





# **VISION DOCUMENT**

**VERSION 2.0**

# **HARYANA**

**VISHWAKARMA SKILL UNIVERSITY**

योग: कर्मसु कौशलम्





हरियाणा राज भवन,  
चण्डीगढ़ - 160019

HARYANA RAJ BHAVAN,  
CHANDIGARH - 160019

### Message

It gives me immense pleasure to learn that Haryana Vishwakarma Skill University (HVSU) is organizing a workshop on "Skilling Haryana: Connecting Aspirations, Potential and Opportunities" on 25<sup>th</sup> August, 2017.

Haryana Vishwakarma Skill University (HVSU) has been founded with an aim to facilitate skill-based education and research to empower the youth of the state. We feel that a society can only reap its demographic dividend, if it invests in education and skill development. As a state, we have to train about one million people in various skills by 2022 to make them employable and meet the industry's demand of skilled work force. It would need concerted efforts from all quarters.

Dignity of labour and value of skills training are inter-linked. As a society, we tend to accord more importance to general education and the degrees and overlook skills. This mindset must change for good. The feasibility of introducing skill training below the secondary level of education should be explored. It will develop a technical aptitude amongst the students and motivate them to opt for skill training as a considered career option. Parents and teachers can play an important role, if they are convinced about the value of skills training. Skills training can touch the lives of millions of rural and urban youth by providing them with jobs and opportunities for entrepreneurship.

The workshop organised by HVSU on "Skilling Haryana: Connecting Aspirations, Potential and Opportunities" is on a contemporary issue and I am hopeful that its proceedings will be useful to not only the University but to everyone. The University under the stewardship of its Vice Chancellor, Shri Raj Nehru has explored the sectors of economy to identify its key domains through the Vision Document. HVSU has also launched a few innovative technical training courses in collaboration with industry.

I wish HVSU, its Vice Chancellor and staff every success in their future endeavours to take the University to greater heights.

**(Prof. Kaptan Singh Solanki)**

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मनोहर लाल  
MANOHAR LAL



D.O. No. CMH-2017 / Spl. 2

मुख्य मन्त्री, हरियाणा,  
चण्डीगढ़।

CHIEF MINISTER, HARYANA,  
CHANDIGARH.

Dated 18<sup>th</sup> Aug, 2017

### Message

India currently has one of the youngest population in the world, with the median age of 25 years. It is predicted that the country will have the world's largest working population by the year 2030. The demand for skilled workforce to contribute towards various sectors, is likely to increase manifold in the days ahead.

As of today, a mere 2% of the Indian workforce, is formally skilled. The in-service training is received only by 15% of the workers in the manufacturing sector. There is a need to impart skills in various vocations and to make the youth of the state employable. Well experienced and adequately trained resources are required in large numbers whilst being of desired quality. Haryana has, in recent years, invested intelligently to create a well developed technical education infrastructure across the state.

HVSU has been specifically been created to benchmark quality technical education in the state. Through its Vision document, HVSU has attempted to explore the skills spectrum; identify the relevant domains, the job roles and to formulate an effective strategy. The University has launched certain innovative technical programs for the students in collaboration with the industry, to make the entire training process employment oriented.

This innovative initiative of HVSU is expected to provide the much needed industry-academia connect. HVSU should be seen as the nursery of industry-ready work force for the manufacturing industry of not just the state of Haryana, but for the entire country.

I congratulate Shri Raj Nehru, Vice Chancellor HVSU for catalyzing the entire skill ecosystem through this Vision Document. The proceedings of the workshop on "Skilling Haryana: Connecting Aspirations, Potential and Opportunities" will invigorate the environment further to start a discourse within the ecosystem.

I am sanguine that HVSU shall put in concerted efforts with the industry and the academia to provide opportunities to the youth to realize their aspirations through quality skill training and industry exposure.

I wish the workshop a great success.

(Manohar Lal)



**डा. जितेन्द्र सिंह**

राज्य मंत्री (स्वतंत्र प्रभार)  
उत्तर पूर्वी क्षेत्र विकास मंत्रालय,  
राज्य मंत्री प्रधान मंत्री कार्यालय,  
कार्मिक, लोक शिकायत तथा पेंशन मंत्रालय,  
परमाणु उर्जा विभाग तथा अंतरिक्ष विभाग,  
भारत सरकार



सत्यमेव जयते



**MESSAGE**

**DR. JITENDRA SINGH**

Minister of State (Independent Charge),  
Ministry Development of North Eastern Region,  
Minister of State, Prime Minister's Office,  
Ministry of Personnel, Public Grievances and Pensions,  
Department of Atomic Energy & Department of Space,  
Government of India

New Delhi 14th August, 2017

It gives me immense pleasure to learn that the Government of Haryana has established the state's first skill university – Haryana Vishwakarma Skill University (HVSU) to promote training, studies and research in the field of skills.

Skilled youth are a national asset, who will make India, the Skills Capital of the World as envisioned by our Prime Minister Shri Narendra Modi. In our country there are about 400 million youth who will have to be trained in various skills to brighten their employability prospects.

Haryana is a progressive state. Its contribution to country's achievements in all fields has been exemplary. The youth of the state is keen to learn new vocations and skills. It is a challenge as well as an opportunity to transform skills' landscape of the state.

I am hopeful that HVSU, under the dynamic leadership of its Vice Chancellor Shri Raj Nehru shall avail these opportunities to skill the youth through innovative training programmes and industry's participation. The University has prepared its Vision Document after a deliberate interaction with the youth at grass root level for strategy formulation.

The workshop under the aegis of HVSU, deals with a current topic "Skilling Haryana: Connecting Aspirations, Potential and Opportunities". A cross section of eminent people from academia, industry and the government will be deliberating over it, whose outcome will be of immense value to everyone.

I wish the Vice Chancellor and the faculty members of HVSU success in their efforts.

**(Dr. Jitendra Singh)**

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## Vipul Goel

Industries and Commerce,  
Skill Development and  
Industrial Training and Environment Minister



## विपुल गोयल

उद्योग एवं वाणिज्य, कौशल विकास  
एवं औद्योगिक प्रशिक्षण एवं पर्यावरण मंत्री

### Message

Requirement of a skill university in the state was being felt for long. The Haryana Vishwakarma Skill University (HVSU) has been established with an objective to promote skills education and training in the State.

Haryana has a sound industrial base, built over the years. It has served the State and its people well by contributing significantly towards the development and prosperity. After agriculture, industries of Haryana have been the largest employers of workforce.

Like any other sector, industrial sector too needs periodic upgradation in terms of technology and skilled workforce. Its demand for skilled manpower is perpetual and can be predicted with fair accuracy.

Reliable estimates indicate that there will be a large gap in the supply and demand of skilled workforce in future, unless we undertake skilling of youth with urgency and despatch, it deserves. Technical institutes who are meant to meet the industry's demand of skilled manpower should prepare themselves accordingly.

Integration of industry with training institutes is a must to achieve optimum standards of training as desired by the former. Dual education system, in which the industries and institutes jointly play an important role looks promising. It should be examined on its merits for the feasibility of adaptation in our context.

Industrial sector of Haryana has an onerous responsibility towards connecting aspirations, potential and opportunities for the youth by coming forward to facilitate their training and employment.

I am aware that the HVSU has recently launched some innovative courses in collaboration with the industry. I congratulate Shri Raj Nehru for the same and hope his initiatives will fructify into many such training opportunities.

I wish the workshop a great success.

  
(Vipul Goel)





**Prof. Raj Nehru**  
**Vice-Chancellor**



## MESSAGE

Skills training in the country is witnessing a seminal change at fast pace. For the first time vocational education has been accorded importance, that it deserves.

Haryana is the land of opportunities. Its people are its biggest asset. Traditional livelihoods, mainly in agriculture still provide jobs to a large number of people. Women workforce participation in the state needs an upswing. All sectors of the economy require skilled workforce. To meet the industry's demand, about 1.8 million youth will have to be skilled in different trades by 2030. The Haryana Vishwakarma Skill University (HVSU) is acutely aware of its share of responsibility in the skilling the youth of the state.

Economies that have shown significant progress around the world have also successfully delivered Skill education in an integrated model- where a student has option to pursue skill education right from the school level until university level certification in a progressive format. To realize this dream HVSU is designing NSQF aligned, credit-based, modular skills courses based on standardized curriculum in multi disciplines with a focus on progression through industry alignment. The programs will focus on new age skills with application orientation, where industry will be a key partner.

The present workshop deals with a contemporary topic. Connecting aspirations of the youth with opportunities is a solemn responsibility of everyone. The HVSU has tried to feel the pulse of the youth through an extensive study – Youth Aspiration Survey, which has been included in the Vision Document of the university.

There have been a number of confabulations as a prelude to the workshop. Today, a cross-section of eminent people from the Government, industry, corporate, academia and other walks of public life will be giving their valuable inputs on the issue. I am sure that the outcome of the workshop will be of immense use to everyone.

I, on behalf of all members of faculty and staff of HVSU welcome everyone to the event and thank you for your kind presence.

Thank you.

**(Raj Nehru)**





Trilok Chand Gupta, IAS  
B.COM. (Hons.), LLB, FCA, FCMA



D.O. No. PS/PSSTIT/18974

Financial Commissioner and  
Principal Secretary to Govt., Haryana,  
.....Department  
Chandigarh.

Dated : 16-08-2017

### Message

It gives me immense pleasure to realise that Haryana Vishwakarma Skill University (HVSU), which came into existence in November 2016 is actively working to achieve its mandate i.e. providing skills education to people. In coming years, Haryana would need skilled people in large numbers to meet the demand of the industry and maintain its growth trajectory. Towards this end, all our technical education resources will have to work in unison.

Our industry is on the cusp of transformation. Industry 4.0 is knocking on its door. It will usher in new age technologies and job roles. Academia and industry will have to work together to ensure a smooth change over without disrupting the jobs and production.

The workshop on “Skilling Haryana: Connecting Aspirations, Potential and Opportunities” touches upon a contemporary issue. Skills can convert youth aspirations into opportunities. We need to have a well thought of strategy to train thousands of people in various skills. I am hopeful that the deliberations at the workshop will suggest a strategy for this onerous task.

I compliment Shri Raj Nehru, Vice Chancellor of Haryana Vishwakarma Skill University for his initiatives and creative approach towards skills education and wish HVSU every success in its future endeavours.

*T.C. Gupta*

(T.C. Gupta) 16/08/2017

Principal Secretary to Government Haryana,  
Skill Development & Industrial Training,  
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**Message**

Haryana Vishwakarma Skill University (HVSU) has started its operations in a very short time to meet the aspirations of the youth. Programmes offered by University are innovative, futuristic and call for integration with industry. We are overwhelmed by the response that our programmes received from the prospective candidates.

HVSU shall continue with this trend by designing more courses, which are in-demand, cater to the need of the industry and most importantly, meet the aspirations of our youth. We intend touching

University's handful staffs has been working relentlessly for collecting the data for Youth Aspiration Survey, drafting the vision document and organising the workshop. This has been possible under the dynamic leadership of Shri Raj Nehru, Vice Chancellor.

The workshop is on a very important issue. It is going to be a confluence of ideas, from where the linkage between youth aspirations and opportunities shall emerge.

I congratulate the HVSU staffs for organising such an important event.

Thank you.

Place: Gurugram

Dr. Sunil Gupta

Registrar





## Message

Education is a mechanism to promote learning by dint of knowledge, skills, values, and beliefs. It determines the nation's perspective and has the strength to accelerate the socio-economic growth. The Government of Haryana has taken initiatives to strengthen the foundations of its education system, with prime focus on vocational education and training.

Haryana is a developed state and has vast potential to create jobs for its youth in the agriculture, manufacturing and services sectors. This would involve training and skilling of youth and existing workforce in the current and future skills. This is only possible with the combined help of Government, academia and industry.

HVSU team under the dynamic leadership of Hon'ble Vice Chancellor Shri Raj Nehru working in the same direction by drafting a Vision Document and organising a workshop on "Skilling Haryana: Connecting Aspirations, Potential and Opportunities". The workshop would provide an insight and the way forward to make Haryana as skilled State of the country.

I feel proud to be a part of the HVSU family and invite all the stakeholders to be a part of this historic moment.

Thank you.

Prof (Dr) Navdeep Malhotra

Dean, HVSU



## ACKNOWLEDGEMENTS

Drafting of the Vision Document was an important task for all of us. Our quest to connect with the youth, took our teams to every district of the State. Various departments and organisations helped us with data and information. List of the people whom we met, interacted and received their support is exhaustive. We thank them all profusely for their help.

We are especially thankful to DS Dhesi, IAS Chief Secretary, Rajesh Khullar, IAS PS to CM, TC Gupta, IAS Principal Secretary SD&IT, Anil Malik, IAS Principal Secretary Technical Education, Dr. Mahavir Singh, IAS Principal Secretary Higher Education, PK Das, IAS Principal Secretary School Education, Apoorva Kumar, IAS, Dr. Dinesh Kumar VC YMCAUST, Dr. BK Kuthiala, VC MCU, Dr. Venkatesh Balasubramaniam IIT-M, Dr. Sunita Chhibba DG NSDA, Manish Kumar MD & CEO NSDC, Dr. G Prasanna DG HIPA, Mrs. Rekha Dahiya HIPA, Dr. RS Rathore AICTE, KK Agnihotri Advisor NSQF, KK Kataria Director HSDM and Rajive Gulati HARTRON for the valuable inputs and support from the establishment.

The private sector and professionals supported our efforts wholeheartedly in a variety of ways. Notable amongst those are – Dr KC Yadav, PH Singh HeroMoto Corp, AD Burman Maruti Suzuki India Ltd., Rajiv Sharma JBM Group, Ravinder Rana Concentrix, Harish Bhardwaj Concentrix, Saurabh Aggarwal Skill Cube, Arvind Koul East West Automation, Lokesh Sharma IMS Health, Rakesh Sood Trim India, Vijay Rai NHRDN, Dhananjay Singh NHRDN, D Bhattacharya ISTD, Dharam Rakshit HeroMoto Corp, Dr. Vinod Shanbhag, Dr. Rupinder Kaur E&Y, Ms Shweta Khanna, Sandeep Bidani Positive Momentum, Dr. Sujata Sahani IILM, Dr. Radha Rani Sharma MDI, Ajay Mishra RBS and Ms Gauri Sarin Approach International.

Strategic Government Advisory (SGA) team at YES BANK have been of immense help in editing, designing and publishing the Vision Document. Their contribution has enriched the document.

The Vision Document team comprising Col US Rathore, Ms Simi Somasundran, Sanjay Bhardwaj, Ms Chanchal Bhardwaj, Dr. Vikram Bansal and Dr. Dalip Raina from HVSU has worked against time to draft the document, despite several constraints.

Our efforts would not have fructified without the cooperation from Dr. Raj Singh Antil, Dr. Lalit Sharma, Dr. Jai Prakash Kaushik, Sanjeev Tayal, Amit Vashisth and Ms Shikha Gupta who played a major role in organising a series of ideations with academia and industry, which helped the Vision Document team in understanding the dynamics and nuances of various sectors.

Lastly, we would like to thank everyone who has been associated with the project.



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## CHAPTER - 1

# Haryana: A Journey of Transformation

### Historical Perspective

Haryana, an ancient, sacred and historically significant region, has witnessed the dawn of civilization and the grandeur of Vedic age on the banks of Rivers Saraswati and Drishadwati.

Migrations and invasions crisscrossed its length and breadth; culminating into settlements and bloody battles. Its landscape is dotted with relics of ancient civilizations dating back to prehistoric times (Circa 15000 BCE).

Prehistoric humans lived here in the hills of Morni (Shivalik) and Aravali. Protohistoric man (Circa 5000 BCE) made his settlements at many places including Siswal (Hisar), Mitathal (Bhiwani), Banawali (Fatehabad) and Balu (Kaithal). Harappan civilization (Circa 3000 BCE) blossomed here in Banawali and Rakhigarhi, Agroha, Siswal and Hansi (in Hisar), where urban life as we know it developed its rules and standards.

Around 2500 BCE, genesis of the great Vedic civilization took here, initially in the Saraswati – Drishadwati region which subsequently spread across rest of India. It is commonly believed that the Vedic people, Aryans, drove out the older inhabitants of the region, but latest archaeological researches negate this hypothesis.

In the later Rig Vedic era, many tribes and principalities acquired prominence here. The Kauravas were one of them. It was in this era that great Battle of Mahabharata (Circa 1400 BCE) was fought between Kauravas and Pandvas in Kurukshetra. En passant, the great song celestial, Bhagavad Gita was delivered by Lord Krishna, which to this day remains a seminal doctrine teaching the principles of Karmayoga and dutifulness to people all around the world.

Passing through various vicissitudes, political, material and so forth, and experiencing the travails of war, Haryana had a tumultuous history until the rule of Pushpabuthis i.e. the Vardhanas of Thanesar. Harshwardhan was the greatest ruler of the dynasty. But after him, came the deluge of invaders that destroyed the social, economic and cultural fabric of the region built meticulously over centuries.

Figure 1: Archaeological Sites in Haryana



Courtesy: Dr. KC Yadav

The State has numerous historical battlefields like Thanesar, Taraori, Karnal and Panipat where the destiny of India was written and rewritten many times over. Rulers of Delhi, shy of shaking out from their comfort zone did not contest their enemies till they reached the Gagghar-Yamuna plains. The results proved disastrous, paving way for foreign rule.

The Third Battle of Panipat (1761) paved the way for the advent of a modern power, the British East India Company, which eventually became the ruler. It was a long night of loot, plunder and violence; to get rid of which the oppressed people rose up to throw off their yolk. That is what we call India's First War of Independence.

The first bugle of uprising was blared at Ambala about nine hours before the outbreak at Meerut. The entire populace of the state rose up like one man under their local leaders and destroyed all vestiges of Company rule from their land.

Haryana liberated itself from the East India Company's rule and remained free for four months till the British gained back the control. As retribution, scores of men, women and children were killed by the British. Local chieftains, who came to the aid of British in the Battle of Narnaul were rewarded with the jagirs of Narnaul, Ballabgarh, Bawal and Dadri.

Eighty-nine-year long British Rule ended with India's Independence on 15 August 1947. Haryana remained part of Punjab state till 01 November 1966, when it became an independent state of Indian Union. The state has been politically stable since 1990's.

## Geography

Haryana lies between Latitude 27°39' & 30°35' N and Longitude 74°28' to 77°36' E covering an area of 44,212 sq. km. It is a landlocked state; sharing its borders with Punjab and Himachal Pradesh in the North; Uttar Pradesh in the East; Rajasthan in the South and West. It surrounds Delhi from the North, West and South. Sixty-seven per cent of state's area is included in the National Capital Region (NCR) for integrated planning and development.

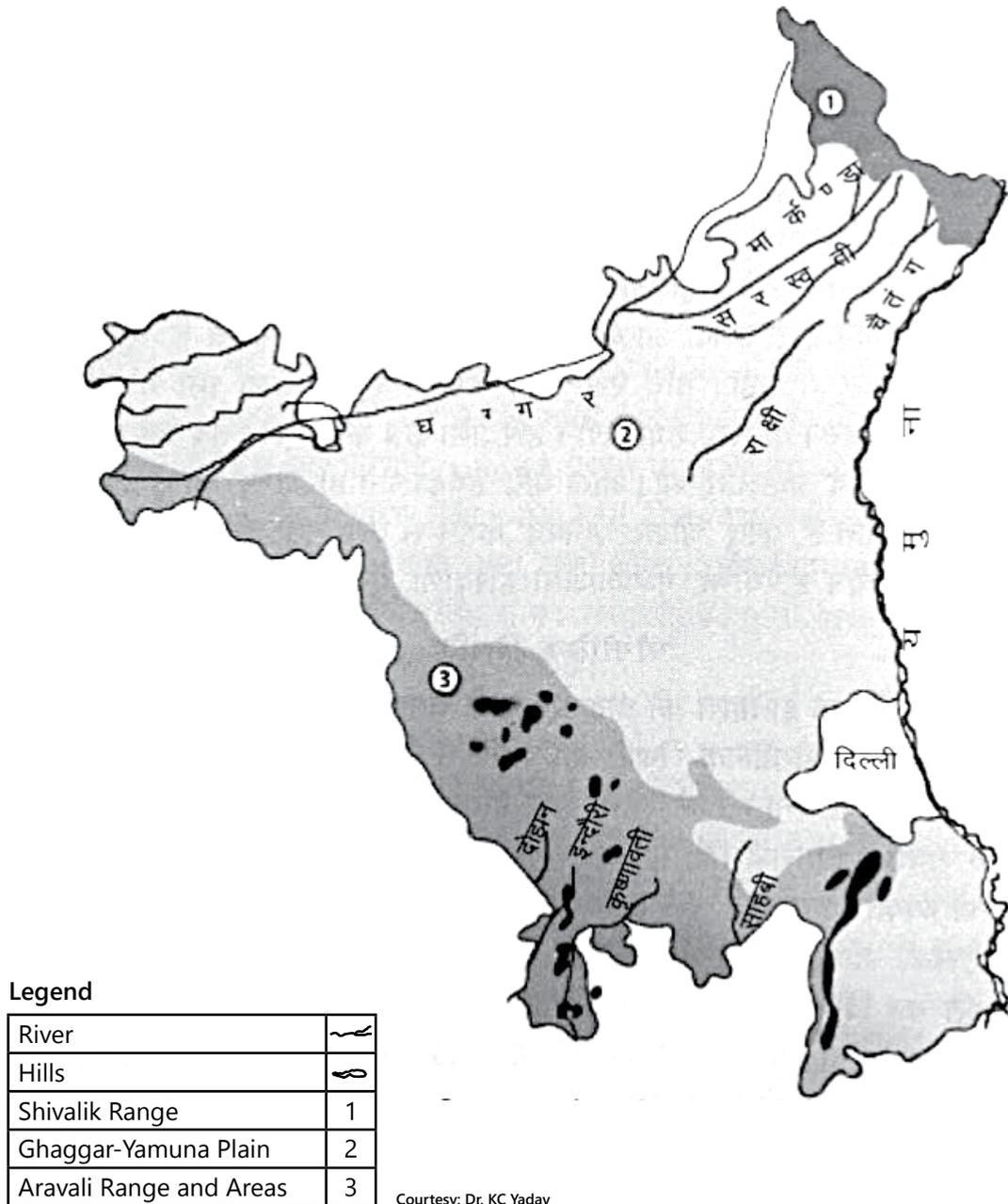
The altitude of Haryana varies between 700 to 3600 ft (200 to 1200 meters) above sea level. It is sub-divided into nine physiographic units and is drained by two major rivers Yamuna and Ghaggar.

The state has four main geographical features:

- ✓ The Yamuna-Ghaggar Plains forming the largest part of the state
- ✓ The Shivalik Hills to the Northeast
- ✓ Semi-desert Sandy Plains to the Southwest
- ✓ The Aravali Ranges in the South

**Rivers:** The ancient Sarasvati and Darishawati rivers are believed to have flown through the state, but these have now disappeared. The old bed of Sarasvati can still be traced at places. River Yamuna demarcates state's Eastern boundary with Uttar Pradesh (230 kms). Other rivers are seasonal. River Ghaggar rises in the outer Himalayas, and enters the state near Pinjore in Panchkula, draining through Ambala and Hissar, it reaches Bikaner in Rajasthan and thereafter disappears in the deserts. Ghaggar's important tributaries include the Chautang and Tangri. River Markanda originates in Nahan (Himachal Pradesh), enters Ambala, flows through Kurukshetra and meets Ghaggar. River Tangri originates from the Morni Hills in the Shivaliks, flows through Ambala and enters Patiala (Punjab). In the South, there are many seasonal rivers such as Sahibi, Krishnawati, Indori and Dohan which drain through Rewari and Mahendragarh districts.

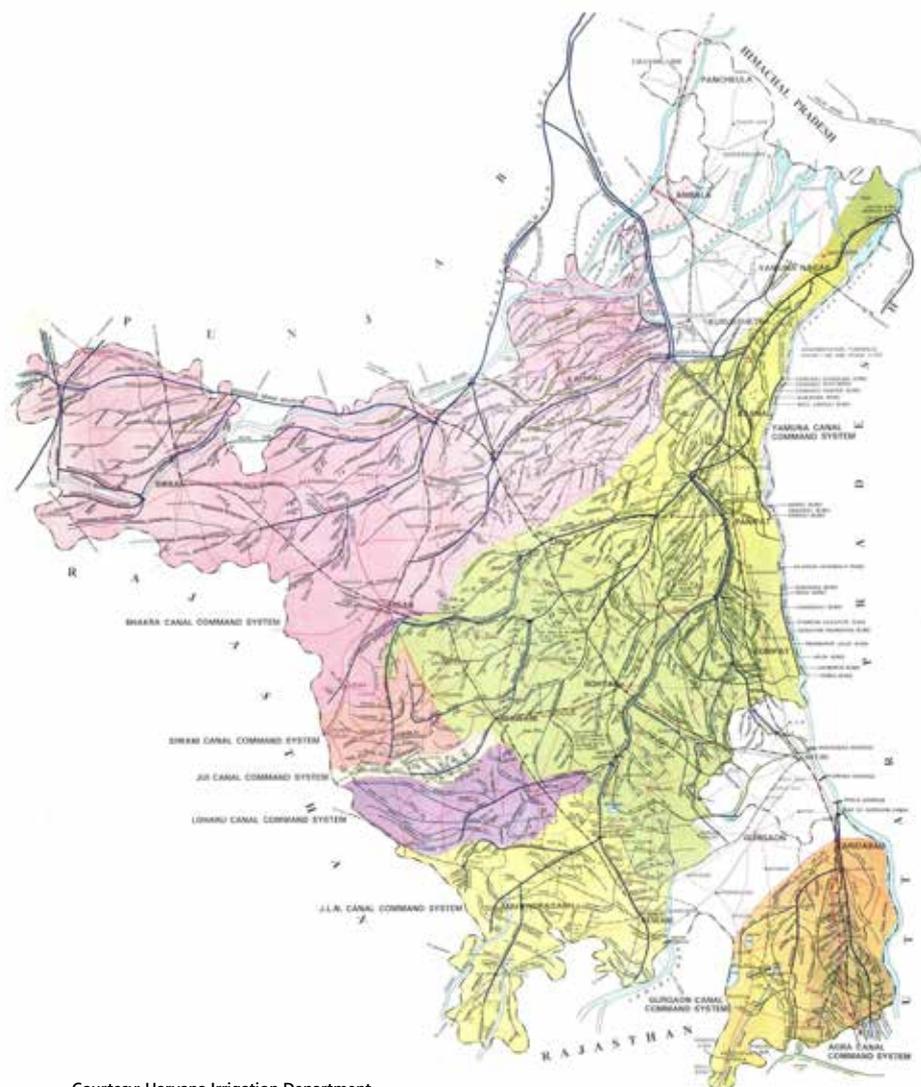
Figure 2: River Map of Haryana



**Canals:** The state is served by two major canal systems – Western Yamuna Canal (WYC) and Bhakra Canal. WYC originates from River Yamuna at Tajewala in Yamunanagar. It is the largest canal system in the state, irrigating about 400,000 hectares. Bhakra canal enters the state at Tohana in Fatehabad and irrigates large tracts of land in Hisar, Fatehabad and Sirsa. Jui Canal is a lift canal, which draws water from WYC and irrigates semi-arid tracts of Bhiwani. Gurugram canal originates from River Yamuna at Okhla barrage in Delhi and runs through Gurugram and Fatehabad districts.

The length of the main canal system is 1,500 Km, where as their distributaries and minors run for another 12,300 Km.

Figure 3: Irrigation & Canal System in Haryana



Courtesy: Haryana Irrigation Department

**Precipitation:** The Southwestern monsoon brings rains to the state. Winter rains are sporadic. The average annual rainfall varies from as little as 313 mm in areas bordering Rajasthan in Southwestern parts to 862 mm in the Northeastern parts near Shivalik Hills bordering Himachal Pradesh. In more than half of the state the average rainfall is less than 500 mm. Precipitation progressively reduces towards the South and Southwest. Drought conditions are common in Mahendragarh, Rewari, Bhiwani, Hissar and Sirsa districts.

The mean relative humidity on an average varies from 30 per cent in April to 90 per cent in August, the annual average being 60 per cent.

**Temperature:** The state experiences extreme winter and summer. The minimum and maximum temperatures recorded in the state are 0.5 degree Celsius, Narnaul (January 2017) and 47.8 degree Celsius, Hisar (May 2016) respectively. Winter frost and fog is quite common during the months of December and January.

**Sunshine:** The state receives 320 clear sunny days in a year, it is a high potential location for solar energy generation. Feasibility of establishing solar power parks on the canal banks should be examined.

**Wind:** Minimum and maximum wind speeds recorded are 0.4 and 5.3 km per hour respectively, the mean wind speed clocking 2.9 km per hour. The state has a potential to harness wind energy too.

**Water:** Ground water at several places in the Southern and Western parts is unsuitable for drinking either due to one or more contaminants exceeding the maximum permissible limits. Due to over exploitation of ground water in the past for agriculture, industry and urban consumption, the water table in many areas has receded.

**Crops:** Haryana is an agrarian state with Rabi, Kharif and Zaid crops being sown in the State. Main crops are wheat, rice, bajra, mustard, sugarcane and cotton while farmers also grow vegetables, flowers, mushroom and fruits in good quantity.

**Symbols of Identity:** The State tree is Peepal (*Ficus religiosa*), while Lotus (*Nelumbo nucifera*) is the State flower. The Blackbuck (*Antelope cervicapra*) is the State animal, while the Black Francolin (*Francolinus francolinus*) is the State bird.

## Governance

Haryana is divided into 22 districts with State capital at Chandigarh, which is also a joint capital of Punjab State and a Union Territory. In total, there are 6 divisions, 71 sub-divisions, 93 tahsils, 49 sub-tahsils and 140 Blocks containing 154 towns and 6,841 villages in Haryana.

The state has 10 Parliamentary constituencies and 90 Legislative Assembly constituencies. The Government operates through 53 departments and 56 governmental agencies i.e. public service organisations, statutory corporations, commissions, educational and research institutes, and cooperative societies.

Figure 4: District Map of Haryana



## Human Development Index (HDI)

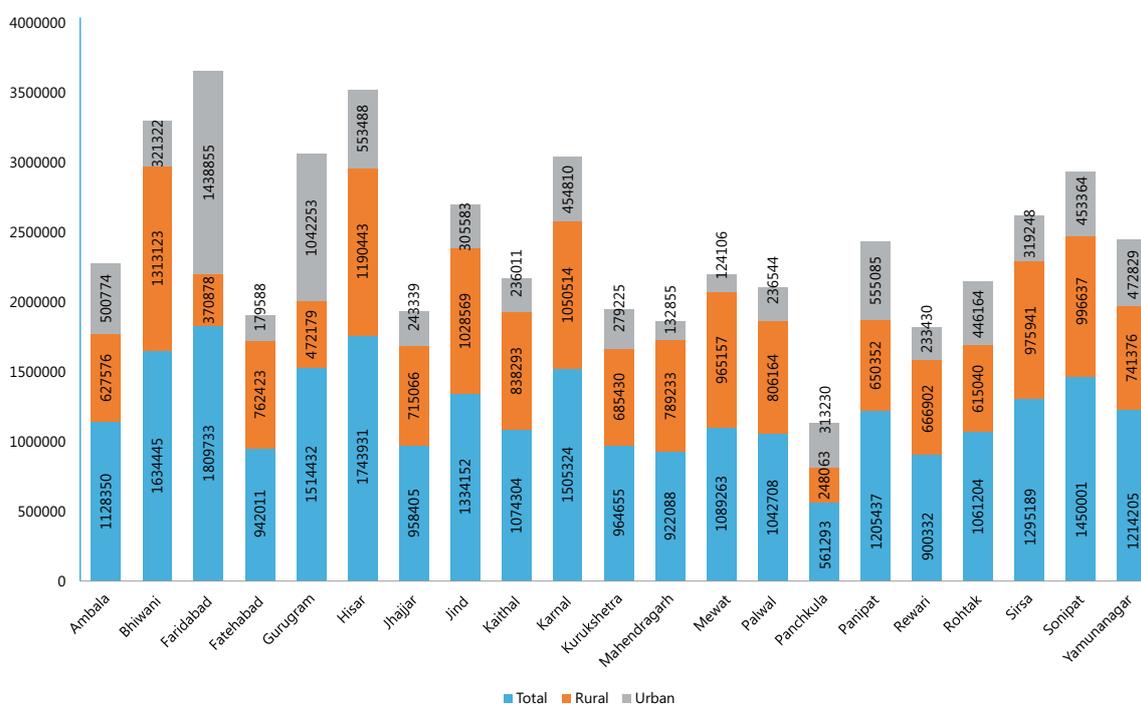
### Population

With just 1.34 per cent of India's geographical area, Haryana is home to 2.09 per cent of the country's population. The population of state has increased from 21.14 million in 2001 to 25.35 million in 2011, with a decadal growth rate of 19.90 per cent.

As per census 2011, population of state was 25.35 million comprising of 53.23 per cent males and 46.77 per cent females. 65.12 per cent of total population lived in rural areas while 34.88 per cent resided in urban areas. The overall population density of the state was 573 sq.km. By the end of 2017, the estimated population the state would be 27.96 million.

The district wise population presented in Figure 5 depicts rural and urban population data as per 2011 census for 21 districts. (Charkhi Dadri was carved out of Bhiwani as 22nd district of the state in 2016). More than 70 per cent population in the districts of Mewat, Mahendragarh, Fatehabad, Bhiwani, Kaithal, Palwal, Jind, Sirsa, Jhajjar, Rewari and Kurukshetra was living in the villages. While 40 per cent urban population was reported from the districts of Faridabad (79.51 per cent), Gurugram (69.82 per cent), Panchkula (55.81 per cent), Panipat, Ambala and Rohtak.

Figure 5: District wise Population of Haryana (Census 2011)



## Urbanisation

It has been estimated that by 2022 there will be as many as nine major urban centers. Such a pace of urbanisation is alarming for the overall development of the state. Districts of Faridabad, Gurugram, Jhajjar, Panipat, Rewari, Rohtak and Sonipat will have more urban population than rural. Their combined population would be equal to the state's population that was in 2011. This will need concerted efforts towards land use, urban planning, infrastructure development, housing, transportation, traffic, energy, water, sanitation, pollution control, law & order, surveillance & monitoring and other civic amenities.

**Table 1: Urbanisation Trend of Haryana**

Districts	2011			2022			2030		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Faridabad	370878	1438855	1809733	366233	2438000	2804233	450008	3886407	4336415
Gurugram	472179	1042253	1514432	466266	2589917	3056183	510395	5207290	5717685
Jhajjar	715066	243339	958405	706111	687964	1394075	756143	1492000	2248143
Mewat	965157	124106	1089263	953070	179385	1132455	1181244	287995	1469239
Palwal	806164	236544	1042708	796068	448502	1244570	972308	818530	1790838
Panipat	650352	555085	1205437	642207	993991	1636198	725403	1470552	2195955
Rewari	666902	233430	900332	658550	1145911	1804461	734296	2225000	2959296
Rohtak	615040	446164	1061204	607338	860896	1468234	649227	1488905	2138132
Sonipat	996637	453364	1450001	984157	1303434	2287591	1065143	2297948	3363091

Source: Government of Haryana Vision 2030 (2017)

## Migrants

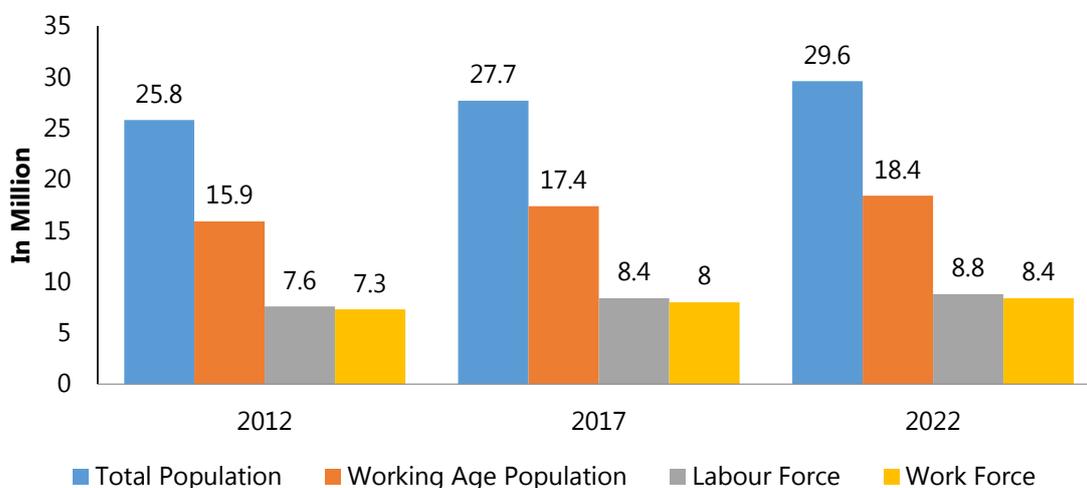
With the Indian economy growing consistently, the urban areas of Gurugram, Manesar, Faridabad, Palwal, Rohtak, Sonipat, Panipat, Karnal and Rewari have emerged as industrial hubs that attract large migrant workforce from both within the state and outside. Haryana ranks 2nd in the country (15 per cent) after Delhi in terms of percentage of in-migrants to the total population. Gurugram, Faridabad and Palwal have a large number of 'white collar' migrant workforce due to massive presence of IT, services and manufacturing firms.

## Working Age Population

Work force of any region implies the total number of people available for or engaged in some kind of work, whereas labour force is the sum total of all people who are able to work. It is estimated that by 2022, Haryana may experience significant rise in its working-age population, presenting an opportunity for the state to take advantage of this demographic dividend. According to National Skill Development Corporation (NSDC), the workforce in Haryana will reach 8.0 million by 2017 which will further increase to 8.4 million by 2022.

Hence, to sustain this incremental increase in worker participation rates, there is an urgent need to create additional jobs. To carve out additional employment opportunities over the next decade, the labour force must be equipped with specific skill sets suited to the needs of the various industries.

Figure 6: Demographic Transformation in Haryana from 2012 to 2022



### Unemployment Rate

In 2015-16, the unemployment rate of Haryana at 4.7 per cent was reported to be less than the national unemployment rate of 5.0 per cent. However, urban Haryana faces more unemployment (5.7 per cent) in comparison to pan-India urban unemployment rate (4.9 per cent). It is especially high for the urban women (18.6 per cent), indicating that the industrial and Gross State Domestic Product (GSDP) growth did not spur inclusive employment growth.

### District Wise HDI

The India Human Development Report, 2011 points out that Haryana has improved in several areas of its HDI. Since large part of Haryana falls within the NCR, some districts have been able to leverage this advantage to become more developed in comparison to other parts of the state. The district of Gurugram tops the HDI at 0.889, followed by Panchkula at 0.777 and Faridabad at 0.696. The districts with mid-range HDI scores are Sirsa at 0.508, Mahendragarh at 0.497 and Rohtak at 0.483. The districts with low HDI scores are Bhiwani at 0.339, Mewat at 0.276 and Palwal at 0.271.

### Literacy Rate

Haryana ranks 22nd in literacy rate (76.64 per cent) at all India level with male & female literacy rates recorded as 85.38 per cent and 66.77 per cent respectively. The State Government has accorded high priority to education sector and is constantly making sincere efforts to make "Education for All" a reality.

### Birth and Death Rate

As per Economic Survey of Haryana 2016-17, the birth rate in Haryana stood at 21.2 per thousand in 2014 as compared to the national average of 21.0 per thousand. The death rate stood at 6.1 per thousand in 2014 as compared to 6.7 per thousand for the nation. Further, the sex ratio which once stood at 879 female per thousand male (Census 2011) has been improving and was reported to be 926 in July 2017. This improvement is being attributed to the 'Beti Bachao - Beti Padhao' program launched by Prime Minister Shri Narendra Modi in January 2015 from Panipat and diligent efforts of the Government of Haryana.

## Mortality Rate

Between 2010-11 and 2015-16, the proportion of underweight children below 5 years fell by almost 10 per cent and under-5 mortality rate (U5MR) declined from 55 per 1,000 live births in 2010 to 43 in 2015. Maternal mortality rate in Haryana has declined by 59 points from 186 maternal deaths per 100,000 live births in 2004-06 to 127 maternal deaths per 100,000 live births in 2011-13.

## Economy

As per the 2015-16 QE, Haryana contributed close to 3.5 per cent to the National Gross Domestic Product (GDP) at constant (2011-12) prices. With the fast-paced economic growth of India, Haryana too has witnessed healthy growth in its GSDP averaging 8.6 per cent per annum since 2004-05, making it a significant contributor to the national growth story. During the year 1966-67, the per capita income of the state at current prices was only INR 608. Since then, the per capita income has increased manyfold and in 2016-17 (A), Haryana reported per capita income of INR 180,174 as compared to the national average of INR 103,007 at current prices.



## Education

Educational infrastructure in the state from primary - secondary - senior secondary and higher education as well as technical and vocational education is good and evenly spread across the state. However, there is a concern regarding Gross Enrolment Ratio (GER) at successive levels. The government has been taking proactive steps to improve the GER. Haryana had taken a lead by introducing vocational education program under the National Skill Qualification Framework (NSQF) at school level in 2012 under the aegis of Rashtriya Madhyamik Shiksha Abhiyan (RMSA).

The state has developed the 'Rajiv Gandhi Education City' near Rai-Kundli over an area of about 2000 acres (Phase-I) in close proximity to Delhi. Some of the most prominent national institutes like Indian Institute of Technology (IIT), Indian Institute of Management (IIM), National Institute of Fashion Technology (NIFT), National Institute of Design (NID), National Dairy Research Institute (NDRI), National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Footwear Design and Development Institute (FDDI) among others are operational/being established in the state.



## Agriculture

Haryana is the food bowl of India; with high productivity, it enjoys a surplus in foodgrain production and contributes about 15 per cent of the central pool of foodgrains. In 2015-16, the farmers produced 3,761 kg foodgrain per hectare as compared to the national foodgrain productivity of 2,070 kg per hectare. Since 1970-71, the state has witnessed an increase of 242 per cent in foodgrain productivity as compared to a 40 per cent increase nationally. Haryana has a higher freshwater fish yield (6,800 kg per hectare per annum) than India as a whole (2,900 kg per hectare per annum). Similar patterns are manifested in the availability of milk (877 g of milk per capita per day) and eggs (179 eggs per capita per annum) as compared to India (309 g of milk per capita per day and 64 eggs per capita per annum).

## Infrastructure

There are plenty of investment opportunities available across the world for a global investor, but only a handful of investment destinations exist in India which are well-poised to register an exponential growth. Haryana is such destination in every sense.

- ✓ **Favourable Policy:** Progressive policies adopted by the present government have created of viable business ecosystem in the state resulting in establishment of various industries in last two years. Government of Haryana has launched its new industrial policy - Enterprises Promotion Policy (EPP) - 2015, which aims at attracting an investment of over INR 1 lakh crore, and creating 4 lakh jobs. The incentive provided to investors includes Value Added Tax (VAT) refund, stamp duty refund, interest subvention, power tariff rebate and more.



- ✓ **Industrial Hub:** Haryana is known for its vibrant agrarian economy and a strong industrial base. It is amongst the front runners of industrial development in India that is showcased with its leading position in production of a number of industrial/ consumer goods.
  - Ranked 6th in Ease of Doing Business Ranking - 2016.
  - Fourth rank in Infrastructure Index developed by Centre for Monitoring Indian Economy (CMIE) 2012.
  - More than 100 Fortune-500 companies are based in the state and nearly 28 per cent of the CEOs in India live in Gurugram.
  - Many a large Indian and Multi-national Corporations (MNCs) have set up their offices and operations in Haryana because of availability of good infrastructure and the state's proximity to Delhi.
- ✓ **Large Industries and MSME Units:** The state has established 384 large and medium enterprises which have catalysed investments of INR 124,860 million and generated employment for 78,578 persons from October, 2014 till 30 May, 2017. During the same period, 17,135 Micro, Small & Medium Enterprises (MSME) units with total investment of INR 94,405 million have been established in the state employing 152,914 persons.
- ✓ **Rural Infrastructure:** 'Swarna Jayanti Mahagram Yojana' has been launched with an aim to provide urban facilities in villages with population of 10,000 or more in a planned manner. This scheme will be completed within five years from 2016-17 to 2020-21, at an estimated cost of INR 14,610 million. Further under Bharat Net program, Wi-Fi facilities have so far been made available in 100 villages in the state.
- ✓ **Mega Investment Summits:** To boost investments in the state, Government of Haryana had organised the first ever mega investment summit – Happening Haryana Global Investors' Summit in 2016. Till date, 409 Memorandum of Understanding (MoU) have been signed by the Government with various entities willing to invest INR 6.20 lakh crore in the state. The proposed investment is expected to create employment for 0.74 million people. Further, the Government organized 'Prawasi Haryana Diwas - 2017' to invite people of Haryananvi origin to invest in the state. The event witnessed signing of 24 MoUs with potential investment to the tune INR 2,043 million aiming to create employment for 45,127 people.
- ✓ **Medical Hub:** Haryana has emerged as a Medical Tourism Hub with world class healthcare infrastructure including leading healthcare brands all across the state. As per the state budget 2016-17 and 2017-18, the state government is planning to establish new institutes and medical colleges in the state including a Health University in Kutail district, Karnal, a new AIIMS (All India Institute of Medical Sciences) in Manethi village, a National Cardiovascular Institute at Badhsa village, as well as medical colleges in each district. The state government has also set up an AYUSH University and an AYUSH cell in every PHC of the state.

- ✓ **Mega Infrastructure Projects:** Planned infrastructure projects would invigorate the economy of Haryana by capitalizing on its strategic geographical location. Major projects include:
  - o Kundali – Manesar – Palwal (KMP) Global Economic Corridor planned along the alignment of Kundali – Manesar – Palwal expressway.
  - o Global City at Gurugram – A joint venture between Delhi-Mumbai Industrial Corridor Development Corporation (DMICDC) and Government of Haryana to build one of its kind Global Greenfield smart city in India.
  - o Integrated Multi-modal Logistics Hub is being planned in Southern Haryana over 1000 acres of land aiming to reduce logistics time.
  - o A 108 Km alignment for Mass Rapid Transit System (MRTS) connecting Gurugram-Manesar-Bawal is proposed to be developed with funding support from Japan.
  - o With availability of 320 of 365 high solar radiation days, Haryana is aiming to leverage its potential to generate 1.3 GW of clean energy by 2022 through a Saur Urja Nivesh (SUN) Solar Park.
  - o Aviation Hub coming up at Hisar will be the largest Maintenance Hub in North India and is expected to be fully operational by 2022.
  - o Model Economic Township to be developed by Reliance Industries in the district of Jhajjar and adjoining areas of Gurugram.
- ✓ **Industrial Cluster:** The defining success of Haryana lies in the strides it has taken in developing manufacturing and tertiary activities by attracting large infrastructural investments in the state. Sector wise industrial clusters across the state are mentioned in Table 2:

**Table 2: Industrial Clusters in Haryana**

District	Industrial Cluster
Gurugram	Automobile, auto components, IT & ITeS, textile, apparel, engineering, electrical, electronics, leather & footwear, rubber, plastic, chemicals, pharmaceuticals, printing and packaging, construction, defence production
Rewari	Automobile, auto components, textile, chemicals, bi-cycles, construction
Hisar	Iron & steel
Fatehabad	Agro & food, iron & steel
Kurukshetra	Agro & food, paper
Yamunanagar	Plywood, steel utensils, paper
Sonipat	Agro & food, auto components, bi-cycles
Karnal	Agriculture implements, agro & food, dairy products, footwear, print & packaging, pharmaceutical
Faridabad	Iron & steel, textile, apparel, automobile, auto components, earthmovers, cranes, engineering, footwear, furniture, construction, agro & food, packaging
Bhiwani	Agro & food, textile, auto components
Sirsa	Agro & food, hosiery and woollen garments
Jind	Agro & food, iron & steel, cotton
Ambala	Scientific instruments
Panipat	Textile, agro & food, petrochemicals
Jhajjar	Cement, footwear, construction
Palwal	Automobile, auto components, engineering

## Connectivity



### AIR

- ✓ International airport at Chandigarh and 5 civil airstrips at Pinjore, Karnal, Hissar, Bhiwani and Narnaul.
- ✓ Well connected with IGI Airport, New Delhi.
- ✓ Upcoming international airport at Jewar, Greater Noida which will enhance connectivity to the region.
- ✓ An international cargo airport and aircraft maintenance hub is proposed in Rohtak.
- ✓ Three flying training centers of Haryana Institute of Civil Aviation are established at Hisar, Karnal and Pinjore.



### ROAD

- ✓ Haryana's physical infrastructure is rated amongst the best, with easy access to the NCR. This reflects in a total road length of 42,638 Km; 2,622 Km of National Highways and 1,801 Km of State Highways.
- ✓ Haryana is among the states having almost cent per cent connectivity to rural areas with metalled roads.
- ✓ As per Budget 2016-17, the state government has launched a scheme "Expenditure on Road Safety" for enhancing the safety on the roads.
- ✓ 135.6 Km long KMP Expressway is being constructed along Western Delhi periphery, which would enhance connectivity and give a boost to the manufacturing sector.



### RAIL

- ✓ Haryana has a 1,630 Km long rail route with railway workshop at Jagadhari.
- ✓ Railways has also signed a MoU with Government of Haryana for plantation of saplings on vacant land on both sides of railway lines and further plans to set up a new joint venture for upgradation of railway stations and strengthening infrastructure
- ✓ Government of India has announced establishing of the Multi-modal High Axle Load Western Dedicated Freight Corridor (DFC) between Delhi and Mumbai, 177 Km of which shall fall in Haryana.

Source: IBEF, June 2017 and Economic Survey of Haryana 2016-17

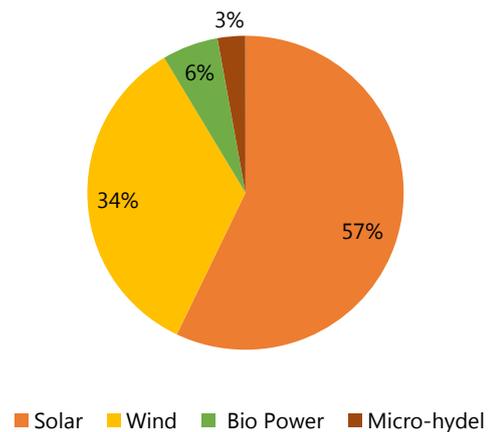


## Power

In 2016-17, India's total installed power generation capacity was 310 GW. The power generation profile included 69.4 per cent thermal, 14.8 per cent renewable, 13.9 per cent hydel and 1.9 per cent nuclear.

By 2022, India is seeking to achieve renewable power capacity of 175 GW. The energy basket would include 100 GW from solar, 60 GW from wind, 10 GW from bio power and 5 GW from micro hydel projects. Country's solar power installation is expected to increase four fold in 2017.

Figure 7: Renewable Energy Basket of India (2022)

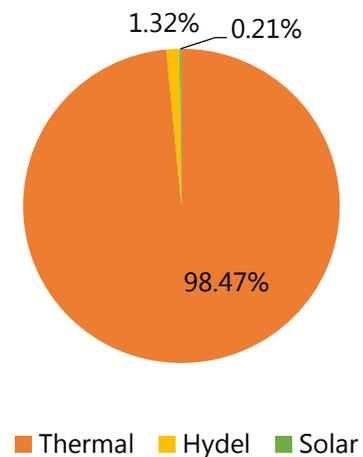


## Domestic Production

Haryana has an installed power generation capacity of 4730.4 MW of which thermal power accounts for 4658 MW (98.46 per cent) coming from thermal power stations at Yamunanagar, Panipat, Hisar and Jhajjar.

Hydel power contributes 62.4 MW (1.31 per cent), which is generated at the hydel project located on WYC in Yamunanagar. Miniscule contribution of 10 MW is received from solar power which comes from the solar power plant at Panipat. Average power demand of the state is 9000 MW as against the installed capacity of 11,000 MW per day from various sources.

Figure 8: Energy Basket of Haryana – July 2017



With government's efforts to provide uninterrupted power supply across the state, Haryana is one amongst the few to achieve 100 per cent rural electrification. Rural households and farms receive power for about 13 and 10 hours a day respectively. Industries and cities receive power supply for 23 hours per day.

### Tele Density

Haryana has overall tele-density of 84.2 per cent with total 24,773,957 wireless subscribers as of February 2017 and 8,580,000 internet subscribers in the state as of December 2016.

### Environment and Pollution

With rapid urbanisation and industrialisation in the past decade, the state is faced with many environmental issues and to tackle these challenges the State Government has taken few proactive steps, like launch of 'Harit Haryana Vishal Haryana' plantation campaign to boost green cover & make the state pollution free.

Haryana is the first state in the country which is free from kerosene as every household in the state has been provided with LPG connection.

### Forest & Wildlife

Almost 80 per cent of Haryana's land is under cultivation, while 16 per cent of land is under other uses like habitations and infrastructure. Only 3.95 per cent of its geographical area is under forest cover, spread over the Shivalik Hills in the northeast to the Aravali Hills in the south and over Yamuna-Ghaggar plains in the east to semi-desert sandy plains in the southwest.

Amongst the districts, Panchkula has maximum forest cover (42.54 per cent) followed by Yamunanagar (12.27 per cent), Faridabad (9.45 per cent), Mewat (7.07 per cent) and Gurugram (5.24 per cent). Agro-forestry and social forestry schemes have helped the state in improving its greenery and tree cover in the state which stands at 2.90 per cent. Poplar and eucalyptus tree plantations support the plywood industry in and around Yamunanagar.

Subtropical dry deciduous forests are found in the Shivalik Hills. Subtropical thorny forests are found in the Aravalli Hills in the Southern parts of the state. Forests of Aravali Hills are infested with the invasive *Prosopis juliflora* (Vilayati Kikar), which is turning the forests into a vast monoculture. To bring back the diversity of the forests, Vilayati Kikar has to be replaced by indigenous tree species in a planned and sustained manner, which can also generate jobs opportunities for the rural population.

The wildlife in the state is diverse. There are two national parks, eight wildlife sanctuaries and two conservation reserves in the state. The forest department also runs six breeding centres for endangered wildlife species. Notable amongst these are Vulture Conservation and Breeding Centre, Pinjore, Crocodile Breeding Centre, Kurukshetra and Pheasant Breeding Centre, Morni.

There is immense potential for Eco-tourism development in the Aravalis. The ruggedness of the Aravalis has its own charm and appeal. Youth can be trained to become professional guides, photographers and tour operators.

## Initiatives Since 2014

### Policy Initiatives

In past three years, Government of Haryana has launched various new policies such as:

- ✓ Enterprises Promotion Policy - 2015.
- ✓ Haryana New Integrated Licensing Policy (NILP) - 2015.
- ✓ Haryana Excise Policy (2015-16).
- ✓ Haryana Sports and Physical Fitness Policy - 2015.
- ✓ Haryana Solar Power Policy - 2014.
- ✓ Apart from these various other policies are in the draft stage like Haryana Textile Policy - 2017, Haryana IT & ESDM Policy - 2017, Haryana State Agriculture Policy and more.

### Infrastructure

- ✓ **State Mini Cluster Development Scheme:** Creating Common Facility Centre (CFC) for a group of at least 10 existing units with funding pattern of 90 per cent State contribution and 10 per cent SPV for project cost up to INR 2 crore.
- ✓ **Incubation Centre for Food Sector:** Financial assistance for creating incubation centre to the extent of INR 70 lakh to be provided to NIFTEM.
- ✓ **Incubation Centre at Universities:** Financial assistance of INR 30 lakh per university would be provided and two universities to be supported each year and supplemented with assistance from Government of India (GOI).
- ✓ **Industrial Infrastructure Development Scheme (IIDS):** IIDS will be introduced with a budget of INR 100 crore per annum for providing adequate road connectivity, water and independent power feeder services to the industrial areas.
- ✓ **Special Incentive Package for ESDM Industries:** The state shall supplement the Government of India scheme of assistance for Electronics Manufacturing Clusters by contributing 50 per cent of the project cost maximum to INR 25 crore.
- ✓ Construction of KMP Expressway restarted.
- ✓ Eight-lane Hero Honda flyover and Keystone Knowledge Park (KKP) in Gurugram.
- ✓ Widening of 1,580 Km roads in rural areas.
- ✓ Country's first CNG based DEMU train started on Rewari - Rohtak rail service.

### Industries

- ✓ Enterprises Promotion Board constituted under EPP – 2015.
- ✓ Fast track clearance facility for uninterrupted growth of investments under Ease of Doing Business scheme.
- ✓ Change of Land Use (CLU) and other approvals within 30 days of applying, while no CLU & NOC required for 31 industrial blocks and provision of automatic CLU in 75 industrial blocks.
- ✓ Zero Defect: Zero Effect Manufacturing system introduced for encouraging healthy competition amongst the MSMEs.
- ✓ Single Window Clearance: Single trading license and market fee deposit.
- ✓ Apna Bill: Apna Vikas Scheme introduced to encourage traders.

## E-Governance

- ✓ A total of 5620 villages put on National Optic Fibre Network.
- ✓ 246 e-Services available to citizens while 195 services notified under Right to Service Act.
- ✓ e-Bhoomi launched for sale of land directly to Government.
- ✓ e-Services for traders available at [www.haryanatax.gov.in](http://www.haryanatax.gov.in) such as e-Registration, e-Payment, e-Filing, e-Tendering, e-Refund etc.
- ✓ Integrated Financial Management System (IFMS): Online communication, release, allocation, revision, re-appropriation of budget at finance department has been implemented. The budget preparation now takes only two months as compared to eight months earlier, an example of responsive and responsible governance.
- ✓ e-District Haryana (e-Disha): An IT-driven electronic interface between the government and the citizens that facilitates the general public to receive effective and timely services. The state government has approved the setting up of 20 District Level eDisha Centres (DLxDC), one each at district headquarters.
- ✓ CM Window Haryana: The Public Grievances Redressal and Monitoring System launched to show transparency in governance and ensure immediate redressal of people's grievances. This system has been designed to meet the twin objectives of minimum administration and maximum governance.
- ✓ E-Tourism Project: Haryana Tourism Corporation is a pioneer in highway tourism and operates 42 tourist complexes. A Web portal as per the W3C guidelines integrated with Online Rooms Booking System and Online e-Ticketing for Surajkund International Crafts Mela has been developed to exploit the full potential of tourism in Haryana.
- ✓ Haryana has won the prestigious SKOCH awards and Order-of-Merit in four categories under e-initiatives.

## Tourism

- ✓ Saraswati Heritage Development Board is being constituted for research, restoration and development of tourism around the mythical Saraswati River.
- ✓ 'Haryana Travel Guide' released to promote tourism in the state.
- ✓ INR 50.40 crore scheme to develop Narnaul-Mahendragarh as a mega tourism circuit sent to Central Government for approval.

## Power

- ✓ Mhara Gaon - Jagmag Gaon Yojana – 24 hours power supply to 507 villages.
- ✓ 92 new sub-stations of varying capacities set up and capacity of 325 sub-stations increased.
- ✓ 5,665 Km long new lines laid and 55,936 new transformers installed.
- ✓ 800 MW Super Critical Thermal Power Plant will be set up in Yamunanagar as an extension project.
- ✓ Under Deendayal Upadhyay Jyoti Yojana of GOI, INR 316 crore sanctioned to strengthen the power distribution system in rural areas.
- ✓ Under Renewable Energy Power Obligation programme of GOI, 25 MW power has been purchased and power tenders of 150 MW are being released.
- ✓ Haryana has joined scheme UDAY, launched by Central government in order to reduce AT&C losses and improving power distribution in states.

## Rural Development

- ✓ Under Swachh Haryana-Swachh Bharat campaign, targets have been fixed to be achieved by October 2, 2019 to construct toilets in every household of villages.
- ✓ e-Panchayat Samvad service started in Rohtak.
- ✓ A new pilot scheme named 'Garvit-Gramin Vikas Ke Liye Tarun' has been launched in Jhajjar to drive positive socio-economic changes in rural areas.
- ✓ Under 'Saansad Adarsh Gram Yojana' 15 Members of Parliament of Haryana have adopted villages.
- ✓ 'Vidhayak Adarsh Gram Yojana' and 'Swaprerit Adarsh Gram Yojana' are being initiated for the all-round development of villages.

## Healthcare

- ✓ Aadhar linked enrolment & birth registration of infants.
- ✓ International level Institute of Yoga and Naturopathy in Panchkula.
- ✓ Process to set up Yogshalas in over 600 villages started.
- ✓ Additionally, Yogshalas to be set up in all residential areas of Haryana while Baba Ramdev has been made the Brand Ambassador for promoting Yoga.
- ✓ As many as 427 essential medicines are being provided free of cost in government hospitals of the state.
- ✓ "Beti Bachao ASHA Protsahan Yojana" has been launched for protection of girls and getting them their due in the society.

## Medical Education

- ✓ Setting up of Medical University in Karnal under process, while a medical college to be set up in each district.
- ✓ National Cancer Institute in Badhsa, Jhajjar under construction.
- ✓ Dialysis Machine & Central Research Lab set up at Khanpur Kalan.
- ✓ Mobile dispensaries sanctioned for Panchkula, Ambala and Sonapat.
- ✓ AYUSH University has been set up in Kurukshetra.

## Women and Child Development

- ✓ National programme 'Beti Bachao-Beti Padhao' being implemented in all districts of the state with special focus on 12 districts having imbalanced sex ratio.
- ✓ 'Sukanya Samridhi Khata Yojana' of Central Government to encourage parents to invest in the names of their daughters by offering high interest and tax rebates.
- ✓ 'Aapki Beti-Hamari Beti' scheme started under which birth of first girl child in Scheduled Caste and Below Poverty Line families and second girl child in other poor families (born on or after January 22, 2015) would be covered and INR 21,000 would be deposited in the bank account of the girl child.
- ✓ 'Haryana Kanya Kosh' has been set up for welfare and development of girls and women and to provide them with healthy environment and equal opportunities for development. Any individual or organization can also donate voluntarily to this fund.
- ✓ Gender ratio increased to 926 girls to every 1,000 boys (2017).

- ✓ Mahila Bus Sewa for girl students on 123 routes.
- ✓ Women Police Station set up at every district headquarters and 8 more at sub-division level are in the pipeline.
- ✓ Tuition fee waiver for girl students in government and government-aided colleges upto graduation level.

### Quality Education

- ✓ 'Learner Enhancement Programme' in launched 3222 primary schools.
- ✓ Semester system discontinued for classes 9th to 12th.
- ✓ Emphasis on Vocational Education in Schools to leverage 'Skill India Programme'.
- ✓ Eight new government colleges started while 28 new government colleges are under construction.

### Agriculture and Allied Related Initiatives

- ✓ e-NAM: 54 grain markets of Haryana connected with National Agriculture Market portal, Arrival records computerized in all grain markets of Haryana.
- ✓ Prizes worth INR 12 crore announced for Krishak Uphaar Yojana.
- ✓ Market fee on purchase of cotton reduced to 0.8 per cent.
- ✓ e-Mandi, a facility to farmers for selling their produce online launched.
- ✓ Horticulture Vision 2030 launched to double the horticulture area and triple the production by 2030.
- ✓ Power on concessional rates to farmers.
- ✓ INR 143 crore sanctioned to assure that water reaches up till tail ends of the State.
- ✓ Eighty-five per cent subsidy on installation of micro-irrigation systems.
- ✓ Five per cent VAT exemption on organic fertilizer
- ✓ Two Pesticide Residue Testing Laboratories being set up in Karnal and Sirsa.
- ✓ A Horticulture University is being established to encourage farming of flowers, fruits and vegetables in the state.
- ✓ 'Haryana Fresh' brand has been launched for agriculture and allied sector products.
- ✓ Gau Sanrakshan and Gau Samavardhan Act constituted and 'Rashtriya Gokul Mission' launched for preservation and promotion of indigenous breeds of cows in Haryana. Fifty per cent subsidy is being provided to the farmers for setting up mini dairy units of indigenous breed of cows and 25 per cent subsidy in other dairy schemes.
- ✓ Haryana has become the first state in the country to implement online Public Distribution System. There are about 14,000 fair price shops in the state and the consumers are getting ration through biometric machines installed at these shops.

### Farmer Welfare

- ✓ Provision under Pradhan Mantri Fasal Bima Yojna – INR 300 crore.
- ✓ Compensation for crops destroyed due to natural calamities – upto INR 12,000 per acre. A total of INR 2403.55 crore has been disbursed as compensation to farmers in last 1000 days.
- ✓ Zero per cent Interest on timely repayment of Cooperative Crop Loans.

- ✓ For the first time in the state's history, moong daal procurement was done on a large scale while the procurement of sunflower increased by 50 per cent.

### Cooperative Sugar Mills

- ✓ Shahabad Cooperative Sugar Mill stood first in technical skill at national level.
- ✓ INR 646 crore paid as dues of sugarcane growers while at INR 320 per quintal highest sugarcane price set in the country by Haryana.
- ✓ Intensive sugarcane development scheme for all 10 cooperative Sugar mills.
- ✓ e-Procurement launched for Sugarfed and Cooperative Sugar Mills.
- ✓ Financial assistance of INR 100 crore per annum to Haryana State Cooperative Agriculture and Rural Development Bank for the years 2015-16 and 2016-17.

### Social Security

- ✓ All kinds of social pensions increased to INR 1,600.
- ✓ Under Pradhan Mantri Awas Yojna (PMAY), Mission Housing for All -2022, offering 6.5 per cent interest rebate on residential loan for urban poor launched.
- ✓ Haryana Vimukt Ghumantu Jaati Development Board constituted.
- ✓ Under Mukhyamantri Vivah Shagun Yojana, financial assistance provided to SC/Vimukt/ Tapriwas/BPL families and widows of all categories for marriage of daughter.
- ✓ Ex-gratia amount for dependents of war martyrs of Armed Forces and paramilitary forces increased to INR 50 lakh.

### Clean Water for All

- ✓ Online web portal launched for water connections, payments of bills and complaint registration.
- ✓ Augmentation and improvement of drinking water supply in 643 villages.
- ✓ 171 canal based and 45 tubewell based water works have been set up.
- ✓ 1468 tube wells and 365 boosting stations started.
- ✓ 6,236 Km long water pipelines laid.

### Swachh Haryana

- ✓ All villages and 10 cities now Open Defecation Free (ODF), target to declare all cities ODF in 2017.
- ✓ Karnal Smart city ranked 1st in Swachhta Sarvekshan – 2017 in Northern India in 2-10 lakh population category.
- ✓ Largest Solid Waste Management (SWM) plant at Bandhwadi for Gurugram and Faridabad, while SWM projects are being implemented in all Gram Panchayats.
- ✓ The only state in India to be Kerosene Free since 1st April, 2017.

### Law and Order

- ✓ Extensively use of Information Technology in Police Department, Citizen Portal 'Harsamay' has been set up, under which people can register FIR by sitting at home.
- ✓ Zero FIR concept has been adopted for removing obstacles in the registration of FIR.
- ✓ 'Road Safety Fund' of Police Department has been sanctioned to reduce the occurrence of road accidents and for ensuring smooth flow of traffic.

## Conclusion

Haryana is a politically stable and progressive state with all sectors of its economy – primary, secondary and tertiary performing well and contributing towards the state's development and prosperity. Haryana has recorded progress along many income and non-income dimensions of well-being and has been a significant contributor towards economy of the country. Since 2015, the government has enunciated many policies and launched initiatives aimed at improving the socio-economic status of the population and accelerating industrial development.

In the near future, rising urbanisation is likely to pose a challenge, but the state has the advantage of a young demographic dividend that will lead to a rapid increase in the working population in next five years. This is an opportunity which must be utilised by policy makers to create an ecosystem conducive to generate jobs on one hand and on another, equip its youth with relevant skill sets to curb unemployment, especially among urban women.

Sustained last mile efforts should be taken to achieve cent per cent literacy in the state. The HDI in the southern and western regions also needs to be improved.

Industrial clusters in the state offer an opportunity to conduct industry specific skill development programme insitu for the fresh trainees as well as experienced workforce. Existing infrastructure of the technical institutes such as Industrial Training Institutes (ITI), polytechnics, community colleges and engineering college can be utilised by Haryana Vishwakarma Skill University (HVSU) for conducting skill development programmes at the industrial clusters.

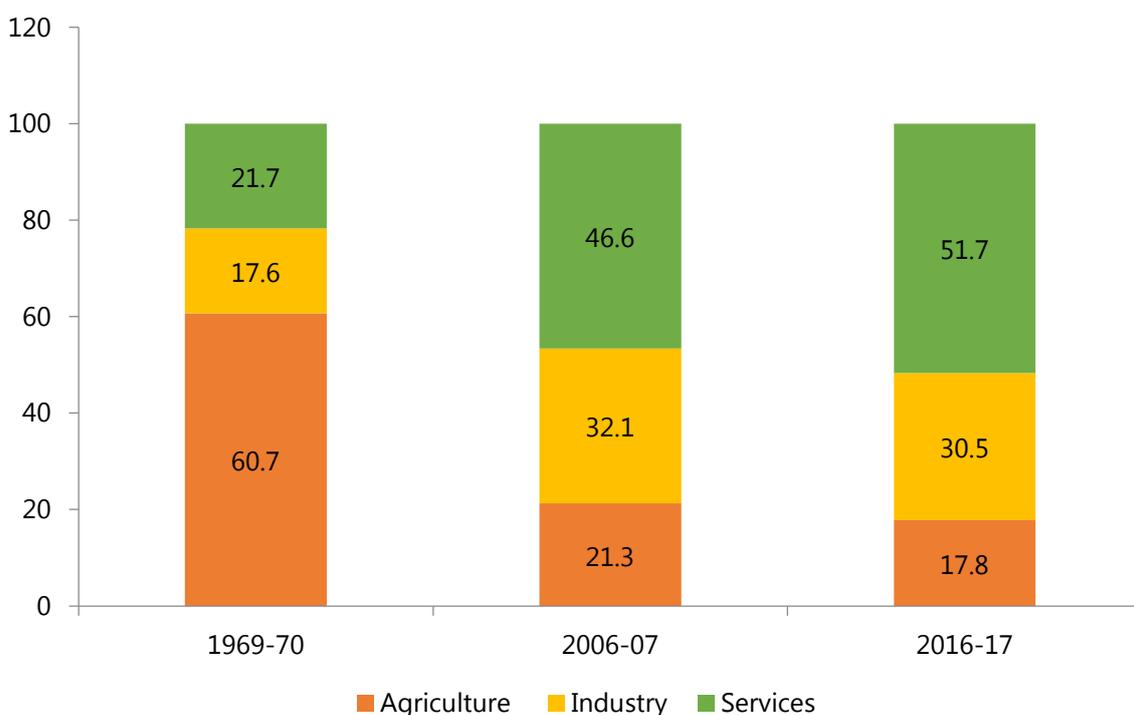
## CHAPTER - 2

# Pillars of Haryana's Economy: Potential and Opportunities

### Sectoral Shift over the Years

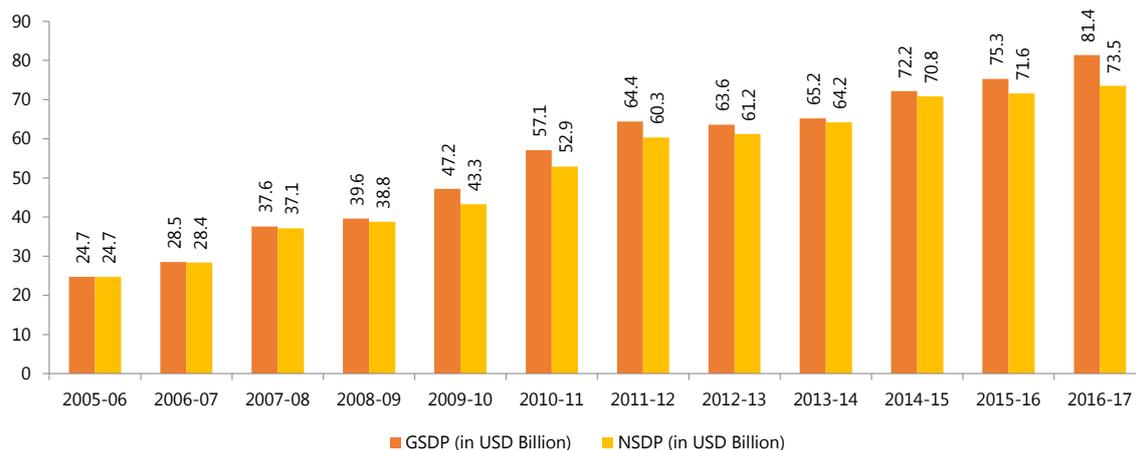
Economy of Haryana at the time of its formation in 1966 was entirely dependent on agriculture. Gradual economic development paved way for industrial and services sectors to flourish at a steady pace. Contribution of agriculture sector which was 60.7 per cent in 1969-70, declined to 21.3 per cent in 2006-07 and 17.8 per cent in 2016-17. Industrial and services sectors filled the void created by agriculture sector. Though the contribution of agriculture in the economy is 17.8 per cent to GSDP, but it employs 51.3 per cent of the rural/ urban work force. The service sector employs 67.6 per cent of the urban work force – contributing 51.7 per cent to the GSDP. The primary sector (agriculture and allied sectors), recorded a growth rate of 3.2 per cent in 2015-16 and is estimated to grow at 7 per cent in 2016-17. The secondary sector (industry) had recorded a growth of 7.7 per cent in 2015-16 as against only 2.3 per cent in 2014-15. In 2016-17, 6.1 per cent is the estimated growth for this sector. The tertiary (services) sector has shown an impressive growth rate of 10.9 per cent in 2015-16 as compared to 10.3 per cent in 2014-15.

Figure 9: Sectoral Shift in Economy (1969-70 to 2016-17)



The GSDP of the state has risen from USD Billion 24.7 in 2005-06 to USD Billion 81.4 in 2016-17, registering a growth of 11.45 per cent Compound Annual Growth Rate (CAGR). In 2016-17, the State's GSDP grew by 8.7 per cent, higher than the country's GDP (7.1 per cent). Despite being a small state having just 1.3 per cent of country's landmass, Haryana has contributed nearly 3.63 per cent to the India's GSDP in 2015-16.

**Figure 10: GSDP and NSDP of Haryana**



The National State Domestic Product (NSDP) has risen from USD Billion 24.7 in 2005-06 to USD Billion 73.5 in 2016-17 at current prices, registering a growth of 10.42 per cent (CAGR). The positive trend on both the indicators is a result of the state's investment friendly policies and development of industrial and trunk infrastructure.

## The Pillars of Economy

### Agriculture Sector

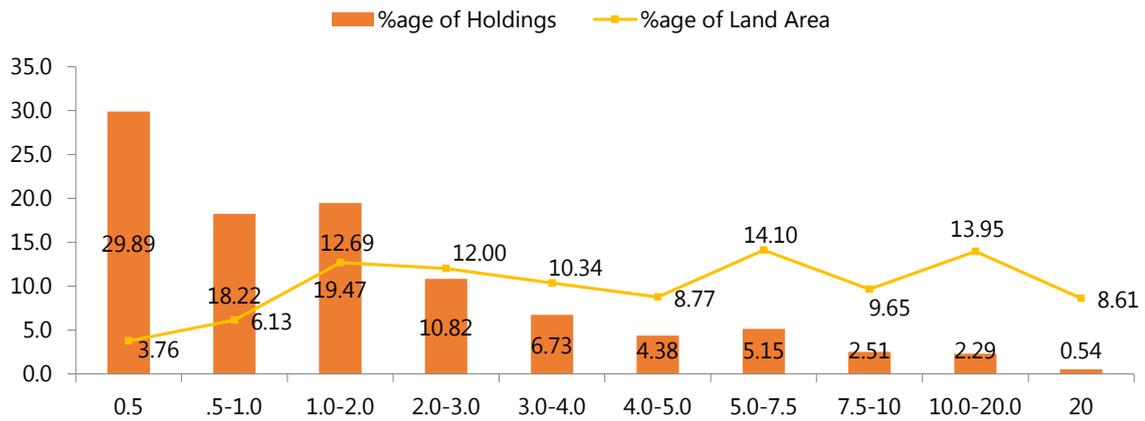
Haryana at heart is an agrarian state. Its farmers are known for their enterprise and hard work. Agriculture was its mainstay of economy during 1970's when its contribution to the GSDP was 60.7 per cent. Over the years, agriculture's contribution has reduced as other sectors have matured, still Haryana remains the second largest contributor to the national buffer stock of foodgrains.

Sizes of the land holdings in the state are increasingly getting fragmented. Majority of the farmers are tending to small farms. According to Agriculture Census, 2010-11, 67.58 per cent of the total land holders who owned land parcels measuring half to two hectares accounted for just 22.58 per cent of total agriculture land. Of this, more than 71 per cent land holdings were jointly owned, which with passage of time, are expected to be further sub-divided.

Average size of the land holding during 2011 was 2.25 hectare. Farming on such small land parcels is financially unviable unless niche crops are grown using modern techniques. Seventy-five per cent farms are tilled by the land owners themselves, and about 22 per cent are managed through share cropping/ lease. Farm work is done by farmers, their families and local and migrant labourers.



Figure 11: Percentage of Land Holdings and Land Area



Being a small state with diverse land use – agriculture, irrigation, industrialisation, urbanisation and infrastructure, no additional land is available for agriculture. Correlation between the area under cultivation and foodgrains produced during 2014-16 points towards a certain decline in coming years.

Table 3: Area Under Cultivation and Foodgrains Production (2014-16): Correlation

Crops	2014-15		2015-16		Percentage (+) / (-)	
	Area (000 Hect) (a)	Production (000 Tonnes) (b)	Area (000 Hect) (c)	Production (000 Tonnes) (d)	Coln (a) and (c)	Coln (b) and (d)
Total Cereals	4397.9	15533	4388	16293	(-) 0.22	(+) 4.89
Total Pulses	83.8	54.5	61.8	40.1	(-) 26.25	(-)19.08
Total	4481.7	15587.5	4449.8	16333.1	(-) 0.71	(+) 4.78

The slight increase in production of foodgrains was due to the wheat and rice production which rose by 5.68 per cent (645,000 tonnes) and 3.32 per cent (138,000 tonnes) respectively during the period. Associated with this is the cost of production for these crops which is growing and thus lowering the returns on investments with every cropping season.

Grain output per hectare has also stagnated over the years. Average yield of country's top five states for rice, wheat and maize is given below:

**Table 4: Average Yield of Country's Top Five States**

State	Rice (Kg/Hect)	State	Wheat (Kg/Hect)	State	Maize (Kg/Hect)
Punjab	3838	Punjab	4294	Tamil Nadu	6423
Tamil Nadu	3191	Haryana	3981	Andhra Pradesh	6396
Telangana	3138	Rajasthan	2961	West Bengal	4351
Haryana	3113	Madhya Pradesh	2850	Assam	3833
Andhra Pradesh	3022	West Bengal	2807	Punjab	3651
Kerala	2837	Gujarat	2751	Telangana	3313

Average national yield for rice, wheat and maize is 2.4, 2.8 and 2.4 tonnes/ hectare respectively, which is far below the average global yield.

Farmers of Haryana are diversifying to new areas. They are moving high value farming avenues including horticulture, vegetables, floriculture, mushrooms and spices. The area and production of such crops is growing.

**Table 5: Non-foodgrain Production in Haryana**

Crops	2015-16		2016-17 (Target)	
	Area (Hectare)	Production (MT)	Area (Hectare)	Production (MT)
Fruits	46788	597839	48856	729044
Vegetables	249602	4204620	241047	4757276
Spices	8031	54989	8270	60624
Medicinal and Aromatic Plants	97	1416	121	2205
Mushroom	-	10,500	-	10,980
Flowers	5930	62857	6017	64431
		50010800 (Nos)		62587000 (Nos)

The state is second largest producer of milk after Punjab. Its per capita availability of milk (2015-16) is 877 gms/ per day. Murrah, Haryana's indigenous buffalo is a famous breed for its milk yield. Similarly, the state has also excelled in poultry farming, it produced 6.26 percent of the total national eggs production in 2015-16.

The Blue Revolution in the state is progressing steadily. From 2008-09 to 2016-17 the fish production in the state has registered 68 per cent increase from 76,290 tonnes to 111,200 respectively.

Irrigated land in Haryana accounts for 89.10 per cent of the gross cropped area. There are three main canal systems in the state, namely WYC, Bhakra Canal, and Gurugram Canal. However, over the years, there has been no appreciable increase in irrigated area. Mainstay of the state's irrigation system are the tube wells and pump sets, which irrigate 61 per cent of the land. There were 843,000 tube wells & pump sets in the state in 2015-16. Irrigated area under canal system has shrunk by 21.5 per cent since 2000-01.

**Table 6: Land Irrigation in Haryana (in Lakh Hectares)**

System	85-86	90-91	95-96	00-01	05-06	10-11	14-15
Canal	11.91*	13.37	13.75	14.76	13.31	12.36	11.51
Tube well	10.42	12.48	13.52	14.67	15.91	16.50	18.18
Others	0.15	0.15	0.33	0.15	0.14	0.01	0.0
Total	22.48	26	27.6	29.58	29.36	28.87	29.69

Exploitation of ground water for irrigation, industrial and urban purposes has had a detrimental effect on the water table. All parts of the state are severely affected where the water level has receded range of 10-40m and even below 40m.

Along with the rise in production of grains, vegetables and fruits, the use of chemical fertilisers and pesticides has also gone up. Fertiliser and pesticide consumption stands at 206 kg and 0.576 kg per hectare respectively, as compared to national average of 165 kg and 0.6 kg per hectare.

Intensive farming and imbalanced use of fertilisers has led to deficiency in both macro and micro nutrients. Twenty four per cent (8,43,466 hectares) land is critically deficient in zinc, 31 per cent in iron (11,18,005 hectares) and 5 per cent in manganese (1,84,186 hectares). The state of macro nutrients (organic carbon, nitrogen, phosphorus, potassium) is also showing depleting trends.

Biomass management is a challenge. Faced with the rising costs, non-availability of farm labour and tight timelines between harvesting and sowing seasons; farmers resort to burning of farm residue (mainly the stubble left behind after mechanised harvesting). This practice not only robs the soil of its valuable nutrients but also causes environmental pollution. There is a growing clamour for programs to encourage organic farming, composting and restoration of soil health.

To indemnify farmers from the vagaries of weather and crop losses, Government of India had launched Pradhan Mantri Fasal Bima Yojna (PMFBY) on 13 January 2016. The Government of Haryana has notified PMFBY in June 2017 covering Kharif and Rabi crops under its ambit for 2017 and 2018 respectively. The entire state has been divided into three clusters for its implementation. The premium for Kharif and Rabi crops has been fixed at 2 per cent and 1 per cent of the sum insured respectively.

Agriculture sector and the farmers in the state are faced with some growing challenges. A survey amongst the professionals in the state and Chaudhary Charan Singh Haryana Agriculture University (CCS-HAU), Hisar brought out some issues besieging agriculture sector. See Annexure 1 for the Questionnaire.

**Brain Drain:** About 90 per cent of the total agriculture graduates who pass out from the university are from Haryana. Graduates aspire for government and corporate jobs. About 50 per cent land a job of their choice in government and corporate sectors, while the rest half move on to other sectors. Like any other sector or vocation, agriculture needs trained manpower, and this brain drain needs to be checked.

**Best Practices:** Farmers of Haryana are practising the following modern agricultural methods in varying degree and frequency:

- a. Use of improved variety seeds and hybrids
- b. Use of Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) and Integrated Water Management (IWM) techniques

- c. Laser levelling technique for fields
- d. Direct-seeded Rice (DSR) technique
- e. Zero tillage practice
- f. Polyhouse technology
- g. Sprinkler irrigation, under-ground pipelines
- h. Soil-test based fertiliser application and bio-fertilisers,
- i. SMS-based weather advisory

**Major Challenges:** Challenges faced by the farmers were identified and solutions recommended are as under:

- ✓ **Water shortage** – Laser levelling, micro-irrigation, DSR, arid farming, crop diversification
- ✓ **Uncertainty of weather** – Contingent crop plans, crop insurance, protected farming
- ✓ **Stagnant production** – Better seeds, hybrids, mixed crops, diversification
- ✓ **Overuse of chemical fertilisers and pesticides** – Soil test based fertiliser application using soil health cards, INM and IPM, fertigation, organic farming
- ✓ **Over cropping** – Crop diversification, niche areas/cluster zoning, inclusion of legumes in cropping system
- ✓ **Farmers' poverty and indebtedness**- Assured Minimum Support Price, decrease in cost of production, assured income, subsidised inputs, adoption of Integrated Farming System (IFS) models
- ✓ **Small land holdings** – Co-operatives/corporate farming, adoption of IFS model
- ✓ **Non-availability of labour** – Mechanisation, green house cultivation, better wages
- ✓ **Biomass management** – Zero tillage, residue incorporation, establishment of biomass based energy production, composting

**Sunrise Sectors:** The following allied sectors were identified as sunrise sectors in agriculture:

**Table 7: Sunrise Sectors in Agriculture**

Floriculture	Horticulture	Peri-urban vegetable farming	Poultry	Cattle feed production
Food processing	Value addition and post-harvest management of agri-produce	Mushroom	Dairy and dairy products	Composting and organic manure
Nursery	Mechanisation in agriculture	Apiculture	Fisheries	Plasticulture

**Skill Gaps:** Skills in the following domains will be in demand. Which will fetch job or promote entrepreneurship among the rural youth, women and landless:

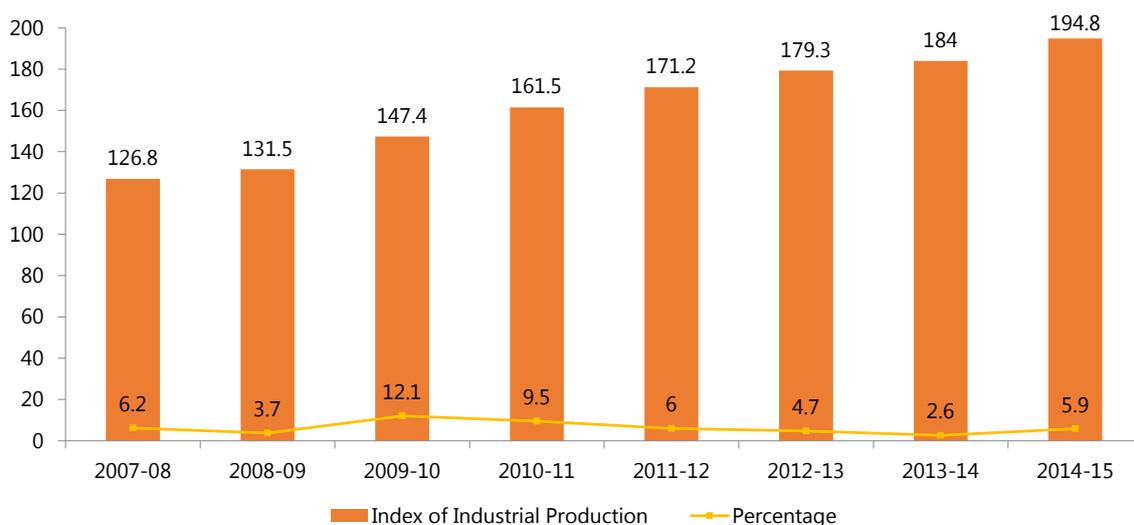
- |   |   |
|---|---|
| a. Food processing  | j. Drip irrigation and sprinkler installation and maintenance |
| b. Cold storage   | k. Repair and maintenance of agricultural machinery           |
| c. Nursery raising and fruit plant grafting               | l. Soil testing   |
| d. Organic farming  | m. Spray of fertilisers and pesticides                        |
| e. Composting   | n. Dairy farming  |
| f. Arid farming   | o. Poultry  |
| g. Fisheries  | p. Bee keeping  |
| h. Mushroom production                                    | q. Custom hiring of machines (co-operative/individual)        |
| i. Green house fabrication, commissioning and maintenance |   |

Agriculture is an important sector of the state's economy. Beset with challenges, it is in the cusp of rural-urban transition. Though its share in the GSDP is continuously reducing but it still provides employment to over 50 per cent population, and cannot be allowed to wither away. It has to evolve by adopting modern technology and techniques. The sector still holds promise for farmers, women, landless and lesser educated workers.

## Industrial Sector

General Index of Industrial Production (IIP) serves as an indicator of the performance of economy. Over the period of time industrial production in Haryana, albeit with some mid-course fluctuations has consistently increased. The IIP (base year 2004-05) in 2007-08 was 126.8 which rose to 194.8 in 2014-15, indicating robust economic growth. Liberal industrial policies and inclusion of parts of the state in NCR has contributed to its economic development.

**Figure 12: Index of Industrial Production in Haryana (2007-08 to 2014-15)**





## Industries in Haryana

To promote industrial development the government has established industrial infrastructure through Haryana State Industrial & Infrastructure Development Corporation (HSIIDC) across the state. Important industrial sectors are automobile, auto components, IT & ITeS, textile, apparel, oil & petrochemicals and pharmaceuticals. Gurugram and Faridabad are the most industrialised districts. Spread of industries in the state is based on well entrenched cluster system.

Haryana is a favourite destination for Indian and MNCs willing to set up businesses in the state. EPP – 2015 enunciated by the state government aims at achieving the GSDP growth > 8 per cent, attracting investments more than INR one lakh crore and generating 400,000 jobs. Due to its investor friendly policies, foreign investments worth USD 62.15 billion have been made during the period 2000-16. During Happening Haryana Investors' Summit – 2016, 406 MoUs worth USD 111 billion were signed. These projects when operational will generate nearly 740,000 jobs. 167 projects are currently in various stages of completion.

The State Government is making conscientious efforts to attract investments from foreign as well Indian Diaspora settled abroad. Results are showing. Haryana has moved to 6<sup>th</sup> from 14<sup>th</sup> spot in the 'Ease of Doing Business' as per Department of Industrial Promotion and Policy, Ministry of Commerce and Industry, Government of India (GOI).

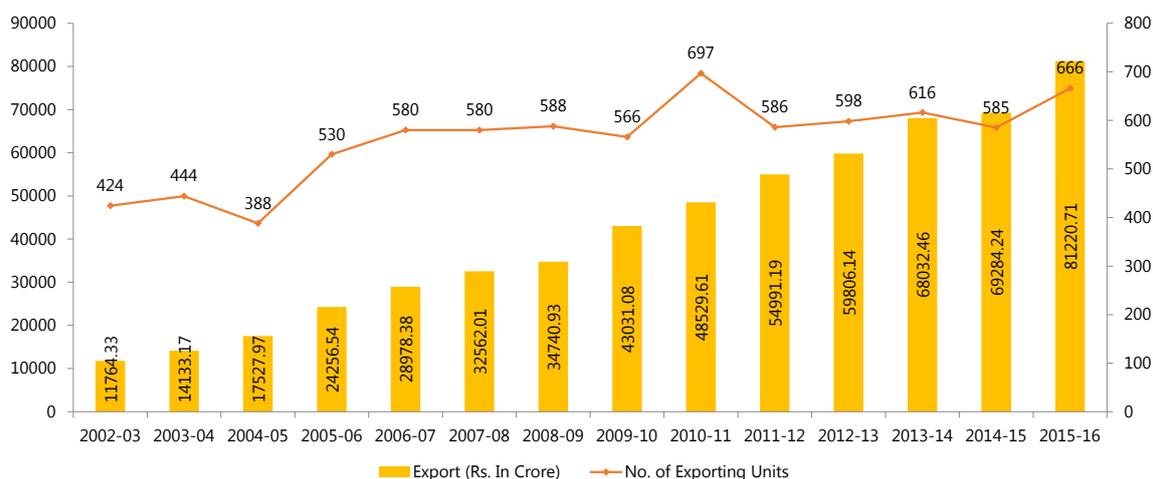
Since 2015, 335 large & medium and 15482 small scale industries have been set up in the state with an investment of INR 19,500 crore generating jobs for 196,831 people. In March 2017, there were 2,115 large & medium industrial units with an investment of INR 59,52,922.93 crore employing about 404,065 people were operating in the state.

The contribution of 90,000 MSMEs in the state has been significant in terms of investment (INR 15,000 crore) and employment to more than 890,000 people.

## Exports

Exports from Haryana present a variegated picture. Exports which stood at INR 4.5 crore in 1966-67 have risen to INR 81,220 crore during the year 2015-16. Since 2009-10, the exports (INR 43,031 crore) have nearly doubled in 2015-16 (81,220 crore).

**Figure 13: Exports from Haryana (2002-03 to 2015-16)**



Sectoral performance of exports has been led by handloom and handicrafts since 2014-15, while automobiles & auto parts, readymade garments and drugs & pharmaceuticals have performed consistently. A drastic decline has been observed in the electronic goods sector which contributed 65 per cent in 2013-14 but has slumped to last position since 2014-15.

**Table 8: Exports Performance Industrial Sector (2013-16)**

Sectors	2015-16	2014-15	2013-14
Handloom Goods & Handicraft Goods	33.9	27.4	7.1
Automobile & Auto Parts	24.7	15.4	13.6
Readymade Garments	12.5	17.6	7.0
Drugs & Pharmaceuticals	5.2	4.5	1.6
Metalware/utensils	4.0	13.3	0.5
Leather Products & Sports Goods	3.9	6.9	1.5
Electrical Goods	3.9	3.8	0.9
Chemicals & Allied Products	3.1	3.3	0.4
Machinery & parts	3.0	3.8	1.3
Agriculture Implements	2.9	0.8	0.3
Slate Stone and mineral	1.3	0.0	0.0
Scientific Instruments & Lab equipment	0.8	1.3	0.8
Glass & Ceramic Products	0.4	1.6	0.0
Electronic Goods	0.4	0.1	65.1

The overall performance of all sectors is no less surprising. The Basmati rice export has topped the charts for over a decade maintaining first or second position. Handloom & handicrafts goods and readymade garments have maintained a steady position. Automobile and auto parts have improved their ranking from eighth place in 2012-13 to third place in 2015-16. Drugs & pharmaceuticals have improved their position from 12th position in 2010-11 to fifth in 2015-16. Electronics which had led the exports since 2007-08 till 2013-14 has slumped to 17th position in 2015-16.

**Table 9: Exports Performance of all Sectors (2007-2016)**

Products	2015-16	2014-15	2013-14	2012-13	2012-11	2010-11	2009-10	2008-09	2007-08
Rice	1	1	2	2	2	2	3	2	2
Handloom Goods & Handi-craft Goods	2	2	4	3	4	4	4	4	4
Automobile & Auto Parts	3	4	3	8	5	7	5	6	6
Readymade Garments	4	3	5	5	6	3	2	4	3
Drugs & Pharmaceuticals	5	8	7	9	11	12	9	13	12
Metalware/utensils	6	5	13	6	13	10	10	11	10
Leather Products & Sports Goods	7	7	8	11	8	6	8	5	5
Electrical Goods	8	10	10	13	10	11	11	9	11
Chemicals & Allied Products	9	11	14	14	9	13	12	12	13
Machinery & parts	10	9	9	10	14	10	6	10	7
Gaugum Products	11	6	6	7	7	5	8	7	8
Agriculture Implements	12	15	16	16	17	16	17	16	16
Raw cotton	13	12	12	18	19	19	19	19	19
Slate Stone and mineral	14	19	17	12	15	14	14	14	14
Scientific Instruments & Lab equipment	15	15	11	15	12	8	13	8	9
Glass & Ceramica Products	16	13	18	17	16	15	16	15	15
Electronic Goods	17	16	1	1	1	1	1	1	1
Pickle	18	17	15	19	18	17	18	17	17
Jewellery	19	18	19	4	3	18	15	18	18

### **Automotive Sector**

By 2030, India is expected to become the third largest automobile and auto components manufacturing country. Haryana considers auto and auto component sector as one of its strength areas. The state is amongst the five automotive clusters in India, producing two-wheelers (39 per cent), passenger cars (48 per cent), tractors (11 per cent), excavators (52 per cent) and mobile cranes (80 per cent). To name a few, sector is being led by Maruti Suzuki, Hero Motocorp, Honda, Yamaha, JCB, Escorts, and ACE.

Auto industry comprises of Original Equipment Manufacturers (OEM), auto component manufactures, dealership and service centres. The upstream and downstream supplier opportunities have great potential to boost the light engineering and MSME sectors. A large number of auto ancillary and component units are functioning to support the above OEMs. The contribution of these

manufacturing units in terms of turnover and employment is significant. As a rough estimate, one new job at the OEM level leads to creation of eight jobs at the vendors' end. Projected incremental employment in the sector is likely to touch 35,555 by 2022.

As motor vehicles are one of the main sources of air pollution, non-polluting technology is bound to make inroads in the sector. In future, hybrid and electric vehicles will be seen on the roads in large numbers, and industrial capacities need to be developed towards the same.

### **Job Roles**

Technological advancement in manufacturing will need high-end skilled workforce, the job roles identified in the sector are mechatronics, automation, robotics, designing, quality control, 3D printing, optics, tool, die, moulds and jigs making.

Institutes offering technical and skill education may have to reorient their curricula and contents to address the futuristic manpower demands of the sector.

### ***Electronic System Design and Manufacturing (ESDM)***

Footprints of ESDM sector in India are limited. India's produces just 1.5 per cent of world's electronic goods. The National Electronic Policy 2012 aims at attracting investments worth USD 100 Billion and creating 28 million jobs in the sector by 2020. India also needs to reduce its dependence on imports to save foreign exchange.

Realising this opportunity, the Government of Haryana has planned six Electronic manufacturing Clusters (EMC) – four along KMP Expressway and two in Gurugram.

The state aims to train at least 15,000 personnel annually for a period of five years. It is also offering an employment generation subsidy of INR 36,000 for a period of five years for capacity building of skilled/ semi-skilled persons and aims to train about 500 trainers for next five years. With special focus on the training of trainers according to NSDC Skill Gap Assessment Report, a reimbursement of INR 100,000 will be offered to training providers.

### **Job Roles**

The job roles identified in the sector which are expected to be in demand in the future are chip designing, operators, automation, quality control and testing.

The state government will further make targeted efforts to develop or align ITIs / Polytechnics and Skill Development Institutes around the Greenfield and Brownfield clusters so as to bridge the skill gap and satisfy industry demand. Further, suitable infrastructure is being created for electronics units by reserving 25 per cent of land in the EMC for common social infrastructure such as housing facilities, medical and sports facilities, schools etc.

### ***Footwear and Accessories Sector***

The footwear sector being manpower intensive provides employment to about 70,000 people in the state. It targets domestic as well as international demands. The sector falls under green category – non-polluting and eco-friendly.

Significantly this sector comprises of Micro and Small Enterprises (MSE) units, which account for about 85 per cent of total production. The growth potential of the sector is expected at 20 per cent CAGR till 2050.



Karnal has been a centre of footwear production since 1966 and currently employing about 50,000 workers. FDDI, Rohtak has been ensuring availability of skilled manpower in the footwear and leather product industry. It is also providing other technical services such as testing, inspection, designing, consultancy etc.

Haryana is in the process of setting up a MSME footwear cluster at Bahadurgarh in two phases with an investment of INR 320 Billion, generating employment for about 37,800 people. A hub is proposed to be developed at Karnal with footwear fashion, research and development and Footwear Technology Institute. Major brands like Liberty, Action, Relaxo, Lancer, Today, Columbus, Aeroback, Welcome etc. have their presence in the state.

For skill upgradation and employment generation, the state offers a subsidy of INR 36,000 per training for a period of five years.

### **Job Roles**

The job roles identified in the sector are leather embroidery, skiving, hand padding, color preparation, dip dyeing and drum dyeing, shoe last manufacturing, quality and testing, tees lasting, sole supporting, sheet and side lasting, Dunlop, buffing & wiping, baffling, stuffing, cement cleaning and heel lasting.

### **Skill Gaps**

The skill gaps in the sector are in areas like footwear design, quality control and testing, colour preparation, dyeing, skiving, sole supporting and tees lasting.

### ***Textile, Apparel and Handloom Sector***

India's textile sector is one of the largest contributors towards exports (11 per cent of total export). The industry is the second largest employer after agriculture, providing employment to over 45 million people directly and 60 million people indirectly. The Indian textile industry contributes approximately 5 per cent to India's GDP. It is expected to grow at 8.7 per cent CAGR, reaching USD 226 billion by 2023.

Haryana is the fourth largest cotton producer in the country, contributing six per cent of the total production. Cotton producing areas of the state are Sirsa, Fatehabad, Bhiwani, Hisar and Jind. Main processing and production centres are at Panipat, Bhiwani, Sirsa, Hisar, Faridabad and Gurugram.

Panipat, traditionally known as the “city of weavers”, has established itself as a centre for handloom products on the global map. Government of India has approved setting up of an Integrated Textile Park at Panipat spread over an area of 30 acres with a project cost of Rs. 140 crores by a group of private entrepreneurs.

Bhiwani, Gurugram and Faridabad belt has emerged as the centre for manufacturing and export of readymade garments. There are about 150 ginning units, 125 carpet manufacturing units, 400 dyeing units, 42 open end units, 20-25 blanket manufacturing units and 250 shoddy yarn manufacturing units, 4000 shuttle less looms and 8,000 power looms units besides other textile based industries in the state. A cluster of high-fashion readymade garment units is operating from the well-developed industrial area of Udyog Vihar, Gurugram.

Textile, apparel and handloom sector employs approximately one million people. Readymade garments worth USD two billion are exported from the state annually. Haryana’s Textile Policy – 2017 envisions infusing an investment of INR 5,000 crore by 2022 and creating 50,000 jobs in the sector.

### Job Roles

The job roles identified in the sector are braiding machine operators, CAD CAM operators sector; sales and marketing professionals in handloom; pattern masters, CAD CAM operators, merchandisers, quality and testing in garment sector.

### Skill Gap

Identified core skills to meet the growing demands of the textile, handloom and handloom sectors are as under:

Textile	Handloom	Apparel
a. Quality testing	a. Weavers	a. Quality testing
b. Braiding machine operators	b. Knitters	b. CAD CAM operators
c. Ring frame operator	c. Knotters	c. Tailor
d. Processing operator	d. Embroiders	d. Pattern master
e. Weaver		e. Embroiderer
e. Processing operator		f. Production manager
		g. Garment pressing

### Pharmaceutical Sector

The pharmaceutical sector has immense growth potential in country. It has registered a CAGR of 17.46 per cent during 2005-16. Its revenue has increased from USD 6 billion in 2005 to USD 36.7 billion in 2016, which is expected to grow at a CAGR of 12 per cent during 2012-20 and reach USD 45 Billion. India exports more than 20 per cent of generic medicines in terms of volumes. It is one of the prestigious sectors of country for its cost-effectiveness and quality.

Haryana has undertaken to develop this sector in a sustainable manner. The state is also contemplating to set up a pharma park to boost this sector. The EPP 2015, Government of Haryana lists the chemical and pharmaceutical sector as one of the focus areas for development and investment. There is a pharmaceutical cluster Karnal. Procedural reforms have been introduced to facilitate investments. The sector registered a growth of 2 per cent in 2013-14 and about 5 per cent in 2014-15.

### Job Roles

Some of the job roles identified in this sector are medical representatives; territory manager; area sales manager; regional/zonal sales manager; national sales manager; product executives, quality controller; production manager (R&D), etc.

### Skill Gaps

There is lack of structured training programmes for these job roles. The current manpower lacks theoretical knowledge. There is a mismatch between teaching and industry requirements of skills. The job roles mentioned above face skill gaps in terms of technical, market acumen, research, innovative ideas and management. There is a need to regularly train the workforce to keep them updated with the current norms.

### Construction Sector

Indian construction sector accounts for 8.04 per cent of GDP. It employs over 70 million people, with over 80 per cent working in unorganised sector. Once a booming sector, it has encountered slump since 2008, when its size was INR 210,000 crore. The sector has suffered set back in the housing segment, whereas its activities in power, urban infrastructure, railways, oil & gas, ports, etc are ongoing.

In 2016-17, the advance estimate Gross State Value Added (GSVA) of the sector for Haryana indicated a growth of 4.9 per cent as compared to 3.9 per cent in 2015-16. Despite the slump in the national markets, the sector is performing steadily. Realtors are focussing on low cost affordable housing schemes which have shown an increase of 3 per cent during October-December 2016 in the Delhi-NCR. As per estimates 31.13 million skilled work force would be needed in the sector by 2022 and 500,000 would be employed in the state.

The skilled workers engaged in the sector in Haryana are comparative better skilled than rest the country. In 2013-14, out of 1000 construction workers, 111 workers were skilled as compared to 96 workers in the country.

Post demonetisation and passage of Benami Transaction (Prohibitions) Amendment Act - 2016, Real Estate (Regulation) and Development Act – 2016 and Goods and Services Tax – 2017 the standards of compliance and transparency in sector have improved. Growth drivers for the sector are:

- ✓ Sixty-seven per cent (13 districts) of Haryana's area falls in the NCR.
- ✓ Faridabad, Karnal, Hisar, Yamunanagar, Rohtak, Gurugram, Sonipat, Sirsa and Panipat have been included in PMAY.
- ✓ Power projects including a nuclear power plant in Fatehabad.
- ✓ Waste management projects in Bahadurgarh, Charkhi Dadri, Karnal, Yamunanagar, Ambala, Narnaul and Rohtak.
- ✓ Kundali-Manesar-Palwal Expressway, Delhi-Mumbai Industrial Corridor and other industrial & logistics parks.
- ✓ Inclusion of Faridabad and Karnal in smart cities list.

## Job Roles

As the sector grows and adopts modern construction techniques, the requirement of the job roles like barbenders, welders, machines' operators, masons, scaffolders, carpenters, electricians, plumbers, supervisors and site engineers at the construction site would go up. Jobs associated with green construction will be in great demand.

## Skill Gaps

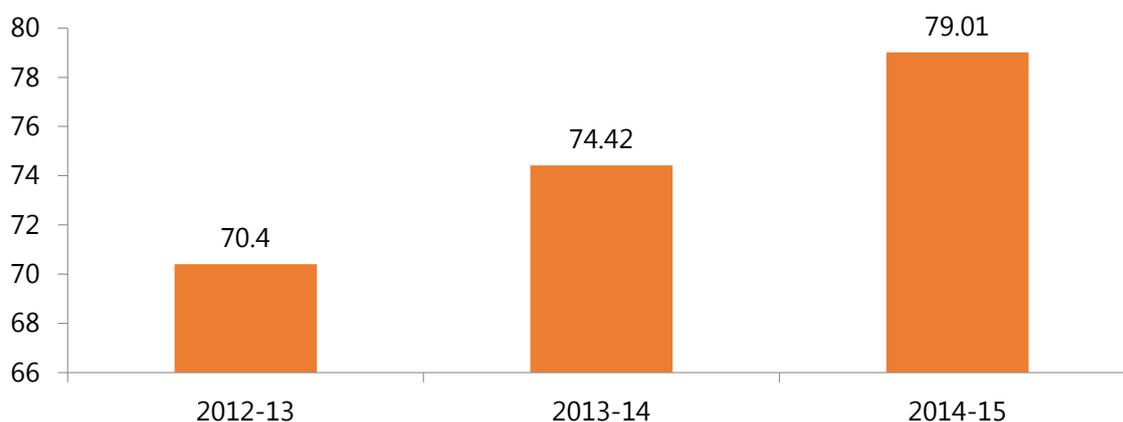
The skill gaps associated with construction sector are knowledge and operation of building management system, designing, construction material & techniques, modular systems' knowledge, casting, moulding, and modern plumbing system, wastage prevention, water and electricity conservation, rain water harvesting, use of renewable energy sources, non-brick & motor construction.

## Food Processing Sector

Haryana has recorded 3.8 per cent growth in agricultural and dairy sectors. New areas of production are fruits, flowers and spices. The key strength for growth of the sector in state is its favourable climate for production and proximity to major markets including Delhi, Rajasthan, Punjab, Himachal Pradesh, Uttar Pradesh and Jammu & Kashmir. Around 6 million tonne of fruits and vegetables were produced in 2015-16.

The food processing industry can be divided into five broad segments, namely fruits and vegetables; milk and milk products; meat and marine products; grain and oilseed; packaged food and beverages. The highest demand is expected to come from grains, oilseed and packaged food sub-sectors. Milk production in state has grown from 7 million tonne in 2012-13 to 7.9 million tonne in 2014-15.

**Figure 14: Milk Production (2012-15)**



The state contributes more than 5 per cent of the total milk production of the country. There are 'A' graded ISO certified semen production stations at Hisar, Yamunanagar and Gurugram. There are 38 registered milk plants in Haryana with a milk processing capacity of 10,000 litres or more per day. Due to competitive advantage provided by Haryana, the state is a hub of major food processing companies. Some of the major brands are Nestle, Haldirams, Cargil, Pepsi, Sunstar and Parle Agro.

The state has also provided various investment opportunities, including integrated logistic hub; cold storages; contract farming; integrated storage facilities; mega food parks at Ambala & Sonipat; food safety management systems; training and provision for market intelligence, etc.

## Job Roles

The job roles required in the sector include quality control manager; procurement; logistics manager; packaging machine operator; bakers; food process line operators; food technologist; food-vegetable picker; shift in-charge; production executive; production supervisor; food database nutritionist; milling operator; microbiologists; electrical/refrigerator technician amongst others.

## Skill Gaps

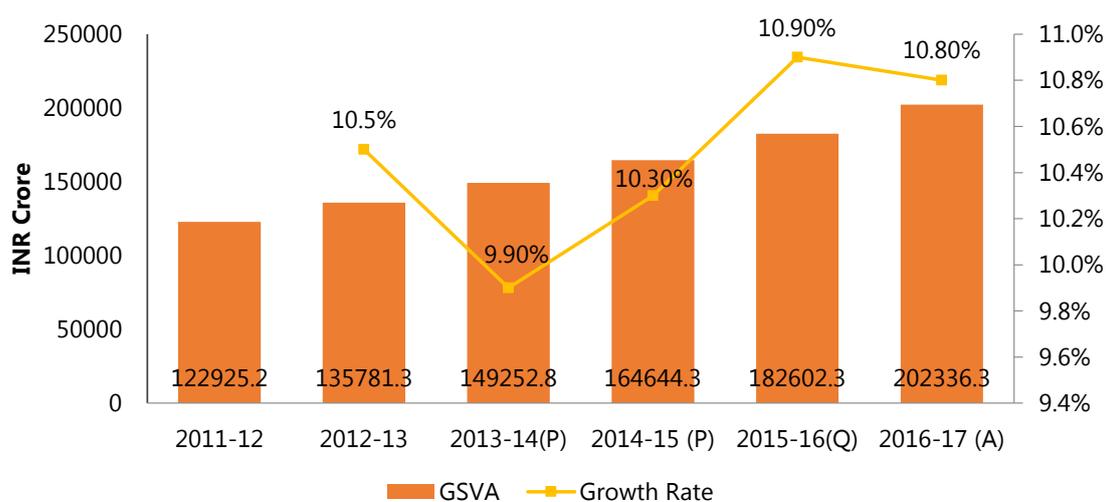
The sector identifies skill gaps for maintaining, operating cold chain and machinery, certification in hygiene, communication skills, lack of knowledge about quality, colour and properties for procurement, knowledge of new technology, no certificate courses in milling, lack of customisation in packaging, unavailability of specific courses in food-tech machinery and frozen foods, lack innovation skills, etc.

## Services Sector

The importance of the Services Sector can be gauged by looking at its contribution to different aspects of the economy. Its share in the GSVA at constant (2011-12) prices has increased to 51.7 per cent in 2016-17. The main constituents of the tertiary sector include trade, hotels & restaurants, transport, storage & communication, banking & insurance, real estate, professional services, public administration, and other services.

The growth rate of tertiary sector is significantly faster than the combined annual growth rate of primary and secondary sector, as service sector grew at the average annual rate of 12.2 per cent during 11th five year plan. This trend of stable growth of service sector also remained on same path during the period of 12th plan. As per the Advance Estimates for 2016-17, the GSVA from services sector has been estimated as INR 2,02,336.34 crore with the growth of 10.8 per cent. This may be attributed mainly to the higher growth recorded in finance, real estate & professional services (11.4 per cent) and public administration, and other services (12.7 per cent) prominent Service Sectors include:

Figure 15: GSVA from Services Sector at Constant (2011-12) Prices.





### *IT & ITES Sector*

The IT & ITeS industry has put Haryana on global map, it contributes 9.4 per cent (2016) towards the state's GDP and 54 per cent of its total exports. Approximately 300,000 people find employment in the industry. Gurugram, a Business Process Management (BPM) hub, accounts for 13 and 5 per cent BPM employees of India and the world respectively. As per NSDC's skill gap analysis, approximately 90, 535 employees will be needed by the sector up to 2022.

The state government has extended various incentives to the IT & ITeS companies, such as relaxation in floor area ratio, rebate on registration and transfer of property charges and exemption under the Haryana Shop & Commercial Act.

The government has granted licenses to 50 proposals for establishment of IT/cyber projects as of August 2015. An innovation campus is proposed to be set up in Gurugram along with seven incubation centres in seven universities in the state. Besides a mobile application development centre will also be set up.

Haryana is the first state to have implemented its State Wide Area Network (SWAN) for voice, data and video transmission. The SWAN vertical connectivity – at the State Network Management Centre (SNMC), District Network Management Centre (DNMC) and Block Network Management Centre (BNMC) – is now operational.

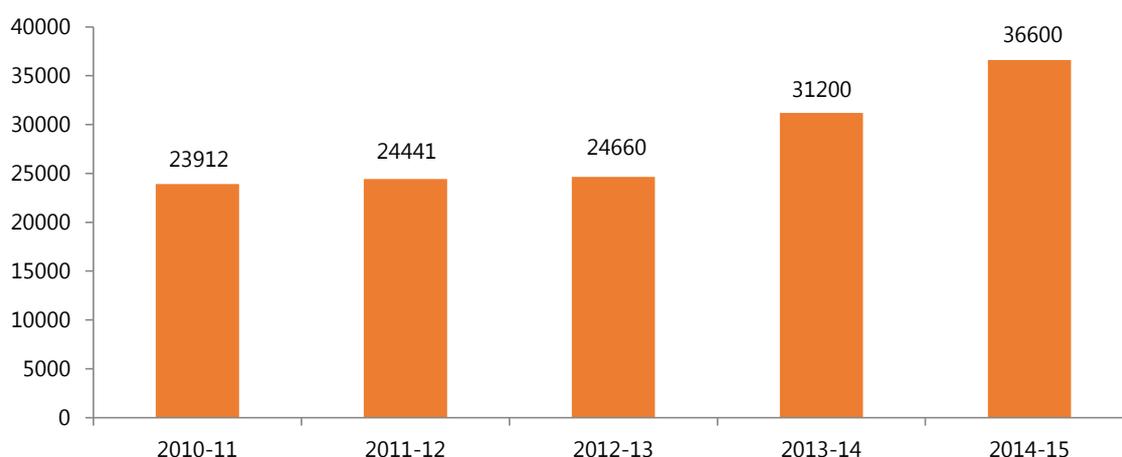
Haryana accounts for 5 per cent of the employment in the global ITES sector. Gurugram has emerged as the BPO capital of India with contribution of more than 11 per cent employment in BPM sector in the country.

During 2015-16, the state government has proposed to spend INR 123 million for the projects namely Common Service Centre and Information Security Management.

- ✓ Post demonetisation, digital payment platforms such as Paytm, MobiKwik, Oxigen, etc. have witnessed a sharp increase in users transactions, app downloads and merchant enquiries, indicating a greater demand of digital payments.

- ✓ India ranks among the top five countries in terms of digitalisation maturity as per Accenture's Platform Readiness Index, and offers good opportunity to grow and scale up digital platforms by 2020.
- ✓ State has a robust IT software sector which complements the electronics hardware manufacturing industry.
- ✓ Haryana is among the leading states in terms of IT exports. As of September 2014, Gurugram accounted for around 7 per cent share in software exports from the country making it the third largest software exporter in India.

**Figure 16: Software Exports made by registered units through STPI in Haryana (in INR Crore)**



#### **Initiatives taken in Haryana's IT & ESDM Policy - 2017**

- ✓ Three integrated IT hubs (including Integrated Townships, Walk-to-Work Campus, etc.) shall be developed in the next five years. The government will earmark 500 acres of land for three IT Townships. At least one is to be developed in the next two years along KMP Expressway.
- ✓ In order to provide adequate support infrastructure, there shall be reservation of 25 per cent of land in each of the IT Townships for common social infrastructure such as housing, medical and sports, schools, recreation facilities, etc.
- ✓ In line with NSQF, the state aims to train at least 15,000 personnel annually for the next 5 years for IT/ITeS.

Being an industry leader, state should leverage its strategic advantage to enter into future domains, such as Animation, Visual Effects, Gaming and Comic (AVGC), Internet of Things (IoT), cloud computing, big data, Electronic Data Interface (EDI), data analytics, quality and documentation, cyber security, application development, coding, programming, e-commerce and start-ups by upgrading existing IT training ecosystem and courses.

Rural youth can be trained to retain traditional IT and ITeS jobs to prevent their flight out of the country.

#### **Job Roles**

The job roles identified in the sectors are tester – Web testing or UI testing; coder/ programmer; data analyst; quality and documentation professional; virtual artificial intelligence; digital marketing; app developer; data centre maintenance; content writer; cloud computing, etc.

## **Skill Gaps**

The skill gaps are in testing – web testing or UI testing, coding/ programming; analytic and algorithmic problem solving quality and documentation coders/ programming skill communication; grievance handling people management skill; high attrition periods etc.

## ***Tourism and Hospitality Sector***

India's Tourism sector, which accounted for about 9.6 per cent of GDP in 2016, is estimated to grow by 6.9 per cent per annum during 2017-27 and create 49.86 million jobs during the same period. Tourism is an umbrella sector as it provides jobs across multiple disciplines – tour operators, transport, restaurants, hotels, guides, small vendors and other services.

All tourists heading for Agra or Jaipur traverse through the state. Despite straddling the Golden Triangle, Haryana has not been able to fully tap its tourism potential. The state does not figure in the top 10 states and Union Territories attracting foreign or domestic tourists. By 2022, the state would need approximately 10,000 skilled people for this sector. During 2015-16, 7,69,2000 tourists visited the state, majority of them domestic tourists (95.5 per cent).

There are 42 tourist spots in the state. To increase the tourist influx, Haryana needs to capitalise on its attractions. It has famous mountain ranges – Shivaliks and Aravalis; varied terrain and climate, archaeological sites, national parks and wild life sanctuaries, places of religious importance, famous battlefields, unique villages, roadside motels, air and surface connectivity, world class hotels and global business hubs.

Prospects of medical tourism in India are bright. By 2018, it is expected to garner USD 6 billion. Haryana has many world class healthcare facilities. It can capitalise on its strengths. Haryana Tourism Policy – 2008 needs a review to formulate strategy to make the state tourists' favoured destination.

With presence of leading hospital chains with world class facilities available at affordable prices as compared to foreign nations, Gurugram has become a major medical tourism hub.

## **Job Roles**

The job roles identified in the sector are event manager, food & beverage services, kitchen staff, travel consultant, ticket agent, guest house caretakers, etc.

## **Skill Gaps**

The skill gaps explored in this sector are team management, communication problem solving skill, self-presentation and ability to respond to guests, inadequate cooking techniques, and lack of basic hygiene/sanitation, inability to make decisions, IT and limited cultural awareness.

## ***Logistics & Transportation Sector***

India has 1,00,087 Kms of highways. It is just 1.7 per cent of the total road length of the country, but these highways bear 40 per cent of the total road traffic. Country's freight traffic is either road bound (65 per cent) or rail bound (35 per cent).

Due to paucity of highways, road stoppages spike the fuel cost and delivery time in transportation. As per a Joint Study Report by TCI and IIM (Kolkata) – 2014-15, India loses USD 6.6 billion per annum

on account of such delays. In 2015-16, a total of 6,029 Kms of highways were added in the network. Situation is expected to change with commissioning of more highways and construction of two dedicated Eastern and Western Freight Corridors – DMIC and Amritsar-Kolkata Industrial Corridor (AKIC), both of which pass would through Haryana.

Once fully operational, 60 per cent of the state's area would be served by DMIC. Presently, it will be connecting Faridabad-Palwal and Rewari-Hisar industrial areas and Kundli-Sonipat and Manesar-Bawal investment regions. The AKIC would serve the districts of Yamunanagar, Ambala, Kurukshetra, Karnal, Panipat and Sonipat.

Haryana with its vast road and rail network is utilising its geographical advantage by setting up logistics parks alongside the industrial parks and industrial areas. Logistics and transport sector has seen an impressive growth. Almost all reputed transport and logistics companies (including the MNC's) have their offices, warehouses and transport fleets in the state.

Transport and warehousing go hand in hand. Transportation accounts for 50-60 per cent and warehousing accounts for 25-30 per cent of the business in the sector. Hence, the both sub-sectors offer jobs. There is an acute shortage of heavy vehicle drivers (22 per cent in 2017) in the country. Logistics provides entry level jobs in departments like booking, data entry, transportation, documentation, despatch, delivery, marketing, etc. At the warehouses, supply chain managers, supervisors, storekeepers, packagers, despatchers, data entry, etc. are required. India needs cold-chain to cut the losses of perishable goods. Cold-chain will offer similar jobs.



E-commerce and courier and express delivery services are linked inextricably to logistics transportation logistics sector. Similar job roles shall be available in this segment too.

### **Skill Gaps**

Identified skill gaps in the sector are communicational, information & communication technology, organisation skill, numerical and analytical.

### **Healthcare Sector**

The growth of healthcare sector can be attributed to its strong coverage, services and service incorporation of public and private players to provide world class infrastructure at a relatively nominal cost as compared to other developed countries. The sector has projected a CAGR of 16.5 per cent in 2008-20, and expected to reach the market of USD 280 billion by 2020.

The state has 59 hospitals, 489 Primary Health Centers (PHCs), 125 dispensaries, 119, and Community Health Centers (CHCs) and 2630 sub-centers. There has been increase in the medical facilities from

840 in 1970 to 3422 in 2015-16. To provide better health facilities in the state 15 health centres and two hospitals were upgraded with all medical facilities in 2015-16.

In addition, 100-bed civil hospital in Kaithal has been upgraded to 200-bed hospital. The capacity of CHCs at Safidon and Radaur has been increased to 50 beds each. The 75-bed hospital at Ambala cantonment has been upgraded to 100-bed hospital. In last one-and-a-half year regime, the government has got constructed 10 civil hospitals, 13 CHCs and 13 PHCs.

Shri Mahohar Lal, Chief Minister of Haryana has laid the foundation stone for 2,000-bed Amrita Institute of Medical Sciences & Research Centre (Amrita Hospital) in Greater Faridabad, recently.

The healthcare sector also encompasses of health tourism and beauty & wellness. The health tourism has become a common form of vacationing. It covers a broad spectrum of medical services. The medical tourism is actually thousands years old. The unbelievable reach of India's healing arts is not to be ignored.

The beauty & wellness sector one of the rising sectors in health industry which has posted a growth rate of 15-17 per cent from 2012-16. It faced shortage of approximately 600,000 skilled personnel during 2016-17. The sector would require an additional manpower of 10.09 million workforce by 2022.



### Job Roles

Some of the job roles identified in this sector include health information specialist, electronic health record, clinical documentation, community paramedic, tele-health specialist, anesthesia technician, emergency medical technician, Ayurvedic management, lab assistants, geriatric care, bio medical engineering, paramedics, medical imaging, assistant, in operation theatre, intensive care unit and cardiology, general duty assistant, etc.

### Skill Gaps

- ✓ A study by Public Health Foundation of India for the Ministry of Health and Family Welfare brought out that there is approximately 97.9 per cent skill gap across various verticals of healthcare.

- ✓ It had also highlighted that India has a requirement for around 6.5 million allied healthcare professionals while the current supply is less than 300,000.
- ✓ To overcome the skill gaps the Planning Commission Report 2015-16 estimates that Haryana will be spending INR 1,226 per capita on health in the year 2019-20, which is the second largest for all large Indian states.
- ✓ The major skill gaps associated with healthcare sector are communications skills, information & communication technology, language, patient care, equipment handling, documentation, quality control, geriatric care and palliative care, etc.

### **Retail Sector**

India has reached a remarkable position in global retail rankings. India's net retail sales are quite significant among emerging and developed nations. The retail sector is ranked third after China and Brazil.

It currently employs over 31 million workforce in conventional retail segments and additional 7.6 million in specialised retail segments. The demand assessment of skilled manpower by Retailer's Association Skill Council of India up to 2022 is projected at 63.27 million.

One of major constituent of the sector is online retail business. It has high potential for growth in the near future. The e-commerce is expected to be the next major area supporting retail growth in India. The industry is projected to touch USD 100 billion by 2020 growing from USD 30 billion in 2016.

The growth in the e-commerce industry is estimated to reach online retail to USD 70 billion by 2020 from USD 3 billion in 2014.

Haryana has a significant potential for retailing of its agro and allied products. A number of enterprises like Tata Kisan Kendra, Godrej's Aadhar, DSCL Hariyali, Mahindra's Subhlabh and ITC's Sagar Chaupal have emerged in the rural market in the state. For Haryana women, whose unemployment rate (9.3 per cent, 2015-16) is alarming, e-commerce offers good prospects.

### **Job Roles**

Some of the job roles identified in the sector are store operations assistant, cashier, trainee associate, sales associate, distributor salesman, team leader, departmental manager, store manager, self-employed retailer, seller activation executive, customer service associate, respectively etc.

### **Skill Gaps**

The required skill for the growth of retail sector is business awareness & acumen communication, customer service, IT, selling & negotiation, people management and leadership, grievance handling, high attrition periods, book-keeping/ accounting, product knowledge, ineffective demonstration & marketing of products, customer empathy and entrepreneurship.

### **Banking, Financial Services and Insurance (BFSI) Sector**

The performance, long-term growth, welfare and development of an economy, is related to its degree of financial development. Higher the degree of financial development, wider will be the financial services.

Banking & financial products in India are fairly mature in terms of supply, product range and reach. Their penetration in rural India and to the poor still remains sparse. Factors like financial inclusion schemes have emphasized the need to focus on spreading the reach of banking & financial services to the unbanked population of India.

The BFSI sector faces challenges of scarcity of skilled manpower especially in the hinterland. More financial intermediaries are expected to be established and requirements of manpower with the requisite skill set are expected to increase many fold.

As per BFSI Sector Skill Council, at any given point of time there are more than 7,000 entry level jobs available in the sector. However, the options available to hire a candidate with desired skill set are limited. There is a large current as well as future demand for trained manpower. Most graduate and post graduate programs currently available in country do not emphasise on BFSI specific training and with little or no emphasis on soft skill development.

### **Job Roles**

The sector include job roles like banking associate, teller, customer relationship officer, microfinance executive, insurance agent, insurance advisor, sales associate retail, marketing specialist, etc.

### **Skill Gaps**

The sector include skill gaps in areas like general banking operations; insurance and risk management; accounting of financial instruments & derivatives; Demat & depositories knowledge; customer handling and grievance handling; sales orientation programme banking, insurance, non-banking financial products knowledge; regulations pertaining to banking and finance industry, soft skills or communication skills, etc.

### **Sunrise Service Sectors**

#### **Sports**

Haryana boasts of a rich sporting legacy. The state has given some of the best athletes to the country. Wrestling, athletics and boxing are the popular sports. The state has a long list of achievers in these disciplines. Earlier Haryana was known for its prowess in contact sports, but its players have garnered laurels for the country in non-contact sports too.

In 2016 Olympics (Rio, Brazil), India won a bronze medal in wrestling through Sakshi Malik. In 2014 Commonwealth Games, Glasgow (UK), India won 64 medals of which 15 were garnered by sportspersons from Haryana. In 2010, Commonwealth Games (New Delhi), 22 out of 38 gold medals that India got were won by Haryana sportspersons. In State's Sports and Physical Fitness Policy – 2015 Government pledges to support 26 Olympic sports to produce potential sportspersons.

The Youth Aspiration Survey (YAS) undertaken by HVSU indicates that 400 out of 1597 respondents preferred sports education/ skill as their career choice. Sports and physical fitness are becoming the flavour of urban lifestyle leading to niche job creation. A number of gymnasiums and fitness centres have mushroomed in the cities and towns across the state. Yoga is another discipline which has the potential of producing quality jobs.

Professional sports leagues have become popular in India in a short time. Launch of Indian Premier League, Hockey India League, Indian Super League, Premier Badminton League and Pro-Kabaddi League, Pro-Wrestling League, etc. has generated a lot of hype and public participation. Organisation of such events needs detailed professional management. Professionally trained managers and

support staff would be needed in large numbers to handle the growing magnitude of these events. Sports management is a lesser known discipline in the country. HVSU can design and offer courses to take a lead in this arena.

### **Job Roles**

Job roles like physical fitness trainer, sports coach, Yoga instructor (in urban areas) are in demand. Impetus given by the government to Yoga has added to its popularity. HVSU can address sports in a phased manner. Initially, courses for job roles like sports management, physical fitness trainer, Yoga instructor can be designed and offered. Later on, sport specific courses for aspiring coaches can be planned.

### **Animation, Visual effects, Gaming and Comics (AVGC)**

The AVGC is a sunrise sector having good potential for wealth creation and employment generation. Indian animation, VFX and post production market has grown 20 per cent from 2013-15. The AVGC industry constitutes over 7 per cent of the overall media and entertainment industry in India. It is expected to reach a size of INR 14,747 crore by 2019.

India contributes 6 per cent of the animation, VFX and post production work globally. Leveraging its advantage in the IT sector, India could emerge as the global hub for content creation. The industry currently employs 85,000 people, which includes freelancers. The gaming sector remains on top and its bullish trend is a driving force for the sector.

The Government of Haryana realises the potential of AVGC as a sunrise sector and is committed to make 'Gurugram' as the AVGC hub of North India. IT & ESDM Policy -2017 aims to boost up AVGC sector in the state through:

- ✓ Establishment of Animation & Gaming Centre of Excellence in Public Private Partnership (PPP) mode for which government would provide financial assistance towards capital expenditure and purchase of equipment, up to INR 10 billion.
- ✓ To establish AVGC Park, 50 acres of land in Gurugram has been allotted.
- ✓ Curriculum Alignment - Necessary steps are being taken to align the curricula as per the industry needs and explore possibility to introduce industry recognised certificate courses in degree colleges and universities in the state in association with leading institutes such as NID etc. It is planned to achieve annual intake capacity of 1,000 students in the discipline.

### **Skill Requirement**

Skills needed in the AVGC sector are artificial intelligence, gaming, robotics, designers, animators and data centre technicians.

### **Smart Cities**

Government of India had launched Smart Cities Mission on 25 June 2015, with an objective to promote core infrastructure in the cities. As on date, 98 cities have been earmarked for Smart Cities. The total outlay of the project is INR 190,000 crore.

In Haryana, Faridabad and Karnal have been shortlisted to be developed as smart cities. The government has signed a MoU with DMICDC to develop a Greenfield Global Smart City over an area of 1000 acres in Gurugram. The city shall be one of its kinds in India and will be designed by integrating smart community concepts ranging from water supply and power to integration of IT services in managing various utilities of the area.

Smart city project will usher in new technologies and applications in town planning, infrastructure, buildings, transportation, energy, water, sanitation & waste management; healthcare, surveillance & security; information & communication technology application for integration and governance.

Haryana has as many as 14 proposed smart cities in its vicinity. These cities would need these skilled jobs to run their operations. IT infrastructure will be the backbone of all the systems and processes. Skills like planning & designing, data analytics, implementation & management programming, high-end consulting, system & network integration, monitoring, etc. will be in demand.

To meet the future demand, the state has to accelerate quality education programme in science, technology, engineering and mathematics. Multi-disciplinary course curriculum need to be designed to train the work force from the school levels.



### **Mass Rapid Transport System**

Urban transit in India consists of bus, metro, monorail and light rail systems. Currently, rapid transit systems operate in nine cities and more are under construction or in planning stage. Industrial corridors between India's big metropolitans like the DMIC, the Chennai-Bangalore Industrial Corridor, AKIC and the Bangalore-Mumbai Economic Corridor seem a positive move initiated by Government of India. It is hoped that many industrial and commercial centres will be created along these belts and hence there will be a need of MRTS at these zones.

**Metro** – Metro is the future of urban transportation, there are currently nine operational metro systems. As of September 2016, India had 324 Kms of operational metro lines. A further 520 Kms of lines are under construction. The GOI aims to have metro rail system, in all cities having population of more than one million. The government has approved proposal to implement metro rail systems in 50 cities.

The Delhi Metro was the first modern metro in India with most extensive network involving 218 Kms operation in New Delhi. To enhance its penetration in NCR, Haryana Government, took proactive steps to develop India's first fully privately financed metro, 11.7 Km Rapid Metro Rail in Gurugram.

The state government has planned to develop few MRTS projects in Haryana such as:

- ✓ Integrated multi modal logistics hub in Southern Haryana.
- ✓ Gurugram-Manesar-Bawal MRTS -108 Km.

- ✓ To expand metro network, Haryana Mass Rapid Transport Corporation Ltd (HMRTC) has been constituted.
- ✓ Expansion of Rapid Metro in Gurugram.
- ✓ Badarpur- Mujesar Metro Rail service started.
- ✓ Expansion work started on Delhi Metro to Bahadurgarh; YMCA (Faridabad) to Ballabhgarh; Kundli to Narela in Sonipat; Huda City Centre to Sohna Road in Gurugram.
- ✓ To initiate smart transits, Government of Haryana plans to launch Metrino pod taxis in Gurugram.
- ✓ NCR planning board aims to develop rapid rail transit junction points across NCR to connect Delhi with nearby major cities. These nodes will include 111 Km corridor connecting Delhi-Sonipat – Panipat; 180 Km corridor connecting Delhi – Alwar; 90 Km corridor connecting Delhi –Meerut.

**Job Role:** With the push from GOI to develop Smart cities, manufacturing corridors, there will be good job opportunities in MRTS sector. Further, it is evident from fact that metro rail companies like Alstom and Bombardier (manufacturer of train cars) have set up manufacturing plants in India to meet evergrowing demand. MRTS offers bouquet of jobs in mechatronics, electrical, mechanical, IT/ITES, maintenance, back end operations, communication, safety, security, facility management, sales and more. However, customised courses suiting to MRTS requirements are not being run in the country. There is a need to initiate technical courses specifically for the jobs related to MRTS.

### **Green Jobs**

With negative effects of urbanisation and industrialisation having a detrimental impact upon the environment, the demand for green jobs in the country is expected to rise. Jobs in the following areas shall come up in urban, rural, industrial and agriculture areas in varying numbers:

- ✓ Power generation through renewable energy sources.
- ✓ Water management in the cities, industries and farms.
- ✓ Solid waste management .
- ✓ E-waste management.
- ✓ Water purification.
- ✓ Air purification.
- ✓ Restoration of environmental balance.
- ✓ Green construction.
- ✓ Green transportation.

The demand will be spread across the country, higher in cities and industrialized areas. Being an emerging sector, it is faced with inadequate training infrastructure and skilled workforce. Some of the in-demand job roles in the sector are:

### **Solar Energy**

- ✓ Solar PV panel installation and maintenance technician.
- ✓ Solar thermal equipment installation and maintenance technician.
- ✓ Solar air conditioning (heating, cooling, refrigeration) technician.

### **Water Management**

- ✓ Sprinkler and drip irrigation installation and maintenance technician.
- ✓ Reverse osmosis water purification system installation and maintenance technician.
- ✓ Operator technician for STP.

### **Waste Management**

- ✓ Solid waste handler.
- ✓ E-waste handler.

### **Clean Air**

- ✓ Air purification system installation and maintenance technician.

### **Conclusion**

Haryana has witnessed rapid economic growth in the last decade, positioning itself as one of the harbingers of India's growth story. In past few decades, Haryana has transformed from a largely agrarian economy to an IT/ ITeS and manufacturing hub. This structural transformation of economy is attributed to various factors like rapid urbanisation of Delhi and hence induced development of NCR, implementation of well-defined Five Year Plans, favourable policies and ecosystem created by Government of Haryana for manufacturing and service sectors.

With trunk infrastructure in place across the state, Haryana is poised to remain one of the most progressive states of the country. As 67 per cent of its area falls under NCR and DMIC influence zone, the state is expected to witness steady rise in infrastructure development in coming decades and hence lies the opportunity to create jobs in sunrise sectors like smart cities, MRTS, sports, AVGC, tourism & hospitality, green jobs, BFSI, logistics and transportation and more. The job roles identified in these sectors are in conformation with the industry experts' survey conducted across 100-odd industries in Haryana and also match with YAS outcome. See Annexure 2.

Haryana can take advantage of this exponential development, if it strategically develops technical and vocational courses to equip students with desired skill sets specifically for niche job roles in the emerging sectors.

## CHAPTER - 3

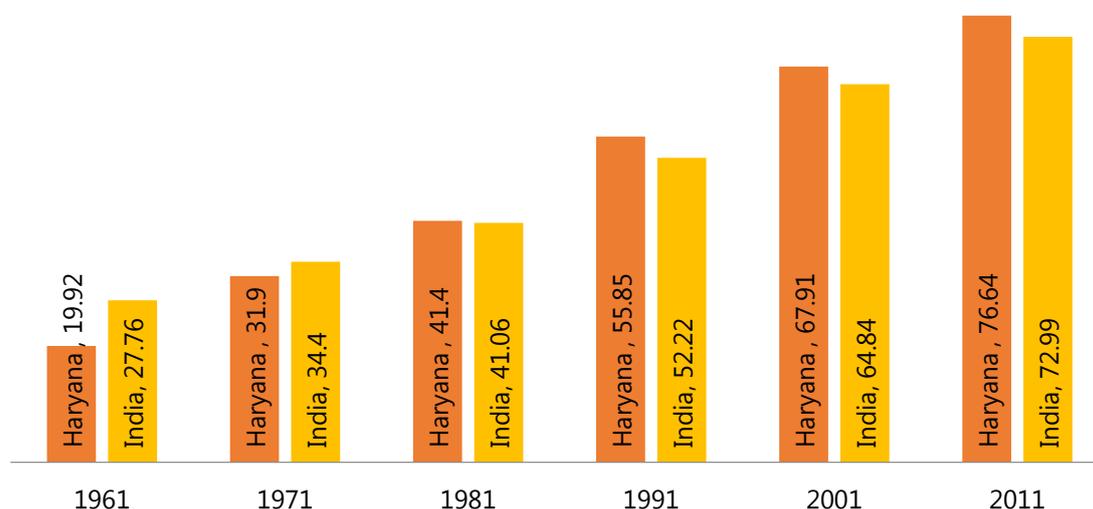
# Existing Education and Skill Ecosystem: Challenges and Opportunities

### Introduction

Indian education sector has seen periods of rapid expansion in last two decades and is now witnessing another major shift i.e. focus on skill-oriented, employment-based entrepreneurial education. Skill India Mission launched on 15 July 2015 to skill 400 million people in different skills by 2022, has given impetus to this upsurge.

Haryana's education system has grown with the time. Adult literacy rate in the state has risen since 1966. In 1961, unified Punjab state's literacy rate was at 19.92 per cent; below the national average of 27.76 per cent. In 2011, it touched 76.64 per cent with male literacy at 85.38 per cent and female literacy at 66.67 per cent which is above the national average of 72.99 per cent.

Figure 17: Literacy Rate of India and Haryana (1961 – 2011)



Source: [www.data.gov.in](http://www.data.gov.in); [www.indiastat.com](http://www.indiastat.com)

As per Census 2011, Gurugram with 84.4 per cent had the highest adult literacy rate and Mewat with 56.1 per cent was at the bottom. Rewari at 92.9 per cent and Gurugram at 77.6 per cent had the highest male and female literacy rates respectively. Mewat and Palwal stood last in male and female literacy rates with 73.0 per cent and 56.4 per cent respectively.

Haryana has a network of educational institutions spread over its 22 districts. Between 1975-1985 and 2005-2011 the education system of the state, has witnessed substantial growth. There were 4,447 primary schools in 1966, which doubled to 9,690 by 2016. Number of middle schools increased six

fold to 4,479 from 735 and number of secondary/senior secondary schools rose from 597 to 7663 in these five decades. Similarly, the higher education sector also grew in size. Presently there are 41 Universities and 870 colleges in the state.

**Table 10: Total Number of Education Institutes in Haryana (1966-67 & 2015-2016)**

Type of Institution	1966-67	2015-16
University	1	41
Arts and Science College	40	288
Engineering College	1	152
Master of Business Administration College	0	115
Master of Computer Application College	0	42
Bachelor of Pharmacy College	0	44
Teachers Training College	5	491
Polytechnic	6	207
Industrial Training Institute	48	382
Secondary/Senior Secondary School	597	7663
Middle School	735	4479
Primary School	4,447	9690

Source: Department of Technical/Higher/Secondary/Elementary Education, Haryana.

Note: Arts and Science Colleges include Self Financed/Aided Colleges/Government Colleges.

The Government of Haryana was one of the first amongst the Northern states to incorporate quality assurance procedures into its Policy Document- 2000.

Haryana ranks number two in the Northern region after Uttar Pradesh in securing accreditations. A total of eight universities and 133 colleges are accredited by the National Assessment and Accreditation Council (NAAC). There are other initiatives which indicate that the State is willing to take experimental and dynamic steps for growth and improvement in education. Special efforts are being made to spread the facilities of education in the rural areas. During the Financial Year 2015-16, there were 7,995 primary schools (Government) in rural areas and 903 in urban areas. Most of the new government colleges have been opened in the rural areas. Almost 50 per cent colleges in the state are in the rural areas.

Greater emphasis is being laid by the State Government on girls' education. Their education is free up to graduation level. New government colleges for women have been established. Out of total 114 government colleges, 32 are exclusively for women. There are 97 privately managed aided colleges out of which 35 are for girls. Haryana has an established system of education resulting in high literacy rate, in the State, which is above the national average. However, the literacy spread of is not even in the state, where some districts are high in literacy and few districts are far below the national average.

## School Education System

Haryana has an impressive school education infrastructure consisting of 21,831 schools. Out of this 7,663 are senior secondary schools (3,258-government, 4,405-private), 4,479 secondary schools (2,395-government, 2,068-private), 9,690 primary schools (8,924-government, 766-private) (U-DISE Report 2015-16). Table 11 gives district-wise distribution of primary and senior secondary schools in the state.

**Table 11: District-wise Primary and Secondary Schools**

District	Senior Secondary Schools			Primary Schools		
	Govt.	Non Govt.	Total	Govt.	Non Govt.	Total
Ambala	155	151	306	485	44	529
Bhiwani	307	348	655	677	50	727
Faridabad	89	385	474	241	82	323
Fatehabad	149	126	275	389	31	420
Gurugram	118	220	338	383	32	415
Hisar	274	340	614	522	32	554
Jhajjar	176	222	398	307	42	349
Jind	215	225	440	438	30	468
Kaithal	149	159	308	377	42	419
Karnal	168	264	432	496	13	509
Kurukshetra	114	164	278	499	21	520
Mahendragarh	146	195	341	503	23	526
Mewat	90	64	154	492	7	499
Palwal	108	213	321	360	49	409
Panchkula	61	63	124	277	29	306
Panipat	120	199	319	245	40	285
Rewari	147	170	317	412	41	453
Rohtak	163	227	390	235	29	264
Sirsa	188	154	342	533	39	572
Sonipat	209	281	490	443	70	513
Yamunanagar	112	235	347	610	20	630
Total	3258 (42.52)	4405 (57.48)	7663	8924 (92.10)	766 (7.90)	9690

Source: Statistical Abstract of Haryana 2015-16

[http://esaharyana.gov.in/Data/StateStatisticalAbstract/StatisticalAbstract\(2015-16\).pdf](http://esaharyana.gov.in/Data/StateStatisticalAbstract/StatisticalAbstract(2015-16).pdf)

Note: Figure in parenthesis represent per cent

It is evident that spread of educational infrastructure in the state has an element of disparity; there are certain districts with higher number of schools, as compared to other districts/regions. Growth of private senior secondary schools in districts with lesser government schools is all too evident.

In Haryana, the government shares major responsibility in terms of providing primary education as the participation of the private sector in primary education is just 7.9 per cent. However, the share of private sector in senior secondary education grows to 57.48 per cent.

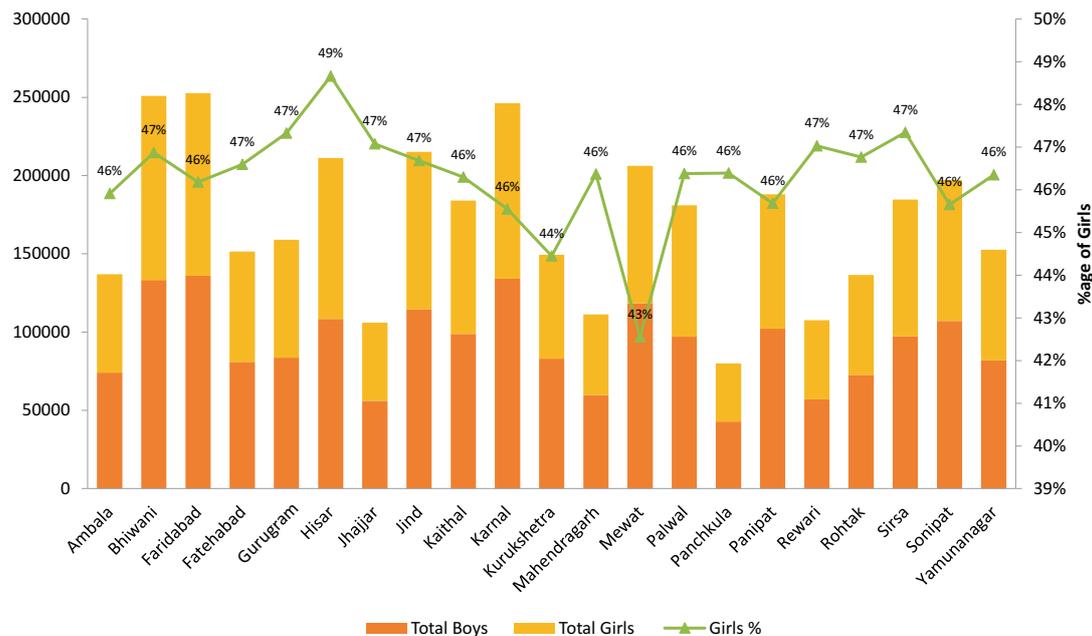
**Figure 18: Class and Gender-wise School Enrolment in Haryana (2015-16)**



Source: Data Analysis by HVSU based on U-DISE Report 2015-16; <http://hryedumis.gov.in/statistics/reports>

The State has tried to improve the enrolment in schools by providing various incentives like mid-day meal, free text books & stationary, free uniforms, waiver of fees, and stipends to the students from socially and economically backward sections. Despite these efforts, there is a drastic decline in enrolments after class X as 243,216 students out of 320,102 left education system. There could be various reasons for this such as, poor exam results (Haryana School Education Board's results for class X have been in range of 41-49 per cent in the past few years); dropouts due to economic reasons, and enrolments in ITIs and other vocational courses. However, class XII enrolments rose by 142 per cent, possibly due to return of students as private students.

**Figure 19: District-wise School Student Enrolment (2015-16)**

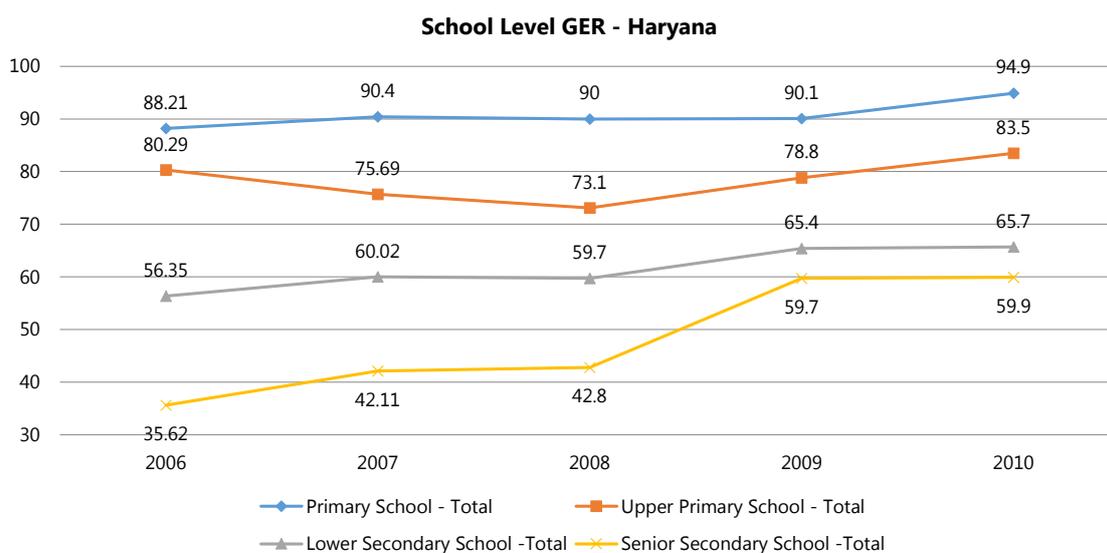


Source: Statistical Abstract of Haryana 2015-16, Publication No 1157, Department of Economics and Statistical Analysis Haryana

Most of the districts in the state have made remarkable achievement in student's enrolment at elementary and primary level. Though in few districts are not able to meet the objective of Sarva Siksha Abhiyan (SSA), but the ongoing initiatives of Government will certainly facilitate all such districts to achieve the objective of education for all. The area of concern is high rate of dropouts at senior secondary level of education. Alternative arrangements to bring back all such dropout students in to main stream of education need to be explored.

The GERs across all the education levels in the state have seen improvement over last decade. As school level, primary school level GER improved from 88.2 per cent in 2006 to 94.9 per cent in 2010, during the same period upper primary level GER improved slightly from 80.29 per cent to 83.5 per cent; secondary school GER improved considerably from 56.35 per cent to 65.7 per cent, and the senior secondary school Level GER improved immensely from 35.62 per cent in 2006 to 59.9 per cent by 2010. There is a clear gap in GER of all the four levels of school education, which indicates the dropout rate at every successive level. In 2010 94.9 per cent children were enrolled into the formal education system at primary level whereas at upper primary level this ratio declined to 83.5 per cent, it reduces further to 65.7 per cent at lower secondary level. The GER for Senior Secondary school stood at 59.9 per cent for the same year. Thus there is huge gap of about 35 per cent in gross enrolments from primary level to senior secondary levels.

**Figure 20: School Level GER - Haryana**



Source: NITI Aayog website; <https://data.gov.in/catalog/gross-enrolment-ratio-ger-0>

## Higher and Technical Education

Higher education infrastructure in the state has increased manifold since 2011. There are a total of 870 degree colleges and 41 Universities operating in the state. 288 colleges of general education are spread across all 22 districts. In the technical education sector there are 152 engineering colleges, 207 polytechnics, 115 MBA colleges, 44 MCA colleges, 44 pharmacy colleges, and 382 Industrial Training Institutes (ITI) are operational. See table 12

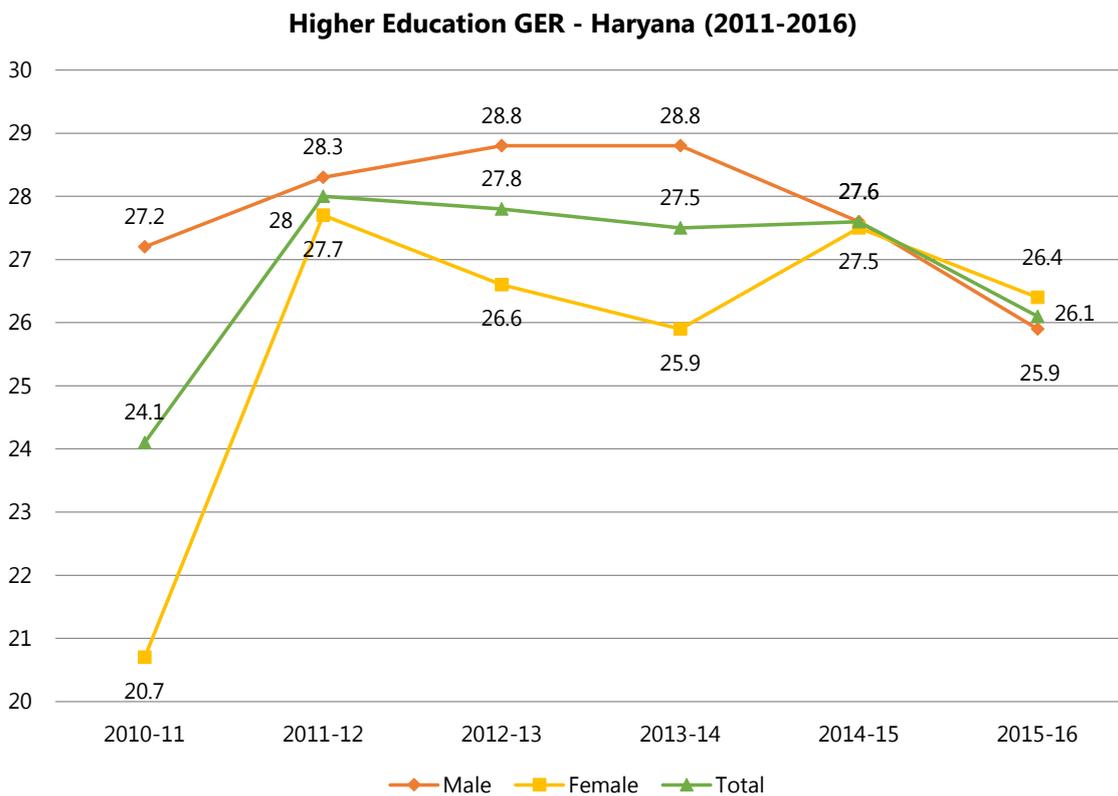
**Table 12: Growth of Colleges in the State (2011-12 to 2015-16)**

Type of College	2011-12	2012-13	2013-14	2014-15	2015-16
General	194	318	367	415	441
Agriculture	0	1	4	4	4
Architecture	3	5	8	10	9
Arts	2	2	2	3	3
Commerce	1	1	1	1	1
Computer Application	2	5	6	7	7
Education/Teacher Education	53	139	167	192	220
Engineering & Technology	64	80	90	89	91
Fine Arts	0	0	0	0	0
Fisheries	0	0	0	0	0
Hotel & Tourism Management	0	1	1	1	1
Journalism & Mass Communication	0	0	0	0	0
Law	3	4	7	9	8
Management	10	14	20	22	20
Medical-Allopathy	0	2	2	2	4
Medical-Ayurveda	0	2	3	3	5
Medical-Dental	0	6	6	8	8
Medical-Homeopathy	0	1	1	1	1
Medical-Others	0	1	1	1	1
Nursing	0	8	13	14	16
Oriental Learning	0	0	0	0	0
Para Medical	0	0	0	0	0
Pharmacy	3	16	20	20	21
Physiotherapy	2	4	3	3	4
Sanskrit	0	1	1	1	1
Science	0	0	0	1	1
Sports/Yoga/Physical Education	0	0	0	0	0
Veterinary	0	0	0	0	0
Others	47	4	18	14	3
Grand Total	384	615	741	821	870

Source: Data Analysis by HVSU based on AISHE Final Reports from 2011-12 to 2015-16

Since 2011-12, the GER in higher education has also declined marginally. Interestingly, the GER in case of male students has declined from 28.8 per cent in 2012-13 to 25.9 per cent in 2015-16. Where as, for female students the GER has faired better than males students for the same period. See Figure 21.

Figure 21: Higher Education GER - Haryana (2011-2016)

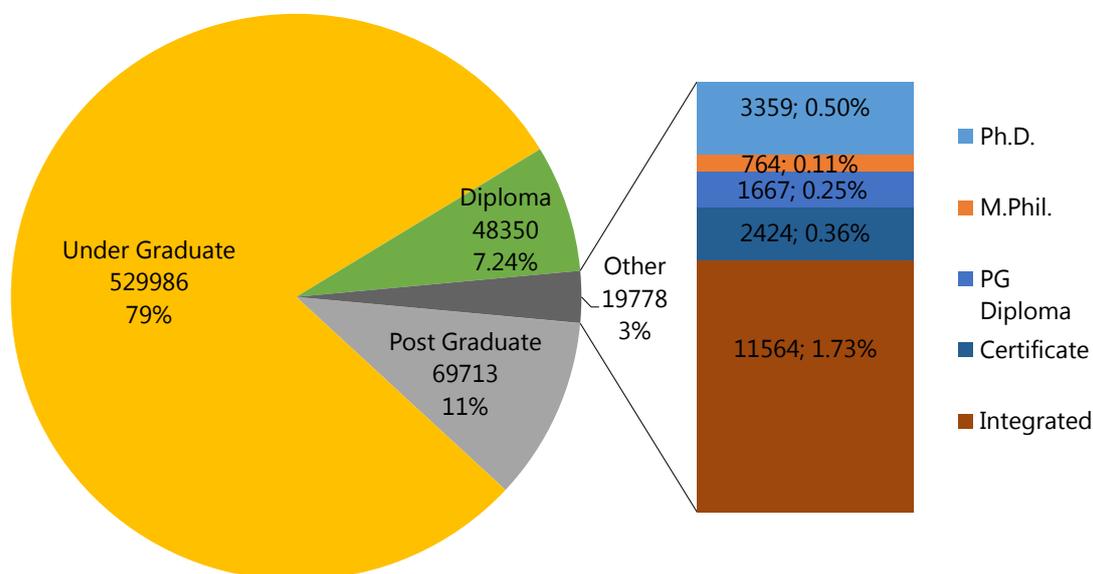


Source: AISHE Report 2015-16; <https://data.gov.in/catalog/gross-enrolment-ratio-ger-higher-education>



**Enrolment Details:** In 2015-16, out of 667,827 students, over 79 per cent were enrolled in under-graduate courses, and about 11 per cent and 7 per cent in post-graduate and diploma courses respectively. The total number of students enrolled in integrated and certificate courses was 11,564 and 2,424 respectively, about 1.73 per cent and 0.36 per cent of total students enrolled.

Figure 22: Level-wise Break-up of College Enrolments in Haryana (2015-16)



Source: AISHE Final Report 2015-16; <http://aishe.nic.in/aishe/reports>

As per AICTE there were a total of 188 engineering & technology colleges in Haryana in 2015-16. The AISHE 2015-16 Report puts this number at 91. This can be due to difference in their classification/ nomenclature system.

Table 13: Details of Engineering & Technology Institutes in Haryana (2013-14 to 2016-17)

Year	No. of Institutes	Intake	Enrolments	Passed	Placement
2013-14	196	72068	28047	20954	10008
2014-15	192	72644	25977	19771	9731
2015-16	188	69620	19738	18599	9514
2016-17	144	58551	15205	0	8801

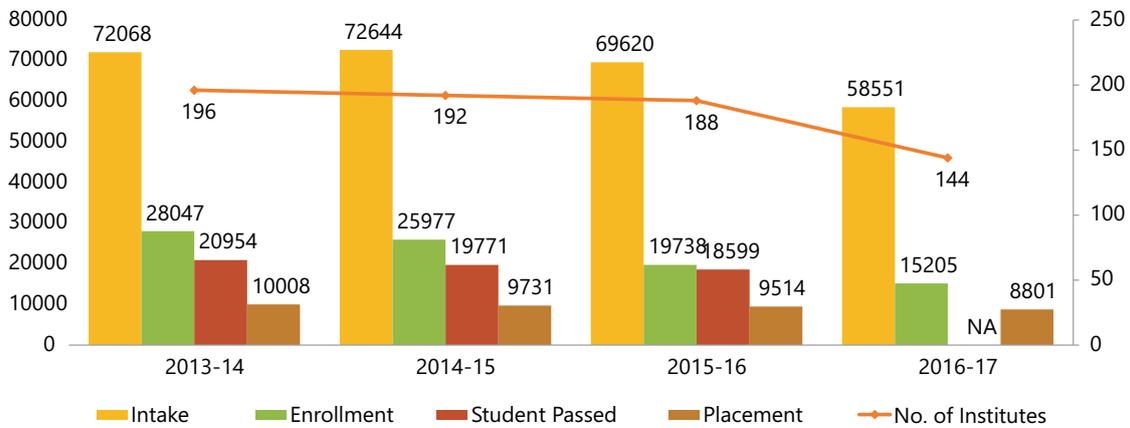
Source: AICTE Website; <http://www.aicte-india.org/dashboard/pages/dashboardaicte.php>

In 2016-17, 144 institutes were offering engineering and technical education in the state. The number of institutes fell by 23.4 per cent between 2015-16 and 2016-17. The institutes are facing the problem of capacity under-utilisation. Their 61 per cent, 64.24 per cent, 71.64 per cent and 79 per cent seats remained unsubscribed in 2013-14, 2014-15, 2015-16 and 2016-17 respectively. This clearly indicates that:

- ✓ Demand for these courses has dwindled.
- ✓ The students do not see bright prospects.
- ✓ Demand and supply aspects were not studied/ considered before opening the institutes.

The pass percentage in these institutes is satisfactory but the placement of students despite showing improvement over last three years, is still below 60 per cent. It is an indication that either there are fewer jobs in the market or engineering graduates lack employable skills. It is further substantiated by the fact that out of 1,910 undergraduates who had registered through the Saksham Yuva Yojna (SYY) in Haryana, 598 (31.3 per cent) were engineering graduates indicating that students who failed to find a job remained jobless. See Figure 23.

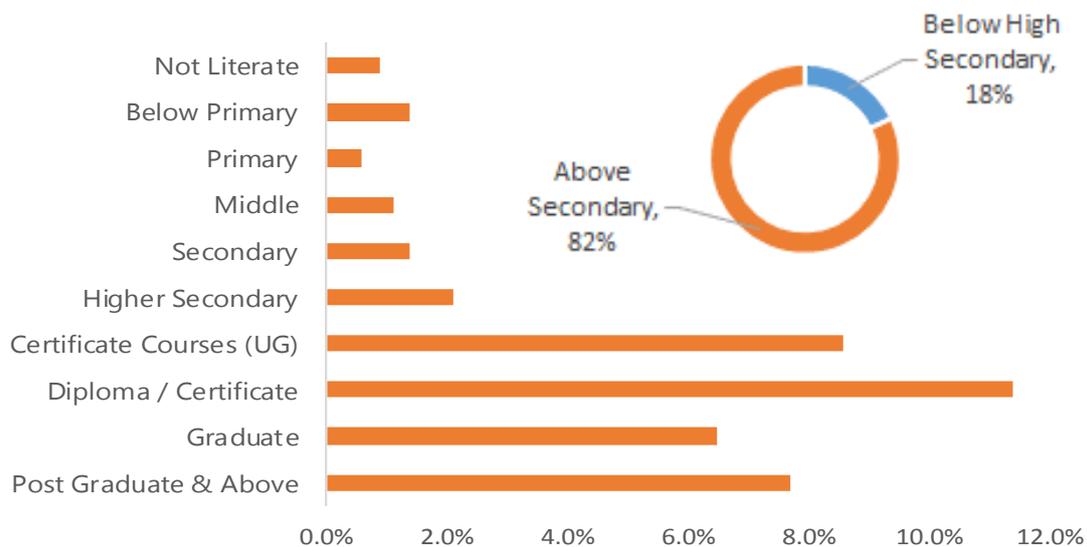
**Figure 23: Performance of Engineering & Technology Colleges (2013-14 to 2016-17)**



Source: AICTE Website; <http://www.aicte-india.org/dashboard/pages/dashboardaicte.php>

A study on students' placements done by Aspiring Minds in 2015 states that only 20 per cent engineers were employable. Similar sentiments have also been echoed by industry associations and in other reports. As per the AISHE Final Report 2015-16, out of total 667,827 students enrolled for higher education in the State, over 79 per cent students (529,986) were registered in under-graduate courses. Out of which only 17,555 were enrolled in technical courses. Ninety-seven per cent students were enrolled in non-technical/ general courses. Lack of employability skills, industry orientation and exposure in such courses resulted in poor placement records. This underlines need for a 'Finishing School' model and a combination of short-term courses imparting operational and employability skills, to bridge the skill gap.

**Figure 24: Unemployment Rate as per Education Levels (2015-16)**



Source: Employment & Unemployment Survey, Ministry of Labour & Employment, 2015-16. Analysis by PWC

The higher education system is more oriented towards theoretical or knowledge-based learning. That is one of the reasons why such courses have become comparatively less employable. An Employment & Unemployment Survey conducted by Ministry of Labour & Employment has revealed that unemployment level is higher among degree holders. More than half of unemployed certificate/diploma/graduate/post-graduate degree holders cite unavailability of matching job with their skills as main reason for their unemployment. This signifies scope of market relevant skilling, re-skilling and up-skilling.

## Universities

There are as many as 41 UGC approved universities in the state including 17 private, 16 government and 6 deemed universities. Higher education has witnessed rapid expansion during last decade. Haryana has some of the important universities which provide quality education. Apart from the regular courses, most of the universities offer distance learning/ correspondence programmes also.

**Table 14: Universities in Haryana (July 2017)**

Type	Numbers
Central Universities	01
State Universities	15*
Private Universities	19
Deemed Universities	06
Total	41*

Source: AISHE Report 2015-16; [http://mhrd.gov.in/sites/upload\\_files/mhrd/files/statistics/AISHE2015-16.pdf](http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/AISHE2015-16.pdf);

\*Haryana Vishwakarma Skill University added

## Polytechnics

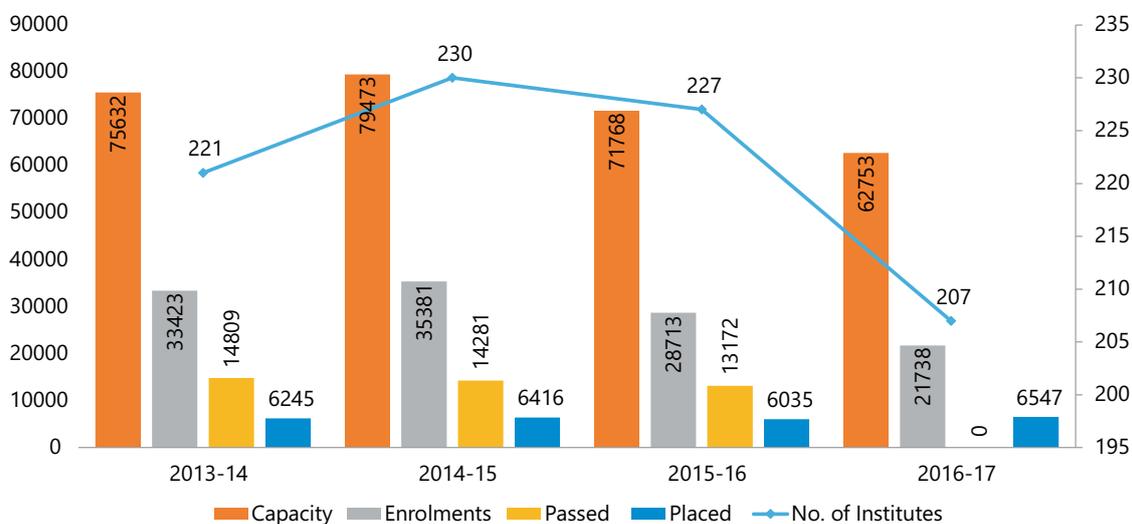
The Department of Technical Education provides technical education through diploma, under-graduate and post-graduate level institutions in the field of engineering and technology, architecture & urban planning, management, pharmacy, hotel management, fine arts, applied arts & crafts and design.

At the time of inception in 1966, there were only six Polytechnics (government-4 and government aided-2) and one Regional Engineering College at Kurukshetra (joint venture of State Government and Government of India) with an annual intake of only 1,341 students. There has been an exponential growth of technical education institutes since then. In 2016-17 the institutes have grown to 578 with total intake capacity of 127,528 students.

The enrolment rate in the polytechnics should be a matter of concern. In 2014, 56 per cent seats went unutilized and in 2015, 60 per cent seats remained vacant. In 2016, 207 diploma institutes with a capacity of 62,753 students could only receive 34 per cent (21,738) enrolments. This could be attributed to low pass percentage rate in class XII and dropout rate at secondary and senior secondary levels.

In Polytechnics, low pass percentage and placement of students is also matter of concern, which stood at 45 per cent and 49 per cent respectively in 2015-16 and 40 per cent and 42 per cent in 2014-15. It is to be noted that a large number of students in these institutes are from other states. See Figure 25.

Figure 25: Performance of Polytechnics in Haryana (2013-14 to 2016-17)



Source: AICTE Website; <http://www.aicte-india.org/dashboard/pages/dashboarداicte.php>

Higher and Technical Education is facing a challenge to meet the expectation of the employers in the present system of education. A good number of institutions are available in the state but the quality of education which is measured in terms of outcome is an area of concern and needs special attention.

## Central Government Institutes

Beside its own education infrastructure, Haryana has a good number of institutes of national repute in various areas as agriculture, horticulture, chemicals & fertilizers, management, information technology, design, fashion technology, food processing, electronics, plastic engineering, etc. Some of these institutes are:

### National Dairy Research Institute

NDRI is India's premier dairy research institutes located in Karnal. It has developed expertise in different areas of dairy production, processing, management and human resource development. The institute offers academic programmes in the field of dairy science. Commensurate with the potential requirement of the expanding dairy industry of the country, the institute is offering various courses such as Diploma in Dairy Technology and Diploma in Animal Husbandry & Dairying, B.Tech (Dairy Technology), and M. Tech and Ph.D in each of the 13 disciplines .

There are certain other prestigious institutes that are being established in Haryana. The details are as under:

### Indian Institute of Information Technology (IIIT)

IIIT is being established at village Kilohrad; district Sonipat in Public Private Partnership (PPP) mode by the Ministry of Human Resource Development (MHRD), GOI.

### Indian Institute of Management (IIM)

IIM is being established by the MHRD, GOI. This will be the first and only IIM in NCR.



### **National Institute of Design**

NID is established in district Kurukshetra by Ministry of Commerce & Industry, GOI, with the help of NID, Ahmadabad.

### **National Institute of Fashion Technology**

NIFT is coming up in Panchkula, in collaboration with Ministry of Textiles, GOI.

### **Indian Institute of Technology**

An extension campus of IIT Delhi will come up at Rajiv Gandhi Education City, Kundli, district Sonapat. It is proposed to establish a science & technology park, high performance computing facility and faculty development centre in the extension campus.

Another extension campus (Research and Development) of IIT Delhi is being set up in district Jhajjar, for establishing Skill Development Centre (SDC) and bio-sciences research park.

### **National Institute of Electronics & Information Technology Centre (NIEITC)**

NIEITC is being setup at Kurukshetra by the Department of Electronics and Information Technology (DEIT), Ministry of Communications & Information Technology, GOI.

### **Technology Centre**

A technology centre of Ministry of Small, Micro and Medium Enterprises, is being set up in the premises of Government Polytechnic Neemka, district Faridabad.

## Vocational Education and Skill Initiatives

### Rashtriya Madhyamik Shiksha Abhiyan (RMSA)

The scheme of “Vocationalisation of Higher Secondary Education”, approved in September 2011, was revised by incorporating the lessons emerging out from the Haryana’s pilot programme on National Vocational Education Qualification Framework (NVEQF) and subsuming the scheme under the RMSA. The pilot was launched in 2012 in 40 schools across eight districts covering 4,908 students in four industry sectors i.e. IT & ITeS, Automotive, Private Security and Retail. Number of industry sectors has now grown to 14 and it has been mapped to NSQF. It is running in 1001 schools across Haryana with an intake capacity of 136,050 students. Increased enrolment in RMSA indicates growing demand for vocational skill-based courses in main stream. See Table 15 and 16.

The RMSA aims to:

- ✓ Prepare educated, employable and competitive human resource for various sectors of the economy and global market.
- ✓ Enhance the employability of youth through demand-driven competency-based, modular vocational courses.
- ✓ Maintain competitiveness through provision of multi-entry, multi-exit learning opportunities and vertical mobility/ inter-changeability in qualifications.
- ✓ Fill the gap between educated and employable.
- ✓ Reduce the dropout rate at the secondary level.
- ✓ Reduce the pressure on academic higher education.

**Table 15: Industrial Sectors Covered Under RMSA**

S.No.	Sector	S.No.	Sector
1	Agriculture	8	IT / ITeS
2	Apparel Fashion Designer	9	Media Entertainment/Animation
3	Automobile	10	Patient Care Assistant
4	Banking & Financial Services	11	Physical Education & sports
5	Banking & Insurance Services	12	Retail
6	Beauty & Wellness	13	Private Security
7	Healthcare (Vision Technician)	14	Tourism-Hospitality-Travel

Source: Haryana School Education Pariyojna Parishad (HSEPP)

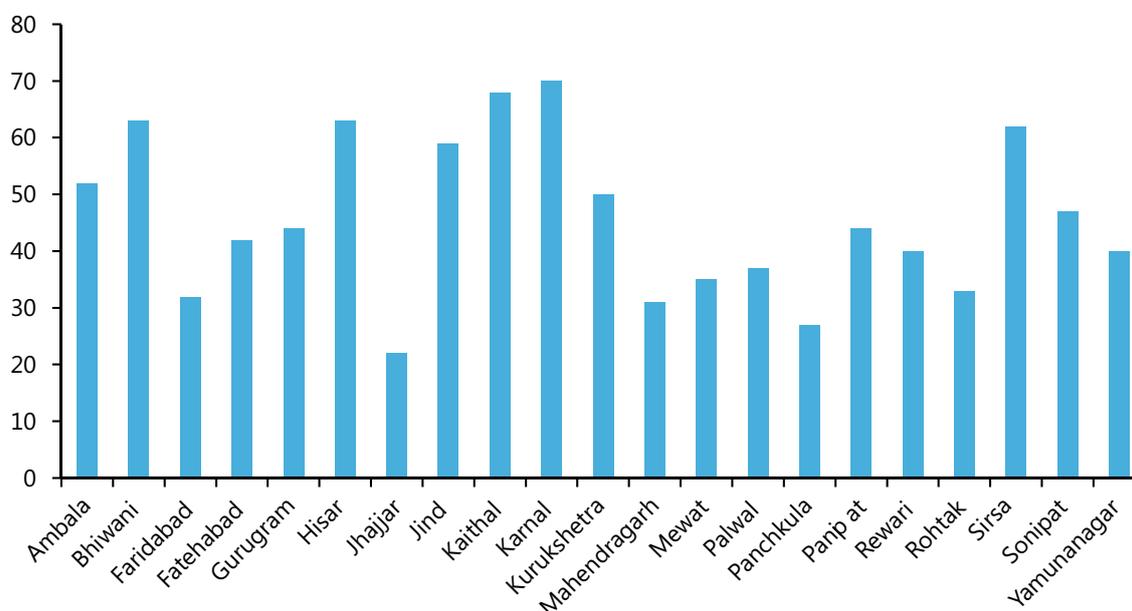


**Table 16: Schools Covered Under RMSA and Student Enrolment (2012-13 to 2017-18)**

Year	Schools Covered	No. of Skills per School	Intake Capacity per Skill	Total Intake	Actual Enrolment
2012-13	40	02	25	4000	4909
2013-14	140	02	25	9000	9800
2014-15	240	02	25	12000	12531
2015-16	490	02	25	45500	41570
2016-17	990	02	25	93000	81747
2017-18	1001	02	25	136050	Under process

Source: Haryana School Education Pariyojna Parishad (HSEPP)

**Figure 26: District-wise schools under RMSA (2016-17)**

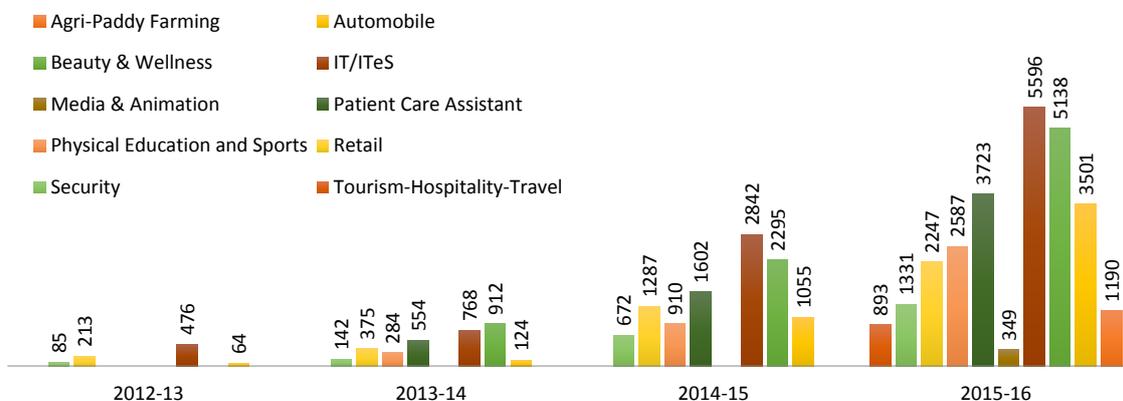


Source: Haryana School Education Pariyojna Parishad (HSEPP)

Figure 26 shows the district wise distribution of schools where vocational education under RMSA is imparted. Karnal with 70 schools is the leader and Jhajjar with only 22 schools is at the bottom. Mewat and Faridabad have only 8 per cent of total schools running the scheme. Panchkula also has a few schools enlisted.

Mewat, Palwal and Faridabad account for almost one-sixth population of the state and yet rank much lower in terms of education and literacy indices. These three districts have enormous potential for development in vocational education sector.

**Figure 27: Skill-wise Student Enrolment in last Four Years**



Source: Haryana School Education Pariyojna Parishad (HSEPP)

Sectoral preferences of students for the vocational subject have been more or less constant over the years. They prefer IT & ITeS, beauty wellness, patient care retail and physical education in that order. See Figure 27.

RMSA examination results over the years show that a large number of students pass their NSQF examinations but fail in the main examinations. For example, in 2016-17, there were 16,811 students who had cleared NSQF Level 2 but failed in their secondary (class X) standard examinations and 2,486 students cleared NSQF Level 4 but failed in their senior secondary (class XII) standard examinations. The comparison of performance of students in L2 & L4 programs with that of secondary and senior secondary main examination results shows that the pass percentage for RMSA programs is above 90 per cent but for formal education is below 50 and 70 per cent respectively.

Students who failed in their main examinations did well in the NSQF examinations. It is an indicator that students who are not able to cope up with the regular education can be inducted into vocational education. See Table 17.

**Table 17: Session-wise Number of Students Passing NSQF L-2 & L-4**

Level-2				HBSE Class X	Level-4				HBSE Class XII
Year	Appeared	Passed	Pass %	Pass %	Year	Appeared	Passed	Pass %	Pass %
2013-14	1789	1596	89	61	2013-14	1835	1683	92	73
2014-15	5029	4951	98	41	2014-15	1641	1585	97	54
2015-16	9850	9213	94	49	2015-16	822	768	93	62
2016-17	18663	16811	90		2016-17	2594	2486	96	65

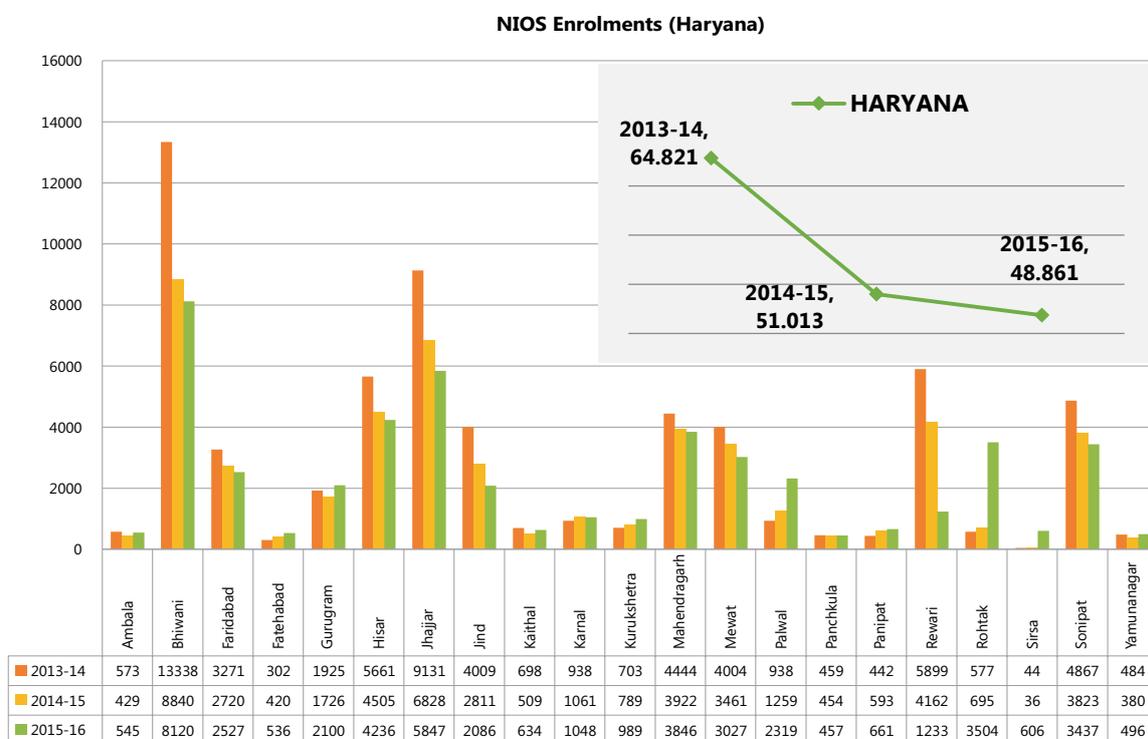
Source: Haryana School Education Pariyojna Parishad (HSEPP)

Since the launch of the pilot program in 2012-13, the number of schools where RMSA program is running has increased from 40 to over 1,000 and the total students enrolled in various vocational programs have grown from 4,009 to 81,747 by 2016-17. For the current academic session the total capacity has increased to 136,050. This shows that there is good demand for vocational skill programs among school students.

### National Institute of Open Schooling (NIOS)

The NIOS was established in November 1989 by the MHRD, GOI. It was introduced as an alternate system of academic education for dropouts, girls and economically and socially backward groups. In 2013-14 the total enrolment in NIOS system was approx 65,000 which has reduced significantly to 48,800 in 2015-16. Employability recognition and lack of smooth vertical and horizontal progression are perhaps the major reasons for NIOS losing its appeal amongst the students. See Figure 28.

Figure 28: District-wise NIOS Enrolment from (2013-14 to 2015-16)



Source: NIOS Website Stats 2017; <http://www.nios.ac.in/download-section.aspx>



## NIOS Vocational Programmes

NIOS also offers various vocational, life enrichment and community oriented courses at secondary and senior secondary level. Vocational education programme were introduced by MHRD to enhance employability by providing professional skills. There are 101 courses in sectors such as home science & hospitality, engineering & technology, agriculture & animal husbandry, business & commerce, health & paramedical (Ayurveda & Yoga), computers & IT, etc. It is observed that the preferred medium of instruction is Hindi as out of the total 1693 candidates, 78 per cent (1315) opted for Hindi, while 22 per cent opted for English. It indicates that there is a requirement of course content being prepared/ translated in Hindi.

## Industrial Training Institutes

The ITIs are post-secondary schools constituted under Directorate General of Employment & Training (DGET) to provide vocational training. After completing ITI, tradesmen can undergo apprenticeship training in different industries. The ITIs are to be rechristened as Kaushal Kendras and over 800 skill programs would be offered through these institutes.

In 1966, there were 48 government ITIs with a total capacity of 7,156 seats. Today, there are a total 372 government & private ITIs in the state, with 96,376 seats offering various courses in 75 different trades. Out of these, 33 government ITIs are exclusively for women. Total enrolment in ITIs was 73,332 against the capacity of 96,376 in 2016-17. See Table 18.

**Table 18: Number of ITIs and Capacity (1966-67 to 2016-17)**

Year	Government ITIs		Private ITIs		Total	
	Numbers	Seats	Numbers	Seats	Numbers	Seats
1966-67	48	7156	-	-	48	7156
1999-00	74	14485	19	1372	93	15857
2004-05	78	15188	19	1372	97	16560
2014-15	143	48748	114	15252	257	64000
2016-17	149	58772	223	37604	372	96376

\* Department of Skill Development and Industrial Training, Haryana, Final Report 2016-17

The ITIs are well-spread all over the state including in the industrial clusters. The HVSU can launch industry-specific courses aimed at skill development of a particular cluster and job role (s) through these ITIs.

The Skill Development and Industrial Training Department (SDIT), Haryana provides skill training to youth through the following schemes and programmes under the aegis of National Council of Vocational Training (NCVT) / DGT, MSDE, GOI:

### Craftsmen Training Scheme (CTS)

The objective of the scheme is to provide skilled craftsmen to Industries and self-employment opportunities to trainees through industrial training. The number of institutes under this scheme were 48 in 1966 and now there are 372 ITIs (149 Government and 223 Private) offering training in 75 trades. The total training capacity of the institutes is 96,376. See Table 18.

### Apprenticeship Training Scheme (ATS)

Apprenticeship (Amendment) Act, 2014 and Apprenticeship (Amendment) Rule, 2015 provides to create training facilities in different trades in various establishments, regulate and control of training

of apprentices. In the state a total of 4,443 industries/establishments have registered on portal under Apprenticeship Training Scheme and about 38,809 candidates/ apprentices have registered for Apprenticeship Training in various establishments. There has not been any significant increment in enrolments under this scheme, despite the fact that the Apprenticeship Act - 1961 has been revised to facilitate this same. In order to boost the registration of establishments and apprentices, a District Apprenticeship Committee under the Chairmanship of respective Deputy Commissioners has been constituted. The registrations for industrial establishments from Haryana have doubled since 2014, and the numbers for candidates registered from the state have tripled during the same period.

### Craft Instructor Training Scheme (CITS)

Objective of the CITS is to train instructors in the techniques of transferring hands-on skills, in order to train semi-skilled / skilled manpower for the industry. It is one year duration course.

Under CITS five institutes (One government & four private) meant for Industrial Training of Trainers (ITOT) are functioning in the state to train the instructors. Government ITOT has been setup with World Bank's assistance. These institutes have a cumulative capacity of training over 1350 trainees in different skill areas. The number of trainers trained by these institutes is inadequate to satiate the demand for trainers.

To make the training more flexible, it is conducted in a modular format. Under the modular concept, multi-entry and multi-exit provision has been made to make programme flexible, so that instructor can take up training in any of these modules at any of the institutes as per his/ her convenience. Modules in Engineering Technology that are common for many trades are: a) Training Methodology (TM) - common for all trades, b) Engineering Technology (ET) - common for similar trades in a group, c) Trade Technology I (TT-I) - trade specific, and d) Trade Technology II (TT-II) – trade-specific.

For non-engineering trades, training is being offered in four modules each of 3 months duration are: a) Trade Skill-I, b) Trade Skill-II, c) Training Methodology, and d) Vocational calculation & Science.

Teacher Training Centers are presently providing certificate courses, training about (Government 52,175 + Private 33,148) = 85,323 trainees in the State. These institutes are not only supplying skilled craftsmen to the industries but also generate avenues for self-employment.

### Skill Development Initiative Scheme

The aim of Skill Development Initiative Scheme (SDIS) is to provide vocational training to school leavers/dropouts, existing semi-skilled and skilled workers, to improve their employability by optimally utilising the infrastructure available with government / private institutions and the industry. The existing skill sets of the persons can also be tested and certified under this scheme.

SDIS is centrally sponsored by DGT, GOI. Demand driven short term courses based on Modular Employable Skills (MES) are offered in consultancy with the industry. There are 629 courses spanning 70 sectors for trainees who have studied class V or above. The training delivery is flexible - part time, weekends, full time to help the trainees. The training is provided through empanelled VTPs. Presently, there are 233 VTPs (114 government, 119 private) and 62,869 trainees have been trained under the SDIS Scheme till December 2014. The Scheme has been discontinued since then.

### Community Colleges:

The scheme of Community Colleges (CC) was introduced to provide low-cost – high-quality vocational education to the local students, by providing opportunities to them to take up employment after



the training or pursue higher education. The CCs offer knowledge-skill mixed programs of different durations, commensurate with the need of local industry. Certification is based on different levels of NSQF - certificate, diploma, and advance diploma. There are currently 58 CCs functioning in the State. See Table 19.

**Table 19: List of CCs and Kaushal Kendra in Haryana**

District	Community Colleges	Kaushal Kendra
Ambala	0	1
Bhiwani	3	
Faridabad	9	
Gurugram	8	1
Hissar	5	
Jhajjar	2	1
Karnal	9	
Kurukshetra	1	
Mahendragarh	1	1
Panchkula	1	
Panipat	2	
Rewari	3	
Rohtak	1	
Sonapat	8	
Yamunanagar	5	1
<b>Total</b>	<b>58</b>	<b>5</b>

Source: <http://www.nationalskillsnetwork.in/wp-content/uploads/2017/04/State-wise-list-of-Community-Colleges-1.pdf>

#### Suggestions to Strengthen CCs:

- ✓ **Dual-Enrollment with Regular Schools:** Government should provide financial incentives for students to encourage dual enrollment i.e. regular formal school and basic skill programmes in CCs. This will help in strengthening these institutes including higher enrollments, better programme viability, community and student sensitisations, and skill initiation of students.

- ✓ **Focused Targeting:** The CCs should focus efforts on the population less likely to be college-bound, a substantial percentage of students who do not enroll in a college following high school. Focusing on such students at an early stage, their skilling and vocational requirements can be met at right stage and GER for the high school, secondary school and higher education can also be improved. These students can be encouraged with financial support as mentioned above.
- ✓ **Career Advising Services:** Career advisory services both academic and career planning can be rendered by CCs about career pathways, opportunities for employment in specific fields and earnings. Such intensive career advising can be conducted for the students with help of various colleges and universities. Specialised software / app platform can also be developed /deployed for such advisory services.
- ✓ **Credit Transfer System:** There should be an unambiguous credit transfer system that enables students to navigate to university courses without loss of credits with their associate degree programme. In a fast changing labor market, these pathways should include vocational, professional, and technical programmes along with the traditional arts and science programmes.
- ✓ **Concurrent Skill-Industry Alignment System:** The CC career pathways, particularly through vocational, professional, and technical programmes, need to be aligned with national and international standards. The CCs can align with HVSU for offering programmes that close existing skills gaps, by replacing existing programmes with lesser employability. New programmes can be designed in partnership with business and industry, that will help create new employment opportunities.

## Kaushal Kendra

Deen Dayal Upadhyay (DDU) Kaushal Kendras have been introduced to provide vertical mobility in vocational education. The vocational education programmes run by CCs or ITIs are up to NSQF Level 4 only. The objective of Kaushal Kendras is to provide higher level vocational programs including graduate and post-graduates. Besides skilling, entrepreneurship development is also given importance under this programme.

Five Kaushal Kendras have been established in the State in Yamunanagar, Mahendragarh, Ambala, Palwal, and Gurugram. These offer programmes from diploma to post graduate level in various sectors including networking, printing & publishing, theatre & television, retail & logistics, fashion & designing, BPO, hospitality, Yoga etc. See Table 19.

There are also some degree colleges in the state imparting the vocational training at degree level as Bachelor in Vocational (B.Voc) courses with multiple exit and entry options. Students can exit after one year with a diploma; after two years with an advance diploma; and after three year with a B.Voc degree. Existing educational and industrial training institutes are running various skill development programmes started from time to time by various departments/ministries.

## Other Skill Development Programmes

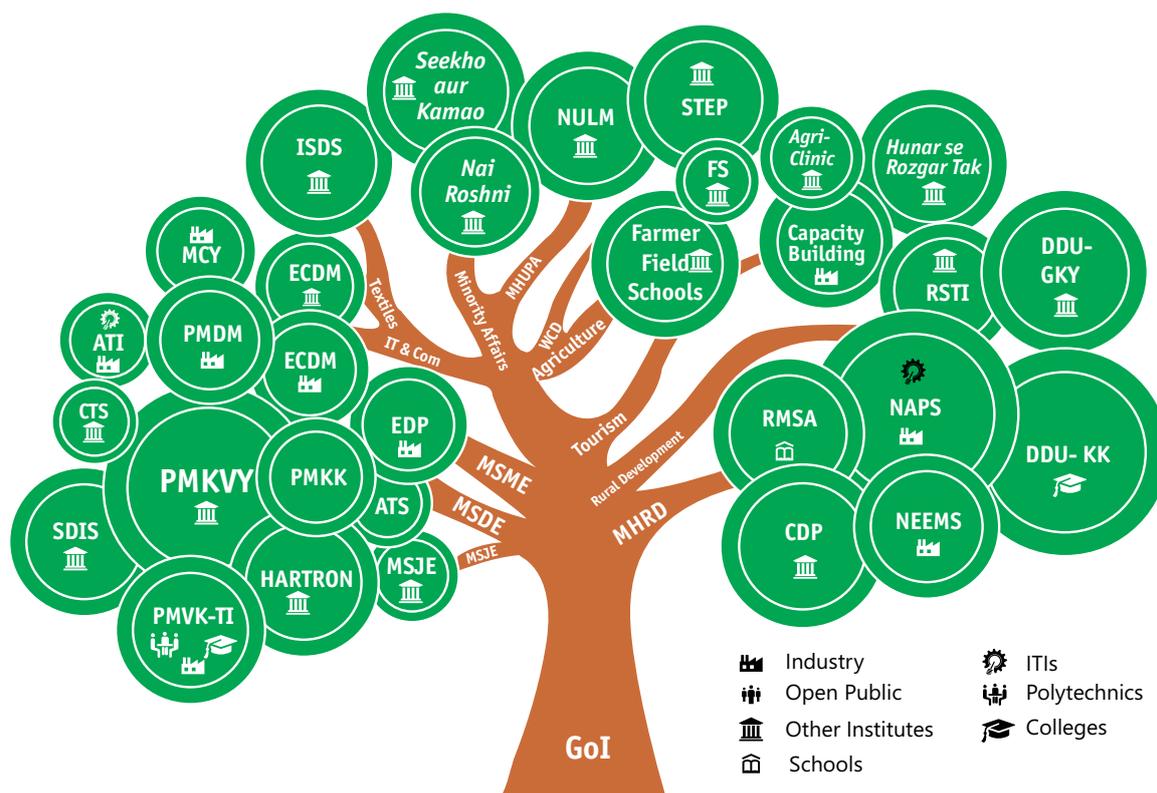
National Apprenticeship Training Scheme (NATS) is one of the flagship programmes of GOI. for skilling Indian youth. It is a one-year programme equipping technically qualified youth with practical knowledge and skills required in their field of work. The apprentices are imparted training by the organisations at their place of work. Trained managers with well developed training modules ensure that apprentices learn the job quickly and competently. During the period of apprenticeship, the apprentices are paid a stipend amount, 50 per cent of which is reimbursable to the employer from GOI. At the end of the training period the apprentices are issued with a Certificate of Proficiency

which can be registered at all employment exchanges across India as valid employment experience. The apprentices are placed for training at Central, State and Private organisations which have certified training facilities. A total of 434,793 students have enrolled on the NATS platform to find opportunities and a total of 12,169 industries are registered to search and hire motivated new talent, and 2,712 institutions have registered themselves on the portal to provide their students better career opportunities.

A study conducted by NSDC and KPMG has established the requirement of incremental human resource of 1.8 million during 2017-2022, of which the share of minimally skilled, semi-skilled, and skilled manpower will be 951,000, 666,000, and 190,000 respectively. To meet the demand, NSDC has targeted to train 164,000 trainees through short-term training programmes under PMKVY II. As of June 2017, a training quota of 120,000 candidates has been allocated to 121 training centres in Haryana.

There are many other skill initiatives/ schemes run by various government bodies and implemented at various levels through different agencies. A snapshot of the schemes at various levels is as under:

Figure 29: The Skill Tree





**Table 20: PMKVY Centres in Haryana**

Sectors	Ambala	Bhiwani	Charkhi Dadri	Faridabad	Fatehabad	Gurugram	Hisar	Jhajjar	Jind	Kaithal	Karnal	Kurukshetra	Mahendragarh	Mewat	Palwal	Panchkula	Panipat	Rewari	Rohtak	Sirsa	Sonapat	Yamunanagar	Grand Total
Agriculture		3	1				6	1		1	1	2							5	2		3	<b>25</b>
Apparel, Made-ups & Home Furnishing	5	8		5	9	4	11	2	4	5	1	5	7	3	1	2	5	4	3	8	4	5	<b>101</b>
Automotive		2	1	1		3	1	1			1	2				1	2	2		1		1	<b>19</b>
Beauty and Wellness	3	4	1	5	9	2	12	1	5			2		1		2		1	3	2	7	2	<b>62</b>
BFSI		1				1	2		2			2				3	1						<b>12</b>
Construction		6	1				2				1	1	2	1	1		1					1	<b>17</b>
Domestic Workers							3															1	<b>4</b>
Electronics	7	5		1	6	5	9	3	5	3	1	4	11	1	3		2	2	6	6	7	3	<b>90</b>
Food Processing																				1			<b>1</b>
Furniture & Fittings					1				1			3			1						1	1	<b>8</b>
Gems and Jewellery				1															2				<b>3</b>
Green Jobs						1															1		<b>2</b>
Handicrafts and Carpet				1																			<b>1</b>
Healthcare										2	3			1					1				<b>7</b>
Iron and Steel												1											<b>1</b>
IT-ITeS	1	1	1	1	2	5	2		2	4		1	1	1		2	1		2	4	1	3	<b>35</b>
Logistics	1	1		1		2		1		1		6	1		2	1	2		4	1	5		<b>29</b>
Media & Entertainment																			1				<b>1</b>
Plumbing										1		3			1						1		<b>6</b>
Power		5					1	1				2	1					1			1	1	<b>13</b>
Retail	4	5				3	6	4	5	2	1		5		1	2	3	2	5	2	3	4	<b>57</b>
Rubber								2															<b>2</b>
Security		2		1	1	3						1				1							<b>9</b>
Sports		1								1												1	<b>3</b>
Telecom	1	2			2	1	4	1	1	3							2	1	3	1	1	3	<b>26</b>
Tourism & Hospitality	1	2				2	1				2					1	1					2	<b>12</b>
<b>Grand Total</b>	<b>23</b>	<b>48</b>	<b>5</b>	<b>17</b>	<b>30</b>	<b>32</b>	<b>60</b>	<b>17</b>	<b>25</b>	<b>23</b>	<b>10</b>	<b>34</b>	<b>30</b>	<b>8</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>13</b>	<b>35</b>	<b>31</b>	<b>34</b>	<b>26</b>	<b>546</b>

Source: PMKVY Website; <http://www.pmkvyofficial.org/Training-Centre.aspx>

The popular trades are apparel, made-ups & home furnishing, electronics, beauty and wellness, retail, IT-ITeS, logistics, telecom, agriculture, automotive, and construction. The top 10 districts in terms of PMKVY centers are Hisar-60, Bhiwani-48, Rohtak-35, Kurukshetra-34, Sonipat-34, Gurugram-32, Sirsa-31, Fatehabad-30, Mahendragarh-30, and Yamunanagar-26. Hisar and Fatehabad districts clearly have more demand for apparel and beauty and wellness courses where as Mahendragarh shows preference for electronics courses. Higher (NSQF 5 >) courses in these sectors can be selected and run in these locations.

### **PMKVY - Technical Institutes (PMKVY-TI)**

There is surplus capacity and infrastructure of technical institutes in the country. To optimise the best use of resources available with All India Council of Technical Education (AICTE), MHRD has decided to run the PMKVY scheme for technical institutes also. The scheme was introduced in 2016 for all the AICTE approved institutes.

In the state, 17 institutes are training students under PMKVY-TI. There are a total 395 Qualification Packs (QPs)/ job roles ranging between NSQF L2-L5, spanning 33 industrial and service sectors in which training can be imparted. The basic aim of PMKVY-TI is to provide employable and certifiable skills aligned to National Occupational Standards (NOS) and necessary soft skills, to the school dropouts.

### **Pradhan Mantri Kaushal Kendra**

The MSDE is supporting the establishment of Pradhan Mantri Kaushal Kendras (PMKK) in every district of India as Skill Development Model Centres. In Haryana, 21 PMKKs have been sanctioned in the parliamentary constituencies of Ambala, Bhiwani-Mahendragarh, Hisar, Karnal, Kurukshetra, Rohtak, Sirsa, Sonipat, Faridabad and Gurugram.

### **Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)**

With an aim to provide skill training to the rural youth (15-35 years) under Earn-while-Learn programme DDU-GKY was initiated as a part of National Rural Livelihood Mission (NRLM). The mission for poverty alleviation called Aajeevika. Aajeevika was rechristened as DDU-GKY in 2014. Haryana State Rural Livelihoods Mission aims to train 39,330 candidates through DDU-GKY. NRLM has 11 Project Implementation Agency (PIA) in the State. There are 26 centers providing short-term training (up to three months) under the scheme for various job-roles in sectors like automotive, retail, security, etc. During training the trainee will be provided one-month OJT. Around 2,120 candidates were trained out of which approximately 1,150 candidates were reported to be placed in employment. See Table 21.

**Table 21: Details of DDU-GKY Centres in Haryana**

Sr. No	Name of the PIA	Trade	Districts	Target
1	IKYA- Human Capital Solutions Private Limited	Technician- White goods services IT- DEO  Hospitality Food and Beverage services  Retail customer relationship and sale	Ambala, Jind, Kurukshetra, Panipat, Yamunanagar, Sonipat	4000
2	Indian Institute of Skill Development	CNC turning Construction Electrician Basic sewing operation	Ambala, Faridabad, Mewat	2200
3	ICA Infotech Private Limited	Accounts and back office executive Customer sales executives	Ambala, Bhiwani, Faridabad, Gurugram, Jhajjar, Karnal, Kurukshetra, Mewat, Panipat, Panchkula, Rohtak, Sonipat, Yamunanagar	6400
4	Adyana Learning Solutions Private Limited	Automobile services technician- entry level	Ambala, Bhiwani, Faridabad, Gurugram, Jhajjar, Rewari, Rohtak	2000
5	Eagle Hunters Solutions Limited	Retail Hospitality Security	Bhiwani, Mahendragarh, Rohtak	3000
6	All India Society for Electronics and Computer Technology (AISECT)	Retail executives Sale executive Office automation BPO executives DTP operators	Ambala, Bhiwani, Gurugram, Jhajjar, Jind, Karnal, Panipat, Palwal, Panchkula, Rohtak, Sonipat	2000
7	India Can Education Solutions Private Limited	Retail Sale Office assistant Hospitality DBPO	Fatehabad, Hisar, Jhajjar, Kaithal, Karnal, Kurukshetra, Mahendragarh, Panchkula, Rewari, Sirsa	7860
8	AFC India Limited	Medical and Nursing Electrical Security Business and Commerce	Bhiwani, Faridabad, Gurugram, Jhajjar, Panchkula.	1845
9	Wazir Advisors Private Limited	Retail/Sales associate	Faridabad	600
10	Centum Works India Limited	Sales persons (Retail) Sales Persons (Door to Door) BPO Hospitality assistant Telecom Sales	Bhiwani, Fatehabad, Hisar, Jind, Kaithal, Sirsa	7800
11	Mcon's Media Marketing Private Limited	IT	Bhiwani, Hisar	1625

Source: <http://hsrlm.gov.in/Linkdetail.aspx?artid=20&menuid=4>

## Rural Self-Employment Training Institutes

To promote the self employability opportunity amongst the rural youth, NRLM has established Rural Self Employment Training Institutes (RSETI) in association with public sector banks. Almost 30 to 40 skill development programs are being offered by RSETI. These are of short-duration courses.

There are 21 RSETIs operating in the state. Out of these 16 are being managed by Punjab National Bank, three by Syndicate Bank and one each by Oriental Bank of Commerce and State Bank of India. RSETIs can be leveraged by HVSU for their good infrastructure for incubation and entrepreneurship development programmes.

## Haryana Skill Development Mission

Haryana Skill Development Mission (HSDM) was established in May 2015 with an aim to provide quality skill training to the youth to enhance their employability. It has seven Skill Range Headquarters, each controlling three districts, at Ambala, Rohtak, Hisar, Gurugram, Faridabad, Panipat and Bhiwani. Mission had funded training of 410 youth in 2015-16 and 2610 in 2016-17. HSDM has 23 training providers empanelled on its rolls.

HSDM aims to train 50,000 youth during 2017-18 (20,000 under state-funded schemes, 10,000 as car drivers and 19,000 under PMKVY-II). Mission has approached MSDE for establishment of India International Skill Centres at Faridabad, Panchkula, Mewat, Bhiwani and Fatehabad. Proposal to open driving training institutes and skill centres under PMKK is also proposed. HSDM in collaboration with Apparel Made-ups Home Furnishing Sector Skill Council has carried out the RPL of 3,600 youth in 2016-2017.

**Table 22: Various Skills Schemes in Haryana**

Department	Name of the Scheme	Persons Trained in 2016-17	Targets of 2017-18
HSDM	SURYA	2610	50000
Technical Education	Creation of Employment Generation Opportunities – For SC Students	1500	2000
	Community Development Through Polytechnic (CDTP)	8400	9600
	ISDS Scheme of Ministry of Textiles	3600	Funds NA
Skill Development & Industrial Training	Apprenticeship	12375	14000
	MES	Funds NA	Funds NA
Haryana State Rural Livelihood Mission	Ajeevika / DDUGKY	17000	20000
Tourism Department	Hunar se Rozgar Scheme	1200	2000
Women & Child Department	SABLA	100	500
Urban Local Bodies	Employment through Skill Training & Placement – NULM	7150	17000
HARTRON	Various specialized courses in IT/ ITES	15000	18000
	<b>Total</b>	<b>68935</b>	<b>133100</b>

Source: Details provided by SDIT and HSDM

The mission is also in process of launching the following new schemes:

- a) Seekho-Sikhaao for training the trainers,
- b) Smart (Skill Mart) readymade/ tailor-made courses for industry employees who require competence enhancement, and
- c) DAKSHA (Dissemination of Applied Knowledge and Skill in Haryana).

To promote the industry involvement in skilling HSDM has collaborated with Maruti Suzuki India Ltd. to enhance employability skills and soft skills of diploma students, training of trainers of polytechnics for their skill up-gradation as per need of the manufacturing and auto industry.

## The Saksham Yuva Yojna

Under SYU, Government of Haryana has introduced "Educated Youth Allowance and Honorarium Scheme - 2016" to provide monthly unemployment allowance to educated youth and honorarium to the eligible post-graduate applicants for honorary assignments provided by the government. The scheme also provides skill up-gradation opportunities to the youth. About 100 job-roles are offered for skilling of over 14,400 unemployed youth who have registered themselves under the SYU.

Haryana Vishwakarma Skill University (HVSU) has initiated the communication skills training project for trainees registered under SYU. It is a six-month training program including OJT of three months with industry. Pilot project of the scheme is being run in six districts Gurugram, Faridabad, Rohtak, Kurukshetra, Hisar, and Rewari.

Besides, there are different other schemes of skill development such as Entrepreneurship Development Programme (EDP) and Entrepreneurship Skill Development Programme (ESDP) by Ministry of MSME and Hunar se Rojgar Tak by Ministry of Tourism. Six Jan Sikshan Sansthan have been established in Haryana under National Literacy Mission at Faridabad, Sirsa, Rohtak, Panipat, Sonapat, and Gurugram to provide vocational skills to non-literate, neo-literate and school dropouts. Minority students are being trained under the schemes like Nai Manzil by Ministry of Minority Affairs.

There are various skills development programmes from different ministries and departments being run in Haryana. At state level there is no body which coordinates the efforts of these programmes in a fruitful manner. It is suggested that all skilling activities in the state should be brought under the ambit of HSDM. HVSU can advise HSDM for coordination of skill activities in the state.

## Challenges and Opportunities

Haryana's vocational education and skill system is extensive, but a lot of challenges exist. Certain challenges are systemic, which can be overcome easily. Certain issues need cooperation from all quarters for their resolution.

- ✓ **Dropouts:** The GER suggests a large number of dropouts at primary and secondary level. From pre-primary to higher education there is a dropout rate of 5-10 per cent at every stage. Sharpest dropout happens at 10th and 10+2 Levels. Curbing dropout rate at various stages of education is a challenge. Multiple factors – domestic, economical and academic are the reasons for the dropouts.

The students who dropout before class XII can be channelised into HVSU programmes. As their number is large, more institutes would be required to absorb them. HVSU can propose three models to arrest dropout rate.

- Skill sensitisation at early stage from class VII onward as hobby or summer skill. The university can design various skill programmes at school levels.
- The university can run a pilot project with an alternate education system with unique combination of two vocational subjects, computers, science, mathematics and a language (total 6 subjects as per policy) is taught at school level.
- The dropouts can be brought back to education framework by enrolling them in various courses at NIOS and ITI level. The university can design and implement ITI certificate programme for class V, VIII and X dropouts.
- A credit sharing policy can be established for the students who fail in academics but pass their vocational subjects. This can bring immediate relief to a large number of students in their vertical movement.

- ✓ **Quality of Trainers:** Increased demand for general education, skill education and skill programmes have upped the requirement for good quality teachers and skill trainers. Good trainer cannot be produced overnight. Currently, most of this demand is met through training trainers through short-term Train the Trainer (T3) programmes of 3-10 days. Inadequately trained and prepared trainers do not impart quality training resulting in trainees with less than desired level of skills. Good quality trainers need to be prepared through long-term T3 programmes.

HVSU can function as a capacity building centre for State's skill ecosystem. There is a need for staff training programmes for raising good vocational instructors. The university can create a pool of trainers from industry and academia from national and international resources. Special programmes/ courses can be developed to train good quality master trainers, who in turn would train field trainers. The university can design special T3 programmes to meet the requirement.

- ✓ **Assessors:** Like trainers, there is a gross shortage of good quality of assessors in the ecosystem. A vocational or skill education programme would need assessors in large numbers.

Special programmes/ courses can be developed to train good quality master assessors, who in turn would train field assessors. The university can be a platform where special assessment tools and training can be designed in the partnership with organisations like NSDA and SSCs.

- ✓ **Short-duration Skill Programmes:** Most of the skill programmes run through skill initiatives are of short duration. Their training delivery through vocational training partners and employability leaves much to be desired. Our aim should be to train limited numbers, but quality and employability must be ensured.

Large number of students trained in such programmes can be leveraged for diploma and higher courses by training them for appropriate bridge course. HVSU after analysing the industry demand can run customised programmes for such candidates with an optimal mix of core employability and soft skills. The university can develop a system of credit transfer for these programmes to establish the equivalency with entry level requirements.

- ✓ **Social Acceptability:** The vocational and skills programmes are still considered a last resort and not as an alternative choice to main stream/ formal education courses. There is a stigma attached to vocational education and certificates and diplomas. This is partly due to lack of horizontal and vertical movement from vocational courses and careers into formal education.

The university can design the programmes based on credit transfer system for flexible mobility in both directions. The component based on NSQF can also be helpful in bridging the gap between formal and vocational education. The university can be helpful in establishing a uniform system of equivalence in formal and skill education.

- ✓ **Lack of Sensitization:** A mechanism at school level to sensitize students about skills and vocational education is lacking. Prevailing poor perception about vocational education courses cannot be without proper counselling. A cadre of counsellors at school level should be employed to sensitise students and parents about skills and vocations. This will help in overcoming prejudice and stigma attached to such vocational courses. The university can design a skill sensitisation-cum-education programme at school level, for counselling, aptitude/skill mapping, profession guidance, skill/ sector initiations, practical/ industry exposure and life skills. Summer skill certification programmes can also be introduced.
- ✓ **OJT Programmes.** There is a conspicuous lack of integrated in-plant apprenticeship programmes resulting in many shortcomings of vocational programmes including lack of inter-linkages, financial system integration and learning attitudes problems etc.

Programmes which have involvement of industry can turn this challenge into opportunity. The university can propose to create "POOL of SKILL" with industries and in association with MSME. A centralised core can be created in the state in partnership with SDIT, where companies can register their requirement of apprenticeship/ OJT. The university can leverage schemes like NATS, NAPS and NEEM etc. for such programmes.

- ✓ **Lack of Employability.** The students/ trainees coming out of vocational and skill education streams are not found employable. Industry integrated courses can help in improving the employability. Industry Integrated courses for people who are fully or partially employed with a view to skill and prepare them for better employability. Multiple, small strength (30-60 seats), integrated, placement assured programmes with industry partners customised to their needs can be run under the aegis of HVSU.
- ✓ **Finishing Programmes:** Multiple finishing programmes for engineering and other graduates through Hub-and-Spoke model can be run at multiple locations. Such programmes can also be run for industrial work force. Special finishing schools can be run in Hub and Spoke Model across State in partnership with various institutes and industry partners in those regions.
- ✓ **Labour Market Information System (LMIS):** There is a requirement of having a LMIS in the state, which will forecast the requirement of manpower, job roles, skills and technology. Technical/ skill education can suitably adapt itself to the requirements of the industry. As most of the employment is generated by the MSME sector, which does not have any mechanism to forecast its needs, the LMIS will help in demand and supply aggregation. A digital platform can be provided with the help of department of industries, employment and various stakeholders for LMIS.
- ✓ **Future Technology and Skills.** Areas like solar energy, water treatment, waste disposal, pollution control, energy conservation, communication, IOT, data analytics, automation, mechatronics, robotics, artificial intelligence, urban transportation, logistics and transport, etc are going to be in demand. An environment scan shows that industry is yet to gear up to meet the demand. The university can leverage this by introducing various vocational training programs in these areas. The university can establish various regional centres of excellence collocated with industrial hubs.
- ✓ **Entrepreneurship Development:** In the absence of local entrepreneurs, opportunities are seized by the entrepreneurs coming from outside. Local entrepreneurs must be encouraged.

Entrepreneurship is not only an exercise in self-employment, but it generates employment. The University can contribute it two ways:

- Introducing entrepreneurship course in every programme as a module.
  - Establishing Regional Incubation Centre at the industrial hubs.
- ✓ **Skills Training Coordination at State Level:** There is a plethora of skill programmes offered under various missions and executed by many training providers. All seem to work in separate compartments. All skills training activity in the state needs to be coordinated by one body for quality control, movement of trainees, trainers and assessors and placement of trainees. A centralized coordinating body is required. The HVSU can play a major role in coordination and development of various skill programmes in the state.

## Conclusion

Haryana state has good training infrastructure (schools, ITIs, Polytechnics and colleges etc.), large industrial zones and corridors, and a positive and determined leadership. There are challenges too, which can be dealt by multilevel approach.

A comparative look at the student enrolment across successive levels of education and training reveals that despite numerous efforts by the government there exists a high rate of dropouts at every successive level. From 350,000 students in class IX only half reach to senior secondary level, which reduces further at higher education level.

The demand for skill-based vocational courses such as ITI is high with an impressive pass out and placement ratios in comparison to technical courses. ITI placements are better. The table below illustrates the class wise capacity, enrolment, pass outs and placement records.

**Table 23: Class wise Capacity, Enrolment, Pass and Placements in 2015-16**

Class	Total Capacity	Enrolment	Pass	Placement	Year
Class 9	355000	352972	320102	-	2015-16
Class 10	355000	320102	156209	-	2015-16
Class 11	300000	76886	75577	-	2015-16
Class 12	300000	186169	156586	-	2015-16
Polytechnic	71768	28713	13172	6035	2015-16
B.Tech	69620	19738	18599	9514	2015-16
ITI	61575	50358	42539	20193	2015-16

Source: U-DISE Report 2015-16, AICTE website, Department of Skill Development & Industrial Training, Government of Haryana

Haryana government has incentivised and worked with a focused approach in education and skill sectors during the last three years. The state has launched multiple programmes and schemes like nature education and awareness program, free conveyance facility for the girl students along with special buses on 44 routes, making schooling facilities available within a radius of 1 Km. - 3 Km. at primary and middle schools respectively. To ensure girl students attendance separate functional toilets for boys and girls at every school have been made.

To improve quality, monthly tests from class I to VIII have been introduced and their results are published on Monthly Test Monitoring System (MTMS) Portal of Education Department.



The NCC, NSS, Bharat Scouts & Guides students are being involved to identify school dropouts and motivate them to rejoin the schools. Girl students who could not clear class X and XII are being readmitted in the schools. 12,900 girl students have been readmitted in class X and 4,790 in class XII.

Admissions in all government colleges in the state are done through an online portal. More than 247,000 applicants had filled up their application forms online for different under graduate and post graduate courses. About 172,000 students were admitted in government colleges through this process. During the last three years, seven new polytechnics have been established in the state.

Integrated Skill Development Scheme of Ministry of Textiles, Government of India is being implemented in the State by Technical Education Department with a target to train 20,000 persons in the Textile Sector in multi-skill development centres across seven districts of the state.

It has been observed that despite continuous efforts by the government a large number of youth is still need to be skilled as per their aptitude, potential and employability. There is an urgent need for adopting alternate skill based education which can provide them with jobs. Various schemes such as NAPS, NATS and NEEM etc. can be leveraged to cater that need.

The underutilisation of training capacity of technical institutes is a major concern. Vocational and formal education system needs modification /modernisation. The situation throws a different level of challenge both at macro and micro levels. On macro level government is required to implement some systemic changes to facilitate the education sector to move towards a system which has access to more information and can change courses easily to meet manpower demand and supply. Introduction of many apprenticeships schemes to encourage the industry participation in OJT is a good initiative.

On micro level institutes like ITIs, polytechnics universities and should come forward and forge durable/ sustainable interface with the industry, specially the MSME sector. Present infrastructure of ITIs and other institutes can be leveraged for last mile connectivity with the industry. All ITIs can be connected through a Hub-n-Spoke model to cater to the demands of various localised industrial clusters.

Finally, the biggest challenge of them all is the changing the mindset. This is primarily due to perceived lower level of earning potential associated with vocational education, ordinary physical infrastructure, and the fact that majority of students take vocational education as their last option. Whereas in other developed countries many of the vocational courses are considered very coveted and sought after by youth. A full-fledged university focus on skill education is required to resolve.

Establishment of HSDM and HVSU are two most important initiatives of Haryana Government which should create a skill environment in the state and cater to the needs of the students and industry.

HVSU shall launch new skilling initiatives by initiating special programs for skill sensitisation at early stage from class VII onward as hobby or summer skill certification courses. Various awareness programs should be launched through community radio and talk shows etc to promote and educate people with the advantage of skilling. The university can provide various skill programs at school and small summer training at the centre of excellence at various district levels. For this purpose the ITIs/ Polytechnics/ community colleges/ PMKK can be utilised.

The university should strive to create a central pool of trainers and assessors and leverage available pool of trainers and assessors with SSCs.

There are several parallel training programs in the state by various departments which are leading to duplicity. A collective effort and approach in the state is needed to establish a Vocational Council with SDIT, HSDM and the HVSU. All training partners, assessors and training facilitators should be registered with the same for bringing uniformity in the system. Model of OJT and education should be promoted by the state to make it more attractive for trainee, trainers and industry by promoting special schemes on training period basis.

Haryana's skills ecosystem is extensive and well developed. It needs policy interventions for making it lean, responsive and quality conscious. Cooperation from the industry, parents, teachers and students will go a long way to train the youth as per their aptitude and potential.

## CHAPTER - 4

# Youth Aspiration Survey: Feeling the Pulse

### Introduction

India represents world's largest youth population with 356 million people between the age group of 10-24 years. By 2022, majority of its population would be in the working age group (15-59 years), making it the world's youngest nation. This demographic dividend provides India the advantage of a large pool of available manpower, but it also brings major challenge on how to skill this huge talent pool.

Skills and knowledge are the driving forces of socio-economic growth. To enhance skill development in the country, Prime Minister Narendra Modi launched the Skill India Mission on July 15, 2015 on the occasion of World Youth Skills Day. The programme aims to impart practical skills and enhance employability of more than 400 million youth across sectors by 2022. To actualise this, a number of initiatives including National Skill Development Mission (NSDM), National Policy for Skill Development and Entrepreneurship-2015 and PMKVY among others have been launched. The GOI has displayed its resolve to speed up the process of skilling by allocating INR 17,273 crore in the Union Budget (2017-18), the highest allocation ever made.

India Human Development Report-2011 indicates that Haryana has achieved improvement in its HDI. There has been a consistent focus on improving the literacy rate (67.91 per cent in 2001 to 75.55 per cent in 2011), but the spread of education has not been uniform. The district of Gurugram scores the highest on the literacy index at 0.785, followed by Panchkula at 0.740 and Ambala at 0.738. The districts with medium scores on the literacy index are Mahendragarh at 0.673, Kurukshetra at 0.650 and Panipat at 0.644 while districts with lower literacy index scores are Sirsa 0.529, Fatehabad 0.515 and Mewat 0.292.

**Table 24: Spread of Education Across Haryana**

Division	District	Literacy Index	Education Index
Ambala	Ambala	0.738	0.740
	Kurukshetra	0.650	0.705
	Yamunanagar	0.677	0.690
	Panchkula	0.740	0.756
Faridabad	Faridabad	0.737	0.749
	Palwal	0.537	0.579
	Mewat	0.292	0.320

Division	District	Literacy Index	Education Index
Gurugram	Gurugram	0.785	0.779
	Rewari	0.726	0.702
	Mahendragarh	0.673	0.674
Hisar	Fatehabad	0.515	0.603
	Jind	0.572	0.624
	Hisar	0.595	0.652
	Sirsa	0.529	0.612
Rohtak	Rohtak	0.713	0.701
	Sonipat	0.695	0.711
	Bhiwani	0.632	0.648
	Jhajjar	0.720	0.730
	Charkhi Dadri	NA	NA
Karnal	Karnal	0.625	0.687
	Panipat	0.644	0.665
	Kaithal	0.535	0.607

Source: Government of Haryana Vision 2030 (2017)

Note: The literacy index is based on the literacy rate and education index is based on the net enrolment ratio.

The district of Gurugram has the highest education index score at 0.779, followed by Panchkula at 0.756 and Faridabad at 0.749. The districts with medium education index scores are Yamunanagar at 0.690, Karnal at 0.687 and Mahendragarh at 0.674. In comparison, Fatehabad is at 0.603, Palwal is at 0.579 and Mewat is at 0.320. The districts of Hisar division and Kaithal though better on enrolment index but fare unsatisfactorily on literacy rate. District of Mewat fares unsatisfactorily on both the indices. See Table 24.

However, quality of education has not kept pace with the expansion of literacy in the state. Forty-five per cent of the students that are enrolled in the class V were not able to read English sentences and 79.2 per cent of the students of class III were unable to read the class I level text books. Similarly, 78.4 per cent students enrolled in class III and 24.6 per cent students of class VIII found it difficult to do simple divisions. The education system and the policy-makers must focus on training delivery and quality of education.

## Youth Aspiration Survey

There are very few studies which have attempted to feel the pulse of the youth. The YAS, in fact, traverses the uncharted territory to explore the feelings and aspirations of young men and women of Haryana, who seldom share these with others.

### Methodology

- ✓ To determine the perception and aspiration of youth, a structured questionnaire was used to conduct survey across all the districts of Haryana. It has been designed to fathom the aspirations of millennial and youths towards the vocational skill and training across different sectors and specific job roles.
- ✓ The study also tries to explore the socio-economic dimensions, inherent skills, awareness about vocational education and desire to improve soft skills, using appropriate scaling techniques. (See Annexure 3 & 4 for the YAS Questionnaire).

## Study Area

- ✓ The sample has been collected in such a manner that all six divisions contribute at least 12 per cent of the sample size in the final sample of the study. Gurugram, being an important industrial and commercial hub, has contributed approximately 20 per cent respondents. The data covers all the districts of Haryana uniformly. See Table 25.

**Table 25: Sample Distribution Division/ District**

Division	District	No. of Respondents	Per cent
Ambala	Ambala	78	4.88
	Kurukshetra	69	4.32
	Yamunanagar	66	4.13
	Panchkula	33	2.07
Faridabad	Faridabad	51	3.19
	Palwal	100	6.26
	Mewat	77	4.82
Gurugram	Gurugram	316	19.79
	Rewari	59	3.69
	Mahendragarh	70	4.38
Hisar	Fatehabad	71	4.45
	Jind	49	3.07
	Hisar	54	3.38
	Sirsa	39	2.44
Rohtak	Rohtak	36	2.25
	Sonapat	60	3.76
	Bhiwani	48	3.01
	Jhajjar	56	3.51
	Charkhi Dadri	87	5.45
Karnal	Karnal	53	3.32
	Panipat	66	4.13
	Kaithal	59	3.69

Source: HVSU Youth Aspiration Survey – 2017

## Sampling Technique

- ✓ To conduct the survey and collect the responses, the study has adopted the stratified and convenience type of sampling technique.
- ✓ As per a different study on Haryana, 4.8 per cent of the population above 15 years of age has received some kind of vocational training and 7 per cent graduates and 8 per cent post graduates are unemployed due to unavailability of jobs matching their skill/ training and experience. To ascertain the above, the data has been collected from a diverse spectrum of youth population.

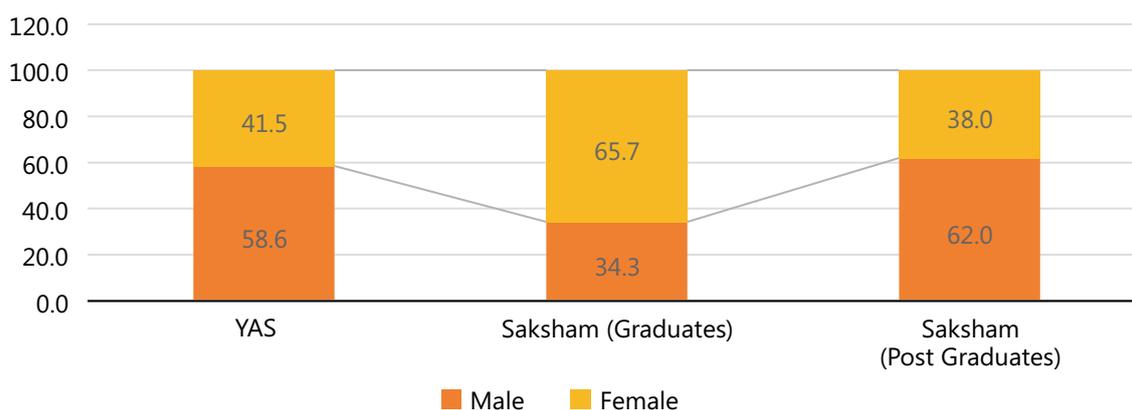
## Sample Size

- ✓ The survey being descriptive and empirical in nature has collected responses from 1597 respondents comprising of students enrolled under NSQF Levels 1, 2, 3 & 4; pursuing diploma from ITIs, enrolled under different graduate and post graduate programmes in colleges and universities; school dropouts and unemployed. The response has also been compiled and

analysed for the students enrolled under 'Saksham Yuva Yojna'. The respondents under SY Y comprise of 12547 post graduates and 1910 graduates. The total sample of the study is 16054 respondents.

- ✓ The survey has tried to explore the youth's preference towards various sectors of economy and the associated job roles therein. The questionnaire for YAS includes 16 sectors namely agriculture, apparel, automobile, banking & insurance, construction, entrepreneurship, health care, hospitality & tourism, IT/ITeS, logistics, management, petroleum & solar energy, retail, security, sports and textile to determine the preferences of students across 69 job roles. (See Annexure 3 & 4). The SY Y respondents were given options for 15 sectors namely agriculture & allied, textile & apparel, automobile, banking & insurance, construction, food processing industries, healthcare, hospitality & tourism, IT/ITeS, logistics & transportation, electronics & telecommunication, green jobs, retail, beauty & wellness and sports & physical education to provide their preferences.
- ✓ Gender-wise, the respondents' population is well dispersed. In YAS, males comprise of 58.55 per cent and females 41.45 per cent. In context to Saksham aspirants, the graduates accounted for 34.3 per cent females and 65.7 per cent males. On the other hand, 62 per cent female and 38 per cent male respondents were post graduates.

**Figure 31: Gender Profile of Respondents**



- ✓ The YAS survey was conducted amongst the respondents of age group ranging from 14 to 32 years. More than 80 per cent of the respondents were between 14 and 22 years of age.
- ✓ The YAS samples were collected from schools (73.01 per cent) and colleges (26.98 per cent). The educational institutes have been further segregated into government (86.29 per cent) and private (13.71 per cent) to take into account the diverse viewpoints of aspirants.

**Table 26: Profile of Respondents**

Group	No of Respondents	Per cent
<b>Age</b>		
14	136	8.52
15	126	7.89
16	216	13.53
17	218	13.65
18	252	15.78
19	143	8.95
20	108	6.76
21	76	4.76
22	57	3.57
23	51	3.19
24	43	2.69
25	38	2.38
>=26	133	8.33
<b>Total</b>	<b>1597</b>	<b>100.0</b>
<b>Gender</b>		
Male	935	58.54
Female	662	41.45
<b>Total</b>	<b>1597</b>	<b>100.0</b>
<b>School/Collage</b>		
School	1166	73.01
College	431	26.98
<b>Total</b>	<b>1597</b>	<b>100.00</b>
<b>Government/Private</b>		
Government	1378	86.29
Private	219	13.71
<b>Total</b>	<b>1597</b>	<b>100.00</b>

Source: HVSU Youth Aspiration Survey – 2017

- ✓ The sample size represents 207 (12.96 per cent) respondents are qualified up to class IX followed by 280 (17.53 per cent) from class X, 72 (4.51 per cent) from class XI, 547 (34.25 per cent) from class XII, 230 (14.40 per cent) with graduate and post-graduate degrees and 261 (16.34 per cent) with ITI qualification.



**Table 27: The Education Profile**

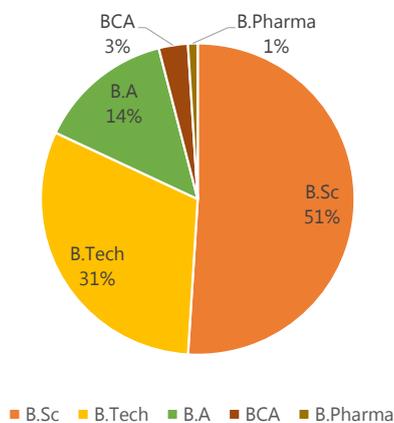
Education Standard	Male	Female	Total
Class IX	113	94	207 (12.96)
Class X	180	100	280 (17.53)
Class XI	42	30	72 (4.51)
Class XII	276	271	547 (34.25)
ITI	196	65	261 (16.34)
Graduation	85	68	153 (9.58)
Post-Graduation	43	34	77 (4.82)
Total	935 (58.55 )	662 (41.45)	1597 (100.00)

Source: HVSU Youth Aspiration Survey – 2017

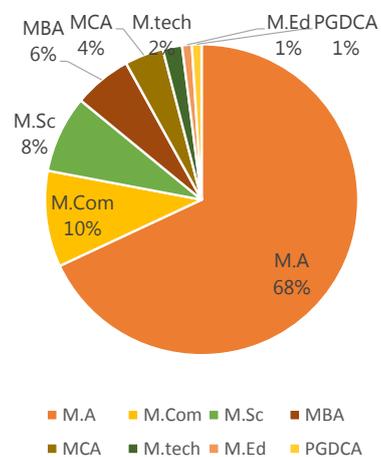
Note: Figure in parenthesis represent per cent

Qualification-wise break-up of the Saksham respondents is varied. Amongst the graduates 65 per cent are science and arts graduates, 31 per cent engineering graduates, followed by BCA (3 per cent) and B. Pharma (1 per cent). The post graduates' profile is somewhat similar, as 86 per cent are from arts, commerce and science streams, while MBA and MCA comprising 6 per cent and 4 per cent respectively.

**Figure 32: Qualifications of the Graduates**



**Figure 33: Qualifications of the Post Graduates**



## Results and Discussions

### Aspirations

**Lure of Government Jobs Continues:** Results indicate that the age old obsession with the government jobs still persists in the mindset of youth as 59.67 per cent respondents aspire for government jobs and 14.65 per cent youth also aspire to serve the nation by joining the Armed Forces. Preference for working in the private sector was given by just 11.65 per cent respondents despite various job avenues created by industry and service sectors.

**Agriculture Loses its Charm:** Agriculture as a career option was preferred only by 3.07 per cent despite Haryana being an agrarian state with 65.12 per cent population still living in the villages. However, the spirit of entrepreneurship was observed as 10.96 per cent respondents expressed desire to be self-employed.

**Table 28: Preference of Profession**

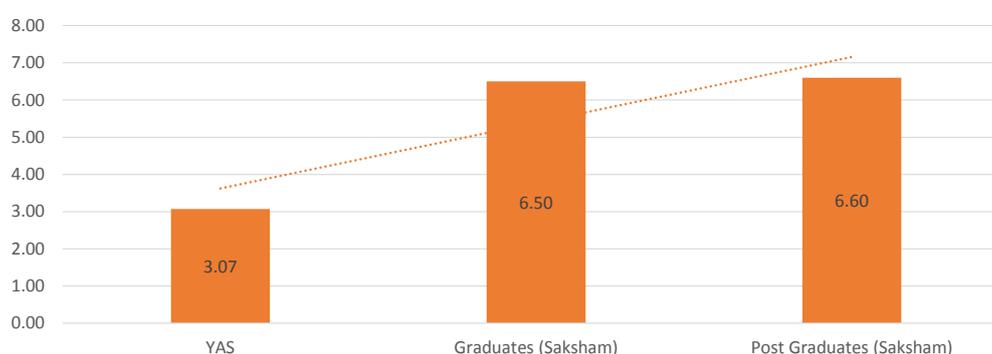
Profession	Male	Female	Total
Agriculture	36	13	49 (3.07)
Armed Forces	139	95	234 (14.65)
Government Service	554	399	953 (59.67)
Private Sector	102	84	186 (11.65)
Self Employed	104	71	175 (10.96)
Total	935 (58.55)	662 (41.45)	1597 (100.00)

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

Respondents scant preference towards agriculture as their considered career option is bound to surprise many, but it needs a closer look. Amongst the YAS respondents 3.7 per cent and 6.6 per cent of SYY respondents have opted for Agriculture. The charm of this age old profession is waning. It is observed that with the shift in the education levels the attraction towards agriculture increases, though marginally. In other terms, millennial population is not attracted towards the agriculture.

**Figure 34: Agriculture as a Career option**



Additionally, a survey conducted among the agriculture professionals from CCS-HAU, Hisar highlights the fact that most of the agriculture graduates who pass out every year prefer government and corporate jobs rather than taking up farming.

If the state wants to maintain its pride of place on the agriculture map of India, the youth need to be reoriented towards agriculture, by introducing it as a hobby, skill and vocation in the successive

rungs of the education ladder and provide entrepreneurial support to budding agri-preneurs. There are various sunrise areas like soil testing, IOT, organic farming, protected farming, etc. where the HVSU can get involved in skills development.

**Degree Dominates:** To fulfil their aspirations, 58.48 per cent respondents wanted to pursue a degree, 23.48 per cent diploma and 18.04 per cent certificate course. Age old mindset of people to acquire degrees for a job still lingers. There is need to promote dignity of labour, value of entrepreneurship and acceptability of certificate/ diploma courses for the employment to get over this legacy of the past.

**Table 29: Aspiration and Education**

Profession	Certificate	Degree	Diploma	Total
Agriculture	3	28	18	49 (3.07)
Armed Forces	62	131	41	234 (14.65)
Self Employed	36	92	47	175 (10.96)
Government Service	125	604	224	953 (59.67)
Private Sector Service	62	79	45	186 (11.65)
Total	288 (18.04)	934 (58.48)	375 (23.48)	1597 (100.00)

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

To derive a comprehensive overview of respondents' education profile, the study has tried to cross tabulate education profile with aspirations. The results indicate that respondents from all levels of education prefer government services. Students who are pursuing industrial training also show the same trend; out of 261 respondents from ITIs, 55.17 per cent (144) prefer government service followed by Armed Forces 75 (28.7 per cent). Only 31 (11.8 per cent) respondents want to pursue their career either in private sector or in business.

**Table 30: Education and Professions**

Education	Agriculture	Armed Forces	Business	Govt. Servant	Private Sector Service	Total
Class IX	9	31	21	119	27	207
Class X	8	38	31	166	37	280
Class XI	4	17	8	39	4	72
Class XII	14	59	57	339	78	547
ITI	11	75	15	144	16	261
Graduate	3	11	27	95	17	153
Post-Graduate	0	3	16	91	7	77
Grand Total	49 (3.07)	234 (14.65)	175 (10.96)	993 (62.18)	186 (11.65)	1597

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent



By far, it is evident that despite more job avenues being created by services and industrial sectors, students are still inclined towards government sector as their first career choice largely due to preconceived notions of job security and other factors. It poses a challenge to the policy makers and industry to attract the skilled workforce into the mainstream secondary and tertiary sectors by introducing innovative course designs.

Why do certificates and diplomas fail to impress youth irrespective of their qualification? Perhaps their curriculum, training delivery methods and less acceptability in the job market are to be blamed. Respondents attach intrinsic social and professional value with the degrees; despite these have not been able to get them the jobs. All qualifications do not require a degree format. Short-term courses culminating into certificates and diplomas are important in the professional and employment value chain. Their acceptability amongst the youth and employers needs to be established.

HVSU can take the lead, by offering short-term top-up courses on in-demand skills and technology. Aligned to the existing occupational standards and industry requirement, these courses will shore up the prospects of employability.

The path of education which leads to the acquisition of degrees needs exit options at suitable junctures, to provide more options to utilise employable skills and vocations. Confederation of Indian Industry (CII) and Weebox Survey – 2016 indicates that students, especially undergraduates, who have undergone some skill / professional course, have better chances of landing a job of their choice. The demand of certain skills like communication, IT, customer relations, sales, business development and field operations is perennial and multi-sectoral, and is expected to go up by 15 per cent in 2017. Training all students on such skills must be a compulsory part of the education framework.

Industry integrated model of learning skills brings together the trainee and his/ her future employer. At the workplace a trainee not only learns the skills but also processes through which these are applied to enhance productivity.

The aim of the model is to acquire theoretical knowledge and practical skills in equal measure, which can also be achieved without pursuing degree education. The parents, students and teachers need to work together to dispel the perceived notions attached to degrees.

## Innovative Models for Skilling

The survey has tried to explore the inter-relationship between respondents' educational background and their preferences for various models of vocational skill and training courses. The study shows that respondents aspire to be self-dependent while learning, as they do not wish to be financially dependent on their parents or family income.

A majority of respondents (~70 per cent) have opted for "Earn plus Learn" model, followed by "Earning Livelihood through Job" and "Learning a Vocational Skill".

**Table 31: Preference for Vocational Skill and Training Model**

Education	Earning + Learning	Earning Livelihood Through Job	Learning a Vocational Skill	Total
Class IX	157	31	19	207
Class X	171	83	26	280
Class XI	55	12	5	56
Class XII	401	98	48	547
ITI	169	83	9	261
Graduate	109	31	13	153
Post-Graduate	54	11	12	77
<b>Grand Total</b>	<b>1116 (69.88)</b>	<b>349 (21.85)</b>	<b>132 (8.26)</b>	<b>1597</b>

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

Preference for Earn plus Learn model should serve as a pointer for the policymakers, educationists and the industry while designing student-friendly models of training delivery in vocational/ technical education. It should be noted that financial independence will add to self-esteem and motivation of the youth and enhance their productivity.

The government should also look into developing an educational platform from upper primary level onwards to encourage students to take up vocational skill programmes for their future career options. Earn plus learn model can only succeed with the active cooperation and involvement of industry. It is main conduit of technical education and employment in other countries. Hence, government and educational institutes must incorporate industry while designing their training models.

Generation Y is more interested in Earn plus Learn model as compared to generation X, which prefers learning and earning afterwards. HVSU can prepare blended courses with industry which meets the aspirations of the both. Short-term courses should be conducted without causing much relocation of trainees. Towards this end, the existing network of community colleges can offer HVSU's courses at their campuses.

## On-the-Job-Training Soars

The inter-relationship between educational background and preference to training delivery methods outstrip the age old tradition of classroom teaching (5.13 per cent). Youths are looking for innovative OJT models (50.47 per cent) where they get to learn hands-on from industry stalwarts followed by the combination of all (classroom, digital and OJT method). This preference corroborates with the students' preference for Earn plus Learn model. Desire of youth to learn by practical approach rather than being taught by traditional training delivery methods should be taken due cognisance of, as it would require radical changes in training methods, infrastructure and curriculum.

**Table 32: Training Delivery Methods**

Education	Classroom Training	Combination of All	Digital	OJT	Grand Total
Class IX	10	89	9	99	207
Class X	17	113	19	131	280
Class XI	1	33	4	34	72
Class XII	31	200	26	290	547
ITI	16	60	12	173	261
Graduate	1	73	18	61	153
Post-Graduate	6	44	9	18	77
<b>Grand Total</b>	<b>82 (5.13)</b>	<b>612 (38.32)</b>	<b>97 (6.07)</b>	<b>806 (50.47)</b>	<b>1597</b>
<b>Gender Preference for Learning Model</b>					
	Classroom Training	Combination of All	Digital	OJT	Grand Total
<b>Female</b>	<b>38</b>	<b>262</b>	<b>32</b>	<b>330</b>	<b>662</b>
Earning + Learning	22	226	19	242	509
Earning Livelihood Through Job	7	20	8	68	103
Learning a Vocational Skill	9	16	5	20	50
<b>Male</b>	<b>44</b>	<b>350</b>	<b>65</b>	<b>476</b>	<b>935</b>
Earning + Learning	27	259	33	288	607
Earning Livelihood Through Job	10	59	18	159	246
Learning a Vocational Skill	7	32	14	29	82
<b>Grand Total</b>	<b>82</b>	<b>612</b>	<b>97</b>	<b>806</b>	<b>1597</b>

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

Further, the inter-relationship of gender vis-à-vis type of enrolment and training module indicates that both sexes prefer earn plus learn model aligned to OJT.

The evidences provide an empirical insight for the decision makers to build up such skilling model whereby, youth can pursue their career by adopting the industry aligned courses with outcome based knowledge.

Desire of youth to learn by practical approach rather than being taught by traditional training delivery methods should be taken due cognizance of, as it would require radical changes in training methods, training infrastructure and curriculum. To adopt a remunerative OJT method for youths, industry has to open its doors wider for the trainees, as this aspiration cannot be satisfied by providing apprenticeship only.

## Apprenticeship

In 2017, Haryana, despite being one of the major industrialised state, deployed a meagre apprenticeship population of 6245, spread across 18 industrial sectors involving 199 out of 882 industrial units of large and medium type. Automobile (2843), IT/ITeS (1331), Energy (582), Electronics (505) and Transportation (490) are the top five providers of apprenticeship.

Apprenticeship alone is not enough to meet the aspiration of youth who want to be educated/trained through Earn plus Learn or OJT model. Government and industry has to come up with innovative schemes to encourage industry to accommodate such a large number of aspirant trainees.

### Industry-sponsored Personnel

HVSU can take the initiative by developing a training model for the working professionals. Industry can sponsor them for requisite qualifications/ courses which will be run either in-situ or at the HVSU campus. This will help in keeping the workforce in tune with changing technology and also their retention with the organisation.

For the underprivileged students a low cost education model 'Learn Now, Pay Later' in consonance with Pratham recommendation can be adopted. The student is required to pay 30-40 per cent of the fee to start education and the rest can be recovered from him/ her in instalments after securing a job.

There is a need to improve upon present education delivery models and design an 'Education to Employment' system wherein students can decide the programmes that would help them in learning as well as earning. Multiple partnerships with industries and other academic institutions can be explored to provide multi-institution and multi-disciplinary exposure to the trainees based on mutually agreed curriculum and training delivery methods, based on Erasmus (European Community Action Scheme for the Mobility of University Students) model in Europe.

Exposure during apprenticeship/internship/OJT substantially increases the employability. The students who undergo such training are more confident and better poised while looking for the jobs. An analysis by CII in 2017 for 480,000 students shows that more than 88 per cent of the students were interested in apprenticeship.

### Women on the Move

On being asked their willingness to relocate, a whopping 74.64 per cent respondents said 'Yes'. Out of 662 female respondents, 77.49 per cent were ready to relocate as against 72.62 per cent males for pursuing a career. The readiness is indicative of women breaking the traditional barriers to claim their rightful place in the society.

The change in the mindset of female respondents may be due to some of the recent initiatives of the State Government like 'Beti Bachao: Beti Padhao', University for Women in Yamunanagar, Haryana Kanya Kosh, Aapki Beti Humari Beti, Operation Durga, Mahila Police Volunteer Initiative, etc.

There has been a focus on encouraging the society to change its mindset and allow women to join mainstream education across the state. It can also be attributed to uneven distribution of the opportunities in the State. The government should focus on providing safe working environment and facilities like working women hostels and safe transportation in every district.

Wherever possible, training on basic skills can be organised in clusters which are within the easy reach of women trainees. Schemes initiated by Ministry of Women & Child Development, Government of India like Support to Training and Employment Program for Women (STEP) for ensuring the sustainable employment and income generation need to be taken up. More emphasis should be laid down on One Stop Centres and Sabla schemes for integrated support and holistic development of girls. This will motivate women to avail skilling opportunities closer to their homes.

**Table 33: Women Relocation and Need for Communication Skill Training**

Gender	Wish to Relocate		Total
	No	Yes	
Female	149 (22.51)	513 (77.49)	662
Male	256 (27.38)	679 (72.62)	935
<b>Grand Total</b>	<b>405 (25.36)</b>	<b>973 (74.64)</b>	<b>1597</b>
Wish to Enroll for Communication Skill Training			
Female	79 (11.93)	583 (88.07)	662
Male	173 (22.99)	588 (77.01)	935
<b>Grand Total</b>	<b>232 (18.41)</b>	<b>1075 (81.59)</b>	<b>1597</b>

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

### Focus on Communication Skills

Non-proficiency of Haryana youth in communication skills has been eclipsing their careers for long, despite being hard working and diligent. The youth have realised this deficiency and are ready to overcome it. 82 per cent of the respondents have shown keen interest in undergoing a structured training in communication skills. Females have overtaken males as 88.07 per cent female respondents said 'yes' to communication training as against 77.01 per cent male counterparts. It suggests that the government must include communication skills as part of the curriculum at every stage of learning and launch some structured training programmes for communication skills.

As per Weebox survey conducted in 2017, vital factors which enhance employability are logic, numeric ability, domain knowledge, communication skills, cultural understanding, integrity & values, personality, adaptability, learning agility, etc. HVSU should develop the courses that are embedded with such learning.

### School Dropouts - a Focus Segment

Out of the 1597 respondents, more than 8 per cent (136) are school dropout falling under the age group of 15 to 26 years. An analysis carried out by NSDC has also mentioned a dropout rate of 15.8 per cent at secondary level and 5.75 per cent at senior secondary level in the state.

More than 88 per cent (121) of dropout respondents wish to continue their study through different mediums to build up their career. There is a scope for creating a window of opportunity in the prevailing education system for dropouts to restart their education. Vocational skill education for such students shall be highly beneficial. Respondents who expressed their desire to restart their study also preferred earn plus learn learning model.

**Table 34: School Dropouts**

Response	No of Respondents
<b>School Dropouts</b>	
Yes	136 (8.51)
No	1461 (91.48)
<b>Total</b>	<b>1597 (100.00)</b>
<b>Reason for Dropout</b>	
Poor Academic Performance	8 (5.88)
Family Economic Condition	56 (41.18)
Personal Reason	61 (44.85)
Any Other	11 (8.09)
<b>Total</b>	<b>136 (100.0)</b>
<b>Wish to Continue Study</b>	
Yes	121 (88.97)
No	13 (11.02)
<b>Total</b>	<b>136 (100.0)</b>

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

### Existing Basic Skills

The survey attempted to capture existing basic skills among the youth and it was observed that 25.40 per cent of the respondents are computer literate, 23.41 per cent claimed proficiency in some sports, 15.0 per cent possessed painting skills and driving while teaching and tailoring were above 10 per cent. Some respondents claimed to possess multiple skills.

**Table 35: Existing Skills in Youth**

Skill	Frequency
Computer	365
Sports	337
Painting	224
Driving	172
Teaching	209
Tailoring	145
Beautician	134
Music	137
Electrician	119
Cooking	111
Agriculture	156
Photography	114
Shop keeping	105
House keeping	79
Accountancy	75
Mobile Repair	68
Salesperson	67

Skill	Frequency
Hair Cutting	74
Appliances Repair	63
Cycle Repair	47
Security Guard	34
Auto Repair	32
Plumbing	30
Dairy	25
Welding	26
Handicrafts	36
Carpentry	38
Mason	19
Grain Milling	14
Blacksmith	5
<b>Do you possess any degree for your skills?</b>	
No	1083 (67.81)
Yes	514 (32.19)
<b>Grand Total</b>	<b>1597 (100)</b>

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

However, 67.81 per cent of the respondents surveyed did not possess any certification for their skill. Such youth, who are proficient in some skill, need to be (a) trained on advanced skills, (b) duly certified or (c) given support to become an entrepreneur. A supportive policy for engaging such youth would play a vital role in settling them in careers of their choice and drive economic growth of the state.

People who are endowed with skills or have learned through informal manner lack acknowledgement and certification. A large workforce works in our homes, farms and factories. In the absence of certification, they are considered unskilled. Due acknowledgement and certification will not only enhance their self-esteem but also pave way for their career progression. The government should open centres for learning, counselling, assessment, licensing and entrepreneurial development specific to sectors so that a skilled person can get his/ her prior learning certified. The HVSU can be a nodal agency for such initiative.

Further, it was observed that 72.5 per cent of the respondents confirmed that they had heard about vocational education/ training which is indicative of spread of vocational education/ training through ITIs and NSQF amongst the youth.

**Table 36: Awareness Vocational Education/Training**

Heard About Vocational Training	Frequency	Per cent
Yes	1159	72.57
No	438	24.43
<b>Total</b>	<b>1597</b>	<b>100.0</b>

Source: HVSU Youth Aspiration Survey – 2017

Note: Figure in parenthesis represent per cent

## Sectoral Preference

To study the sectoral preference of respondents, the survey gave options of 16 different sectors to choose. The preferences have been ranked from 1 to 16 on the basis of choices opted by youth. Sports sector (400) appears to be most preferred sector, followed by IT/ITeS (371), automobile (332), healthcare (303), banking & insurance (271) and construction (235) and so on. The results match with outcomes of surveys conducted by agencies like NSDC, National Council of Applied Economic Research (NCAER), RMSA and PricewaterhouseCoopers (PWC) for exploring the emerging sectors for training and employment of youth in Haryana. (Refer Annexure 5 & 6).

**Table 37: Sectoral Preferences of Youth**

Sector	Preferences	Rank
Sports	400	1
IT/ITeS	371	2
Automobiles	332	3
Healthcare	303	4
Banking, Financial Services & Insurance (BFSI)	271	5
Construction	235	6
Security	203	7
Management	200	8
Entrepreneurship	194	9
Retail	180	10

Sector	Preferences	Rank
Hospitality & Tourism	167	11
Apparel	154	12
Agriculture	150	13
Logistics	117	14
Textile	106	15
Solar	65	16

Source: HVSU Youth Aspiration Survey – 2017

The results are indicative of aspiration of youth for imbibing skills and seeking jobs in various sectors of economy. The inter-relationship between the educational background and the sectoral preferences has been focussed. Automobile is the first preference of class IX students. Sports have been preferred by class X and XII students, whereas class XI students preferred IT/ITeS and healthcare sector. ITI students preferred construction sector. IT/ITeS appears to be most preferred sector amongst graduate and post graduate students, followed by BFSI, automobile and healthcare (Refer Annexure 7).

Certain promising sectors like modern agriculture, solar energy, logistics, hospitality & tourism, textile & apparel and entrepreneurship have not found favour due to poor awareness levels amongst the respondents.

Hence, to tackle unemployment in the short term, government should focus on sports, IT/ITES, healthcare, BFSI, tourism & hospitality and construction sectors as its key thrust areas by offering specialised OJT courses to the youth.

### Job Roles for Current and Future Scenario

The YAS explores highly preferred job roles across different sectors. It is observed that organic farming & composting (45), sewing machine operator (74), showroom executive (92), insurance advisor (77), electrician (133), beauty & wellness (74), general duty assistant (89), multi-skilled person (38), junior software developer (113), shipment bagging agent (34), HR assistant (44), solar energy appliances technician (38), cashier (74), CCTV supervisor (111), physical training instructor (160) and weaver (40) are the most aspired job roles from the respective sectors by the youth (Refer Annexure 8, 9).

Thus, it becomes necessary for the government to generate jobs that match the aspirations of the youth and requirement of the industry. Promising sectors of economy should be introduced at different education levels (secondary to senior secondary) as vocational and skill education subject to prepare required workforce.

An intensive consultation with more than 50 industry experts was held to ascertain in-demand sectors, technology and job roles by HVSU. It has been noticed that there are many job role that are common across the industry.

Some of the job roles cited by experts are fitness expert, event sports management specialist, yoga instructor, physical training instructor, sports medicine (Sports); maintenance, robotics, quality control, CAD CAM/optics/3D printing, CNC operation, tool & die designing, mechatronics, design engineering (Automobile/Manufacturing); general duty assistant, medical imaging specialist, paramedic staff, geriatric care, tele-radiology, Ayurvedic therapy, equipment maintenance specialist, health informatics specialist (Healthcare); heavy engineering tools automation management (Construction); chip designing, operators (Electronics); warehouse management, demand planning & supply; transport management (Logistics); event manger, food & beverage services, kitchen staff,

travel consultant, ticket agents, guest house caretakers (Hospitality & Tourism); Waste management, renewable energy management (Green Jobs); retail sales associate, departmental manager, store manager, channel marketing manager, e-marketing manager (Retail); cyber security, CCTV Supervisor (IT); CRM executive, mutual fund agent, insurance advisor, sales associate retail (BFSI); soil testing, organic farming, IOT, geographic information system (Agriculture).

The job role identified from the industry experts, sector skill councils and youth aspiration aspirant are in conformity with one another. The university should develop the courses and train people as per industry's demand.

### Trainers are Crucial

As we expand our horizon by including more and more sectors and job roles in the vocational education fold, there would be huge requirement of qualified trainers in current as well as emerging sectors. Associated requirements of training such as infrastructure, curriculum, and course material shall also be required to be addressed simultaneously. Training is as good as its trainers and assessors; hence a cadre of competent trainers and assessors is a prerequisite for successful implementation of vocational education model in the state.

### The SY Y

Despite being an industrial state, Haryana still faces unemployment amongst diploma/certificate, graduates and post graduates. The skill gap analysis reports by NSDC, NACER, and PWC have found that despite of being highly educated, youths are not skilled enough to match the requirement of employers in the market.

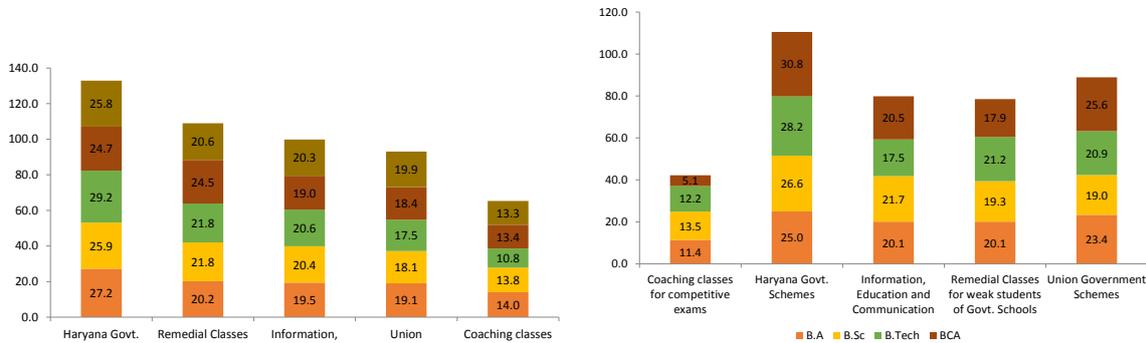
The Government of Haryana had launched 'Saksham Yuva Yojna' in 2016 with an aim to provide educated unemployed youth an allowance of Rs 3,000 and an honorarium of up to Rs 6,000/- for 100 hours of work, for three years or till the age of 35 years.

The educational profile of SY Y aspirants indicates that maximum unemployment exists in general education stream (arts, science & commerce). What is more surprising is the unemployment prevailing amongst the youth with technical and professional degrees (engineering, management and computer applications). The unemployment in this segment can be addressed by offering short-term value-added courses, teaching employability skills and offering them a comprehensive assistance for start-ups.

The job preferences of graduates and post graduates are inclined towards the following:

- a. Participation in State government schemes (graduates 27.6 per cent and post graduates 26.6 per cent),
- b. Participation in Central government schemes (graduates 22.2 per cent and post graduates 18.6 per cent),
- c. Information, education & communication (graduates and post graduates 20.0 per cent)
- d. Remedial classes for weak students (graduates 19.6 per cent and post graduates 21.8 per cent).
- e. Coaching classes for competitive exams (graduates 10.6 per cent and post graduates 13.1 per cent)

**Figure 35: Qualification vs Job Preferences**



More than 54 per cent preferred to work with job opportunity in state government as compared to 40.8 per cent with Central government. 41.4 per cent were keen on coaching weak students, while 23.7 per cent preferred to coach students for competitive exams.

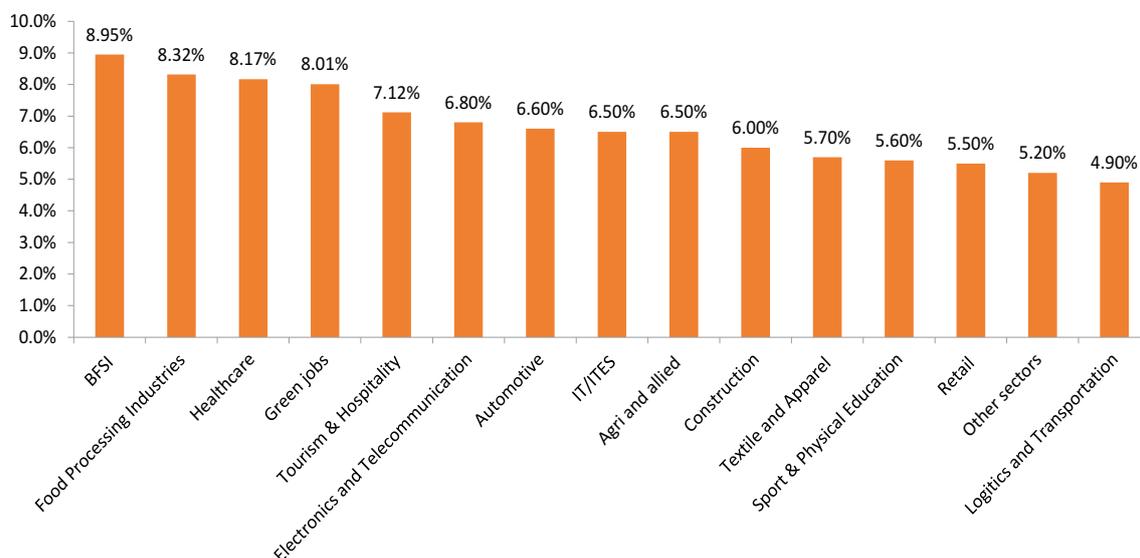
The job preferences of respondents are in line with the preferences of YAS aspirants. This reflects that the common preference for the government job prevails. The government should encourage the students to evaluate on various entrepreneurial skill and vocational education as career option. To wean away people from the lure of government jobs an awareness campaign should be run in the schools and colleges. The government can also leverage the aspirants for Saksham for remedial and coaching classes so as to help the poor and underprivileged students of the state. This would also help in developing the enrolment ratio and literacy level of the state.

### Sectoral Preference

#### Graduate:

The rank preferences among the graduates for sectors appear to be evenly distributed across 15 sectors. Top five preferences are BFSI (8.95 per cent), food processing industry (8.32 per cent), healthcare (8.17 per cent), green jobs (8.01 per cent) and tourism & hospitality (7.12 per cent). Overall percentage garnered by these sectors stands at 40.57 per cent.

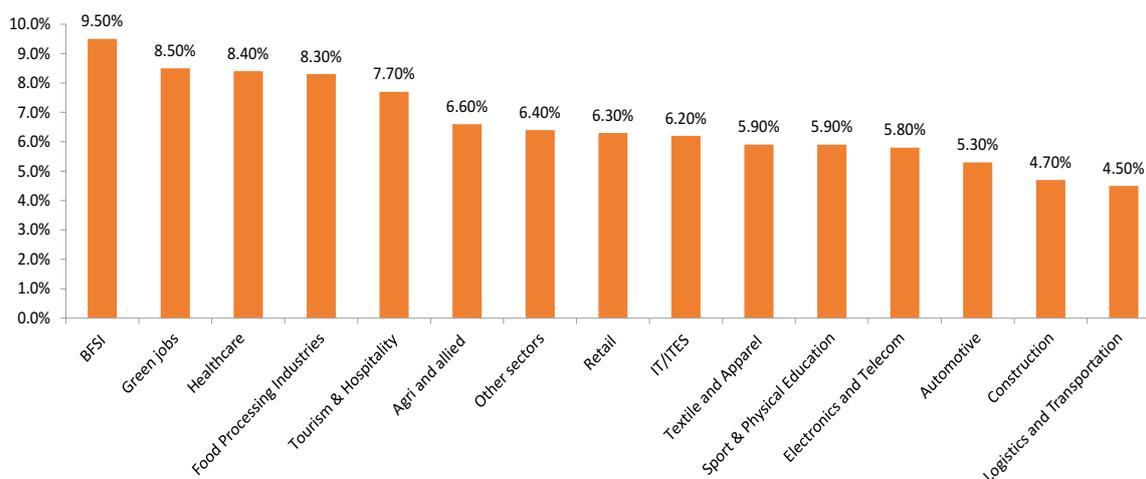
**Figure 36: Sectoral Preferences of Graduates Under SY Y**



## Post Graduate

The options exercised by post graduates for sectors selection do not display sharp preferences. Amongst the 15 sectors, sectoral preference remains unchanged. First five sectors are BFSI (9.5 per cent), green jobs (8.5 per cent), healthcare (8.4 per cent), food processing industry (8.3 per cent), and tourism & hospitality (7.7 per cent). Food processing and green jobs which were at second and fourth rank respectively in the graduates' preference have swapped their ranks. Overall percentage scored by these sectors stands at 42.4 per cent.

**Figure 37: Sectoral Preferences of Post Graduates under SY Y**

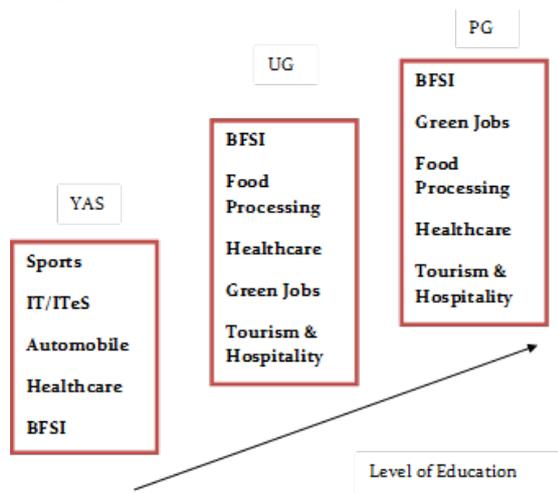


The preferences of graduate and post graduates are reflective of their awareness of sunrise and happing sectors of economy. The preferences are commensurate to their qualifications which can be honed by acquiring value added skills and competence.

## Comparison Between YAS and SY Y:

While comparing the preferences of Youth Aspiration Survey with SAKSHAM, difference is notable, YAS respondents being young and studying vocational education subjects being taught from class IX to XII have given similar preferences. However, two options i.e., BFSI and healthcare match with Saksham preferences. The probable reason could be that undergraduates are young, who have left schools recently and willing to restart studies, if possible. Their options match with the vocational education subjects taught under RMSA. The graduates and post graduates are looking for secured jobs. They have preferred the area of specialisations.

**Figure 38: Sectoral Preferences YAS & SY Y**



## Key Inferences

**Challenges:** It is evident from the survey that despite more job avenues being created by service and industrial sector in Haryana, students are still inclined towards government sector as their first career choice largely due to preconceived notion of job security and other factors. It poses a challenge to the policy makers and industry stalwarts to attract the skilled workforce in the mainstream secondary and tertiary sectors by introducing innovative course designs.

**Adopt Innovative Models of Skilling:** Desire of youth is to learn by practical approach rather than being taught by traditional training delivery methods. This should be taken due cognizance of, as it would require radical changes in training methods. Preference to earn plus learn model and OJT should be opted by the policy makers while designing different models of training delivery in vocational/ technical education.

**Focus on Communication Skills:** Youth of Haryana have realised this deficiency and are ready to overcome it hence government must include communication skills as part of curriculum at every stage of learning and must launch some structured programmes for communication skill training.

**Training is Need of the Hour:** Majority of youth is proficient in some skill but need to be (a) trained on advanced skills, (b) duly certified or (c) given support to become an entrepreneur. A supportive policy for engaging such youth would play a vital role in settling them in careers of their choice and drive economic growth of the state.

**Sectoral Preferences:** To address unemployment, Government should focus on sectors which align with Youth aspirations such as Sports, IT/ITES, Healthcare, BFSI, Tourism and Construction sector. Government should focus on these as key thrust areas and align investment in infrastructure of these sectors while offering specialised OJT based training courses targeting skill development of youth of Haryana. While comparing the preferences of YAS with SYY, it can be observed that there is a difference in preferences, as undergraduate students are young, they are motivated to opt for new avenues and take courses accordingly. Their options tally with the subjects offered under vocational education under RMSA. While graduate and post graduate students are more inclined toward specialisation leading to stabilised jobs. However, two options i.e., BFSI and healthcare match with SYY preferences.

**Trainers are Crucial:** As we expand our horizon by including more and more sectors and job roles in the vocational education fold, there would be huge requirement of qualified trainers. Hence a cadre of competent trainers and assessors is a prerequisite for successful implementation of vocational education model in the state.

## CHAPTER - 5

# Skill Education and HVSU Framework

India holds an important place in global education ecosystem. With more than 1.5 million schools and 260 million students, 751 universities and 35,539 colleges, the education system in India is considered as one of the most extensive in the world.

In ancient times, India had a Gurukul system of education. During those times, a student was accepted by a teacher (Guru) who taught all subjects from Sanskrit to holy scriptures and from mathematics to metaphysics to all students. The students stayed with the teacher and left only after he/she deemed the education completed.

The modern education system in India was set in place by the British in the 1830s. The design of curriculum was confined to English, Science and Mathematics. The subjects of Nature and Philosophy were considered unnecessary and teaching was confined to classroom rather in nature.

In India, the Right of Children to Free and Compulsory Education Act - 2009 mandates Governments to provide free and compulsory education for children between 6 to 14 years of age. Generally, primary education (Class I to V) starts at an age group of 5-6 years, middle/upper primary (class VI to VIII) school education ends at age 14. Secondary education begins from class IX and lasts until class XII with age group ranging between 15-18 years. By and large, class X is known as secondary and class XII as senior secondary. Based upon performance in secondary school education, students may choose their subjects for senior secondary school, where students get a chance to select a stream like science, commerce, and arts/humanities. The U-DISE report mentions that the dropout ratio happens to be on a higher side at secondary level and transition thereafter.

To achieve universal elementary education (Sarva Shiksha Abhiyan) and improve enrolments and skill education in schools, MHRD is running RMSA schemes. Under RMSA, vocational education is aligned to NSQF. It offers options to students to select a particular course from available vocational subject whose curriculum is spread over from class IX to XII. Haryana was selected as one of the pilot states and initially started with 40 schools in selective trades such as automotive, IT/ITeS, retail and security in 2012.

The curriculum for the Higher Secondary Certificate Examination (HSCE) is determined by the boards of secondary education. The HSCE is most common class XII examination. However, All India Senior School Certificate (CBSE), Indian School Certificate, Certificate of Vocational Education (CISCE), Senior Secondary Certification (NIOS), Intermediate Certificate and the Pre-University Certificate are also offered.

The ITIs and Industrial Training Centres (ITC) provide training in various industrial sectors after post-secondary schools. These operate under Directorate General of Training (DGT), MSDE. To enhance employability, NAPS was launched under apprenticeship schemes. The NAPS contemplates to make

it more attractive for both industry and youth. This scheme is incentivising employers, sharing of basic training cost in respect of apprentices and offer stipends to the apprentices.

Another body under MHRD namely AICTE was also established to oversee quality control of technical education and regulate establishment of new private professional colleges.

The AICTE has established polytechnics and CCs catering the needs of students who have no access to a traditional college and wanted to pursue higher education. A student has a choice to pursue diploma post class X and can also opt for diploma for 2-3 years after class XII. AICTE has authorised polytechnics and CCs to also offer various technical and vocational courses which are specialisation in nature.

## Tertiary Education

The higher education system of India is highly centralised and subsidised. The university education system is overseen by University Grants Commission (UGC). It is a statutory body that determines and maintains standards of higher education. It is responsible for developing education system, allocation of funds and grants with due recognition to the institutes in India. It has established NAAC to assess universities and colleges using ranking system ranging from A++ to C for ascertaining the Quality Status of an institution.

In 2015, UGC introduced Choice Based Credit System (CBCS) in attempt to encourage a more interdisciplinary approach to education and offer more flexibility and choice to students. The reform also introduced a standardised assessment and grading plan based upon a 10-point scale. Since its inception, the system has faced scrutiny by students and administrators.

UGC has recognised vocational education as a stream at the higher education level and initiated a degree programme namely Bachelor of Vocation (B.Voc), Master of Vocation (M.Voc) and Ph.D. It has given an opportunity to students for vertical mobility. The programmes under vocation at education framework are a blend of general and skill & vocational education to promote mobility between the two. This framework allows multiple pathways between vocational education and job markets. It allows learners to exit and rejoin industry to enrich his/ her competence. The student can again resume the University and can further enhance skills to get into a niche industry of his/ her choice. This framework is well articulated between vocational education, ITIs and conventional education system.

To have a comprehensive understanding for vocation and skill education system across economies, it is imperative to explore some of the best practices that are being practiced by nations for delivering the vocational education and training.



## CASE STUDIES

### International Vocational Education Models

## Vocational Education and Training in Germany

Germany is a country with 82.67 million population and 16 States (Landers). It is one of the largest economies and ranked 11th on Human Capital Index-2016 and 9th on Global Innovation Index-2017. In 2017, the Country's jobless rate dropped to 5.8 per cent, the lowest since 2011.

Germany is known for its dual training system known as Vocational Education and Training (VET) that builds relationship between learning and training. This dual training helps students to undergo training in an industry along with education in a vocational school. The VET enables trainees in their transition from education, training and into employment. Its efficacy can be gauged from the fact that Germany had low youth unemployment rate of 3.6 per cent in June 2017- the lowest in the European Union.

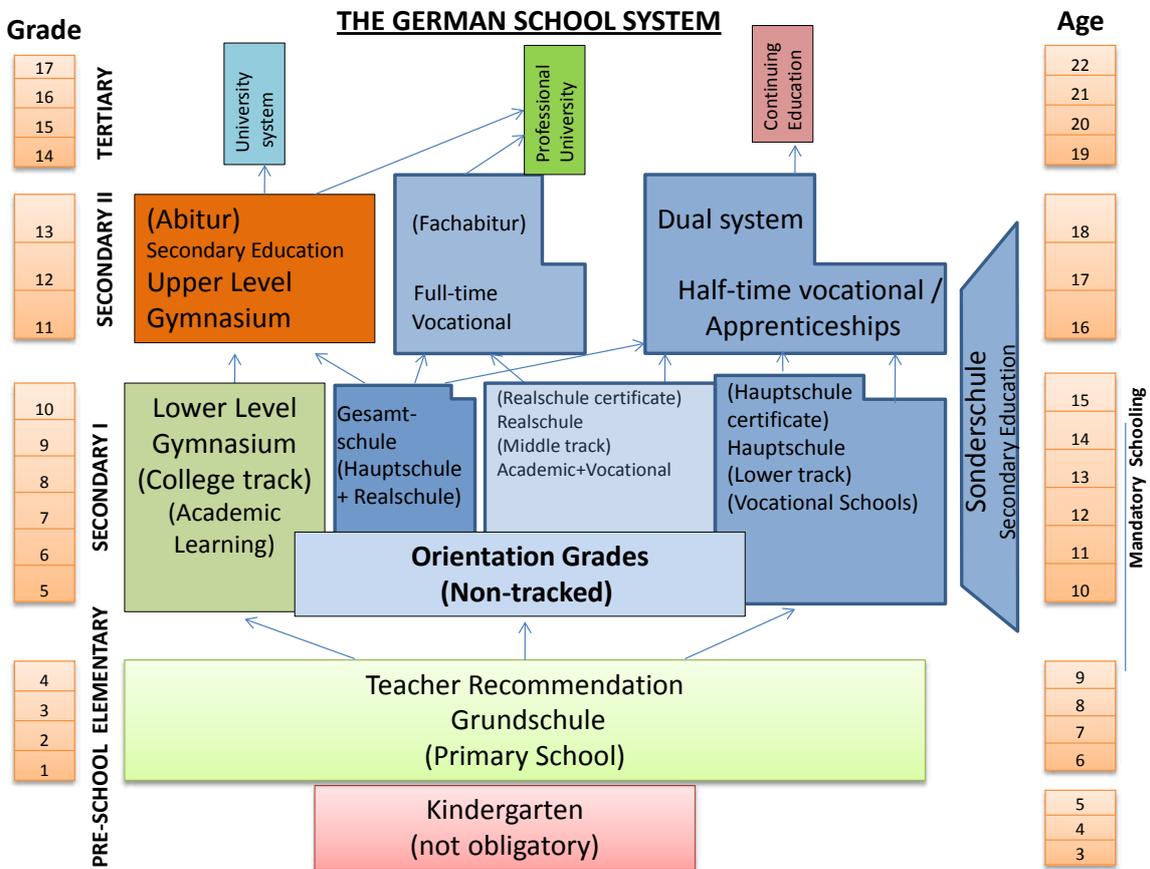
The VET has noticeable presence starting from the schooling level especially within Secondary Sector II. The compulsory education ends at age of 9 or 10. The performance in secondary school primarily determines the future pathways – academic, academic and vocational and pure vocational education. After this, students move to upper secondary education and take up streams depending upon their aptitude. Generally, majority of VET graduates work as skilled employees and may take further specialisations in universities.

Approximately 50 per cent of the students opt for vocational training under the dual training system which lasts for 2-3.5 years, depending on the trade. Significant characteristic of the dual system is, that the Industry and Crafts bear the responsibility and ownership through their representative bodies, the Chambers of Industry and Commerce and Chambers of Crafts.

Approximately 70 per cent of the VET processes are delivered as in-house training in companies according to compulsory training ordinances (curricula) by Chambers certified corporate trainers. These trainings are closely monitored and certified by the Chambers. The apprentices enter into a training contract with the company under which they are also paid an apprenticeship salary, and are thereafter registered at Chambers of Industry and Commerce.

Vocational schools, which are run by the state governments and staffed by high profile faculty with bachelor and master degrees, are normally attended by the student twice a week. The syllabi of these schools are closely harmonised with the practical training curricula. This symbiosis of practical training under real-time conditions and theoretic knowledge is intended to provide not only skills, but profound competencies and permits the continuation of the professional career up to the academic level.

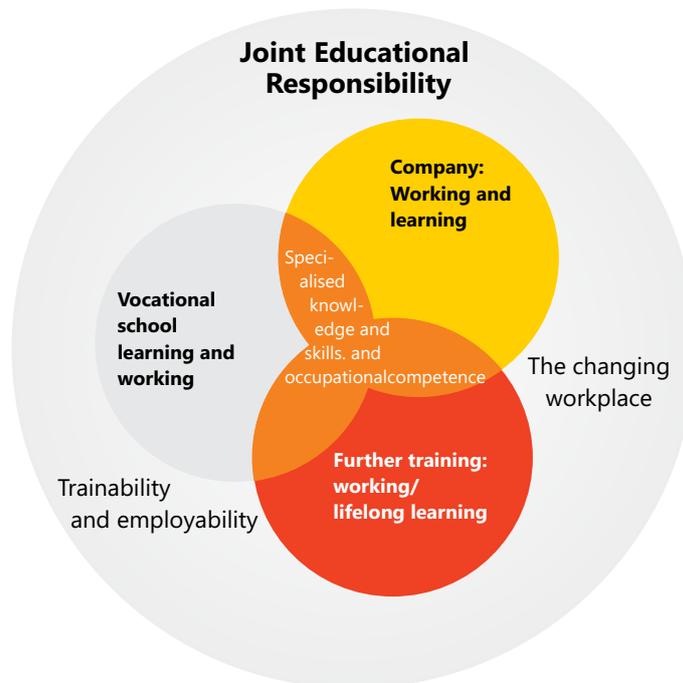
Figure 39: The German School System



VET graduates are qualified as skilled workers after passing the examination and this qualification is recognised throughout the country. VET graduates can advance to master craftsmen (i.e. Meister) or similar qualifications in their professions, subject to further advanced vocational training provided by their respective business Chambers and passing the Meister examination. VET graduates can also pursue higher education in universities of applied sciences or other post-secondary institutes, leading to bachelor or even master degrees.



Figure 40: Dual System - Basic Elements



Source: <https://www.sequa.de/images/stories/uploads/files/EN-Germanys-Vocational-Education-ataglance-BMBF-2003.pdf>

Moreover, industries, in association with the Federal Institute of Vocational Education (an apex body of the Ministry of Education) and trade unions, are crucial players for creating and updating training regulations and occupational profiling. This helps in bringing consistency and uniformity in training and certification across Germany.

**Eight-level German Qualification Framework (GQF):** GQF for Lifelong Learning (DQR), provides framework that encompasses all educational courses/ qualifications within Germany across every field. The GQF has eight-level qualification framework describing competence required to obtain qualifications. GQF draws a distinction between two descriptors, each of which is divided into two sub-categories: professional competence (knowledge & skills) and personal competence (social competence & autonomy).

Table 38: GQF Levels

GQF levels	Description
8	Doctoral studies
7	Master Strategic professional (IT), equivalent to master's degree
6	Master craftsmen, bachelor professional, certified specialist etc., equivalent to bachelor's degree
5	IT specialist (certified), information technology specialist, service technician (certified)
4	Dual vocational education and training ( 3 or 3 ½ years)
3	Dual vocational education and training (2 years)
2	Vocational training preparation (Entry-level vocational qualification, vocational school)
1	Vocational training preparation

European Credit Transfer System (ECTS) was developed by the European Commission to ensure a common method of academic accreditation for international study. The ECTS permits academic achievement to be compared and transferred between universities. The universities in Germany follow ECTS and students can achieve 60 ECTS credits in an academic year. The students usually study 30 credits per semester. One credit corresponds to 25 to 30 hours of work. Students workload in ECTS consist of timing required to complete planned learning activities such as attending lectures, seminar, independent and private study, preparation of projects and examination. European Credit System for Vocational Education and Training (ECVET) system aims at allowing the transfer, recognition and accumulation of learning outcomes to obtain a qualification.

**The Erasmus Programme:** The Erasmus is a cooperation and mobility programme in higher education. It aims at enhancement of quality in European higher education, promoting EU as a centre of excellence in learning around the world and promoting inter-cultural understanding through cooperation with third countries as well as for the development of third countries in the field of higher education. It comprises three actions:

- ✓ Implementation of Joint Programmes at Masters and Doctorate levels and award of individual scholarships/fellowships.
- ✓ Erasmus Mundus Partnerships aim at promoting institutional cooperation and mobility activities between Europe and third-country Higher Education Institutions (HEIs).
- ✓ It provides support to transnational initiatives, studies, projects, events and other activities aimed at enhancing the attractiveness, profile, image and visibility of, and accessibility to, European higher education in the world.

## Vocational and Professional Education & Training in Switzerland

Switzerland is a country with 8.37 million population and has 26 Cantons. Swiss economy is stable and holds 3rd slot in utilising its 85 per cent human capital (Human Capital Index-2016). According to Global Innovation Index-2017, Switzerland is one of the world's most innovative countries.

Switzerland, like Germany and many other European countries (Austria, Denmark and Norway) follows dual VET system. In Switzerland, it is called Vocational and Professional Education & Training (VPET) system. VPET is divided into two levels of education: Upper Secondary Level, VET and Tertiary Level Professional Education. Switzerland has the lowest youth unemployment rate (under 4 per cent) as compared to other developed countries. ILO (Lässig and Vuille 2014)

**Education and Stream Selection:** The VPET commences after lower secondary education (equivalent to class IX in India). The compulsory education culminates at Grade 9 or lower secondary school, equivalent to the secondary school in India. After compulsory education, students can choose between two upper secondary education options - academic and vocational. The performance at lower secondary is analysed and it largely influences the selection of the streams. Academically inclined students can go for academic education in upper secondary schools and spend next six or seven years to attain Graduation (Baccalaureate). On the other hand, students inclined towards vocational education can choose from different occupations and trades available. Such system from the school level could be beneficial for choosing stream and career paths.

**Community-based Career Centers:** The success of Swiss dual-track system is mainly due to the involvement of community-based career centers. These centers guide students in transition from Grade 9 to higher education and also counsel parents and students. They offer a wide range of services

from portfolio development, assistance in lining up opportunities or short pre-apprenticeships to sampling prospective apprenticeship companies. The career counsellors support students through this process, mentoring them until they have found the right options.

**Case Management Centres:** Students who have a problem in making a smooth transition into the VET system can use these case management centres. A case management system at the local/ Cantonal level engages various social service agencies, career guidance centres, etc. Case management system tracks the progress, offers advice and support for a transition to VET.

**Dual Education:** Generally, more than 70 per cent of students get enrolled in pre-vocational or vocational programs at the upper secondary levels. Among those who choose vocational programmes, about 93 per cent are enrolled in joint vocational programmes. VET prepares students for a career in a wide range of sectors including banking, high-tech, health and traditional trades and crafts, and due to this remains highly popular amongst the youth. Students are inducted in the industry and get to work with the experts. The training delivery is hands-on, students are paid while they learn and at the end receive a nationally recognised qualification. At the end of the training, the students can make a choice between seeking full-time employment and pursuing higher education.

The VET offers the following programmes:

1. **Two-year VET Programme with Federal VET Certificate** – The programme offers lower learning performance and a federally recognised professional qualification. This enables the students to continue for higher level offering within the sector.
2. **Three or Four-year VET Programme with Federal VET Diploma** – A federal VET diploma in a particular profession and mobility to a higher vocational education and training is offered to the successful candidates.
3. **Federal Vocational Baccalaureate (FVB)** – This is an extended general education to supplement the three or four-year VET programme for adolescents with higher learning performance. The FVB enables direct admissions in university of applied sciences.

**Table 39: Qualifications under VET**

Level	Qualifications (Abschlussarten)				
8					HFP
7				HF	
6			BP		
5		EFZ			
4					
3	EBA				
2					
1					

**Legend:** EBA: Federal VET Certificate - Two-year basic vocation education; EFZ: Federal VET diploma - Three or four-year basic vocational education; BP: Vocational examination; HF: Higher technical schools; HFP: Higher technical examination.

(Source: Swiss Department for Economy, Education and Science, 2015)

**Industry Engagement:** Swiss industries partner with the State Secretariat in education, research, and innovation. The aim is to develop industry qualifications and assessments, training curriculum, and additional course work for students during their upper secondary vocational education. The system produces highly skilled, ready-to-work employees for Swiss businesses, serving as a real and important economic incentive for businesses to participate. While in apprenticeship, the industry immediately puts young people in a setting with adult professionals, where they are treated differently than in school and given more responsibility, coupled with ample coaching and support. The learning is hands-on, contextualized, and applied: academic concepts are made real. Students are paid while they learn, typically the equivalent of about USD 600-700 a month to begin, growing to USD 1,100-1,200 by the third year. The duration of industry work is three to four days per week or a week at the most. At the end of the apprenticeship, they have a nationally recognised qualification, and the opportunity to move directly into full-time employment or to continue towards higher education.

**Stakeholders:** The Cantons supervise schools and colleges in higher education for apprenticeship. They offer vocational courses, career guidance services and provide training to apprenticeship trainers in the host companies implementing the Federal Vocational and Professional Education and Training Act. Professional organisations engage trade associations, social partners, VPET providers and companies for content of VET programmes and for establishing national qualification procedures.

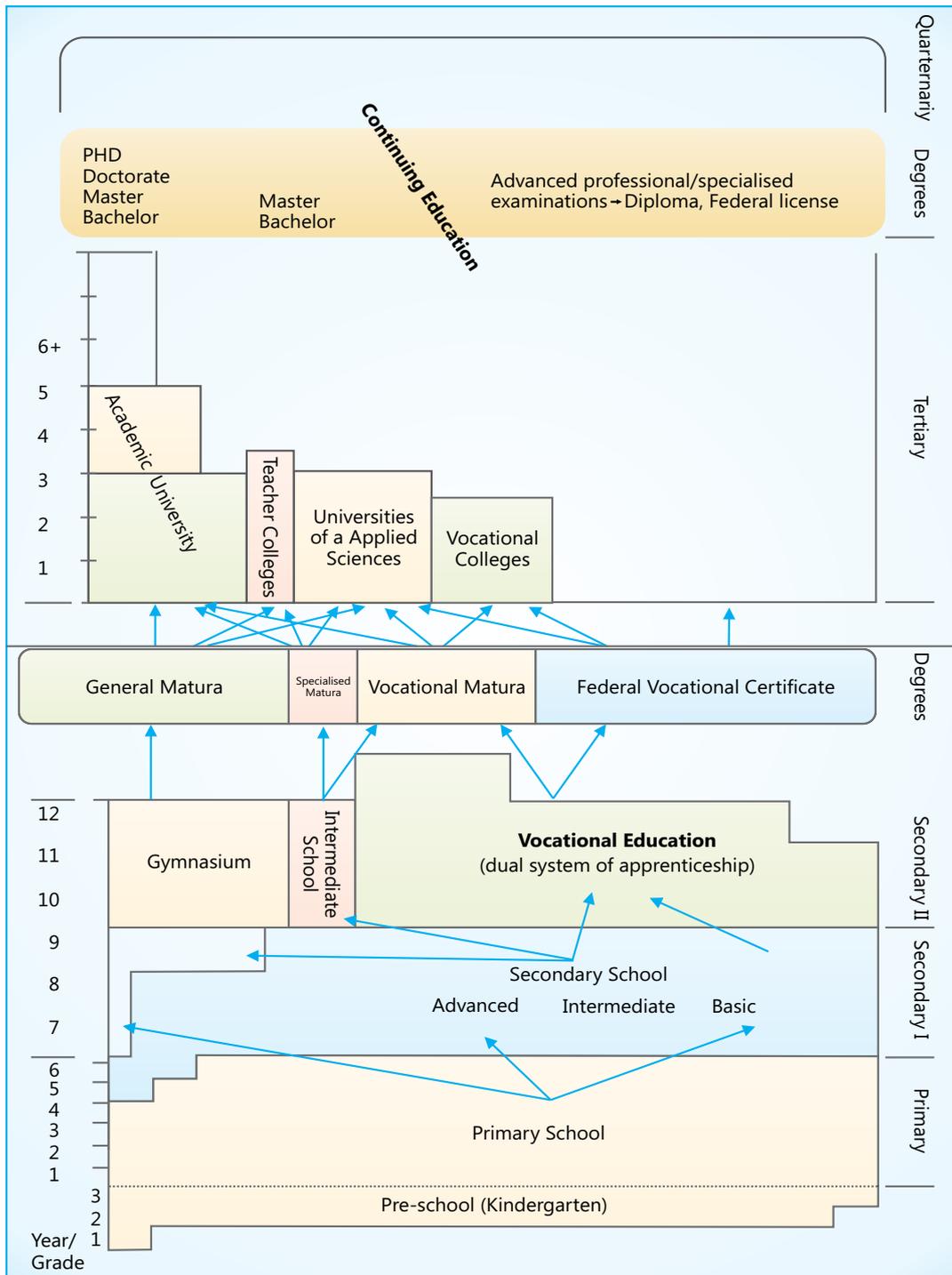
The VET and professional education are jointly carried by the Confederation, the Cantons and Professional Organisations. Two arms of the Confederation are:

- ✓ **State Secretariat for Education, Research and Innovation** which is responsible for regulating and co-funding the VET and professional education sectors.
- ✓ **Swiss Federal Institute for Vocational Education and Training** which provides basic and continuous training to teachers, trainers, instructors oversee examiners working at both VET upper secondary and professional education sectors.

**Credit Transfer:** The credit system is based upon ECTS developed by the European Commission. One credit corresponds to 30 hours. Like Germany, the Erasmus Programme is also popular in Switzerland.



Figure 41: Education System of Switzerland



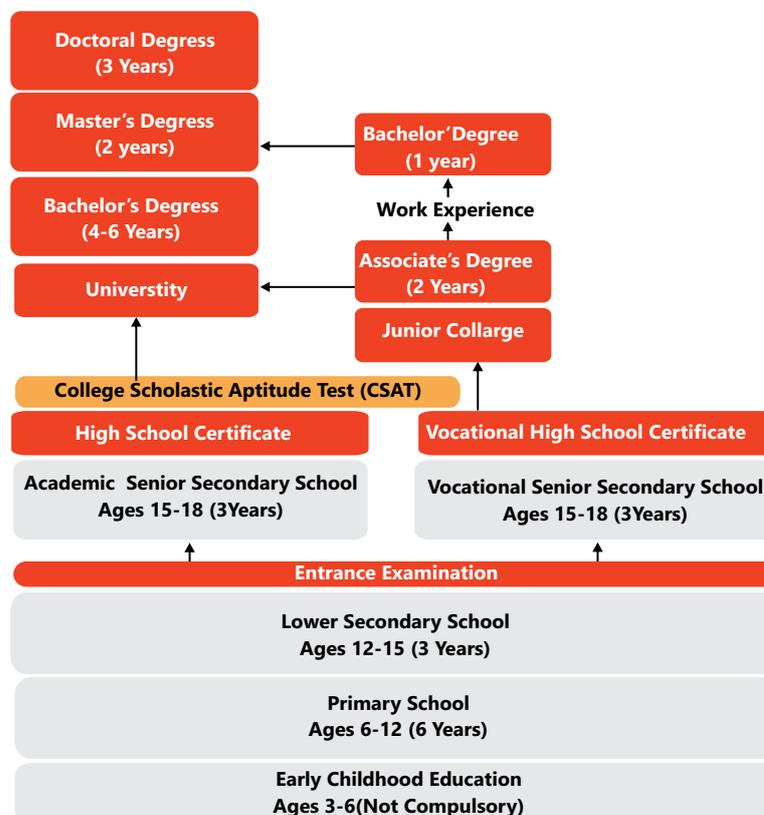
## Vocational Education and Training in South Korea

South Korea is a country of 51.44 million. According to Human Capital Index-2016, it is ranked 32nd in utilising its human capital. On Global Innovation Index-2017, South Korea is ranked as 11th. Countries unemployment rate had declined to 3.6 per cent in May, 2017 from 4.0 per cent in April, 2017.

**Equity in Education:** The South Korean system consists of pre-school, primary, secondary, higher and continuing education. Compulsory education covers primary education and lower secondary levels, from the age group of 6 to 14. Korea has various policies to promote equity in education, particularly from the early years. It provides early childhood education and day-care childcare institutions (Grade 1 & 2) offer creativity development programmes. South Korea has a school choice or ability grouping concept that promotes equity. Upper secondary education (3 years) consists of general, vocational and specialist streams. It has highest tertiary gross enrolment ratio in the world, while over 97 per cent of that same age group has finished at least upper secondary education, it performs very well in terms of educational equity (OECD: 2010).

**VET:** VET at high schools prepares students specific to sectors of the labour market. VET high school selection is based either on school's entrance exam or junior high school grades. Enrolment in general academic is higher as compared to vocational enrolment. In 2010, to enhance the attractiveness of vocational education, a group of vocational high schools (Meister schools) were established. It was designed on the lines of German model. The government offers full scholarship, boarding and lodging to the students attending Meister schools. It has helped in enhancing the status and appeal of Meister schools leading to further expansion.

Figure 42: Education System of South Korea



Source: National Centre on Education and the Economy, South Korea

**Stakeholders:** The Ministry of Education is responsible for quality of the education system, with policies led by the Central Government and supported by various bodies. The ministry oversees the capacity building of teachers, master teachers and evaluation and assessment framework of an education system. Other ministries, including the Ministry of Finance and the Ministry of Labour, also contribute to the development of policy, particularly in the area of vocational education and developing competencies to meet labour market demand. Municipalities are responsible for certain areas of education policy in compulsory schools, including managing budgets and school facilities in their area of responsibility.

**Lifelong Learning Account System (LLAS):** LLAS is a means of officially recognising, accumulating and keeping record of individual learning outcomes achieved outside regular school boundaries. It was designed to bridge the wide gap of participation of different age groups and educational attainment levels. The concept of LLAS is to facilitate lifelong learning across all stages. This lifelong education account system recognises the non-formal learning experiences enabling attainment of primary and secondary diplomas and other educational qualifications. The accumulated data can also be used when individuals seek employment.

The National Institute for Lifelong Education maintains this through online management systems, on which a standardised learning account record system is generated. Individuals who wish to have their educational experiences managed apply for the opening of a personal account. Data accumulated on the record system are issued into a certificate of learning experiences for the students.

**Academic Credit Bank System (ACBS):** Korean Educational Developmental Institute, in association with South Korean government, has launched ACBS that allows students to earn a degree by combining credits from different sources. It is useful for students who have nearly enough qualifications to graduate, but are deterred from finishing by difficulty of registering in a new institution with risk of needing to repeat classes.

ACBS allows students to pool their credits earned from various sources into a package and which can be converted into a degree. ACBS also plans a study course for the students based on their existing credits that enable them to earn a degree. By awarding a degree, ACBS certifies that a student has followed an ABCS-designed curriculum and accumulated relevant number of core, general, and elective credits for that program.

**Korean Qualifications Framework (KQF):** Korea has developed National Competency Standards (NCS) to identify and standardise competencies needed to successfully perform various skilled jobs. Specialised high schools, Meister schools and vocational junior colleges have been introduced in new curriculum based on NCS to try to reduce gap between school curricula and labour market requirements. In 2003, the Korean Research Institute for Vocational Education and Training had established the KQF, which sets out an integrated system of levels common to academic and vocational qualifications. The Korean Ministry of Employment and Labour, further made efforts to reform the KQF through development of NCS and introduction of qualifications grounded in learning outcomes. Therefore, in 2013, Korea introduced NCS to identify and standardise the competencies needed to successfully perform various skilled jobs. These new measures are designed to strengthen links between industry, technical and vocational education and training (TVET) and qualifications system, helping to raise status and significance of TVET (Seung Il Na, 2012).

## HVSU Framework

India's population is viewed as a large pool of human capital that can cater to global needs and create an internationally accepted skilled workforce. HVSU can do its bit by addressing concerns of the State by skilling youth to the desired national and international standards and requirements.

The YAS indicates sectoral preferences and willingness of respondents to pursue career through industry-oriented programmes. To correlate given preference, HVSU has also culled out priority sectors from various surveys/reports pertaining to the State. The analysis also provides evidences for the current and future job roles in these sectors.

To meet demand of industry and changing technological scenario, HVSU shall conceptualise contents & curriculum conforming to quality and standards of NSQF and International Qualification Frameworks (ISCO-08). The prime objective of the HVSU shall be to equip learners with latest industrial skills and enable them to be employable. The courses shall be industry-aligned, multi-skilled, technology imbedded, and modular in nature. The learners can go back to their work with enriched knowledge; come back to the next level of the vocational education based on last learning outcome certification. HVSU shall adopt "Earn while Learn" approach for delivering vocational education and training. The university needs to design innovative programmes blended with OJT or apprenticeship.

As an important stakeholder in integrated educational model, industry will be engaged in curriculum, syllabus and content development for the courses. HVSU shall partner with industry in its various proposed models like on-campus at Palwal or off-campus or hub & spoke which shall be in to the industry for delivering skill education and training.

HVSU needs to design skill/ career development programmes from certificate level to doctorate level spanning entire canvas of skill education. To promote educational equity and inclusion, trainees from all walks of life and different abilities will be free to take up education with the university.

University shall have an in-campus vocational school acting as its Feeder. In the interregnum students from other schools and institutions shall be admitted in its programmes.

To make vocational education more aspirational, it shall be beneficial to start a vocational stream from middle level or as a separate discipline after secondary education as followed by Germany, Switzerland and South Korea.

The university can collaborate with open schooling system as well as other institutes for bringing dropouts to mainstream education. The learning ability of the students shall be assessed in this school and HVSU can help in defining a career pathways and progression to its other educational programmes. The school shall be established in partnership with State or NIOS.

HVSU should have a Finishing School that will offer specialised programme to youth that will brighten their chances of employment.

To create equivalence to general education and credit against certification, a spokes can be created to offer certification to the learners. The learner will be given credit respective to learning outcomes. These credits shall be maintained in the credit bank of the university which will track the learning progress of the learner as followed by South Korea.

University shall nurture budding entrepreneurs by providing career guidance and mentoring. It shall establish incubation centres in campus and in industrial clusters on hub and spoke model. HVSU's

Palwal campus shall function as a hub of all programmes and shall offer affiliation to institutions desirous of partnering in programmes as spokes

The university can partner under the consortium model with different institution. This partnership will facilitate partners by sharing resources and faculty. The consortium will help university in curbing cost for faculty and infrastructure. It will help in mobility and acceptability of vocationally trained students in industry as done by educational institutions with in the tEuropean Union.

The pedagogy of all programmes in HVSU shall be blended with learning; ranging from face-to-face, digital, virtual, simulation among others. Technology based learning will have two-pronged approach i.e. simulation and digital learning. The students in university shall be given practical exposure in laboratory and living laboratory. The university shall invite companies to open their living laboratory to offer real time experience to the students.

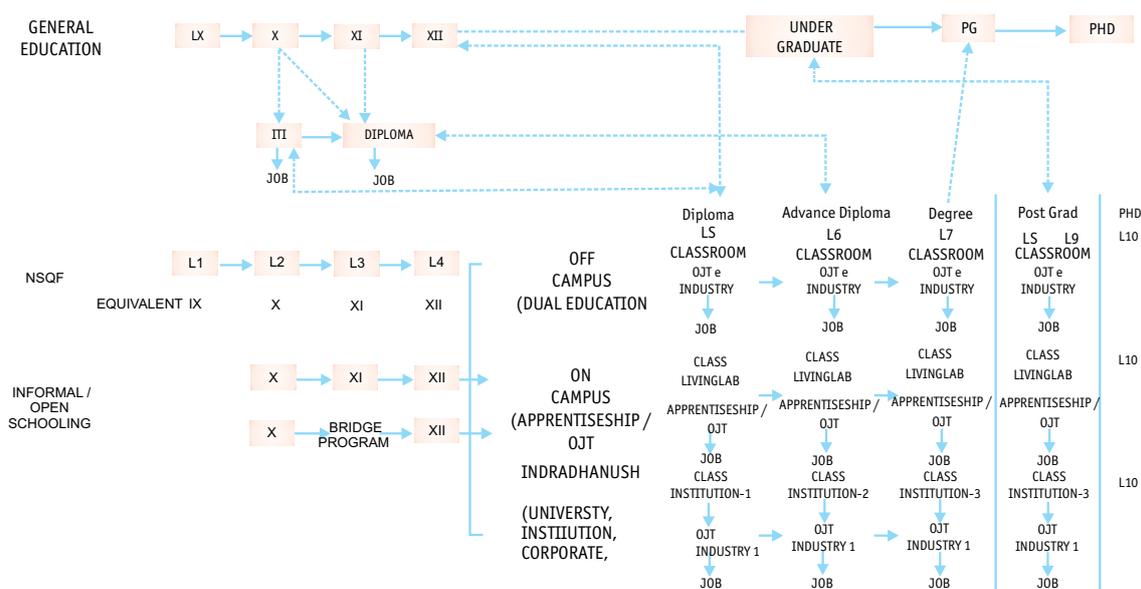
HVSU shall have an extensive library that will give students an array of learning options and platform to complete their syllabus. The library should have a digitally enabled learning system – e-books, application, simulation, cloud, virtual, etc.

Centres of Excellence (COE) shall be established in the campus and as well as at learning centres. Industry shall be approached and convinced to open industry specific COE for students to receive training in a specialised field.

HVSU shall lay emphasis on quality and training of trainers and assessors. It will try to populate environment by training the master trainers, field trainers, lead assessors and field assessors. Development of good quality assessment tools for all the programmes shall be a priority.

The University shall also invest in research and development. Schools shall be encouraged to take research in high-end technology areas, and emerging sectors of economy. HVSU shall also promote innovations in all areas and acknowledge deserving innovations by conferring *Honoris Causa*. Institutional support to the innovators shall be provided to help them patent their innovations.

Figure 43: HVSU Vocational Education Model



## CHAPTER - 6

# RECOMMENDATIONS, BEST PRACTICES AND INSTITUTIONAL DESIGN

### PART I – RECOMMENDATIONS

#### Urbanisation

From 2001 to 2011, Haryana has seen a 45 per cent growth in the urban population. By 2030, there will be as many as nine major urban centers in the state. Districts of Faridabad, Gurugram, Jhajjar, Panipat, Rewari, Rohtak and Sonapat will have more urban population than the rural. The combined population of these nine urban centres would be equal to the state's population that was in 2011. Urbanisation would pose a major challenge for the state.

Concerted efforts would be needed in managing land use, urban planning, infrastructure development, housing, transportation, traffic, energy, water, sanitation, waste disposal, pollution control, law & order, surveillance & monitoring and other civic amenities.

#### Demographic Dividend

By 2022, Haryana would need 1.3 million skilled, semi-skilled and minimally skilled workers. To realise this demographic dividend, this is work force needs to be trained to meet the demand of the industry. To impart an industry-oriented skills training, cooperation from industry would be needed in the form of OJT.

Unemployment rate amongst the urban women in Haryana at 18.6 per cent in 2015-16 is highest in India. Participation of women in the economy through skills training, entrepreneurship promotion, formation of cooperatives, and provision of finance needs to be ensured.

To determine the perception and aspiration of youth, a structured questionnaire was used to conduct survey across all the districts of Haryana. It has been designed to fathom the aspirations of millennial and youths towards the vocational skill and training across different sectors and specific job roles. The YAS survey being descriptive and empirical in nature has collected responses from 16054 respondents. The survey has tried to explore the youth's preference towards various sectors of economy and the associated job roles therein. The questionnaire for YAS includes 16 sectors namely agriculture, apparel, automobile, banking & insurance, construction, entrepreneurship, healthcare, hospitality & tourism, IT/ITeS, logistics, management, petroleum & solar energy, retail, security, sports and textile. Sports appeared to be most preferred by class X and XII students, whereas class IX students preferred automobile and class XI students opted for IT/ITES and healthcare. The graduates and post graduates, opted for IT/ITES followed by BFSI, automobile and healthcare. The ITI students mostly preferred construction sector. Saksham respondents' top five sectoral preferences are BFSI, food processing industry, healthcare, green jobs and tourism & hospitality sectors.

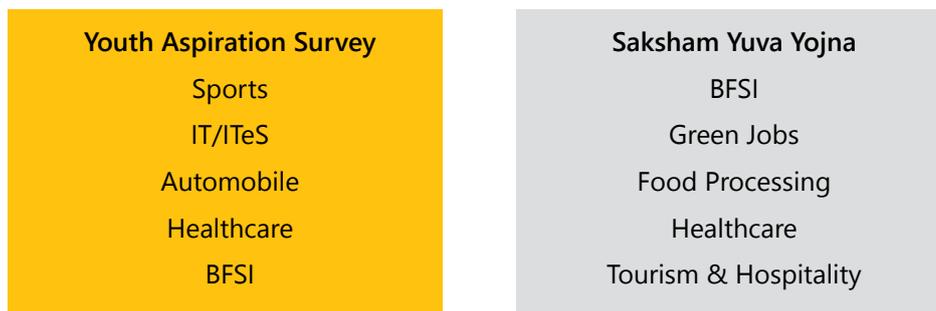
To validate the results of YAS, a study has been carried out with in the industry. The HVSU had organised an industry-academia meet wherein personnel's from the industry were invited to share their views about future of skill education and training. The questionnaire has been distributed among these personnel and response from more than 100 respondents has been collected (See Annexure 2 & 10 for details). The analysis provides insights for the job roles that university need to focus on for future prospects. Almost 128 job roles have been identified from the analysis.

The HVSU also conducted a series of pre-workshop meetings for validating the analysis and provide the valuable insights for designing and developing the course and infrastructure for the university. These meetings have also provided their valuable inputs for more than 50 job roles.

To have understanding about the sector and job roles, the university team has also explored reports of RMSA, NSDC, PWC, PMKVY, etc. These reports highlights that the sectors like automobile, agriculture, IT/ITeS, beauty & wellness, healthcare, hospitality and tourism, retail and textile are in demand and have enrolled and trained enough number of trainees in Haryana.

**Sectoral Preferences:** From our YAS as well data analysis of SYY (16054 respondents), sectoral preferences of the students and unemployed for taking up vocational education or jobs are given in the Figure 44. While YAS respondents preferred sports, IT/ITeS, automobile, healthcare and BFSI, SYY respondents (unemployed youth) preferred BFSI, green jobs, food processing, healthcare and tourism & hospitality.

**Figure 44: Sectoral Preference YAS and SYY**



Training capacity, popular job roles and availability of qualification packs and NOSs for training in these sectors is discussed in successive paragraphs. (Refer Annexure 11 for details). In case qualification packs and NOSs are not available, HVSU will develop the contents of the job roles in alignment with industry and seek validation through NSDC/NSDA.

## Industrial Sector

Industrial sector is on the cusp of technological transformation from Industry 2.0 to Industry 4.0. New technologies like automation, robotics, mechatronics, IOT, cyber physical systems, cloud computing, artificial intelligence, etc. shall appear on the horizon. This changeover needs management, as it will affect many jobs. MSME, the largest employers of work force shall be adversely affected as compared to large and medium units.

New technology shall reduce jobs in one area while open avenues in others. This changeover needs a comprehensive study to understand its dynamics and effects on the jobs, production, product competitiveness and requirements of new skills and training.

The sectors like ESDM, footwear and textile, apparel & handloom which have been performing consistently should be patronised and infused with better technology and research and development.

Food processing sector compliments and addresses the need of the agriculture sector. It has good prospects due to availability of work force and raw material in the state.

### Automobile/Manufacturing

As motor vehicles are one of the main sources of air pollution, non-polluting technology is bound to make inroads in the sector. In future, hybrid and electric vehicles will be seen on the roads in large numbers.

The automobile & allied sector would require an additional manpower of 35555 by 2022 in the state. The YAS and SYY data shows that 20.79 per cent and 11.80 per cent respondents are willing to pursue their career in automobile sector respectively. The job roles that are popular in industry and NSDC are Customer Relationship Executive (L4), Sales Executive (L4) and Automation (L3 to L7) for which QPs and NOSs are available.

The futuristic job roles popular in the industry are Mechatronics, automation, robotics, quality control, optics, tool, die, moulds, jigs & fixtures, 3D printing, CNC operators, etc. The technological advancement in manufacturing will need high-end skilled workforce. HVSU shall develop their courses, curricula and contents to address the futuristic manpower demands of the sector in collaboration with industry requirements.

### Service Sectors

In the BPM sector new countries like Philippines, Indonesia, Vietnam, Sri Lanka and Bangladesh have appeared as India's competitor. Possibility of retaining BPM jobs by diverting these to rural areas should be explored, which provide jobs to rural youth as well.

The AVGC is a promising sector. Haryana has evinced interest in it after Karnataka and Gujarat. Though the government has extended institutional support to AVGC sector, it needs attention of the technical institutes to produce requisite workforce.

### IT/ITeS

The IT & ITeS industry has put Haryana on global map, it contributes 9.4 per cent (2016) towards the state's GDP and 54 per cent of its total exports. Approximately 300,000 people find employment in the industry. Gurugram, a Business Process Management (BPM) hub, accounts for 13 and 5 per cent BPM employees of India and the world respectively.

Haryana is the first state to have implemented its State Wide Area Network (SWAN) for voice, data and video transmission. The SWAN vertical connectivity – at the State Network Management Centre (SNMC), District Network Management Centre (DNMC) and Block Network Management Centre (BNMC) – is now operational. Three integrated IT hubs (including Integrated Townships, Walk-to-Work Campus, etc.) shall be developed in the next five years.

The youth aspiration survey respondents have ranked this sector at second place. 23.23 per cent of respondents have considered IT/ITeS sector as their career choice. The current job roles that are in demand and have available qualification packs are Coder/programmer (L7), CRM Domestic Voice/Non-Voice (L4), Data entry operator (L4), App developers (L4), etc. The futuristic job roles identified in the sector include Data Analyst & Big Data (L7), Cyber Security (L7), Cloud Computing, IOT, Gaming, Virtual Artificial Intelligence, etc.

The sector is having good potential for growth and development. HVSU need to address the gaps that are prevailing in the sector. University need to design the courses that will address the current and futurist demands of the sector. The university should create its clusters in terms of Hub and Spoke model so as to address the shift of ITeS sector in the rural areas of economy in the state.

## Healthcare

The growth of healthcare sector is due to its strong coverage, services and increasing incorporation of public and private players. The sector has projected a CAGR of 16.5 per cent in 2008-20. The sector is expected to reach the market of USD 280 billion by 2020.

Since 2015, the government has got constructed 10 civil hospitals, 13 CHCs and 13 PHCs. Shri Mahohar Lal, Chief Minister of Haryana has laid the foundation stone for 2,000-bed Amrita Institute of Medical Sciences & Research Centre (Amrita Hospital) in Greater Faridabad, recently. The sector would require an additional manpower of 10.09 million workforces by 2022.

The current, futurist and popular job roles with in industry and well as in terms of trainings offered by NSDC are Health Informatics Specialist (L4), Tele-health Specialist, Assistant In Operation Theatre (L4), Beauty & Wellness Assistant (L4), Geriatric Care Assistant (L4), Medical Record Assistant, Intensive Care Unit Assistant (L4), General Duty Assistants (L4), Phlebotomy Technician (L3), Health Educator, Health Data Analyst, etc.

HVSU need to get aligned with trainers in health sector and the industry experts to develop the courses that are in current and future demand in the sector. Being the sunrise sector and with immense potential of growth, university shall develop their contents and courses that meet futurist requirement of the sector. HVSU also need to look into the students enrolled under RMSA at school level and initiate the campaign to motivate the students and make them aware about the potential and requirement of manpower and the aspirations attached with skilling progression and higher qualification in the sector.

To make the state healthy, the government should mandate the students enrolled under vocation training in healthcare sector to get OJT in private and public hospitals. There need to be have a preference for vocational trained students in terms of entry level job in this sector and the same need to be notified in public.

## Tourism & Hospitality

There are 42 tourist spots in the state. To increase the tourist influx, Haryana needs to capitalise on its attractions. It has famous mountain ranges – Shivaliks and Aravalis; varied terrain and climate, archaeological sites, national parks and wild life sanctuaries, places of religious importance, famous battlefields, unique villages, roadside motels, air and surface connectivity, world class hotels and global business hubs.

India's Tourism Sector, which accounted for about 9.6 per cent of GDP in 2016, is estimated to grow by 6.9 per cent per annum during 2017-27 and create 49.86 million jobs during the same period. By 2022, the state would need approximately 10,000 skilled people for this sector. The job roles that are in demand in the sector include Event Manager (L8), Travel Consultant (L8), Front Office Executive (L5), Kitchen Staff (L3, L5), Transport Duty Officer (L6), Adventure sports Organiser (L7), Tour Escort (L8), Housekeeping (L5,L6,L7), Medical Tourism, etc. The YAS and SYD data shows that more than 10 per cent and 8 per cent of respondents have preferred the sector as the choice of vocational education for future perspective.

To promote domestic and foreign tourists, Haryana should capitalise on its diversity of terrain, weather and culture. It should preserve and carry out theme-based development of the famous battlefields like Kurukshetra, Taraodi and Panipat, where decisive battles were fought. In doing so, the State would be the first one to promote and encash on battlefield tourism.

Government should develop a heritage center in NCR that captures states' rich history dating back to 15000 BCE. With the help of archeological survey of India and latest technology, the bygone era should be recreated in a manner that showcases Haryana's heritage and captures the imagination of tourist.

Tourism potential of Shivalik and Aravali Hills and River Saraswati should be exploited. The youth can be trained in allied jobs in Tourism and Hospitality sector and HVSU should play a key role in designing courses and imparting training.

## **BFSI**

The BFSI sector faces challenges of scarcity of skilled manpower especially in upcountry locations. More financial intermediaries are expected to be established and requirements of manpower with the requisite skill set are expected to increase many-fold.

Being the preferred sector among youth of Haryana some of the current and futurist job roles identified in the sector are Sales associate retail, Microfinance executive (L2), Marketing specialist, Customer relationship officer, GST Specialist (L4), Business Correspondent (L3), Data Analytics, Accounts Executive (L4), etc.

This sector appears to be the most appealing sector for unemployed youth enrolled under SYY. It has been ranked at first place by these respondents. The 17 per cent of YAS aspirants also shows preference for the sector.

As per BFSI Sector Skill Council, at any given point of time there are more than 7,000 entry level jobs available in the sector. However, the options available to hire a candidate with desired skill set are limited. There is a large current as well as future demand for trained manpower.

To met the current and futurist demand of manpower in the sector, institutes shall offer the courses that are imbedded with behavioral skill and the requisites if the industry. The University shall offer an integrated model course to fulfill the requirements of manpower in the state in this sector.

## **Sports**

Physical fitness, Yoga and sports are becoming part of our life. In the YAS undertaken by HVSU 400 out of 1597 respondents opted for sports skill/ education. The Job roles that appears to be in demand in this sector are Physical fitness trainer (L4), Sports coach (L5), Yoga instructor, etc.

Professional sports leagues have become popular in India in a short time. Organising such events requires professional managers. Sports management being a lesser known discipline in the country needs to be taken up by educational institutes.

## **Smart Cities and MRTS**

Smart cities would create many specialised jobs. Haryana has Faridabad and Karnal as designated smart cities. Smart city project will usher in new technologies and applications in the area town planning, infrastructure, buildings, transportation, energy, water, sanitation & waste management; healthcare, surveillance & security; information & communication technology application for

integration and governance. Being a new field, Haryana can take lead and prepare manpower for other smart cities as well.

Similarly, mass rapid transit system is coming up in many cities. MRTS needs integrated skills for operations, management and maintenance. Being a new discipline, MRTS is not being taught as a subject in the technical institutes. HVSU should consider a tie up with Delhi Metro Rail Corporation (DMRC) or Rapid Metro Rail Gurugram or Haryana Mass Rapid Transport Corporation for starting integrated courses for the MRTS sector.

## Green Jobs

With the ill effects of urbanisation and industrialisation mounting, need and prospects of green jobs in the country are brightening up. Jobs in the areas of power generation through renewable energy sources, resource conservation, water and air purification, waste management, etc shall come up in urban, rural, industrial and agriculture areas.

The state receives 320 sunny days in a year; this potential should be harnessed for generating solar power. It has 1,500 km and 12,000 km long main canals and distributaries respectively. In a state, where the land is at premium, these canals can be considered for the site of solar parks.

To conserve water, the state should introduce drip and sprinkler irrigation system in the entire state in mission mode.

Being an emerging sector there a dearth of qualified manpower. Very few institutes are offering courses in this sector. HVSU can collaborate with Department of Renewable Energy, Government of Haryana and National Institute of Solar Energy to build up capacity and start training on various courses.

## Agriculture

Haryana has been an agrarian state. The contribution of its agriculture sector towards SGDP has dwindled from 60.7 per cent in 1969-70 to 17.8 per cent in 2016-17. The agriculture sector still provided employment to 51.3 per cent of rural and urban work force. Neglect of the sector will release a large number of semi-skilled and minimally skilled workers towards toward the urban centres.

The Youth Aspiration Survey indicates that the, agriculture, as a profession has lost its appeal amongst the youth and agriculture graduates. Amongst the YAS respondents 3.7 per cent and 6.6 per cent of SYR respondents have opted for it. Sector is facing other socio-economic and environmental pressures as well.

Sunrise Sectors: The following allied sectors were identified as sunrise sectors in agriculture:

**Table 40: Sunrise Sector in Agriculture**

Floriculture	Horticulture	Peri-urban vegetable farming	Poultry	Cattle feed production
Food processing	Value addition and post-harvest management of agri-produce	Mushroom	Dairy and dairy products	Composting and organic manure
Nursery	Mechanization in agriculture	Apiculture	Fisheries	Plasticulture

The agriculture sector and the farmers in the state are faced with some growing challenges. Challenges faced by the farmers were identified and solutions recommended are Water shortage – Laser levelling, micro-irrigation, DSR, arid farming, crop diversification; Uncertainty of weather – Contingent crop plans, crop insurance, protected farming; Stagnant production – Better seeds, hybrids, mixed crops, diversification; Overuse of chemical fertilisers and pesticides – Soil test based fertilizer application using soil health cards, Integrated Nutrient Management (INM) and Integrated Pest Management (IPM), fertigation, organic farming; Over cropping – Crop diversification, niche areas/cluster zoning, inclusion of legumes in cropping system; Farmers' poverty and indebtedness- Assured Minimum Support Price (MSP), decrease in cost of production, assured income, subsidized inputs, adoption of Integrated Farming System (IFS) models; Small land holdings – Co-operatives/ corporate farming, adoption of IFS model; Non-availability of labour – Mechanisation, green house cultivation, better wages; Biomass management – Zero tillage, residue incorporation, establishment of biomass based energy production, composting.

The current and future Job Roles identified in the sector are:- Nursery Operations (L3), Organic Farmer (L4), Cold storage Supervisor (L5), Soil Tester (L5), Drip Irrigation & Sprinkler Installer (L4), Green House Fabricator & Installer (L4) and, Farm Tool Manufacturing (L5), GIS Executive. Agriculture sector needs organisational support, scientific intervention and to spread into sunrise areas and futurist job roles to arrest its decline. HVSU can develop agri-preneurship courses in the sector and shall play a responsible role for its progress.

## Education

Haryana has an impressive, evenly distributed education infrastructure (from primary to universities) across the state. However, the following issues in the education sector need attention:

- ✓ State should attain cent per cent literacy rate.
- ✓ Poor performance of certain areas/ districts with regards to literacy and education index.
- ✓ Poor gross enrolment ratio in primary, secondary and higher education level.
- ✓ Poor pass percentages in secondary and senior secondary levels.
- ✓ High dropout rates at successive level of education.
- ✓ Poor capacity utilisation (25 per cent) in engineering and other technical institutes.
- ✓ Large number of unemployable graduates and post-graduates.
- ✓ Quality of education delivery.
- ✓ Quality of trainers.

The state has been a pioneer in launching vocational education from class IX to XII under NSQF under RMSA in 2012. This project has spread to over 1000 schools in the state.

The following are recommended to tone up the education system in the state:

- ✓ Work towards attaining cent per cent literacy. Services of unemployed educated youth can be taken in this regard.
- ✓ Special monitoring and attention to those areas/ districts which are lagging behind in literacy and education index.
- ✓ Attain cent per cent gross enrolment ratio up to compulsory education level i.e. class X. Again the services of unemployed educated youth can be taken in this regard.

- ✓ Investigate dropouts on case to case basis and motivate parents and student to resume studies. The services of unemployed educated youth can be taken in this regard.
- ✓ Avail the services of academic counselors to convince students and parents about benefits of continuing with education and taking vocational education.
- ✓ Concentrate on the quality of trainers and training delivery.
- ✓ Sustained campaign to be launched to improve the quality of education and pass percentage in the education value chain.
- ✓ Study the pattern of enrolments vis-à-vis the capacity utilisation of engineering and other technical institutes and explore options of converting unutilised capacity for skill education programmes.
- ✓ Channelize students towards vocational education. These could be students with right aptitude, those who have elected to study vocational education and the dropouts.
- ✓ Train unemployed youth in employable skills to improve their chances of employment.
- ✓ Consider introducing science, technology, engineering and mathematics (STEM) subjects from upper primary levels to improve the technological threshold of the students.

### Vocational Education

The state has a good infrastructure for vocational education. It is in part inspired by German model. Industry's participation varies from case to case, from being good to indifferent. The following is needed to enthuse the vocational education in the state:

- ✓ Examine, evaluate and explore the suitability of German, Swiss, Korean and finish model to the local requirement of the region.
- ✓ Empower local chambers of commerce and other industry bodies.
- ✓ Suitably incentivise industries to participate in imparting vocational education.
- ✓ Involve educational institutes and industry in preparation of curriculum, syllabus and content for the course.
- ✓ Involve educational institutes and industry in training of trainers.
- ✓ Incentivise industry to provide trainers to educational institutes.
- ✓ Encourage industry to open production cum training centres and skill enhancement centres in the educational institutes.
- ✓ Industry to accept the trainees for OJT in its premises for the duration of training.
- ✓ Introduce vocational education from class VI onwards in schools.
- ✓ Further education from class X onwards should be based on academic counsellor's recommendation.

The vocational education in the state should run through an extensive network of skill schools, feeder schools and VTPs providing trainees to ITIs and Polytechnics.

## PART II – BEST PRACTICES

### Vision

To emerge as one of the foremost institution of quality in skill education acknowledged by industry, nationally and internationally.

### Mission

- ✓ Try to change the prevailing social perception about the low esteem of vocational education and bring it at par with other education streams.
- ✓ Make education more relevant to employment and employability.
- ✓ Bring industry closer to talent by bridging the gap of both quality and quantity of manpower.
- ✓ Build a pipeline of talent for future as well as building the means for this.
- ✓ Improve employability of the existing workforce through skills upgradation.
- ✓ Improve the quality of trainers and assessors.
- ✓ Introduce the system of academic counselors.
- ✓ Nurture talent for local, national and international requirements.
- ✓ Create a platform for self employment and entrepreneurship capability.

### Objectives

HVSU shall work to achieve the following objectives:

- ✓ Scan the environment
- ✓ Identify sectors and job roles for intervention.
- ✓ Raise capacity and infrastructure for skills education.
- ✓ Forge integration with institutions, industry and academia.
- ✓ Design and develop institutional skill model and courses.
- ✓ Commence skills education programmes.
- ✓ Train youth with skill proficiency and competency for different level job roles.
- ✓ Develop campus infrastructure.
- ✓ Develop institutional capacity and strength.
- ✓ Sustain and increase skills education programmes.
- ✓ Discharge university's citizen social responsibility.

### Inclusivity

The portals of HVSU shall be open to all persons desirous of learning; irrespective of their sex, race, creed, caste or class. No condition shall be imposed as to religion, belief or profession in admitting or appointing members, students, teachers, workers, or in any other connection.

The University shall also make special provisions in respect of women, weaker sections of the society and in particular Scheduled Castes and Scheduled Tribes, persons with disability to help them in acquiring skill education.

## Certification

The University is authorised to award certificates, diplomas, degrees and other such distinctions under its seal. University shall be open to joint certification involving other universities and industries depending upon the programmes.

## National and International Employability

The skills training imparted by HVSU shall be aligned to the Indian National Occupational Standards (NOS). For international portability of skills, the training will be aligned to those international standards which are benchmarked with national NOSs. For international employability a counselling centre will be opened at the HVSU. HVSU shall also collaborate with Haryana Overseas Placement Assistance Society, in ascertaining in-demand qualifications and job roles for training youth for international employability.

## Faculty

A university is known by its faculty. Piecing together a faculty of desired competence and commitment shall always be a priority. IT application can help us in availing the services of the best of the trainers available in any part of the world. Availing Massive Open Online Courses (MOOC) provides an opportunity.

The HVSU is acutely aware of the shortage of qualified skill trainers. (Report of the Committee for Rationalisation & Optimisation of the Functioning of the Sector Skill Councils – 2016) University shall avail the services of industrial trainers by collaborating with industry. Industry shall be encouraged to provide trainers as a part of their CSR or other commitments. Industrial trainer with adequate skill and experience shall be inducted into training ecosystem. To attract industrial training talent they will be paid at par with their counterparts. Method of engagement of faculty could be as under:

- ✓ Visiting
- ✓ Contractual
- ✓ Industry provided
- ✓ Distant

The HVSU shall invest continuously in the train the trainer programmes. Initially, a cadre of master trainers and trainers in all disciplines will be raised, in collaboration with domestic and international institutes and industry. All trainers will be trained on the following skills:

- ✓ Platform skills – nuances of training delivery, communication, class control and use of aids.
- ✓ Domain skills – domain knowledge and skills and technical, communication and inter-personal competencies pertaining to the trade.

Short-term orientation and skills upgradation courses for the trainers will be run periodically.

## Assessors

Assessors are important in the skills value chain; a number of assessors in different fields will be required. HVSU shall collaborate with NSDA and NSDC to leverage the availability of assessors in the eco-system. University will also run train the assessor programme for those job roles/ new age skills for which assessors are not available. Assessors like trainers need to have an intimate knowledge of course curriculum, syllabus and content. An ongoing effort shall be put in developing assessment tools for various courses as per their mode of training delivery.

## Career Guidance and Counseling

In our education system career guidance and counseling has an important role, but our education system does not benefit from such support. The HVSU intends availing the services of corporate counselors initially before training own career counselors. Counselors shall provide vocational skill linked career counseling and coach and mentor students. The counselor shall be vocational education ambassador.

As an extension to this competency, the HVSU proposes to train at least one teacher from every school (primary to senior secondary level), who would function as career counselor in the respective schools to help the students in their academic, career and social development and also guide them towards vocational education pathways.

## Medium of Instruction

The HVSU shall strive to promote and use Hindi in its functioning. The medium of instruction for the industrial courses shall be Hindi or Hindi and English. For courses such as IT & ITeS, management, tourism and hospitality, healthcare, etc. the medium of instruction shall be English.

## New Age Technologies

Skill education is impacted by technology. Our industry is witnessing a technological transformation. The HVSU shall strive to incorporate new age technologies into its syllabi, contents, courses and pedagogy with the help of academia and industry.

Impact of technologies like machine learning, intelligent applications, automation, robotics, mechatronics, IOT, cloud computing, data analytics, cyber security shall be assessed on the existing employment ecosystem with the help of industry and complimentary qualifications shall be designed for the existing and fresh work force. HVSU shall leverage technology for training delivery, teaching and facilitating blended learning. Platform like MOOC shall be utilised for online learning.

## STEM Education

Technical threshold of the students, who aspire to pursue skills education should be above average. The students often lack such scientific and technological temperament and ability, which impedes their education and career. Science and technology is all permeating in our lives. Even for our daily chores, we need some degree of technological understanding and problem solving. We should think of including Science, Technology, Engineering and Mathematics subjects (STEM) in our education system in an integrated manner.

HVSU favours of promoting the study of STEM subjects and one/ two languages from primary to senior secondary education level. STEM subjects shall replace the general education subjects which are being taught in the schools currently.

The change will improve the quality of the students, who will have better understanding of the science and technology.

HVSU shall teach STEM subjects in a comprehensive manner as a prelude to its all courses and programme.

## Choice Based Credit System

The HVSU shall benchmark all its courses and programmes with Choice Based Credit System (CBCS), as it enables vertical and horizontal mobility in learning and gives flexibility in course designing, hours of teaching practical and assigning credits. The students will have an easy mobility to other educational institutions nationally and internationally with the facility of transfer of credits earned.

HVSU shall institutionalize CBCS by structuring training based on selected NOSs instead of QPs. Since all major higher education institutions are aligning to credits systems, HVSU shall leverage this under all its priority programmes.

## Feeder School

HVSU recommends having an in-campus feeder school in the form of a pure skill school that can be collaborated with for example, National Institute of Open Schooling (NIOS), Board of School Education, Haryana and the ITIs. These skill schools shall develop the vocational curriculum of identified sectors in line with the NSQF Levels 1-4 and pursue with the regulators to provide it the equivalence with the existing education levels of class IX-XII. The model will allow students after class VIII to choose alternate and equivalent skill career pathways, which will have the options of vertical or horizontal mobility. The country has the biggest advantage of having a large number of ITIs that can be converted into skills schools. The students passing out from the skills school shall serve as feeder to various programmes.

HVSU shall partner with National Council on Vocational Training/ State Council on Vocational Training for training curriculum.

In the interregnum, students from other schools of NIOS and other institutions shall be admitted to the courses on the basis of merit.

## Finishing School

Employability of just-passed-out students and young workers suffers from skill gaps. As per National Association of Software and Services Companies Report – 2012, out of one million graduates that pass out every year for jobs and higher studies only 25 per cent are employable. Additionally, a survey titled “National Employability Report - 2015-16” conducted by Aspiring Minds for 150,000 engineering students in the country over 80 per cent were found unemployable. Over the years situation has not changed appreciably in tier I, II or III cities.

Among the disparate causes cited for such deficiency, the main ones are lack of employability skills – problem solving, IT proficiency, communication, presentation, job-ready skills, productivity, quality assurance, professional attitude, team work, leadership and adaptability for new ideas and situations.

The students after passing out from their institutions find it difficult to land a job. Similar challenge is faced by industry to hire suitable candidates. Once hired, the candidate undergoes the cycle of learning-unlearning-relearning to imbibe work ethos, technology, productivity and quality assurance and other professional nuances.

The HVSU shall have finishing school where industry-oriented short duration courses will be run to enhance the employability of the trainees. The trainees, who will be enrolling in the finishing school shall be coming from both technical and non-technical background.

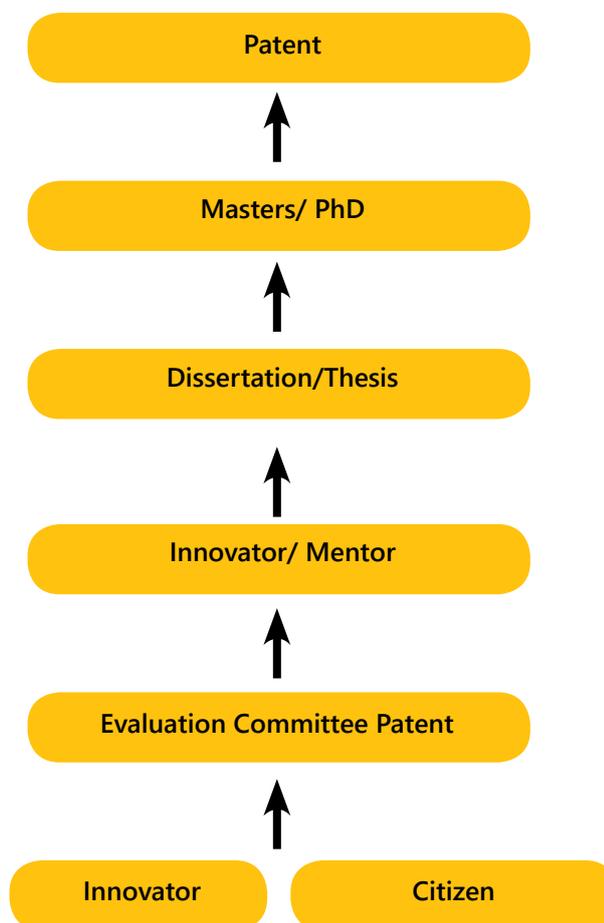
Besides soft skills and personality development courses, the school shall offer other programmes to the students, serving or out-of-job professionals to make them employable. The corporate shall also be willing to hire students from the finishing school.

### Innovations and Patents

There must be many workers (sometimes uneducated) bestowed with extraordinary intelligence and skills. They have done innovations (Jugaad) in their work to improve products and efficiency, but are not aware of its real worth. HVSU intends to bring such talents to the fore by recognising their work and talents.

Anyone can put up his/ her innovation before an evaluation committee, which will examine it for originality and recommend for patenting. The committee will assign a mentor to the innovator, who will help him/ her in writing the dissertation/ thesis for the award of Masters or Ph.D as the case may be. The innovator shall be awarded an Honorary Doctorate (Honoris causa) and the innovation will be sent for patenting by the committee. Such people shall serve as ambassadors for the university promoting vocational education. This programme is open for all. It is available for paired innovators as well.

Figure 45: Innovations and Patents



### Training Delivery

Training delivery is the soul of any skills programme. It will be endeavored that it is carried out by competent trainers, who execute well-planned training programmes as per desired method and form without slippages.

Training would be interactive and the students' participation shall be encouraged by the trainers. Students' learning and grasp of the subject will be gauged at regular intervals through innovative assessment tools. Weak students shall be closely mentored, counseled and supported to improve their performance. Technology plays an important part in training delivery. On line training content shall be prepared and provided to the trainees.

Skills training are best imparted in an industrial environment – real or simulated. It will be ensured that the students receive training and experience which is close to the environment of concerned industry. Technologies like adaptive learning systems, simulated learning and hybrid education models incorporating MOOCs with classroom and laboratory teaching shall be incorporated.

The HVSU shall adopt any of the following methods, depending upon the academic requirement to impart an efficient and mission oriented training delivery:-

### Campus Model

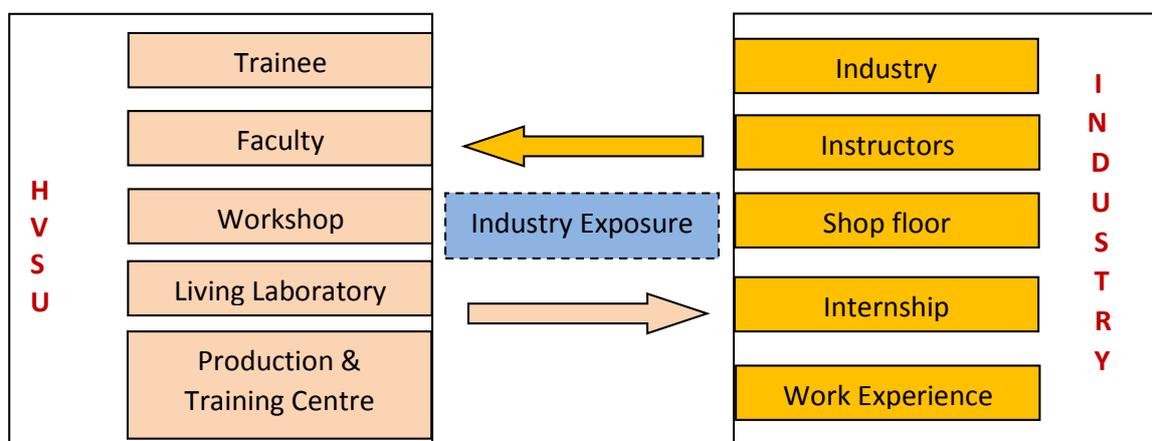
In campus model, the entire training will be imparted in-house, in the classrooms, workshops and living laboratories. Though the students will be campus bound, but they will receive industrial exposure in the form of planned visits and OJT.

Pre-requisite for a campus model are the training infrastructure and trainers. There should be state-of-the-art workshops, industry-specific living laboratory/ skill development centre/ industrial production centre for the training. The infrastructure should be contemporary, with a provision for periodic upgradation. Besides government's help, the participation of the industry in raising such facilities will be important. Industry can, individually or collectively, participate with HVSU through public-private partnership model to raise such on campus facilities.

Trainers are equally important for such training; industry will be approached to provide its trainers for not only training the students but also running the train the trainer programmes.

HVSU will be inviting industry to establish real life industry-specific training infrastructure in the domains like automotive, electronics, leather and footwear, IT&ITeS, BFSI, AVGC, health care, retail, etc.

**Figure 46: Campus Model**



The course curriculum will be aligned to NOSs and the requirement of the industry. The course design will be semester based catering for multiple entry and exit, awarding diploma, advance diploma and degree as the case may be.

The course content will be prepared as per credit system and keeping in mind the multiple entry and exit mode. Assessments will be semester based, carried out by trained assessors.

The campus model will be implemented in the following five stages:

- ✓ Stage 1: HVSU-industry partnership.
- ✓ Stage 2: Selection of programme, development of curriculum, syllabus, content and assessment tools.
- ✓ Stage 3: Selection of faculty and assessors.
- ✓ Stage 4: Provision of in-campus training facility.
- ✓ Stage 5: Commencement of training.

## Hub and Spoke Model

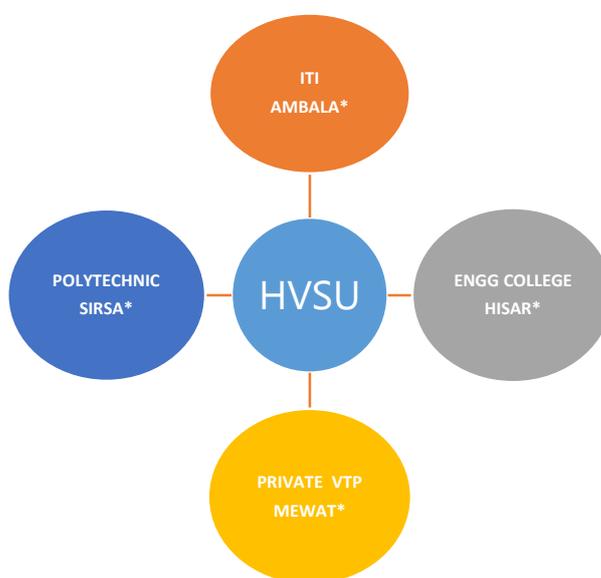
The requirement of skilling in the State is very large. There are scores of men and women desirous of acquiring skills. Relocation of trainees for skills training should be avoided. The skills ecosystem in the state has a variety of training infrastructure, both in the public and private sectors offering certifications from short-term to post graduate level courses. In the state some training institutes are not running to their full capacity. Their idle capacity can be leveraged if the institutes have got a good faculty and infrastructure and are willing to run HVSU programme.

HVSU will adopt hub and spoke training model in the major industrial clusters/ Special Economic Zones and backward areas of the state to deliver industry-specific skills training in the sectors like auto components, light engineering, electronics, textile, apparel, leather and footwear, agro, IT & ITeS, BFSI, healthcare, logistics, retail, etc.

HVSU campus will function as the hub of the training; controlling and monitoring ongoing training at various locations. The curriculum, syllabus and course content for the programmes will be developed by HVSU. The assessment and certification at the 'spokes' will be conducted under the aegis of HVSU. Spokes will deploy their own instructors to conduct the programme.

HVSU will invite deserving institutions having locational advantage for affiliation and participation in hub and spoke model. HVSU can also develop its own training centre based in government training institutes and develop it as a Centre of Excellence.

**Figure 47: Hub and Spoke Model**



*\*For example only*

The hub and spoke model will be implemented in the following four stages:

- ✓ Stage 1: Selection of programme, development of curriculum, syllabus, content and assessment tools for hub and spoke model.
- ✓ Stage 2: Evaluation of institute.
- ✓ Stage 3: HVSU-Institute partnership.
- ✓ Stage 4: Commencement of training.

## Campus-Industry Model

The Campus-Industry Model draws its inspiration from the German Dual Education model. The system produces highly skilled, ready-to-work employees for the industry. In this form the training will be delivered in the campus as well as in the industry. The young trainees prefer dual education system for the following advantages:

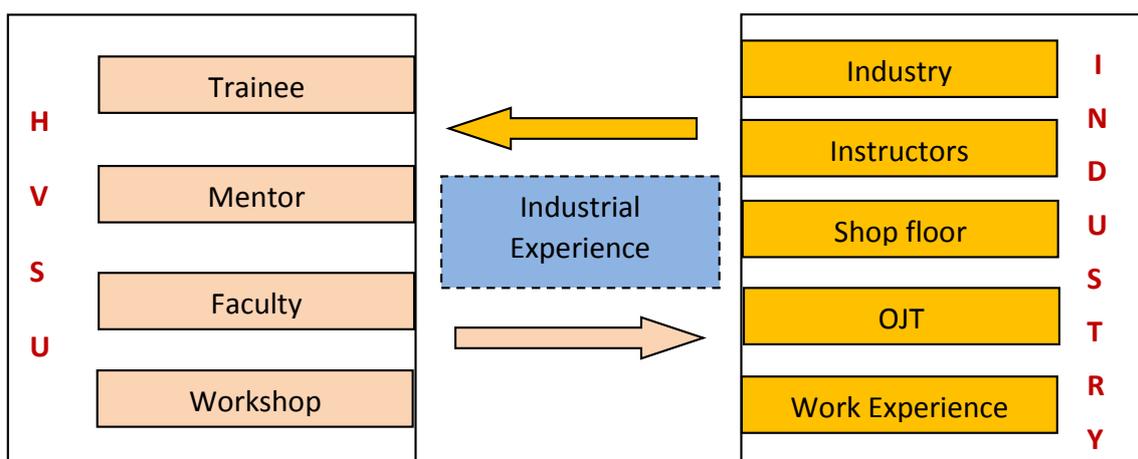
- ✓ It immediately puts young people in a setting with experienced, where they are treated differently than in college and given more responsibility, coupled with ample coaching and support.
- ✓ The learning is more hands-on, contextualied and applied. Academic concepts are made real.
- ✓ Students are paid while they are learning, typically the equivalent of about INR 6,000 -12,000 per mensem.
- ✓ At the end of the training programme, they have a nationally recognised qualification, that is portable and the opportunity to move directly into full-time employment or to continue on into higher education.

The HVSU will be the nodal agency for programme implementation. Important industries like automobile, auto components, electronics, IT & ITeS, BFSI, etc. which use advanced technology and absorb skilled manpower will be offered collaboration for campus-industry training.

In order to dovetail the requirements of industry the curriculum, syllabus, content and a semester-based training programme in modular format will be worked out in consultation with them. Details of each semester will be worked out and industry's participation will be firmed in.

The mobilisation, screening and selection will be carried out by a joint committee under the aegis of HVSU. Selected trainees will undergo training programme as per schedule. HVSU appointed mentor accompany trainees during their industrial training. Industry will provide their instructor(s) for the period of training with it. Student's feedback on training will be taken regularly and weak students will be counselled, assisted and mentored closely.

Figure 48: Campus-Industry Model



Industrial exposure will comprise of class room and laboratory training and working on the shop floor (OJT). Trainees will receive stipend for the duration of industrial exposure. Semester wise assessments will be carried out in situ.

HVSU will monitor the entire programme for its punctuality, quality, and statutory compliance. All assessments and certification will be done under the aegis of HVSU.

The campus-industry model will be implemented in the following four stages:

- ✓ Stage 1: Evaluation of industry.
- ✓ Stage 2: HVSU-Industry partnership.
- ✓ Stage 3: Selection of programme, development of curriculum, syllabus, content and assessment tools.
- ✓ Stage 4: Commencement of training.

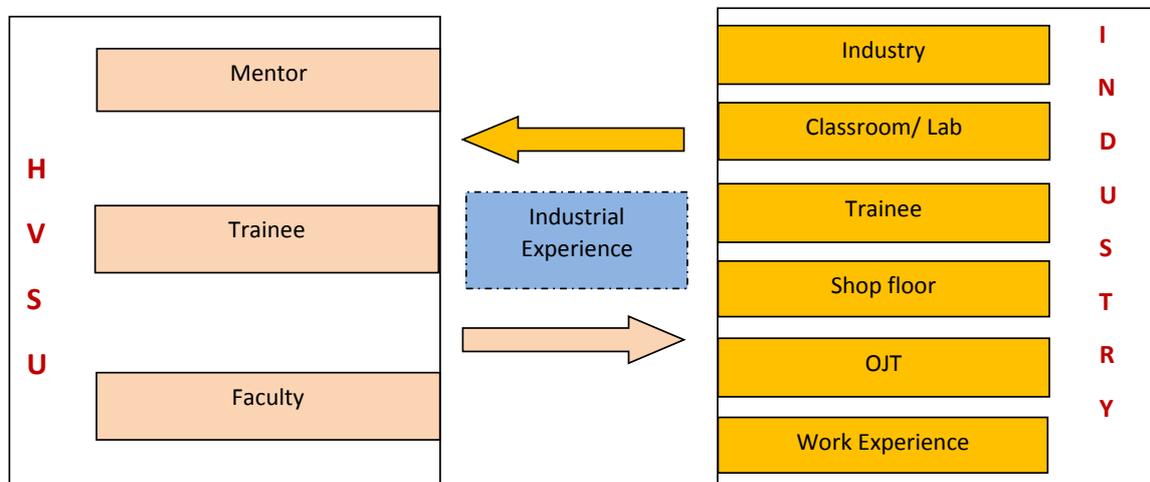
### Industry Model

Industry model also draws its inspiration from dual education system. In this model industry's participation in training is far greater. Students work and study at the industrial premises for the entire duration of training.

HVSU intends adopting industry model of training with those industries which have large capacity in terms in-house training, and appetite for skill specific manpower. HVSU shall collaborate with such industries for executing industry-specific training programmes.

Having reached an understanding, an industry-specific modular course shall be designed in consultation with the industry. The course curriculum, syllabus and content shall be finalised accordingly.

**Figure 49: Industry Model**



Availability and suitability of trainers with the industry to execute the programme shall be examined. If need be, train the trainer programme shall be run before the course.

Trainees' mobilisation, test, screening, interview and selection will be carried out in consultation with industry.

Trainees' who have made the cut will study a NSQF aligned, credit-based modular course at the industry's premises. Trainees will be paid for their OJT at applicable rates. A mentor from HVSU shall be with the trainees to maintain liaison and coordination for the duration of the course.

HVSU will be the nodal agency for ensuring training delivery, quality control, compliances, assessments and certification.

The industry model will be implemented in the following four stages:

- ✓ Stage 1: Evaluation of industry.
- ✓ Stage 2: HVSU-Industry partnership.
- ✓ Stage 3: Selection of programme, development of curriculum, syllabus, content and assessment tools.
- ✓ Stage 4: Commencement of training.

### Indradhanush Programme

New age skills and technologies transcend the domain boundaries. These seek to amalgamate with the other disciplines to open new vistas for applications. Hybrid skills and hybrid technologies metamorphose as quickly as these emerge. Future job roles would be a combination of talent, skill sets and technology. Their parameters would change with the technology, information and operational processes. Obsolescence would loom large on the workforce, materials, technology and procedures. Learning would be continuous for everyone.

The age of specialisation would demand research & development, innovation, excellence and quality. Such infrastructure and human resource would be dispersed in selected centres of excellence. Integration of specialised learning would need collaborative efforts and innovative curriculum and training delivery.

The Indradhanush Programme is inspired by on the European Union's (EU) European Region Action Scheme for the Mobility of University Students (Erasmus) programme, which synergises EU's schemes for education, training, youth and sport.

We have many good institutions and industries of repute in the state. Their specialised educational programmes or industrial processes, if integrated in a training course can add immense value to it. For integration, such institutions and industries shall be brought under one umbrella through mutual understanding, agreeing to offer benefits to the students who shall access their pedagogy and training facilities during the course of the training programme.

Through the consortium programme HVSU aims at promoting cooperation and synergy amongst the universities, institutions and industries with an objective to propel basic vocational education into higher education orbit and enhance the employment prospects of the students. It will be truly an exchange programme if the consortium partners also participate by fielding a batch of students.

The programme shall promote credit recognition and quality assurance meeting national NSQF standards or the International Standard Classification of Occupations (ISCO) standards.

The HVSU seeks to integrate multi-disciplinary centres of excellence in a collaborative effort to train students through a jointly developed curriculum and training programme. The stakeholders in the project would be the following:

- ✓ Haryana Vishwakarma Skill University
- ✓ Universities, colleges and skill centres
- ✓ Industry
- ✓ Student

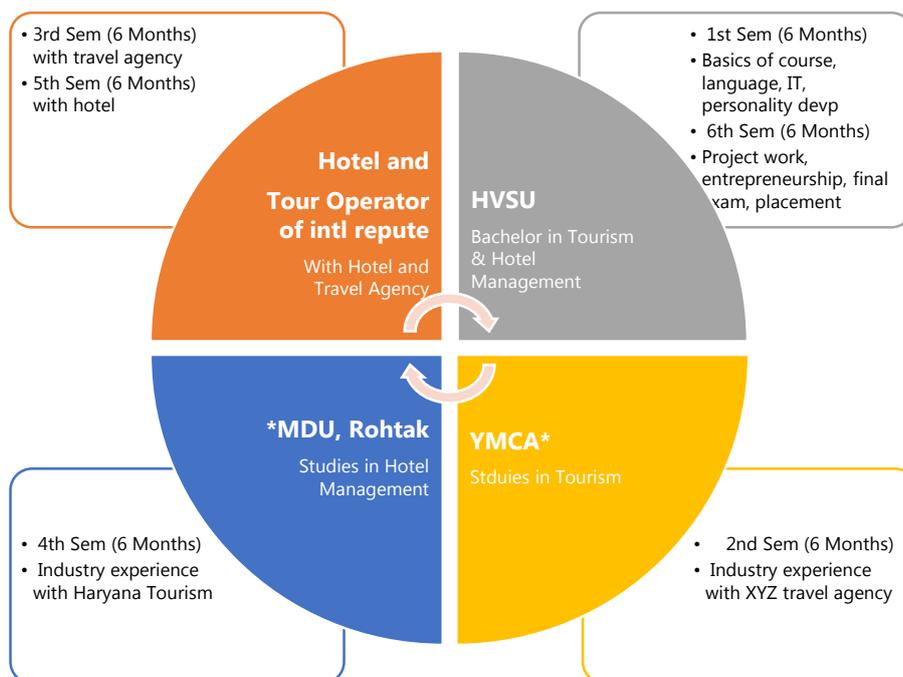
A consortium of industries shall compliment this effort by training the students in their premises offering OJT experience, industrial know-how before employment and enhancing employment potential.

HVSU shall create a consortium of institutions (CI) and consortium of corporate (CC), making it multi-hued, just like a rainbow. The consortium shall strengthen cooperation and student mobility in the field of vocational education in higher education and industries' participation for the:

- ✓ Enhancement of quality in higher education.
- ✓ Promotion of cooperation in CI and between CC.
- ✓ Promotion of mutual cooperation of creating a talent pool and industry ready workforce.

Inradhanush provides a response to the challenges of underutilisation of training capacity, dearth of faculty, demand for integrated courses and optimum utilisation of the institutional strengths. As the available resources shall be shared, the cost of training shall be economical.

**Figure 50: Inradhanush Model for Bachelors in Tourism & Hotel Management**



*\*For illustrative purpose*

Each participating university or institution shall field one such programme making use of the USP of the others.

The programme's specific objectives are:

1. To promote cooperation between institutions and industries for offering quality vocational education in higher education.
2. To avail the goodness of existing courses and training facilities and weave an integrated course.
3. To provide quality higher education to the students at affordable cost.

HVSU would be the nodal agency to lead the project. Following actions will precede the actual launch of the course:-

- ✓ Identification of a course involving multi-technology and multi-skills set.
- ✓ Identify institutes and industries with required faculties and learning infrastructure.
- ✓ Development of curriculum, syllabus, and contents.
- ✓ Formulate training delivery plan based on semester system.
- ✓ Decide system of assessment, credit transfer and certification.
- ✓ Sign MoU with the stakeholders.
- ✓ Appoint mentors.
- ✓ Enroll students.

The batch of students would move from one learning facility to another depending up on the training schedule and semester along with their mentor. On expiry of the training schedule, the learning facility would conduct their examination in-situ and intimate the results. Industry interaction

The nodal agency shall carry out the first and final semester training and examinations; final assessment and certification, data management and placement and tracking of students.

### Skills Bank

In Haryana there are many industrial clusters spread across the state, engaged in traditional as well as modern manufacturing jobs. Due to concentration of industries a large number of workforce lives and works there. The workforce needs Recognition of Prior Learning (RPL) and skills upgradation.

There are many ITIs and CCs functioning in and around these industrial clusters. These institutions are also facing the problem of capacity underutilisation.

The HVSU, with the help of Central and State Governments and local industry can act as a skills bank and offer industry-specific skill development programmes for the workforce at their place of work or in the local ITIs and CCs. The programmes so selected will be demand-driven and industry led. The funding for such programmes shall be made available by the government and local industries. Such skill enhancement programmes are being run successfully in United Kingdom by Sheffield City Region Skills Bank, helping the agriculture, manufacturing and services sectors.

### Entrepreneurship Development

An important facet of combating the unemployment is entrepreneurship. There many young men and women who want to start a business rather than seeking a job, but they do not possess requisite knowledge or acumen for it.

HVSU intends opening and Incubation Centre, wherein such budding entrepreneurs will present their plans to an evaluation committee. The committee shall help them in refining their plans and connect them with a mentor. The budding entrepreneur and the mentor will refine the business plan obtain necessary permissions and compliances make the plan business ready.

At this stage the incubation centre shall provide work space, administrative support, training support, capital assistance and operational assistance. The business plan will be presented to prospective angel investors, who will be briefed by the entrepreneur and mentor. If angel investor likes the idea, he/ she will invest in the startup and thus an idea will begin to fructify.

All students who pass out from the HVSU will be offered the option of turning their knowledge and skills into an enterprise. Students who have gone out and sought a job in the environment can also come back with a business proposal before the incubation centre committee.

## Dignity of Labour

The economy is driven by those who are at the bottom of the work force pyramid. Still we do not have a sense of dignity of labour. Spread of vocational education and skills training are linked to the dignity of labour that we have in our mindset. Parents, teachers and counsellors can promote vocational education and skills training, if they are convinced about its benefits and suitability as a career option for their wards.

HVSU shall promote dignity of labour in its all policies and practices. Vocational education is unfortunately seen as an option for the drop outs, while it should be seen as an alternative to general education for starting a career. The government should appoint accomplished sportspersons, celebrities and skilled workers of repute as Vocational Ambassadors. The skills should be promoted over media highlighting its importance and financial value. A sustained campaign aimed at motivating the industry to adopt OJT model/ apprenticeship models should be launched. Society and industry also needs to change their outlook towards vocational education and training. This change can only come by acknowledging the contribution of workers around us in our lives.

The HVSU recommends that the government should issue a notification regarding the NSQF certification being recognised as a qualification for employment in the public and private sectors and NSQF qualified employees should receive the equal pay and emoluments like other qualified workers.

## Recognition of Prior Learning

India is often labeled as the country of unskilled people, where only 3.8 per cent people have some skills training. The other side of the coin is that there is a phalanx of 97 per cent people have entered the work force and learned their trades through their perseverance. The skill sets of people we often overlook are amazing. Consider the example of a farm labourer and domestic worker.

**Table 41: Farm Labourer and Domestic Worker: Job Description**

Farm Labourer	Domestic Worker
Tending the cattle	Meal planning
Milking the cattle	Cooking the meal
Looking after the sick cattle	Purchasing provisions
Composting the dung and biomass	Serving the meal
Tilling the land	Dish washing
Sowing the seeds	Tidying up the kitchen
Growing of crops and vegetables	Looking after the children, elderly and pets
De-weeding	Operating household appliances
Applying manure, fertilisers and pesticides	Washing and ironing of clothes
Irrigating the fields	Use of sanitation chemicals, detergents
Crop protection	Attending to telephone calls, visitors
Operating tubewell and pumpset	safety and security of the house and inhabitants
Harvesting	Watering the plants
Transporting the produce	Cleaning and mopping
Working with machines – tractors, tillers, harvesters, sprayers,	Managing emergency

HVSU shall aim to keep its relevant industry aligned and suiting to the aspirations of the youth. It shall stay in tune with changing technology through collaboration, innovation and research.

## PART III – INSTITUTIONAL DESIGN

### Introduction

An action plan aligned to the vision, mission and objectives of the HVSU is fundamental to strategic planning in the core areas of HVSU's establishment, operations and administration. The human resource development assumes importance in founding a university. There shall be a requirement of full-time/ part-time faculty, administrative staff, support staff and other functionaries. The action plan needs to be aligned with the vision, mission and objectives of the University enshrined in the Act, Statutes, Ordinances and Rules of the University

For imparting training, there shall be different Departments, School of Studies, offering various academic programmes. In due course of time a requirement of establishing Regional Centres and Study Centres may be felt in various parts of the state. To build capacity various courses shall be designed and developed with contents, including the digital format. To orient the faculty/staff to the courses and methods of training deliver short training/orientation sessions shall be planned as a prelude to the actual training.

Students shall be enrolled for the programmes and the training shall commence in a predetermined schedule and manner.

The HVSU shall be open to seek the advice of academicians, subject matter experts, and consultants for formulation of Statutes and Ordinances, action plan, financial planning, budgeting, infrastructure development in the main campus, setting up of laboratories and workshops and procurement of equipment and property.

The HVSU shall collaborate with educational institutes, industries and persons of eminence in pursuance of excellence in every field.

The university shall be aware of its citizen social responsibility towards the people, society and nation and discharge its duties to fulfill the always and every time.

### Organisational Structure of the University

The following would be the organisation of the University:

1. Chancellor	iv. Peon (1)
2. Vice Chancellor	b. Dy Registrar – Establishment (1)
i. OSD to VC (1)	i. Asst Registrar (1)
ii. PS to VC (1)	ii. Superintendent (1)
iii. Senior Steno (1)	iii. Assistant (1)
iv. Clerk cum Data Entry Operator (1)	iv. Clerk cum Data Entry Operator (1)
v. Peon (1)	v. Peon (1)
3. Registrar (1)	c. Dy Registrar – Academics (1)
a. PS to Registrar (1)	i. Asst Registrar (1)
i. Senior Steno (1)	ii. Superintendent (1)
ii. Clerk cum Data Entry Operator (1)	iii. Assistant (2)
iii. Steno Typist (1)	iv. Clerk cum Data Entry Operator (2)

- v. Daftri /Office Attendant (1)
- vi. Peon (1)
- d. Assistant Registrar – Registration (1)
  - i. Superintendent (1)
  - ii. Assistant (1)
  - iii. Clerk cum Data Entry Operator (1)
  - iv. Peon (1)
- e. Director Estate - Construction Branch (1)
  - i. Executive Engineer- Civil (1)
  - ii. SDO Electrical & Public Health (2)
  - iii. Junior Engineer – Electrical, Public Health, Horticulture (3)
  - iv. Draftsman- Civil (1)
  - v. Assistant (1)
  - vi. Clerk cum Data Entry Operator (1)
  - vii. Tracer (1)
  - viii. Mason (1)
  - ix. Carpenter (1)
  - x. Electrician (1)
  - xi. Plumber (1)
  - xii. Helper (1)
  - xiii. Mali (1)
  - xiv. Peon (1)
- f. Assistant Registrar – Stores & Purchases (1)
  - i. Superintendent (1)
  - ii. Assistant (1)
  - iii. Clerk cum Data Entry Operator (1)
  - iv. Peon (1)
- g. Medical Officer (1)
  - i. Sanitary Officer (1)
  - ii. Pharmacist (1)
  - iii. Medical Attendant (1)
  - iv. Lab Attendant (1)
  - v. Staff Nurse (1)
- h. IT and LMIS Cell
  - i. Programmer (1)
  - ii. Junior Programmer
  - iii. Technical Assistant (1)
  - iv. EPBAX Assistant (1)
- i. RTI Cell
  - i. Superintendent (1)
  - ii. Assistant (1)
  - iii. Clerk cum Data Entry Operator (1)
  - iv. Peon (1)
- j. Legal Cell
  - i. Law Officer (1)
  - ii. Clerk cum Data Entry Operator (1)
  - iii. Assistant (1)
  - iv. Peon (1)
- k. Chief Warden (Nominated)
  - i. Hostel Warden (2)
  - ii. Hostel Supervisor (2)
  - iii. Clerk cum DEO (1)
  - iv. Hostel Attendant (2)
- l. Placement Guidance Cell
  - i. Placement Officer (1)
  - ii. Clerk cum Data Entry Operator (1)
  - iii. Peon (1)
- m. Security Officer (1)
  - i. Asst Security Officer (2)
- 4. Chief Finance & Accounts Officer (1)
  - i. Sr Accounts Officer (1)
  - ii. Accounts Officer (1)
  - iii. Accountants (1)
  - iv. Clerk cum Data Entry Operator (1)
  - v. Assistant (1)
  - vi. Peon (1)
- 5. Controller of Examinations (1)
  - i. PS to Controller of Examinations (1)
  - ii. Dy Registrar of Examinations (1)

- iii. Asst Registrar (Secrecy, Conduct, Results & Evaluation) (3)
  - iv. Superintendent (4)
  - v. Clerk cum Data Entry Operator (4)
  - vi. Assistant (3)
  - vii. Daftri (1)
  - viii. Peon (4)
  - ix. Driver (1)
6. Director Research Studies (Nominated)
- i. Clerk cum Data Entry Operator (1)
  - ii. Peon (1)
7. Librarian (1)
- i. Dy Librarian (1)
  - ii. Asst Librarian (1)
  - iii. Library Attendant (1)
  - iv. Professional Assistant (1)
  - v. Restorer (1)
  - vi. Peon (1)
8. Dean of Student Welfare (Nominated)
- i. Superintendent (1)
  - ii. Clerk cum Data Entry Operator (1)
  - iii. Peon (1)
9. Director Entrepreneurship Development Cell (Nominated)
- i. Clerk cum Data Entry Operator (1)
  - ii. Peon (1)
10. Director Capacity Building (1)
- i. Superintendent (1)
  - ii. Clerk cum Data Entry Operator (3)
  - iii. Peon (1)
11. Director Sports (1)
- i. Dy. Director (1)
  - ii. Store Keeper (1)
  - iii. Games Organiser (1)
  - iv. Groundsmen (1)
  - v. Peon (1)
12. Director Public Relations (1)
- i. Steno-Typist Hindi (1)
  - ii. Clerk cum Data Entry Operator (1)
  - iii. Peon (1)
13. Rajya Bhasha Cell
- i. Hindi Officer (1)
  - ii. Translator (1)
  - iii. Clerk cum Data Entry Operator- (1)
  - iv. Peon (1)
14. Dean Academic Affairs (Nominated)
- i. Clerk cum Data Entry Operator (1)
  - ii. Assistant (1)
  - iii. Peon (1)
15. Industry Instructional Cell
- i. Dy. Director
  - ii. Assistant
  - iii. Peon

## Faculties/ School

As per the need of the environment, the University shall establish various Schools of Studies to offer Certificate, Diploma, Under-graduate and Post-graduate degrees. Add-on programs will also be offered to students enrolled in higher education system to increase their employability.

The identified sectors of interest from economy are IT/ ITeS, Automobile, BFSI, Healthcare, Tourism and Hospitality, Construction, Sports, Textile, Apparel and Handloom, Green Jobs, Electronics, Food Processing, Agriculture, Beauty and Wellness, Retail, Footwear Technology, Plastic Technology and Logistics and Transport. Sunrise sectors and new age technologies shall be University's focus.

Broad domains for study would be Science and Technology, Computer and Information Sciences, Agriculture and Allied Sciences, Professional Studies, Healthcare Studies, Entrepreneurship, Continuing and Extension Education including teachers' education and Social Science & Humanities.

Since, HVSU is operating from a transit campus and its permanent campus shall be ready by 2019. University's endeavor shall to commence training in those sectors and job roles, where dual education model can be followed with active help from industry in an off-campus mode. This section may go through further reviews and modifications depending upon the new opportunities that may come our way.

Besides designing and developing curriculum and study material for the above courses, School / Departments of Studies shall be involved in imparting training and pursuing research. Sector wise development of the faculties is planned as under depending upon the infrastructure and demand of the course (s) and availability of partners willing to collaborate:

- ✓ **Agriculture:** Agriculture and Food Processing, Dairy Farming, Farm Tool Engineering
- ✓ **Manufacturing:** Automobile, Plastic Technology, Electronics, Garment Manufacturing, Textile, Construction, Footwear Technology.
- ✓ **Services:** IT/ITeS, BFSI, Logistics and Transportation, Healthcare, Retail Management, Hospitality and Tourism, Beauty and Wellness, AVGC.
- ✓ **Sunrise:** Sports, , Green jobs, MRTS,
- ✓ **Capacity Building:** Train the Trainer, Train the Assessors, Entrepreneurship, Feeder Schools, Finishing Schools, Community Development.

Under the Academic Section there shall be the following faculties. More faculties would be added subsequently, as per requirements.

1. Faculty of Engineering & Technology
2. Faculty of Applied Sciences & Humanities
3. Faculty of Business & Management Science
4. Faculty of Agriculture and Allied Sciences
5. Centre for Community Development
6. Centre for Entrepreneurship Development
7. Centre for Capacity Building

### Faculty of Engineering and Technology

In the field of Engineering and Technology, the University shall offer Certificate/ Diploma/ Degree level courses in collaboration with the industry in sectors like IT/ ITeS, Automobile, Construction, Textile and Apparel and Green Jobs.

Programme design and delivery would be in Dual Education mode. The university can also utilize the underutilised resources of State Technical Department to run such courses in Hub and Spoke model making use of digital and MOOC technology.

- a. Department of Automotive Studies
- b. Department of IT & Computers

- c. Department of Green Technology
- d. Department of Textile & Apparel Design
- e. Department of Mechanical Engineering
- f. Department of Plastic Technology
- g. Department of Electronics
- h. Department of Electrical
- i. Department of Architectural Engineering & Designing

### Faculty of Business and Management Science

This School will be involved in offering professional programmes in Business Management and Commerce, Healthcare, Tourism and Hospitality, Retail, etc. Bachelor's and Master's Degree programmes will be offered with specialization in Human Resource Management, Marketing Management, Financial Management, Supply-Chain-Management and Operation Management. The proposed schools under the business and management science are:

- a. Department of BFSI & Economics
- b. Department of Tourism & Hospitality
- c. Department of Management Studies

### Faculty of Applied Sciences and Humanities

The University proposes to commence courses in applied science subjects like Geophysics, Analytical Chemistry, Environmental Science, Biodiversity, Climate Change, Pollution Control, Sustainable Development and Geo-informatics, Remote Sensing, and Industrial Safety and Management etc.

Under the Social Sciences the disciplines of History, Political Science, Sociology, Economics, Anthropology, Public Administration, Psychology, Rural Development, Tribal Studies, Women & Gender Studies, Library and Information Sciences, Yoga and Fitness, Population Studies etc. shall be introduced both at under-graduate as well as post-graduate levels. The proposed schools under the faculty of professional services are:

- a. Department of Sports & Yoga
- b. Department of Languages & Communication
- c. Department of Security & Surveillance
- d. Department of Life Sciences
- e. Department of Psychology & Behavioural Science

### Faculty of Agriculture and Allied Sciences

In the field of agriculture the School will offer Certificate and Diploma programs in Dairy Technology, Organic Farming, Bee Keeping, Sericulture, Mushroom, Floriculture, Horticulture, Food Processing and Preservation, Water Harvesting and Management, Biomass Management, Farm Technology,

Food Services & Quality Management, Poultry Farming, Marketing of Agriculture Products etc. The proposed courses under the faculty are agriculture Engineering, agri-preneurship, farm tool engineering, dairy sciences.

### Centre of Community Development

The prime of function of this faculty would be to run various programs under Level 4, to design, develop and implement bridge courses to bring dropout and it is pass out at the equivalent to class XII. It would work with NIOS, RMSA and State Education Board and SDIT Department. The university can propose these models to arrest dropout rate and bridge the gap in vocational education for vertical mobility. All small skill certification programs, NSQF Level 4 programs, summer certification programs, feeder school and vocational schools with ITIs will be taken care by this department.

### Centre of Capacity Building

The objective of the department is to cater the needs of emerging skill education. As skill education is relatively new field there is need of good Trainers and Assessors. The department will run the different training programs for existing Trainers and assessors in the State as well as for creating more in the field. The university will do this with the association of NSDA/NSDC.

The department will also manage a pool of trainers from various international, national academic and industrial resources.

Besides an office at campus this department will be having district level branches in hub and spoke model. For regional and district centres department will be using the resources of SDIT/ HSEB/DTE or community colleges.

The department will also maintain the registration of skilled manpower of the State. The important functions can be summarised as:

- a. Registration of Skills
- b. Train The Trainers
- c. Skill ambassadors
- d. Train and register Assessors
- e. Design and Develop QP/NOS/curriculum
- f. RPL programme

### Controller of Examination

The department will supports the faculties in implementing newer examination regulations and conducting exam administration for exam boards in various courses of study, with a few exceptions. This includes the administration of exam registration and cancellation and similar work, such as grade registration, issuing certificates or transcripts, and checking admittances or non-admittances to exams and final thesis.

A crucial part of our work consists of the communication and advising that takes place at the cross section of the Central Examination Office and Academic department which run courses of study for all those involved such as faculties and students

## Centre of Incubation and Entrepreneurship

To promote entrepreneurship amongst the trainees, the department shall run a training capsule, leading to evaluation of entrepreneurship proposal from the trainees. The University shall provide institutional support, expert's opinion and seed money to firm up the proposal. Later on an angel investor shall be introduced to the trainee for project implementation.

## Department of Research and Development

The HVSU shall lay special emphasis in research and development in current and future technologies. The objective is to produce quality research scholars, thesis and papers.

The department will consist of three divisions:

- ✓ **Division 1.** The division will facilitate commercial applications of academic research, advise from the initial early stage ideas to intellectual property rights issues in the context of technology transfer. This division is the primary contact for any cooperation between the University and industrial partners.
- ✓ **Division 2. Research Funding:** This section will inform on State, National and International research programs and policies as well as funding opportunities. This division provides advice and guidance at all stages of a project, from proposal writing to project management.
- ✓ **Division 3. Career Development:** The section will offer support for all issues concerning the professional development of researchers. It provides customized programs, courses, and individual coaching for researchers at all levels. Career Development also serves as the primary point of contact for companies interested in recruiting researchers.

## Department of IT and LMIS

The internal management and IT will be available to central administration for tasks affecting all departments such as:

- IT resources and applications
- LMIS
- Corporate communication
- Academics and training delivery
- Office and general internal management
- Website management
- Cyber security
- Telephone communication

Besides, the department will provide a digital platform to industries and skilled workforce to facilitate the placement processes.

## Department of Public Relations

The Department of Press and Communications will be responsible for media relations and coverage of HVSU activities in print, electronic and digital media. It will publish the university newsletter SKILL Insight, the HVSU Magazine, and the HVSU Annual Report.

## Directorate of Student Services

The Student Advice Centre advises school students, prospective students, students, parents, and school teachers. It is the first point of contact for all questions about studies and the university.

The various fields of responsibility and advising services include:

### Advising and Services

The area advising and services for school students and prospective students offers a variety of possibilities to those who want to think more about studies and research. Aside from events in the different subject areas at university, interested individuals can get information at info events and presentations. Individual advising on topics such as choosing a course of study, study demands and content, application, and enrollment often make it easier to make the switch to university studies.

### Psychological Counseling

The psychological counseling will advise and accompany students in all problems that affect their studies. It takes place in individual conversations, and offers additional academic trainings for groups. With its counseling and advisory offerings, it will complement the activities of the departmental advisors and HVSU mentors.

### Career Center

The Career Center is the first point of contact for all questions on topics such as entering the job market, job opportunities, and career planning. It offers a comprehensive program of seminars and career training opportunities, advising sessions, and helps students to master their first steps in the professional world.

Goal: Student success (from a holistic approach for personal, educational, and professional success viz employment or further education and training, and goal attainment e.g. psychosocial, technical, applied learning, multiple intelligence, leadership, etc.)

Scope: Admin, Quality Assurance, Grievances, Impact Assessment, Integrated linkages with TVET -- classes and industry partners for relevance and value add interventions. to infuse a culture of student-centered TVET and Services and assessment of learning, strategic planning, budgeting, advocacy, student engagement, etc.

Assessment Center, Basic competencies/general knowledge, Application and integration to promote SMME and market related skills resources, Psychometric testing, Providing ToT on different learning styles, etc, Research on TVET outcomes, Student Life - Co-curricular programs to enhance learning & skill development, e.g. lectures, tours, sports, leadership, etc.

## Establishment of Centre of Excellence at Regional Level.

Regional Centers will be established in each district in the State. However, in the initial state (2017-18) three Regional Centers can be established at Hisar and Ambala. Regional Centers will be responsible for coordinating and monitoring the activities at the Spoke Centers in the region. There may be One admin two academic and three non-academic staffs engaged in each Regional Centre. Academic, administrative and financial activities of the Spoke Centres will be coordinated by the Regional Centres. Rent free accommodation will be provided by the Government/

**Table 42: Estimated Courses and Faculty Requirement**

Faculties	Schools	Number of courses estimated in three years			Estimated faculty requirement		
		2017-18	18-19	19-20	2017-18	18-19	19-20
Faculty of Applied Science & Humanities	School of Sports & Yoga		1			2	
	Department of Languages & Communication		1	1		2	2
	Department of Security & Surveillance	1		1	2		2
	Department of Life Sciences	1			2		
	Department of Psychology & Behavioural Science			1			2
Faculty of Engineering & Technology	Department of Automotive Studies	6	1	1	12	2	2
	Department of IT & Computers		1	1		2	2
	Department of Green Technology		1	1		2	2
	Department of Textile & Apparel Design	1		1	2		2
	Department of Mechanical Engineering*			1			2
	Department of Plastic Technology	1		1	2		2
	Department of Electronics*	1		1	2		2
	Department of Electrical*			1			2
Faculty of Business & Management Science	Department of BFSI & Economics	1	1	1	2	2	2
	Department of Tourism & Hospitality	1		1	2		2
	Department of Management Studies	3	1	1	6	2	2
Faculty of Agriculture Sciences	School of Agricultural Engineering	1	1	1	2	2	2
Total faculty (UGC)		17*	7*	16*	34*	14*	32*
Overall for all Departments		40*			80*		
Centre for Community Development	Feeder School			1			2*
	Finishing School			1			2*
	Community Courses	3	3	6	6*	6*	12*
Centre for Entrepreneurship Development		1			2*		
Centre for Capacity Building		1	1		2*	2*	
Center of Excellence (By Industry)		1	1		2*	2*	
<b>Total Faculty Requirements (Centre)</b>		<b>3*</b>	<b>6*</b>	<b>10*</b>	<b>6*</b>	<b>12*</b>	<b>20*</b>
<b>Overall for Centers</b>		<b>19*</b>			<b>38*</b>		
<b>Grand Total (Departments + Centres)</b>		<b>59*</b>			<b>118*</b>		

# assumed 1 course = 30 student Batch (Specific subject experts for different modules can vary)

\* Subject to change

## Construction of University Campus:

The campus shall be environment friendly. It shall have exemplary infrastructure in the field of:

**Energy Requirement:** The design of buildings shall be such that maximum sunlight is used for lighting up offices and common areas. Campus shall have infrastructure to harness solar energy for its power and other energy needs. Other available sources of renewable energy shall be identified and integrated into campus' energy grid. It shall be our aim that with the passage of time HVSU shall emerge as knowledge centre for non-conventional energy sources.

**Water Requirement:** The campus shall be able to harvest entire rain water – the runoff from the neighborhood and which falls on the campus land. It shall be stored in an artificial lake, which will recharge ground water. A robust system of treatment and recycling of waste water shall be established at the campus.

**Waste Recycle:** An integrated waste recycle system to take care of waste would be needed in the campus. We shall be able to recycle organic waste and dispose all other wastes as per acceptable practices. HVSU can offer expertise in the field of waste recycle.

**Zero Emission and Zero Waste:** Campus shall be designed in such a manner that use of motor vehicles is reduced to a minimum. For intra campus movement there will solar carts, e-rickshaws, bicycles and walking. It shall be the endeavor of all students, residents and visitors to campus to generate minimum waste in their daily life. The waste shall be recycled as per norms.

**Building Designs:** Campus buildings shall be designed and constructed in a manner that these are environment friendly and present an aesthetic view of the University. May be we can take a leaf from Shantiniketan and Vansthali Vidyapeeth. The buildings shall be constructed as per green norms and duly certified by competent certification bodies.

**Landscaping:** HVSU shall have signature landscaping, in harmony with nature and requirements. There shall be lots of open areas, shady places, water bodies, walkways, cycle tracks and sports arena. Landscaping shall not choke the soil or prevent ground water recharge.

**Horticulture:** HVSU campus shall have 30 per cent of its area under forest or tree cover. We shall only plant and nurture endemic species of trees, shrubs, plants, creepers, grasses and other flora. A landscape plan shall predate construction activity, so that orders with the nurseries can be placed in advance. We would be able to plant 3-4 years old saplings once the campus is ready. We can plan a rehabilitation centre for the tree species that are losing out due to deforestation and urbanisation such as endemic variety of mango, date palms, etc.

**Ecological Survey:** Before the construction of the campus gets underway, we shall have an ecological survey of the campus land and adjoining areas carried out to ascertain local flora and fauna. All efforts shall be made to save the endemic species.

**Technology Demonstrator:** The University campus shall endeavor to be a technology demonstrator and facilitator for new and renewable energy sources for the state.

Permanent campus of the University will be constructed at Dudhola, Palwal. As the construction is likely to take time the university shall have an operational office and mini campus at Gurugram and operate in off-campus mode to execute its educational programmes.

Permanent campus of the University shall have the following:

- |  |   |
|--|---|
| a) Administrative Blocks               | l) Incubation and entrepreneurship centre |
| b) Academic Blocks                     | m) Workshops and labs                     |
| c) Library Block                       | n) Sports field(s)                        |
| d) Computer Centre                     | o) Mini stadium                           |
| e) Media Production Centre             | p) Indoor games courts and gymnasium      |
| f) Auditorium & Convention Centre      | q) Jogging track                          |
| g) Seminar, Meeting & Conference Halls | r) Swimming pool                          |
| h) Skill Development Centre            | s) Parking Area for Staff & Students      |
| i) Canteen for Faculty & Students      |   |
| j) Warehouse for Course Material       |   |
| k) Student Service Centre              |   |

The residential complex shall have the following:

- |  |                                     |
|--|-------------------------------------|
| a) VC Residence                            | h) Community Centre                 |
| b) Faculty Housing                         | i) Shopping Centre                  |
| c) Senior Admin. Housing                   | j) Hostels (Boys and Girls)         |
| d) Admin. Staff Housing                    | k) Cafeteria                        |
| e) Health Centre                           | l) Security office and control room |
| f) Guest House                             |                                     |
| g) Transit Accommodation for Guest Faculty |                                     |

## SUMMARY OF KEY RECOMMENDATIONS

### For the Government

**Skill Sensitisation:** Vocational education and training still suffers from social unacceptability and lack of awareness amongst the youth. It is considered as the 'last option' in the career ladder. Such unawareness is proving to be detrimental in the spread and acceptability of the vocational education and its students. The government should plan and run special awareness programs on vocational education and training aimed at students of class V onwards. The campaign could be in the form of hobby and summer camps on skills being run across the state, culminating into certificate of participation for the participants. For this purpose the services of HVSU, ITIs/ Polytechnics/ Community Colleges/VTPs can be marshalled. A mass media campaign to educate target groups telling the advantage of VET with the involvement of celebrities, famous craftsmen and innovators will augment our efforts.

**Skill Ambassadors:** Selected vocational education teachers from schools should be trained and sensitised centrally, to act as skill ambassadors at their schools. These teachers shall counsel students and motivate them to take up vocational subject as a considered career options.

**Alternate Education System:** To promote VET, a pilot project offering a combination of two vocational subjects along with computers, science, mathematics and one language (total 6 subjects as per policy) should be run for class IX students in the selected schools of the state. Existing infrastructure of the ITIs/Polytechnics/Community Colleges/VTPs can be utilised for delivering practical training. Based on the results and responses six-subject VET model can be replicated in other schools as well. Industry's involvement and engagement should also be sought in spreading the vocational education amongst the students.

**NSQF Equivalence:** The students seeking vocational education under NSQF in schools require mobility to ITIs/Polytechnics and HVSU. A percentage of seats in ITIs/Polytechnics for such students should be reserved.

The government should accept vocational education training under NSQF as qualification for the employment in suitable jobs in public and private sectors. This issue needs to be addressed and mandated through a notification.

Pan-India portability of NSQF qualification into technical and general education stream needs to be mandated and enforced, as different states/ organisations interpret it differently.

**NSQF Mobility:** In 2015-16, the pass percentage in NSQF Level 2 and 4 was 93.6 per cent and 92.4 per cent students as against the pass percentage in class X (48.8 per cent) and XII (62.4 per cent). Students who cleared their vocational education examinations but failed to clear the general education examinations should be permitted to pursue the next level of NSQF vocational education, while they clear their general education examination.

**Wage Parity:** The employees who have received certification under NSQF should be considered at par with their counterparts at the workplace for wages and emoluments.

**Labour Market Information System (LMIS):** Haryana, being an industrialised state must have a LMIS of its own. A LMIS will help in integrating the efforts and strengths of the industry, employees/job seekers, training providers and government departments including HSDM. The HVSU can support the LMIS for the State by being a facilitator in the entire effort. It shall be mandatory for every enterprise to register its current and expected vacancies on the portal so that a forecast on demand and supply of manpower can be made accurately and training institutes can plan their activities.

To augment the process, the proposed regional centres of HVSU shall also assist in mapping the requirement of skilled manpower in the various industrial hubs. These centres would facilitate the registration of skilled workforce.

**Skill Nodal Agency:** There are several parallel training programs being run in the state by different skill agencies and training providers. These efforts need integration for the sake of accounting for the trained manpower and their deployment/movement. It is proposed that the entire skilling activity in the state be brought under the ambit of HSDM for coordination, accounting and resource utilisation.

To facilitate the process of multi-agency integration, HVSU should be designated as skill advisor and partner to HSDM. The ITIs that are operational in the state need to get affiliated with the university on a feeder model. HVSU should act as an advisory and administrative body for the vocational training institutes in the state.

There is large number of persons being trained every year in various skill programs such as PMKVY, DDUGKY and other schemes. Most of the training is done at entry level jobs of NSQF level 3/4. This effort at times does not match the requirements of industry. In order to upgrade the skills of manpower trained in entry level job roles, HVSU shall design bridge courses by to take their competency to next NSQF level.

**On-the-Job-Training:** OJT is the soul of VET, it is deeply embedded in the industrial training in advanced countries like Germany, Switzerland and South Korea. In our context, it is practised in varying degrees by industries and educational institutes. The university shall take the advantage of schemes like National Employability Enhancement Mission (NEEM) and National Apprenticeship Promotion Scheme (NAPS) to make OJT model more innovative and successful. It is observed

from an analysis by HVSU that in Haryana only 6245 apprentices were engaged in 486 industrial organisations out of 4523 organisations registered under NAPS in 2016-17. To facilitate students' OJT through these schemes, government should make it compulsory for all the industries enrolled under NEEM and NAPS to support the vocational and technical education so as to upgrade skill ecosystem.

HVSU proposes that dual education model integrating OJT with vocational education should be mandated in letter and spirit for conducting technical education. Haryana being an industrial hub need quality workforce aligned to the requirements of the industry which can only be produced by adopting the undiluted concept of dual education.

The OJT model should be promoted across the State, by seeking willing cooperation from the industry and incentivising it for the trainee and the industry. OJT periods of the trainees will be credited in the credit bank.

**Underutilised Infrastructure:** Unfortunately the capacity utilisation of our ITIs/ Polytechnics/ Engineering colleges is sub-optimal. There could be many reasons for this, but this malady has been recurring over the years. To understand the problem in all its dimensions, a committee should be constituted who would suggest ways and means of economising the efforts and capacity utilisation. In the interregnum, interested universities and institutes can be invited to open their regional training centers to make use of surplus infrastructure.

The ITIs should be affiliated to HVSU to act as university's extension in the state. HVSU shall run its courses in hub and spoke model, benefitting its students and utilising

**Sunrise Sectors:** The importance of sunrise sectors of economy such as green jobs, robotics, automation, agriculture, AVGC, IOT, MRTS, smart cities, healthcare, tourism, sports, etc must be understood. To catalyse these sectors investments must be encouraged. Technical educational institutes should gear up to meet the future demands by training workforce on related job roles.

**Entrepreneurship:** Our youth should not only be a job seeker. Start ups at all levels irrespective of educational and social background must be encouraged. It has the potential of empowering women, unemployed and educated alike. The government should develop the policy which offers encouragement, counselling and financial support to the budding entrepreneurs. Entrepreneurship should form an important module in all courses and curriculum. The students studying at HVSU should be entitled to avail loans on flexible terms.

**Training of Women:** In YAS, conducted by HVSU, women of Haryana, in no unambiguous manner have expressed their keen desire to receive training and find employment for their social mobility and upliftment.

Seventy per cent Women want to pursue their career by relocating themselves to a place where training and employment opportunity exist. They are keen to make themselves employable by learning communication skills. Their preference of learning is OJT model.

These indicators are good enough for the government to take cognisance of and focus on providing training facilities, safe working environment, working women hostels and safe transportation in all the districts.

Inclusion of women in the workforce shall improve their workforce participation and gender diversity in the workplace. It will also curb the women unemployment rate.

**CSR Desk:** The State government should establish a CSR desk, where the employers can contribute to a corpus. By doing so, employers would be entitled to a rebate in the CSR. Twenty-five per cent of the corpus so collected should be spent skill development in the state. Government should mandate this through appropriate notification.

## For the University

**Standardise Curriculum:** University shall design its courses by involving concerned universities and industries in drafting of curriculum, syllabi and content. The courses shall be based and aligned to the existing NOS. The course shall be based on semester system providing the multiple exit and entry points. For the job roles or skills for which the NOS are unavailable, HVSU shall, in consultation with industry and draft the same and get approved from NSDA/NSDC. Subsequently, university shall offer its services to ITIs and polytechnics for the improvement of their course ware.

**Credit Transfer and Credit Bank System:** The HVSU shall develop a credit transfer and credit bank system to keep a tag of the credit points earned by the trainees. The trainees who undergo courses or appear for recognition of prior learning test shall earn credit points. Students studying vocational education under RMSA and NSQF shall benefit from this initiative as their credit points shall be preserved.

**Mode of Training:** The University shall prefer industry integrated models of training on the following lines: a) Campus model; b) Campus-Industry model; c) Industry model. Irrespective of the model adopted, it will be ensured that maximum OJT in the industrial environment is provided to the students.

Besides industry, the university shall also develop synergy to seek cooperation in executing multi location and multi institution training models leveraging Hub and Spoke model and Consortium model. The infrastructure of higher and technical education is also under utilized in the state; the university can run various vocational programs in partnership with such institutes in hub and spoke model.

**Train the Trainer:** Good quality master trainers and trainers are a prerequisite for skills training. A central pool of trainers and assessors should be created. The industry shall be approached for providing its trainers and assessors for training of trainers/students. Trainers and assessors present in the eco-system – NSDC, SSC and HSDM shall also be made use of. Special emphasis will be laid in training of master trainers and assessors. Trainers shall be trained in, platform as well as domain skills.

The HVSU shall design and develop advanced training courses for the trainers and assessors and shall also run upgradation programs periodically which are the need of hour. Subsequently, the university shall offer its services to train the teachers from primary to senior secondary levels including vocational education instructors who will act as vocational ambassadors/counsellors.

Subject matter expertise of National Institute of Technical Teachers Training & Research (NITTER) and National Instructional Media Institute (NIMI) should be leveraged teachers' training and capacity building.

**Technology in Training:** The University shall develop skill programme based on new technology like ICT based pedagogy, MOOC and simulations for training delivery and OJT. For several courses, the mixed model of online and offline maybe used for reaching to a larger "student" base and utilize facilities optimally.

**Dropouts:** Bringing back the dropouts to educational stream should be our priority. These can be brought back by enrolling them in various courses at ITI level. Customised certificate program for class V, VIII and X dropouts can be designed and implemented. Course and curriculum so designed should have equivalency with the formal education system. The university needs develop scheme (s) to induct dropouts in the vocational education and training corresponding to NSQF Levels 1 to 4 to provide pathway to those who wish to rejoin the mainstream education.

**Enhance the Employability of Graduates:** The HVSU shall design and run short term courses on finishing school model, for pass out graduates and post-graduates, who find it hard in landing a job due to some skill deficit.

**Promote Entrepreneurship:** The University shall focus on promoting entrepreneurship amongst the trainees. It can be achieved by a) Introducing entrepreneurship module in every course, b) Establishing Regional Incubation Centre at industrial hubs in hub and spoke model. c) Leverage RSETI and other incubation centers in the state for the purpose. HVSU shall provide institutional support to selected entrepreneurs by providing seed capital and introducing them to an angel investor.

**The MSME:** More and more small and medium businesses in the informal sector are getting into the organized sector. MSME is the largest employer of the workforce in the industrial sector. The HVSU shall have "MSME Centre of Excellence", established as part of the core departments, providing consultancy on problems and solutions for this sector.

**Skills Bank:** The HVSU, with the help of Central and State Governments and local industry shall act as a skills bank and offer industry-specific skill development programmes for the workforce at their place of work or in the local ITIs and CCs. The programmes so selected will be demand-driven and industry led.

**Communication Skills:** The YAS indicated that 81.5 per cent students wished to enrol for communication skill and training. Haryana youth want to learn communication skills as it has been eclipsing their careers prospects. As per Weebox survey 2017, the vital factor which enhance employability is communication skills besides other. The HVSU shall include communication skills and behavioural training as part of all its courses.

**Vocational Education under RMSA:** The HVSU can strengthen NSQF scheme by fielding innovative pedagogy. The students under NSQF (L4) shall have access to direct entry to degree programmes offered by HVSU by keeping certain percentage fixed in the admission process. The university shall provide an opportunity to NSQF (L2) students for seeking admission in different courses embedded with OJT.

**Finishing School:** The HVSU shall plan vocational education and training programmes in collaboration with industry on the lines of German and Swiss education model. The ITI and polytechnic students can be inducted and given specialised skills at the finishing school of the University. HVSU shall offer career pathways to the drop-outs, ITI, polytechnic and other pursuing degree in different disciplines students for pursuing higher education.

**CSR Activity:** University should get itself registered under (ATG) and Foreign Contribution (Regulation) Act (FCRA) for receiving CSR funds from domestic and multi-national corporations.

The HVSU shall under its citizen's social responsibility adopt all the schools of Village Dudhola for infrastructure upgradation, capacity building and overall improvement in instructional and education standards. In subsequent years, schools of the district shall also be incorporated into the scheme

## For the Industry

**Current Syllabus:** It is a common refrain of the industry that the syllabus taught at institutes is not current. The syllabus of various courses should be updated periodically. HVSU can partner with the industry in curriculum, syllabus and content writing. The syllabus and job role requirements both shall be matched with existing Qualification Packs and National Occupational Standards.

**Industry Involvement:** Industry's involvement in training is crucial. It should provide its space, infrastructure, personnel and opportunity to trainees for on-the-job-training. The industry can claim benefits under CSR and other schemes. There shall be a State CSR desk to ensure that industries spend a fixed percentage from their CSR funds towards various skilling education activities.

**Popularise Apprenticeship:** The various apprentice schemes shall be popularized and incentivised amongst the industry. To adopt a remunerative on-the-job-training method for youths, industry has to open its doors wider for the trainees, as this aspiration cannot be satisfied by providing apprenticeship only.

**Facilitate Lifelong Learning:** Due to changing technologies at work place, a worker's relevance in a job is linked to his/ her skills upgradation. There are various industries, who train their manpower regularly HVSU can leverage such demand and design suitable customised courses for the industries for re-skilling, up-skilling and cross-skilling of work force. HVSU can also develop training modules for the working professionals. Industry can sponsor them for requisite qualifications/ courses which will be run either in-situ or at the HVSU campus. This will help in keeping the workforce in tune with changing technology and also their retention with the organisation.

**On-the-Job-Training:** OJT in technical education should be promoted by the State to make it more attractive for trainee, trainers and industry, based on the length of training period. The longer the training period the better the incentives. OJT periods of the trainees will be credited in the credit bank.

**The NAPS:** Industry should leverage the benefit of NAPS and provide the opportunity to the youth of state for sharing their infrastructure and technology for learning. The apprenticeship/internship/ OJT substantially increases the chances of employment.

**Consortium:** To develop a sound and socially acceptable education system, the consortium pillars need to integrate for proper dissemination of skill education training. The industry should open gateways for such so that state objective of Kaushal Haryana: Kushal Haryana can be realised.

**CSR Benefit:** The industry can utilise their CSR fund by building an institutional partnership with the University. This will benefit the students by enhancing their employment skill and industry by getting a skilled workforce.

# ABBREVIATIONS

ACBS	Academic Credit Bank System
AICTE	All India Council for Technical Education
AKIC	Amritsar-Kolkata Industrial Corridor
ATS	Apprenticeship Training Scheme
AVGC	Animation, Visual Effects, Gaming and Comic
B.Voc	Bachelor in Vocational
BCE	Before Common Era
BFSI	Banking, Financial Services and Insurance
BPM	Business Process Management
CAGR	Compound Annual Growth Rate
CBCS	Choice Based Credit System
CC	Community College
CCS-HAU	Chaudhary Charan Singh Haryana Agriculture University
CFC	Common Facility Centre
CHC	Community Health Centre
CITS	Craftsman Instructor Training Scheme
CLU	Change of Land Use
COE	Centre of Excellence
CTS	Craftsman Training Scheme
DDU-GKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
DGET	Directorate General of Employment and Training
DGT	Directorate General of Training
DMIC	Delhi-Mumbai Industrial Corridor
DMICDC	Delhi Mumbai Industrial Corridor Development Corporation
DQR	GQF for Lifelong Learning
DSR	Direct-seeded Rice
ECTS	European Credit Transfer System
ECVET	European Credit System for Vocational Education and Training
EDI	Electronic Data Interface
EMC	Electronic Manufacturing Clusters
EPP	Enterprises Promotion Policy
Erasmus	European Community Action Scheme for the Mobility of University Students
EU	European Union
FCRA	Foreign Contributions (Regulation) Act
FDDI	Footwear Design and Development Institute
FVB	Federal Vocational Baccalaureate
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GOI	Government of India
GQF	German Qualification Framework
GSDP	Gross State Domestic Product
GSPA	Gross State Value Added

HDI	Human Development Index
HSDM	Haryana Skill Development Mission
HSIIDC	Haryana State Industrial & Infrastructure Development Corporation
HVSU	Haryana Vishwakarma Skill University
IFS	Integrated Farming System
IIDC	Industrial Infrastructure Development Scheme
IIM	Indian Institute of Management
IIP	Index of Industrial Production
IIT	Indian Institute of Technology
INM	Integrated Nutrient Management
IOT	Internet of Things
IPM	Integrated Pest Management
IT	Information Technology
ITC	Industrial Training Centres
ITeS	Information Technology Enabled Services
ITI	Industrial Training Institute
ITOT	Industrial Training of Trainers
IWM	Integrated Water Management
KMP	Kundali – Manesar – Palwal
KQF	Korean Qualifications Framework
LLAS	Lifelong Learning Account System
LMIS	Labour Market Information System
M. Voc	Master of Vocational
MES	Modular Employable Skills
MHRD	Ministry of Human Resource Development
MNC	Multi-national Corporation
MOOC	Massive Open Online Courses
MRTS	Mass Rapid Transport System
MSDE	Ministry of Skill Development and Entrepreneurship
MSE	Micro and Small Enterprises
MSME	Micro, Small & Medium Enterprises
NAAC	National Assessment and Accreditation Council
NACAER	National Council of Applied Economic Research
NAPS	National Apprenticeship Promotion Scheme
NATS	National Apprenticeship Training Scheme
NCR	National Capital Region
NCS	National Competency Standards
NDRI	National Dairy Research Institute
NEEM	National Employability Enhancement Mission
NID	National Institute of Design
NIFT	National Institute of Fashion Technology
NIFTEM	National Institute of Food Technology Entrepreneurship and Management
NILP	New Integrated Licensing Policy 2015

NIMI	National Instructional Media Institute
NITTER	National Institute of Technical Teachers Training & Research
NOS	National Occupational Standards
NRLM	National Rural Livelihood Mission
NSDA	National Skill Development Agency
NSDC	National Skill Development Corporation
NSDM	National Skill Development Mission
NSDP	National State Domestic Product
NSQF	National Skill Qualification Framework
NVEQF	National Vocational Education Qualifications Framework
ODF	Open Defecation Free
OEM	Original Equipment Manufacturer
OJT	On-the-job-training
PHC	Primary Health Centre
PIA	Project Implementation Agency
PMAY	Pradhan Mantri Awas Yojna
PMFBY	Pradhan Mantri Fasal Bima Yojna
PMKK	Pradhan Mantri Kaushal Kendra
PMKVY	Pradhan Mantri Kaushal Vikas Yojna
PMKVY-TI	Pradhan Mantri Kaushal Vikas Yojna Technical Institutes
PPP	Public Private Partnership
PWC	PricewaterhouseCoopers
QP	Qualification Pack
RMSA	Rashtriya Madhyamik Shiksha Abhiyan
RPL	Recognition of Prior Learning
RSETI	Rural Self-Employment Training Institutes (RSETI)
SDIS	Skill Development Initiative Scheme
SSA	Sarva Shiksha Abhiyan
SSC	Sector Skill Council
SUN	Saur Urja Nivesh
SWAN	State Wide Area Network
SWM	Solid Waste Management
SY Y	Saksham Yuva Yojna
T3	Train The Trainer
TVET	Technical and Vocational Education and Training
UGC	University Grants Commission
VAT	Value Added Tax
VE	Vocational Education
VET	Vocational Education and Training
VPET	Vocational and Professional Education & Training
VTP	Vocational Training Provider
WYC	Western Yamuna Canal
YAS	Youth Aspiration Survey

# ANNEXURES

## ANNEXURE 1: Questionnaire: Agriculture Sector

Q1. What has been the performance of agriculture sector in Haryana in the last five years?

Sr. No	Factors	2016	2015	2014	2013	2012
1	Acreage under cultivation					
2	Area under irrigation					
3	No of operational land holdings					
4	Production of grains					
5	% age of national production					
6	Contribution of agriculture towards GSDP					
7	No of people employed in the sector					

Q2. Rank the allied sectors of agriculture in Haryana in terms of their growth and output.  
(from 1-14)

Sr. No	Allied Sectors	Ranking	Sr No	Allied Sectors	Ranking
1	Dairy and livestock		8	Floriculture	
2	Poultry		9	Mushroom	
3	Pisciculture		10	Medicinal plants & herbs	
4	Apiculture		11	Seed production	
5	Fruits		12	Food processing	
6	Vegetable		13	Green house cultivation	
7	Nursery		14	Organic farming	

Q3. What percentage of agriculture graduates passing out from your institution, do actually choose farming as their profession?

Sr. No	Year	No of Graduates	Farming	Govt Job	Corporate Job
1	2016				
2	2015				
3	2014				
4	2013				
5	2012				

Q4. What percentage of agriculture graduates who enrol/ pass out from your institution hail from Haryana?

Sr. No	Year	No of Graduates	Haryana	Other states	Corporate Job
1	2016				
2	2015				
3	2014				
4	2013				
5	2012				

Q5. What is the extent of mechanisation in agriculture sector in Haryana?

Sr No	Factors	2016	2015	2014	2013	2012
1	No of tractors					
2	No of combine harvesters					
3	No of tube well					
4	No of crushers					
5	No of power tillers					
6.	No of pump sets					

Q6. Who actually works in the farms in Haryana?

- Local farm labourers
- Migrant farm labourers
- Farmers and their families

Q7. What has been the consumption of chemical fertilisers and pesticides (including weedicide) in Haryana?

Sr. No		2016	2015	2014	2013	2012
1	Fertilizers					
2	Pesticides					

Q8. What are the major problems besieging agriculture sector in Haryana?

Sr. No	Challenges	Ranking	Sr. No	Challenges	Ranking
1		1	8		8
2		2	9		9
3		3	10		10
4		4	11		11
5		5	12		12
6		6	13		13
7		7	14		14

Q9. What is the prevalent system of farm management in Haryana? Give percentage.

- Self farming
- Share cropping
- Land on lease
- Cooperative farming
- Land not under farming

Q10. What are the sunrise sectors of agriculture in Haryana?

Q11. List the job roles in agriculture sector in which youth would like to be trained?

Q12. How agriculture sector is dealing (or plans to deal) with the following challenges:

- a. Water shortage
- b. Uncertainty of weather
- c. Overuse of chemical fertilisers and pesticides
- d. Over cropping
- e. Farmer poverty and indebtedness
- f. Small land holdings
- g. Biomass management

Q13. Can the challenges mentioned in Q12 bring in new skills and more jobs?

Q14. Which are the main agro industries functioning in Haryana? What has been their performance in terms of output and employment?

Sr. No	Industries	2016	2015	2014	2013	2012
1						
2						
3						
4						
5						
6						

Q15. What has been the per hectare yield for wheat and rice and production cost in Haryana?

Sr. No		Factor	2016	2015	2014	2013	2012
1	Wheat	Per hectare yield					
		Production cost					
2	Rice	Per hectare yield					
		Production cost					

Q16. List the agricultural best practices adopted by the farmers of Haryana?

Q17. What is the state of co-operatives and corporate farming in agriculture sector in Haryana?

Q18. In which sub-sectors of agriculture co-operatives can be introduced/ successful?

Q19. Which skills/ training in agriculture sector can alleviate the financial conditions of the following category of people?

- a. Women
- b. Landless
- c. School dropout

Q20. What are the prospects of growth of the following with in agriculture sector?

- a. Drip and sprinkler irrigation
- b. Green house cultivation

- c. Organic farming
- d. Compost production
- e. Arid farming
- f. Others

Q21. Which skills and enterprise can augment the income of farmers and landless in agriculture sector?

Q22. What is the state of crop insurance in Haryana?

Sr. No	Factor	2016	2015	2014	2013	2012
1	Area					

Q23. Penetration of ICT application in Agriculture sector in Haryana

Sr. No	Factor	Newspaper	Radio	TV	Internet	Kisan Helpline	Mobile app
1	Sourcing						
2	Knowledge & Counselling						
3	Weather						
4	Marketing						

Q24. How do reach out to the farmers for knowledge sharing?

- a. Through helpline
- b. Knowledge centres
- c. Kisan Mela
- d. Filed Visits
- e. Any Other (Please specify)\_\_\_\_\_ -

ANNEXURE 2: Industry Survey

**HARYANA VISHWAKARMA SKILLS UNIVERSITY**  
**INDUSTRY SURVEY**

1. Name And Address Of Organisation You Are Working With

2. Existing Strength Of Employee: Total And Skilled

3. Specify Entry Level Job Roles In Your Industry

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4. Are You Supportive Of Apprentices Programme?

Yes  No

5. Which Are Your Feeder Institutions For Supply Of Skilled Manpower?

6. Which Job Roles Are Trained By Your Organisation's Internal Agencies?

7. Which Are The Job Roles Trained By External Agencies For Your Organisations?

8. If University Wishes To Collaborate With You, Suggest Job Roles

9. Please Specify The Job Roles For Future Preparedness In Your Organisation

10. Please Specify Some Challenges In Skilling Manpower In Your Organisation.

11. Please rate domain for hiring in order of preference (1 being most preferred)

Undergraduate	Graduate
ITI	Masters
Polytechnic	Engineers

12. Please rate skills for employment in order of preference

Domain Expertise	Life Skill
Numeric & Logical Ability	Learning Agility

Name:

Designation:

Contact:

Email:

**Note:** The information provided by you will be used for academic purpose only.

**Thanks for sparing your precious time**

### ANNEXURE 3: Youth Aspiration Survey Questionnaire

#### HARYANA YOUTH ASPIRATIONS SURVEY QUESTIONNAIRE

Name:	Mobile (Optional):
Age:	Gender: Male / Female/Third Gender
Annual Family Income:	Email:
Education: 8 <sup>th</sup> / 10 <sup>th</sup> / 12 <sup>th</sup> / Graduate / Post Graduate / ITI / Others _____ (Specify)	
School/ College: Govt/ Private	Present Occupation:
Village/ Town/ City:	District:

1. Are you a School dropout: Yes/ No
- a) If Yes Reason for leaving the school: Lack of parents encouragement/ Academic performance/ Family economic condition/ Personal Reason/ Any Other \_\_\_\_\_ (Specify)

b) Do you wish to continue your study: Yes/ No

2. Do you possess any of these skills?

Accountancy	Auto Repair	Agriculture	Appliances Repair	Beautician
Blacksmith	Carpentry	Computer	Cooking	Cycle Repair
Dairy	Driving	Electrician	Grain Milling	Hair Cutting
Handicraft	House Keeping	Mason	Mobile Repair	Music
Painting	Photography	Plumbing	Salesperson	Shop keeper
Security Guard	Sports	Tailoring	Teaching	Welding
Yoga	Any Other Skill .....			(Specify)

3. Do you possess any Degree/ Diploma / Certificate / License for your skills: Yes / No

4. What are your aspirations in life? To become ....

Agriculturist	Armed Force	Govt. Servant	Private Sector Service	Business/Self Employed
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5. To fulfil your aspiration which education/skill you want to acquire?

Certificate	Diploma	Degree
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6. Have you heard about Vocational/ Skill education? Yes / No

7. Which skill would you like to choose as your profession? (If more than one , Choose only two)

Agriculture			
Organic Farming & Composting	Floriculture	Mushroom Farming	Green House Farming

Apparel			
Garment Cutter	Sewing Machine Operator	Garment Checker	Garment Packer

Auto			
CNC Operator	Auto Service Technician	Dealership Sales Executive	Showroom Executive

Banking & Insurance			
Business Correspondent & Business Facilitator	Investment Agent	Insurance Advisor	Microfinance Executive

Construction					
Mason	Welder	Bar Bender	Plumber	Electrician	Carpenter and Scaffolding

Entrepreneurship			
Retail Outlet	Micro and Small enterprises	KVIC	PMRY

Education			
Nursery Teacher Training	Junior Basic Teacher	B Ed	M Ed

Health Care				
Aangan Wadi/ Aasha Worker	Midwife	General Duty Assistant	Vision Technician	Administration Services

Hospitality and Tourism					
Kitchen Staff	Sales & Marketing	Multi-skilled person	Integrated Technology Experts	Travel Consultant	Tourist Guide

IT/ITES			
CRM Domestic Voice	Data Entry Operator	Junior software developer	Hardware developer

Logistics				
Shipment Bagging Agent	Transport Coordinator	Custom Clearance Agent	Freight Forwarding Agent	Toll Collector

Management				
HR Assistant	Marketing Assistant	Admin Assistant	PR Assistant	Office Assistant and Office Secretary

Petroleum and Solar Energy	
Fuel Pump Attendant	Solar Energy Appliances Technician

Retail			
Store Operator Assistant	Distributor Salesman	Cashier	Retail Associate

Security		
Security Supervisor	CCTV Supervisor	Assistant Security Officer

Sports	
Yoga Instructor	Physical Training Instructor

Textile			
Weaver	Handloom Weaver	Spinning Machine Operator	Doffer

8. If you had an option to enrol yourself in a training programme, what would you opt for?

Classroom Training	Digital	On the job Training	Combination of all
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9. Are you prepared to relocate yourself for the sake of Training and Employment: Yes /No

10. Do you wish to enrol for :

Learning a Vocational Skill	Earning Livelihood through Job	Earning + Learning
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11. Do you wish to enrol for communication skill course: Yes/No

**Note:** The details provided will ONLY be used for the analysis purpose and will be treated as highly confidential

Thanking for Sparing your Time

ANNEXURE 4: Youth Aspiration Survey Questionnaire

हरियाणा युवा आकांक्षा सर्वेक्षण: प्रश्नावली

नाम: मोबाइल (एचिछक):  
 आयु: लिंग: पुरुष / स्त्री / थर्ड जेंडर  
 पारिवारिक आय(वार्षिक): ईमेल:  
 शिक्षा: 8 वीं / 10 वीं / 12 वीं / स्नातक / स्नातकोत्तर / आईटीआई / अन्य \_\_\_\_\_ (निर्दिष्ट करें)  
 स्कूल / कॉलेज: सरकारी / निजी वर्तमान व्यवसाय:  
 ग्राम / नगर / शहर: जिला:

1. क्या आप ने स्कूली शिक्षा पूरी नहीं की? हाँ / नहीं  
 (A) यदि उत्तर हां है तो स्कूल छोड़ने के क्या कारण थे?  
 (क) माता-पिता/ अभिभावक से प्रोत्साहन न मिलना (ख) पढाई में कमजोर  
 (ग) परिवार की कमजोर आर्थिक हालत (घ) व्यक्तिगत कारण  
 (ङ) कोई अन्य कारण ----- (लिखें)  
 (B) क्या आप अपनी पढाई फिर से शुरू करना चाहेंगे? हाँ / नहीं  
 2. निम्नलिखित कौशलों में से आपको कौन सा कौशल (हुनर) आता है?

अकाउंट	ऑटो मरम्मत	कृषि	उपकरण मरम्मत	ब्यूटीशियन
लोहार	बढ़ई	कंप्यूटर	पाक कला	साइकिल मरम्मत
डेयरी	झाड़विंग	इलेक्ट्रीशियन	आटा चक्की / राइस मिल	बाल काटना
हस्तशिल्प	हाउस कीपिंग	राज मिस्त्री	मोबाइल मरम्मत	संगीत
चित्रकारी	फोटोग्राफी	नलसाजी (प्लंबिंग)	सेल्समैन	दुकानदार
सुरक्षा गार्ड	खेल / योग	सिलाई	शिक्षण	वैलिंग
कोई अन्य कौशल ..... (लिखें)				

3. क्या आप ने अपने कौशल के लिए कोई डिग्री / डिप्लोमा / सर्टिफिकेट या लाइसेंस हासिल किया है? हाँ / नहीं

4. जीवन में आपकी आकांक्षाएं क्या हैं?

किसान	सशस्त्र बल सेवा	सरकारी नौकरी	निजी क्षेत्र सेवा	निजी व्यवसाय
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5. अपनी आकांक्षा को पूरी करने के लिए आप कौन सी शिक्षा या कौशल हासिल करना चाहते हैं?

सर्टिफिकेट	डिप्लोमा	डिग्री
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6. क्या आपने व्यावसायिक या कौशल शिक्षा के बारे में सुना है?                      हाँ / नहीं

7. आप अपने पेशे के रूप में किस कौशल को चुनना पसंद करेंगे? एक से ज्यादा विकल्प की स्थिति में अधिकतम दो चुने

क्षेत्र (सेक्टर)	नौकरी / व्यवसाय					
कृषि	जैविक खेती और कम्पोस्ट खाद बनाना		फूलों की खेती	मशरूम की खेती	ग्रीन हाउस खेती	
परिधान	गारमेंट कटर		सिलाई मशीन ऑपरेटर	गारमेंट परीक्षक	गारमेंट पैकर	
ऑटोमोबाइल	सीएनसी ऑपरेटर		ऑटो सेवा तकनीशियन	सेल्स एग्जीक्यूटिव	शोरूम एग्जीक्यूटिव	
बीएफएसआई	व्यापार संवाददाता / व्यवसाय शिक्षक		निवेश एजेंट	बीमा सलाहकार	माइक्रोफाइनेंस एग्जीक्यूटिव	
निर्माण क्षेत्र	राज मिस्त्री	वैल्डर	बार बेंडर	प्लम्बर	इलेक्ट्रीशियन	बढ़ई और शटरिंग
उद्यमिता	खुदरा आउटलेट		माइक्रो और लघु उद्यम	खादी ग्रामोद्योग	<b>SAKSHAM</b>	
शिक्षा	नर्सरी टीचर ट्रेनिंग		जूनियर बेसिक शिक्षक	बी एड	एम एड	
स्वास्थ्य सेवाएं	आंगन वाडी/ आशा कार्यकर्ता		मिडवाइफ	जनरल ड्यूटी सहायक	विजन तकनीशियन	
आतिथ्य और पर्यटन	सेल्स एग्जीक्यूटिव		यात्रा सलाहकार	पर्यटक गाइड	रसोई स्टाफ	
आईटी / आईटीईएस	कस्टमर रिलेशनशिप मैनेजर कॉल सेंटर		डाटा एंट्री ऑपरेटर	जूनियर सॉफ्टवेयर डेवलपर	हार्डवेयर डेवलपर	

लोजिस्टिक्स	शिपमेंट बगिंग एजेंट	परिवहन समन्वयक	कस्टम क्लीयरेंस एजेंट	टोल कलेक्टर
प्रबंधन	मानव संसाधन सहायक	विपणन सहायक	एडमिन एडमिन	कार्यालय सचिव/ कार्यालय सहायक
पेट्रोलियम और सौर ऊर्जा	फ्यूल पंप अटेंडेंट	सोलर एनर्जी एप्लायंसेज तकनीशियन		
खुदरा (रिटेल)	स्टोर संचालक सहायक	वितरक विक्रेता	कैशियर	रिटेल एसोसिएट
सिक्योरिटी	सिक्योरिटी सुपरवाइजर	CCTV सुपरवाइजर	असिस्टेंट सिक्योरिटी अफसर	सिक्योरिटी अफसर
खेल	योग प्रशिक्षक	शारीरिक प्रशिक्षण अनुदेशक (PTI)	खेल प्रशिक्षक	
कपडा	वीवर	हथकरघा बुनकर	स्पिनिंग मशीन ऑपरेटर	डॉफर

8. यदि आप किसी ट्रेनिंग प्रोग्राम में दाखिला लेने के इच्छुक हैं तो, आप क्या चुनेंगे?

क्लासरूम ट्रेनिंग	डिजिटल ट्रेनिंग	नौकरी के साथ- साथ ट्रेनिंग	सभी
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9. क्या आप प्रशिक्षण और रोजगार की खातिर खुद को स्थानांतरित करने के लिए तैयार हैं?

हाँ / नहीं

10. क्या आप निम्नलिखित में से किसी में दाखिला लेना चाहते हो?

वोकेशनल स्किल	नौकरी के साथ कमाई	कमाना + पढाई
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11. क्या आप कम्युनिकेशन स्किल कोर्स में दाखिला लेना चाहते हो?      हाँ / नहीं

#### ANNEXURE 5: Comparison of Ranking of sectors as per various surveys

Sector	RMSA	Sector	NCAER	Sector	PWC
IT/ITeS	1	Automobile	1	Auto	1
Beauty & Well ness	2	Agriculture	2	Apparels	2
Health Care	3	Textile	3	Logistics	3
Sports	4	Footwear	4	Textile	4
Automobile	5	IT	5	Metal Products	5
Retail	6	Defence Manufacturing	6	FMCG	6
Agriculture	7	Solar	7	Machinery	7
Security	8	Pharma	8	Rubber	8
Banking & Insur- ance	9			Electrical	9
Hospitality & Tourism	10			Basic metal	10
Apparel	11				
Media	12				

Source: <http://hssp.in/NSQF/Default.aspx>; The NCAER State Investment Potential Index 2016; PwC analysis, 2017

#### ANNEXURE 6: Comparison of YAS with NSDC priority sector

Sectors	YAS	Sectors	NSDA	Sectors	Group
Sports	1	IT/ITeS	1	IT/ITeS	1
IT/ITeS	1	Automobile	1	Automobile	1
Automobiles	1	Electronic	1	BFSI	1, 2
Healthcare	1	Engg Products	1	Construction	1, 2
BFSI	1	Scientific Instruments	2	Retail	2
Construction	1	Communication	2	Hospitality & Tourism	2
Security	2	Education	2	Healthcare	1,2
Management	2	Healthcare	2	Agriculture	3
Entrepreneurship	2	BFSI	2		
Retail	2	Retail	2		
Hospitality & Tourism	2	Logistics	2		
Apparel	2	Construction	2		
Agriculture	3	Textile	2		
Logistics	3	Chemical	2		
Textile	3	Hospitality & Tourism	2		
Solar	3	Pharmaceuticals	2		
		Agriculture	3		
		Rubber	3		
		Food Processing	3		
		Beverages	3		
		Leather	3		
		Paper Products	3		

Source: District Wise Skill Gap Study for State of Haryana, KPMG Analysis; National Skill Development Corporation, 2013; HVSU Analysis

## ANNEXURE 7: Education-wise Youth Preference of Sector

Education	Agri	Apparel	Auto	BFSI	Construction	Entrepreneurship	Health	Health & Tourism	IT/ITes	Logistics	Management	Solar	Retail	Security	Sports	Textile
9th	20	24	65	51	27	21	50	20	56	7	21	8	32	32	47	29
10th	19	29	55	61	37	27	61	24	54	23	37	9	28	58	98	24
11th	8	2	18	7	7	6	18	6	16	5	3	1	8	7	11	1
12th	58	45	81	99	55	74	98	65	120	26	66	15	60	56	146	29
ITI	16	32	76	13	90	16	44	17	60	34	13	10	16	26	71	6
Graduation	14	11	18	24	9	24	22	18	44	12	42	9	17	12	18	9
Post-Graduation	15	11	19	16	10	26	10	17	21	10	18	13	19	12	9	8
Grand Total	150	154	332	271	235	194	303	167	371	117	200	65	180	203	400	106

Source: HVSU Analysis

## ANNEXURE 8: Job Roles for Current and Future Scenario

Sector	Job Role 1	Job Role 2	Job Role 3	Job Role 4	Job Role 5	Job Role 6	Total
Agriculture	Organic Farming & Composting	Floriculture	Green House Farming	Mushroom Farming			
	45	34	27	44			150
Apparel	Garment Cutter	Sewing Machine Operator	Garment Checker	Garment Packer			
	27	74	36	17			154
Auto	CNC Operator	Auto Service Technician	Dealership Sales Executive	Showroom Executive			
	90	70	80	92			332
BFSI	Business Correspondent & Business Facilitator	Investment Agent	Insurance Advisor	Micro-finance Executive			
	74	61	77	59			271
Construction	Mason	Welder	Bar Bender	Plumber	Electrician	Carpenter	
	17	26	16	28	133	15	235
Entrepreneurship	Retail Outlet	Micro and Small enterprises	KVIC	PMRY	Beauty & Wellness		
	27	47	16	30	74		194
Healthcare	Aangan Wadi	Midwife	General Duty Assistant	Vision Technician	Administration Services		
	64	43	89	55	52		303

## ANNEXURE 8: Job Roles for Current and Future Scenario

Contd...

Sector	Job Role 1	Job Role 2	Job Role 3	Job Role 4	Job Role 5	Job Role 6	Total
<b>Hospitality &amp; Tourism</b>	Kitchen Staff	Sales & Marketing	Multi-skilled person	Integrated Technology Experts	Travel Consultant	Tourist Guide	
	23	34	38	24	29	19	167
<b>IT/ITeS</b>	CRM Domestic Voice	Data Entry Operator	Junior software developer	Hardware developer			
	88	109	113	61			371
<b>Logistics</b>	Shipment Bagging Agent	Transport Coordinator	Custom Clearance Agent	Freight Agent	Toll Collector		
	34	30	15	18	20		117
<b>Management</b>	HR Assistant	Marketing Assistant	Admin Assistant	PR Assistant	Office Assistant and Office Secretary		
	44	43	36	34	43		200
<b>Petroleum and Solar Energy</b>	Fuel Pump Attendant	Solar Energy Appliances Technician					
	27	38					65
<b>Retail</b>	Store Operator Assistant	Distributor Salesman	Cashier	Retail Associate			
	32	32	74	42			180
<b>Security</b>	Security Supervisor	CCTV Supervisor	Assistant Security Officer				
	47	111	45				203
<b>Sports</b>	Yoga Instructor	Physical Training Instructor	Sport Trainer				
	96	160	144				400
<b>Textile</b>	Weaver	Handloom Weaver	Spinning Machine Operator	Doffer			
	40	23	26	17			106

Source: HVSU Analysis

## ANNEXURE 9: Ranking of Job Roles

	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6
<b>Agriculture</b>	Organic Farming & Composting	Mushroom Farming	Floriculture	Green House Farming		
<b>Apparel</b>	Sewing Machine Operator	Garment Checker	Garment Cutter	Garment Packer		
<b>Auto</b>	Showroom Executive	CNC Operator	Dealership Sales Executive	Auto Service Technician		
<b>BFSI</b>	Insurance Advisor	Business Correspondent & Business Facilitator	Investment Agent	Microfinance Executive		
<b>Construction</b>	Electrician	Plumber	Welder	Mason	Bar Bender	Carpenter
<b>Entrepreneurship</b>	Beauty & Wellness	Micro and Small enterprises	PMRY	Retail Outlet	KVIC	
<b>Healthcare</b>	General Duty Assistant	Aangan Wadi	Vision Technician	Administration Services	Midwife	
<b>Hospitality &amp; Tourism</b>	Multi-skilled person	Sales & Marketing	Travel Consultant	Integrated Technology Experts	Kitchen Staff	Tourist Guide
<b>IT/ITeS</b>	Junior software developer	Data Entry Operator	CRM Domestic Voice	Hardware developer		
<b>Logistics</b>	Shipment Bagging Agent	Transport Coordinator	Toll Collector	Freight Agent	Custom Clearance Agent	
<b>Management</b>	HR Assistant	Office Assistant and Office Secretary	Marketing Assistant	Admin Assistant	PR Assistant	
<b>Petroleum and Solar Energy</b>	Solar Energy Appliances Technician	Fuel Pump Attendant				
<b>Retail</b>	Cashier	Retail Associate	Store Operator Assistant	Distributor Salesman		
<b>Security</b>	CCTV Supervisor	Security Supervisor	Assistant Security Officer			
<b>Sports</b>	Physical Training Instructor	Sports Trainer	Yoga Instructor			
<b>Textile</b>	Weaver	Spinning Machine Operator	Handloom Weaver	Doffer		

Source: HVSU Analysis

## ANNEXURE 10: List of Personnel in Industry Survey

Sr. No.	Name	Designation	Organization
1	A.K Matta	MD	ETA
2	A.K Verma	Ex. GM	Hero Motocorp
3	Ajay Deep Lather	Principal Correspondent Navbharat Times	Bennett, Coleman & Co. Ltd.
4	Alok Bansal	AVP	Maruti Suzuki India Ltd.
5	Alok Sabharwal	President	Defined Valves
6	Amarjit Singh	Head Mkt.	Umasanjeevini Hospital
7	Anand Goyal	AM	Mount Talant
8	Anand Karunakaran	Partner	Alpha Automation
9	Andleeb Jain	CPO	JK Cement

## ANNXURE 10: List of Personnel in Industry Survey

Contd...

Sr. No.	Name	Designation	Organisation
10	Ankur Gupta	Dy. Director-CRC	Amity University Gurgaon
11	Anshumal Dikshit	Principal Consultant	HR-Mantra Consulting
12	Anuj Malhotra	AVP	Yes Bank
13	Anuj Rastogi	Chief Marketing Officer	Skill Cube(P) Ltd
14	Anurag Kanti	Co-Founder	INDIA Redefind
15	Anwasha Chakrabarty	DGM	LEA Associate
16	Arun Bhardwaj	CEO	AVTEG
17	Arvind Kaul	MD & CEO	East West Automation Technologies (P) Ltd.
18	Ashish Sharma	Program Manager	Transport Planning & Road Safety
19	Ashok Kr. Arya	Chairman	Orgnazation Development Institute
20	Ashutosh	Head-HR	Hitachi India
21	Astish Khanduri	Sr. Exe-HR	Panasonic India
22	Atishai Kumar Saxena	Sr.Asstt.Director Skill Development	Federation of Indian Chamber of Commerce and Industry
23	Atul Mohan	Vice President	Mahamritunjay trade & technologies (P) Ltd.
24	B.K. Joshi	Administrator	NHRDN Delhi & NCR Chapter
25	Basant Singh	Sr. Manager	Hitachi India
26	Bhagat Singh	Chapter Manager	NHRDN-Delhi NCR Chapter
27	Bhavana	COPA Inst.	Govt.ITI Gurugram
28	CA Vishal Goel	Associate professor	IILM Institute for Business & Management
29	Deepak Bharara	Director	People A2Z
30	Deepak Jain	VP-HR	Manko Pharma
31	Dev Jha	Head HR	Videocon
32	Dharam Pal	Sr.Lecturer	Govt. Ploytechnic,Manesar
33	Dharmendra Kumar	Mgr.	East West Automation Technologies (P) Ltd.
34	Dheeraj Sahni	Lecturer	Govt. Polytechnic Manesar GGN
35	Dr Meenal Sharma	Associate professor	Amity University
36	Dr Rumki	Dy.Director-IA	Amity University
37	Dr V.P. Singh	Advisor OD	Patanjali
38	Dr. Dharinder Tayal	Director	ANOVUS Institute of Clinical Research
39	Dr. K.L Patel	DGM(Retd) IOC R & D Centre	IOC
40	Dr. Manoranjan Sharma	General Manager & Principal	Canara Bank , Regional Staff Training College
41	Dr. Subrata Taul	CMD	Vision Geospatial Solutions Pvt Ltd
42	Dr. Sudesh	Assistant Professor	HRC ,DU,Education
43	Dr. Sujata Shahi	Sr. Manager	IILM Institute
44	Dr. Suresh K. Solanki	Principal	C.B.S.Memorial Sr. Sec.School
45	Dr. Y.P Bhatia	MD	Atron Institute & Social Science
46	Dr.Neeru Bhatia	Executive Director	Atron Institute & Social Science
47	G. P. Rao	Managing Partner	GPR-HR Connecting UP
48	GERARD D'MELLO	General Manager- HR	Daikin Airconditioning India Private Ltd.
49	Gurpreet Singh	RSA	Transportion & Road Safety
50	H. P. Arya	CGM(Corp HR)	JBM Group

## ANNEXURE 10: List of Personnel in Industry Survey

Contd..

Sr. No.	Name	Designation	Organisation
51	Himani Agarwal	Program Director	Saahas for Women
52	Hitesh Chandel	Chief Mentor	Consulting leadership & Management
53	J. P. Singh Parwana	Chief Editor	Apa Ki Awaj News Channel
54	J.P. Singh	Media	Aap Ki awaaj News Channel
55	Jasjit Singh Mahon	Head-Corporate Engagements	BML Munjal University
56	Jeewan Kumar	A. D.	Govt. I.T.I. GGM
57	K.S.Bakshi	EVP-HR	The Oberoi Group
58	Kanishk Vashist	Analyst	Skill Cube(P) Ltd
59	Khushboo Chanana	Co-Founder -Skill Reporter	Teamserve professional
60	Khushboo Chanana	Co-Founder	Skill Reporter
61	Kishore Bahl	Vice President	Spring Overseas
62	Krishan Kapoor	President	Haryana INDU Asso.
63	L.K.Gupta	GM- Skill Development & ITI Projects Training Acadmey	Maruti Suzuki India Ltd.
64	M M Singh	GM	Hero Moto Corp. Ltd
65	Mainak Uprety	Branch Head	Apron solution Pvt.Ltd
66	Manmohan	Principal	DBSCR GPES sample Rohtak
67	Manoj Kumar	Lec in Arch.	DBSCR GPES sample Rohtak
68	Manoj Tyagi		IMT Industrial Association
69	Manoj Yadav	AGM-Sales	KUKA Robotic (India)Pvt.Ltd
70	Mohit Gandhi	Principal Adviser	Wellngkar Education
71	Mohit Sharma	Head-NCR	Bettleplace
72	Mr. A D Burman	AUP	Maruti Bharati
73	Mr. Dhananjay Singh	DG	NHRDN
74	Mr. Dinesh Kalia	C.E	X fon Solution
75	Mr. M.M. Singh	GM, Telent Development and Human Resources	Hero Motocorp
76	Mr. Rajiv Gulati	Multi Skill Development Center	HARTRON
77	Mr. Ravi Sinha	General Manager	Hero Motocorp
78	Mr. Sadeep Bidani	Advosory	Cognitiv Partner
79	Mr.Dharm Rakshit	Head HR	Hero Motocorp
80	Mr.Mahvir Singh Dahiya	Director	ESIE GOI, New Delhi
81	Ms. Ruchi Shah	Lead-Placements	IILM Institute
82	Mukesh Ahir	Director	Viacom India
83	Mukesh Kumar	Principal	Govt. Ploytechnic,Manesar
84	Mukul Jain	Consultant	AKGEC Skills Foundation
85	Murli D Shyam	Head HR	RJ
86	N.K. Mohapatra	Chief Exeutive Officer	Electronics Sector Skills Council of India
87	Nakul Kumar	Manager	Shuttl
88	Naresh Yadav	HR Director	Horizon Mgmt Consultancy
89	Navdeep Malhotra	Asstt.GM	YMCA University of science & technology

## ANNXURE 10: List of Personnel in Industry Survey

Contd...

Sr. No.	Name	Designation	Organisation
90	Naveen Sharma	GM	CSC SPV,Meity, N.Delhi
91	Neeraj Goel	Director	People Resources
92	Neha Bishnoi	Coordinator	IILM Institute
93	Nitin Kumar	Sr. Exe-HR	Panasonic India
94	O. K. Mishra	HR Head	SGS Tekniks Manufacturing Pvt. Ltd.
95	Padma Singh	UP-L&D	BSES
96	Pankaj Gupta	Director	Elite Equipment India Pvt.Ltd
97	Pankaj Jain	COD	Mount Talant
98	Parth Joshi	Vice President	Yes Bank Ltd.
99	Pawan Kumar	Manager	IILM
100	Piyush Chakraborty	VP-Projects	Electronics Sector Skills Council of India
101	Pradeep Prem	CEO(Skill Development & Center of Excellences)	Netsmartz
102	Priya Taneja	AM	Pharma
103	Prof. Jai Prakash	Principal – Director	St. Andrews
104	Puneet Sharma	Sr.Vice President Strategic Government Advisory	Yes Bank Ltd.
105	R Rajnarayan	Senior Vice President & CHRO	TITAN Company Ltd.
106	R.K. Sharma	Head Skill	JBM Group
107	R.S. Dabas	Chief of HRD	JBM Group
108	Raj Kumar	MD & CEO	Amass Skill Ventures Pvt.Ltd
109	Raja Raman	Vice President	Sopient(IT)
110	Rajan Pradhan	CR-Manager	KIIT University
111	Rajatesh Mondal	Sr. Sales Engg.	FESTO
112	Rajesh Kapoor		Haryana INDU Asso.
113	Rajiv Chawla	Chairman	IamSMEofIndia Habitat Centre
114	Rajive Gulati	GM	Hartron
115	Rakesh K Gulati	AP (c)	HIPA
116	Rakesh K. Singh	Director-Corporate Resource Center	Amity University
117	Rakesh K. Singh	Vice President	Laghu Udyog Bharti
118	Rakesh Gupta	Vice President	Haryana INDU Asso.
119	Ram Raj	Manager(Info. Syst.)	ICOCL
120	Ratan Agrawal	Sr. GM-HR	Heromotocorp
121	Ravi Prakash	Dy.Manager-HR & Administration	Beumer India Ltd.
122	Ravi Sinha	GM-HR	Hero Motocorp.
123	Ravinder Chanana	Founder -Skill Reporter	Teamserve professional
124	Ravinder Kamal	Principal G ITI gurugram	Govt.ITI Gurugram
125	Ravinder Pandita	Proprietor	
126	Ravindra Hatthiwari	Trainig Head	I.P.G.I.
127	Reena Nigam	HoD Skill Institute	Amity University Gurgaon
128	Rikhil Nagpal	Hon. Jt. Sec.	Textile Association India-Delhi
129	Rohit Aggarwal	Partner	Techman Enterprises
130	Ruma Batheja	Head-OD & HR Strategy	Knowledgetics

## ANNXURE 10: List of Personnel in Industry Survey

Contd...

Sr. No.	Name	Designation	Organisation
131	Sachin Jain	MD & CEO	EP Infoways Pvt.Ltd.
132	Saleem Ahmed	VP-Business Development	Electronics Sector Skills Council of India
133	Sanjay Kr. Prasad	Manager(Engg.)	East West Automation Technologies (P) Ltd.
134	Sanjay Yadav	Director	Drips Apparecs Pvt Ltd
135	Sanjeev Kr. Jha	Consultant	DIC
136	Santosh Kumari	GI	Govt. ITI Women Gurugram
137	Sarabjit Kaur	Jr. APO	Govt. ITI (W) Gurugram
138	Satish Chand	President	IMT Industrial Association
139	Satyender Singh	APO	Govt.ITI Gurugram
140	Saurabh Aggarwal	Founder & MD	Skill Cube(P) Ltd
141	Saurabh Walia	Center Head	CII-MCC
142	SC Dewan	Manager National Council-ISTD	Ex IFFCO GM
143	Shahnawaz Alam	Media	Amar Ujala publication
144	Shakti Takkar	R.A	GVF
145	Shalabh Srivastava	Managing Director	Gunina Solution
146	Shweta Goel	AVP	Yes Bank Ltd.
147	Sorabh Saxena	Manager-Plant HR	Panasonic India
148	Sunil Dhankhar	Lecturer	Govt. Polytechnic Jhajjar
149	Sunil K Chaturvedi	CEO	Automotive Skill Development Council
150	Surender Sigh Rohilla	JAPO	Govt.Industrial Trg.Institute Gurugram
151	Suresh Kumar	JAPO	Govt.Industrial Trg.Institute Gurugram
152	Umesh Saroj	TPO, SL (ECE)	Govt. Ploytechnic,Jhajjar
153	Vaibhav Ram	Business Head	Mount Talant
154	Varun Sharma	YP(CII-MCC)	MOLE-NCS
155	Vatsala	R.A	GVF
156	Veer singh	VP	Shuttl
157	Vijay Sharma	GM-HR	Hero Motocorp
158	Vikash Jain	Founder	Entrepreneur & Training
159	Vikrant Malhotra	RHS-ICICI	ICICI Bank
160	Vivek Upadhyay	Dy.	NCR Chamber of commerce and Industry
161	Vivek Upadhyay	Dy.Secretory	NCR Chamber of Commerce of Industry
162	Yashashvi Goel	CEO	School Of Skills

Source: HVSU Analysis

## ANNXURE 11: Sector-wise detail for Qualification Pack (QP) and Job Roles

Name of the Sector	Industry Demand 2017-22	Future Job Roles	NSQF Level	QPs/ NoS	Certified Trainees in Haryana (2016-17 )	Popular Job Role with Industry	Popular Job Role with NSDC
Automobile & Allied Sector	35555	Mechatronics	5,6,7	No	3250	Yes	
		Automation	3,4,5,6,7	Yes		Yes	Yes
		Robotics	5,6,7	No		Yes	
		Designing	5,6,7	Yes		Yes	
		Quality Control	5,6,7	Yes		Yes	

## ANNXEURE 11: Sector-wise detail for Qualification Pack (QP) and Job Roles

Contd...

Name of the Sector	Industry Demand 2017-22	Future Job Roles	NSQF Level	QPs/ NoS	Certified Trainees in Haryana (2016-17 )	Popular Job Role with Industry	Popular Job Role with NSDC
		3D Printing	5,6,7	No		Yes	
		Optics	5,6,7	No		Yes	
		Tool, Die, Moulds, Jigs Making	4,5,6	Yes		Yes	
		Customer Relationship Executive	4	Yes		Yes	Yes
		Sales Executive	4	Yes		Yes	Yes
IT/ITeS	47000	Testing – Web Testing or UI Testing	7	Yes	5168		Yes
		Coders/ Programmers	7	Yes			Yes
		Data Analytics	7	Yes		Yes	
		Quality and Documentation	7	Yes			
		Virtual Artificial Intelligence	Nil	No		Yes	
		Digital Marketing	7,8	Yes			
		App Developers	4,5,6,7	Yes		Yes	Yes
		Data Centre Maintenance/Scientist	7	Yes			
		Content Writing	7	Yes			
		Cloud Computing	Nil	No		Yes	
		Internet of Things	Nil	No		Yes	
		Gaming	Nil	No		Yes	
		Hardware Developer	7	Yes			Yes
		Data Entry Operator	4	Yes		Yes	Yes
		CRM Domestic Voice/ Non-Voice	4	Yes			Yes
		Animators	Nil	No		Yes	
Solar		Solar PV panel installation and maintenance technician	4	Yes	480		Yes
		Solar thermal equipment installation and maintenance technician	3	Yes			Yes
		Solar air conditioning (heating, cooling, refrigeration) technician	Nil	No		Yes	
		Sprinkler and drip irrigation installation and maintenance technician	Nil	No		Yes	
		Reverse osmosis water purification system installation and maintenance technician	Nil	No		Yes	
		Operator technician	3	Yes			Yes
		Solid waste handler	3	Yes		Yes	
		E-waste handler	3	Yes		Yes	

## ANNEXURE 11: Sector-wise detail for Qualification Pack (QP) and Job Roles

Contd...

Name of the Sector	Industry Demand 2017-22	Future Job Roles	NSQF Level	QPs/ NoS	Certified Trainees in Haryana (2016-17)	Popular Job Role with Industry	Popular Job Role with NSDC	
Construction	500000	Barbenders	4	Yes	4140		Yes	
		Welders	4	Yes			Yes	
		Modern Construction Techniques	Nil			Yes		
		Free Casting	Nil			Yes		
		Masons	4	Yes			Yes	
		Scaffolders	5	Yes			Yes	
		Carpenters	4	No			Yes	
		Electricians	2,6	Yes			Yes	
		Sensor based Plumbing	Nil	No			Yes	
		Supervisors	6	Yes			Yes	
		Quality Technician	6	Yes			Yes	
		Green Construction	Nil	No			Yes	
		Hospitality & Tourism	10000	Event manager		8	Yes	2680
Food & beverage steward/Manager	4,8			Yes		Yes		
Kitchen Steward	3,5			Yes		Yes		
Travel consultant	8			L4 Available		Yes	Yes	
Transport Duty Officer	6			Yes		Yes		
Adventure sports Organiser	7			L4 Available		Yes		
Front Office Executive	5			Yes		Yes		
Housekeeping	5, 6,7			Yes		Yes		
Tour Escort	8			L4 Available		Yes		
Guest house care takers	5			Yes		Yes		
Healthcare + Beauty & Wellness	100000	Health Data Analyst	Nil	No	12604	Yes		
		Health Information Specialist	4	Yes		Yes	Yes	
		Community Paramedic	4	Yes			Yes	
		Health Educator	Nil	No			Yes	
		Patient experience officer	Nil	No			Yes	
		Tele-health Specialist	Nil	No			Yes	
		Home Health Aide/ Geriatric Care Assistant	4	Yes			Yes	Yes
Anaesthesia Technician	4	Yes		Yes	Yes			

## ANNEXURE 11: Sector-wise detail for Qualification Pack (QP) and Job Roles

Contd...

Name of the Sector	Industry Demand 2017-22	Future Job Roles	NSQF Level	QPs/ NoS	Certified Trainees in Haryana (2016-17 )	Popular Job Role with Industry	Popular Job Role with NSDC
		Cardiac Care Technician	4	Yes		Yes	Yes
		Emergency medical technician	5	Yes		Yes	Yes
		Operation Theatre Assistant	4	Yes		Yes	Yes
		Phlebotomy Technician	3	Yes		Yes	Yes
		General Duty Assistant.	4	Yes		Yes	Yes
BFSI	7000	Sales associate retail	Nil	No	1620	Yes	Yes
		Customer relationship officer	Nil	No		Yes	
		Microfinance executive	2	Yes		Yes	Yes
		Insurance advisor	4	Yes		Yes	Yes
		Marketing specialist	Nil	No		Yes	
		GST Specialist	4	Yes		Yes	Yes
		Business Correspondent	3	Yes		Yes	Yes
		Data Analytics	Nil	No		Yes	
		Accounts Executive	4	Yes		Yes	Yes
Sports		Physical fitness trainer	4	Yes	600	Yes	Yes
		Sports coach	5	Yes		Yes	Yes
		Yoga instructor	Nil	No		Yes	
Logistics & Transportation		Warehousing (Storage & Packaging)	3	Yes	6180	Yes	Yes
		E-Commerce	Nil	No		Yes	
		Courier & Express Services	3	Yes		Yes	Yes
		Cold Chain Logistics Solutions	6	Yes		Yes	Yes
		Heavy vehicle drivers	Nil	No		Yes	
		Data entry	3	Yes		Yes	Yes
Agriculture		Floriculturist	4	Yes	4620	Yes	Yes
		Organic Farmer	4	Yes		Yes	Yes
		Cold storage Supervisor	5	Yes		Yes	Yes
		Soil Tester	5	Yes		Yes	Yes
		Drip Irrigation & Sprinkler Installer	4	Yes		Yes	Yes
		Green House Fabricator & Installer	3,4	Yes		Yes	Yes
		GIS Executive	Nil	No			Yes

Source: District Wise Skill Gap Analysis, National Skill Development Corporation 2013-14; IT& ESDM Policy, 2017; Skill Development landscape in India: A perspective for foreign service providers 2015, UKIERI; Tourism & Hospitality Industry in India; <https://www.ibef.org/industry/autocomponents-india.aspx>; <http://www.haryanaturism.gov.in/showpage.aspx?contentid=5527>; <http://www/bfsissc.com/>

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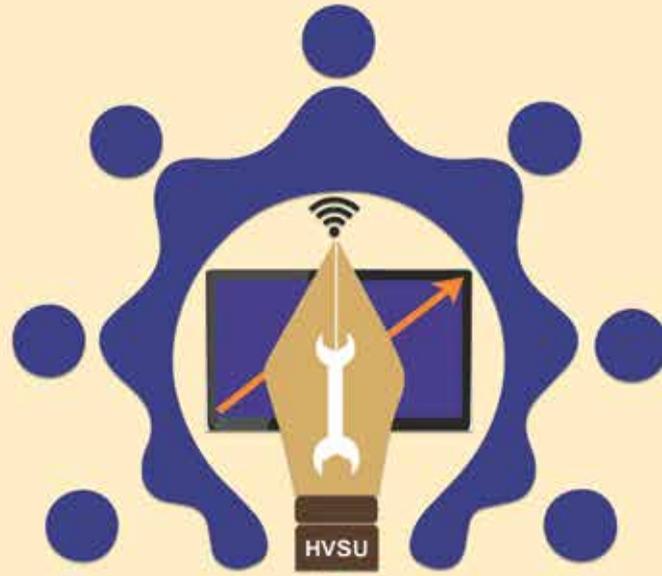
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