

# An Overview of Technical Vocational Education and Training Ecosystem in India





**India has one of the youngest populations in the world and enjoys a demographic dividend with the age group of 28 years as compared to 37 in China and the USA, 45 in Western Europe, and 49 in Japan in 2020. This workforce however still needs to be skilled and become work-ready through TVET interventions.**

## INTRODUCTION TO INDIAN TVET ECOSYSTEM

Of India's total workforce of ~520 million<sup>1</sup>, agriculture employs nearly 49 percent<sup>3</sup> while contributing only 15 percent<sup>3</sup> of the Gross Value Added (GVA) (~29 percent<sup>3</sup> of China's workforce was employed in agriculture). Industry and services accounted for 13.7<sup>3</sup> and 37.5 percent<sup>3</sup> of employment while making up for 23 percent<sup>3</sup> and 62 percent<sup>3</sup> of the GVA in 2016. India also exhibits a low female labour force participation rate (LFPR) (23.7 percent<sup>3</sup> in Financial Year (FY) 2012 as compared to 61 percent<sup>3</sup> in China and 56 percent<sup>3</sup> in USA). According to National Policy for Skill Development and Entrepreneurship, more than 54 percent<sup>3</sup> of India's population is part of the working age group – 15 to 59 years, and this demographic dividend is expected to last for next 25 years. However when it comes to providing vocational education and skills to the workforce, the National Skill Development Policy has estimated that only 5.4 percent<sup>3</sup> of the workforce in India has undergone formal skill training as compared to 68 percent<sup>3</sup> in the UK and 96 percent<sup>3</sup> in South Korea.

Technical and Vocational Education and Training (TVET) is a concurrent subject in India, with responsibility shared by the Central government and State governments. Along with public institutions, private sector participation is encouraged and private sector forms a key player in the skilling ecosystem. This reports provides an overview of stakeholders, their role and challenges in the TVET Ecosystem of India.

The challenges in the Indian TVET are twofold – making vocational education aspirational and integration of informal sector (as almost 85 percent<sup>3</sup> of workforce is engaged in unorganized sector) in the skill development ecosystem. Active advocacy is needed to create awareness amongst the youth (especially rural and semi urban) to take up skill development route for seeking employment opportunities and at the same time create strong industry linkages as done by some of the established TVET ecosystems across the globe. Additionally, like in the rest of the world, a shift from traditional job

<sup>1</sup> [http://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](http://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf)

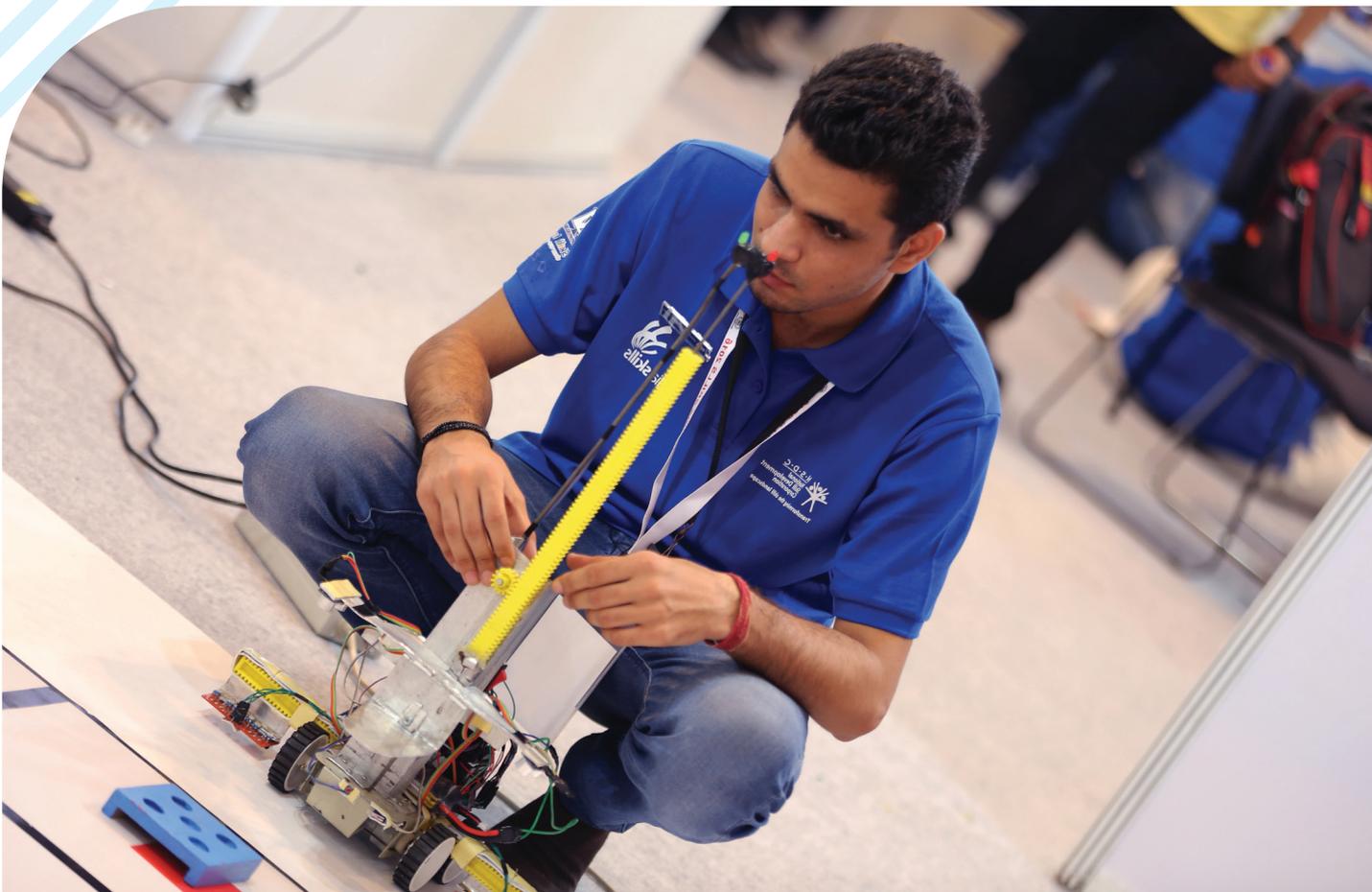
roles and corresponding training programs to the job roles of tomorrow is currently underway. Driven by the technological and demographic changes the workforce requirement has also changed. To cater to this complex requirements, multifold efforts involving large number of stakeholders working simultaneously towards the objective of creation of a skilled workforce is pivotal.

Over the years the Indian skilling ecosystem has evolved accordingly with a mix of government as well as private efforts to serve the skilling requirements. Apart from the conventional long term skill development programs, multiple short term programs and initiatives of recognizing and formalizing the existing informal skills have been introduced in the country.

The Government of India (GoI) plays the dual role of policy advocacy as well as a key financier for majority of skill development initiatives. Ministry of Skill Development and Entrepreneurship

(MSDE) is entrusted with creating policies for skill development initiatives and supports the operations centrally with assistance of National Skill Development Corporation (NSDC), Directorate General Training, erstwhile National Skill Development Agency (NSDA) and National Council for Vocational Training, National Skill Development Fund (NSDF), State Skill Development Missions (SSDM) and other Program Implementation Agencies (PIAs) to assist in this endeavour. National Council of Vocational Training (NCVT) and NSDA have recently been merged to form National Council for Vocational Education and Training (NCVET).

MSDE is tasked with skilling on a large scale with speed and high standards in order to achieve the government's vision of a 'Skilled India.' At the state level, the primary responsibility for program implementation and governance lies with the state governments through respective State Skill Development Missions (SSDMs).



## KEY STAKEHOLDERS AT CENTRAL AND STATE LEVEL

Stakeholders work within a broad framework as envisaged in National Policy on Skill Development and Entrepreneurship 2015 that supersedes the Policy of 2009. The core objective of the Policy is to empower individuals, by enabling them to realize their full potential through a process of lifelong learning where competencies are accumulated via instruments such as credible certifications, credit accumulation and transfer, etc. To achieve this objective, the policy has four thrust areas:



## ROLES AND RESPONSIBILITIES OF KEY STAKEHOLDERS

The following is an overview of the areas of responsibilities of the key stakeholders who are spearheading the TVET in India:

### **Industrial Training Institutes (ITIs):**

Managed by the Directorate General Training (DGT), which funds and oversees the NCVT; and the Central Institutions Network, which builds capacity and curriculum for the ITI network. Individual ITIs, are operated and financed by the

state governments. There is a scope for state-level certification through the State Council for Vocational Training.

### **Polytechnic:**

These organizations are a mix of government and private institutions that promote higher-level skills and are usually regarded as a part of the higher education sector. They are financed and controlled by the All India Council of Technical Education (AICTE)

and overseen by the Directorate of Technical Education at the state level.

**Training Providers:** This is an extensive network to promote talent growth across the nation. NSDC offers financing support to Training Providers to construct ability by expanding funds, technical aid, thought leadership, and expertise management.

**Captive Service Providers:** They develop the career of the person and the organization's growth at the same time. Potential employees/current employees are taught the skills, knowledge, and competencies needed to perform the job. The Training Providers are expected to retain the participants as regular employees upon successful completion of the training.

**Skill Development Institutes (SDIs):** There are three broad groups of SDIs- government managed and funding organizations, privately managed and government funded organizations, privately funded and managed organizations.

**Directorate General of Training:** This is the apex organization involved in overseeing the development and coordination of vocational training. It is entrusted with the upgrading of craftsman training schemes,

curricula design, and modernization of ITIs and maintaining quality standards and granting of affiliations. Regional Directorate of Skill Development and Entrepreneurship (RDSDE) under Directorate General of Training (DGT) are involved in monitoring and implementation of the Apprenticeship Act. Other schemes promoted by the DGT include the Crafts Instructor Training Scheme, recognition of prior learning under the Skill Development Initiative, apprenticeship training, advanced vocational training scheme and vocational training for women.

**NSDC:** It is a non-profit entity and a Public-Private Partnership (PPP) that is aimed at catalysing private sector training initiatives in skill development and vocational education. The entity aims to channelize private investments towards development of scalable and sustainable skill development training solutions. It has also helped in channelizing Corporate Social Responsibility funds of private agencies.

**National Council of Vocational Education and Training (NCVET):** Envisaged to regulate the functioning of entities engaged in vocational education and training, both long-term and short-term, and will establish minimum standards for the functioning of all entities. Their primary functions will include:

- Recognition and regulation of awarding bodies, assessment bodies and skill related information providers.
- Approval of qualifications developed by awarding bodies and SSCs.
- Indirect regulation of vocational training institutes through awarding bodies and assessment agencies.
- Research and information dissemination, and grievance redressal.



**Sector Skill Council (SSCs):** Autonomous non-profit entities that are set up by NSDC and represent industry in the specified sectors. Their primary function is to enable creation of curriculum and content as well as to enable training of trainers in their respective sectors.

#### **National Skill Development Fund**

**(NSDF):** Owned by a public trust set up by the GoI, NSDF receives contributions from government and non-government sources for skill development and vocational education. The fund is channelized by NSDC for meeting the skilling objectives through initiatives such as Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 1.0, PMKVY 2.0, UDAAN and Standard Training Assessment and Reward (STAR) Scheme. In addition, over INR 56,380 million<sup>2</sup> has been applied towards this objective.

#### **National Institute for Entrepreneurship and Small Business Development**

**(NIESBUD):** This institute is involved in mentoring, hand-holding and training existing and potential entrepreneurs by assisting them in setting up and scaling up of revenue generating activities. The institute is also involved in research, integrating of entrepreneurship with skill training, cluster-based initiatives and offering training programs for trainers and promoters.

#### **Indian Institute of Entrepreneurship (IIE):**

This institute is located in Guwahati and is aimed at promoting entrepreneurship development in the North Eastern region as well as undertaking training, research and consultancy activities in small and micro enterprises.

#### **Ministry of Human Resource**

**Department (MHRD):** MHRD is split into two branches viz. Department of School Education and Literacy, which is responsible for development of literacy and school education in India; and Department of Higher Education, which

is responsible for secondary and post-secondary education in the country.

#### **Department of Labour and Employment**

**(DoLE):** DoLE in every state is responsible for protecting and safeguarding the interests of workers, and the poor, deprived and vulnerable segment of the society. The department seeks to build a healthy work environment and to coordinate vocational skill training and employment.

#### **Department of Technical Education**

**(DoTE):** DoTE in every state is responsible for all the skill development interventions of the respective state governments.



Post independence, TVET sector in India was primarily anchored by government through ITIs and polytechnics. Over time and post National Skill Policy of 2009, private training providers are also active contributors and skill ecosystem has evolved to accommodate short-term, long-term and cooperative TVET models.

<sup>2</sup> <https://www.msde.gov.in/annual%20report.html>

## SECTORAL TVET TRENDS IN INDIA

A close review of the demographic profile across states and union territories reveal significant variation w.r.t. between the age, education level, income level, aspirations, skill set requirements of the industry and the nature of jobs in the state. At one end of the spectrum, there is a soon-to begin-ageing population, where the elderly and their needs will require greater attention; and then there is the young population, where providing education, skills, and employment opportunities assume the highest priority.

Addressing the observed imbalances, most State governments have set up State Skill Development Missions (SSDMs) as nodal bodies to anchor the skill development

agenda in the state. SSDMs are expected to play a significant role in escalating the pace of skilling, through the identification of key sectors for skill development in the state, as well as coordinating with central ministries and state departments, and industry and private training organizations. Each state has adopted a structure of SSDM that best suits the local environment and the state vision for skill development.

The table below lists down some of the key initiatives taken by the various state governments to further the agenda of skill development. This is not an exhaustive list and has been only put up for representation purposes.

State/Union Territory	Key Trends
<b>West Bengal</b>	<ul style="list-style-type: none"> <li>• Integrated skill development policy and infrastructure to train 0.6 million trainees under institutional and non-institutional mechanisms.</li> <li>• Private sector investments in skilling include Corporate Social Responsibility (CSR) and affirmative action-based initiatives for setting up skill development centres for skilling in the foundry and engineering instruments sector. Tata Hitachi has set up operator training schools.</li> <li>• Current sectors with large employment include IT-ITeS, healthcare, Banking, Financial services, and Insurance (BFSI), automotive, transportation and logistics, tourism and hospitality.</li> <li>• Sectors which are set to see future growth include construction, retail, agriculture and allied services, micro, small &amp; medium enterprises (MSME), jute and textile, electronics.</li> </ul>
<b>Andhra Pradesh</b>	<ul style="list-style-type: none"> <li>• Andhra Pradesh State Skill Development Corp. (APSSDC), an entity structured on a PPP mode along with NSDC and private partners to initiate and oversee skill development initiatives.</li> <li>• Tremendous participation by industry players including Siemens, Kia Motors, Jain Irrigation Systems, Google, Amazon, etc.</li> <li>• Private sector initiatives include investments for a model skill development training facilities by HCL technologies, Hitachi and Johnson Controls and GMR group.</li> <li>• Current sectors of focus include auto, IT, electronics, food processing, textiles, tourism, agriculture, leather, chemical and pharmaceuticals.</li> <li>• Focus sectors for the future have been identified as IT-ITeS, aerospace and defence, fabricated metals, transport, logistics, auto, auto components, healthcare, life sciences, pharma, tourism and hospitality, Banking, Financial services, and Insurance (BFSI), fisheries and aquaculture.</li> </ul>

State/Union Territory	Key Trends
<b>Bihar</b>	<ul style="list-style-type: none"> <li>• Apart from central initiatives, state initiatives such as Kushal Yuva Program (for employability skills enhancement), Recruit-Train-Deploy initiative (demand driven skill training) are focused towards skill development training.</li> <li>• Current sectors being focussed for skill development include electronics, hardware, construction, apparel, mining, logistics, retail, telecom, agriculture, IT-ITeS, tourism, hospitality.</li> <li>• Sectors for future focus are IT-ITeS, energy, power, hospitality, tourism, fabricated metal products, plastics and chemicals.</li> </ul>
<b>Gujarat</b>	<ul style="list-style-type: none"> <li>• Private sector has significant presence in the state. Private investments include investments by Maruti Suzuki-Japan Institute of Manufacturing, that was set up for skill training centres in Mehsana Gujarat.</li> <li>• Other state sponsored schemes include the Kaushalya Vardhan Kendra (KVK), which imparts skill training through the village cluster training centres and Vocational Training Centres.</li> <li>• The main sectors that witnessed focused skill training over the past few years include gems &amp; jewellery, agriculture, electronics and hardware, apparel, retail, beauty and wellness, logistics, automotive, Banking, Financial services, and Insurance (BFSI) and capital goods.</li> <li>• Future skill gap is expected in IT-ITeS, transport and logistics, plastic and rubber products, fabricated metal products, auto and auto components, gems and jewellery, energy (conventional/green energy), Banking, Financial services, and Insurance (BFSI), hospitality, tourism, non-metallic mineral based products.</li> </ul>
<b>Maharashtra</b>	<ul style="list-style-type: none"> <li>• The Pramod Mahajan Kaushalya Udyojkta Vikas Abhiyan (PMKUVA) is a key state government scheme that is aimed at employment linked skill development training.</li> <li>• Maharashtra was the first state to pilot skill vouchers for skill training. This was done by a skill development agency named BARTI.</li> <li>• Private sector investments include those by JSW in setting up of a skill development and training institute adhering to international standards and incorporating technology and virtual classroom in training delivery.</li> <li>• Current industries with large employment are textiles, Banking, Financial services, and Insurance (BFSI), building construction, real estate, IT-ITeS, auto and auto components.</li> <li>• Sectors for focus in the future include building construction, real estate, organized retail, transport, logistics, warehousing, packaging, travel, tourism, hospitality, trade, healthcare services.</li> </ul>
<b>Kerala</b>	<ul style="list-style-type: none"> <li>• Initiatives that have been undertaken include the setting up of Centres of Excellence, employment enhancement programs, Kaushal Kendras, employability centres, career development centres, job training centres.</li> <li>• Kerala's Additional Skill Acquisition Program (ASAP) is a pioneer project geared towards encouraging vocational education in schools.</li> <li>• Key industries in the state include textiles, handloom, spices, rubber, power looms, retail, telecom, healthcare, construction, sericulture, minerals, agriculture, forest-based products, IT-ITeS among others.</li> <li>• Future sectors in focus include Banking, Financial services, and Insurance (BFSI), IT-ITeS, tourism and hospitality.</li> </ul>

State/Union Territory	Key Trends
<b>Madhya Pradesh</b>	<ul style="list-style-type: none"> <li>• The Government of MP has entered into a collaboration with ITE Education Services (ITEES), which is a subsidiary of Singapore's Institute of Technical Education (ITE), Singapore.</li> <li>• Several flexi MoUs have been signed with Maruti Suzuki, Hyundai Motors, Toyota Motors and Maruti Development Laboratory.</li> <li>• Cab aggregator Ola signed an MoU with the government to support over 25,000 entrepreneurs through skill development of drivers.</li> <li>• Focus sectors include agriculture and food processing, tourism, textiles, pharmaceuticals, mineral based industries, beauty and wellness, and construction among others.</li> <li>• Future focus sectors include construction, organized retail, transport, logistics, warehousing, textile and healthcare services.</li> </ul>
<b>Odisha</b>	<ul style="list-style-type: none"> <li>• Centrally sponsored as well as state level skill development activities are overseen by the Odisha State Skill Development Agency.</li> <li>• Private sector initiatives include those by Essar, which is aimed as skill training to improve livelihood of farmers.</li> <li>• Future focus sectors include IT-ITeS, renewable energy, apparel and agriculture.</li> </ul>
<b>Rajasthan</b>	<ul style="list-style-type: none"> <li>• Rajasthan was the first state to set up the state level body to coordinate skill development activities under the Rajasthan Skill and Livelihood Development Corporation. The Employment Linked Skill Training Program (ELSTP) and Regular Skill Training Program (RSTP) are two flagship schemes undertaken in the state.</li> <li>• Rajasthan was the first state to set up a mission on livelihoods, which has enhanced innovative capabilities in the state.</li> <li>• Sectors for focus in the future include retail, tourism and hospitality, biotechnology, automotive, gems and jewellery, IT-ITeS.</li> </ul>
<b>Uttar Pradesh</b>	<ul style="list-style-type: none"> <li>• UP has witnessed prominent industry participation in skilling initiatives. Boeing, Amazon and GE Healthcare have agreed to collaborate with UP for imparting skill trainings. The state also has an MoU with Maruti Suzuki with regards to automobile related training.</li> <li>• The state is known for industrial clusters in sectors such as IT-ITeS, engineering, infrastructure, leather, tourism, automobile, healthcare.</li> </ul>



## SECTORAL TVET TRENDS IN INDIA

The skill development and training requirements of different sectors are unique with regard to the extent of specialization and automation, on-the-job trainings, job role specificity, dependence on infrastructure and other factors. Hence strategically, it is crucial to embrace the sector level trends in TVET, while conceiving innovative skilling models. Manpower requirement for different sectors vary depending on sector outlooks due to the advent of technology in previously manpower intensive sectors. Future outlook for sectors such as construction, retail, electronics, IT-ITeS, automotive and manufacturing indicate high volume requirements. However, apart from

quantitative supply additions, qualitative aspects in terms of emerging job roles, upskilling of current workforce and training requirements in terms of delivery and type of training would have to be relooked at.

Currently, the sector-specific training requirements are focused on by the SSCs, which are also responsible for designing and advocating the standards in the specified sector.

Key trends for select sectors are captured in the below table, this is not an exhaustive list (and has been only put up for representation purposes basis sector reports and secondary sources).

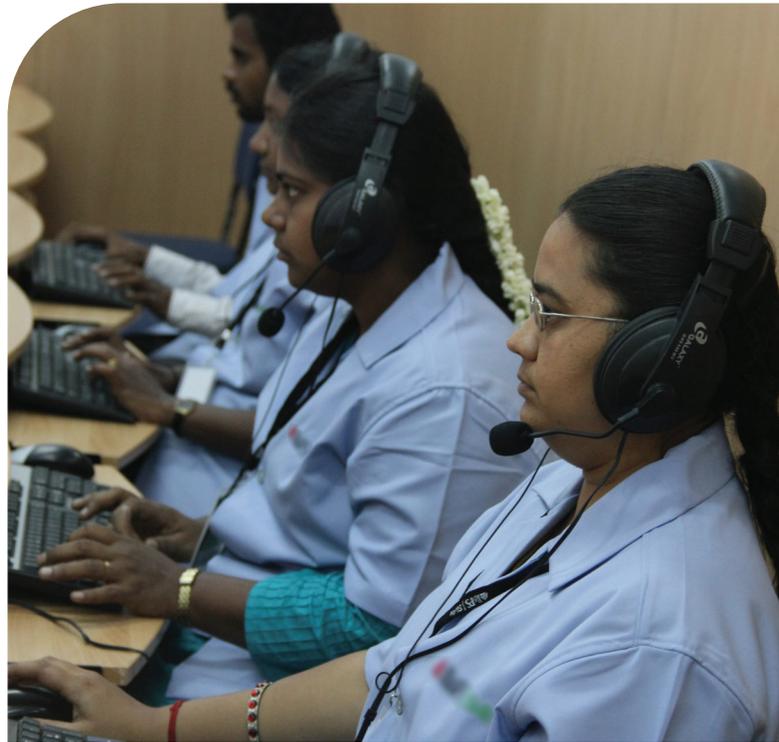
Sector	Key Trends
<b>Agriculture and Allied Industries</b>	<ul style="list-style-type: none"> <li>GVA is estimated to be INR 17.67 trillion in Financial Year (FY) 2018 and has grown at over 2.8% between FY2012-18. Contribution to India's Gross Domestic Product (GDP) is over 15%.</li> <li>Crucial focus areas for skill development include production procedures and practices, post-harvest management, value addition and food processing, seed production, marketing, cold chain, fisheries, livestock production, horticulture, etc.</li> <li>Key initiatives include over 690 Krishi Vigyan Kendras (KVKs) in collaboration with Indian Council for Agricultural Research (ICAR), initiatives of Agriculture Skill Councils of India (ASCI), National Apprenticeship Promotions Scheme (NAPS), etc.</li> </ul>
<b>Automotive and Auto Components</b>	<ul style="list-style-type: none"> <li>Auto components industry has reached US Dollar (USD) 51.2 billion in size and is expected to grow at a ~12-14% Compound Annual Growth Rate (CAGR) due to growth in domestic and export demand. However, it is estimated that only over 9% of 0.6 million engineers graduating are employable in the sector. India is the fourth largest automobile market in the world.</li> <li>Private auto manufacturers viz. Maruti, Hyundai, Honda, etc. undertake skill trainings augmenting initiatives undertaken by Automotive Skills Development Council (ASDC). Incentives to private organizations include tax write-off to train fresh trainees from outside the companies.</li> <li>Emerging skill development initiatives to focus on smart systems, electric vehicles, sustainability, sensor making, social intelligence, computational thinking and automotive design, etc.</li> </ul>

Sector	Key Trends
<b>Aerospace and Aviation</b>	<ul style="list-style-type: none"> <li>India is set to become the third largest aviation market by 2024, with passenger air traffic reaching over 421 million by 2020.</li> <li>Enormous private sector and international participation, with India and Singapore agreeing on a joint skill development plan. NSDC, the Aerospace and Aviation Sector Skill Council has signed a MoU with a Singapore Polytechnic and Singapore based private firm to set up skill development centres for advanced skilling. Boeing has partnered with NSDC and Nettur Technical Training Foundation (NTTF), Rossel Techsys and Tata Advanced Materials Limited to offer post-diploma in Aerospace Interconnect Solutions.</li> <li>Areas of focus for skill training include aerospace and aviation, emerging technologies, automotive and logistics, including maintenance, repair and overhaul services, etc.</li> </ul>
<b>Apparel, Made-Ups and Home Furnishing</b>	<ul style="list-style-type: none"> <li>Indian apparel market is expected to reach over USD 300 billion and global market is expected to grow to USD 2 trillion by 2025. Currently, the sector has 14 million workers and this is set to increase to 21.4 million by 2022, indicating a skill gap of over 6 million</li> <li>Recently a Center of Excellence (CoE) for apparel, made-ups and home furnishing was inaugurated by the Apparel SSC in Tiruppur, Tamil Nadu.</li> </ul>
<b>Beauty and Wellness</b>	<ul style="list-style-type: none"> <li>The beauty industry in India is said to grow at a Compound Annual Growth Rate (CAGR) of over ~12% to INR 1.5 trillion by 2020.</li> <li>The SSC has recently signed an MoU with CIDESCO International (World Standard for Beauty and Spa Therapy).</li> </ul>
<b>Banking, Insurance and Financial Services</b>	<ul style="list-style-type: none"> <li>The Banking, Financial services, and Insurance (BFSI) sector has seen robust growth in the range of ~11% to 15% annually. Over 1.6 million skilled workers would be required by 2020.</li> <li>The Banking, Financial services, and Insurance (BFSI) sector would require skilled labour to meet the needs of mobile banking, digital lending, actuarial skills, statistics, analytics and fintech products and solutions.</li> <li>An emerging trend in Banking, Financial services, and Insurance (BFSI) skill development has been technology- enabled blended learning.</li> <li>While back office and transaction processing profiles comprise existing job roles, customer facing and sales related job roles are seeing a surge in recent times in the BFSI sector.</li> </ul>
<b>Capital Goods</b>	<ul style="list-style-type: none"> <li>Indian capital goods sector is valued at USD 32 billion, contributing over ~12% to Indian manufacturing industry. The sector directly employs over 1.4 million and indirectly employs over 7 million people.</li> <li>The sector has seen both public and private investments in skill development in the sector.</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>The construction sector is set to grow at a 7% Compound Annual Growth Rate (CAGR), and employs 45 million in the unorganized sector. It is the second largest employment generator in India.</li> <li>It is expected that focus would be on skills related to smart city infrastructure and sustainable real estate development.</li> </ul>

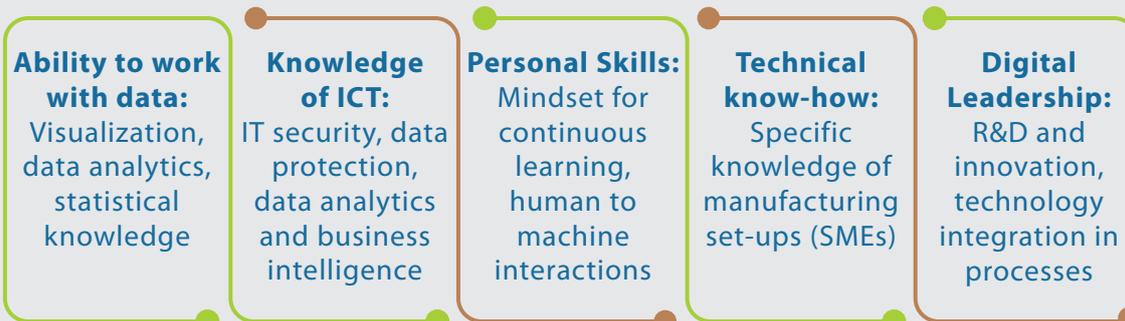
Sector	Key Trends
<b>Domestic Workers</b>	<ul style="list-style-type: none"> <li>• Constituting one of the largest unorganized employment sources in India, a demand for over 10 million domestic workers is expected by 2022.</li> <li>• SSC is set to skill over 2.5 million domestic workers by 2025-26.</li> <li>• Collaborations for global mobility of domestic workers include the International Migration Centre Project, Indo- British Collaboration for training and placements of Indian trained housekeepers.</li> </ul>
<b>Electronics</b>	<ul style="list-style-type: none"> <li>• The demand for electronics devices is expected to rise to USD 400 billion by 2022 at a 24% Compound Annual Growth Rate (CAGR).</li> <li>• The sector skill council targets skilling over 2 million by 2022, with majority skilling in the field of LED lighting, communications and broadband equipment and automotive.</li> <li>• Increasing collaboration with private sector and education institutions is seen in the sector, with focus on outcome-based learning.</li> </ul>
<b>Food Industry</b>	<ul style="list-style-type: none"> <li>• Sector is seeing trends such as food apps, franchising, fast food chain development, parlour cafes, single dish restaurants, etc. Over 1.5 million are in organized sector and seven million employed in unorganized sector.</li> <li>• Emerging skill trends are in the areas of bakery, confectionary, patisserie, restaurant service skills, bar operations and banqueting skills.</li> </ul>
<b>Furniture and Fittings</b>	<ul style="list-style-type: none"> <li>• The sector would see a requirement of over 11.3 million workers by 2022.</li> <li>• Skill development is in partnership with private sector (Hettich, Godrej, Pidilite, etc.), state government and manufacturing associations.</li> </ul>
<b>IT-ITeS</b>	<ul style="list-style-type: none"> <li>• India's IT-ITeS sector contributes to over 7.7 % of the GDP and is expected to grow to USD 350 billion by 2025</li> <li>• Emerging trends include internet of things (IoT), machine learning, artificial intelligence and robotic process automation</li> </ul>
<b>Tourism and Hospitality</b>	<ul style="list-style-type: none"> <li>• The contribution of the tourism sector to India's GDP is expected to grow by 7.1% per annum between FY 2018-2028.</li> <li>• The sector has seen private participation, including collaboration between Skill India and AirBnB to catering to the evolving demand of the sector. Focus of the initiative is to train hospitality micro-entrepreneurs in India.</li> </ul>
<b>Textiles</b>	<ul style="list-style-type: none"> <li>• The Indian textile industry is set to reach USD 223 billion by 2021 and the scheme for capacity-building in the textile sector has been designed with an outlay of INR 13 billion for the period FY 2018-20. The scheme is aimed at imparting demand driven and placement-oriented training.</li> </ul>
<b>Telecom</b>	<ul style="list-style-type: none"> <li>• India is currently the second largest telecommunication market in the world with a growth in telephone subscriber base at 17.4% CAGR in the period of FY07 to FY18.</li> <li>• Microsoft India signed an MoU with the Telecom Sector Skill Council for implementing project Sangam, which involves application of a cloud hosted platform for assisting in skill development and placement of trainees.</li> </ul>

# FUTURE OF SKILLS: EMERGING TRENDS IN SKILL DEVELOPMENT

Job market in India has become dynamic due to factors such as globalization and technological advances which have collectively impacted the job requirements and have made it imperative for the workers and job seekers to upskill themselves to stay relevant in the current environment. Some of the future technologies, which companies are adopting really fast and want their leadership and management to leverage from are big data analytics; app and web enabled markets; IoT, machine learning, cloud computing; digital trade, AR/VR; encryption; new materials; wearable electronics; and distributed ledger (blockchain), 3D printing, etc. Skill requirements for higher job levels would also see dynamic shifts. Some crucial skills based on usability for managers are expected to be as follows:



Focus would also be on type of qualifications required. Some of these are listed below:



It is expected that future hiring would be dictated by sectors adopting future technologies such as artificial intelligence, robotics and IoT. As per the World Economic Forum's Future of Jobs 2018 report, employers indicate that they are set to prioritize and focus their reskilling and upskilling efforts on employees currently performing high-value roles, as a way of strengthening their enterprise's strategic capacity with 54 percent and 53 percent of the companies, respectively, stating they intend to target employees in key roles

and in frontline roles through relevant new technologies.

The massive adoption of technology in all priority sectors and the requirement for upskilling in the vocational education space over the last few years has seen emergence of newer technologies. This has enhanced the learning process by integrating traditional teaching methods with experiential learning.

Some key examples of game-changing technologies are listed below.

Technology	Description
<b>Communication Technologies</b>	With the advent of superior communication platforms, learning via communication technologies has gained prominence. Innovations in this space allow users to break geographical barriers to educate themselves, using, for instance, 3D holography and mobile technologies.
<b>Personal Learning Environment (PLE)</b>	PLE is a conceptual framework that allows an individual to plan and learn according to his/her own needs. An individual is free to choose from a plethora of online resources, which are available either free or for a fee, and construct his/her own lesson plan. This concept is rapidly finding acceptance among learners due to its flexibility and focus on individual needs.
<b>Game-Based Learning</b>	The increasing penetration of smartphones and mobile applications has created a huge potential for game-based learning. Games and applications help enhance concentration while sharpening the artistic, mathematical, linguistic, creative, and scientific ability of students. Game-based learning allows users to break down their curriculum into several different concepts and create simulation-based learning processes around each concept.
<b>Simulation</b>	Simulations allow for experiential learning by actively engaging learners. They reduce the need for laboratory-based experiments, and create an immersive experience.
<b>Massive Open Online Courses (MooCs)</b>	MooCs offer a flexible learning opportunity to students, who are, in turn, increasingly opting for such courses offered by Universities of repute. Even Indian institutions are following the initiative of putting their lectures and other resources online for students.

With the availability of multiple training products and methodologies in this vertical, training methodology has seen a shift from the vastly instructor-led classroom sessions conducted with AV aid towards usage of analytics and innovation for better learning retention and experience.

Some of the emerging trends in skill development space are highlighted below:



### **Customized Training:**

One of the biggest emergent trends in skill training is development of more individualized approach that allows trainees more choices in how they approach their own learning. There is no longer an adequate one-size-fits-all approach.



### **Adaptive Learning and Content Delivery:**

Artificially intelligent training delivery that adapts to trainees needs. This helps in predicting learner behaviour to keep training relevant, interesting, and fresh. For example, gamification has led to an average increase of 37 percent in returning learners to e-learning websites.



### **Data Analytics:**

Measurement, collection, analysis and reporting of data about candidate learning and the context, and incorporating content basis candidate's interests and progress observed through data collection. This has given rise to the improvisation in the instructional design.



### **AR/VR-Scale Learning:**

Usage of Augmented Reality and Virtual Reality for better understanding and delivery of content, leading to higher fact retention and increased ability in comprehending information.



### **Micro-Learning:**

Easily-digested bites of information or instruction that can be immediately applied to a job. Helpful in upskilling of the current workforce.



### **Emergence of Gig Economy:**

Labour market characterized by the prevalence of short-term contracts or freelance work. Availability of Gig workforce will increase the demand for highly skilled and specialized jobs, providing organizations and trainees greater independence and flexibility.

## LOOKING AHEAD

Designed to cater to the dynamic demands of the future job market the Indian TVET system has seen an array of changes over the past decade. The multiple stakeholders (Government, non-profit organizations and corporations) play a pivotal role in identification for future requirements and accordingly work towards their fulfilment.

While a lot of efforts have been made much more is needed in order to meet the challenges of making skilling aspirational and creating demand for skilled manpower. The constant

evolution of the Indian TVET system will assist in fulfilling those challenges and towards creation of a high quality, skilled, future ready workforce.

The way forward shall be an adaptation of a demand driven approach ably supplemented by technology-based training delivery. It is imperative to timely identify emerging trends within the skill development space and build structures that cater for the rising demand for future job roles across sectors and businesses.





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**About National Skill Development Corporation (NSDC):** National Skill Development Corporation, working under the aegis of Ministry of Skill Development & Entrepreneurship, is a unique public-private-partnership which aims to catalyse creation of quality vocational training ecosystem in India. The organisation provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train-the-trainer academies either directly or through partnerships. Since establishment in 2009, NSDC has trained more than 2 crore people through its partnership with 600+ training partners, wide a robust network of 11,000+ training centres spread over 600 districts across the country. NSDC has institutionalized 37 Sector Skill Councils and is also implementing Government's flagship skill development schemes such as Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Pradhan Mantri Kaushal Kendra (PMKK), National Apprenticeship Promotion Scheme (NAPS), among others.

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