehensively details the pre-project expenses incurred for key activities that necessitate further expansion under the EV Park initiative. The DPR has been submitted for approval to the Higher Education Department, seeking formal authorization and issuance of necessary government orders.

The pilot production of lithium-ion cells is being initiated at the land allocated by TTPL. This pilot production initiative is aimed at initiating cell manufacturing activities prior to the full-scale establishment of the EV Park, thereby enabling early-stage technology validation and industrial-scale process refinement. The proposal focuses on demonstrating the viability of the cell manufacturing technology being developed by the EV Consortium, ensuring that the necessary expertise, infrastructure, and production capabilities are established well in advance.

Clean Energy Innovation and Business Incubation Centre (CEIBIC)

The Clean Energy Innovation and Business Incubation Centre (CEIBIC) was launched on June 22, 2022, as a strategic partnership between the Energy Management Centre (EMC) - Kerala, Kerala Development and Innovation Strategic Council (K-DISC), and Social Alpha's Clean Energy International Incubation Centre (CEIIC).

CEIBIC was established with the primary goal of fostering innovation and entrepreneurship in the clean energy sector at the grassroots level in Kerala. The incubation center aims to support up to 30 clean energy technology innovations by 2026, providing an ecosystem that nurtures early-stage startups, innovators, and entrepreneurs. Through this initiative, CEIBIC offers access to testing and validation facilities, prototyping support, mentorship networks, and financial assistance to drive the development and deployment of innovative clean energy solutions.

As its first major initiative, CEIBIC launched the '**CEIBIC Innovation Challenge**' on June 22, 2022, to identify and support promising innovators working across the clean energy value chain in Kerala. The challenge received an overwhelming response, with 100 applications submitted from various parts of the state. Through a rigorous screening process, these applications were shortlisted for 39 promising innovations, which were categorized into two groups based on their level of technological maturity:

- Pre-Pilot Innovations – 29 applications
- Post-Pilot Innovations – 10 applications

10 startups were identified as winners of the first cohort of the CEIBIC Innovation Challenge. These selected startups will receive incubation support, mentorship, funding opportunities, and access to CEIBIC's ecosystem to further develop and scale their clean energy innovations.

Values unlocked through CEIBIC

CEIBIC has delivered significant value to its startups through targeted support, funding, and infrastructure access. Key achievements include:

1. Startup Training – Two intensive bootcamps (Oct 2023 & Aug 2024) equipped startups with business and technical skills.
2. Capacity Building – 20+ workshops, mentorship sessions, and strategic guidance provided.
3. Job Creation – 55 new jobs generated in the clean energy sector.
4. Funding Support – ₹138 lakh secured by three startups for growth.
5. Startup Growth – One startup progressed from MVP to revenue generation.
6. Cloud & Tech Access – $5,000 AWS credits provided for cloud computing.
7. Market Exposure – Startups showcased at Keraleeyam, IEFK, and Green Power Expo.
8. Prototyping & Infrastructure – Access to labs in Bangalore, industry software (SolidWorks, Ansys), and CEIIC-Rohini facilities.

These initiatives have significantly contributed to strengthening the clean energy startup ecosystem in Kerala, fostering innovation, and accelerating the commercialization of sustainable energy solutions.

Startups selected through CEIBIC Innovation Challenge

1. Climai CleanTech Pvt Ltd (Solar Bhai) – A SaaS platform that enhances solar plant efficiency by diagnosing performance issues, increasing savings by up to 25%. It can save INR 50 crore annually for 30,000+ rooftop solar owners while reducing carbon emissions.
2. Yesen Sustain Pvt Ltd – Converts conventional boats to electric using retrofit kits, reducing pollution, operational costs, and enhancing passenger comfort. This innovation supports Kerala's tourism and fisheries while cutting CO2 emissions.
3. MistEO Pvt Ltd – Uses weather forecasting to predict solar power generation, ensuring stable energy supply and promoting wider rooftop solar adoption in Kerala, lowering electricity costs.
4. Gridflow Technologies Pvt Ltd – Develops modular, electric pod-based transportation to reduce congestion, carbon footprint, and accidents, enabling a scalable, smart urban mobility solution for Kerala.
5. Tranquility IoT & Big Data Solutions – Provides real-time energy data through smart meters, improving energy efficiency and reducing carbon emissions. Its technology can lead to significant cost savings if adopted at scale.
6. Praketa Innotech Pvt Ltd – A domestic energy management system that encourages behavioral change for efficient energy use, reducing electricity bills and contributing to Kerala's Net Zero Carbon mission.
7. Norbert Hewitt Pvt Ltd / Propulse Mobility – A single-window EV transport ecosystem providing vehicles, charging solutions, and analytics, enabling businesses to transition smoothly to electric mobility while cutting costs and emissions.
8. Transfloat Solar Pvt Ltd – Develops second-life battery storage solutions to stabilize Kerala's power grid, supporting renewable energy growth and increasing employment opportunities.
9. Hooba Energetics LLP – Uses carbon nanomaterials for power transmission, reducing energy losses and improving grid efficiency. A 1% loss reduction could save KSEB $16.7 million annually.

Figure 85 CEIBIC Startups, SolYield has been selected as a winner of the SolarX Start-up Challenge 2024: India, organised by the International Solar Alliance, and supported by Invest India.

Figure 86 Clamp-on CT based Wireless Energy Meter Board developed by Tranquility

Figure 87 BEEP device installed next to a distribution board at a premise

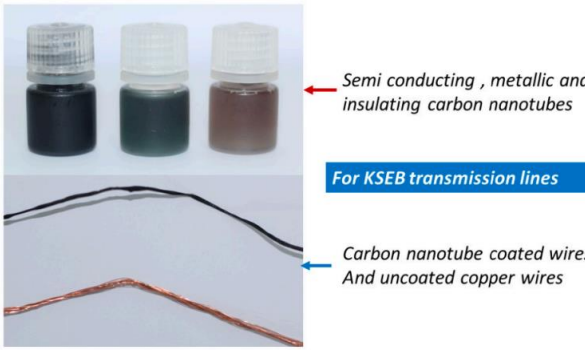

Figure 88 Lab level tests conducted on coated and uncoated copper wires

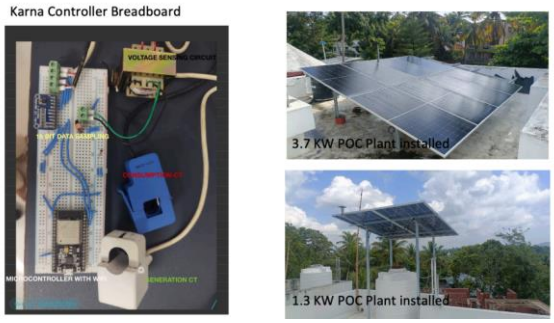

Figure 89 MistEO Pvt Ltd - Installation of the demo plant in Trivandrum and prototype of the controller

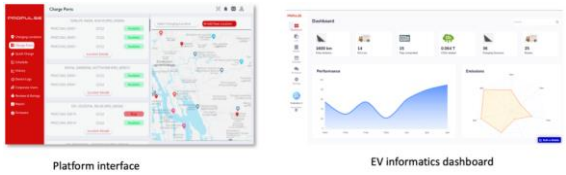

Figure 90 Platform interface and dashboard of Propulse

Figure 91 Gridflow pod carrying a passenger

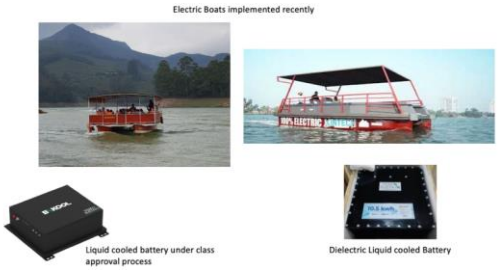

Figure 92 Marine boats re-fitted with Yesen Sustains Electric conversion kit and their battery systems

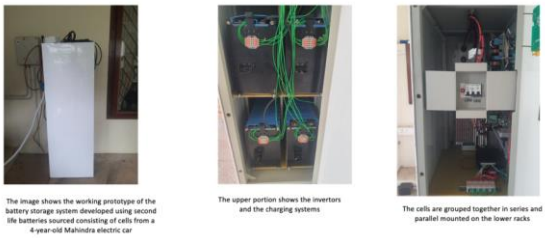

Figure 93 Prototype of the 10kW system made by Transfloat

13. Kerala Genome Data Centre

Kerala Development and Innovation Strategic Council (K-DISC) plans to establish a high-capacity data centre to harness the power of genomic data and the rich Biodiversity of Kerala. This center would serve as a hub for researchers, healthcare professionals, and public health officials to access and share genomic data. The data would be used to better understand disease transmission, identify new treatments and therapies, and monitor the emergence of new diseases. The genome data centre would require investments in infrastructure, including data storage and computational resources. It would also require the development of standards for data collection, analysis, and sharing, as well as ethical guidelines to ensure the responsible use of this sensitive data.

Kerala's biodiversity is characterized by a wide range of plants and animal species, many of which are endemic to the region largely concentrated within “The Western Ghats” a mountain range that runs through Kerala. Building a genomic data resource pool would enable us to identify genetic variants that are associated with specific diseases and to track the spread of infectious diseases across different populations enabling biosecurity pathway for the state. This could help to promote a more integrated and coordinated approach to disease surveillance and response, supporting efforts to prevent and control infectious diseases.

Progress Achievements

1. KIIFB has approved and sanctioned the Phase 1 project proposal submitted by KGDC. The project will be executed through K-DISC, which is the special-purpose vehicle (SPV). During the financial year 2024-25, Rs.76.6 Crore and during the financial year 2025-26, Rs.23.4 Crore will be issued by KIIFB and these funding for KGDC Phase 1 Project will be as a grant.
2. A MoU has been signed between K-DISC and DUK for the co-hosting the Kerala Genome Data Centre at DUK campus along with their existing data centre and help in operations and maintenance of the above said data center. Meetings were held with DUK on 11.06.2024, 25.06.2024 to define the data center contours.
3. An expert group convened to address dengue on May 28, 2024. A research proposal, "Pilot Initiative for Dengue Genome Sequencing for Epidemiology, Evidence-Based Public Health Decision Making in Kerala," was subsequently drafted. This proposal was presented to Dr. Rajan N Khobragade IAS, Additional Chief Secretary (Health) to the Government (Health & Family Welfare), on June 13, 2024. The proposal highlighted the crucial role of genome sequencing in understanding dengue epidemiology and supporting evidence-based public health decisions in Kerala. The meeting concluded that the proposal should be submitted to the Department of Health & Family Welfare, GoK, for further approval. The Department may support the project by identifying study sites, providing necessary permissions, allocating human resources for data collection and follow-up services, and identifying potential dengue patients. Hence the proposal was submitted in eOffice for kind approval. The Hon. Minister for Health has approved the Proposal for Kerala Priority Projects – Dengue developed as part of KGDC Phase I project.
4. Supplier Identified through open bidding that covered the design, supply, installation, testing, and commissioning of hardware to support KGDC’s infrastructure. The delivery and setup is estimated to be completed in 120 days.
5. **Empanelment for Sequencing Services -** KGDC is initiating a tender process to empanel reputable labs (both private and government) capable of delivering sequencing services. A preliminary list of 22 labs has been compiled.

6. **Scientific Advisory Board (SAB) Meetings -** Two SAB meetings—on May 4 and September 2—covered key topics such as budget allocations for sequencing grants. A notable highlight is the approval of a dengue project by the Ministry of Health, secured at a budget of INR 32 lakhs. These meetings reflect an active and informed advisory process driving KGDC's scientific agenda forward.
7. **Grants for Sequencing and Genomic Data Generation -** KGDC will invite researchers to apply for sequencing and genomic data grants. This includes a clear strategy for evaluating proposals based on their scientific merit and relevance to Kerala's priorities. Announcements have been made through KGDC website and through KGDC scientific events.
8. **Section-8 Company Registration -** A draft application to register KGDC as a Section-8 Company (a not-for-profit legal entity under the Companies Act in India) is in progress. Achieving this status will provide KGDC greater operational flexibility and help attract funding for its research and development activities.
9. **KGDC at Kerala Literature Festival 2025 -** KGDC participated in the Kerala Literature Festival 2025, hosting a special panel discussion titled "Health, Heritage, and the Human Script: Genomics for the People of Kerala" on January 23, 2025 at Kozhikode Beach. This insightful discussion featured Dr. Vinod Scaria, Sam Santhosh, and Dr. T. P. Mubarak Sani, with Dr. Raju Rhee moderating the session.

Figure 94 KGDC at the Kerala Literature Fest, Kozhikode 2025

10. 37th Kerala Science Congress - KGDC participated in the 37th Kerala Science Congress, held in February 2025, at the Kerala Agricultural University, Thrissur.

Figure 95 KGDC at the Kerala Science Congress, Thrissur 2025

14. Kerala Medical Technology Consortium

The Kerala Medical Technology Consortium (KMTC), initiated by the Government of Kerala, is a multi-year, high-priority program designed to promote the state's MedTech sector by leveraging its unique strengths and established institutions. Developed by experts from research, industry, and government, KMTC aims to address key challenges and capitalize on opportunities by fostering collaboration among stakeholders across research, industry, academia, healthcare, and government, positioning Kerala as a leading destination for medical technology investments and projects. This approach is built on the proven cluster model of innovation, which is essential for sectoral growth.

KMTC's strategy for achieving its vision revolves around a two-pronged approach: Extensive Marketing & Business Development and Building Interactions Between Stakeholders.

In marketing and business development, KMTC is working to reposition Kerala as a prime investment destination for Medical Devices and MedTech by launching a comprehensive rebranding campaign. Through international and national platforms, roadshows, exhibitions, and digital marketing efforts, KMTC aims to attract both domestic and global investors.

KMTC also fosters collaboration and interaction among the many established institutions in Kerala's MedTech ecosystem. This holistic strategy is designed to build a thriving innovation hub, propelling Kerala to become India's leading Medical Devices hub by 2032.

Project Achievements

1. INR 207.66 Crores of investments from 5 companies have been bought in since April 2024. Cumulative investments brought in by KMTC since June 2022 is INR 323.66 Crores from 9 projects.
2. **Harrison's Malayalam**, part of the RPG Group and one of India's largest natural rubber, tea, and pineapple aggregators, is entering the rubber-based medical devices and nutraceuticals sectors through strategic guidance from KMTC. Partnerships with Kodi Healthcare and Vitaliz, proposed by KMTC, will drive innovation, boost Kerala's life sciences ecosystem, and promote industrial growth and employment.
3. **Vinvish Technologies**, Trivandrum, is leveraging its expertise in aerospace and optics to enter the medical devices sector. With strong capabilities in design, prototyping, and mass manufacturing, Vinvish is expanding into MedTech ancillary supplies and contract manufacturing, working on seven projects with companies from Kerala, Pune, Iran and the Netherlands.
4. KMTC successfully enabled **Invent Diagnostica GmbH,** a leading diagnostics company from Berlin, to explore Kerala as part of their global expansion strategy. This decision was influenced by a series of strategic interactions between KMTC and Invent during the Medica 2023 event, where Kerala's thriving MedTech ecosystem was showcased. KMTC highlighted Kerala's potential as a hub for innovative healthcare solutions, paving the way for future collaboration.
5. KMTC is actively supporting **Keltron**, in marketing its "Shravan" hearing aids. KMTC has identified potential partners for expanding Keltron's reach beyond Kerala to national and international markets.

#	Company and Brief Investment / Project Details	Proposed Investment (Inr Crores)
1	**Agappe - Fujeribio** Japan Project for the indigenous manufacturing of CLEA Technology in India	40.00
2	**Genes MDX** a start-up based out of Nagercoil starting operations from the Bio 360 Park for manufacturing Diagnostic Solutions	2.00
3	**Harrison's Malayam Ltd – Kodi Healthcare** This project initiated by KMTC marked the foray of HML, India's largest aggregator of Natural Rubber, into MedTech Manufacturing. HML has invested into an MSME , Kodi Healthcare to manufacture India's first indigenous Natural Rubber Based Urine Bags.	0.50
4	**Sascan Technologies** Incubated at TiMED, Sascan came up with a Oral Cancer Screening Device which has been rated by the DOP as the best start up in the country.	16.00
5	**in.vent Diagnostica, Germany** in.vent Diagnostica GmbH Berlin , Germany is a global leader in delivering high quality Human Bio Materials and driving advancements in the diagnostics Industry. In discussions with Kerala Medical Technology Consortium (KMTC) Government of Kerala over the past year and more, in.vent Diagnostica GmbH Germany has decided to invest into Kerala by way of direct investments in sourcing and processing of Human Biomaterials and manufacturing controls and samples for the in vitro diagnostics Industry in Joint Venture with a local partner in Kerala.	150.71
6	**Vitaliz Bio Sciences** A nutraceutical incubated at C Camp was bought to Bio 360 by KMTC. They have now taken up space for piloting at IAV and purchased a 2 acre land at Bio 360	24.00
7	**San Ferrero** A project for elderly which has been mentored by KMTC and logged on to the KSwift portal. The project is one of a kind Assistive Technology living space using products designed by 8 curated start ups.	90.00
8	**iOrbit Digital Technologies** The company incubated at ICFOS and having offices in Bangalore,Pune and Trivandrum has now committed to KMTC for setting up a manufacturing facility at Bio 360.	0.45
	Total	**323.66**

Table 17 KMTC - Companies and proposed investments

6. KMTC has developed a strategic roadmap to establish Kerala as India's MedTech hub with quantified targets, emphasizing a clear vision and mission. Key milestones for the next 5 and 10 years include focusing on three strategic segments—medical electronics, medical rubber, and assistive technology—while prioritizing quality to ensure competitive products. The roadmap aims to generate high-end jobs, enhance exports, and foster the establishment of MedTech clusters across the region.

Figure 96 Honourable Chief Minister opens Agappe Diagnostics new manufacturing unit at Ernakulam

Figure 97 in.vent Diagnostica with the Hon. Minister for Law, Industries and Coir, Mr. P. Rajeev

7. **MEDICA 2024:** The Kerala Pavilion was the only state-led MedTech exhibition from India, fostering collaborations with Fraunhofer Society, Germany, Hsinchu Science Park, Taiwan, and AMED, Japan.
8. KMTC organized Investor Meet at Startup Infinity, Dubai in November 2024 to connect Kerala-based startups with global investors.
9. **Arab Health 2025:** KMTC, in close partnership with KSIDC, represented Kerala at the premier event. A 60 sq.m. pavilion, featuring six co-exhibitor companies, highlighted the state's MedTech ecosystem. On the sidelines of Arab Health 2025, KMTC hosted Investor Meet with Kerala Rubber Ltd (KRL) in Dubai to attract Rubber-based MedTech investments.
10. **BIOCONNECT 2.0:** KMTC played a key role in bringing MedTech companies, research institutions, and investors together as part of Bioconnect 2.0 organised by Kerala Life Sciences Industries Parks (KLIP) from September 26–28, 2024.
11. KMTC has made significant progress in setting up Innovation & Entrepreneurship Development Cells (IEDCs) in medical institutions across Kerala. Working closely with the Department of Health & Family Welfare, Department of Medical Education, Kerala Start-Up Mission (KSUM), and the Indian Medical Association (IMA).

Figure 98 KMTC at Medica 2024, Germany

12. **EMPOWER 2024:** The event focused on Assistive Technology and attracted global leaders like WHO, Global Disability Innovation (GDI) Hub, and Indian Council of Medical Research (ICMR). Startups received seed funding of INR 78.5 lakh. On the sidelines of the Conference, KMTC joined hands with Confederation of Indian Industry (CII) to organise an exclusive Industry Leaders Roundtable on Assistive Technology (AT) and saw over 25 CXos and senior leaders participate. The event was hosted by the National Institute of Speech and Hearing (NISH) in October 2024.

Figure 99 Empower 2024 - with participation of Hon. Minister Dr. R. Bindu and MLA Kadakampally Surendran

13. **Invest Kerala Global Summit (IKGS) 2025:** KMTC contributes to the success of the IKGS, working with partners like KSIDC.
14. KMTC has signed Memoranda of Understanding (MOUs) with 11 diverse partners / institutions including the National Research & Development Corporation (NRDC). Discussions are progressing with Fogarty Innovation (USA), to explore collaboration.
15. Several efforts and initiatives have been undertaken to “break-the-silos” between key stakeholder groups in the ecosystem, so that more meaningful interactions may open possibilities of collaboration and innovation.

16. **KMTC Stakeholders Connect Meets** – a unique platform to bring together interested members of the Kerala MedTech ecosystem has been created by KMTC and 5 of these have been organized since April 2024, on critical topics like Innovating in Assistive Technology and Opportunities for Rubber Cooperatives in manufacturing of Rubber-based Medical Devices. These initiatives impacted and helped relevant stakeholders – researchers, entrepreneurs, investors – for instance, cooperative societies recognize the benefits of vertical integration into medical device manufacturing, adding significant value to their existing operations. With over 120 delegates representing industry, startups, research institutions, healthcare, and cooperative societies, and featuring 10 expert sessions and 2 panel discussions, these meets have been instrumental in bringing new stakeholders into the MedTech space.
17. KMTC has jointly submitted a proposal with MG University for developing a prototyping and manufacturing cluster for Biomedical Devices, under a scheme of the Department of Science & Technology (DST), Government of India.
18. KMTC has actively collaborated with key financial institutions such as Kerala Financial Corporation (KFC), State Bank of India (SBI), National Small Industries Corporation (NSIC), and Small Industries Development Bank of India (SIDBI) to enhance the financial network within Kerala's MedTech ecosystem. In parallel, KMTC has worked to build a strong pipeline of investment ready projects and startups, enabling them to access capital more effectively and drive growth within the state's MedTech industry.

Figure 100 Dr. R Bindu, Hon. Minister for Higher Education and Social Justice inaugurate Stakeholder Connect Meet at NIPMR

Figure 101 10th Stakeholders Connect Meet in association with the Institute of Cooperative Management Trivandrum on 19 July 2024

15. Centre of Excellence in Microbiome

The Centre of Excellence in Microbiome (CoEM) initiated by the Government of Kerala under the aegis of Kerala State Council for Science Technology and Environment, and Kerala Development and Innovation Strategic Council and the scientific mentoring of Rajiv Gandhi Centre for Biotechnology aims to foster research and entrepreneurial activities in various domains of microbiome - human, animal, plant, aquatic and environment. The tripartite signed the MoU. Hon. Chief Minister released the CoEM Logo. Constituted Scientific Strategy Board with Director, RGCB as Chairman, and Management Committee with Member Secretary, K-DISC as the Chairman.

The Detailed Project Report (DPR) and five-year action plan with budget of CoEM was submitted to Kerala Infrastructure Investment Fund Board (KIIFB) and got approved. The CoEM has established its interim base at the KINFRA Film and Video Park, Kazhakoottam.

Project Achievements

1. Laboratory space for CoEM is established in the transitional base KINFRA Film & Video Park, Kazhakoottam, along with the newly recruited scientists and administrative staff.

Figure 102 CoEM Laboratory at KINFRA Park, Thiruvananthapuram

Figure 103 World Microbiome Day Celebration

2. **World Microbiome Day Observance -** CoEM observed World Microbiome Day on June 27th, 2024 in association with National Academy of Sciences India (NASI)- Kerala Chapter at Mar Ivanios College, Thiruvananthapuram. Dr. Rajan Khobragade IAS, Additional Chief Secretary to Health & Family Welfare Department, Govt of Kerala, inaugurated the event, and Shri. M.C. Dathan, Mentor (Science) to Chief Minister, as Guest of Honour.
3. Conducted a one-Day seminar on 'Microbiome: Current Research Trends and Future Perspectives'. Speakers – 1) Dr. Santanu Chattopadhyay (BRIC- RGCB) - 'You, me and our Gut Microbiome' 2) Dr. B. Krishnakumar, (CSIR-NIIST) - 'Sustainable Sanitation Systems through Microbiome Engineering'.
4. **Agar Art Competition -** Agar Art competition as an outreach program for the students and researchers as part of the World Microbiome Day Observance.

Figure 104 Agar Art Competition

5. Released the First Newsletter 'Microbiome Updates' - Shri. K.N.Balagopal, Hon. Minister for Finance, Govt. of Kerala released the first edition of Newsletter on 2nd August 2024.
6. Co-organized conferences/workshops/webinars in association with Universities and National/regional Agencies.
7. Co-organized an insightful lecture on 'Aquatic Microbiome Research: Opportunities and Scopes' by Dr. Christopher J Martiniyuk, Professor, University of Florida in association with KUFOS on 26th July, 2024.
8. An initiative with Kerala Start-up Mission to network with the Microbiome based Start-ups and entrepreneurs and recruited Entrepreneur communicators in Microbiome. CoEM-KSUM interns interacted with the esteemed faculty members and research teams of the School of Biosciences and members of Business Innovation and Incubation Centre (BIIC) and NRICMI at Mahatma Gandhi University.

Figure 105 Shri. K.N.Balagopal, Hon. Minister for Finance releases Microbiome Updates

Figure 106 CoEM-KSUM Partnership

9. As part of World Antimicrobial Resistance Awareness Week, CoEM co-organized an International Symposium ALARM 2024 in association with Amrita School of Biotechnology, on Nov 22 & 23. Director delivered a keynote lecture on 'Preventing AMR: Research Updates and Driving Action' in the event.
10. **National Startup Day Observance-2025 -** CoEM observed National Startup Day, on 16th January. Interns had the privilege of interviewing young entrepreneur Mr. Ajith Gopalakrishnan, the visionary behind Clout Bioinnovators Pvt. Ltd.,

Thiruvananthapuram, a groundbreaking startup revolutionizing sustainability through microbial technology.

Figure 107 Symposium on AMR

11. Co-organized a National Workshop on Microbiome of Coastal Environment in association with Department of Environmental Sciences, University of Kerala, on Nov 19-22. Inauguration by Padma Shri M.C Dathan, Scientific advisor to Hon. Chief Minister, Valedictory address by Prof. K.P.Sudheer (EVP, KSCSTE & Principal Secretary, Science and Technology Dept.).

Figure 108 National Workshop on Microbiome

12. CoEM actively participated in 37th Kerala Science Congress at Kerala Agriculture University, Thrissur.

Figure 109 Centre of Excellence Microbiome at the 37th Kerala Science Congress

Entrepreneurship supporting Activities

13. **Microbiome conclave** for microbial based enthusiasts and entrepreneurs in association with Kerala Start up Mission- 5th March 2025.
14. **Microbiome Ideathon** to address microbiome-based problem statements! A call for ideas with exciting cash prize for the microbiome enthusiasts.

Figure 110 CoEM collaborations with Kerala Startup Mission

Research Activities

15. Research Project entitled ‘Exploring the Microbiome Profile and development of health benefitting microbial consortium from selected Traditional Fermented Foods in Kerala’ submitted to Kerala Genome Data Centre (KGDC), Govt. of Kerala.
16. CoEM signed an MoU with CSIR- National Institute for Interdisciplinary Science and Technology (NIIST) for carrying out combined Probiotic research & product development.
17. Initiated preliminary collaborative research project discussions in different domains.

Way Ahead

Building on Kerala’s commitment to scientific research and innovation, K-DISC is set to establish a cutting-edge CoEM research laboratory at the KINFRA campus, fostering advanced studies across human, animal, aquatic, plant, and environmental domains. The declaration of the ‘State Microbe’ and the creation of a Virtual Microbe Museum will enhance public awareness and scientific engagement. Skill development programs, including hands-on training, hybrid lectures, and webinars, will empower students and researchers with specialized expertise. Additionally, by networking microbiome startup aspirants with experienced mentors, K-DISC aims to strengthen Kerala’s biotechnology ecosystem, driving impactful research and entrepreneurship.

16. Centre of Excellence in Nutraceuticals

Background

The Centre of Excellence in Nutraceuticals (CoEN) is an initiative by the Government of Kerala, aimed at exploiting the rich plant biodiversity and vast aquatic ecosystems of Kerala and harnessing the immense therapeutic, preventive or immune stimulant functions of potent nutraceuticals. By combining the richness of nature with advanced scientific research, CoEN intends to create a transformative impact on health and wellness, putting Kerala on the map as a pioneer in the field of sustainable nutraceutical development. K-DISC was entrusted to facilitate a programme to integrate research centres, start-ups and other institutes in the field. It was decided to avail financial assistance from the Kerala Infrastructure and Investment Fund Board (KIIFB) for the immediate operational needs (Phase I) and long term infrastructure requirements (Phase 2) including estimates for civil works, staff, equipment and recurring costs for the development of the CoEN under KSCSTE.

Nutraceuticals

Kerala, often referred to as "God's Own Country," has a unique ecosystem that positions it as a hub for nutraceutical development. Nutraceuticals are food products that offer both therapeutic and preventive health benefits, bridging the gap between traditional food items and pharmaceutical drugs. Nutraceuticals encompass a wide spectrum, including functional foods (which resemble traditional foods but possess beneficial physiological properties), dietary supplements (such as proteins, vitamins, and minerals), naturally sourced components, and pure compounds and have demonstrated efficacy in managing lifestyle-related disorders such as diabetes, cardiovascular diseases, and obesity, as well as conditions like cancer and neurodegenerative diseases. This "food as medicine" approach aligns well with preventive healthcare strategies, making nutraceuticals a key player in promoting overall well-being. The growing demand for nutraceuticals is driven by a shift in consumer preferences toward holistic health solutions with minimal side effects.

Project Achievements

- As per GO dated 25-07-2024, Prof KP Sudheer and Dr. Ruby John Anto were appointed as the Chief Executive Officer and Chief scientist respectively, of the Centre of Excellence in Nutraceuticals, and both of them took the charge for duty from 26-07-24 onwards.
- The mission and objectives of the centre was highlighted in the talk delivered by the Chief Scientist of the centre, who was invited as the chief guest of the National Conference on Omics in Redefining Health Care, conducted at Jubilee Mission Medical College and Research Institute, at Thrissur on 23rd and 24th August 2024.
- A project proposal incorporating all immediate necessities including the equipments for initiating the centre has been submitted to KSCSTE on 27-8-2024.
- The Chief Scientist participated and served as the resource person in the Bioconnect 2.0, Kerala program in September 27-28, 2024, themed I2I (Innovation to Industry), organized by Kerala Life Science Industry Park.
- The Chief Scientist was invited for the International Conference on Advancements and Innovations in Phytochemistry, Nutraceuticals and Functional Foods on 11th and 12th November, 2024 organized by Kerala Academy of Science at Mar Athanasios College for Advanced Studies Tiruvalla (MACFAST). She chaired the technical session and served in the evaluation panel of oral presentation and award committee.
- Established temporary laboratory and office facilities in the building allocated at IAV campus, Thonnakkal, Thiruvananthapuram.

- On 11.12.2024, Officials from KIIFB visited the temporary laboratory provided for CoEN in the IAV campus, for assessing the facility.
- We have initiated evaluation of various formulations of natural products, which can serve as health supplements, chemo-preventives and immune boosters.
- Clinical trial is going on evaluating the efficacy of a formulation against Hepatocellular Carcinoma (HCC) and Nonalcoholic Steatohepatitis (NASH).
- The Chief Scientist, inaugurated the International Seminar on "Global innovations in nutraceuticals and sustainable energy" at Little Flower College, Guruvayoor on January 8th 2025 and delivered a talk on "Exploring the therapeutic potential of nutraceuticals against cancer and metabolic diseases."

Way Ahead

K-DISC is committed to bridging traditional wisdom with modern scientific validation to unlock the potential of nutraceuticals for public health. In the short term, efforts will focus on building a strong network of research institutions and experts to document and evaluate herbal, traditional, and tribal practices in the context of Ayurveda. Simultaneously, opportunities will be created for MSMEs and startups to develop and commercialize validated nutraceutical products. In the long run, systematic screening and scientific validation of these products will help address metabolic and lifestyle diseases while strengthening immunity. By fostering innovation-driven entrepreneurship, K-DISC aims to position Kerala as a hub for evidence-based nutraceutical research and development.

Figure 112 CoEN participated in the Scientist's conclave

Figure 112 CoEN Exhibition in the Kerala Science Congress 2025

17. Programmes of Value Added Products

Climate Smart Coffee Project- Wayanad

Wayanad, a biodiversity hotspot in the Western Ghats, plays a crucial role in India's coffee cultivation, with over 95% of its coffee being Robusta, a climate-resilient variety with a GI tag. Despite its superior intrinsic quality, Wayanadan Robusta remains undervalued in global markets, often used as a low-cost filler for blended or instant coffees. The coffee sector in Wayanad is plagued by unscientific farming methods, poor post-harvest management, lack of certification, and absence of farmer-led trading models like the 'Amul' model. Smallholder farmers, who make up more than 70% of the coffee growers, struggle with fragmentation, low productivity, and price fluctuations.

The region's proximity to the Nilgiri Biosphere Reserve, a UNESCO World Heritage site, underscores the need for sustainable coffee cultivation that aligns with biodiversity conservation. The Climate-Smart Coffee Project aims to address critical gaps in the sector by promoting eco-friendly, quality-driven, and remunerative farming practices. By integrating climate-resilient strategies, certification programs, and market-driven interventions, the project seeks to elevate Wayanad's coffee to premium markets, ensuring higher incomes for small farmers while preserving the ecological integrity of this biodiversity-rich region.

Project Progress

1. **Field visit and analysis** - As part of conducting a market study and developing a business development plan along with Public Relation (PR) strategy formulation, field visits were conducted. Nayaneethi Policy Collective coordinated this field visit. The final report will be prepared after some more survey and analysis is done.
2. **KYK (Know Your Kaapi) Coffee quality analysis results** - Release and Review of KYK Coffee quality analysis result. About **331 samples** were collected from dairy farmers who were unaware of such a quality analysis and submitted to the Coffee Board for analysis.
3. **Logo of Wayanad's Indian Fine Robusta (WIFR) released** - The logo represents the core values of Wayanad's Indian Fine Robusta coffee. The Wayanad Laughing Thrush presented in the logo is a testament to the rich bio-diversity of Wayanad. WIFR represents a holistic coffee that combines product quality, product safety and sustainable sourcing standards as part of our initiative to differentiate the current' filler image of Wayanad Robusta.

Figure 113 Wayanad India Fine Robusta Logo

4. **Coffee documentary for the World of Coffee (WoC) Event** - An Introductory video and coffee documentary was prepared for presentation at the World of Coffee 2024, Copenhagen.
5. **Participation of project team at World of Coffee, Copenhagen** - A team along with a women and a tribal farmer presented the WIFR at World of Coffee 2024 held at Copenhagen, Denmark during 27.06.24-29.06.24. Asia's First Lady of coffee, Mrs. Sunalini Menon introduced our Robusta coffee at the venue and received appreciation from international coffee lovers. There were specific requirements for large quantities of coffees produced by tribal farmers.

Figure 114 World of coffee at Copenhagen, participants, stall and news

6. **Meeting with the Director, NCBS** - Meeting with the Director, National Centre for Biological Sciences (NCBS) Bangalore to discuss the formation of the Wayanad Knowledge Cluster. A proposal is being prepared for the same.
7. **Meeting with Director of Dairy Department** - Following in person meetings with the Secretary Diary Development and Animal Husbandry by the Programme Head, an online meeting with the Director of the Dairy Development Department and the Presidents and the Secretaries of all Milk Co-operative Societies in Wayanad was held. Dairy department has given official consent for the dairy cooperatives to support the climate smart coffee project. Meeting with presidents and secretaries of different milk societies in Wayanad, along with the Coffee Board and RARS representatives were conducted.
8. Distributed 10 Berry Borer traps to farmers through Panavalli Dairy Cooperative Society.

Figure 115 Shri.G.Balagopal and Dr.P V Aravind at KTU workshop on Sustainability Engg and Carbon Neutrality

9. Awareness program for coffee farmers about the financial support and subsidies available from coffee board and the activities to be planned during October-November conducted.
10. Meeting with Shri. Jagadeesha (CEO, Coffee Board, Bangalore) to seek support for arranging an online Coffee clinic for the coffee farmers of Wayanad, especially for farmers who submitted KYK samples.

11. Team meeting with Dr.Karuthamani, Coffee Board to discuss about the Post-Harvest Training Sessions.
12. Four interns were selected and orientation was given regarding field level and other activities of the project.
13. Discussion with Dr. Saket Pande (University of Groningen) to discuss the generation of Bio-CNG and Bio-hydrogen from agricultural waste for possible implementation in the coffee park.
14. Discussion with Wayanad Coffee Growers Association to discuss regarding the WIFR protocol.
15. Discussion with E-Com Commodities Pvt Limited and dairy cooperative society members to discuss about the data collection of coffee farmers and possible support to the farmers.
16. Discussion with the District Collector and stakeholders at the Collectorate for giving awareness about the program for the stakeholders and seeking support from them.

Figure 116 Meeting with district Collector and stakeholders at collectorate, Kalpetta

17. Awareness classes on GAP for coffee harvesting and post-harvesting at various dairy co-operative societies. Training was given to large number of small farmers about the correct Post Harvest SOPs to be followed.
18. Workshop at Govt. Agricultural College, Trissur on the Problems in Plantation Crops.
19. Field visit to Vanamoolika to study Parchment Coffee processing.
20. Discussion with Sattva delegates to discuss about the collaboration with IDH -an international organization that brings together public and private stakeholders to make global agricultural markets more sustainable.
21. Participated in the 'International coffee Day program at Sultan Batery, presided by the District Collector and attended by a large number of farmers.

Figure 117 International Coffee Day Celebrations

Figure 118 Second level awareness classes at Panavally, Kunnumbatta, Makkiyad and Kunnumalangadi

22. Cluster-level farmer meetings at selected dairy cooperative societies to facilitate farmers' understanding on KYK results and quality of coffee samples submitted for evaluation. Dr. Manthappa, Chief, Research wing of Coffee Board and officials explained the KYK evaluation procedure and coffee quality grading by cupping. After the online session coffee clinics were conducted with support from CB experts and they explained the KYK results of each farmer.

Figure 119 Cluster-level farmer meetings

23. Visit by Program head and Science Lead at Mahindra World City to study their CNG and bioenergy implementations.

Figure 120 Visit to Mahindra World City, Chennai-Energy Par to study their CNG and bioenergy implementations

24. Online meeting with National Commodities and Derivatives Exchange Mumbai Team to explain the support they can offer for marketing WIFR coffee.

Figure 121 Bio-hydrogen workshop at Cottanad Estate. Led by Dr. P.V Aravind

Figure 122 Presentation in Pooppoli 2025 on Carbon Sequestration in coffee plantations by Shri. Dharmaraj N

25. Dr. T D John presented a paper on " Bio-energy potential in climate smart coffee farms-a case study at Wayanad", in the IIT Bombay - University of Groningen Joint Workshop on Biohydrogen and Fuel Cell systems on 3rd June 2024. Dr. Aravind also presented paper on "Bio-energy and bio- hydrogen potential from biomass"

Figure 123 Dr. Aravind presenting paper on bio-energy and bio-hydrogen at IIT-Mumbai

Figure 124 Meeting with Ms Richa Sharma, Senior Manager, National Cooperative Exports Ltd (NCEL)

Figure 125 With Director NIT Kozhikode Dr.Prasad Krishna and CWRDM Executive Director Dr. Manoj Samuel

Figure 126 Meeting with Ms Richa Sharma, Senior Manager, National Cooperative Exports Ltd (NCEL)

Figure 127 Demonstration of fermentation for specialty coffee production at Cottanad Estate, Vaduvanchal

26. Meeting with INDOCERT MD, Mr. Mathew Sebastian and team regarding certification procedures and WIFR standard formulation.

Figure 128 Shri. G. Balagopal, IAS (Rtd) , Program Head, lighting the lamp of training on "India Coffee APP"

Figure 129 Dr.P V Aravind presenting Wayanad Coffee program at the Indo-Dutch Tech Summit in New Delhi

Way Ahead

As part of its continued efforts to strengthen Wayanad's coffee ecosystem, K-DISC is set to enhance farmer participation, quality assessment, and sustainable practices in the coming months. The enrollment of 3,000 farmers and the formation of 10 Farmer Producer Organizations (FPOs) in collaboration with NABARD will empower local communities and improve market access. Additionally, the establishment of 15 mini quality assessment labs in dairy cooperatives will ensure better product standards. Advanced training for specialty coffee farmers and a comprehensive soil survey in Wayanad using satellite data will further promote sustainable and scientific farming methods. These initiatives collectively aim to drive innovation, improve productivity, and enhance the long-term viability of Wayanad's coffee cultivation.

Conference Presentations and Awards

The K-DISC team, together with C-DAC T, presented a paper titled "Green Grid Kerala: Empowering Government Buildings Through Microgrid Innovation" at the 50th IECON Conference, held in Chicago, Illinois, USA, from November 3-6, 2024.

Figure 130 Representatives of K-DISC and C-DAC T at the 50th IECON Conference, Chicago, USA

The OLOI team led by Dr. Deepa Gopinath, presented a paper “One Local Government One Idea’ building an innovation ecosystem to address the second-generation developmental challenges of Local Self Government Institutions” at the Globelics IndiaLICS Conference at KIIT, Bhubhaneshwar, Odisha on September 20-21, 2024.

Figure 131 OLOI team at IndiaLICS, Bhubhaneshwar, Odisha

K-DISC made 3 poster presentation and 8 oral presentations at the 37th Kerala Science Congress 2025. The Mazhavillu paper presentation won the Best Oral Presentation Award under the Scientific Social Responsibility category.

Sl.	Paper / Poster	Authors
1	Developing an Innovation Ecosystem For EV Components In Kerala: A Holistic Approach (Poster)	Athira V Dr. Asok Kumar A Dr. P. V. Unnikrishnan
2	Mazhavillu - A New Approach Towards Integrated Science Learning In Kerala (Poster)	Saiprasanth K, Ms Anju G, Ms. Midhila K T, Ms Anjana T M, Ms Shebeena K K, Ms Chikku Marin John, Ms Adithya G L, Ms Sreevidya V, Ms Amrutha C S
3	Exploring The Soul Of Kerala's Flora And Fauna Through An Indigenous Perspective: Harnessing Genomics As a Kerala Model (Poster)	Dr. Raju M Rhee, Dr. Amjesh R, Mr. Prakash Matthew, Dr. P.V. Unnikrishnan
4	Triple Bottom Lines And Byophillic Design For Co-Working Spaces In Kerala - Developing A Model	Dr. P. V. Unnikrishnan, Mr. P. M. Riyas, Ms Shaghna Nath R U
5	Creating An Innovation Ecosystem For Breaking Kerala's Redistribution And Sustainability Paradox	Subramanian T K, Mr. Srikumar Chattopadhyay, Dr. P. V. Unnikrishnan
6	Building A Model For Blue Ocean Strategy For DUI Innovation In ODOI Clusters	Nikhil S S, Mr. T K Subramanian, Mr. Biju Parameswaran, Dr. Asok Kumar A
7	Nurturing An Innovation Ecosystem-Linked Model For Building Up Capabilities For Collaborative Real World Problem Solving (RWPS) Among Students	Dr. Manoj A S, Mr. Biju Parameswaran, Dr. P. V. Unnikrishnan
8	Building Microgrid Models In Highrise Buildings Towards an Approach In Kerala	Abilash A K, Dr. P. V. Unnikrishnan, Dr. Asok Kumar A, Mr. Prakash Jacob Matthew
9	Mazhavillu: Revolutionizing Science Education In Kerala's Model Residential Schools – A Study On Its Impact	Amrutha C S, Ms Adithya G. L Ms Anju G, Ms Chikku Marin John, Ms Sreevidya V, Ms Anjana T. M, Ms Shebeena K. K, Ms Midhila K. T, Mr Saiprasanth K, Ms Durgamalathi P.
10	OLOI - A Doing Using Interacting Innovation Model For Local Governments In Kerala	Prakash Jacob Matthew, Vipin V C, Dr Deepa P Gopinath
11	Towards A New Model For Addressing Challenges In Kerala's Labour Market Leveraging Community Models For Empowerment And Demand Linked Skilling	Shaghna Nath R U, Mr. Nipinraj S, Dr. P. V. Unnikrishnan

Table 18 Paper and Poster presentations at Kerala Science Congress 2025

Figure 132 K-DISC Participation in the Kerala Science Congress 2025

Figure 133 K-DISC won the PMI Kerala Project Management Excellence Award in "Big Project of the Year" for building the state Innovation Ecosystem with VSSC and UST Global as runner-ups.

Figure 134 K-DISC won the PMI Kerala Project Management Excellence Award in "Sustainability project award" for the Miyawaki Project with Allianz and UST Global as runner-ups.

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