Skill Development in Andhra Pradesh
Vision 2029

30th March 2016

Submitted by:
Ernst & Young LLP (EY)
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INTRODUCTION
1. Introduction

India stands at a historical juncture, with the potential to reap rich economic benefits in the next few decades. India is expected to become one of the most populous nations by 2025, with a population of around 1.4 billion. The country’s population pyramid is expected to “bulge” across the working age group (15-59) over the next decade, increasing the working age population to just under 900 million by 2022\(^1\).

![Population in 15-59 age groups by 2022](image_url)

The demographic boom period in India is in contrast with the ageing phenomenon globally, that will create a skilled manpower shortage of about 56.7 million by 2022. With the rising trend of outsourced work globally, India has the opportunity to become a global reservoir of skilled manpower, accounting for 28% of the graduate talent pool among 28 of the world’s lowest-cost economies.

1.1. Global Drivers of Change and the Future of Jobs and Skills

The globe is witnessing the beginning of what is being believed to be the Fourth Industrial Revolution. Fast paced convergence of technology in previously independent fields such as digital, robotics, artificial intelligence, nanotechnology, internet-of-things, 3D printing, smart materials, genetics and biotechnology are all innovating and amplifying each another exponentially. Rapid proliferation of smart systems—cities, grids, factories, homes is expected to address major problems from climate change to supply chain management. A wider set of socio-economic, geopolitical and demographic drivers, are having a concurrent and as significant impact on the future of jobs and skills.

---

\(^1\) EY Estimates: Reaping India’s promised demographic dividend (2013)
These major disruptive forces at work across industries will have a profound impact on the business models and consequently on the skills and employment landscape over the coming decade. The expected impact on jobs could range from significant job creation to massive job displacement and from increased labour productivity to widening skills gaps. In many countries and industries, the occupations or specialties which are most in-demand today did not exist 10 or even five years ago, and this pace of change is set to accelerate further. It is estimated that, 65% of children entering primary school today will ultimately end up working in completely new job types that do not exist today.
Table 1: Drivers of change: Time to Impact

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Rising geopolitical volatility</td>
<td>New energy supplies and technologies</td>
<td>Advanced robotics and autonomous transport</td>
</tr>
<tr>
<td>Mobile internet and cloud technology</td>
<td></td>
<td>Artificial intelligence and machine learning</td>
</tr>
<tr>
<td>Advances in computing power and Big Data</td>
<td>The Internet of Things</td>
<td>Advanced materials, biotechnology and genomics</td>
</tr>
<tr>
<td>Crowdsourcing, the sharing economy and peer-to-peer platforms</td>
<td>Advanced manufacturing and 3D printing</td>
<td></td>
</tr>
<tr>
<td>Rise of the middle class in emerging markets</td>
<td></td>
<td>Longevity and ageing societies</td>
</tr>
<tr>
<td>Young demographics in emerging markets</td>
<td></td>
<td>New consumer concerns about ethical and privacy issues</td>
</tr>
<tr>
<td>Rapid urbanization</td>
<td></td>
<td>Women’s rising aspirations and economic power</td>
</tr>
<tr>
<td>Changing work environments and flexible working arrangements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate change, natural resource constraints and the transition to a greener economy</td>
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</tbody>
</table>

Source: World Economic Forum

As per the World Economic Forum’s latest report, which covers most major economies and labour markets, released in January 2016, the current trends could lead to a net employment impact of more than 5.1 million jobs lost to disruptive labour market changes over the period 2015–2020, with a total loss of 7.1 million jobs—two thirds of which are concentrated in routine white collar office functions, such as Office and Administrative roles—and a total gain of 2 million jobs, mainly in Computer and Mathematical and Architecture and Engineering related fields. As per the report, Manufacturing and Production roles are also expected to see a further decline but are also anticipated to have relatively good potential for upskilling, redeployment and productivity enhancement through technology rather than pure substitution.

Two job types have been identified as critical to the employment landscape of 2020, practically across all industries and geographies. The first is data analysts, which companies expect will help them make sense and derive insights from the torrent of data generated by technological disruptions. The second is specialized sales representatives, as practically every industry will need to become skilled in commercializing and explaining their offerings to business or government clients and consumers, either due to the innovative technical nature of the products themselves or due to new client targets with which the company is not yet familiar, or both. A particular need is also seen in industries as varied as Energy and Media, Entertainment and Information for a new type of senior manager who will successfully steer companies through the upcoming change and disruption.

Even jobs that will shrink in number are simultaneously undergoing change in the skill sets required to do them. Across nearly all industries, the impact of technological and other changes is shortening the shelf-life of employees’ existing skill sets.

For example, technological disruptions such as robotics and machine learning—rather than completely replacing existing occupations and job categories—are likely to substitute specific tasks previously carried out as part of these jobs, freeing workers up to focus on new tasks and leading to rapidly changing core skill sets in these occupations. Even jobs for marketing or supply chain professionals targeting a new demographic in an emerging market—may require very different skill sets just a few years from now as the ecosystems within which they operate change.

On average, by 2020, more than a third of the desired core skill sets of most occupations will be comprised of skills that are not yet considered crucial to the job today. Overall, social skills—such as persuasion, emotional intelligence and teaching others—will be in higher demand across industries than narrow technical skills, such as programming or equipment operation and control. In essence, technical skills will need to be supplemented with strong social and collaboration skills. For example,
the Mobility industries expect employment growth accompanied by a situation where nearly 40% of the skills required by key jobs in the industry are not yet part of the core skill set of these functions today.

At the same time, workers in lower skilled roles, particularly in the Office and Administrative and Manufacturing and Production job families, may find themselves caught up in a vicious cycle where low skills stability means they could face redundancy without significant re- and upskilling even while disruptive change may erode employers’ incentives and the business case for investing in such reskilling.

Table 2: Employment Outlook for Key Sectors and Job Roles by Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Sectors: Employment Outlook</th>
<th>Job roles &amp; Occupations: Employment Outlook</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Growing</td>
<td>Declining</td>
</tr>
<tr>
<td>India</td>
<td>Consumer Basic &amp; Infra Mobility Energy</td>
<td>ICT</td>
</tr>
<tr>
<td>France</td>
<td>Mobility Financial Services &amp; Investors</td>
<td></td>
</tr>
</tbody>
</table>
The impact of technological, demographic and socio-economic disruptions on business models will be transformational to the employment landscape and skills requirements, resulting in substantial challenges for recruiting, training and managing talent. Not anticipating and addressing such issues in a timely manner over the coming years may come at an enormous economic and social cost for businesses, individuals and economies and societies as a whole. For a talent revolution to take place, governments and businesses will need to profoundly change their approach to education, skills and employment, and their approach to working with each other. Businesses will need to put talent development and future workforce strategy front and centre to their growth. Firms can no longer be passive consumers of ready-made human capital. They require a new mindset to meet their talent needs and to optimize social outcomes. Governments will need to re-consider fundamentally the education models of today. As the issue becomes more urgent, governments will need to show bolder leadership in putting through the curricula and labour market regulation changes that are already decades overdue in some economies.
1.2. Workforce Composition and Employment Drivers in India

The size of the workforce in India is placed at 48 crores\(^2\), of which around 23 crores is non-agricultural workforce. The non-agricultural workforce aggregating 48% of the workforce contributes 83% to the Indian economy. Out of the 23 crores, only around 3 crores (including 1.73 crores in Government and Government owned enterprises) are engaged in the formal sector. By conservative estimates, formal sector contributes about half of the total non-agricultural output, implying a per capita annual output of around INR 16 lakhs per formally skilled person. An informal sector worker on the other hand contributes under INR 2 lakhs annually to the national output. A formally skilled worker with a commensurate employment is thus 8 times more productive than a worker in the informal sector\(^3\).

Among all the countries, India enjoys a unique advantage not only to fulfill its internal demand of skilled manpower, but also cater to labour shortage in other countries.

The Government of India has identified 20 high-growth sectors that have the ability to provide expanded employment. It consists of 10 high-growth sectors on the manufacturing side and an equal number on the services front. Out of these, the key sectors are textiles, construction, automotive, IT/ITES and health care.

The business case for skill development is thus quite strong. The focus on skill development in India has been building up ever since 2009 when the Government of India announced the first National Skill Development Policy.

1.3. Skill Development Landscape in India

Skill development and entrepreneurship efforts across the country have been highly fragmented so far. As opposed to developed countries, where the percentage of skilled workforce is between 60% and 90% of the total workforce, India records a low 5% of workforce with formal vocational skills. There is a need for speedy reorganization of the ecosystem of skill development and entrepreneurship promotion in the country to suit the needs of the industry and enable decent quality of life to its population. For this purpose, a Ministry of Skill Development and Entrepreneurship was created in November, 2014 in order to coordinate the efforts for skill development and entrepreneurship across the country. The National Policy for Skill Development & Entrepreneurship 2015 envisages to skill 400 million persons by 2022. The following four outcomes have been identified:

- Ensure youth emerging from formal education are employable with job or self-employment oriented skills
- Ensure people stuck in low income jobs and in the unorganized segments can access growth opportunities through up-skilling / re-skilling and Recognition of Prior Learning (RPL)
- Improve supply and quality of the workforce for industry, contributing to increased productivity
- Make skilling aspirational for youth

To achieve these outcomes, a framework built on five central pillars has been conceived by the Ministry - Create a pipeline of skilled people, correct supply for demand, certify global/common standards, connect supply with demand and catalyze entrepreneurship. These five pillars will be supported by cross-cutting enabling measures.

\(^2\)NSSO Survey 66\(^{th}\) Round: 2009-10
\(^3\)EY Analysis 2013-14
Under the new government regime, the Honorable Prime Minister has envisaged key flagship missions for the development of the nation which will serve as key employment drivers for skill development in India.4

► **Micro Units Development Refinance Agency (MUDRA):** The scheme focuses on encouraging entrepreneurship in the country by providing capital to small/micro units. The program aims to provide easy funding to 57 million small businesses. MUDRA has sanctioned loans worth INR 240 crores of which around INR 137 crores have been disbursed. In a scenario where job growth is not commensurate to provide enough placement linked wage employment in future, this initiative is expected to give a major leg up to self-employment.

► **Make in India:** This scheme focuses on making India a manufacturing powerhouse by encouraging foreign investment, thus requiring skilled manpower in advanced manufacturing.

► **Digital India:** This initiative is aimed at bridging the digital divide in India providing digital infrastructure to citizens and electronic delivery of government services. This would require specialized skilled labour in digital technologies.

► **Swachh Bharat:** This campaign aims at making India clean and free of open defecation by construction of 1 crore toilets and improving solid waste management. This would require a huge cadre of skilled manpower to cater to building toilets and to use modern technology in cleaning and sanitation.

► **Smart Cities:** This program of the government focuses on promoting cities that provide core infrastructure, clean and sustainable environment which would require specialized skilled manpower to enhance the quality and performance of urban services.

► **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):** This scheme will aim at providing basic services including water supply, sewerage, and urban transport to households in cities, requiring skilled manpower on a large scale.

### 1.4. Andhra Pradesh Context

Andhra Pradesh has a population of 4.94 Crore which accounts for 4.08% of the country’s population, making it India’s 10th most populous state. The state is divided into 13 districts, 670 mandals and 17,363 villages.5

Andhra Pradesh is strategically located with a 974 km coastline, large natural endowments namely agriculture, minerals, water, natural gas, human capital resources and excellent infrastructure – roads, rail, ports, airports, utilities etc. The state has 30 existing urban centers, 3 mega cities and 12 smart cities planned.

The per capita income of Andhra Pradesh was at INR 81,397 in 2013-14, and is estimated to reach INR 107,733 by 2015-16. Visakhapatnam, Krishna, and West Godavari have the highest per capita income in the state.

Out of the 13 districts in Andhra Pradesh, 5 districts - Chittoor, East Godavari, Guntur, Krishna and Visakhapatnam alone account for 47% of the state’s population as these districts have the greatest opportunity and potential for employment and industrial development.

The six districts namely Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur, Prakasam and Nellore have been identified as High Growth Category I which would focus on fast track growth using policy initiatives, capital and infrastructure available in a multi-pronged approach.

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4 Mint: Narendra Modi’s Missions
5 Census 2011
ANDHRA PRADESH VISION
2. Andhra Pradesh’s vision to become a developed state by 2029

Andhra Pradesh has embarked on a vision to become one of the top 3 states in India by 2022 and the best State by 2029. The State wants to continue on the journey to become one of the key globally preferred destinations by 2050. A key enabler of this vision will be transforming into a highly skilled and knowledge driven economy with speed, scale and quality.

An effective Skill Development system – which connects education to technical training, technical training to labor market entry and labor market entry to workplace and lifelong learning – can help countries sustain productivity growth and translate that growth in more and better jobs. An OECD Report on G20 Skills Strategy quotes ‘Skill Development enhances people’s capacities to work and their opportunities at work, offering more scope for creativity and satisfaction at work. The future prosperity of any country depends ultimately on the number of persons in employment and how productive they are at work. Growth accounting analysis indicated that graduate skills accumulation contributed to roughly 20% of GDP growth in UK from 1982-2005. Econometric analysis also indicated that a 1% increase in the share of the workforce with a university degree raises the level of long-run productivity by 0.2-0.5%.

Rich literature exists on the links between education, skills, productivity and economic growth. Thus, there exists a positive correlation between skill development and GDP growth.

In this context, two outcomes are imperative for Andhra Pradesh to become a developed economy. Firstly, a high Labor Force Participation Rate (LFPR) and a higher proportion of the population being highly skilled. A demographic analysis and comparison to benchmarks will give a clearer perspective.

EY population projections indicate Andhra Pradesh to have a population of 5.06 crores in 2016. Age wise composition of the projected population is mentioned in the figure 4 below.

Figure 4: Age wise population breakup

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 yrs.</td>
<td>14%</td>
</tr>
<tr>
<td>10-14 yrs.</td>
<td>8%</td>
</tr>
<tr>
<td>15–39 yrs.</td>
<td>44%</td>
</tr>
<tr>
<td>40 – 59 yrs.</td>
<td>24%</td>
</tr>
<tr>
<td>&gt;60 yrs.</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: EY Population Projection 2016

Andhra Pradesh enjoys the best demographic dividend in the country with a working age population (15-59 years) of 3.4 crores which is 67% of its population as opposed to 63% in Maharashtra, 62% in Haryana and 52% in Bihar. The state also contributes 5% to India’s working age population. (Refer to Annexure 1 for details)

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6 ILO Report: Skills for Improved Productivity, Employment Growth and Development
7 BIS Research: The relationship between graduates and economic growth across countries
8 EY Research
At a 62% Labour Force Participation Rate (LFPR), the state ranks among the leading states in India (India average - 52%). Developed and developing nations have an average LFPR of 70%.

Table 3: Labour Force Participation Rate

<table>
<thead>
<tr>
<th>Country</th>
<th>Labour Force Participation Rate (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>71</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>71</td>
</tr>
<tr>
<td>Thailand</td>
<td>72</td>
</tr>
<tr>
<td>Singapore</td>
<td>68</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>80</td>
</tr>
<tr>
<td>Vietnam</td>
<td>78</td>
</tr>
</tbody>
</table>

The total population stands at 5.06 crores, out of which the total working age population (15-59 years) totals up to 3.4 crores. 4.8 lakh persons (currently in the 50-59 age group) will be exiting the working age over the next 15 years, and an additional 1.1 crores (in the 0 to 14 age group) will be entering the workforce. This implies a net working age population of 4.05 crores. Thus, out of the total working age population of 4.05 crores, approx. 2.8 crores (assuming a 70% Labour Force Participation Rate (LFPR)) will be part of the labour force.

As per the National Policy for Skill Development and Entrepreneurship 2015, only 4.69% of the total workforce in India has undergone formal skill training as compared to 68% in UK, 75% in Germany, 52% in USA, 80% in Japan and 96% in South Korea. Based on national estimates, currently only 5% of the labour force in Andhra Pradesh is formally skilled. The State would have to target skilling at least 70% of the labour force (2 crores) over the next 15 years if it aspires to get counted among the leading talent hubs across the globe. The figure 5 below shows how the 2 crore skilling target for the state will be derived.

**Figure 5: Deriving Skill Development Target**

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9 World Bank

10 EY Population Projections
Geographically, a district wise analysis shows that 30% of the working age population is concentrated in 3 districts namely East Godavari, Guntur and Krishna. The focus of the state government should be on rapid skilling in these districts to create a larger impact. Concentration of rural working age population is largely in East Godavari and Guntur while urban working age population in Visakhapatnam and Krishna.¹¹ (Refer to Annexure 2 for details)
3. Vision for Skill Development

Andhra Pradesh has a vision of becoming a developed state by 2029 where people have equal opportunities and dignified livelihoods to prosper through inclusive, sustainable, socioeconomic growth and remain safe, healthy, happy, competitive and responsible global citizens.

To realize the vision for the state, Andhra Pradesh will have to transform into a knowledge driven economy which focuses on higher productivity and higher per capita output. In order to ensure this desired future state, Andhra Pradesh would need to generate quality jobs, greater innovation and more entrepreneurs. Skill Development therefore emerges as an imperative for the state.

3.1. Andhra Pradesh’s Vision for Skill Development

To establish Andhra Pradesh as the ‘Skill Capital’ of India by 2020 and be counted among the Top 10 global hubs for highly skilled manpower by 2029 by creating a future-ready and globally competitive workforce of 2 crore people with entrepreneurial and innovation skills.

The vision for Skill Development of Andhra Pradesh takes into account the overall vision of the state as well as the vision of the Ministry of Skill Development & Entrepreneurship.

Ministry of Skill Development & Entrepreneurship is looking at ‘Skilling on a large Scale at Speed with high Standards and to promote a culture of innovation based entrepreneurship to ensure Sustainable Livelihoods for all citizens in the country’.

Thus, the state of Andhra Pradesh’s vision to have a 2 crore skilled workforce would contribute in a significant way to the country’s target of skilling 40 crore people by 2022. A ‘skilling for all’ policy would be adopted in the state to achieve the ambitious target of skilling over 70% of the labour force or over 50% its working age population by 2029.

As per the Global Talent Index 2015\textsuperscript{12}, the top 10 countries include United States, Denmark, Finland, Sweden, Norway, Australia, Singapore, Canada, Switzerland and Hong Kong. Thus, for Andhra Pradesh to attain a place in the top 10 global hubs for skilled manpower by 2029 there needs to be excellence of universities, overall high quality of its existing workforce, meritocratic environment, substantial investment in education, openness to international trade and foreign direct investment. Many of these broad based issues have been addressed in greater detail in other papers on higher education etc. Annexure 3 provides the details of the Global Talent Index 2015. Capturing data on the total number of formally skilled workers in the economy would provide the key metric of success while undertaking a skill development program in the State. Thus, the state of Andhra Pradesh should take this parameter into consideration for capturing data.

\textsuperscript{12} Economist Intelligence Unit
3.2. Analyzing and breaking down the ‘2 crore’ target segment

To achieve the ambitious target of skilling 2 crore people over the next 15 years, a clear roadmap and phased approach has been defined to achieve the final outcome (figure 6).

Figure 6: Skill Development Milestones

Over the next 15 years, 1.1 crore persons will be joining the workforce presently in the age group of 0-14 years, and 48 lakh persons will be exiting the workforce. The total 4.05 crore labour force over the next 15 years, has been clearly segmented and targeted on the basis of learner segments as mentioned in Figure 7.

The age group of 15-49 years, has been divided into two learner segments namely,

1. Non-Workers. The State’s target will include persons in education and dropouts
   a. Presently approximately 18.5 lakh persons are in education, and 91.3 lakh persons will enter this segment over a 15 year period. The target will be to skill 55 lakh such individuals
   b. Presently approximately 8.5 lakh persons are dropouts, and 42.2 lakh persons are expected to join this learner segment over a 15 year period. The target will be to skill 21 lakh such individuals
2. Workers. The State’s target will include persons who are employed or unemployed
   a. 31 lakh persons form the unemployed segment, of which 28 lakh would be skilled over a 15 year period;
   b. Out of the 187 lakh persons employed in the state, 96 lakh would be skilled over a 15 year period;
      i. 47 lakh persons in the Agriculture sector would be skilled
      ii. 4 lakh persons in the Household Industry would be skilled
      iii. 45 lakh Other Workers would be skilled
Skill Development Sector Paper – AP Vision 2029 Project

Figure 7: Target Segment

Target for Skilling Development

0 - 14 years
- 114.8 lakhs
- 80 lakhs in education
- 34 lakhs out of education
- 4 lakhs dropouts

1.1 crore persons will be joining the working age group over the 15 year period

15-49 years
- 291 lakhs
- 73 lakhs non worker
- 218 lakhs worker

There will be an increment of persons in the below segment year-on-year

- Year 0
  - 80.5 lakhs in education
  - 42.2 lakhs dropouts

- Year 15
  - 91.3 lakhs in education
  - 45 lakhs other workers

200 lakhs
- 55 lakhs in education
- 21 lakhs dropouts
- 28 lakhs unemployed
- 96 lakhs employed
- 47 lakhs agriculture
- 4 lakhs household
- 45 lakhs other workers

48 lakh persons will be exiting the working age group over the 15 year period

1,10,00,000 persons will be joining the working age group over the 15 year period

In Education

Public Education 46 lakhs
Private Education 34 lakhs
Dropouts 4 lakhs

Out of Education

Non Worker 73 lakhs
Dropouts 8.5 lakhs

Worker 218 lakhs
Unemployed 31 lakhs
Employed 187 lakhs
3.3. Institutional Framework for Skill Development in Andhra Pradesh

The state of Andhra Pradesh aims to transform the state into a knowledge hub for which Andhra Pradesh Skills and Knowledge Mission has been setup with a group of 40 academicians from universities and colleges across India. The Knowledge Mission is a first of its kind initiative to usher education reforms and create entrepreneurs who can generate employment opportunities. Apart from increasing gross enrolment ratio, the Knowledge Mission will address educational inequity between rural and urban areas, improve quality of education, invest in faculty development, ensure youth employability, align vocational education, promote arts and humanities, encourage public private partnerships and industry collaboration, and initiate a reform process to remove regulatory road blocks, the release added. The State government will adopt a two-track approach to achieve objectives under the Mission to improve existing institutions by identifying structural gaps and initiate changes in existing curriculum. The second approach is to work towards creating new institutions in the State by identifying areas where they will be viable and necessary including establishing off-shore institutions which will partner with international institutions.

Andhra Pradesh has expanded its skill development infrastructure significantly both under the Government and Private Sector. The Department of Skill Development, Entrepreneurship & Innovation has been recently set up for building up a skilled workforce and for the effective implementation of the schemes. The major functions of the new department include:

► Coordinating several departments viz, Rural development, Urban development, Tribal development, Disabled welfare, Minority welfare, Social welfare which are already organizing the training programmes to build skills workforce;
► Coordinating with other key enablers like National Skill Development Corporation, Industrial associations, Sector skills Councils and relevant departments.
► Involving all the departments which are providing skills through centrally assisted and state assisted schemes.(Higher Education, Technical Education, School education, Labour Employment and Training)
► Capacity building and skill development for existing employed to improve their productivity;
► Identifying the needs of the industry and establishing Vocational Centers in order to collaborate with the industry.
► Eventually, to develop the state into a knowledge hub with skilled workforce.

Andhra Pradesh State Skill Development Corporation (APSSDC) has been setup under the Department of Skill Development, Entrepreneurship and Innovation to strengthen and enhance the skill development in the state. It will act as an implementation wing to the new Department. APSSDC is planning to have six clusters for skill development in Vishakhapatnam, Kakinada, Guntur, Nellore, Chittoor, and Anantapur districts. These clusters will cover all the 13 districts of the state with each cluster focusing on 2-3 sectors to impart skills. Each of these clusters would have six colleges, which would eventually become Centers of Excellence where they could either become autonomous, or apply for a deemed university status.

The APSSDC will collaborate with various ministries on their skill development programs in the state. Figure 9 gives an overall structure of the various departments and programs which could be integrated under the APSSDC.
3.4. Phased Projection

A **phased approach** will be used to achieve the 2 crore target, wherein year on year a larger population would be skilled as the infrastructure and ecosystem for skill development matures in Andhra Pradesh. The figure 8 below describes the targets.

**Figure 8: Step-up Phased Approach**

![Phased Projection Diagram]

Until the recent formation of a new Department for Skills Development, Entrepreneurship & Innovation, various departments in Andhra Pradesh had been driving their respective skills agenda without a unifying single purpose. These Departments have created an extensive infrastructure for skill development, which albeit needs to be upgraded. Collectively, these institutions have the capacity of training close to 2.85 lakh people per annum. In order to achieve the scale required for skilling 2 crore in 15 years, training target would need to increase from 0.9 lakhs per annum in Year 1 to 16 lakhs per annum by year 5. The training capacity in the State is underutilized currently due to low enrolment rates.
Figure 9: Training target expansion

Table 4 summarizes the existing skilling infrastructure under various departments in Andhra Pradesh.

Table 4: Skill infrastructure in Andhra Pradesh

<table>
<thead>
<tr>
<th>Departments</th>
<th>Skilling Infrastructure</th>
<th>Annual Seating Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Labour &amp; Employment</td>
<td>470 ITIs</td>
<td>1.23 lakh</td>
</tr>
<tr>
<td>Department of Technical Education</td>
<td>306 Polytechnics</td>
<td>87,000</td>
</tr>
<tr>
<td>Commissionerate of Collegiate Education</td>
<td>154 Jawahar Knowledge Centers</td>
<td>20,000</td>
</tr>
<tr>
<td>Andhra Pradesh Board of Intermediate Education</td>
<td>48 Exclusively Vocational Junior Colleges</td>
<td>38,746</td>
</tr>
</tbody>
</table>

ITIs and polytechnics account for over 73% of the seating capacity in the state.

**Industrial Training Institutes (ITIs)**

The state of Andhra Pradesh has 470 ITIs in the state with a seating capacity of 1.23 lakh students in the traditional TVET system under the Directorate General of Employment and Training. District wise details of the ITIs are given in Table 5.

Table 5: District wise ITI

<table>
<thead>
<tr>
<th>District</th>
<th>Govt. ITI</th>
<th>Private ITI</th>
<th>Seating capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anantapur</td>
<td>6</td>
<td>30</td>
<td>8,557</td>
</tr>
<tr>
<td>Chittoor</td>
<td>9</td>
<td>30</td>
<td>9,755</td>
</tr>
<tr>
<td>East Godavari</td>
<td>2</td>
<td>33</td>
<td>12,494</td>
</tr>
<tr>
<td>Guntur</td>
<td>3</td>
<td>32</td>
<td>7,367</td>
</tr>
<tr>
<td>Kadapa</td>
<td>10</td>
<td>27</td>
<td>9,129</td>
</tr>
<tr>
<td>Krishna</td>
<td>3</td>
<td>32</td>
<td>9,382</td>
</tr>
</tbody>
</table>
Analyzing the data on ITIs, the trades which emerge as the most popular on the basis of enrolment ratio include Mechanical Repair & Maintenance of Heavy Vehicles, Mason (Building Constructor), Sheet Metal Worker, Mechanic Diesel, Marine Fitter, Welder, Vessel Navigator, Computer Operator & Programming Assistant, Electrician and Carpenter.

It deserves mention that the above mentioned 10 most popular trades out of 46 trades account for 53% of the total seats allotted and 64% of the total student enrolment in Andhra Pradesh. Most of the seats belong to only two sectors – Manufacturing and Electrical. IT/ITeS related trades have been initiated lately in some of the ITIs. Rest of the high growth sectors like tourism, hospitality, wellness, railways, aviation etc. has negligible representation in the course curriculum at ITIs. (Refer to Annexure 4 for details)

**Polytechnic Colleges**

The state of Andhra Pradesh has 306 Polytechnics with a seating capacity of 87,000 students and 18 D. Pharm Institutions with a seating capacity of 1,000 students, under the Department of Technical Education. Table 6 gives a breakup of the polytechnics in the state.

<table>
<thead>
<tr>
<th>Type</th>
<th>Polytechnics</th>
<th>Seating capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Polytechnics</td>
<td>81</td>
<td>16,395</td>
</tr>
<tr>
<td>Aided Polytechnics</td>
<td>02</td>
<td>715</td>
</tr>
<tr>
<td>Pvt. Unaided Polytechnics</td>
<td>68</td>
<td>33,961</td>
</tr>
<tr>
<td>2nd Shift Polytechnics in Engineering Colleges</td>
<td>155</td>
<td>35,760</td>
</tr>
<tr>
<td>Total</td>
<td>306</td>
<td>86,831</td>
</tr>
</tbody>
</table>

Department of Technical Education

The Department of Technical Education has also established 42 Skill Development Centers in the state with an objective of synergizing the overall capacity building of the technical education system. Since
inception in 2011, the Skill Development Centers have enrolled 14,000 students. The programs are offered in each branch of engineering namely Mechanical, Civil, Electronics, Electrical and Computers.

The Skill Development Centers Scheme has the following components:

1. Skill Development Programs: Improving communication, life and analytical skills, improving technical and domain skills and fine arts
2. Customized Training Programmes: Imparting domain knowledge as per industry needs
3. Project Works: Identification of Mini & Major projects and providing hand holding support & guides

Commissionerate of Collegiate Education

The Commissionerate of Collegiate Education has established Jawahar Knowledge Centers (JKC) to help students learn and practice employability skills. The JKC is to provide solution to the problem of unemployment faced by students studying non-professional courses in degree colleges in Andhra Pradesh. Currently 154 JKC are running in the state of Andhra Pradesh with 20,000 students trained in 2014-15. 23% of these students were placed through placement drives conducted by these JKC in leading sectors like IT & ITES, Banking & Finance, Insurance, Pharmacy, Marketing, Telecommunications and Service Organizations.

Andhra Pradesh Board of Intermediate Education

The Andhra Pradesh Board of Intermediate Education looks after the 40 Private Exclusively Vocational Junior College and 8 Government Exclusively Vocational Junior Colleges which offer vocational courses in plus 2 education. 23 vocational courses are also being offered in the field of Engineering & Technology, Agriculture, Home Science, Business & Commerce and Humanities.

Employment Generation and Marketing Mission (EGMM)

Employment Generation and Marketing Mission (EGMM) is a society setup by the Department of Rural Development of Andhra Pradesh, to provide employment to the rural unemployed youth. It acts as an implementing partner for the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) with a target of training 19,000 annually. EGMM has emerged as one of the largest missions working for the underprivileged youth. In the last 3 years, EGMM has conducted trainings for over 25,000 candidates in over 50 different courses and have placed 19,000 of them, mostly in the private sector.

Mission for Elimination of Poverty in Municipal Areas (MEPMA)

Mission for Elimination of Poverty in Municipal Areas (MEPMA), a society formed under the Department of Municipal Administration and Urban Development, for the empowerment of urban poor women, especially those residing in slums. Forming the urban women into SHG's and encouraging internal savings and lending, disability intervention, capacity building of community based organizations, creating credit access through bank linkages, subsidized loans for self-employment units and state level women credit cooperative society are some of the functions performed by MEPMA. It also implements the National Urban Livelihood Mission (NULM) skill training programmes in the state.

Andhra Pradesh State Skill Development Corporation (APSSDC)

The government has launched 50 Skill Development Centers under the Andhra Pradesh State Skill Development Corporation (APSSDC) to offer programs in modern technologies, software development,
mobile app development, electronics and communication. 5000 engineering students have been trained in these technologies. Training of Trainers is happening and around 200 trainers that have been trained in 6 areas as Trainers for such courses that will now scale it up.

The government has also sanctioned the establishment of 6 centers of excellence (CoE) throughout the state to significantly enhance the skill set of engineers and technical graduates. The cabinet has recently approved the Siemens 6 hub-spoke Centers of Excellence, 30 skill development institutes (capacity of 2.2 lakh/year) which will be coming up in the state. These CoEs will focus on product design & development and foster innovation. An institution of excellence focusing on skill development will be soon established in the state. Four 21st century “Gurukulam” have been allocated to APSSDC which are ready for implementation across the state to skill around 3600 candidates.

APSSDC has been designated as the State Implementing Agency (SIA) for the skill training in the ‘Electronics System Design and Manufacturing (ESDM) sector, a scheme of Department of Electronics and IT, Govt. of India. 15,000 non-engineering background youth – from school drop outs to degree and polytechnic students have to be trained in the next 3 years. 18 training partners have been selected under this scheme by APSSDC with an initial target of around 1000 youth. All districts have been covered with about 14 different courses being offered.

For IT Sector Training, MoUs have been signed with NASSCOM for launching courses in ‘Cyber Security' and ‘Data Analytics’. 5 Universities and over a dozen autonomous colleges have signed up and participated in the first curriculum development workshop in Aug2015. The State plans to train many trainers and train 1000 engineers by 2015-16 in these courses. Tribal Welfare is building up 28 Youth Training Centres (YTCs) in different tribal belts of AP for skill training of tribal youth

Tribal Welfare Department with APSSDC has organized 3 convergence workshops on making these centres ideal centres for skill training. All relevant regional officers participated in the workshops. MoU for skill training by APSSDC in 18 of the completed YTCs has been finalized and would be signed soon. The plan is to train 5000 persons in 2015-16.

3.5. Learner Segment Breakup of the Target

To achieve the vision for skill development in the state, the total population has been divided on the basis of learner segments (table 7):

Table 7: Learner Segment Breakup

<table>
<thead>
<tr>
<th>S. No.</th>
<th>LEARNER SEGMENTS</th>
<th>SUITABLE JOB ROLES of COMPETENCY LEVEL</th>
<th>OUTCOME - CANDIDATES FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>OUTSIDE THE EDUCATION SYSTEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>School Drop-outs/ Pass-outs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Not In Employment, Education or Training (NEET)</td>
<td>L3, L4</td>
<td>Placement linked Short term training</td>
</tr>
<tr>
<td>2.</td>
<td>Employed</td>
<td>L3, L4</td>
<td>Recognition of Prior Learning</td>
</tr>
<tr>
<td></td>
<td>ITI/ Polytechnic Pass-outs / Engg./ General Graduates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Unemployed</td>
<td>L4, L5</td>
<td>Finishing Skills Training</td>
</tr>
<tr>
<td>4.</td>
<td>Employed</td>
<td>L5 and above</td>
<td>Skills Up-gradation Training</td>
</tr>
<tr>
<td>B.</td>
<td>WITHIN THE EDUCATION SYSTEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. No.</td>
<td>LEARNER SEGMENTS</td>
<td>SUITABLE JOB ROLES of COMPETENCY LEVEL</td>
<td>OUTCOME - CANDIDATES FOR</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------</td>
<td>---------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>5.</td>
<td>School Students IX, X, XI, XII</td>
<td>L1, L2, L3, L4</td>
<td>Skills @ Schools Training</td>
</tr>
<tr>
<td>6.</td>
<td>ITI/ Polytechnic</td>
<td>L4 and above</td>
<td>Skills @ Vocational Course Training</td>
</tr>
<tr>
<td>7.</td>
<td>Graduate/ Engineering Colleges</td>
<td>L5 and above</td>
<td>Skills @ College Training</td>
</tr>
<tr>
<td>8.</td>
<td>Post Graduate Courses</td>
<td>L6 and above</td>
<td>Skills @ PG Training</td>
</tr>
</tbody>
</table>

The ‘employed category’ forms the major chunk of the learner segments where skilling is required which includes recognition of prior learning (RPL) and skill up-gradation training.

The next major category would be persons ‘in the education system’. Thus, Vocationalization of schools and colleges would serve as an important intervention.
KEY STRATEGIES
4. Overall Strategy for Skill Development in Andhra Pradesh

The strategy for skill development is focused on evolving the skill development capacity expansion in the state based on a flexible demand-driven approach so that it can translate the vision into a reality. Skill development in the state is primarily geared towards the traditional VET system. The regular 2 year ITI and 3 year diploma courses account for majority of the seating capacity in the state.

A high impact awareness generation and communication campaign will reach out to the total addressable target population in Andhra Pradesh. A bouquet of courses across key sectors will be identified keeping Andhra Pradesh’s district level economic profiling in view. Candidates will be trained on NSQF aligned and Sector Skill Council recognized courses, DGE&T recognized MES courses and courses for specific skilling requirements.

To keep in mind the future of skills in Andhra Pradesh and the country, the following driving trends have been identified.
► **Technology and Innovation**: Converging technologies and cross-disciplinary skills, ICT development and the age of big data, Digitalization of production
► **Society and the Individual**: Growing desires for better work life balance, Income uncertainty, Changing work environments, Growing diversity, Demographic changes
► **Business and Economy**: Changed economic perspectives, New business ecosystems
► **Resources and the Environment**: Growing scarcity of natural resources and degradation of ecosystems
► **Law and Politics**: Decreasing scope for political action due to constrained public finances

While changes that result from trends can, to a significant degree be foreseen - assessing the impact of disruptions on the Andhra Pradesh labour market, employment and skills in the year 2029 is far more complex and indeterminable.

**Figure 11: Step up – Phased Approach**

**4.1. Future Ready Skills Infrastructure**

Due to bifurcation of the state, educational assets are highly skewed in favor of Telangana. There is a need to invest in the infrastructure for rapid skilling in the state by upgrading the existing infrastructure, creation of new infrastructure and thinking of innovative ways of exploring available infrastructure.
To meet the ambitious target, the training capacity of the state will need to increase from 2.85 lakhs to 16 lakhs per annum in the 5 year period.

**State-of-Art Skill Development Campus**

**Develop 10 Skill Parks**

**Open Centers of Excellence for all major thrust areas**

**Setup 130 Skill Development Centers in the state**

A state-of-art central campus (300-500 acres of land) is envisaged with the following facilities:

- Integrated School (with Vocational Skills)
- Skill Development University
- Training of Trainers Institute (with residential facility)
- Manufacturing & R&D setup
- Industrial Centers of Excellence
- Entrepreneurship & Incubation facilities
- Residential campus with capacity to hold 20,000 trainees
- Land-intensive training programs
- Industrial consortiums and state of art sector skill councils

Some Centres of Excellence (COEs) being proposed in the state are:

- Nano Technology
- Agro & Food Processing
- Urban & Smart City Management
- Digital Technologies
- Maritime Technology
- Hi-end manufacturing
- Start-up and Incubation
- Technology Transfer Management
- Global Partnerships
- Animation, Gaming, Media & Entertainment

### 4.2. Embedded Vocational Skilling

The current approach to skill development is essentially around fixing a broken model of formal education, as students coming out of schools/colleges are not employable. It is therefore important to make vocational education an imperative at the secondary school level. Britain’s national curriculum, introduced vocational learning in schools in 1993. All schools in Britain offer choices to 16-year-old students who are finishing school. China has introduced vocational educational in schools when students attain the age of 14.

Students need to be sensitized early to the value and dignity of vocational skills. Introducing vocational training early has the benefit of allowing students to make informed choices on the trades they would want to focus on from a long career view. It will also contribute to reduction in drop-out rates at the secondary level in Andhra Pradesh as students from economically weaker sections would find formal education more meaningful as they would be readily employable on completion of their intermediate education.
Key interventions are as follows:

1. Introduction of vocational education at the age of 15.
2. Effective implementation of the Centrally Sponsored Scheme of Vocationalization of Secondary and Higher Secondary Education in the State

The Ministry of HRD's Centrally Sponsored Scheme of “Vocationalization of Higher Secondary Education” has been revised as per a circular dated March 12, 2014 and henceforth will be known by the name of “Vocationalization of Secondary and Higher Secondary Education”. The Scheme has already been subsumed under the Rashtriya Madhyamik Shiksha Abhiyan scheme with effect from 1st April, 2013. The major changes in the scheme are as follows: i) Introduction of Vocational Education from Class IXth onwards i.e. at the secondary stage. ii) 75:25 sharing pattern between Center and States for funds released under all the components of the scheme. 90:10 sharing pattern for funds released to the North Eastern States including Sikkim. iii) Provision for a flexible pool of Rs. 14.50 lakhs per annum per school for engaging resource persons including Teachers/Skill Knowledge Providers/Trainers etc. iv) Provision of financial costs for engaging with the Industry/Sector Skill Councils (SSCs) for assessment, certification and training. v) Enhancement of funds for purchase of books and e-learning material. vi) Financial provision (1% of total budgetary outlay) for Innovative Programmes under vocational education. vii) Cost of development of curriculum and learning materials to be a maximum of Rs. 2.00 lakhs per skill level per job role. viii) Performance linked incentive to Govt. aided and recognized, unaided private schools.

Vocationalisation of all schools by 2029
Towards 100% students passing out employable by 2029

4.3. Integrated Institutional Mechanism

The Ministry of Skill Development & Entrepreneurship has been formed at the Centre to streamline the skill development efforts of more than 20 ministries & 70 departments, to cover the gaps in the capacity and quality of training infrastructure as well as outputs, insufficient focus on workforce aspirations, lack of certification and common standards and a pointed lack of focus on the unorganized sector.

The nodal department for Skill Development in Andhra Pradesh, which has been established recently, will enhance coherence of policies, schemes / funding and implementation.

The key to successful integration will be how effectively Departments of School Education, Higher & Collegiate Education and Labour & Employment work together with the Department of Skill Development, Entrepreneurship and Innovation. Some of the imminent and immediate challenges related to capacity and fund utilization can be resolved through convergence of these Departments. Some states like UP have been able to empower their Skill Development Mission as the single go-to agency for implementation of 6-7 major Central skill development schemes in the State by facilitating the convergence.

Convergence for faster Decision Making
Effective resource optimization
4.4.  Skilling for All

To create a high skilled manpower with an improved labour force participation, to meet the scale of skilling 2 crore people over the 15 year period, ‘Skilling for All’ should be the mantra of the government. Skill development has to be promoted as a universal goal for human development and social inclusion in the State. It needs to permeate across all levels including schools, colleges, institutions of higher, existing workforce in the farm and non-farm sector, workers in the formal and informal sector, rural and urban Self Help Groups, Government employees and needs to have a special emphasis on the aspirations and needs of school and college dropouts, unemployed, women workers and socially vulnerable and disadvantaged groups.

Key interventions are as follows:

1. Large scale social campaign for sensitization and mobilisation
2. Introduction of a Right to Skill Development Act
3. Recognition of prior learning and emphasis on certification of already existing workforce
4. Up-skilling / Re-skilling of existing workforce
5. Multiple placement avenues
6. Skills Passport Concept
7. Outcome focus on key metric of job creation/ self-employment
8. Technology enabled skilling
9. Higher prioritisation for funding in State Budgetary allocations
10. Focusing on creating a scalable model through effective private sector involvement and optimisation of public sector infrastructure

4.5.  Aspirational Skilling

Andhra Pradesh’s youth aspires to higher value-added white collar jobs, particularly in the knowledge and services sector, vis-à-vis blue collar jobs. The IT/ITES and the life sciences technology revolutions in pre-bifurcated Andhra Pradesh over the past two and a half decades have naturally contributed to this consequence as these sectors offered better opportunities and prospects in pay and career progression as opposed to the traditional manufacturing sector. Vocational training has been narrowly associated with traditional manufacturing and therefore has not had any comparable appeal.

The value of vocational education needs to be articulated, packaged and communicated to the youth in terms of “progressing levels of competencies”, which are equally in-demand by the industry in the service and manufacturing sectors. Also, the future scenario needs to be emphasized where a certified skilled worker will have a distinct advantage in pay and career progression over an unskilled or semi-skilled worker. In order to create this aspiration, parents would also need to be targeted and sensitized as they have an important role as influencers when youth are making career choices. These objectives can be achieved through a high-visibility social campaign led by the Hon’ble Chief Minister and other
leaders of the State. The State may also moot a dedicated regional TV Channel or Local Community Channel for skill development.

It is equally important to make quality vocational training aspirational for employers whereby they see it as an imperative and acknowledge the productivity linked to skilled workforce by showing preference in hiring, paying the requisite premium or by offering better career progression to certified skilled workers. The value proposition for industry can be developed only on the basis of empirical evidence that skilled workers achieve better productivity and deliver better outcomes for the bottom line. For this, the State would have to undertake necessary baseline surveys, initiate pilot studies and capture detailed enterprise level data on enhancement in performance linked to skilled workers. Andhra Pradesh would need to work closely with the various Sector Skill Councils that have been set up to drive this agenda with the stakeholders in their respective sectors. The State Government may also provide incentive-linked plans to industry to promote up-skilling of existing workers or for training and providing assured job placements to fresh candidates.

State wide campaign on raising importance, dignity and ‘financial pay offs’ of skilling

Partnerships with Sector Skill Councils to advocate hiring of certified skilled workers by industry

4.6. Enabling Policy Framework

Currently, Andhra Pradesh has no formal policy in the state for promoting skill development & entrepreneurship. With the formation of a nodal department for Skills, Entrepreneurship and Innovation, the State is well poised to formulate focused policies and interventions. Policy interventions must be an outcome of consultations with key stakeholder Departments such as School Education, Higher Education, Labour & Employment on one hand and with trainees, training partners, national level agencies on the other. The State also has the opportunity to inform the policy with an appreciation of best practices in other States or internationally. The major paradigms and enablers to achieve a complete policy framework are as follows:

▸ Aspiration and Advocacy
▸ Capacity
▸ Quality
▸ Synergy
▸ Mobilization and Engagement
▸ Global Partnerships
▸ Outreach
▸ ICT Enablement
▸ Trainers and Assessors
▸ Inclusivity
▸ Promotion of skilling among women

The following policy interventions are required:

▸ Skilling for All Policy/ Right to Skills Act
▸ Convergence of schemes on skilling to a nodal department
▸ Policies for Entrepreneurship & Innovation
▸ Right to Internet Act
4.7. Quality Assurance Framework

Aligning with the National Policy for Skill Development & Entrepreneurship 2015, 'One Nation, One Standard' should be the mantra to ensure that standards and quality for skilling are globally aligned and Indian youth can aspire to secure local, national and international job opportunities. Quality of training can be measure by competency outcomes and employability of trainees.

The following parameters have been identified for improving quality:

► Quality assurance framework embedded in NSQF
► Market relevant training programmes
► Recognition of prior learning
► Curriculum alignment
► National Certification Framework
► Employability skills
► Placements

The following interventions are required:

► Building strong linkages with NSDC, and 31 Sector Skill Councils and international Institutions
► Dual Certification
► Creation of master trainers by training of trainers
► Measuring the impact of skilling interventions
► Continuous Skill Gap assessment
► Partnering with private training providers
► Creation of a Labour Market Information System (LMIS)

Single Standard

Large pool of master trainers by 2029

Standardization and high quality training

Labour Market Information System
The Bureau of Labour Statistics captures complete data on the employment trends in the United States. An Occupational Outlook Handbook is released annually, which covers occupations at a national level. The Employment Projections (EP) program has more detailed data on the projected employment by occupation and industry. This data shows National Employment Matrix base year and projected employment for each occupation by industry and for each industry by detailed occupation. The Occupational Employment Statistics (OES) survey is the primary source of employment data for the Occupational Outlook Handbook. The searchable online database allows users to search occupational trends using multiple variables. Users can search occupations by categories such as highest paying occupations (with indicative median salaries), fastest growing occupations and occupations which are generating the most number of new jobs.
Each of the mentioned strategic interventions are prioritized on the basis of short, medium and long term.

4.8. Recognition of Prior Learning (RPL)

RPL will be a key component for reskilling and upskilling of the employed workforce in the Agriculture and Construction sector in Andhra Pradesh.

Due to the presence of a large unorganized sector in the state, as well as large workforce dependent on agriculture and construction, it is important to recognize and certify the skills and knowledge gained by individuals outside the formal learning system. In addition, the absence of an accepted certification of knowledge and skills hinders their ability to secure advanced employment and social recognition.

Recognition of Prior Learning (RPL) is seen as a tool for delivering a fairer, more efficient, more flexible and a more inclusive skills system.

► For the learner, RPL provides recognition of tacit skills and learning acquired prior to structured learning and enables a way to access relevant training; it also enables greater flexibility and choice to be embedded in training programme design
► RPL, for the employer, is a cost effective and efficient method (since there is no duplication of effort) to build the skill levels in the organization and is a critical and relevant investment for the workforce. This also provides the employer the flexibility to make scientifically based differential wage/compensation plans linked to workforce skill-levels
► RPL, in some measure, contribute to improving livelihoods for the millions of workers in the predominantly unorganized work sector by improving income levels

Table 8: Strategic Interventions (Short, Medium & Long Term)
<table>
<thead>
<tr>
<th>Theme</th>
<th>Timeline</th>
<th>Strategic initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy framework</strong></td>
<td>Long term</td>
<td>1. Enabling environment, incentives and mentoring support to make Entrepreneurship a sought after option after skilling</td>
</tr>
<tr>
<td></td>
<td>Short Term</td>
<td>1. Skill Development Policy, Entrepreneurship Policy and Innovation Policy</td>
</tr>
<tr>
<td></td>
<td>Medium Term</td>
<td>3. Policy - Right to Internet Access</td>
</tr>
<tr>
<td></td>
<td>Long term</td>
<td>2. Policy - Right to Internet Access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Dual Certification</td>
</tr>
<tr>
<td><strong>Quality Assurance</strong></td>
<td>Short Term</td>
<td>3. QA of VTPs</td>
</tr>
<tr>
<td></td>
<td>Medium Term</td>
<td>4. Continuous Skill Gap Assessment</td>
</tr>
<tr>
<td></td>
<td>Long term</td>
<td>1. Enabling eco-system for skilling to generate a ‘pull’ factor for skilled manpower</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. QA of Assessment bodies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Creation of master trainers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. QA of Assessment bodies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Measuring the impact of skilling interventions</td>
</tr>
</tbody>
</table>
### 4.9. Vision Framework: Skill Development

**Figure 14: Vision Framework**

<table>
<thead>
<tr>
<th>Key Issues &amp; Challenges</th>
<th>Guiding Principles</th>
<th>Key Themes/Anchors</th>
<th>Strategic Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to state bifurcation, educational assets highly skewed in favor of Telangana</td>
<td>Upgrading existing infrastructure and creating new assets</td>
<td>Future-ready Skills infrastructure</td>
<td>Skills University; Skill Parks; Centres of excellence; Skill Development Centres</td>
</tr>
<tr>
<td>Poor social indicators creates a challenge for future skill pool</td>
<td>Making vocational education an imperative</td>
<td>Embedded vocational skilling</td>
<td>Embedding skill development in curriculum, finishing school concept; vocationalization of schools</td>
</tr>
<tr>
<td>Lack of convergence between various institutions &amp; schemes for skill training</td>
<td>Convergence of key govt. institutions into a unitary structure</td>
<td>Integrated institutional mechanism</td>
<td>Nodal department for Skills to enable coherence of policies, schemes/ funding and implementation</td>
</tr>
<tr>
<td>Approx. 1.2 lakh being skilled under various initiatives</td>
<td>Scaling up to skill 5 million people in 5 years and 20 million in 15 years</td>
<td>Skilling for All</td>
<td>Socially inclusive skilling, Act for Right to Skilling,</td>
</tr>
<tr>
<td>AP's youth aspires to higher value white collar jobs vis-à-vis blue collar jobs</td>
<td>Social mobilisation campaigns to imbue dignity to vocational training</td>
<td>Aspirational Skilling</td>
<td>Communicating importance, dignity and 'financial returns' of skillling through social marketing</td>
</tr>
<tr>
<td>No formal policy in the state for promoting skill development and entrepreneurship</td>
<td>Policies to spur skilling, entrepreneurship and Innovation</td>
<td>Enabling Policy framework</td>
<td>Policies for skill development, entrepreneurship, innovation, Right to have access to Internet, Right to get skilled</td>
</tr>
<tr>
<td>Lack of quality trainers &amp; assessors</td>
<td>Continuous improvement</td>
<td>Quality Assurance framework</td>
<td>Partnering with private VTPs, Employers, NSDC and SSCs; Development of master trainers; continuous skill gap assessment</td>
</tr>
</tbody>
</table>
4.10. SWOC Analysis

Strengths, Weaknesses, Opportunities and Challenges (SWOC) in the skill development landscape for Andhra Pradesh have been identified after consultations with various stakeholders.

Figure 15: SWOC Analysis

**Strengths**
- Large existing infrastructure for skill development
  - 470 ITIs, 306 Polytechnics, 154 JWCs, 48 Exclusively vocation junior colleges
  - Many successful skill development initiatives already being run under various departments
- Integration of all mission under the Department of skills innovation and entrepreneurship can bring a significant change
- Expected large industrial investment would lead to skilled manpower requirement

**Weaknesses**
- Due to state bifurcation, educational & industrial assets have got skewed to Telangana
- Lack of budgetary support for Telangana
- Shortage of qualified trainers
- Skill training agencies - Supply-Demand dynamics
- Poor literacy, Low ranking on primary & upper primary educational indices creates challenge for future skill pool
- Lack of convergence between institutions focused on skilling
- AP’s youth aspires to higher value tech jobs vis-à-vis blue collar jobs

**Opportunities**

**Challenges**
PRIORITIZED SECTORS
5. Priority Sectors

The Future of Jobs & Skills, a Report by the World Economic Forum, provides a forecast of the sectors and skills in them that will be in focus over the next 5 years. A detailed analysis is provided for key sectors in Annexure 4.

Based on Andhra Pradesh’s economic profile and skill and manpower analysis by NSDC, vocational training providers may focus on the following sectors in the state:

Table 9: Priority Sectors

<table>
<thead>
<tr>
<th>Importance</th>
<th>Sector</th>
<th>Key Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Priority</td>
<td>Construction</td>
<td>Vishakhapatnam, Guntur, Krishna</td>
</tr>
<tr>
<td></td>
<td>Tourism, Travel &amp; Hospitality</td>
<td>Chittoor, Krishna, Vishakhapatnam</td>
</tr>
<tr>
<td></td>
<td>Banking &amp; Insurance</td>
<td>Vishakhapatnam</td>
</tr>
<tr>
<td></td>
<td>IT/ITeS (including ESDM)</td>
<td>Vishakhapatnam</td>
</tr>
<tr>
<td></td>
<td>Agriculture</td>
<td>Across the State</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>Across the State</td>
</tr>
<tr>
<td>Priority</td>
<td>Transportation, Logistics &amp; Warehousing</td>
<td>Krishna, Vishakhapatnam</td>
</tr>
<tr>
<td></td>
<td>Textile &amp; Leather</td>
<td>Nellore, Vishakhapatnam, Guntur, Vizianagaram</td>
</tr>
<tr>
<td></td>
<td>Chemicals &amp; Pharmaceuticals</td>
<td>Vizianagaram, Srikakulam</td>
</tr>
<tr>
<td></td>
<td>Auto &amp; Auto Components</td>
<td>Chittoor, Krishna, Nellore</td>
</tr>
<tr>
<td></td>
<td>Food Processing</td>
<td>Vishakhapatnam</td>
</tr>
</tbody>
</table>

Manufacturing Sector

Given the State’s investor friendly environment and growing ease of business (Andhra Pradesh has been ranked 2nd in a World Bank Doing Business Survey of 2015), the State is witnessing large inflows of fresh investments. The State is expected to become a large hub for ESDM sector and also has a significant base to build further in the textiles & leather, pharmaceuticals, chemicals & fertilisers, auto & engineering and food processing sectors. It estimated that approximately 1.5 million new jobs will be generated by the manufacturing sector alone in the State over the next 15 years.

Construction

The construction sector contributes about 11.4% of the total output of the State economy and also contributes to 11.52% of the employment. The sector will be a continued high contributor due to key initiatives like the new capital city of Amravati, smart cities, new airports and a major thrust on affordable housing (to make the State slum free) and sanitation works.

Several large impact urban development projects and schemes are planned in Tier I and II cities of Andhra Pradesh. 31 cities in Andhra Pradesh are covered under the Central AMRUT Atal Mission for Rejuvenation and Urban Transformation) Scheme with a total outlay of Rs. 50,000 Cr for five years. Under the NTR Rural Housing Schemes 2 lakh houses have been sanctioned during the year 2015-16. Government has sanctioned an additional Rs. 150 Cr. under the NTR upgradation scheme for undertaking repairs for dilapidated houses constructed prior to 2004. 40 ULBs have been identified for a new scheme – “Housing for All” for which Rs. 225 Cr. has been allocated for 2015-16. Several other schemes are in place.

Construction sector will be one of the largest creators of new jobs over the next 15 years in Andhra Pradesh. It is estimated that for every lakh invested housing sector, 2.69 new jobs are created in the economy. The labour to output ratio of 2.34 in the Construction sector is the highest among all
sectors. The key focus on skilling of construction workers will be through RPL (Recognition of Prior Learning) and up-skilling of the existing workforce further to the skilling of rural youth and agricultural labourers moving away from the farm sector to enter the construction sector.

The key skills identified in this sector include Foreman Formwork, Foreman Reinforcement, Mason Marble Granite & Stone, Foreman Wet Finishing & Flooring, Mason, Welder, Mechanical & Electrical Maintenance, Quality Control Lab Technicians, and Operators.

Information Technology

In combined State of Andhra Pradesh, the share of IT turnover or employment creation in Visakhapatnam, Kakinada, Vijayawada, Tirupati was marginal. For the year 2012-13, Total combined AP exports were Rs. 51285 crores and all India IT exports were Rs. 4,10,836 Cr, where as the exports from these locations were only about Rs.1628.73 crores (constituting about 0.4% of IT exports from India. Similarly, for the year 2012-13, while the IT employment in combined state was 3,24,850, in Visakhapatnam, Vijayawada, Tirupati, Kakinada put together was only 22644.

Soon after assuming office of the new residual state of AP, Honourable Chief Minister approved the Blue Print in June 201-56 for IT. The targets of Blue Print Document are to achieve by 2020:-

Investments

- IT: USD 2 bn (Rs.12000 crores)
- Electronics: USD 5 bn (Rs.30000 crores)
- 5% share in national exports of Software Employment
  - IT: 0.5 mil(5 lakhs)
  - Electronics: 0.4 million (4 lakhs)
- 100 Incubators & Accelerators
- Incubation of 5,000 Companies & Start Ups
- Venture Capital of Rs 1000 cr to be mobilized for Innovation
- To create one Entrepreneur from each family
- To make one person e-literate in every house hold.
- To be FIRST in India in Quality & Quantity of e-Services
- To be known as the Silicon Corridor of India
- The New IT Policy 2014-2020 hinges on four pillars – Human Capital, Infrastructure, Incentives and Good Governance

Towards this direction, in the new IT Policy 2014-2020, it is proposed to set up 10 mega IT Hubs, Two ITIRs(Visakhapatnam, Tirupati & Anantapur), 20 Electronic Manufacturing Clusters, Hardware Park at Kakinada, IT Lay Outs/clusters in every district headquarters. Physical infrastructure such as provision of electricity, water, roads are provided to the door step of these IT Lay Outs/EMCs to enable IT and Electronic companies to come and start operations.

For AP to steal a march over other competing states in IT, it would have to focus on the future drivers of the Technology Sector and play at the frontier to leapfrog from its current position.

Some of the key technology trends which AP must focus on while skilling its youth in the T sector are. The top 10 strategic technology trends are:

The Device Mesh

The device mesh refers to an expanding set of endpoints people use to access applications and information or interact with people, social communities, governments and businesses. The device mesh includes mobile devices, wearable, consumer and home electronic devices, automotive devices and environmental devices – such as sensors in the Internet of Things (IoT). As the device mesh evolves, we expect connection models to expand and greater cooperative interaction between devices to emerge.
Ambient User Experience

The device mesh creates the foundation for a new continuous and ambient user experience. Immersive environments delivering augmented and virtual reality hold significant potential but are only one aspect of the experience. The ambient user experience is focused on providing an experience that flows across and exploits different devices, including IoT sensors, common objects such as automobiles, or even factories. Designing these advanced experiences will be a major differentiator for independent software vendors (ISVs) and enterprises alike by 2018.

3D Printing Materials

Advances in 3D printing have already enabled 3D printing to use a wide range of materials, including advanced nickel alloys, carbon fiber, glass, conductive ink, electronics, pharmaceuticals and biological materials. These innovations are driving user demand, as the practical applications for 3D printers expand to more sectors, including aerospace, medical, automotive, energy and the military. The growing range of 3D-printable materials will drive a compound annual growth rate of 64.1 percent for enterprise 3D-printer shipments through 2019. These advances will necessitate a rethinking of assembly line and supply chain processes to exploit 3D printing. 3D printing will see a steady expansion over the next 20 years of the materials that can be printed, improvement in the speed with which items can be printed and emergence of new models to print and assemble composite parts.

Information of Everything

Everything in the digital mesh produces, uses and transmits information. This information goes beyond textual, audio and video information to include sensory and contextual information. Information of everything addresses this influx with strategies and technologies to link data from all these different data sources. Information has always existed everywhere but has often been isolated, incomplete, unavailable or unintelligible. Advances in semantic tools such as graph databases as well as other emerging data classification and information analysis techniques will bring meaning to the often chaotic deluge of information.

Advanced Machine Learning

In advanced machine learning, deep neural nets (DNNs) move beyond classic computing and information management to create systems that can autonomously learn to perceive the world, on their own. The explosion of data sources and complexity of information makes manual classification and analysis infeasible and uneconomic. DNNs automate these tasks and make it possible to address key challenges related to the information of everything trend.

DNNs (an advanced form of machine learning particularly applicable to large, complex datasets) is what makes smart machines appear "intelligent." DNNs enable hardware- or software-based machines to learn for themselves all the features in their environment, from the finest details to broad sweeping abstract classes of content.

Autonomous Agents and Things

Machine learning gives rise to a spectrum of smart machine implementations – including robots, autonomous vehicles, virtual personal assistants (VPAs) and smart advisors – that act in an autonomous (or at least semiautonomous) manner. While advances in physical smart machines such as robots get a great deal of attention, the software-based smart machines have a more near-term and broader impact. VPAs such as Google Now, Microsoft's Cortana and Apple's Siri are becoming smarter and are precursors to autonomous agents. The emerging notion of assistance feeds into the ambient user experience in which an autonomous agent becomes the main user interface. Instead of interacting with menus, forms and buttons on a smartphone, the user speaks to an app, which is really an intelligent agent.

Adaptive Security Architecture
The complexities of digital business and the algorithmic economy combined with an emerging "hacker industry" significantly increase the threat surface for an organization. Relying on perimeter defense and rule-based security is inadequate, especially as organizations exploit more cloud-based services and open APIs for customers and partners to integrate with their systems. IT leaders must focus on detecting and responding to threats, as well as more traditional blocking and other measures to prevent attacks. Application self-protection, as well as user and entity behavior analytics, will help fulfill the adaptive security architecture.

**Advanced System Architecture**

The digital mesh and smart machines require intense computing architecture demands to make them viable for organizations. Providing this required boost are high-powered and ultraefficient neuromorphic architectures. Fueled by field-programmable gate arrays (FPGAs) as an underlining technology for neuromorphic architectures, there are significant gains to this architecture, such as being able to run at speeds of greater than a teraflop with high-energy efficiency.

**Mesh App and Service Architecture**

Monolithic, linear application designs (e.g., the three-tier architecture) are giving way to a more loosely coupled integrative approach: the apps and services architecture. Enabled by software-defined application services, this new approach enables Web-scale performance, flexibility and agility. Microservice architecture is an emerging pattern for building distributed applications that support agile delivery and scalable deployment, both on-premises and in the cloud. Containers are emerging as a critical technology for enabling agile development and microservice architectures. Bringing mobile and IoT elements into the app and service architecture creates a comprehensive model to address back-end cloud scalability and front-end device mesh experiences. Application teams must create new modern architectures to deliver agile, flexible and dynamic cloud-based applications with agile, flexible and dynamic user experiences that span the digital mesh.

**Internet of Things Platforms**

IoT platforms complement the mesh app and service architecture. The management, security, integration and other technologies and standards of the IoT platform are the base set of capabilities for building, managing and securing elements in the IoT. IoT platforms constitute the work IT does behind the scenes from an architectural and a technology standpoint to make the IoT a reality. The IoT is an integral part of the digital mesh and ambient user experience and the emerging and dynamic world of IoT platforms is what makes them possible.

**Tourism, Travel & Hospitality**

Andhra Pradesh is known for its pristine beaches, important places of worship, lush green forests, spicy cuisine and the hospitality of its people. Various tourism projects have been planned over the next 5 years which includes adding hotel rooms, eco-tourism and agri tourism, wellness and spa tourism, sports tourism and rural tourism to name a few.

People are the crux of tourism and tourist services, high quality services can only be achieved through high quality talent. The state aims to enhance the status of tourism talent pool available in the state and has decided to take a multi modal approach for the same. Equal importance will be given to higher education, vocational skills and niche skills to ensure diversity and quality of jobs available. As a part of its plan to revitalize the tourism sector in the state the government plans to have an integrated approach towards addressing the manpower requirements of the sector.

Initiatives in the state:

<table>
<thead>
<tr>
<th>Focus Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism University in the State</td>
</tr>
<tr>
<td>Centre of Excellence in Tourism</td>
</tr>
<tr>
<td>Collaboration with Global institutions to adopt Global standard Hospitality Training and Skill Development across levels</td>
</tr>
</tbody>
</table>
Vocational trainings in tourism are short duration, focused and modular technical training programs. The modular approach means that the trainees can add on to their portfolio of skills for vertical and horizontal progression. At the same time the content is focused to allow for dissemination of only relevant skill. These trainings are delivered on flexible schedules and local language to maximize the involvement of local youth. These trainings will be delivered through network of centers that will include Technical and Non-Technical Schools and Colleges industry centers, Training Organizations, Services. The vocational skills are required in following areas in Tourism:

1. Tour Guiding, Interpretation skills
2. Culinary Arts
3. Restaurant Skills
4. Languages
5. Soft Skills
6. Bar Management etc.
7. Soft Adventure
8. Wellness and spa staff

The state will capitalize the central scheme of Hunar se Rojgar Yojana, to train people for tourism vocational skills. The state government will collaborate with institutions and identify the vocational skills required by the Tourism sector. The state would look at the possibility of collaboration with Central Scheme of “Vocationalisation” of Secondary and Higher Secondary Education” to include Tourism skills in Vocational Education in Schools.

Initiatives in focus

1. Training programs through Hunar Se Rozgaar Yojana
2. Training calendar for districts for various stakeholders
3. Train the trainer program
4. Training local tourism entrepreneurs for utilizing government schemes, finance and reaching markets

Banking & Insurance

The banking & insurance sector is expected to contribute significantly to the creation of jobs in skilled segment. The key skills identified include Sales & marketing of banking and insurance products, retail banking, and financial agents in Insurance & NBFC companies. Special focus would be on rural banking.

Agro & Food Processing

The number of farmers in AP has reduced from 1991 till 2011 by 24.4%. If this trend continues, which is likely, considering the growing urbanization, land marginalization and better income opportunities in urban areas, the number of farmers is estimated to further come down from the current 33 Lakhs to approximately 30 lakhs by year 2022 and to 20.2 lakhs by 2029. This would imply that there will be a significant workforce moving from the farm to the non-farm sector, for which there would need to be reskilling.

The number of farm labourers is showing an increasing trend from the past 3 decades. From 2001 to 2011, agriculture labourers have increased by 20.5%. In order to increase the per capita value generation in agri and allied sectors, it is imperative that skill development and generating gainful employment in agro processing sectors needs to be facilitated.

To enhance the overall value generation in Agriculture and allied sectors, the productivity levels and Gross value added per Agricultural labourer should be improved using training, mechanization and technological support. Focus on improving human capacity and facilitation through technology will improve the sectoral value creation. The suitable training and development and up-skilling and re-skilling programmes should be provided to the skilled, semi-skilled and minimally skilled labour force to increase the GVA per agricultural labour by twofold by 2022 and fourfold by 2029.

Skill upgradation of labourers is required in the following areas:

- Nursery management
- Seed production
- Orchard management
- Farm management
- Farm mechanization
- Scientific harvesting and post-harvest management
- Procurement, cleaning, grading, sorting, Quality testing, packaging, bar coding, labelling
- Agro and Food Processing
- Dairy & meat industry
- Fisheries and sea food processing

Combined effort of Directorate of Employment and Training, Andhra Pradesh State Skills Development Corporation and National Skills Development Corporation along with Departments of Agriculture, Horticulture, Animal Husbandry, Fisheries and Andhra Pradesh Food Processing Society is required for skill development of farmers and agricultural labour force in agro processing.

The following are the identified skills for development of dairy industry:

- Improvement in the quality of animals through appropriate breeding techniques
- Maintaining an efficient animal health and disease control system
- Enhancing the marketability of the milk and other products
- Financial management
- Disease management - for owners and workers
- Feed management - for owners and workers
► Quality management of milk (fat content, hygiene etc.)
► Financial management - Feeding and marketing
► Inventory management
► Food safety
► Market linkages
► Mechanization

The following are the identified skills for chilling plant operation:
► Milk collection
► Milk Testing and quality assurance
► Operation of Bulk Milk Cooler
► Technical aspects of the plant

The following are the identified skills for development of meat industry:
► Quality and hygiene (food safety) management of meat
► Certification aspects
► Financial management - Feeding and marketing
► Inventory management
► Storage and logistics
► Market linkages
► Mechanization

Training Centres on Fisheries in the State:
► State Institute of Fisheries Technology (SIFT)-Kakinada
► Fisheries Training Institute (FTI)- Machilipatnam
► IFTC, Badampudi
► IFTC, Kurnool
► MPEDA’s Training Centres
► Krishi Vigyan Kendra (KVK)- Undi & Others
► Agriculture Technology Management Agency (ATMA) programmes

Skills required for promotion of fisheries in Andhra Pradesh:
► Preserving and storage techniques
► Establishing fish processing unit with technology and new processing techniques
► Market development skills inside and outside state
► Recommended International code of practice
► General principles of food hygiene and safety - The Hazard Analysis and Critical Control Point (HACCP) system Fish preparation and its hygienic presentation
► Latest technologies in production and post-harvest care
► Fish Development and handling
► Fish processing and packaging - Canning, fillets, pickles, battered and breaded products
► Labelling
► Logistics management and marketing
► Knowledge of ornamental fish and their development

Skill required in seafood processing:
► Filleting / Portion Cuts / Fishmeal Canning (of cooked fish)
► On-shore processing (all processing activities of seafood in factories on shore)
► Frozen Whole / Heading and Gutting / Filleting/Fishmeal
► Off-shore processing (all processing activities of seafood in factories on vessels)

Training Centres on Fisheries in the State:
Healthcare

Currently, there are 6,052 doctors available in public health facilities of AP, which accounts to about 0.12 doctors per thousand populations. Therefore, there is a serious shortage of doctors, almost 44,077 doctors to serve the current population, @ 1 doctor per thousand populations.

Table 10: Estimation of Manpower required for servicing the Healthcare

<table>
<thead>
<tr>
<th>Doctors Targetted</th>
<th>FY 15</th>
<th>FY 16</th>
<th>FY 17</th>
<th>FY 18</th>
<th>FY 19</th>
<th>FY 20</th>
<th>FY 21</th>
<th>FY 22</th>
<th>FY 23</th>
<th>FY 24</th>
<th>FY 25</th>
<th>FY 26</th>
<th>FY 27</th>
<th>FY 28</th>
<th>FY 29</th>
<th>FY 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>0.12</td>
<td>0.18</td>
<td>0.28</td>
<td>0.43</td>
<td>0.66</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>New Recruitment</td>
<td>6052</td>
<td>9301</td>
<td>14295</td>
<td>20014</td>
<td>33900</td>
<td>52013</td>
<td>52670</td>
<td>53140</td>
<td>53558</td>
<td>53980</td>
<td>54405</td>
<td>54833</td>
<td>55265</td>
<td>55657</td>
<td>56052</td>
<td>56450</td>
</tr>
<tr>
<td>Nurses Targetted</td>
<td>0.80</td>
<td>1.30</td>
<td>2.10</td>
<td>3.41</td>
<td>5.54</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Nurses</td>
<td>40000</td>
<td>65.392</td>
<td>1,06,389</td>
<td>1,75,328</td>
<td>2,86,829</td>
<td>4,69,829</td>
<td>4,74,027</td>
<td>4,78,263</td>
<td>4,82,065</td>
<td>4,85,938</td>
<td>4,89,842</td>
<td>4,93,990</td>
<td>4,97,388</td>
<td>5,00,954</td>
<td>5,04,467</td>
<td>5,08,046</td>
</tr>
<tr>
<td>New Recruitment</td>
<td>25,302</td>
<td>41,511</td>
<td>68,205</td>
<td>1,11,720</td>
<td>1,83,000</td>
<td>4,196</td>
<td>4,236</td>
<td>4,762</td>
<td>4,793</td>
<td>3,825</td>
<td>3,857</td>
<td>3,889</td>
<td>3,926</td>
<td>3,953</td>
<td>3,980</td>
<td></td>
</tr>
<tr>
<td>Paramedics Targetted</td>
<td>0.40</td>
<td>0.55</td>
<td>0.76</td>
<td>1.05</td>
<td>1.45</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Paramedics</td>
<td>1,200</td>
<td>1,797</td>
<td>2,524</td>
<td>3,551</td>
<td>5,399</td>
<td>7,962</td>
<td>8,008</td>
<td>8,054</td>
<td>8,095</td>
<td>8,136</td>
<td>8,178</td>
<td>8,220</td>
<td>8,262</td>
<td>8,300</td>
<td>8,339</td>
<td>8,378</td>
</tr>
<tr>
<td>New Recruitment</td>
<td>587</td>
<td>722</td>
<td>1,027</td>
<td>1,563</td>
<td>46</td>
<td>46</td>
<td>41</td>
<td>41</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>38</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Total Manpower</td>
<td>47,232</td>
<td>76,400</td>
<td>1,23,729</td>
<td>2,00,873</td>
<td>3,26,127</td>
<td>5,29,984</td>
<td>5,34,704</td>
<td>5,39,457</td>
<td>5,43,678</td>
<td>5,47,030</td>
<td>5,50,225</td>
<td>5,53,952</td>
<td>5,56,095</td>
<td>5,58,871</td>
<td>5,61,658</td>
<td>5,64,374</td>
</tr>
</tbody>
</table>

Note: Calculation has been done on norms of WHO and Indian government for requirements of health professional. As per WHO there should be 3.5 doctors per thousand population. The Indian government recommends maintaining the ratio of 1 doctor / 1000 population.

5.1. Shift in the workforce

The new state of Andhra Pradesh has over 6 agro-climatic zones and broadly 5 different soil types to cultivate a wide range of crops. It is bestowed with a long coastline of 974 km. It is also identified as the ‘bejewelled rice bowl of India’. Agriculture is the largest contributor to the Agriculture and allied sectors GSDP. In context of socio-economic development, Agri & allied sectors have been a crucial segment for the state concerning the contribution towards GSDP and dependency of a large workforce, but marred with inconsistent growth of this sector. On one hand, it is a major contributor to the GSDP over the years (although not the largest) but on the other hand, it is the largest employment provider in the state. Going with the trend, the conservative estimate indicates that the contribution of Agriculture and allied sectors in GSDP may come down to 25.5% (current prices) in 2018-19, similarly, it may be approximately 22% by 2022 and remain around 20% by 2029. As 62% of the population are generating 27.59% of GSDP (Current prices) in the present scenario in AP, the population dependent on agricultural activities should be brought down to 40% –42% in order to enhance the per capita value generation in agricultural activity.

The vision 2029 aims at diverting people involved in primary agricultural activities to value addition and agro-processing through training and improving the skills. The number of farmers in AP has reduced from 1991 till 2011 by 24.4%. If this trend continues, which is likely, considering the growing urbanization, land marginalization and better income opportunities in urban areas, the number of
farmers can further come down from the current 33 Lakhs to approximately 30 lakhs by year 2022 and to 20.2 lakhs by 2029. The number of farm labourers is showing an increasing trend from the past 3 decades. From 2001 to 2011, agriculture labourers have increased by 20.5%. In order to increase the per capita value generation in agri and allied sectors, it is imperative that skill development and generating gainful employment in agro processing sectors needs to be facilitated. The decline in farmers has been at a CAGR of about 3%, while the rise in agri labour has been at the rate of approximately 4%. It is estimated that by 2029, approximately 40 lakh farm labourers can move out of primary sector and start participation in agro and food processing sector. Both the phenomena will enhance the sectoral value and per capita value generation in the state. To tackle the challenges that would arise out of lack of availability of agri labour and to increase the farm productivity, efforts need to be taken to increase the mechanization in agriculture.

5.2. Job creation potential and Sector/ Region Focus for Skilling Initiatives over the next 5 years

Global employment trends indicates job creation in the coming years will be mainly in the private sector services, which will employ more than a third of the global workforce in the next five years. Public services in healthcare, education and administration will see a 12% share of the total employment. Industrial employment is expected to stabilize globally at 22% of total employment.13

There is a growing need of high-skilled occupations globally, making up more than 18% of the total employment. Low-skilled occupations and non-routine jobs still make up more than 45% of total employment worldwide, with medium skill routine jobs accounting for 37% share.

Between 2004-05 and 2013-14, the average Gross State Domestic Product (GSDP) growth of Andhra Pradesh was 14.37% and may reach 15.16% by 2015-16.14 The growth in the state was mainly driven by the services sector which accounted for 52% of the estimated GSDP for 2014-15. The GSDP growth rate for the services sector is estimated to be the highest at 13.7% as compared to industries at 9.3% and agriculture at 11.04% for 2014-15.15

The Honorable CM has identified large initiatives in the state to achieve the vision of being the best state of the country by 2022. Table below identifies the district wise initiatives which would lead to incremental skilled manpower in the respective areas.

Table 11: Key initiatives – District wise

<table>
<thead>
<tr>
<th>Districts</th>
<th>Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Srikakulam</td>
<td>Airport, Bhavanapu-Kalingapatnam Port, Industrial City VIC Corridor, Food park, Open University,</td>
</tr>
<tr>
<td></td>
<td>School of Planning and Architecture</td>
</tr>
<tr>
<td>Vizianagaram</td>
<td>Greenfield airport, Industrial city, Tribal reservoir, Electronic and hardware park, Port and</td>
</tr>
<tr>
<td></td>
<td>music academy</td>
</tr>
<tr>
<td>Visakhapatnam</td>
<td>Megacity, International airport, VCIC corridor, Metro rail, Industrial Institute of Management,</td>
</tr>
<tr>
<td></td>
<td>Indian Institute of Foreign Trade, Food park, Innovation and incubation hub, Railway zone,</td>
</tr>
<tr>
<td></td>
<td>Exhibition and Convention Center</td>
</tr>
<tr>
<td>East Godavari</td>
<td>Petroleum University, Telugu University, hardware Park, Petroleum Corridor, VCIC, Smart City</td>
</tr>
<tr>
<td></td>
<td>status to Kakinada and Rajahmundry, Aquaculture processing unit, LNG terminal, IT Hub and Port</td>
</tr>
<tr>
<td></td>
<td>in Tuni</td>
</tr>
<tr>
<td>West Godavari</td>
<td>National Institute of Technology, Institute of arts and crafts, Narasapur port, Tadepalligudem</td>
</tr>
<tr>
<td></td>
<td>Airport, Ceramic industry, Oil Palm centre, Polavaram project, Horticulture research Institute,</td>
</tr>
<tr>
<td></td>
<td>Tourism development near Kolleru</td>
</tr>
<tr>
<td>Krishna</td>
<td>Development of Gannavaram airport, Machilipatnam port, Oil refinery and cracker unit, Metro</td>
</tr>
<tr>
<td></td>
<td>rail in the capital region, automobile and logistics hub, food park and mega city, aquaculture</td>
</tr>
<tr>
<td></td>
<td>processing unit, Expansion of Bharat electronics unit in Machilipatnam, textile park, tourism</td>
</tr>
<tr>
<td></td>
<td>circuit, missile center in Avanigadda, dance academy at Kuchipudi &amp; IT Hub at Vijayawada</td>
</tr>
</tbody>
</table>

---

13 World Employment Social Outlook Trends 2015, ILO
14 Directorate of Economics & Statistics
15 Socio Economic Survey 2014-15
Districts | Initiatives
--- | ---
Guntur | VGTM metro rail, AIMS, Agricultural university, national disaster relief unit, smart city, food park, airport at Nagaraharunagar and theme park, solar power unit
Prakasam | Industrial hub at Donakonda, University of mines and mineral sciences, airport at Ongole, Ramayapatnam airport, food park, completion of Veligonda park, smart city and aquaculture processing unit
Nellore | VCIC and BCIC corridor, Automobile Hub, Duggarajapatnam Port, Institute of hotel management and marine institute and fertilizer unit
Chittoor | Tirupathi International airport, Kuppam Airport, IIS, IIT, Apollo health center, metro rail, mega food park, IT Hub in Tirupati, tourism circuit linking Tirupathi Sri-Kalahasthi and Kanipakam
Kadapa | Steel plant, cement hub, Urdu University, Kadapa airport, solar and wind power units, garment cluster, Mineral based industries,
Anantapur | Central University, Horticultural university, BCIC in Hindupur, textile park, food park, ancillary to AIMS, Devotional center at Puttaparthi, Aircraft repatriating center, completion of handri-neeva and Kuder-Mush mineral ore project,
Kurnool | Smart City, airport, IIIT, Hyderabad-Bangalore Industrial corridor, textile cluster, near fuel complex, super specialty hospital, Livestock research and polytechnic center, seed production center, wagon workshop, Mining school and food park

Investment Pipeline Analysis

An analysis of the investment intents received by the State of Andhra Pradesh as of January 2016, indicates an immediate potential of 1 million new jobs being created in the State over the next 5 years (average period over which the entire investment is realised). Assuming an idealistic 100% implementation rate and that the State Government continues its campaign to attract private sector investments every year with an incremental employment potential of 5% upto 2029, then the state can expect to create 14.36 million new jobs cumulatively between now and 2029. This simplistic estimation does not take into account the job creation that will result purely from public expenditure on economic and social asset creation, particularly in basic infrastructure, especially in smart cities and in healthcare and education infrastructure.

Table 12: Key initiatives - District wise

<table>
<thead>
<tr>
<th>S.No</th>
<th>Sector</th>
<th>No. of MoUs</th>
<th>Investment (INR Crore)</th>
<th>Share of Total Investment</th>
<th>Employment</th>
<th>Share of Total Employment</th>
<th>Job Creation Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tourism</td>
<td>26</td>
<td>4,659</td>
<td>1.00%</td>
<td>15,240</td>
<td>1.54%</td>
<td>3.27</td>
</tr>
<tr>
<td>2</td>
<td>IT sector</td>
<td>64</td>
<td>3,368</td>
<td>0.72%</td>
<td>50,000</td>
<td>5.06%</td>
<td>14.85</td>
</tr>
<tr>
<td>3</td>
<td>Urban development</td>
<td>1</td>
<td>500</td>
<td>0.11%</td>
<td>1,000</td>
<td>0.10%</td>
<td>2.00</td>
</tr>
<tr>
<td>4</td>
<td>Animal husbandry</td>
<td>6</td>
<td>195</td>
<td>0.04%</td>
<td>4050</td>
<td>0.41%</td>
<td>20.77</td>
</tr>
<tr>
<td>5</td>
<td>Industry</td>
<td>115</td>
<td>201277</td>
<td>43.05%</td>
<td>430886</td>
<td>43.58%</td>
<td>2.14</td>
</tr>
<tr>
<td>6</td>
<td>Energy</td>
<td>24</td>
<td>145842</td>
<td>31.19%</td>
<td>68205</td>
<td>6.90%</td>
<td>0.47</td>
</tr>
<tr>
<td>7</td>
<td>Mining</td>
<td>25</td>
<td>6455</td>
<td>1.38%</td>
<td>10390</td>
<td>1.05%</td>
<td>1.61</td>
</tr>
<tr>
<td>8</td>
<td>Food processing</td>
<td>65</td>
<td>5102</td>
<td>1.09%</td>
<td>61900</td>
<td>6.26%</td>
<td>12.13</td>
</tr>
<tr>
<td>9</td>
<td>Infrastructure</td>
<td>8</td>
<td>43900</td>
<td>9.39%</td>
<td>15000</td>
<td>1.52%</td>
<td>0.34</td>
</tr>
<tr>
<td>10</td>
<td>Housing</td>
<td>4</td>
<td>41500</td>
<td>8.88%</td>
<td>250000</td>
<td>25.28%</td>
<td>6.02</td>
</tr>
<tr>
<td>11</td>
<td>Retail</td>
<td>4</td>
<td>1480</td>
<td>0.32%</td>
<td>37150</td>
<td>3.76%</td>
<td>25.10</td>
</tr>
<tr>
<td>12</td>
<td>CRDA</td>
<td>4</td>
<td>13300</td>
<td>2.84%</td>
<td>943821</td>
<td>2.11</td>
<td>6.02</td>
</tr>
</tbody>
</table>

Of the million jobs that the current investment pipeline indicates, the maximum share of new jobs that will be created will come from the manufacturing sector (43.58%), housing sector (25.28%), Energy Sector (6.9%), Food Processing sector (6.26%), IT Sector (5.06%) and Skill Development (4.5%). This composition gives a fair indication of the key sectors in which skill development needs to be emphasised over the next five years as they will create the maximum demand for skilled manpower.

A closer look at the investments in each sector also give a clear picture of the sub-sectors in which skill development efforts will need to be targeted. In manufacturing industries for instance, the focus would have to be on Engineering & Auto, ESDM, Pharma, Oil & Gas and Solar Manufacturing.

In Energy, apart from conventional energy, there is a major thrust on renewable technologies such as solar and wind. Infrastructure investments are mainly in road construction, marine dredging and
warehousing/logistics. Skill Development sector will create a massive demand for trainers and assessors.

As per the Industries Department estimates as of December 2015, Andhra Pradesh has received 177 applications for industrial investments worth INR 90,377 crore in the two backward regions of Rayalaseema and North Andhra. These investment projects have the potential to create employment for approximately 1,89,000 persons in the two regions.

As per the ‘master plan’ prepared by the state Government to propel industrial growth in the state, the Government is banking on major projects like Visakhapatnam-Chennai Industrial Corridor (VCIC), Chennai-Bengaluru Industrial Corridor (CBIC) and National Investment Manufacturing Zones (NIMZ) for the development of these regions.

The VCIC is being developed at a cost of Rs 4,683 crore with the funding of Asian Development Bank. Industries Department estimates VCIC to attract an investment of Rs 1 lakh crore and generate employment for 50,000 persons. Food processing, chemical and petroleum, textiles, electronics, metallurgy, pharmaceuticals, automobiles and auto ancillary and service sector would be focus areas of VCIC. VCIC clusters would be developed at Pydibheemavaram and Bheemunipatnam in Srikakulam district, Achutapuram as well as Nakkapalle in Visakhapatnam district and Srikalahasti & Yerpedu in Chittoor district.

CBIC is being developed at a cost of Rs 18,548 crore with the funding of Japan International Cooperation Agency (JICA). In CBIC, focus would be on general manufacturing, automobiles and auto ancillary, agro and food processing, metals and metallurgical products, biotech and services sector.

The AP government estimates that the proposed NIMZ will create opportunities for 20,500 direct and 29,200 indirect jobs and attract an investment of over Rs 43,500 crore. The union government had already sanctioned one NIMZ at Kalikiri in Chittoor district and another at Hindupur in Anantapur district in the State.

Ministry of Chemicals and Fertilizers, Government of India announced a slew of projects in Andhra Pradesh which include a large Greenfield Petrochemicals Complex, a Medical Devices Manufacturing Park, National Institute of Pharmaceutical Education and Research (Niper) and Central Institute of Plastics Engineering & Technology (CIPET).
6. Delivery Framework

A 10 point framework needs to be established for creation of an effective skill development ecosystem for the state of Andhra Pradesh, outlining the major enablers and paradigms to achieve the objective of being the ‘Skill Capital’ of India.

The delivery model spanning across the skill development value chain is depicted in Figure below. The delivery model has three central tenets:

► PPP based training model encouraging industry partnership with a viable and outcome linked fees structure for training providers
► Evaluation of the delivery primarily through 3rd party assessment and limited reliance on process control
► Leveraging the existing public infrastructure (like government schools) as far as possible and mobilization of candidates at source (schools, Gram Panchayats) to keep the model inclusive for all stakeholders.

Figure 17: 10 Point Framework for Skill Development

6.1. Segment wise Training

Based on the research, a clear segmentation has been done of the addressable target population.

Segment 1: Skilling for Employed

► Agriculture training
► Construction training
Segment 1 - For those in Employment

► Agriculture training

Given a significant shift of the agricultural workforce to the non-farm sector is envisaged for the future, RPL for upskilling of the workforce to enhance their productivity would be critical. For the community institutions and self-help groups to survive and sustain under livelihood programmes like NRLM/RKVY/NHM/NMFP, it is imperative to train the group members in good agricultural practices and modern farming techniques to improve productivity and enhance farmer profitability. In this context, farmers and farm labourers engaged in Agriculture & Allied activities form the relevant target segment for the programme will be the target group for agriculture sector training. Institutions like Jeevika, NABARD, WDC, NHM etc. will be leveraged for conducting training programme in agriculture sector. Jeevika and NABARD have promoted SHGs, Farmers’ groups and Farmers’ Producer Organizations throughout the state. These institutions will be utilized as nodal institutions for skill development of farmers including women farmers in particular. Extensive network of Jeevika and NABARD will be leveraged for programme implementation and monitoring & evaluation.
Construction Training

A large section of the work-force is engaged in the construction sector on daily wages. In the absence of formal skill development and certification, their career prospects remain limited. It is important to target this segment for skillling and certification by building up their technical know-how and upgrading their skills. The training imparted would be important for career progression of the skilled candidates. Training across the levels and up-skilling of the existing workers through RPL would be targeted over the project duration.

Manufacturing/Services

While most large scale units invest in in-house training and development, a majority of the enterprises in the SME sector do not have an adequate investment for the same. The existing workforce needs continuous upskilling and reskilling to keep their skills relevant to the job. In this regard the private sector in the State needs to be incentivized to go for RPLY certification for their current staff. Another major instrumentality that can be used for on-the job training is the newly revised Apprenticeship Act, which empowers the State to act against errant enterprises which do not provide apprenticeships despite having the requisite capacity. The State may tie up with various Sector Skill Councils and foster greater engagement between them and the companies that have invested in the state so that certification and training programs can be taken up for the existing workforce.

Segment 2 – Skilling for those in Education

Engineering/ITI/ Polytechnic Graduates

Lack of enough new jobs for ITI pass outs is on account of lack of soft skills and placement linkage is also a major area of concern. A placement oriented soft skills and life skills primer linked with placements would be important for boosting the placements in ITIs. For this purpose, ITI graduates form a target base over 15 years. ITI graduates who are currently unemployed would also be targeted under this. The unemployed ITI graduates form a critical base to create immediately visible results in Andhra Pradesh to increase stakeholder buy-in of the programme. Right-skilling of ITI students/ unemployed ITI graduates on soft skills (English and Behavioural Training) and basic IT Training modules and employability enhancement modules is targeted to be conducted utilizing the existing infrastructure of ITIs/Polytechnics

For Engineering Colleges, introduction of modules on Soft Skills in the final semester is a key way to improve their employability. There needs to be an increased focus on longer industrial training/ apprenticeship modules in the final year to give students a better opportunity at grasping and practicing skills in the work place. Also, Engineering students need to be encouraged through entrepreneurship development programmes and mentorship programmes for starting up new and innovative enterprises

Vocationalisation of Schools

Vocational Training at the School level will provide a strong impetus to societal perception of skill development and related activities in Andhra Pradesh. The Vocational Training can be mandatorily started in schools in towns and urban areas. All school students in Class IX-XII and in Class V-VIII who would move to secondary education over 5 years form the target base for this category of skill development.

Segment 3: Skilling for those outside Education & Employment
Placement-linked Training Programme

The rest of the training activities shall be focused on training and placement of youth who would be tapped from new entrants in the workforce/unemployed personnel. The flagship cross-sectoral placement linked training programme would target skilling/ re-skilling of unemployed youths or new entrants to the workforce (dropouts from the formal education channel) via a placement-linked training programme to be conducted at District based mega residential training centres and block based day training centres. The sectors for the training have been identified based on student demand for the courses, employment demand locally and nationally, and TSP strength in delivering training and linking with employment. Skilling for placement and wage linked training programmes are carried out under various Central Government Schemes. The two flagship schemes, Pradhan Mantri Kaushal Vikas Yojana) and the DDU-GKY (Pt. Deendayal Upadhyay Grameen Kaushal Vikas Yojana), need to be scaled up in the State for achieving the targets.

Entrepreneurship Development

Entrepreneurship development training and Incubation facilities needs to be available at a large scale as this will contribute to job creation in a major way. The State Government can offer these courses through its various Centres of Excellence as well as through other short term training programmes. The student can learn vital start up skills and skills for independently marketing their products/services. The Government must support these programmes with adequate mentoring support from the private sector and venture capital /seed financing so that the more successful start-ups can become job creators in the economy.
7. Funding

The total budgetary outlay for the skilling 2 crore persons in the state over the next 15 years is estimated to be around INR 44,048 crores. This works out to be roughly INR 22,000 training cost per candidate. The overall budgetary outlay is as follows:

Table 13: Overall Budgetary Outlay

<table>
<thead>
<tr>
<th>Year</th>
<th>Youth to be Skilled (in Lakhs)</th>
<th>Budgetary Outlay (in Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-19</td>
<td>50</td>
<td>11,025</td>
</tr>
<tr>
<td>2020-22</td>
<td>45</td>
<td>9,907</td>
</tr>
<tr>
<td>2023-29</td>
<td>105</td>
<td>23,116</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>44,048</td>
</tr>
</tbody>
</table>

The breakup of the budgetary outlay is as follows:

Table 14: Breakup of Budgetary Outlay

<table>
<thead>
<tr>
<th>Year</th>
<th>2015-19</th>
<th>2020-22</th>
<th>2023-29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth to be Skilled (in lakhs)</td>
<td>50</td>
<td>45</td>
<td>105</td>
</tr>
<tr>
<td>Training Cost (in Crores)</td>
<td>11,000</td>
<td>9,900</td>
<td>23,100</td>
</tr>
<tr>
<td>Other Overheads* (including infrastructure, manpower, training setup, technology etc.) in Crores</td>
<td>25</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>11,025</td>
<td>9,907</td>
<td>23,116</td>
</tr>
</tbody>
</table>

*Other overheads (Operating & Capital expenditure) are ~0.23% of training cost

7.1. Sources of Funds

Funding for the skilling will be largely met through:

i. Centrally Sponsored Schemes

ii. State’s Contribution to avail Centrally Sponsored Schemes

iii. GAP funding, if any from state budgets

iv. Industry Investments

It is envisaged that in the years to come as against the current funding pattern of 100-0, 75-25 & 50-50 split of funding between Public and Private, going forward same may be 50-50 in years to come. Also support from the central schemes is envisaged at 75%

It may be noted that component of additional funding of funds if any, could be generated by exploring possibilities from:

i. Several un-explored Central Schemes such as Entrepreneurship Development Program Scheme under MSME, Training thru C:DAC/ NIELIT, National Mission on Food Processing from Ministry of Food Processing Industries, Vocational Training Centre in Tribal Area (VTC)/ Skill development through grant-in-aids to NGOs of Ministry of Tribal Affairs, Integrated Skill Development Scheme (ISDS) of Ministry of Textiles.

ii. By clubbing different training programmes for unorganized sector and integrating it with the SDI Courses

iii. Centre on account of increased training’s and skilling carried out by state
iv. By a fee component to be charged to learners seeking training’s in soft skills or skill gap courses and MES scheme allows for that
v. By looking at CSR provisions of PSUs and Private Sector
vi. From NSDC sponsored programs.
8. Monitoring & Evaluation

The vision document has been structured as an outcome oriented document. It is therefore desirable that there should be regular monitoring and evaluation of the initiatives to ensure that best practices can be scaled and corrective measures can be introduced. The overall objective is for the Govt. of Andhra Pradesh to have a robust monitoring and evaluation mechanism to ensure successful implementation of the skill development vision. The following monitoring indicators should be looked into:

- Number/registrations of youth interested in skilling
- Number of youth registered in training programmes
- Number of youth assessed and certified by regulatory authorities
- Placement rate of skilled trainees
- Number of accredited/affiliated training providers/centres
- Number of certified trainers, sector-wise
- Number of certified assessors, sector-wise
- Number of job roles for which QPs and NOS have been developed
- Existing public infrastructure leveraged for training
- Number of skilled persons engaged in overseas employment
- Reduction in sectoral demand and supply gap
- Amount of private funds mobilised for encouraging skill development and entrepreneurship
- Percentage of socially and geographically disadvantaged groups enrolled in training programmes
- Percentage of skilled youth that are self employed
- Infrastructure dedicated for entrepreneurship support
- Number of schools running skills and entrepreneurship courses
- Percentage of socially and geographically disadvantaged groups engaged in self-employment
9. Other Skill Development Models

9.1. Skill Development Models in other States

9.1.1. Gujarat

Skill Up-gradation and Capacity Building is a major component in the Participative Policy for landowners in developing new estates. In Gujarat, the Industries department undertaking Gujarat Industrial Development Corporation (GIDC) has tied up with the Directorate of Employment & Training to undertake training and skill up gradation program for people in various districts. GIDC is providing the fee, stipend, transport and accommodation. Around 460 persons are undergoing a 2 year course totally funded by GIDC and close to 50 Skill Up-gradation Centre’s are being constructed for impartment of training in various GIDC estates at a cost of Rs. 36 crore. Further 50 more such centres are planned to be constructed at a cost of Rs. 45 crore. State of the art apparel training centres have been started in Ahmedabad and Surat, Apparel Parks by ALT Training Foundation, Bangalore has undertaken this venture. Skill up-gradation courses through virtual classrooms to be started in 6 estates.

Central online admission procedure has been adopted by the state in which session starts from 1st August to July each year. The selection of applicants for admission is carried out purely on merit as prescribed for each of the individual trades. A Candidate preference tracking application has been setup to track trainee’s interests in the various courses offered so as to make the offering more significant and in track with the applicants choice. Hostel facilities have been established in 48 Govt. ITIs. This enables the students to live and learn at the same place thereby removing the constraints of distance and poor living conditions which otherwise would have been an hindering factor as faced by most of the candidates staying outside. While in apprenticeship training as an additional incentive almost all the establishments’ offer benefits to the apprentices like: welfare benefits, subsidized food rates, transportation facility etc.

9.1.2. Maharashtra

Maharashtra State Skill Development Society has been established as a Single Nodal Agency for all the Skill Development initiatives in the state with the objective of (a) preparation and continuous updating of “State Skill Gap Assessment Report” and “State Skill Development Plan” (b) Empanelling and grading training providers, (c) Providing support to District & Division level Committees and Sectoral / Territorial Skill Mission Officers in the state for the preparation and effective implementation of “Annual Action Plans”.

A ‘Knowledge Management Centre’ on Skill Development has been proposed to be established at YASHADA, Pune. A Dynamic Labour Market Information System and State Web Portal have been established by the Directorate of Employment and Self-Employment. A thrust is being given in the Industrial Policy towards strengthening of the Maharashtra Centre for entrepreneurship development. This will play a bigger role in the training needs of the Industry. Industry associations are being encouraged to take up hands-on training in the Industrial units for need-based skills.

9.1.3. Tamil Nadu

One of the leading states in terms of demographic dividend is Tamil Nadu, with approximately 66% of the population lying in the working age group it is the eleventh largest state in India by area and the seventh most populous state in India. It is the second largest state economy in India as of 2012. The state has the highest number (10.56 per cent) of business enterprises and stands second in total employment (9.97 per cent) in India, compared to the population share of about 6 per cent. In the 2013 Raghuram Rajan panel report, Tamil Nadu was ranked as the third most developed state in India based on a “Multidimensional Development Index”. Tamil Nadu is also the second most industrialized state in India. Some of the sectors that are prominently present in Tamil Nadu are leather Industry, Textile and Engineering, Automotive, Heavy Industries, Electronics & Software.
It is amongst the Top 3 most preferred states for giving, as per the responses of companies to the Corporate Job Survey. The major industries that prefer hiring from Tamil Nadu are: Automotive, BFSI, BPO/ITES, Core, Manufacturing, Software & IT. These are also the major sectors that are present in the city. With these figures in hand it does seem that the Government policies are also helping in generating employment for the state. A lot of credit also goes to the state government that is coming up with plans to provide better facilities like infrastructure and investment support. The state’s diversified industrial base, competitiveness in both labour intensive and capital intensive sectors due to rich human capital, right set of policy measures and comfortable linkages between banks and businesses have been the drivers for its growth.

The Government of Tamil Nadu plans to act as a true facilitator for economic delivery. On one hand it is trying to bring in new technical and administrative capabilities in its way of working, it plans to develop a culture of responsive and transparent Governance that ensures progress, security, and equal opportunity to all stakeholders. It has relatively high capacity for skilling students. Perhaps this is the reason why a significant portion of the skill pool of this state was assessed to be employable. With more than one-third of the skill pool employable, the state fares better than the overall average of country. With the skill pool proficient in individual skill areas of employability like Communication, soft skills, logical aptitude etc. the state is also amongst the Top 10 states, which have the high percentage of female candidates who are employable. It also provides employable candidates in all age groups (18-21 years, 22-25 years, and 26-29 years).

Tamil Nadu is home to some of the most reputed institutes for higher education in India, which include about 40 Government universities (State, Central & Joint Support) and over 20 private universities. To take care of the skill levels the Government also has taken steps. It’s Department of Employment and Training (DET) is responsible for producing skilled workforce by implementing various skill training programmes to ensure a steady flow of skilled manpower in different trades. It has a complete framework of training programmes and schemes like Craftsmen Training Scheme (To train the craftsmen to meet the existing and future demand of trained manpower of the industries.), Apprenticeship Training Scheme(ITI/Polytechnic trainees are sponsored as apprentices in Industrial establishments for a period ranging from 6 months to 2 years for acquiring industrial skills), Industrial Schools ( For Training in 110 trades mainly in the areas like catering, tailoring, Computer Software, beautician, Office Automation etc.), Skill Development Initiative-Modular Employable Skills(Courses on minimum skill sets required in each skill area to make the trainees employable) , Centres of Excellence , Up gradation of Government ITI’s under Public Private Partnership (PPP) mode, and Skill Initiatives of Tamil Nadu Skill Development Mission (TNSDM).

The TNSDM acts as the nodal agency for all skill development initiatives in the state and partners with industry to identify skill gaps and designs course material leading to Modular Employable Skills (MES) Certification or other industry acceptable Certification. Apart from this Tamil Nadu Government has several schemes like Soft Skill training, e-modules and Simulator based Training in ITIs, Faculty Development Institutes to ensure continuous supply of quality instructors, “Tamil Nadu State Skill Registry” to capture and monitor skill data. Though many initiatives mentioned above are in the early stages of implementation, but whatever has been done, has made the talent available in Tamil Nadu more employable.

9.1.4. Uttar Pradesh

The Uttar Pradesh Skill Development Mission acts as the nodal agency for all skill development initiatives in the state and partners with industry to identify skill gaps and designs course material leading to Modular Employable Skills (MES) Certification or other industry acceptable Certification. The ITI’s in UP come under the Directorate of Employment & Training. The traditional TVET system (ITI’s/Polytechnics) had an annual capacity of 245,000 candidates. In addition, degree colleges and institutions had an annual capacity of 180,000 students (both engineering and management). Every year about 2 million candidates dropped out of the formal education channel from 5th – 12th class. Of these over 1.50 million had no avenue of skill development. The policy proposes skilling of 50 lakhs
persons in the age group of 18 to 35 involving all stakeholders (government institutions, professional training partners, industries, Govt institutions, Professional institutions etc.) for 12th five year plan period.

Standardization of syllabus and monitoring systems across all the schemes and departments to reap economies of scale has been devised. Convergence of all physical and finance resources available under various central and state schemes for skill development has been achieved through the nodal agency coordinating all the efforts. This will facilitate preparation of a comprehensive plan and bringing in uniformity in courses and their costs. Given the constraints in government systems, the mission works closely with professional private sector partners to train the large numbers that is mandated for the mission. IT enabled online systems is being put in place for transparency, speed of decision making and networking of all stakeholders. This system will also provide relevant data and information to all other stakeholders.

9.2. Skill Development Models of other Countries

9.2.1. China

China has seen a structural transformation in its economy in the last two decades and has emerged as a manufacturing behemoth over this period. Both output and employment share of agriculture declined in favour of industry and services. China has undertaken systemic reforms to build a skilled workforce which has enabled it to become the manufacturing powerhouse it is today.

Regulatory Reform for Education and TVET

Vocational education in the Chinese school system earlier used to be introduced at the junior secondary level (or junior middle school) for students in the age group of 12-14 years old. Junior level secondary schooling is the last 3-year stage of the 9 years of compulsory schooling mandated by the nine-year Compulsory Education Law of 1986. China has made 9 years of Compulsory Education universal. Since 1999, the number of students enrolled in higher education institutions has been expanding rapidly. In 2008, total enrolment of post-secondary school had increased more than fourfold compared with 1999. There were 4.13 million students in colleges and universities in 1999 while the number has jumped to 18.28 million in 2008. However, vocational education at junior secondary level has been dwindling in recent years. After 9 years of schooling, only 11.6% of junior secondary graduates entered workforce. Of the remaining 88.4% students continuing to senior secondary those entering the vocational stream are almost 50%. It is only 3% in Indian context.

One of the most important initiatives by the Chinese government has been the enactment of the 1996 Vocational Education Law of the People's Republic of China. The law provides the legal backing for vocational education and training in the country. The Law not only encourages students to take up vocational stream post junior secondary education, but also clearly demarcates the different roles and responsibilities of the various stakeholders in the TVET system: Ministry of Education, Ministry of Human Resources and Social Security, education and training schools and institutes under the two ministries, local governments, and enterprises. It also contains provisions for development of the rural economy by promoting technology and rural vocational education.

Mobilising funding for Vocational Education

In China, the Vocational Education Law enacted in 1996 requires that 20 per cent of the annual education budget should be allocated to vocational education and training. The fiscal decentralization of the Chinese (unitary) system of governance and autonomy of the local governments plays an important role in the implementation of vocational education. The local governments set aside a special sum or arrange a portion for vocational education from the local extra charges that they have decided to collect for education and in addition can appropriate more funds for rural vocational training. In addition, all enterprises as a policy are required to utilize 1.5 per cent of their payroll towards in-service training, which if they fail to do, should contribute an equivalent amount to the government to be used towards adult training.
The responsibility for financing VET and academic school education in China rests with township and country government (i.e. local government). Only higher education is financed and managed by central/provincial government. The fiscal decentralisation that characterises China’s system of governance thus benefits local enterprises (as the VET system is flexible and responsible to local needs) as well as the students in terms of employment.

**Student Incentives for adoption of Vocational Education**

The Chinese government encourages the adoption of vocational education at senior secondary level by incentivizing it financially. Encouraging students to opt for vocational stream in secondary high schools through measures like stipend for rural students for boarding and lodging, making tuition fee free of cost (since 2009) for all students has shown very positive outcomes for China’s vocational education. Around 95 per cent employment rate of senior secondary vocational school graduates speaks for the external efficiency of China’s TVET system.

**Vocationalisation of School Education**

China has built a foundation of VET over many years through School-based vocational education, provided by Junior and Senior Vocational Schools (SVS, Skilled Workers Schools (SWS) and Secondary Technical Schools (STS). Ministry of Education (MOE) and the Ministry of Human Resources and Social Security (MOHRSS) are the two main departments which are responsible for vocational education schools. The vocational schools (on secondary level) do provide courses at senior level that last 3 – 4 years and students will end up with a leaving certificate and/or a rating certificate according to the MOHRSS’ vocational standards. The provided courses cover a wide range of areas with a clear emphasis on crafts and commercial vocations, while the skilled workers schools (SWS) emphasize industrial vocations.

Tertiary vocational education provides vocational education at Higher Vocational Colleges (HVC) and Senior Skilled Workers Schools (SSWS). The entry requirements for the upper secondary vocational education are either a successfully passed entry exam or a leaving exam of a junior vocational school. At tertiary level there are abridged studies (2-3 years) at vocational colleges which aim at preparing graduates for practice-oriented positions in production. The share of vocational colleges’ entrants as part of the overall university entrants has reached the mark of 50%. The graduates of HVCs receive a leaving certificate and a rating certificate (of medium level) in accordance with the vocational standards of MOHRSS.

The schools and colleges under the MOHRSS (SWS, SSWS and TC) are very good at competency based training and skill development required by the industry. The schools and colleges under the MOE traditionally emphasize subject instruction. In recent years, they are reforming towards to meet the requirement from workplace.

**Active Involvement of Industry in Skill Development**

Students in the three-year vocational education stream at senior secondary level are required to spend the full third year as interns at local enterprises to acquire practical training and industry exposure. The local enterprises in China because of fear of punishment (taxation or negative publicity or mark on reputation) at the hands of local governments (empowered by the provisions of the 1996 VE Law) participate in practical training. In addition, the local governments help local enterprises by incentives such as allotment of land at subsidized prices, or preferential treatment in case of award of government projects. Such measures prove to be influential in encouraging industry to actively participate in vocational education and training. 85 per cent of Chinese firms conduct in house training.

**Focus on Training of Trainers/ Teachers**
Teachers in vocational schools are required to undergo one month in industry each year, or two months every two years for their career progression and promotion. The practical training at the enterprises equips them with latest technology and evolving industry needs.

**Curriculum Design**

The curriculum of a senior secondary vocational school is designed such that, one-third includes general academic skills defined nationally by the Ministry of Education, another one-third is again nationally defined content associated with the particular occupation, and the remaining one-third defined again with respect to the occupational field is determined locally at the school level with the help of local enterprises.

9.2.2. Germany

Some of the key takeaways from the German vocational training system are the mandatory full-time education of 9-10 years (state specific). Obligatory part-time VET for a period of three years for all candidates not pursuing higher education and the system of dual training i.e. vocational training combining education at a Government supported vocational school with an apprenticeship position in a company. It is indeed commendable and this in turn gives the trainee transition from school to work which is facilitated by 2-3 year training period. Since working and learning are simultaneously pursued it leads to investigation of opportunities and own abilities. This also leads to attainment of social standing and income at an early age.

On the industry side this model assures availability of competent workforce for the considerable future. The low personnel recruitment costs and the low Labor costs (low cost trainees doing work for a fixed time-frame) works to their cost benefit. From governments standpoint the dual system means uniform national qualifications standards are guaranteed which helps in keeping the German manufacturing competitiveness maintained, the flexible 3-year part time vocational training which is govt. financed means there is a constant availability of Labor force. Lower training costs for the government as the private sector is involved in the training program.

There is a strong field presence for the program implementation and management aspect of Skill development field with a ratio of 1 public service employee for every 18 citizens. The industry also is involved because of the investor friendly policies and in most cases Industry chambers act as facilitators. The chambers also double up as auditors sometime so that constant evaluation and monitoring is ensured. This is to prevent any discrepancies that may arise in the system.

Various Public-Private partnerships are followed such as Govt. financed vocational schools; On-the-job training is also facilitated by industries which includes bearing the cost component factor. The course, curriculum and certification process is carried out in line with Industry requirements. For a candidate, Employment after completion of training assures him a job which is made feasible by the qualification framework for VET trainees to enrol for higher education.
Annexure 1: Working Age Population (District Wise)

District wise breakup of working age population

![Pie chart showing the distribution of working age population by district]

District wise working age population (in ‘000s)

<table>
<thead>
<tr>
<th>Districts</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
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<td>746</td>
<td>2,565</td>
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<tr>
<td>Chittoor</td>
<td>1,814</td>
<td>819</td>
<td>2,633</td>
</tr>
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<td>East Godavari</td>
<td>2,489</td>
<td>892</td>
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</tr>
<tr>
<td>Guntur</td>
<td>2,070</td>
<td>1,112</td>
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<td>Kadapa</td>
<td>1,181</td>
<td>636</td>
<td>1,817</td>
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<tr>
<td>Krishna</td>
<td>1,712</td>
<td>1,244</td>
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<td>1,767</td>
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<tr>
<td>Prakasam</td>
<td>1,695</td>
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<td>Srikakulam</td>
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<td>Visakhapatnam</td>
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<td>1,372</td>
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<tr>
<td>Vizianagaram</td>
<td>1,168</td>
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<tr>
<td>West Godavari</td>
<td>2,028</td>
<td>546</td>
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<td><strong>State Total</strong></td>
<td><strong>21,929</strong></td>
<td><strong>9,755</strong></td>
<td><strong>31,683</strong></td>
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## Annexure 2: Working Age Population – India Level

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<tr>
<th>State</th>
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<th>% of working age population (state) to total population (India)</th>
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<td>100.00%</td>
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<tr>
<td>Goa</td>
<td>66.83%</td>
<td>0.13%</td>
</tr>
<tr>
<td>Sikkim</td>
<td>65.96%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>65.93%</td>
<td>6.51%</td>
</tr>
<tr>
<td>Tripura</td>
<td>64.37%</td>
<td>0.32%</td>
</tr>
<tr>
<td>West Bengal</td>
<td>64.29%</td>
<td>8.04%</td>
</tr>
<tr>
<td>Karnataka</td>
<td>64.22%</td>
<td>5.37%</td>
</tr>
<tr>
<td>Punjab</td>
<td>63.98%</td>
<td>2.43%</td>
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<tr>
<td>Kerala</td>
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</tr>
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<td>Himachal Pradesh</td>
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<tr>
<td>Maharashtra</td>
<td>63.13%</td>
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<td>Gujarat</td>
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<td>Manipur</td>
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<tr>
<td>Haryana</td>
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<tr>
<td>Arunachal Pradesh</td>
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<tr>
<td>Mizoram</td>
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<td>Nagaland</td>
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<td>Chhattisgarh</td>
<td>60.03%</td>
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<td>Uttarakhand</td>
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<td>Jharkhand</td>
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<td>Uttar Pradesh</td>
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<tr>
<td>Meghalaya</td>
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</tr>
<tr>
<td>Bihar</td>
<td>52.13%</td>
<td>7.43%</td>
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## Annexure 3: Global Talent Index 2015

<table>
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<th>Rank</th>
<th>Country</th>
<th>Rank</th>
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<td>China</td>
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<td>Denmark</td>
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<td>Country</td>
<td>Overall Score</td>
<td>Demographics</td>
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<tr>
<td>India</td>
<td>42.2</td>
<td>75.8</td>
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# Annexure 4: Global Sector Skills Forecast (2020)

## Basic & Infrastructure: Chemicals, Infra & Urban Development, Mining Metals

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<th>Workforce Disruption</th>
<th>Skills Forecast</th>
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<td><strong>Top Trends</strong></td>
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<td>Impact on Employee Skills Felt</td>
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<tr>
<td>Already</td>
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<tr>
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<tr>
<td>5 years &amp; beyond</td>
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<tr>
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<tr>
<td>Skills</td>
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<tr>
<td>Stability</td>
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<tr>
<td>Growth of Main Job Roles</td>
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<tr>
<td>(2015-2020)</td>
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<td></td>
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<td>Emerging Job Roles &amp; Occupations</td>
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<tr>
<td>Key Skills for 2020</td>
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<td>78%</td>
<td>78%</td>
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<td>New energy supplies &amp; technologies</td>
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</tr>
<tr>
<td>60%</td>
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## Consumer: Agriculture, Food & Beverages, Retail, Consumer Goods and Lifestyle

<table>
<thead>
<tr>
<th>Drivers of Change</th>
<th>Workforce Disruption</th>
<th>Skills Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top Trends</strong></td>
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<tr>
<td>Impact on Employee Skills Felt</td>
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<tr>
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<tr>
<td>Impact on Employee Skills in next</td>
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<tr>
<td>5 years &amp; beyond</td>
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</tr>
<tr>
<td>Employment Outlook</td>
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<tr>
<td>Skills</td>
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<tr>
<td>Emerging Job Roles &amp; Occupations</td>
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<tr>
<td>Key Skills for 2020</td>
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<tr>
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<td>30%</td>
<td>Stable</td>
<td>Stable</td>
</tr>
<tr>
<td>70%</td>
<td>70%</td>
<td>70%</td>
</tr>
</tbody>
</table>

## Key Skills for 2020

**Climate Change**
- Chemical Engineers
- Civil Engineers
- Business Services & Administration Managers
- Manufacturing, Mining and Construction Managers
- Declining Mining and Petroleum Extraction Workers
- Construction Laborers
- Chemical Processing Plant Operators

**Changing nature of work**
- Accountants & Auditors
- Investment Fund Managers

**New energy supplies & technologies**
- Biochemical Engineers
- Complex Problem Solving Skills
- Critical Thinking
- Cognitive Flexibility
- Creativity
- Mathematical Reasoning

**Changing nature of work**
- Business & Financial Operations
- HR Specialists
- Problem sensitivity
- Active Learning
- Critical Thinking
- Management of Financial Resources
- Persuasion

**Changing nature of work**
- Architecture & Engineering
- Biochemical Engineers
- Complex Problem Solving Skills
- Critical Thinking
- Cognitive Flexibility
- Creativity
- Mathematical Reasoning

Ernst & Young |71
### Middle Class in Emerging markets

| 40% | 60% |

- Shop Salespersons
- Sales Representatives, Wholesale and Technical Sales

### Geopolitical volatility

| 33% | 67% |

- Declining Assembly and Factory Workers
- Food Processing and Related Trades Workers
- General and Operations Managers
- Business Services and Administration Managers

### Energy: Energy Utilities, Oil & Gas, Renewable Energy

#### Drivers of Change

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<td>New energy supplies &amp; technologies</td>
<td>41%</td>
<td>59%</td>
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<td>70%</td>
<td>Growing General and Operations Managers Business Services and Administration Managers Energy and Petroleum Engineers Electro-technology Engineers Declining Assembly and Factory Workers Petroleum and Natural Gas Refining Plant Operators Mining and Petroleum Extraction Workers Mining and Petroleum Plant Operators</td>
<td>Management</td>
<td>MDs &amp; CEOs</td>
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<tr>
<td>Climate change</td>
<td>42%</td>
<td>58%</td>
<td></td>
<td></td>
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<td>Changing nature of work</td>
<td>9%</td>
<td>91%</td>
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</table>

### Financial Services & Investors: Banking & Capital Markets, Insurance & Asset Management, Private Investors Institutional

#### Drivers of Change

|------------|----------------------------------------|-----------------------------------------------|-------------------|-----------------|----------------------------------|----------------------------------|---------------------|

Ernst & Young |72
| Middle class in emerging markets | 50% | 50% | | | | | | | | | | |
| Mobile Internet & cloud technology | 64% | 36% | | | | | | | | | | |

### Healthcare: Global Health & Healthcare

<table>
<thead>
<tr>
<th>Drivers of Change</th>
<th>Workforce Disruption</th>
<th>Skills Forecast</th>
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<tbody>
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<td>Mobile Internet &amp; cloud technology</td>
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<td>50%</td>
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<tr>
<td>Longevity, ageing societies</td>
<td>50%</td>
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### Information & Communication Technology

<table>
<thead>
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<th>Drivers of Change</th>
<th>Workforce Disruption</th>
<th>Skills Forecast</th>
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<td>80%</td>
</tr>
<tr>
<td>Middle class in emerging markets</td>
<td>50%</td>
<td>50%</td>
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<tr>
<td>Longevity, ageing societies</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Mobile Internet &amp; cloud technology</td>
<td>76%</td>
<td>24%</td>
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</tr>
<tr>
<td>Processing power, big data</td>
<td>56%</td>
<td>44%</td>
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<tr>
<td>Changing nature of work</td>
<td>23%</td>
<td>77%</td>
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### Mobility: Aviation & Travel, Automotive, Supply Chain & Transportation

#### Top Trends

<table>
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<th>Drivers of Change</th>
<th>Workforce Disruption</th>
<th>Skills Forecast</th>
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<tr>
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<td>70%</td>
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### Media, Entertainment & Information

#### Drivers of Change

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<th>Workforce Disruption</th>
<th>Skills Forecast</th>
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</thead>
<tbody>
<tr>
<td>Emerging Job Roles &amp; Occupations</td>
<td>Key Skills for 2020</td>
</tr>
<tr>
<td>Creativity Active Learning Time Management Negotiation Programming</td>
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<tr>
<td>--------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Mobile Internet &amp; cloud technology</td>
<td>75%</td>
</tr>
<tr>
<td>Processing power, big data</td>
<td>40%</td>
</tr>
<tr>
<td>Changing nature of work</td>
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Ernst & Young
Annexure 5: ITI Seating Capacity and Enrollment
(Trade Wise)

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Seat Count</th>
<th>Trainee Count</th>
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<tbody>
<tr>
<td>Electrician</td>
<td>49854</td>
<td>25454</td>
</tr>
<tr>
<td>Fitter</td>
<td>28371</td>
<td>12589</td>
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<tr>
<td>Mechanic Diesel</td>
<td>8358</td>
<td>6810</td>
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<tr>
<td>Welder</td>
<td>4431</td>
<td>2384</td>
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<tr>
<td>Draughtsman (Civil)</td>
<td>8320</td>
<td>1984</td>
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<tr>
<td>Computer Operator and Programming Assistant</td>
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<td>1252</td>
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<tr>
<td>Electronics Mechanic</td>
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<tr>
<td>Mechanic (Motor Vehicle)</td>
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<td>Turner</td>
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<td>Machinist</td>
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<td>Instrument Mechanic</td>
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<td>293</td>
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<td>Carpenter</td>
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<td>235</td>
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<tr>
<td>Dress Making</td>
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<td>233</td>
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<tr>
<td>Sewing Technology</td>
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<td>202</td>
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<tr>
<td>Plumber</td>
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<tr>
<td>Wireman</td>
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<tr>
<td>Stenographer &amp; Secretarial Assistant (English)</td>
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<tr>
<td>Mechanic Radio &amp; T.V.</td>
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<td>Plastic Processing Operator</td>
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<td>Sheet Metal Worker</td>
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<td>Draughtsman (Mechanical)</td>
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<td>Health Sanitary Inspector</td>
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<tr>
<td>Mech. Repair &amp; Maintenance of Heavy Vehicles</td>
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<td>Mason (Building Constructor)</td>
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<td>Marine Fitter</td>
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<td>Laboratory Assistant (Chemical Plant)</td>
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<td>Sanitary Hardware Fitter</td>
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<tr>
<td>Trade Name</td>
<td>Seat Count</td>
<td>Trainee Count</td>
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<tr>
<td>------------------------------------------------------</td>
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</tr>
<tr>
<td>Mechanic Agriculture Machinery</td>
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<tr>
<td>Mechanic Auto Electrical and Electronics</td>
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<tr>
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<tr>
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<tr>
<td>Pre/Preparatory School Management (Assistant)</td>
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<tr>
<td>Secretarial Practice (English)</td>
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<tr>
<td>Stenographer &amp; Secretarial Assistant (Hindi)</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>122,928</strong></td>
<td><strong>56,464</strong></td>
</tr>
</tbody>
</table>
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2nd floor, Shivalik Ishaan
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Fax: +91 120 671 7171

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Sector 9-C, Madhya Marg
Chandigarh – 160 009
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Pune – 411 006
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