Engineering Research & Development (Engineering R&D) Policy 2021

Department of Electronics, IT, Bt and S&T

GOVERNMENT OF KARNATAKA

Contents

Foreword

Shri B.S. Yediyurappa

Hon'ble Chief Minister, Government of Karnataka

Government of Karnataka has always strived to lead the wave of innovation. In this very spirit, it is with immense pleasure that I present to you India's visionary policy, drafted to encourage the Engineering Research & Development (ER&D) industry.

The ER&D landscape across the country as well as in Karnataka has been witnessing an accelerated momentum over the last decade. Therefore, the time is ripe to enable a policy framework and position Karnataka as the 'Destination of Choice' for ER&D in the country. The aim of this policy is not only to attract a higher number of leading ER&D Multinational Companies (MNCs), Global Capability Centers (GCCs) and Engineering Service Providers (ESPs) to the State but also to provide them with a robust and well-connected ecosystem, including an easy access to a skilled talent base.

With this in mind, the policy embraces three key focus areas; viz., integrated value chain, focused sectoral approach and emphasis on talent development.

I would like to extend my appreciation to NASSCOM and Industry Leaders, for their knowledge partnership in curating this policy. I hope this policy enables Karnataka to spearhead contribution towards India's ER&D economy and encourage leading MNCs to choose Karnataka as their 'preferred ER&D destination'.

Dr. Ashwath Narayan C.N.

Hon'ble Deputy Chief Minister, Government of Karnataka

Karnataka, over the years, has developed a flourishing well-connected innovation ecosystem. Government of Karnataka is continuously invested in boosting this ecosystem, by identifying high potential industries. The State's ER&D industry has witnessed accelerated growth over the recent years, and Karnataka has evolved to be the preferred home. In recognition of the same, Government of Karnataka has taken the lead in coming up with a progressive ER&D Policy.

The policy has dedicated focus on supporting a research mindset and encouraging the "Make in India" spirit. With the policy's unique set of offerings, one can easily observe that the intent is to get more and more IPs to register in India, make it simple for the industry to leverage high-end talent and take the research-oriented education system to greater levels. The key underlying thought has been to lay a foundation that encourages the youth to get into a research mode. Furthermore, we have also sought a unique confluence of various aspects of Governmental polices in order to meet the policy objectives.

Expert opinions were gathered over extensive stakeholder consultations and leading practices from India and across the globe and incorporated. Engagement of both primary and secondary sources to this effect has helped develop a comprehensive policy framework.

Department of Electronics, IT, Bt and S&T has deep dived into the industry trends and specific requirements, to come up with this holistic policy. I would like to place on record my appreciation for NASSCOM and all other stakeholders, for their hard work. I welcome you all to utilize the set of policy offerings to help scale the State's ER&D industry to greater heights.

Ms. Debjani Ghosh

President, NASSCOM

India is a leading destination for IT-BPM services globally.

Engineering and R&D (ER&D) Services have been back-bone of Global Companies. Digital technologies are driving the demand in all industry verticals and markets. ER&D from India has been growing ever since Texas Instruments started in Bangalore, way back in 1985. Today, there are over 900 such Global Capability Centres (GCCs) in India. Indian ER&D Service Providers are offering innovative solutions across the world. Today, ER&D players from India serve over 90% of the top Global 1000 companies with over 30% of market share.

Global ER&D spend is multiplying due to digital engineering adoption across industry segments. Industry 4.0, advanced manufacturing, changing global supply-chain scenarios are providing more opportunities. Our talent base, evolving domain expertise, maturing innovation ecosystem and supportive government policies are helping to capture these opportunities. India is emerging as the preferred global engineering and R&D hub.

Karnataka has been the key to ER&D services growth in India. The State being a base for prominent industries like - Automotive, Semiconductors, Industrial, Energy, Telcom, Consumer Electronics, Aerospace & Defense, Computing Systems, Medical devices - is unique. Government support, skilled talent and a vibrant start-up ecosystem are the key building blocks for the State. In the last few years, many countries have rolled out significant policy initiatives to incentivize R&D. For example, countries like Israel and Canada providing risk capital to business R&D initiatives, where countries Singapore and Poland increased the eligible tax deduction for R&D expenses. Karnataka today competes with several international destinations like Eastern Europe, Vietnam, Mexico, Singapore, and China to remain as the leader in this space.

In this context, the effort of the Govt of Karnataka to adopt a specific ER&D policy is timely and will help the State take a leap to accelerate its R&D innovation. I am pleased to note that the policy aims to address the most important issues of the industry and provides relevant incentives for companies to set up R&D facilities in the State. The policy focuses on enabling cross industry innovation, creating research & test infrastructure and skill development to address the critical needs of the industry and strengthen the innovation ecosystem of the State. We wish all success to the Government of Karnataka and look forward to partnering the State in this mission.

1. Introduction

The State of Karnataka has long retained its position as an Innovation powerhouse. The State, today, is proud to host over 400 leading R&D Centers/ GCCs[1]. Currently, Karnataka contributes ~40%[2] of the Engineering Research and Development (Engineering R&D) revenues in India. There is an evident opportunity for Karnataka to emerge as the Global Engineering R&D destination and remain at the forefront. This can be achieved by addressing key challenges and building a robust platform for Engineering R&D across Government, Industry, Startups and Academia.

Government of Karnataka seeks to achieve the above by integrating R&D activity across verticals and fostering a research friendly environment within the State. The Government is cognizant of the fact that to leverage the full potential of the Engineering R&D universe within the State, equal emphasis must be laid on generation & retention of IP within the State, as well as talent development, along with the supporting infrastructure. Another tenet under focus is boosting the Engineering R&D spend, both at the Government and Industry levels. The ultimate aim is to develop self-sustaining localized Engineering R&D manufacturing/ production capabilities within Karnataka.

To supplement the State's efforts in this direction, Government of Karnataka signed a Statement of Intent and entered into a strategic collaboration with IT industry's apex body, NASSCOM, in 2019. The partnership involves driving initiatives that stimulate, enable and position Karnataka as the Global Engineering R&D destination, attracting investments, high-end research capabilities and skilling opportunities in the State.

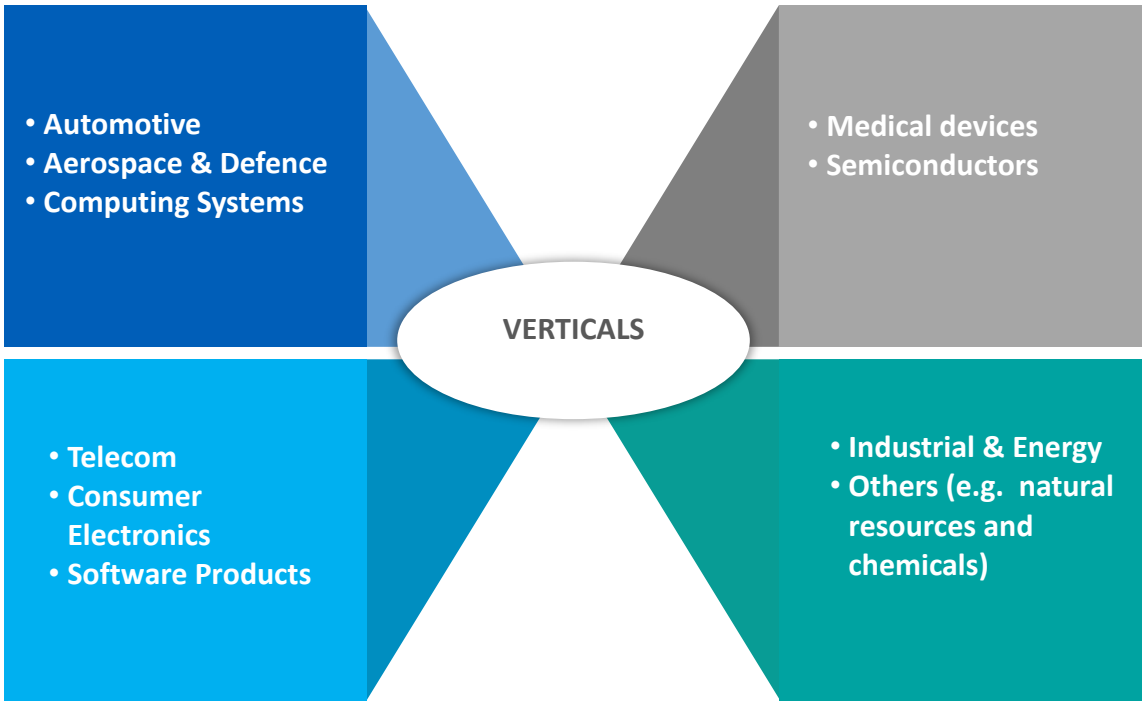
Engineering R&D Services include *"services involved in creation of new products (hardware or software) across the entire product life cycle (product conceptualization, design, development, testing, manufacturing, and maintenance")*[3]**.** Additionally, Engineering R&D services include *"those associated with maximizing the life span and optimizing the yield associated with a product or asset"*[4]. The ambit not only extends beyond the design elements of a product or a

[1] DPIIT and Invest Karnataka Data
[2] https://nasscom.in/sites/default/files/media_pdf/Press_Release_NASSCOM_and_GoK_ERD_Partnership.pdf
[3] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020
[4] https://pursuite-production.s3.amazonaws.com/media/cms_page_media/961/Brochure-Final%20ERD.pdf

service, in fact, further consists of the infrastructure, equipment and processes engaged in manufacturing or delivering them.

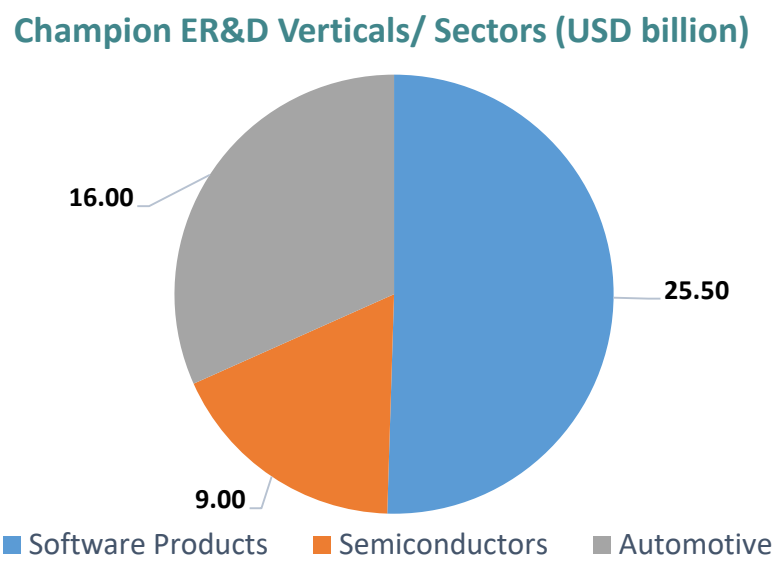
1.1 The Global Engineering R&D Landscape

The Engineering R&D Landscape**,** in its present form, includes multiple verticals (sectorial aspects). An indicative broad spectrum of Engineering R&D verticals may be visualized as follows[5]:



The Engineering R&D Industry saw a global spend of **USD 1.4 trillion in 2018** and is resiliently reflecting a consistent growth pattern and evolution, expecting to reach **USD 2 trillion by 2025**[6]. The leading three sub-sectors that have driven Engineering R&D spend growth (2019) are Software Products, Semiconductors and Automotive[7].

[5]NASSCOM and Everest Group
[6] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020
[7]NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020



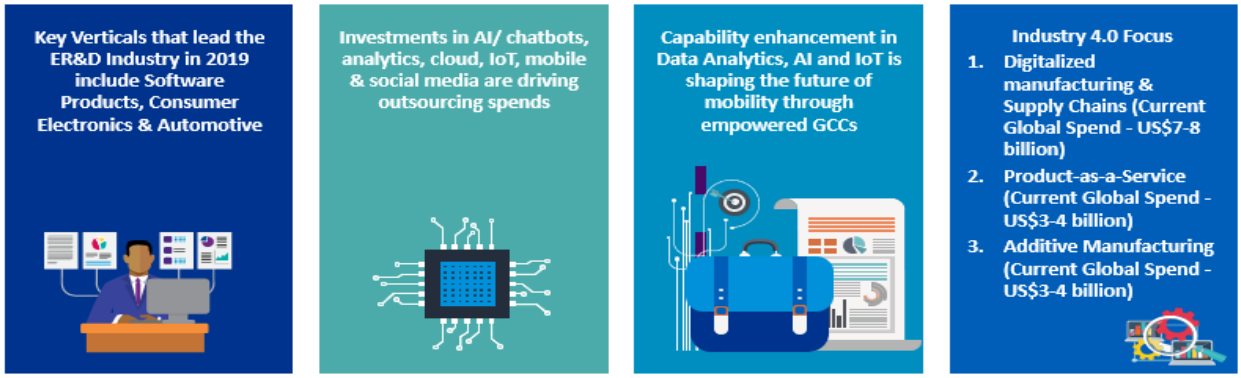
The accelerated growth of the ER&D industry is primarily attributed to the following factors:

1. Increased investments in Industry 4.0 solutions and modern industry processes & assets;
2. Engineering R&D industry moving past the 'Maturity' stage leading to industry mergers & consolidation;
3. Rise in need for interconnected systems and for localized products; and
4. Growing offshore sourcing demands.

In line with the last factor of growing offshore sourcing demands, the **Global Engineering R&D Sourcing (Out-sourcing) Market** was ~USD 90 billion in 2019 and is currently growing at ~10%[8]. Further, the outsourcing market can potentially reach USD 160 billion by 2025[9]. This is championed majorly by a greater focus incoming from Government, other non-Engineering verticals and higher Engineering R&D GCC & ESP investments in skills, scalability and technology.

[8] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020
[9] https://community.nasscom.in/communities/policy-advocacy/action-plan-to-make-karnataka-the-preferred-erampd-destination.html

A **few notable trends** currently dominating the industry[10] are as shown below:



Engineering R&D industry's evolution has also spurred the need for equal emphasis across **key pillars of talent augmentation, increased market access and technological innovation/ digitalization**. Also, the shift to a **remote working/ hybrid working/ mobile working model**, supported amply by **Digital Engineering** aspects, will only bolster expansion of the Engineering R&D industry beyond Bengaluru Urban District, which is one of the key focus of this policy.

1.2 The Wave of Digital Engineering

The current paradigm shift in the Engineering R&D market, is pre-dominantly owed to the emergence of **Digital Engineering** solutions. GCCs and ESPs are poised to **move up the value chain** and increase contribution to design and development of products using digital technologies. The convergence is expected to be all pervasive and would help **drive efficiencies** across Product Design, Development, Testing, Maintenance and Knowledge Management.

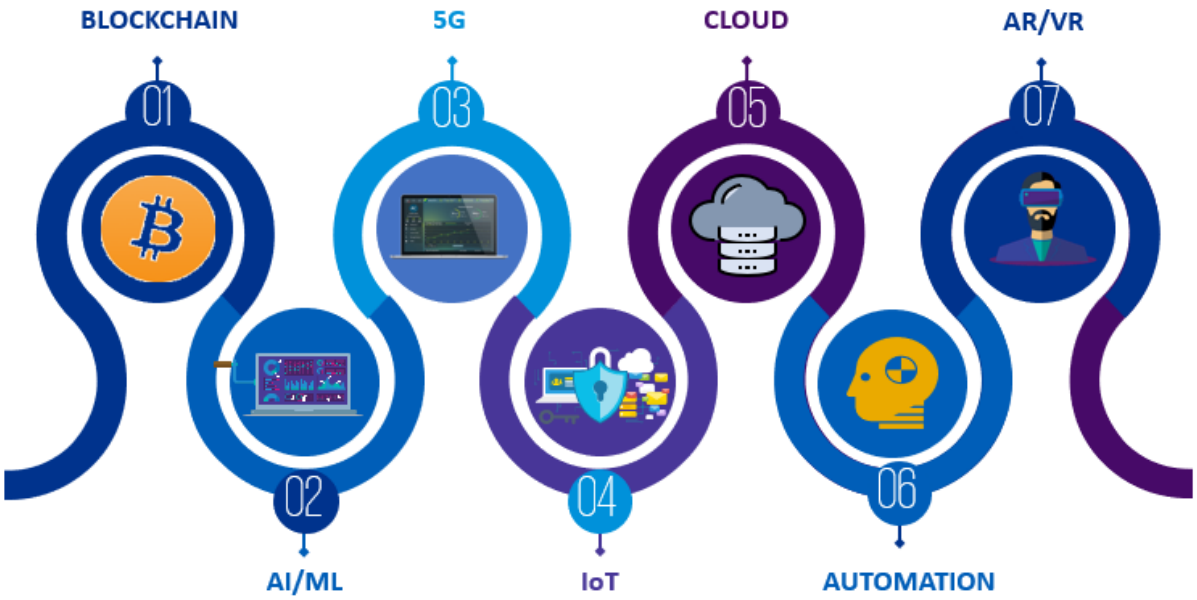
The linkage that needs to be observed specifically, is the one between **Digital Engineering and Industry 4.0**, which reflects in the form of:

- Digitalized manufacturing operations & automation in processes and supply chains;
- Product-as-a-Service Business Model, allowing customers to pay for a desired result (instead of the equipment driving the result);
- Additive Manufacturing, which can deconstruct the tedious production processes engaged for complex parts and enhance their functional performance.

[10] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020

The all-pervasive stream of **Digital Engineering** is on the rise and cuts across all verticals. However, it is pertinent to note that the maturity and readiness of digital Engineering adoption across verticals varies vastly, with Health Tech, Industrial & Energy and Automotive verticals leading the way. Dominant Engineering R&D players have already shifted erstwhile spends on legacy Engineering R&D platforms to state-of-the-art digital offerings.

Champion Technology Enablers in Digital Engineering include:



With the increased emphasis on digital Engineering across all major verticals of the Engineering R&D industry, Engineering R&D entities expect greater support for the following:

1) Assistance in building strategic partnerships and shortened time to market;

2) Optimization of processes and re-Engineering of design, development and testing through digitalization efficiencies;

3) Easy access to advanced workforce, with hybrid skillsets and expertise;

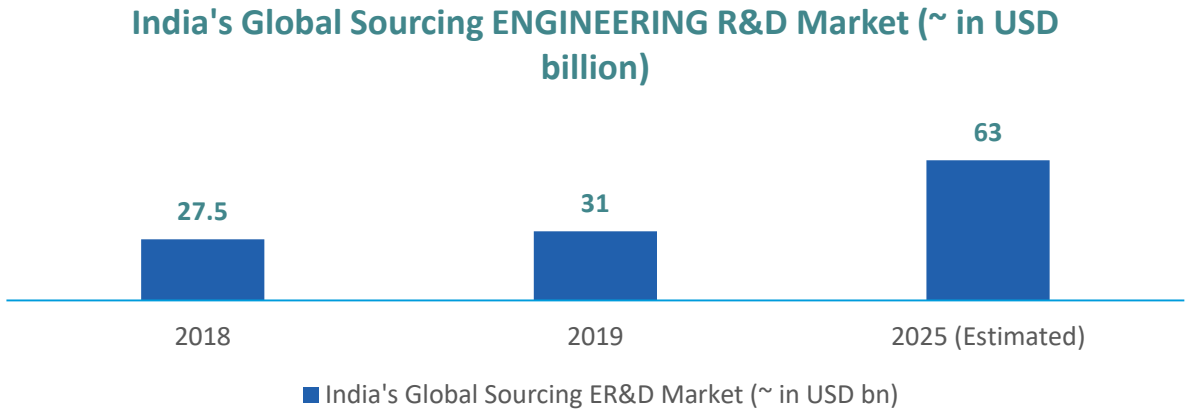
4) Enhancement of user experience by leveraging AI and connected ecosystems; and

6) Improvement in R&D efficiency, from an Intellectual Property (IP) standpoint (patents per R&D dollar/ rupee spent).

1.3 India as the Hub for Global Digital Engineering

The Engineering R&D ecosystem in India primarily includes manufacturing organizations and other MNCs with their design capabilities in the country, Indian ESPs, Engineering and Defence Public Sector Units, Medium, Small & Micro Enterprises (MSMEs), Startups and Academia.

Share of India in Engineering global sourcing was estimated to be 34%, ~USD 31 billion in 2019 and is expected to grow at a CAGR of 12-13% to reach ~USD 63 billion by 2025. India's share in digital Engineering sourcing, stood at ~28%, USD 5.2 billion in 2019, and is expected to grow at a CAGR of 27-28% to reach ~USD 22 billion by 2025[11].



Engineering R&D also became the fastest growing segment in the country, at 12.8%, in 2018[12]. This growth is evident as India is fast emerging as the Engineering and Design hub for various Engineering R&D vertical domains of Automobiles, Aerospace, Consumer electronics, Machinery, Semiconductor, etc.

Key Highlights

1. ***India is well positioned to tap into the digital Engineering R&D growth, with ~27-28% CAGR growth rate anticipated for digital Engineering spend[13]***
2. ***46 of the top 50 Engineering R&D spenders have their centers in India [14]***

[11] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020
[12] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020
[13] NASSCOM-Everest Group Report on Digital Engineering, An Opportunity Unparalleled, January 2020
[14] Accenture Report on ER&D and product development GICs

3. ***India supports 11+ Engineering R&D verticals***
4. ***India has a vast reservoir of talent pool for the Engineering R&D industry, with ~15 lakhs Engineering/ technology graduates annually[15]***

Indian ER&D players developed in-depth digital engineering capabilities on high business impact-backed domains

Automotive	AI solutions for autonomous cars, monitoring driver behavior, connected cars, warranty diagnostics, demand forecasting and product mix prediction, infotainment systems.
Product Software	Generic malware signatures, ML based security solutions, Customer analytics, Contextual extraction, Disease detection, Connectivity platforms, SaaS, PaaS, IaaS solutions
Consumer Electronics	Home automation using AI/ML and IoT, Marketing assistance, ML based cyber security solutions
Semiconductor	New age chipsets for next-gen AI/ML solutions, smart nano- chipsets, building high-end reference platform, IoT led platforms, GPU accelerated cloud containers
Industrial	Intelligent power solutions using AI, AI led video surveillance for human detection & tracking, predictive analytics solutions for control systems, IoT led solutions for smart cities, building infrastructure, connected engines
Telecom	Enhancing network capability with AI/ML, improving user device interaction through AI, Network analytics, edge computing solutions lenges, home automation products, Cloud SDN solutions
Aerospace	Next generation airplane health management for improving airline and airport operations, AI Enabled product design and machine instructions, AR/VR based assembly/Inspection

Source: *NASSCOM*

The key growth drivers for India's Engineering R&D story include:

— Changing perception of India, as an 'Innovation Driver', rather than as an 'Implementation & Support Partner';

— Continued Engineering R&D investments by MNCs, especially in the increasing number of Startups in the domain; and

— Rising need for localized products adapted to emerging markets and flexible resource capacity.

[15] AICTE/ MHRD Data

A key favorable factor for India is its demographic dividend. With more than 50% of the country's population under the age of 25 years[16], India is a young nation with a vast reservoir of human capital. Close to ~1.5 lakh students[17] are enrolled in PhD programs across the country. Furthermore, youth also lead India's Startup ecosystem, with the median age of founder-entrepreneurs as only 31 years old[18].. This talent base needs to be tapped and nurtured adequately, for it to complement the Engineering R&D growth story.

2. Advantage Karnataka

Karnataka has evolved as the pioneering destination for the Engineering R&D industry competing with several regions both in India and abroad. Karnataka is currently the leading contributor to the Indian Engineering R&D industry revenue. Having said that, Karnataka has immense prospects to ace the upcoming trends of the Engineering R&D industry, thereby maintain and further boost its position. Government of Karnataka seeks to integrate the State's Engineering R&D ecosystem and further strengthen its overall value proposition, to champion India's Engineering R&D growth trajectory.

2.1 State's Engineering R&D Ecosystem

Karnataka is an attractive destination for Engineering R&D due to its inherent advantage of a large number of highly qualified manpower comprising of both engineers and research scholars.

Karnataka's Key Highlights include:

- Karnataka contributes ~40% to India's ER&D revenue
- Karnataka hosts 400+ R&D Centers/ Global Innovation Centers (GICs)[19]
- Karnataka has made great strides and has attracted several large funds as foreign investment into the State and in turn to the country. An enduring ecosystem, booming

[16] Economic Survey India 2018-19
[17] All India Survey of Higher Education (AISHE) by the HRD Ministry 2019
[18] Economic and Social Council (ECOSOC) Youth Forum, United Nations
[19] Invest Karnataka

R&D space and an assemblage of MNCs and academic institutions have made the State a leader in telecom, aerospace, software and consumer electronics, among others.

- Karnataka comprises of 50% of India's R&D talent. It is home to a large pool of skilled automotive R&D talent base[20]
- The State is home to the highest number of multinational R&D centers and a rich talent pool of young engineers[21]
- Bengaluru ranks among top 3 cities globally for successful launch of tech Startups
- Bengaluru, has emerged as the fourth-largest technology cluster in the world
- Bengaluru is also the fastest growing tech hub in the world
- Bengaluru recorded a total funding of USD 5.3 billion across 267 deals in 2019[22]

On the skill & talent front, Karnataka is home to some of the premier educational institutions. Notable ones include Indian Institute of Science Bengaluru (IISc), Indian Institute of Technology Dharwad (IIT-D), International Institute of Information Technology Bengaluru (IIIT-B), Indian Institute of Information Technology Raichur (IIIT-R), National Center for Biological Sciences (NCBS), National Institutes of Technology Karnataka (at Surathkal, Mangaluru, NITK), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) and Institute of Bioinformatics and Applied Biotechnology (IBAB), among other upcoming several Government and private academic institutions. The rich academic ecosystem has resulted in path-breaking research in science and Engineering, backed by technological innovations and further mobilizing an entrepreneurial spirit among its citizens through its ever-expanding technology Startups landscape. Public Private Partnerships (PPP), integrative research and collaborations between industry and academia are also few other key indicators of the burgeoning spirit of innovation in the State. The State has also been specifically supporting Engineering R&D Startups, especially those working on Deep-tech solutions across verticals. With GoK's support, Engineering R&D Deep-tech Startups have been developing cancer-related technology products (using thermal imaging, AI etc.), AR/VR solutions for medical procedures, etc. If the momentum can be sustained by adequate policy

[20] https://community.nasscom.in/download.php?file=wp-content/uploads/attachment/gics-in-india-getting-ready-for-the-digital-wave.pdf
[21] http://ficci.in/spdocument/20885/Towards%20Making%20Bengaluru%20R&D%20Capital%20of%20India%20Report.pdf
[22] Inc42

enablers, the State will be all set to witness continued robust growth in the coming years, in the Engineering R&D domain.

2.2 Why Karnataka – Facilitators & Enablers

Government of Karnataka (GoK) plans to invest in the finest programs that would catalyze research and innovation by bridging the gap between academia and the private sector. GoK, through strategic interventions, aims to ensure that Karnataka retains its lead on Engineering R&D in the country and helps generate more IPs in Karnataka while simultaneously creating a skilled knowledge capital.

Key Initiatives undertaken to boost the Engineering R&D industry in the State are as follows:

- 58 K-Tech Innovation Hubs established by Department of El., IT, Bt and S&T, GoK
- Over 1.25 lakh square feet (sq. ft.) of Incubation Space has been created in collaboration with Industry Associations and Academia
- GoK has set up Technology Business Incubators (TBIs) in various institutions of higher learning as well as sector-specific Centers of Excellence (CoEs). These centers have well-developed R&D facilities to encourage innovation and foster a strong linkage between R&D and commercialization of technologies so developed.
- The Idea2PoC - Elevate Program of GoK provides a grant of up to INR 50 lakhs for product development to early stage ventures. A total of INR 116.73 crore fund has been committed as grants to 489 entities under this program till date, including Deep-tech Startups.
- GoK's Electronics, System, Design and Manufacturing (ESDM) Policy offers INR 2 crores as R&D grant per entity per year.
- GoK's Information Technology (IT) Policy also offers R&D grants of up to INR 1 crore.
- GoK has facilitated development of Bengaluru Bio-Innovation Center in Bengaluru and agriculture, nutraceutical/ phytopharmaceutical technology incubators in Dharwad and Mysuru, respectively, to facilitate the development of biotech Startups and provide them quality infrastructure facilities for R&D activities.

- GoK has established Biotechnology (Bt) Finishing Schools to foster R&D and entrepreneurship in the sector.
- GoK has initiated 20+ strategic partnerships with leading global innovation, Startup and biotech clusters to attract investment and foster collaborations.

3. ENGINEERING R&D Policy Framework

3.1 Vision

Accelerating Karnataka's growth towards leaving a footprint in the Global Engineering R&D landscape, promoting the State as the **'Engineering R&D Destination of Choice'** and transforming into a vibrant **'Knowledge Economy'**.

3.2.a. Objectives

— **To sustain & augment Karnataka's Leadership in Engineering R&D**

- Attract leading Engineering R&D entities to establish and/or expand Engineering R&D capabilities in Karnataka
- Create strong linkages between Industry and Academia to accelerate development of innovative Engineering R&D products, solutions and services
- Support and strengthen the availability of skilled Engineering R&D human capital

— **To boost competitiveness of the Engineering R&D entities in Karnataka**

- Establish and offer access to advanced testing, prototyping and other allied innovation infrastructure
- Facilitate Engineering R&D entities to adopt leading practices and gain marketing opportunities
- Support Engineering R&D entrepreneurs/ Startups to reach Proof-of-Concept stage & run pilot programs and Facilitate access to investment opportunities

— **To promote innovation that propels technology-led inclusive economic growth in Karnataka**

- Foster new innovative Engineering R&D ecosystems and infuse capital via Industry-Government collaborative channels

- Taking the Engineering R&D industry beyond Bengaluru to spur growth of regional economies
- Boost domestic manufacturing capabilities and foster the spirit of Make in India
- Promote IP Creation, Registration and Retention in Karnataka

3.2.b. Key Potential Benefits

- Enable Karnataka to contribute **~45%** to India's Engineering R&D during the policy period;
- Create an additional **~50,000 new jobs (direct & indirect)** for skilled manpower in the Engineering R&D sector during the policy period;
- Grow regional economies by promoting innovation and Engineering R&D across Karnataka;
- Developing a research-oriented skilled talent pool and foster a knowledge economy;
- Attract Engineering R&D intensive investment into Karnataka; and
- To augment capacity by bridging the Gap between Engineering/ Research Talent and Industry's Technology Needs.

3.3 Roadmap built on 3 PILLARS

- **PILLAR A) ATTRACT MNC ENTITIES TO ESTABLISH OR EXPAND ENGINEERING R&D OPERATIONS IN KARNATAKA**
- **PILLAR B) MARKET THE ENGINEERING R&D ADVANTAGES OF THE STATE TO GLOBAL MNCs**
- **PILLAR C) BRIDGING THE GAP BETWEEN ENGINEERING TALENT AND OPPORTUNITY**

3.4 Priority Sectors and Facilitators

3.4.1. Priority Sectors

The purview of this policy extends to **5 key Priority Sectors*** under the Engineering R&D industry, namely:

i. **Aerospace & Defence:** This sector encompasses Engineering R&D entities as may be defined in the prevailing Karnataka Aerospace Policy, Karnataka ESDM Policy/ Karnataka ESDM Special Incentives Scheme and/ or Industrial Policy.

ii. **Auto, Auto Components & EV:** This sector encompasses Engineering R&D entities as may be defined in the prevailing Karnataka ESDM Policy/ Karnataka ESDM Special Incentives Scheme, EV Policy and/ or Industrial Policy.

iii. **Biotechnology (Bt), Pharma & Medical Devices:** This sector encompasses Engineering R&D entities as may be defined in the prevailing Karnataka Bt Policy, Karnataka ESDM Policy/ Karnataka ESDM Special Incentives Scheme and/ or Industrial Policy.

iv. **Semiconductors, Telecom, ESDM:** This sector encompasses Engineering R&D entities as may be defined in the prevailing Karnataka ESDM Policy/ Karnataka ESDM Special Incentives Scheme/ Karnataka Industrial Policy and/ or National Electronics Policy.

v. **Software Products:** This sector encompasses Engineering R&D entities as may be defined in the prevailing Karnataka IT/ ITeS policy and/ or Industrial Policy.

The purview across the Priority Sectors to be limited to the scope as per the Definition of 'Engineering Research & Development' (Section 5 Definitions, Point VI).

3.4.2. Role of Karnataka Innovation Technology Society (KITS) & Karnataka Digital Economy Mission (KDEM) as Facilitators

KITS plays a critical role in the growth and development of the State's digital economy and allied knowledge-based industries in Karnataka. The organization strives towards building the brand equity of the State as the most preferred destination in India for investment in these industries.

KITS assists the Department of Electronics, IT, Bt and S&T (Department) in implementing Government's policies, programmes and schemes, administering incentives, concessions and other policy offerings, organizing events such as trade shows, conferences, etc. and undertaking all allied promotional activities that help in developing these industries in the State. KITS is also responsible for facilitation and handholding of all new industry-related investments. KITS has already undertaken multiple steps and initiatives to propel the growth of the State's IT, ESDM & Biotech industries, and will be handholding Engineering R&D MNCs to set up or expand in Karnataka.

KDEM is a Section 8 Company (not-for-profit) with equity participation by both Industry and Government of Karnataka (Department of Electronics, IT, Bt and S&T). KDEM has been setup to promote Digital Industry growth and attract investments by providing hand-holding services and suggesting policy initiatives to be taken up by the State. KDEM will support the Department in implementation of this policy and specific policy incentives.

3.5 Unique Offerings

The Policy Offerings mentioned in this section shall be facilitated by KITS. These offerings are applicable to ER&D MNCs, GCCs, ESPs and State Government Universities/ State Government University Affiliated Colleges and their students. The eligibility of an applicant to avail the offerings detailed below shall be read along with Section 4 and Definitions as per Section 5.

PILLAR A. ATTRACT ENGINEERING R&D ENTITIES TO ESTABLISH OR EXPAND R&D OPERATIONS IN KARNATAKA

The key propositions of Pillar A are to market the advantages of the State to leading new and expanding Engineering R&D entities, encourage recruitment of skilled talent from the State and accelerate new technology innovation while simultaneously improving the Engineering R&D infrastructure & ecosystem.

3.5.A.1 Establishment of R&D Centers of Engineering R&D Entities

3.5.A.1 seeks to support and encourage the setting-up of new and/ or expansion of existing Engineering R&D Entities (MNCs, GCCs, ESPs), Beyond Bengaluru Urban District.

GoK, through its strategic interventions, seeks to provide impetus to 'Beyond Bengaluru'. Hence, offerings under 3.5.A.1 intend to attract investments in the Engineering R&D industry and create an Engineering R&D-focused knowledge economy by boosting deep-tech talent in Karnataka.

3.5.A.1.1 Rental Reimbursement

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs)	GoK will provide reimbursement of 50% of rent, up to INR 2 crores or INR 1666 per employee per month, to an MNC Indian entity

APPLICANT	INCENTIVE
	setting up or expanding GCCs in Engineering R&D beyond Bengaluru Urban District.

3.5.A.1.2 Recruitment Assistance

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs)	GoK will provide recruitment assistance of INR 20 lakhs to an MNC Indian entity setting up or expanding operations, beyond Bengaluru Urban District. Only one application per entity will be allowed during the policy period.

3.5.A.1.3 Investment Subsidy

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs)	GoK will provide an investment subsidy equal to 20% of investment, up to INR 2 crores, to an MNC Indian entity setting up or expanding GCCs in Engineering R&D , beyond Bengaluru Urban District.

3.5.A.1.4 Case to Case Basis Offerings across the State

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs)	GoK will consider applicants fulfilling the following criteria on a case-to-case basis: • An applicant providing employment of greater than or equal to 3000; OR • An applicant with investment size of INR 250 crores and above during the policy period

3.5.A.2 Engineering R&D Fund to support Technological Innovation

The Engineering R&D Fund will provide partial and conditional grant for 'Approved R&D Projects' undertaken by Engineering R&D GCCs and ESPs. The 'Approved R&D Projects' to focus on development of innovative offerings that leverage cutting-edge technologies (e.g. IoT, AI/ML, AR/VR, Blockchain, Robotics, Digital twin, Predictive/advance Analytics, Advanced Manufacturing, etc.). These projects can also include Beta Site stage projects (the interim stage between R&D and marketing).

With the support of the Engineering R&D Fund, it is envisioned to facilitate development of future products, utilizing emerging technologies. The ultimate aim of the Engineering R&D Fund is to attract Engineering R&D GCCs and ESPs to undertake a higher number of Engineering R&D projects in Karnataka, with ease and propel higher investments in the State's Engineering R&D industry.

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs, ESPs)	GoK will provide a conditional grant up to 40% of the approved R&D expenditures, up to INR 8 crores per entity.

The Engineering R&D Fund will provide partial financing, a portion of the estimated value of the project, to 'Approved R&D Projects'. The fund will be awarded according to a predetermined set of assessment criterion and terms & conditions, such as:

- Engineering R&D GCCs and ESPs in the priority sectors of this policy should be based in Karnataka,
- New IP registration in India will be a pre-requisite to be eligible for this offering (IP may be allowed to be transferred abroad under favorable conditions), and
- R&D projects that have received support from another Government source will not be eligible to receive further assistance through this Fund.

3.5.A.3 R&D Infrastructure Program to create and strengthen the testing and prototyping infrastructure

R&D Infrastructure Program has been designed to provide a grant for the establishment of testing and prototyping infrastructure, as a consortium/ joint activity of a group of GCCs & ESPs, anchored by KDEM. This infrastructure may be setup, either within the premises of GCCs & ESPs or as standalone units (3 units located in 3 different locations) beyond Bengaluru Urban District. This infrastructure will be available to multiple stakeholders, including ESPs, GCCs, MSMEs, Startups and Academia, operating in the same sector or technological field.

This offering aims to tap into a certain set of opportunity areas within the State Engineering R&D ecosystem. The program seeks to position Karnataka as the preferred choice for the Engineering R&D industry, in comparison to other competitive Engineering R&D markets (domestic & international). The program aims to cater to the demand for higher number of domestic advanced testing and prototyping facilities. As an outcome, the program intends to address the challenge of increased operating costs and delayed product launches, faced by Engineering R&D Startups and MSMEs. Also, promoting greater talent development in the Engineering R&D industry, beyond Bengaluru, is targeted to be achieved through this program.

IMPLEMENTING AGENCY	INCENTIVE
KDEM	GoK will provide a grant of up to 40% of the approved budget or INR 50 crores, whichever is lower (for 3 units located in 3 different locations beyond Bengaluru Urban District).

3.5.A.4 Innovation Labs Program to encourage open innovation

The Innovation Labs Program seeks to setup corporate-led Engineering R&D incubators/ accelerators, as standalone units by GCCs & ESPs. These labs will be established locations across Beyond Bengaluru Urban District, across priority sectors of this policy. Role of the industry would be to provide entrepreneurs/ Startups with an access to market insights, marketing avenues and expertise along with enabling infrastructure at reduced cost. The labs will be

available for utilization by Engineering R&D ESPs, GCCs and Startups, to reach Proof of Concept (PoC) Stage in their R&D endeavours.

The Innovation Labs Program aims to create knowledge economy, leading to greater investment in the State's Engineering R&D industry, by facilitating the success of PoCs created by Engineering R&D GCCs, ESPs and Startups.

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs, ESPs)	GoK will provide a funding equivalent to 33% of the costs, up to INR 8 crores per entity for establishment of innovation labs beyond Bengaluru Urban District. This is applicable to entities for establishing Innovation labs in the areas of priority sectors (listed down as in section 3.4.1.) and showcase emerging areas e.g. Digital Health, Digital Manufacturing, Smart Agriculture, Smart City, Smart Grid & Renewable Energy etc.

3.5.A.5 Digital Innovation for Services Challenges

Digital Innovation for Services Challenge Program will allow Engineering R&D GCCs, ESPs and Startups to conduct trials or pilot programs with State Government Departments*. This program seeks to encourage technology interventions that have a social impact, across priority sectors of this policy, through call for proposals.

** Public procurement by State Government Departments in Karnataka is exempted from paying royalties.*

The program will enable liaising with State Government Departments, to test feasibility of technology interventions with social impact, thereby, resulting in future market expansion opportunities.

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs, ESPs)	GoK will provide a grant of up to 80% for a project cost up to INR 3 crores per entity.

PILLAR B. MARKET THE ENGINEERING R&D ADVANTAGES OF THE STATE TO GLOBAL MNCs

3.5.B.1 Establish Engineering R&D Go & See Centers in Karnataka to demonstrate ENGINEERING R&D capability of the State to prospective customer

Establishment of 'Engineering R&D Go & See Centers' will be anchored by KDEM in PPP mode, for Engineering R&D GCCs, ESPs, Startups and Academia. The centers may be utilized for demonstration of prototypes, research or demos etc. The 'Engineering R&D Go & See Centers' aim to strengthen prospective customer experience, encourage partnership with existing State Engineering R&D stakeholders and attract greater investment in the State's Engineering R&D industry.

The State Government & KDEM will invite Karnataka based Engineering R&D entities (GCCs, ESPs, Startups, Academia) to showcase their prototypes, research, or demos etc. at these centers.

IMPLEMENTING AGENCY	OFFERING
KDEM	GoK will support setting up of 'Go & See Centers' to demonstrate Engineering R&D capability of the State to prospective customers, in Public-Private Partnership (PPP) mode.

3.5.B.2 Host or Participate in Domestic/International Engineering R&D Events and Publish or Present Engineering R&D Knowledge Papers

This offering aims to generate future business opportunities from Engineering R&D entities by promoting the State's Engineering R&D capabilities to domestic and international investors. It also intends to encourage greater participation of Engineering R&D entities at various events (such as conferences, roadshows etc.) and demonstrate cutting edge-technologies/ prototypes

to potential buyers. Additionally, the offering also seeks to support publication and presentation of Engineering R&D Knowledge Papers (such as thought-leaderships, whitepapers, case studies, blogs etc.).

Through this offering, GoK intends to enable Engineering R&D entities to acquire new customers and promote the State as a leading Innovation and Engineering R&D Hub, resulting in the attraction of new investments to the State.

IMPLEMENTING AGENCY	INCENTIVE
KDEM	GoK will provide funding equivalent to one-third of the cost up to INR 25 lakhs for hosting domestic events/ conferences/ publications (up to 2 per year). GoK will provide funding equivalent to one-third of the cost up to INR 50 lakhs for international roadshows or participating in global events to display Karnataka based Engineering R&D entities products/technologies and cost of creating Engineering R&D case studies, whitepapers, blogs and international travel towards airfare, per diem, to present in global conferences (1 per year).

PILLAR C. BRIDGING THE GAP BETWEEN ENGINEERING TALENT AND OPPORTUNITY

3.5.C.1 Applied Research in Academia Program to support industrial application of Academic Research

Applied Research in Academia Program is designed to offer grants to 'Approved Applied Academic Research', undertaken by academic research institutions (State Government Universities or State Government Universities' Affiliated Colleges - B.Tech/ M.Tech/ M.Phil/ PhD) and also supported by an Engineering R&D GCC or ESP. This program will fund applied

research projects which are at an initial stage, and not yet eligible to qualify for commercialization. The scope of the research must be in the priority sectors of this policy and must leverage cutting-edge technologies e.g., IoT, AI/ML, AR/VR, Blockchain, Robotics, Digital twin, Predictive/advance Analytics, Advanced Manufacturing, etc. This program seeks to bridge the gap between know-how within academia and requirements of the Engineering R&D industry.

This Program aims that academic research institutions gain a better understanding of the needs and tendencies of the market, while helping the Engineering R&D entities get an opportunity to tap into discoveries in their field of operation.

APPLICANT	INCENTIVE
Applied Academic Research Projects for State Government Universities/ State Government Universities' Affiliated Colleges (B.Tech/M.Tech/M.Phil/PhD)	GoK will provide funding equivalent to 75% of the approved budget, up to INR 75 lakhs for 12 months (while the participating entity funds the remaining 25% of the approved project cost). If the project is conducted in collaboration with two different institutions, the project will be eligible to receive a funding of up to INR 1 crore for 12 months.

The Engineering R&D entity supporting the academic research project, receives the first right to negotiate a commercialization agreement with the academic research institution.

3.5.C.2 Develop Engineering R&D Future Skills Courses and Promote Adaptation of these courses in Engineering Colleges

This offering aims to develop industry designed courses and promote adaptation of the same across State's Government Engineering Universities/ State Government University Affiliated Colleges. This offering also aims to support setting up of lab infrastructure in these academic institutions.

GoK seeks to bridge the gap between academic skills and needs of the Engineering R&D industry, by enabling State Government Engineering Universities/ State Government University Affiliated Colleges.

APPLICANT	INCENTIVE
State Government Engineering Universities/ State Government University Affiliated Colleges	GoK will fund the cost of developing the industry-oriented courses and master faculty training; providing 100% grants to State Government Engineering Universities/ State Government University Affiliated Colleges as per the following conditions: 1. Each State govt college, up to 10 colleges, will get INR 10,000 per student for training and certification of selected students up to 1000 students per college, of which 33% women students to be considered for this offering. 2. INR 1.25 crores per University/college, up to 11 colleges, to set-up the lab.

3.5.C.3 Promote Internship for Engineering Students to bridge the gap between academic skills and the needs of the Engineering R&D industry

The offering will provide reimbursement of internship stipend to Engineering R&D GCCs and ESPs, for hiring Engineering students as interns in the industry. The aim of this offering is to create industry-academia linkages bridging the gap between academic skills and Engineering R&D industry requirements and developing skilled Engineering R&D talent pool. The offering will also help boost talent development in the Engineering R&D industry.

APPLICANT	INCENTIVE
Engineering R&D Entities (GCCs, ESPs)	GoK will reimburse 50% of the internship stipend for interns per entity, for a period of 3 months, up to INR 10,000 per month per intern, for a maximum of 250 interns per year and 1250 interns over the policy period.

	The entity to offer internships to 33% women candidates and consider 30% of the total interns into full-time employment, to be eligible for this incentive. The hiring entity to claim this incentive only once during the policy period.

3.5.C.4 Chief Minister (CM) Research Fellowship Program

The CM Research Fellowship program is designed to provide monthly stipend and an annual research grant to students in PhD programs related to Engineering R&D and the priority sectors of this policy. The aim of this program is to increase Engineering R&D research activity in the State, create a robust high-end Engineering R&D talent pool and to foster a knowledge economy by enabling a strong industry-academia linkage. Every proposal selected for the fellowship, across the 5 priority sectors, needs to have an industry partner, that confirms to offer monetary support.

APPLICANT	INCENTIVE
PhD Students	GoK will provide monthly stipend of INR 70,000 for the first two years, a monthly stipend of INR 75,000 for third year and monthly stipend of INR 80,000 for fourth year and annual research grant of INR 2 lakhs for students enrolled in Karnataka. 1. 200 students shall be offered this Fellowship over the policy period. 2. 25% women candidates shall be considered for this offering.

4. Eligibility Criteria, Policy Validity and Sanction Process

4.1 Eligibility Criteria

To avail the policy incentives and concessions, an entity must belong to one of the following categories:

a.i. MNC Indian entities setting up or expanding GCCs with global revenue of USD 2 billion and above and with commitment of minimum employment of 200 for Offering 3.5.A.1; and

a.ii. MNC Indian entities setting up or expanding GCCs with revenue of INR 200 crores and above for Offerings 3.5.A.2 to 3.5.A.5 and Offerings 3.5.C.1 & 3.5.C.3.

b. State Government Universities/ State Government Universities' Affiliated Colleges based in Karnataka and students enrolled in these academic institutions for Offerings 3.5.C.1, 3.5.C.2 and 3.5.C.4.

Additionally, entities mentioned in Section 4.1.a.i and 4.1.a.ii should also fulfill the following eligibility criteria:

i. NATURE OF BUSINESS:

All legal entities operating in the Engineering R&D industry (Please refer Section 5, Definitions, Point VI.).

ii. LOCATION:

The entity should have registered office in Karnataka as per the Companies Act, 2013 or the Entity should be registered as per the Karnataka Shops & Commercial Establishment Act, 1961. Entities should either be setting up or expanding their Engineering R&D operations in Karnataka.

iii. EMPLOYMENT:

a. At least 50% of the entity's total qualified workforce should be based out of Karnataka, which should not include contract employees; and
b. The entity to provide at least 25% employment to women personnel, as may be otherwise stated in a specific Offering under Section 3.5, excluding Offerings 3.5.B.1 and 3.5.B.2.

- **The offerings under Section 3.5 of this policy, can be availed in addition to incentives and subsidies provided under any of the policies of Government of India.**

- **Entities availing the offerings under Section 3.5 of this policy can avail incentives under any of the other policies of the Department of Electronics, IT, Bt and S&T, Government of Karnataka, excluding the incentives which are similar in nature.**

4.2 Validity of the Policy

This Policy is valid for a period of 5 years from the date of its notification or till a new policy is announced.

4.3 Sanction Process

Various incentives, concessions and/ or subsidies will be granted to eligible entities from time to time through a Competent Authority and after obtaining approval of the Approval Committees constituted for the same.

The Approval Committee, chaired by the Managing Director, KITS, will consist of industry representatives and subject experts apart from the officials of KITS. This committee will meet at least once in 3 months to consider all eligible applications as well as any other related issues, unless required to do so earlier. The decision of the Approval Committee will be deemed final while sanctioning the eligible amount for Incentives/Concessions.

Case-to-Case Basis Scenario

Case-to-case basis evaluation and approval will be applicable for the following categories, during the policy period:

- An applicant providing employment of greater than or equal to 3000; OR
- An applicant with investment size of INR 250 crores and above during the policy period.

5. DEFINITIONS

I. **Additive Manufacturing:** Additive Manufacturing (AM) is defined as the technology that constructs a three-dimensional object from a digital 3D model or a CAD model by adding material layer by layer. The addition of material can happen in multiple ways, namely power deposition, resin curing, filament fusing. The deposition and solidification are controlled by computer to create a three-dimensional object.[23]

II. **Bengaluru Urban District:** Bengaluru Urban District comprises 5 Taluks, namely Bengaluru North, Bengaluru North (Addl.), Bengaluru South, Bengaluru East and Anekal[24].

III. **Capital Expenditure:** Commonly known as Capex, are funds used by an entity to acquire, upgrade, and maintain physical assets such as property, buildings, an industrial plant, technology, or equipment.

IV. **Digital Engineering**: Digital Engineering encompasses two broad areas; the Engineering behind digital products (products that are intelligent, connected, and personalized) and the leverage of digital technologies (such as IoT, 5G, robotics, AI/ML, mobility, cloud, automation, data & analytics, blockchain, and AR/VR) for Engineering processes.

V. **Emerging Technologies:** Emerging technologies are new technologies whose development or practical applications, or both are still largely inherent, such that they are emerging into eminence from a background of nonexistence or ambiguity.

VI. **Entity:** Private Limited Entity (as per the Companies Act 2013), a Registered Partnership Firm (under the Partnership Act, 1932) or Limited Liability Partnership (under the Limited Liability Partnership Act, 2008)

VII. **Engineering Service Provider (ESP)[25]:** ESP is an entity that provides services across software, embedded, mechanical, and process Engineering functions, which support the conceptualization, design, development, testing, and enhancement of products, both hardware and software. In the software products context, Engineering services include all conceptualization, design, development, testing, enhancement. However, system Integration (SI), maintenance, implementation of software or enhancements and testing

[23] National Strategy for Additive Manufacturing 2020, MeiTY
[24] https://bengaluruurban.nic.in/en/demography/
[25] https://www.everestgrp.com/wp-content/uploads/2019/07/Everest-Group-Engineering-Services-Top-50-2019.pdf

in the context of end custom applications are not part of Engineering services they provide.

VIII. **Engineering Research & Development (Engineering R&D):** Engineering R&D services are those that augment or manage processes that are associated with the creation of a product or service, as well as those associated with maximizing the life span and optimizing the yield associated with a product or asset. This not only includes design elements of the product or service itself, but also encompasses the infrastructure, equipment and processes engaged in manufacturing/delivering them. R&D services involve providing research and development for hardware and software technologies, as well as development of software running on embedded systems.

IX. **Global Capability Center (GCC):** MNC Indian entities that undertake Engineering R&D services for the parent company.

X. **Go & See Centers:** Go and See Centers are dedicated physical spaces that would facilitate organization of a guided tour to prospective/existing investors from global Engineering R&D entities to showcase products and cutting-edge technologies developed by Karnataka based Engineering R&D entities/Research Universities/ Colleges. The value proposition these centers off is that Karnataka's cutting-edge innovations are deployed at one place, for all potential investors and interested Engineering R&D stakeholders.

XI. **Innovation Labs:** Innovation Labs are spaces to foster open innovation. These would help both Engineering R&D Startups and Engineering R&D entities gain access to technological infrastructure and reach a proof of concept stage. Further, they to provide market insights, marketing avenues and industry expertise, in collaboration with other leading Engineering R&D ESPs, MNCs, GCCs and Startups.

XII. **Karnataka Digital Economy Mission (KDEM):** KDEM is a Section 8 Company (not-for-profit) with equity participation by both Industry and Government of Karnataka (Department of Electronics, IT, Bt and S&T). KDEM has been setup to promote Digital Industry growth and attract investments by providing hand-holding services and suggesting policy initiatives to be taken up by the State.

XIII. **Multinational Corporation (MNC):** An MNC has facilities and assets in at least one country other than its base country. It usually has offices and/or factories in different countries and a centralized head office from where it coordinates overall global movements and management.

XIV. **Operating Expenditure (OpEx):** An operating/ operational expenditure/ expense, or OpEx is an ongoing cost for running a product, business, or system.

XV. **Outsourcing (Sourcing):** Outsourcing/ Sourcing is the practice of sourcing from the global market for goods and services across geopolitical boundaries. Global sourcing often aims to leverage global efficiencies in the delivery of a product or service.

XVI. **Pilot Program:** Also known as a trial program, is a trial for assessing feasibility/proving the value of an existing technology that simulates the target market. A Pilot program is essentially a trial for assessing feasibility/proving the value of an existing technology that simulates the target market.

XVII. **Proof of Concept (PoC):** PoC is a realization of a certain method or idea in order to determine its feasibility, or a demonstration in principle with the aim of verifying that some concept or theory has practical potential.

XVIII. **Reimbursement:** Compensation given by the State/ public body/ organization for a defined expense by giving them an amount equal to what was agreed upon.

XIX. **Research Commercialization:** Also called technology transfer, research commercialization is the activity that allows technology created during research to be further developed (via public/ private channels) into marketable products/ services for the benefit of a larger audience or general public.

XX. **Research & Development[26]:** R&D activities can be defined as any systematic and creative work undertaken in order to increase the stock of knowledge and use of this knowledge to devise new applications. R&D activities include one or more of the categories of research such as basic research, applied research and experimental development. (UNESCO manual 1984 and frascati manual, OECD, 2015). The term R&D thus covers three activities: basic research, applied research and experimental development. The basic

[26] R&D Expenditure Ecosystem Report 2019, Economic Advisory Council to the Prime Minister, GoI

criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of common knowledge and techniques for the area concerned.

XXI. **Royalty Payment:** A legally binding payment made to an individual, for the ongoing use of his or her originally created assets, including copyrighted works, franchises, and natural resources.

XXII. **Startup:** As defined in the prevailing GoK Startup Policy.

XXIII. **Subsidy:** Subsidy is a sum of money granted by the state or a public body to help an industry or business to keep the price of a commodity or service low.

XXIV. **Whitepaper:** An informational document, usually issued by an entity or not-for-profit organization, to promote or highlight the features of a solution, product, or service. White papers are often written as sales and marketing tools to attract and educate potential customers about a particular product, service, technology or methodology and encourage purchase.

XXV. **Zone:** The taluks in Karnataka are further classified into zones to ensure a strong industrial base with equitable allocation of funds as per the prevailing Karnataka Industrial Policy.

XXVI. **5G Technology:** 5G is the fifth-generation cellular network technology, also called the digital cellular network in which the service area covered by providers is divided into small geographical areas called cells. Communication to be enabled by radio waves over a common pool of frequencies.

6. GLOSSARY

ABBREVIATION	EXPANSION
AI	Artificial Intelligence
Bt	Biotechnology
CAGR	Compound Annual Growth Rate
CoE	Centre of Excellence
CAPEX	Capital Expenditure
Cr.	Crore (in Indian Rupees Denomination)
Engineering R&D	Engineering Research & Development
ESDM	Electronics System Design & Manufacturing
ESP	Engineering Service Provider
EV	Electric Vehicle
GCC	Global Capability Centre
GoK	Government of Karnataka
IBAB	Institute of Bioinformatics and Applied Biotechnology
IISc	Indian Institute of Science
IIIT	International/ Indian Institute of Information Technology
IIT	Indian Institute of Technology
INR	Indian Rupees
IT	Information Technology
ITeS	Information Technology-enabled Services
KDEM	Karnataka Digital Economy Mission
KERC	Karnataka Electricity Regulatory Commission
MNC	Multi-National Corporation

ABBREVIATION	EXPANSION
MoU	Memorandum of Understanding
MPhil	Master of Philosophy
MSME	Micro, Small & Medium Enterprises
NAIN	New Age Innovation Network
NASSCOM	National Association of Software and Service Companies
NCBS	National Centre for Biological Sciences
NIT	National Institute of Technology
OPEX	Operational Expenditure
PhD	Doctor of Philosophy
PoC	Proof of Concept
PPP	Public Private Partnership
R&D	Research & Development
S&T	Science & Technology
SEZ	Special Economic Zone
SI	System Integration/ Integrator
SME	Small Medium Enterprise
TBI	Technology Business Incubator
USD	United States Dollar

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Additional Chief Secretary, Department of Electronics, IT, Bt and S&T, Government of Karnataka

With this pioneering ER&D policy, Government of Karnataka aims to cement its position as the Global Innovation Powerhouse. We have meticulously stitched together a wide array of offerings. Nurturing of human capital has been given specific emphasis. Additionally, the policy focuses on Knowledge Capital Development, providing a level playing field to women, and the emerging trend of Digital Engineering. We thank NASSCOM for their partnership, valuable inputs and dedicated resolve. We would also like to extend our gratitude to all stakeholders who helped shape up the policy.

Smt. Meena Nagaraj C.N., IAS,

Director, Department of Electronics, IT, Bt and S&T and Managing Director, KITS, Government of Karnataka

The ER&D policy has been carefully crafted to create a research friendly environment and to cater to the specific set of requirements for the ER&D industry. Broadly, the focus has been laid on 5 Priority Sectors, (i) Aerospace & Defence, (ii) Auto, Auto Components & EV, (iii) Biotechnology, Pharma & Medical Devices, (iv) Semiconductors, Telecom, ESDM, (v) Software Products. I would like to thank NASSCOM & all other stakeholders involved in the policy formulation process. I hope this policy spurs the next wave of ER&D growth in Karnataka.