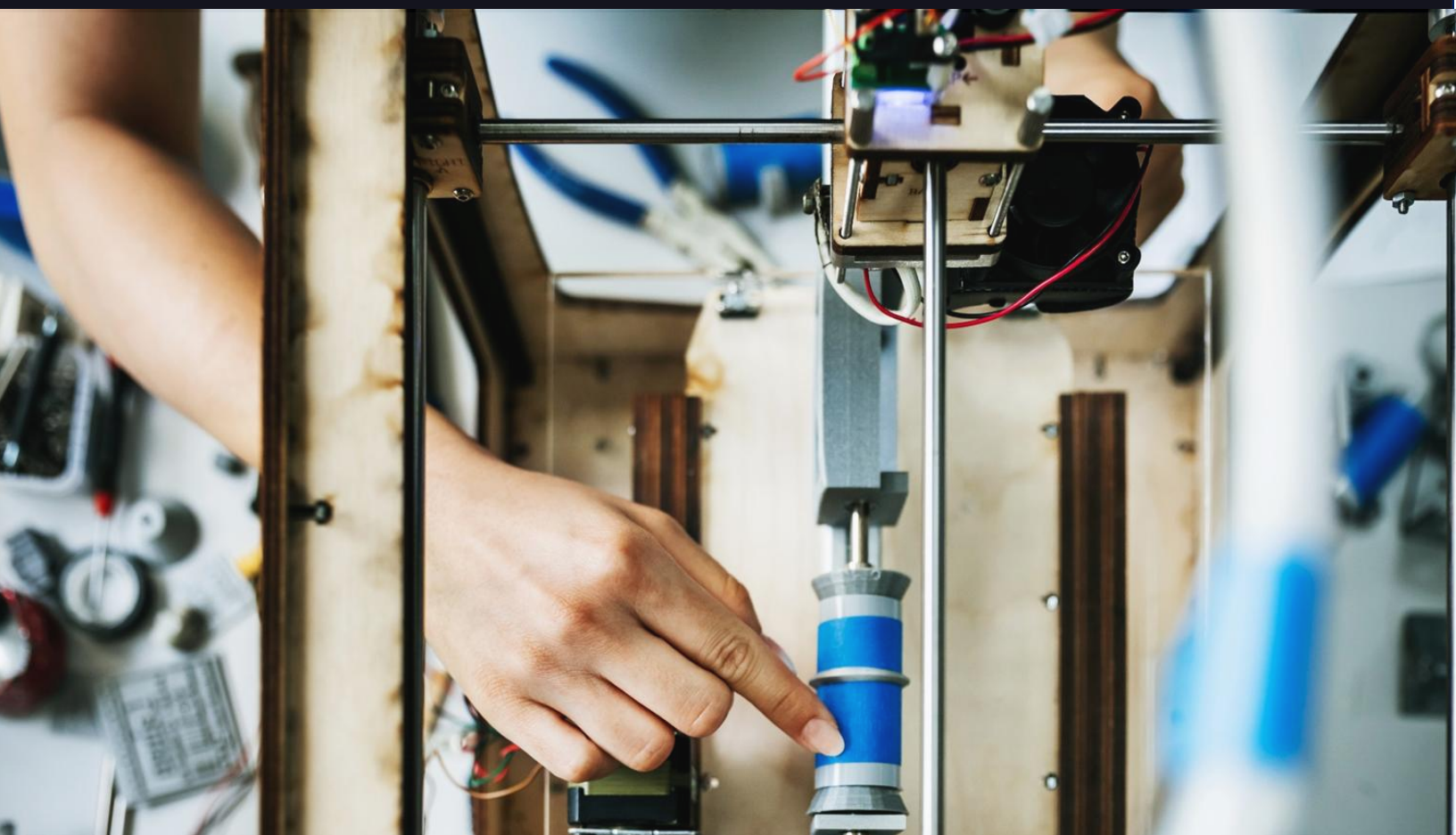
Development of Maharashtra Skill Policy 2025-2030

Final Report

- Detailed Draft Policy
- Draft - Roadmap & Implementation Policy



Contents

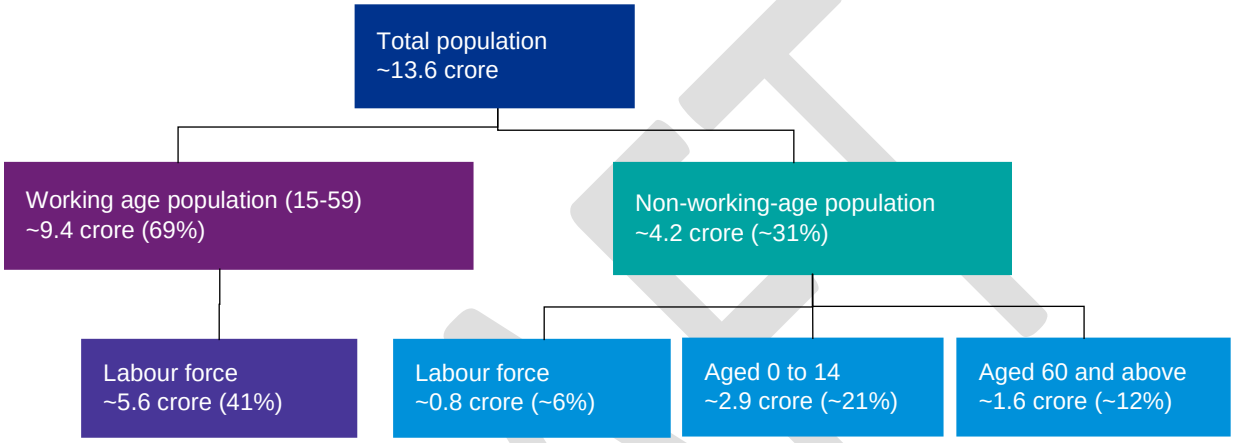
Abbreviations

ASER	Annual Status of Education Report
CFC	Common Facility Centre
CoE	Centre of Excellence
CSR	Corporate Social Responsibility
DLMS	Digital Learning Management System
DSC	District Skill Committee
DVET	Directorate of Vocational Education and Training
ESG	Environmental, Social and Governance
FDP	Faculty Development Programme
GER	Gross Enrolment Ratio
IIoT	Industrial Internet of Things
IMC	Institute Management Committee
LMIS	Labour Market Information System
MAPS	Maharashtra Apprenticeship Promotion Scheme
MCC	Model Career Centre
MCRC	Migration Counselling cum Registration Centre
MEDA	Maharashtra Energy Development Agency
MEDP	Micro Entrepreneurship Development Programme
MESC	Media and Entertainment Skill Council
MIDC	Maharashtra Industrial Development Corporation
MMR	Mumbai Metropolitan Region
MSBSVET	Maharashtra State Board of Skill, Vocational Education and Training
MSDE	Ministry of Skill Development and Entrepreneurship
MSInS	Maharashtra State Innovation Society
MSSDS	Maharashtra State Skill Development Society
MSSU	Maharashtra State Skill University
NCERT	National Council of Educational Research and Training
NCrF	National Credit Framework
NEP	National Education Policy
NGHM	National Green Hydrogen Mission
NIOS	National Institute of Open Schooling
NPST	National Professional Standards for Teachers
PDOT	Pre-Departure Orientation Training
PPP	Public Private Partnership
PRA	Participatory Rural Appraisal
PwD	Person with Disability
SEEID	Skill, Employment, Entrepreneurship and Innovation Department
THSC	Tourism and Hospitality Skill Council
ToA	Training of Assessor
ToT	Training of Trainer
TRTI	Tribal Research and Training Institute
TVET	Technical and Vocational Education and Training
UR	Unemployment Rate
USDS	User Charge Deducted at Source
WSC	World Skill Centre

1. Introduction

1.1. Demography and Labourforce

Globally, structural changes in economies are causing disruptions in the way human beings are skilling themselves and the way they are working. Certain skills are becoming obsolete, paving way for newer skills and jobs. The Fourth Industrial Revolution is un-folding and technological breakthroughs are rapidly shifting the way work and tasks are divided between humans, machines, and algorithms. We are at the beginning of a revolution that is fundamentally changing the way we live, work, and relate to one another, thereby, further reinforcing the need for vocational education and skill development in a State like Maharashtra where about 38 per cent of the population are in their youth (15–34-year age-group), and 69 per cent are within the working age-group (15–59-year age-group).[1]



Source: Census 2011, PLFS 2019-20

Figure 2: Population and labour force of Maharashtra, 2024

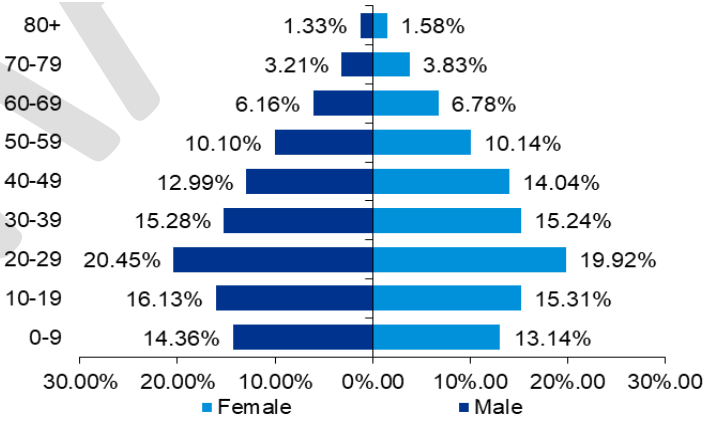


Figure 1: Population Pyramid of the State, 2024

Demographically, the State is the second largest population in the country which is anticipated to grow to 13.3 Cr. by 2030, thereby increasing the proportion within the national population from 8.7 per cent currently to about 8.9 per cent. As per the National Commission on Population, GoI, the projected population of the State was 12.4 Cr. in 2021 and 12.7 Cr. in 2024. With a median age of 31.3 years, the State is an ageing population owing to higher mortality rates, lower crude birth rates and declining decadal population rates over the years. Consequently, the State has already embarked into the much-talked-about demographic bulge which is anticipated to last till 2035-40 and this further reinstates the State's potentiality to emerge as the future hub for skilled labour force. In general, the demographic dividend lasts for around 20-30 years, where fertility and mortality rates are on the decline, and much of the population falls under the working-age.[2] However, with a youth bulge, as the young adults enter the working age, the State's dependency ratio - that is, the ratio of the non-working age population to the working age population - also declines, resulting in the rise in the unemployment rate in the age-groups 20-24 and 25-29 as in 2022-23.

[1] Census 2011, KPMG in India Analysis
[2] https://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/demographics/dependency_ratio.pdf

Therefore, skilling interventions will have to be tailored towards a larger workforce, and in cognizance of the state's opportunity window.

While the surge in the young population is a great impetus, however, currently in Maharashtra the statistics for productive and inclusive engagement of the youth remains a cause of concern. The workforce participation rate is 43.4 per cent which is in line with the national average, with a female participation in workforce of 29.3 percent vis-à-vis a male participation of 56.9 percent.[3] Industry estimates suggest that if the number of female workers were to increase to the same level as the number of men, GDP of the State would expand by about 15 percent. Similarly, exclusion of school and college dropouts from employment translates into a foregone GDP of about five to eight percent. Together with the economic downturns, there are also embedded hazard of this exclusion to the social fabric of the State wherein the disengaged youth can wander into morally abhorrent paths. Moreover, the Gross Enrolment Ratios (GER) at Secondary, Higher Secondary, & Higher Education levels in the State are ~94 per cent, ~72 per cent, & ~35 per cent respectively, implying high dropouts at each level.[4] All these information cues to the quintessential need for an overarching institutional skill-development mechanism to bring back these students into the workforce in employable.

According to the Census 2011, the State is also the home to the second largest tribal population (1.05 Cr.) in the country after Madhya Pradesh with an economy that is largely subsistence-oriented, non-stratified and non-specialised of the target section, and is ranked fifth in terms of population of people belonging to the Scheduled Caste (SC) category. The State is also the home to the second largest disabled population of the country accounting for about 11.1 per cent of the country's total Divyang population. Consequently, the State's skills and employment policies and programmes are of core importance to ensure that all such people can enjoy inclusive skill development leading to both individuals' affirmation and the creation of diversified learning environments. TVET has long played a crucial role in ensuring pathways to further learning or employment for disengaged youth from socio-economically backward communities, school/ college dropouts, students who are the most geographically disadvantaged, migrant workers, marginalized workers, PwDs etc.

Item	Maharashtra				India			
	Age groups				Age groups			
	15-29 years	15-59 years	15 years & above	All age groups	15-29 years	15-59 years	15 years & above	All age groups
Rural								
Male	59.6	82.6	78.5	61.1	65.5	84.2	80.2	55.5
Female	28.6	55.6	50.2	39.1	25.8	44.3	41.5	30.5
All persons	45.1	69.3	64.6	50.3	45.9	64.2	60.8	43.4
Urban								
Male	60.6	82.3	75.9	60.2	58.4	80.8	74.5	58.3
Female	24.0	30.9	27.6	22.1	20.8	28.3	25.4	20.2
All persons	43.6	57.5	52.4	41.7	40.7	55.1	50.4	39.8
Rural + Urban								
Male	60.0	82.4	77.4	60.7	63.5	83.2	78.5	56.2
Female	26.6	44.9	40.7	32.0	24.5	39.8	37.0	27.8
All persons	44.4	64.2	59.4	46.7	44.5	61.6	57.9	42.4

Table 1: Labour force participation rates of the State vis-a-vis India

[3] PLFS 2022-23
[4] UDISE 2022-23, AISHE 2022-23

In terms of labourforce participation rate, Maharashtra stands at 64.2 per cent which is ahead of the national average of 61.6 per cent within the working age in 2022-23. The state has a rural labourforce participation rate of 69.3 per cent which is significantly better than 57.5 per cent in the urban areas, according to PLFS 2022-23. A brief snapshot of the State's labourforce scenario vis-à-vis the country is given in the table above. Interestingly, the State has an Unemployment Rate (UR) of 8.9 per cent among all diploma/ certificate graduates that account for only about 1.5 per cent of the persons aged 15 years and above in the State. This is even lower among the rural people where only about 1.3 per cent of the people aged 15 years and above have diploma/ certificate courses as their highest qualification. Additionally, the labour force participation rate among such persons in the State is 87.6 per cent, lower than the national average of 90.3 per cent. Clearly there is a need to increase the capacity and the quality of training infrastructure and trainers to ensure equitable and easy access of TVET to every citizen of the State. A brief snapshot of the educational qualification of the people above 15 years in the State is given in the below table vis-à-vis India.[5]

	Not literate	Literate & upto primary	Middle	Secondary	Higher Secondary	Diploma/ Certificate course	Graduate	Post graduate & above	Secondary & above
Highest educational qualification of persons of age 15 years and above									
Maharashtra	14.9	14.9	19.7	16.4	16.0	1.5	12.8	3.8	50.5
India	23.3	17.7	20.1	13.9	12.0	1.2	9.1	2.6	38.9
Labour force participation rate for person of age 15 years and above									
Maharashtra	73.6	86.4	82.3	68.5	74.5	87.6	82.4	93.6	75.4
India	80.1	90.3	81.7	68.5	68.6	90.3	88.4	93.7	74.1

Table 2: Educational qualification and labour force participation rates of the State vis-a-vis India

1.2. Economy and Employment

In terms of economic growth, the State is anticipated to double its GSDP to USD 1 tn. by FY 2030, targeting 14 per cent CAGR, boosting manufacturing to 21 per cent. At current prices, the State's GSDP was estimated to be Rs. 42.67 tn. (USD 512.83 bn.) in 2024-25, growing at a CAGR of about 10.17 per cent since 2015-16. A comparative analysis of economic growth performance of Maharashtra vis-à-vis India and other states during the same period reveals a positive differential trend in the State's CAGR with the State's economy growing faster than the national average and most of the other states. The same positive trend is also exhibited in the State's per capita income (average income eared per person) as the same showed a rise from INR 132,836 (2014-15) to INR 277,603 (2019-20), registering a 109 per cent jump over the period. The primary sector of the economy account for about 16 per cent of the GSVA, while the secondary and tertiary economies account for 25 per cent and 59 per cent respectively. Triggered by such exponential growth, the incremental workforce requirement for each year between 2024 and 2028 is about 18 lakh where every year about 11-12 lakh people are anticipated to enter the workforce, thereby creating a gap of 6-7 lakh.[6] This could be offset by reskilling/ upskilling of the existing workforce.

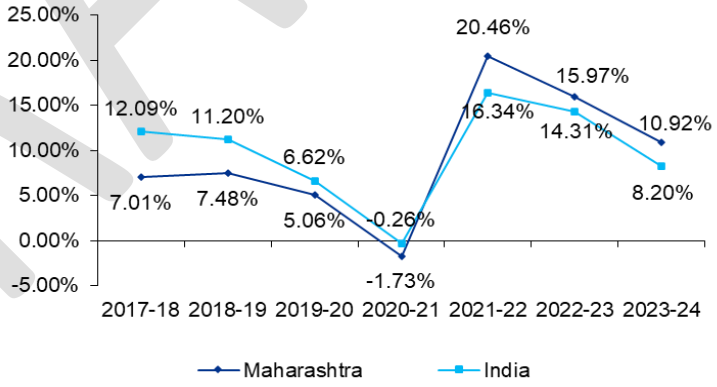


Figure 3: Economic growth rate of the State vis-a-vis India, 2017-18-2023-24

[5] PLFS 2022-23
[6] PLFS 2022-23, Census 2011, The State Skill-Gap Report, 2019-2023 & 2024-2028

Additionally, technology adoption will remain a key driver of transformation in the labour market in the coming years. It is estimated that by 2025, 97 million new roles may emerge globally that would require skills of the future.[7] Trends such as application of Environmental, Social and Governance (ESG)

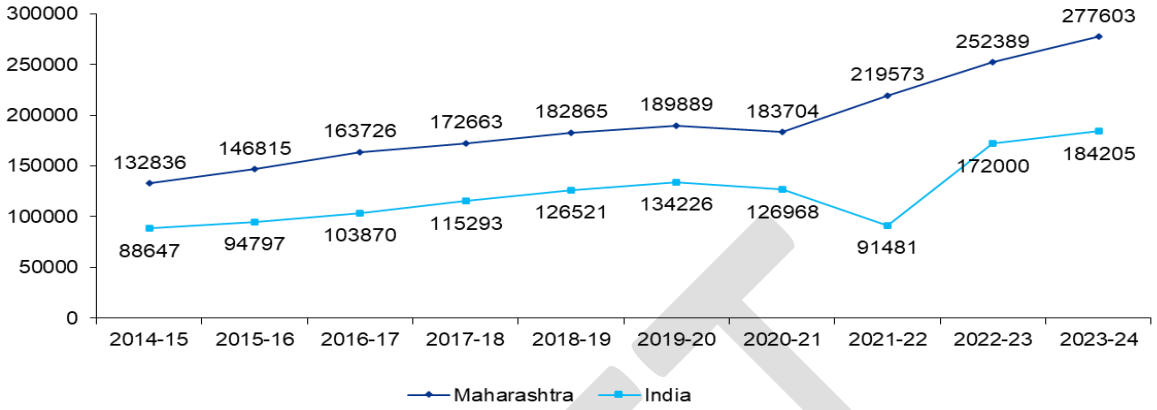


Figure 4: Per capita income of the State vis-a-vis India, 2014-15-2023-24

standards, broadening digital access and extended reliance on Artificial Intelligence will bring immense possibilities that will forever change lives. According to our estimates, only in the State of Maharashtra, more than USD 120 bn. is estimated to be derived in the next 15 years. This would imply significant workplace transformations and changes in the future of work that would be beyond human imagination. Jobs in future will be lot more 'greener' and we need to identify and train our youth not just for such 'green jobs', but also for the transition to such an environment in the future.

In terms of the current employment landscape of the State, about 47.9 per cent of the workforce is self-employed, vis-à-vis a national average of 57.3 per cent. About 30.0 per cent are regular wage/ salaried while 22.1 per cent are casual labourers, vis-à-vis a national average of 20.9 per cent and 21.8 per cent respectively, as in FY 2022-23. The employment rate of the State improved from about 55.9 per cent in 2021-22 to 57 per cent 2023-34, while the unemployment rate reduced from 3.5 per cent in 2020-21 to 3.3 per cent in 2023-24. Such credence was also manifested in female employment rate which increased from 37.3 per cent in 2021-22 to 39.1 per cent in 2023-24, while the youth employment rate increased from 38 per cent to 40.1 per cent during the same period.[8] In conclusion, the State has seen good growth in employment in the recent years showing strong signs of increased formalisation of the economy. This growth could largely be attributed to the State's notable achievement in skill development and vocational education, entrepreneurship promotion etc.

By creating a skilling and vocational education ecosystem with high-quality, globally competitive, and future-proof workforce, the State can enhance the employability and acceptability of the State's youth in global job markets. Such drive in skilling would simultaneously attract international investments, stimulate growth, drive innovation, and strengthen Maharashtra's industrial ecosystem, thereby leading to further formalisation of the State economy. Skill development is key to Atmanirbhar Bharat as it ensures that the workforce has the industry-required competencies to meet the evolving industry demands and global standards. Accordingly, the State's Skill Policy will pave the way for the much-needed framework for resource allocation, governance, implementation, milestones to achieve the envisioned objectives of the State's skill development and vocational ecosystem by 2030.

[7] India Skills Report 2021
[8] PLFS 2023-24, Govt. of Maharashtra

2. Maharashtra State Skill Policy 2025-2030

Enabling the growth of human resources is crucial for any society's development; everything else anchors around human resources - opportunities for their growth, equity, and inclusiveness of facilities and societal norms. Education is an equalising factor for the growth of human resources. In this context of limited skilling network and entailing livelihood opportunities, Maharashtra's focus in the last few years has been to introduce and execute various skilling initiatives. In the last few years, some of the unique achievements of the State demonstrate right vision backed with the right actions. With such broad-based and future-backed plans, the State should plan to have mandatory training for all, from elected representatives to high school students, and must work extensively in developing a robust education ecosystem in the State, right from primary education up to higher education, along with a conducive research environment. The State has alongside developed an enabling regulatory environment for the participation of private sector across the value chain in education.

The State is currently at an inflection point in its history with such a young population and unparalleled potential for high economic growth. Currently about 69 per cent of the population falls within the employable age-group of 15-59 years and the State's population pyramid is expected to further bulge across the 15-59-year age-group over the current decade.[9] Hence, considering the huge challenges as well as the vast opportunities associated with skill development in the State, this is perhaps the most opportune time to adopt a 'future backward' approach towards envisioning the state's Vision in skill development and vocational education on identifying and tapping new opportunities that will further propel the State towards global recognition and make it an aspirational destination for skill development nationally as well as globally.

The distinctive characteristics of using a 'future backwards' approach for planning is that it accounts for sustainability of chosen interventions to reach the ideal future state. Clear vision of the path to long-term targets, stimulates an accelerated yet sustainable movement towards achieving the said goals.[10] Maharashtra, through its futuristic lens of operation, has been a pioneer in upskilling its local manpower to global standards through Maharashtra International Centres, conceptualise the country's first AI University, and establish skill development centres in 1,000 colleges to mainstream vocational education. We believe that the State's prowess for skill development can be emulated in other sectors and areas to build its own brand of globally competitive and skilled workforce within both traditional as well as next-generation sectors and job roles.

Key principles for defining the future state for the Maharashtra Skill Policy

1. **Deepen 'Access'** to skill development and vocational education among youth:
   Deepening access to skilling by providing the most comprehensive and effective last mile delivery of quality skilling programmes is central to the Policy. This can be achieved only with bringing in disruption in entire skilling-education ecosystem along with collaborative effort of State, private sector and not-for-profit partners.
2. **Mainstream 'Equity'** in all the skill development program:
   Ensuring equity requires major shift in approach for policies conceptualisation, communication, and implementation across their lifecycle. Skill Policy 2025-2030 must aim to design pathbreaking initiatives for helping women to become part of the paid workforce. This requires disruption in all spheres, not only skilling, but changing the workplace environment and the community perception about working women.
3. **Achieve sustainable 'Collaboration'** with all the stakeholders:
   The leader takes the first step and shows the direction but needs everyone to come together for a larger goal. The Policy must strongly emphasise collaboration with all the stakeholders, State, national and international partners/ stakeholders from industry, academia, actioners, philanthropist and define their role during the entire journey of transformation.

[9] Population of India at a glance, PLFS 2023-24, Census 2011, KPMG Analysis
[10] "Backcasting in futures studies: a synthesized scholarly and planning approach to strategic smart sustainable city development"- European Journal of Futures Research, 2018 { Backcasting in futures studies: a synthesized scholarly and planning approach to strategic smart sustainable city development (d-nb.info) }

4. **Remain 'Relevant'** in alignment with industry, national, international priorities, and aspirations of youth:
   Being ahead of the curve by always remaining relevant along the path is one the key principles of the Policy. The vision is to identify skills, which the world will need in next three to five years and thereafter, and preparing the workforce by creating infrastructure, dynamic skill planning and constantly keeping an eye on the trend.
5. **Ensure 'Inclusivity'** for all sections of society in skill development:
   Include all and leave none is the motto of any inclusive society. The Policy should aim to ensure that the polices are designed with empathy and compassion so that Maharashtra, which is home to the second largest tribal population in India, all marginalised communities as well those among senior population are included in journey of growth.
6. **Cultivate and nurture 'Innovation'** and entrepreneurial culture in the State:
   The young population of Maharashtra can be productively and meaningfully engaged with blend of job readiness and entrepreneurial acumen. The Policy must be designed to cultivate and nurture a culture of innovation and entrepreneurship with customised solutions for rural and urban women and men, along with skilling initiatives attuned to next-generation sectors and job-roles.
7. **Use 'Promotion' to improve perception** for all the stakeholders about skill development interventions:
   It is important to work on perception change very early both within and outside the State for all the stakeholders- students, communities, corporates, government in a targeted approach. The Policy must identify key areas for promotional campaign, which will bring in conscious changes in the behaviours of people, build the global brand skill development initiatives of the State and position the State as preferred destination for employing highly skilled women and men.
8. **Strengthen 'Governance'**, build capacity, and achieve convergence at all the levels.
   Good governance is the most critical lever for translating the ideas into success. The Policy must aim to develop strategic consensus at all levels, critical reforms for creating a separate cadre of services to focus on skills and employment, and build capacity of all the actors at State, district, block, panchayat level.
9. **Achieve digital inclusion and 'Technology'** integration for all the stakeholders:
   The technology if rightly used could be the single most differentiating factor between a good intent and a good result. The Policy must aim to remain ahead of the curve in all aspects of technology, be it identifying the future technologies for skilling or extensive usages of technology in teaching, training, learning, governance and monitoring.

State Skill Vision

To develop the State as the most progressive and compelling brand of skill development nationally and globally, through providing industry-aligned and employment-linked skills training and vocational education, leveraging public private partnerships and ensuring inclusive practices through access to all citizens of the State by 2030.

State Skill Mission

1. *Develop the State as the most reliable global providers of highly skilled women and men in each of the chosen areas of growth of the State.*
2. *Ensure inclusive and equal opportunities for lifelong learning and training for all, including those engaged in the informal economy.*
3. *Promote skill development and vocational education that is aligned to the Future of Skills, while also ensuring building capacities for skill development in critical unorganized sectors of the State.*
4. *Develop and enforce cross-sectoral, nationally/ internationally acceptable standards for skill development by creating a sound quality and industry-acknowledged assurance framework for skilling and vocational education.*

5. *Create a network of quality instructors/ teachers/ trainers in the skill development ecosystem by establishing high quality teacher training institutions as well as industry-aligned curricula.*
6. *Enhance employability of the existing labour force of the State by providing pathways for reskilling/ upskilling for transitioning into the formal sector employment as well as global acceptance of skills.*
7. *Design robust and new institutional arrangements that provide clear leadership and responsibility for key elements of the system.*
8. *Promote and encourage convergence, coordination and collaboration of skill development efforts and initiatives by all departments/ Ministries/ private sector etc.*
9. *Accelerate the achievement of sustainable development goals by bringing in disruptive reforms and innovative skilling models for niche as well as mass-skilling.*
10. *Propagate the aspirational value of skill development and vocational education among the youth through focussed and extensive outreach programmes across the State.*
11. *Facilitate coordinated and planned actions and reforms for skill development and vocational education of the weaker, disadvantaged and marginalized communities of the State.*

State Skill Objectives

1. *Develop an open, flexible, and diversified system of vocational education that provides further learning or employment opportunities for every citizen regardless of geography, gender, community, language, religion or occupation.*
2. *Create stat-of-the-art infrastructure (including World Skill Centre, Maharashtra International, Centres of Excellence etc.) enhancing reach and access to high-end and industry-aligned skills for youth.*
3. *Build the most compelling and thriving entrepreneurial culture for an innovation-driven growth and increase in MSME activity which act as building blocks for the manufacturing sector.*
4. *Conduct a micro-level Skill Census within the State by 2030 thereby mapping existing skills and competencies and creating digital Skill Cards with integrated skill profile and employability index.*
5. *Ensure industry involvement and participation within skilling across the entire value-chain, right from infrastructure development and curriculum advisory to certification and employment generation.*
6. *Identify and bridge existing skill-gaps across sectors by equipping the youth with existing and future skills demanded by industries.*
7. *Ensure that skilling initiatives reach marginalized and disadvantaged groups, thereby promoting social and economic inclusion, through creation of capacities and facilities near sourcing clusters.*
8. *Align all TVET programmes within the State to State/ national priority sectors, areas, and programmes with a strong focus on regional/ national demand-supply scenario.*
9. *Ensure enhanced vocational education awareness among all youth through last-mile outreach, resulting in increased aspirational value & enrolments, and reduced dropouts & absenteeism.*
10. *Create and maintain a database, in the form of the Labour Market Information System (LMIS), which will act as a portal for matching the demand and supply of skilled workforce in the State/ country.*
11. *Contribute to the holistic and inclusive economic development of Maharashtra by creating a skilled workforce that drives productivity and innovation.*
12. *Augment capacities of Government functionaries for effective implementation of Policy and Vision.*

3. Broad Contours of the Maharashtra Skill Policy 2025-2030

3.1. Access: Deepen 'Access' to skill development and vocational education among youth

The National Policy for Skill Development and Entrepreneurship talks about increasing the capacity and the quality of training infrastructure and trainers to ensure equitable and easy access to every Indian citizen. Although there are no 'one-size-fits all' approach regarding what should be the adequate size and shape of a State's TVET system, the State of Maharashtra should target more than six lakh candidates trained under technical and vocational education within the State annually to meet the requirements of skilled manpower and achieve the aim of inclusive and equitable growth of the State. The promotion of TVET through the idea that 'vocation creates the nation' and the aspiration to increase the proportion of students within the state entering TVET in itself can help to increase the attractiveness of VET – by opening new programmes and institutions (WSC, CoEs etc.).

Increasing access to TVET can be achieved through multiple channels viz. setting up of necessary high-quality training infrastructure right up to the block level followed by creating an enabling ecosystem for the trainees to enrol for skill training programmes, through policy impetus and coherent mobilisation approaches by the local authorities. Centres of Excellence (CoEs) could be set up at a district level within existing institutions with quality infrastructure, and could provide leadership, best practices, research, incubation support, business consultancy, training programs (certificate courses, diploma and degree programmes). Such training initiatives could be provided in Future sectors, the aspirational sector of the district, relevant Industry 4.0 areas (Digitech, agri-tech, construction tech, robotic manufacturing, 3-D printing, IoT, AI-ML etc.), and other relevant areas including teacher training, lifelong learning, entrepreneurship development, life-skills and language education among many others. In addition to this, to make TVET programmes more attractive, the system needs to ensure that vocational students can move onto further learning opportunities, both vocational as well as mainstream education ones, so that TVET is not perceived as a dead-end option.

3.1.1. Integrating vocational education to mainstream education at an earlier stage in schools and through an appropriate credit-based framework

Our existing education system with its prescriptive rote learning methodology thwarts the process of innovation, imagination, and creativity among the learners. This leaves the children bereft of any necessary knowledge or skills for what awaits them in the future–the uncertain and ever-evolving world of work. A large proportion of the youth in the country have somewhat been left in the lurch when it comes to pursuing mainstream education that is aligned with skills and competencies. This surely calls for reforms for mainstreaming vocational education and transforming the country into an equitable and sustainable vibrant knowledge society.

The National Education Policy (NEP) 2020 has reimagined vocational education and intends to overcome or completely dislodge the social status hierarchy and perception associated with it. While it is envisioned that mainstreaming vocational education would minimize the mismatch between demand and supply to an extent as far as manpower requirements in industries are concerned, the fact remains that both the mainstream and vocational education systems need to work together to complement each other for achieving the national goals. As our current education systems emphasise on knowledge-oriented training based on rote learning, rather than practical and experiential learning of what a student could perform in real life using his/her mind and hand, it is necessary to orient our students in school towards vocational education as an alternative career choice. In this regard, some of the key reforms to be initiated by the Government of Maharashtra are discussed below.

- **Early introduction of vocational education in schools:** NEP 2020 calls for the integration of vocational education with mainstream education. The aim is to expose 50 per cent of the learners in K12 and PG to vocational skills by 2025. In this regard, schools can play an important role in disseminating awareness about career paths to students, should they choose to take up vocational courses. Instead of introducing them in class eight or nine, by when one category of students generally would have started coaching for their engineering or medical entrances, and another would be dropping out of the system, it would be a good idea to introduce at an earlier stage in class five or even earlier, so that early exposure to the concepts of vocational education help them make an informed choice to take up vocational courses. Early introduction of vocational education would help

students and parents to select alternative career options and develop a positive mindset towards dignity of labour. Mandatory participation and separate assessments for such courses would also remove the barrier of hierarchy within the education system.

- **Collocating skill development and mainstream education:** According to the Annual Status of Education Report (ASER), 86.8 per cent of the 14-18-year-olds are enrolled in educational institutions; however, only 5.6 per cent of these students have access to vocational training or related courses. While vocational training sees a slight uptick among college students, with 16.2 per cent, the yawning gap between academic qualifications and industry-relevant skills, and the overwhelming majority of the high school students without exposure to skill-based education is alarming. Consequently, the establishment of skill training centres across the State is imperative to bridge the skill-gap, offering tailored programmes that equip students with practical and industrial-aligned skills. These centres can play the pivotal role in not only enhancing employability but also in fostering innovation and economic growth, ensuring that the State's youth are prepared to meet the demands of rapidly evolving labour market.

  Accordingly, the State will set up skill development centres within 1,000 colleges in the State with the target of training 20,000 youth every year with tailor-made programmes selected for them. While this will go a long way in integrating vocational education in to mainstream education, more such skill development centres need to be set up within the premises of the colleges and universities for easy access to such education and skill development. Skill development centres should also be set up within secondary and higher secondary schools as well, using the existing infrastructure and resources, and being operational beyond the normal schedule of schools, through the payment of an honorarium to the faculty and/ or using a revenue-sharing model. This would also help in early vocationalisation of education that may be required to improve employability of dropouts by integrating them into vocational studies. Existing infrastructure of the low or zero-enrolment Government schools, if any, may also be utilized for vocational education and skill development within the community.

- **Designing a flexible and credit linked modular and/or unitised structure in TVET:** Vocational education and training, across the country, is increasingly being challenged to adapt faster to changes in the labour market, in order to provide the right quality skills for employment as well as to empower students to respond to such changes. Beyond doubt, in the face of such everchanging labour markets and rapid technological advancements, more flexible education and training systems are needed to adjust to the demands of employers and the increasingly rapid changes in job requirements. The differences in learners' performance or level of prior knowledge, skills and competences also require a degree of flexibility in education and training systems; students need to be provided with opportunities to fill gaps in their knowledge, for instance by attending extra modules addressing a specific issue, or to be allowed to progress more smoothly though a course of study if they already have certain skills that they have gained elsewhere or through prior experience. Consequently, as envisioned in the NEP 2020 and National Credit Framework (NCrF), a credit-based modularisation and unitisation of vocational education programmes and qualifications is considered as an answer to this perceptible need for flexibility, both in relation to the ever-evolving labour market as well as in what concerns candidates themselves. The State should, therefore, encourage the introduction of such flexible education systems, linked with the development of credit arrangements based on learning outcomes, through the launch of a pilot project targeting specific sectors and courses.

  The rationale for introducing modular and unitised structures is that it allows for easier updating of qualifications to incorporate new technologies or ways of working, and perceived needs or demands of employers, by replacing or updating individual modules where needed, and not the entire course or programme. Additionally, such systems also allow for greater differentiation between candidates in terms of performance or prior knowledge, skills and competences, as it is easier to tailor courses to different learning groups (e.g., by adjusting duration, combination of modules etc.). Flexibility for learners can also be seen in flexible programme duration and multiple entry points, as well as some options for recognition of prior learning and progression within the vocational education systems. Such systems will help in expanding vocational education, will increase its social acceptance and will give all students the opportunity to pursue vocational education alone or through a mix of vocational

education with professional streams, and academic disciplines, and allow for flexible movements between mainstream and vocational education. The step-by-step certification provided by some forms of modularisation also has the potential to reduce dropouts due to regular assessments.

The structure and extent of modularisation may vary depending on occupational areas, local and industry needs and would primarily comprise four main types of modular structures – mandatory structures; core and electives; specialisation structures; and introductory modules. The idea is to ensure that trainings offered in different locations and in different entry-points can be joined up more effectively by means of accreditation of the individual elements and recognition of the training blocks already successfully completed through assessments at each level.

Currently, except for polytechnic and engineering colleges, there is no defined and accepted mobility or credit transfer mechanism between higher education and vocational education. Such credit-based framework, as discussed, provides easy mobility across vocational and general academic streams, through clear equivalence of qualifications/ certifications and credit structures. The vision of the State should, therefore, be to encourage such credit-linked modular frameworks for select sectors of relevance to the existing labour market of the State.

- **Strengthening the Maharashtra State Skills University:** The State Government has already set up the Maharashtra State Skills University aiming to provide quality skills education with state-of-the-art facilities for the youth of the State. The University envisions to provide skills education and training integrated with higher education, applied R&D, entrepreneurship education and support and raise skill levels to enhance productivity and competitiveness of industries both within and outside the State. As the University aims to provide inclusive, holistic, and industry-relevant education experiences that empower students with practical skills and entrepreneurial mindsets, a need is felt to increase the academic content to offer occupation-ready courses using authentic learning facilities. Ensuring demand-alignment, MSSU's curriculum framework must emphasize practical training (60-70% of the curricula) and industry partnerships to ensure job-readiness of the participants from day-one. The University must adopt a credit-based system aligned with the National Credit Framework, allowing for flexible pathways and modular learning programmes as well.

  Currently, the School has the schools of Science Engineering and Technology Skills; Management & Commerce Skills; Humanities Skills; Short-Term Skilling Certifications; International Jobs and Skilling, aiming to bridge the skill-gap, improve employability, and create robust pathways for professional development. As the sustained growth of the major sectors in the State is contingent of upon availability of a skilled workforce, offering industry-aligned programmes across all such other sectors along with trained faculty and state-of-the-art infrastructure is the need of the hour. Accordingly, the University could be strengthened with dedicated schools focussing on sectors like Agricultural and Food Technology; Banking, Fintech and Financial Management; Tourism, Hospitality and Wellness; Mobility & Logistics; Design, Innovation and Creativity; Healthcare & Life Sciences; Sustainability and Green Energy; and Manufacturing and Construction.

  Additionally, the University could carry out a range of activities such as entrepreneurship development and innovation; faculty development and curriculum design; lifelong learning, public policy and labour market studies; life skills and language studies through dedicated Centres of Excellence (CoEs). The Centre for Entrepreneurship and Innovation could offer hands-on assistance for building, testing, and launching start-ups. Aspiring entrepreneurs could be provided access to prototyping workshops, mentorship clinics, investor pitch events, and micro-seed funding—accelerating promising ventures from conception to sustainable enterprises. The Centre for faculty and curriculum development could be dedicated to empowering world-class TVET/ skill faculty and curricula through workshops, hands-on training, peer learning forums, and visiting faculty schemes. The Centre for Life Skills could be aimed at nurturing well-rounded individuals equipped with essential soft skills, life skills and various language abilities, equipping students with the necessary tools for success in the dynamic, interconnected world. The Centre for Lifelong Learning could be aimed at developing and delivering flexible, accessible learning programmes that cater to diverse needs of learners of all ages and backgrounds for continuous skill development and professional growth.

A dedicated Regional and International Partnership Office could also be set up as a cornerstone of the University's comprehensive strategy to become a premier institution for skill development in India and beyond. This could serve as the central hub for orchestrating the MSSU's diverse partnership portfolio, encompassing relationships with national and international industries, top-ranked institutions, international universities, and regional organizations. These partnerships could aim to enhance education quality, promote cultural exchange, facilitate knowledge transfer, boost research and innovation, and improve graduate employability. As a strategic bridge between academia and industry, a dedicated Office for Industry Engagement and Commercial Ventures could be established as a strategic bridge between academia and industry, fostering innovation and driving economic growth. The office could play a pivotal role in identifying industry needs and aligning them with the University's academic programmes and research capabilities. Through initiatives such as industry partnerships, technology transfer, and commercialization of intellectual property, the Office could help translate academic knowledge into practical solutions that address real-world challenges. A separate wing could be dedicated to R&D to accommodate all departments to carry out advanced research and applied R&D. The wing could promote R&D amongst the faculty and students by identifying new research areas, developing projects leading to publication, products, innovations, and startups, and may be financed through innovative financing, CSR or funding through industries, angel investors and venture capitalists.

3.1.2. Developing Skill Hubs as integrated campuses in the PPP route in select urban/ peri-urban areas

India@2047 is envisioned to be 50 percent urbanized with a population of 0.82 billion residing in urban areas. Urban areas constitute only about 3 percent of the total land area but contribute to over 70 percent of the GDP, indicating a high level of economic productivity.[11] Already the second largest urban community in the world, the number of Indian inhabitants is estimated to have increased almost fourfold in the last five decades. As India transitions from being a largely rural to an urban society, the focus needs to be on harnessing the economic potential of all cities, large and small. For this, there is a need to not only nurture megacities and their hinterlands as centres of economic growth, but also facilitate tier 2 and 3 cities and peri-urban areas to take on the mantle in the future. Incidentally, by 2030, Mumbai (MMR) is anticipated to account for 33 mn., accounting for more than four per cent of the Nation's urban population. The State is envisaged to have an urbanization of 51.3 per cent by 2030-35, vis-à-vis 45.8 per cent in 2011-15, resulting in an incremental migration of about 18 mn. people from rural to urban areas in Maharashtra.

Even then economic dynamism is primarily limited to India's large cities, and many other cities are not meeting their potential in serving as engines of economic growth and job creation, leading to a labourforce participation rate of below 50 per cent in urban areas (vis-à-vis 57 per cent in rural areas of India).[12] While the Government's focus (and Niti Aayog's) continues to remain towards rural growth, infrastructure, and development, most cities are hampered by the absence of an economic vision and an accompanying development plan towards policies, regulations, resource allocation, investment promotions, infrastructure integration, master planning for land use and planning etc. This is also equally applicable for the large metros and Tier I and II cities of the country, that still face a dearth of quality infrastructure and vision for skill development and vocational education.

Additionally, on many occasions, the available infrastructure in urban and peri-urban areas is fragmented and lacks sufficient Government incentives for private institutions and industries to participate in developing the required infrastructure. This fragmentation poses a significant challenge in meeting the growing demand for a skilled workforce. With an attempt towards consolidating the already fragmented infrastructure, the establishment of Skill Hubs is imperative to address these challenges and to harness the potential of Maharashtra's working-age population. Such Skill Hubs could be set up in the urban/ peri-urban conglomerations of the State including Nashik, Amravati, Shambhajinagar, Thane, Kolhapur, Solapur and Jalgaon and could be an SEZ-like ecosystem dedicated to skill development, providing plug-

[11] Census 2001, 2011, United Nations Department of Economic and Social Affairs, World Population Prospects, 2019
[12] PLFS 2022-23

and-play infrastructure to industries, corporate offices/ training centres, vocational training institutes, ITI/ Polytechnics and CoEs.

The primary objectives of establishing a Skill Hub in Maharashtra would be to:

a. Create a centralized and integrated skill development ecosystem by integrating industries, universities, corporates and vocational training institutions that cater to the diverse needs of industries and learners at one place.
b. Bridge the gap between traditional academic education and vocational training by promoting hands-on training and practical exposure through successful industry-academia collaborations in the campus.
c. Foster innovation and entrepreneurship through collaborative efforts between industry, academia, and Government by establishing incubation centres and co-working spaces.
d. Provide a conducive environment for skill development institutions to thrive, thereby attracting more investments and talent to the State.
e. Improve regional accessibility by strategically locating hubs in industrial zones to ensure industry participation.

The envisioned Skill Hubs could involve leveraging available Government spaces/ campus with benchmark infrastructure and training facilities to advance the State's skill development initiatives through collocation of different campuses and training initiatives of the local training institutes etc. Some of the facilities would include:

f. **Commercial Spaces**: Strategically located, built-to-suit campus spaces for private training centres, industry training centres, corporate offices and universities providing a vibrant learning environment for the candidates.
g. **Centers of Excellence**: The CoEs will focus on specific industries and sectors, fostering effective industry-academia partnerships to develop cutting-edge training and entrepreneurship programmes.
h. **Co-working Spaces**: Unique collaborative environments designed for independent thinkers and game changers, providing a community where innovation and creativity can flourish.
i. **Incubation Centers**: Designated spaces for entrepreneurs and startups to conduct training and mentorship programmes, supporting the growth of new ventures.
j. **International Skilling Centers**: Facilities offering language and technical training relevant to international standards, preparing the workforce for global opportunities.

The Skill Hub could be meticulously organized into sector-focused zones, addressing both priority and emerging sectors critical to Maharashtra's economic landscape. In addition to the priority sectors, equal emphasis could be placed on emerging sectors that are poised to drive future growth and sustainability. Industry players could play a major role in the Skill Hub by actively participating in and contributing to the development and operation of the hub as well as in training delivery and joint certifications. They could collaborate with training centres and universities to design and deliver industry-relevant training programs, ensuring that the skills delivered align with current and future market demands. Industry could also provide on-the-job training and internships for students, giving them practical exposure to real-world work environments. Towards setting up the intended Skill Hubs, the State could have to offer a comprehensive suite of financial and institutional incentives including subsidized land rates/ building leases, tax rebates and exemptions, scheme based financial assistance etc. Institutional incentives could need to focus on simplifying regulatory compliance, encouraging ease of partnerships, and provision of recognition and accreditation.

The proposed Skill Hub could be set up and managed by the State in the public-private partnership route, leveraging the strengths of both sectors. A dedicated task force could be comprised with representatives from the Government, industry, and academia to oversee the planning and implementation of the Skill Hub. The infrastructure could be provided/ developed by the State Government, which in turn could rope in few private anchor players for operations and management of the hub through an MoU. The anchor players could be an academia, global industry house, industry association, consortium of industries, angel investor/ VC firm etc. A Skill Hub Authority could be established, responsible for the overall management and regulation of the Hub, ensuring compliance with national and State skill development policies.

Required advisory committees could be formulated with industry leaders and experts to provide guidance on strategic directions and ensure the relevance of training programs.

The funding for the envisioned Hub could be sourced through a combination of public and private investments. The key components of the funding model could include Government grants and subsidies and Public-private partnerships (PPP) funds, where private institutions and industries contribute to the development of specific facilities or programmes in exchange for tax incentives and other benefits. The leasing of commercial spaces and the provision of services within the Skill Hub could also act as source of revenue generation. Additionally, collaboration with international organizations and financial institutions for additional funding and technical support could be essential for establishing state of the art infrastructure.

3.2. Equity: Mainstream 'Equity' in all aspects of technical, vocational education & training initiatives

It is important to entrench inclusivity as well as equity under the ambit of any Skills Policy. While the fundamental right to education and training has been well established and recognized within political frameworks across Nations, young people and adults from specific communities and gender still face difficulties in accessing TVET programmes. Accordingly, the Government has identified gender equality as a State priority and the Government's commitment to gender equality in education and training is well integrated in all its development agenda.

Together with gender focus, another area of focus for the State is to enhance skill trainings across other historically disadvantaged groups such as the tribals and PwDs. Such equity among communities unleashes the full power of education to tackle problems associated with societal imbalances, discriminatory practices and belief systems underpinning community-based disparities and societal exclusion. While much of the focus to date has been on the participation of females and other disadvantaged communities in mainstream and vocational education, gender equality is, however, much more than ensuring equities in training numbers. It speaks to the birth of a new era of education system that considers the needs, aspirations and lived experiences of all learners, and which tackles the intersecting and simultaneous disadvantages that may debar a youth or adult from fully exercising their rights to participate in and benefit from education.

3.2.1. Effecting systemic transformations towards gender inclusivity in vocational education and societal perception

The State of Maharashtra regards female participation in the workforce as sustainable and balanced path of economic and social development and is central to realising women's rights and gender equality. The State believes that skilled women earn their own livelihood, are independent to take life decisions and empower the family and community. As more women enter the labour force, economies have the potential to grow faster in response to higher labour inputs, particularly in developed economies like Maharashtra.

Intriguingly, women do massive amount of unpaid care work that is neither recorded nor included in calculation of GDP, and the State of Maharashtra is no exception to this pattern. According to the PLFS 2023-24, still only about one in every three women are employed (wage- and self-employed), and women account for close to three in every five non-workers seeking work in the State.[13] Consequently, the success of the State's skill development campaigns should largely depend upon how effectively and quickly the State initiates the transformation enablers towards embracing an equitable skill development ecosystem and a balanced and inclusive labour market in favour of the women of the State.

- **Promoting female participation in TVET:** The low participation of women in TVET could also be attributed to supply-side barriers including gender unfriendly infrastructure, limited course options, quality of training, lack of career counselling and harassment challenges.[14] Towards mitigating such challenges and facilitating changes at the systemic level, the State should offer financial assistance for counselling and mobilization of female candidates, to all short-term vocational training providers,

[13] PLFS 2023-24
[14] "Gender study to identify constraints on female participation in skills training and labour market in India", DGT

equivalent to INR 100 per female candidate enrolled. The State may also encourage all such institutes with a minimum enrolment of 100 female candidates to mandatorily provide facilities for enhanced hygiene and sanitation, security and surveillance, flexible schedules and childcare support, and pick and drop facilities for females in late evening batches (batch ending beyond 8 PM). Under the State-sponsored PMKUVA scheme, for female candidates residing beyond five kilometres from their training centres, MSSDS may provide a tiffin and conveyance allowance of INR 80, per day attended per trainee on completion of 80 per cent of attendance and paid directly to the beneficiary through DBT, in addition to the wage-loss compensation for such candidates.

Even though on a relative basis, Marathi women are more empowered than other Indian women, societal restrictions on women's mobility still often restrict their access to TVET, particularly in the rural and geographically disadvantaged corners of the State. The State could, therefore, establish mobile training centres to spread the message of learning and demonstrate vocational skill education, particularly for the women, and extended to PwDs and WSHGs in such geographies of the State. The State may setup 36 such mobile training centres, one in each district, with a capacity of about 50 people per centre across shifts. These centres could be equipped inside mobile vans covered with illustrations representing the State's skill development brand. The vans could support smart technologies (smart boards, video feedback to monitors during live evolutions, live training aids) and advanced simulation technology, offering short term courses (less than a month) and certifications via multilingual modular training programmes. The courses offered could include indigenous and widely populated sectors such as textiles, tailoring, beautician, and agriculture, that promote local employment and local economic growth and would have a blend of technical, soft and life skills to support holistic skill development.

To formulate a socially empowering atmosphere promoting more equitable relationships between men and women, there is a need for mobilisation of ideas that contest gender inequality, recognition of women equally in social, economic, political, and environmental arenas, challenging key gender-based biases, and gender equitable behaviours and attitudes. While this would be sustained through the network of mobilisers and Change Agents, the State should also undertake campaigns like '#SheCan' tackling discriminatory gender norms, breaking stereotypes regarding certain trades and job-roles, and promoting education plans and policies prioritising gender equality.

- **Setting up an Institute for Equity Research (IER):** The first step towards tackling the everlasting, prominent and engrained challenge of inclusivity- gender, caste, category, physical state-is to begin with extensive research and development on the subject matter. Right understanding of this systemic challenge, detailed problems at micro level, along with tailored measures required to deal with resolving the issues via advocacy and policy making, needs core research. The State may accordingly consider setting up an Institute for Equity Research (IER) as a platform for policy analysis, research, advocacy, and capacity development for gender and inclusivity (PwDs, transgenders and people belonging to LGBTQ communities) related activities. The State could mandate the IER to devote a substantial portion of its financial and human resources to commissioning and publishing the research and policy analysis, communications publishing and debates in the inclusivity domain.

  Towards gender related research, the goal of this think tank should be to contribute to the debate and discussion on gender theory, policy, practice, skill development and employment, and would indirectly make the argument on gender-inclusive skill development reach the institutional decision makers viz. political establishments and policymakers. IER should encompass a hi-tech state-of-the-art infrastructure, consisting of R&D labs, gender library and innovation booths for conducting high quality research. The State could provide access to modern technology, equipment, global knowledge partnerships, and funding for the research, and also assist onboarding dedicated mentors and global personalities with innovation and sustainability expertise.

- **Community spaces for collaborative learning:** The State acknowledges the positive impact of collaborative spaces for learning, discussing, and growing together in terms of promoting sense of belongingness, ideation, and innovation, and providing agency to voice of women. To achieve this purpose, the State could setup community spaces at panchayat level in approximately 1,000 locations across the State, with a capacity of 40-50 people per community space. The larger purpose

of this initiative would be to inspire a paradigm shift in the perception of the society at large about the myriad genders and their roles, enhance research and learning, promote gender awareness by establishing dialogues around various pathbreaking subjects and role modelling, and encourage further learning and vocational education among women of the State. The infrastructure could involve closed or open spaces with an area of 800-1,000 sq. ft., encompassing a public library that consists of illustrative figures, gamification booth, hard copy of books, human library, ICT enabled workspaces, garden, art lab, vocational education materials etc. This could be set up and operationalized by mobilizing CSR funds from large corporate houses along with resource partnership with grassroot organizations and NGOs of the State.

- **Empowering WSHGs:** The State Government, under the aegis of the Mission Shakti programme, provides universal access to education, life-long learning, and women empowerment facilities among all women, thereby fostering gender transformative changes within the state. While training interventions to women and WSHGS are more focused on managements of SHGs and micro-financing, an equal emphasis has to be placed on all round personality development. Accordingly, there could be a repeated focus on nutrition, legal knowledge, education to children and right to complaint, basic amenities entitlement through Panchayat, reproductive and family planning, domestic violence and institutions where such representations could be made, within the Mission Shakti.

  As climate risks grow, there is an increasing thrust for SHGs, particularly the Women SHGs, to enable alternative livelihoods, creating opportunities for women in agriculture, home-based work, and MSMEs. Achieving this requires an ecosystem with access to tailored technologies, reliable energy, financial support, and business development services. Accordingly, capacities need to be developed for training of WSHGs in the areas of social mobilization and formation, financial inclusion, digital literacy, knowledge about Government schemes etc.

  With an extensive grass-root level connect and strong last-mile outreach, these WSHGs could adequately be mobilized, through appropriate trainings, by the Government in ground-level data collection; conducting Participatory Rural Appraisal (PRA) exercises; involving stakeholders for problem analysis; and for micro-planning, decision making, and social development and livelihood missions impact analysis. The WSHGs could be strengthened and empowered to harness data through a dedicated village level program office to support enterprises in making the most of the data as an asset. The village level offices at the Panchayat level, working under the employment offices, would provide industry specific regulatory guidance; act as trend watcher of local industry requirements; and co-develop flagship data science projects that will have positive demonstrative effects on other enterprises.

3.3. Collaboration: Achieve sustainable and gainful ‘Collaboration’ with all stakeholders

Private sector represents the job market and has a huge potential to influence scale as well as quality of skill development programs. Beyond doubt, shared responsibility and accountability yields better results and hence, are an effective way of improving public delivery, enhancing transparency and strengthening engagement with stakeholders, all under democratic governance. PPPs in TVET ecosystem not only involves public and private sector stakeholders but also take training providers, students and trainers into its fold. This way the entire skills value chain, right from aspiration mapping of students, learning resource development, training infra and delivery, assessment, certification to employment of skilled workers, gets established. Elements, such as on-the-job learning opportunities, apprenticeship, shop floor experiences further enhance the learning curve of the trainees and provides a chance to employers to early-examine the capabilities of the trainees.

Without doubt, the private sector plays a significant role in the TVET process to prepare students for future job opportunities and support the system in making the students more employable. The industry’s involvement at this level will strengthen the industry-academia connect and can move away from the trend of captive skilling by few industry giants to industry’s contribution to skilling initiatives at large. An effectively implemented partnership responds to both the needs of the industry as well as the question of the socio-professional integration of learners by adapting training to the labour market requirements. It is also witnessed that lack of any incentive to employers to spend on developing the skills of the employees is a key deterrent to improve the industry interface. It may also be said that collaboration in TVET does

not necessarily mean with the private sector only and would involve the civil society and all stakeholders along the skills value chain, requiring better regulations and management of the sector to sustain.

3.3.1. Enabling industry collaboration for need-based and industry aligned TVET in the State

The country's major difficulty in TVET concerns a deep lack of cooperation among TVET institutions and the industrial enterprises. This effectively limits the quality of TVET, restricts the attractiveness of TVET for the community, and even constrains the economic growth and restructuring. The industry has to step in here to help support the infrastructure needed so that students can receive industry relevant training. While the Government has made a significant progress in ensuring such cooperation with enterprises, the breadth, depth, and effect of cooperation need to be enhanced through effective policies and regulations. The problem can only be addressed by ushering in a new era of cooperation between TVET schools and colleges with small and medium industrial enterprises. Some of the key initiatives in this regard are listed below.

a. **Forming a model of Dual TVET in collaboration with the industry:** The State recognises the importance of the dual education project in TVET as one of the most effective means of interaction between professional education institutions and companies (State-registered small, medium or large enterprises). On a state-wide scale, this format can become an infrastructure model that provides the ability to predict the needs of production in human resourcing.

    - **Promotion of industry-TVET collaboration:** Keeping in mind the increase in skilled manpower requirement in the manufacturing sector with focus on 'Make in Maharashtra', this model would provide a platform for candidates to adapt to company requirements more easily. The Government would, therefore, endeavour to bring enterprises into a closer relationship with TVET institutions by making it possible for enterprises to build a part of their production line on campus and hire candidates (minimum 50 per cent of workers in the production centre) as both students and workers under the dual management of TVET institutions and enterprises. This brings a high degree of engagement and ownership on the part of the employers and other industry partners. But the system should also be characterised by an intricate web of checks and balances at the levels of MSSDS, Skill, Employment, Entrepreneurship, and Innovation Department (SEEID) and district administration ensuring that the short-term needs or economic gains of employers do not distort or outweigh the broader educational, socio-economic and livelihood generation goals.

      The State could also encourage TVET enterprises to form collaboration with industry through a shareholding model of mixed ownership, whereby medium and large enterprises could be allowed to either adopt or enter into collaboration with TVET institutes. The MSSDS and SEEID could accordingly formulate evaluation procedures, and regularly recognise and honour enterprises which actively participate in forming such collaboration with industry (with a better rating and grading, discretional and preferential target allocation, flexibility in terms of operations etc.). Also, the dual TVET model could allow parents to be more involved in visiting the workplace to observe the work environment and working conditions for their children so that they can rest assured that their children will study in a clean, healthy, hygienic and safe environment.

b. **Rationalising course curriculum tilted towards industry exposure:** In order to provide candidates hands-on practical training and make them employable and industry-ready, the State should consider revising the job-related mix of classroom to shop-floor from 70:30 to 30:70 by 2027, and to a further 10:20:70 mix of classroom, lab, and workshop/ industry exposure for skilling its youth by 2030. This should be initiated through a regulatory framework by the State Government over and above the framework provided by the NSDC and the Central Government. The State should also encourage industry participation in the State's vocational education through Flexi MoUs and as captive service providers. Training delivery should increasingly include interactive methods like gamification, case studies, real-world projects etc. to engage students and enhance learning outcomes. AI tools could be used for monitoring learning outcomes, providing data-driven insights and support, tracking learner's progress, predicting future performance, and identifying areas where support might be needed before they become major issues. This proactive approach to monitoring ensures that training efforts are fine-tuned to yield the best possible outcomes.

c. **Industry-led Training Programme:** Indian youth entering the education and the skilling space in 2025 will be young adults by the year 2030 entering workspace; therefore, the need to prepare them for jobs, for opportunities and for them to be the solution drivers of problems is the need of the hour. Adults who are highly proficient in the skills relevant in the current economic scenario are likely to be able to make the most of the opportunities created by the technological and structural changes modern societies are going through. Those who struggle to use industry-relevant new technologies are at greater risk of losing out. The alignment of academia and industry holds the potential to facilitate such industry-focused skilling interventions taken up by the Government and stakeholders in the skilling ecosystem.

However, multiple reports have been reviewed to identify the indicators of current inadequate industry participation in the skilling space, and how the Government has instituted policies to address the same. The results also indicate that despite courses, such as, ITI and polytechnics comprising practical training and having employment focused component, it is a challenge to get placements for students enrolled in such courses. This is due to low focus on building alliances with industry and lack of core employable skills. The industry should, therefore, be incentivised to participate in training delivery through adequate customisation of affiliation norms for training partners through the introduction of an Industry-led Training Model.

The model could allow industries to act as Experiential Training Providers by the way of demand aggregation and training of human resources for the purpose of providing employment/ placements in their establishments. Trainings can be delivered within industry premises using own resources. To make the training more suited to the industry requirements, customization of course module by the MSBSVET could also be allowed, and, accordingly, assessment and certification of the candidates could be done by MSBSVET. The curriculum may involve a flexible top-up training module with additional training hours in alignment with existing course curriculum. Basic literacy, numeracy skills, communication and social skills maybe included in the top-up training modules.

The industry could pre-screen students before enrolling to ensure fitment to the job-description and must ensure 50 per cent captive placement of such candidates trained. Such subsequent employment at the same industry reduces the process of adaptation of the young specialist who is equipped with the right skills and is able to perform well being already familiar with his/ her job description. Accordingly, this initiative could help the education system by providing industry-responsive and flexible approach to meeting different learning needs of students and eradicating longstanding, stereotyped views about the ‘superiority’ of academic learning compared to vocationally oriented learning. In case of dearth of physical infrastructure, provisions could be made for using Government space and infrastructure for setting up the training infrastructure on payment of a nominal User Charge Deducted at Source (UCDS).

d. **Skill development centres in all Industry Parks:** The role of skill development, training and capacity building in industrial work can never be overstated. Effective training programmes are designed to hone workers’ skills, improving their performance and efficiency, optimise productivity, and ensure that operations run smoothly and reliably. Therefore, understanding the workforce's specific needs and intricacies of the operations, and delivering customised training programs that address these unique factors through skill development centres within the premises of all Industry Parks is the need of the hour. Accordingly, a minimum of five per cent area within all Industry Parks under the jurisdiction and control of MIDC and the Govt. of Maharashtra could be earmarked for setting up such skill development centres and delivering industry-aligned and demand-linked trainings.

Such facilities could either be set up in the Common Facility Centres (CFC) or such other facility earmarked for common use of the Industry Park, or within the premises of Anchor Industry/ Industrial Park Developer, or within the premises of the applicant industrial units. Programmes could be delivered by the industrial units/ Anchor unit using their own resources as well as by engaging trainers from the nearby ITI, polytechnic, vocational training institutes/ training providers in a transactional engagement basis. Adequate flexibility may be offered by MSBSVET in customisation of course curricula and course changes without costs to accommodate the industry needs and demand of the entities. Accordingly, for a smooth implementation of such initiatives, Action Committees could

be created, with the DM/ ADM as the Chairman, responsible for collating and analysing the information about the Industry Parks/ Clusters under their jurisdiction; ensuring setting up and/or presence of skill development centres within each of the Industry Park /Clusters; promoting the interests of the State and the industries; promoting the Dual System of Training (DST); and maintaining information of the Industrial Parks/Clusters for real-time M&E and easy exchange of information.

e. **Promoting micro-entrepreneurship and apprenticeship models for MSME clusters:** Given the limited job availability market, training providers should be encouraged to introduce Micro-Entrepreneurship Development Programmes (MEDP) under which the institutes can help such trainees in designing, launching and running their venture/ start up after their training is over or during the training period. For this purpose, the State could devise strategies to assist training providers in signing regional MoUs with other institutes and industries for providing entrepreneurship training, mentoring, and financial support for business incubations. The shortlisted ideas/ start-ups could be identified for incubation/ facilitation under district level incubation centres. Additionally, Industry Cluster Programme could be leveraged for apprenticeship opportunities and accordingly promote micro-entrepreneurship. Formalising sustainable long-term models for apprenticeship training could help increase the traction of apprenticeship trainings in the MSME sector.

   The State of Maharashtra has a vibrant MSME sector with about five million MSMEs employing about one in every four persons employed in the State. The State has a well-developed infrastructure, including industrial parks, and dedicated MSME clusters, which have provided a conducive environment for the growth of the sector. These clusters, when linked with apprenticeship, can create an immense opportunity for the growth of SMEs, rural microenterprises as well and provide ample local employment overcoming migration issues. This would involve setting up cluster development cell in collaboration with the Directorate of Industries to converge resources and dovetail CSR funds for cluster level skill development. MSSDS could, in this regard, assist in devising capacity building programmes to enable entrepreneurs to align with schemes and incentives of the Aatma Nirbhar Bharat.

f. **Formalising paying a skill premium:** While the industry looks for a competent resource who should be in a position to deliver the desired output from the word ‘go,’ the industry hardly pays any visible and significant ‘skill premium’ to the skilled and competent youth, coming out of the skill ecosystem. While candidates placed post skills trainings under PMKVY/ DDUGKY have, on certain instances, been able to gain skill premium, the same cannot be said about the candidates trained under the State-sponsored PMKUVA scheme. Additionally, even under the PMKVY scheme, the wage premium of candidates placed post skill training varies across different wage brackets both for candidates with pre-training employment experience and freshers.

   Consequently, the industry needs to be educated about the benefits of a skilled personnel vis-à-vis an unskilled person as training leads to increased productivity among employees. Advocacy efforts with industry are needed to showcase the benefits of hiring skilled workers and promoting skill premium for the skilled and certified workers. The industry should work closely with the SSCs and also recognise the trainings done based on NOSs. Once industry participates in the State's skill building agenda and formalises employing certified skilled resources trained as per the standard NSQF and NCrF framework at compensations higher than uncertified resources, society’s perceptions on vocational training as a career option will change. This will lead to higher number of youths opting for a skill-based career to meet their aspirations.

   Accordingly, the State Government could take initiatives towards creating awareness and publicity of the minimum wages of the State and revisions thereof. Advertisements on digital and print media should be carried out including information pamphlets, postcards, booklets on best practices (prepared in cooperation with industry associations and training bodies) on the sectors that performed well and accounted for maximum employments within the state. The state would also periodically review and revise the minimum wages taking into consideration of the cost of living in relation to minimum basic needs and the component of economic factor including GSDP, labour productivity, the enterprises’ ability to pay and the ratio of minimum to median and mean wages, and following a

consultative method involving a technical board within the Labour Department comprising members from Government, industry, academia, labour economists etc.

g. **Continuous industry census:** In the competitive environment prevailing in business space, the markets and industry have a critical role to play. Their contribution is indispensable in determining the course curriculum and in influencing the process of generating employable human capital. The alignment of academia and industry holds the potential to facilitate initiatives taken up by government and stakeholders in the skilling ecosystem. Hence, to increase industry participation in skilling and to align demand and supply of skills between industries and VET, a complete enumeration of all industries and units (both formal and informal) should be conducted in the first place.

   Within this mandate, the State should conduct periodic (annually/ biannually) industry census in all districts to create a district-wise catalogue of industries across sectors and segregated into industry type, scale of business, technology used, workforce size, growth/ expansion plans and strategies etc. Such industry census exercise shall generate reliable benchmark estimates at the disaggregated level (by geographical region, industry group, product level etc.) for evaluation of demand-side ecosystem. This shall also involve mapping and creating a profile of existing skillsets and competencies of workforce across sectors, industries, technologies, geographies etc. including technical skills, soft skills, traditionally inherited skills etc. The same shall be utilised to understand existing appetite and absorption potential of industries for skilled workers, thereby facilitating development of evidence-based strategies and policies for workforce development.

h. **Continuous skill-gap assessments:** Globally, structural changes in economies are causing disruptions in the way human beings are skilling themselves and the way they are working. We are at the beginning of a revolution that is fundamentally changing the way we live, work, and relate to one another, thereby, further reinforcing the need for minimizing the gap between demand and supply to an extent as far as manpower requirements across sectors are concerned. Therefore, in response to the imperative of equipping the State's burgeoning youth population with employable skills poised to meet the demands of future global markets, it is essential to understand the extent of such perceived gap between the demand and supply of skilled workers through continuous and real-time skill-gap assessment.

   Such skill gap is the interplay of industry demand, supply through public and private channels, labour force participation, aspirations and employability of both new entrant and existing workforce. A skill-gapping exercise typically provides insights into the requirement of skilled workforce across sectors and across districts and how the different stakeholders, associated with skilling, are expected to respond in order to achieve the desired targets. This could be achieved through setting up a centralized portal for demand aggregation for industries as well as sharing the available pool of skilled candidates by the individual districts, thus ensuring a bottom-up approach for minimising the demand-supply gap. Additionally, the relevance of existing courses offered under the different programmes also needs to be evaluated through a placement and demand analysis under which placement uptake studies should be conducted to identify underperforming and redundant courses. Such courses should be replaced by courses catering to up-and-coming sectors such as AI, sustainability, Big data analytics, etc.

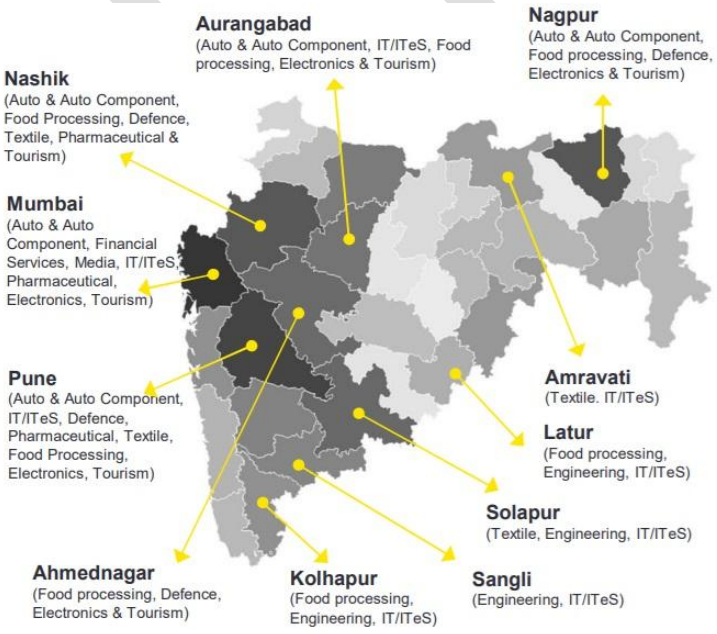
3.4. Relevance: Remain 'Relevant' in alignment with industry, national, international priorities and youth aspirations

The labour market relevance of the skilling initiatives is a function of market-aligned standards, competency-based trainings, and endorsement from the industry. Indian youth entering the education and the skilling space in 2025 will be young adults by the year 2030 entering workspace, and, therefore, the need to prepare them for jobs, for opportunities and for them to be the solution drivers of problems is the need of the hour. Beyond doubt, adults who are highly proficient in the skills relevant in the current economic scenario are likely to be able to make the most of the opportunities created by the technological and structural changes modern societies are going through. This also means that the industry will have to play a more prominent role, as their contribution is indispensable in determining the course curriculum and in influencing the process of generating employable human capital.

Within this mandate, the State should work towards bringing in necessary reforms at policy level (way initiatives are prioritized), infrastructure development (industry focused strategic infrastructure) and institutional shifts (way initiatives are organized) at implementation level to strengthen the alignment with industry needs. Initiatives should also be planned to involve a wide range of skills development opportunities attuned to the State, national and international contexts. Aiming to align training to the needs of the labour market so as to facilitate young people's integration into the workplace, the State could adopt the following initiatives.

3.4.1. Introducing an Aspirational Sector driven skill development ecosystem for the State

The largest economy and the second largest demography, Maharashtra has a lot to offer to national as well as international investors in different sectors across districts of the State.[15] From Financial Services, Media, IT/ITeS in Mumbai, Auto & Auto Component in Nashik, Pune and Shambhajinagar, Food Processing in Nagpur, Textiles in Amravati to Engineering in Kolhapur, different districts offer plethora of investment opportunities, and hence gainful employment opportunities for the skilled youth in the districts as given in the figure.[16] In this regard, the State should identify in each district few sectors (not exceeding five), that offer distinctive investment and employment potential, as the Aspirational Sectors of the district, in a way that the name of the district becomes synonymous with the sectors themselves. Consequently, promotion of the district for specific trades in consonance with the skilling initiatives of the State will attract industry, investors, and recruiters to the region, from all over the world.



As discussed, identification, development and promotion of one or few Aspirational Sectors for a district will not only help leveraging the resources of every stakeholder in the region but will identify the region for recruitment of a specific skill set in the country, as well as abroad. Accordingly, all training interventions within the district across training centres, vocational institutes could be aligned to trades and courses from the Aspirational Sectors such that while 70 per cent of the courses and curricula may be attuned to the Future of Skills, 30 per cent may mandatorily be aligned to such Aspirational Sectors of the district. Dedicated infrastructure and resources for skilling and capacity building may be set up in targeted courses within all training centres, and vocational institutes. In these lines, the district level Centres of Excellence (CoEs) could also dedicatedly focus on the growth of such Aspirational Sectors, along with focus on futuristic IT and industry 4.0 courses.

Beyond doubt, industry has a huge potential to influence scale as well as quality of skill development programmes due to its integral linkage with placements. The industry keeps the curriculum or the way in which the training takes place according to the needs of the industry and can optimise the job market as they like. Accordingly, in each district, one major industry house in each of the Aspirational Sectors, whose brand value and potential for backward and or, forward linkage shall stimulate further investments and employment within the district, could be identified as the *Anchor Industry(s)* in the district. While at a district level a lot of Government as well as private institutions have been created for skill development, many suffer from physical infrastructure and manpower crunch. For example, a lot of training institutes do

[15] CMIE, Economic Survey, 2023-24, Govt. of Maharashtra
[16] https://maitri.mahaonline.gov.in/

not have the requisite machinery to give the students hands-on practical training. The Anchor Industry has to step in here and help support the sector-aligned infrastructure needed in the training centres so that students can receive industry relevant training. The Anchor Industry's involvement at this level will also strengthen the industry-academia connect and can move away from the trend of captive skilling by few industry giants to industry's contribution to skilling initiative at large.

Besides this, the Anchor Industry could also help in curriculum advisory, teacher training, and in offering apprenticeship jobs to the trainees with a stipend so that they can 'earn while they learn'. In return, this will cut down the investments, both in terms of money and time in training for the Anchor Industry when they hire someone with non-relevant skill sets compared to when they get day-one ready employees. So, it is a win-win situation for both the Anchor Industry and TVET institutions within the district. All training institutes, therefore, could be promoted to work in collaboration with the Anchor Industries of the district and district-level CoEs, in a Hub and Spoke Model, creating and supplying skilled and industry ready human resource as critical supplies.

3.4.2. Ensuring industry alignment of teacher training for TVET teachers within the State

The importance of teachers and teacher education in the field of TVET is widely acknowledged at all levels. The competency of TVET graduates is to a large extent influenced by the quality of TVET teachers and teacher educators. Vocational teachers and teacher educators need to be well qualified and with up-to-date competences as well as keep upgrading themselves and their practice to meet the everchanging industry demands and socio-economic needs and changes. In fact, with respect to the 'quality of teachers,' the World Bank Report mentions that many teachers' professional development remains unevaluated and much of evaluation may be ineffective, marked by characteristics of being "episodic, myopic, and often meaningless, short of low quality." The same report also says that there should be in-service training or professional development for teachers, that includes components of practicality, specificity, and continuity to effective teacher professional development.[17] Needless to say, as the delivery of TVET is challenged by several factors including untenable shortages in well-proficient and qualified teachers, trainers, and practitioners, it calls for reforms in teacher training initiatives within TVET to allow school-work transitions and address labour market demands.

Effective vocational teachers need to meet the demanding "dual requirement" of both pedagogical skills, and practical professional expertise. But rigid and sometimes inconsistent requirements to enter the profession and a capacity to make use of part-time teachers without industry knowledge create obstacles to the recruitment of those with significant industry experience. The State as well as the Nation currently suffers from the dual challenges of shortage of qualified teachers on one hand and lack of specialized skills and industry exposure among the teachers on the other hand. In this regard, the State of Maharashtra should adopt a slew of reform measures, as mentioned below, to ensure that teachers, trainers and practitioners in the TVET ecosystem have access to the required pedagogical training, while at the same time remain abreast of the requirements of modern industry.

- **Encouraging industry practitioners to teach part-time in TVET:** While all TVET institutes may have a minimum of 60 per cent of their teachers, trainers, and practitioners as full-time employees, the State should encourage TVET institutes to involve teachers working part-time in industry through flexible arrangements. Encouraging people with valuable industry experience (minimum of five years in the concerned trade) to enter teaching in TVET, either full or part-time, would not only help in meeting the growing shortages in TVET teachers, but would also help in delivering industry-aligned academic training. The State may also explore reforms to enforce minimum wage-floors for all such part-time and contractual teachers for technical as well as non-technical teaching roles in TVET to encourage industry practitioners to teach part-time or to enter vocational teaching in mid-career.
- **Setting up CoEs for teacher training within the State:** CoEs in teacher training in TVET may be set up, one in each of the six administrative divisions, as these centres would co-ordinate efforts in teacher training previously fragmented across different bodies. These centres would monitor the performance of teachers after receiving training support. It would be highly desirable that individual State-empanelled colleges and vocational training institutes harmonise their programmes on teacher

[17] Learning to Realise Education's Promise. 2018. World Development Report.

trainings and the content of qualification courses with these centres with the aim of measuring the impact of training and detect those teachers in need of support. These centres could also design and develop modular-based programmes informed by labour market requirements to support teachers with refresher programmes.

- **Enhancing capacity of teacher training in the State:** One of the main bottlenecks in the supply of skills in the State as well as in the country is the size and qualifications of the teaching workforce. Not all VET teaching staff have adequate pedagogical training and despite recruitment efforts and increasing demand the number of teaching positions at ITIs and vocational institutes has experienced little growth over the years. Accordingly, the State may increase the VET teacher training capacity across State-empanelled teacher training institutes to churn out a minimum of 2,500 teachers every year to ensure a Pupil-Teacher Ratio (PTR) of a minimum of 25:1 by 2030.
- **Consistency in teaching standards through common assessments:** According to National Education Policy 2020, a common National Professional Standards for Teachers (NPST) would be developed in TVET, coordinated by the National Council for Teacher Education (NCTE) in consultation with the National Council of Educational Research and Training (NCERT) and the State Councils of Educational Research and Training (SCERTs). Accordingly, SCERT of Maharashtra should aid the development of the State professional standards and competency framework for all teachers, trainers, practitioners, lecturers, facilitators, counsellors, assessors etc. across all vocational training institutes within the State.

  Consistency in teacher and teaching standards throughout the State should also be achieved through common assessment procedures and effective monitoring to determine whether the necessary skills have been acquired. The State should also develop a life-long learning pathway for all TVET teachers, and such continuous professional development of the teachers may be linked to their annual performance appraisals and vertical career mobility and may also explore the option of rolling out grant schemes to encourage the development of skills and capabilities among the TVET teachers of the State.
- **High-level committee for monitoring and review:** The MSSDS may set up a high-level empowered committee, under the CEO, MSSDS, to ensure implementation and enforcement of such teacher qualification requirements and teacher training initiatives within the State through periodic reviews, candidate feedback, and teacher interviews. Currently, while the ITI teacher qualification, according to DGT is B.Voc/ Engineering degree with one year experience in the relevant field, or three years diploma in appropriate branch in engineering with two years' experience in relevant field, or NTC/NAC certification with three years' experience in relevant field, there is no defined qualification criteria for vocational teachers involved with short-term skill development. Consequently, all training providers must mandatorily furnish all details of teacher education qualification before empanelment with MSSDS. The same should be followed by an interview of the teachers by authorized officials of empowered committee. The State should also bring in legal and regulatory reforms in ensuring a minimum wage floor for all teachers, trainers, practitioners in skill development centres and vocational training institutes within the State to ensure quality and standards of vocational education within the State.

  A minimum floor wage for the vocational teachers will attract right talent to the domain. Currently the whole skill ecosystem of the country as well as the State suffers from quality of trainers and thereby low standards of skilling and competency of youth, as an outcome. A respectable wage level will also attract retired industry professionals and mid-career professionals as well as promote lateral entry/exit to/from the industry and skill ecosystem of the country, as well as the State.

  Such minimum wage may be reviewed once every two years by the committee following a detailed methodology comprising impact assessment study, TVET teaching fraternity consultation through FGDs, industry review and feedback, secondary research, inputs from the relevant departments etc. The regular adjustment can help ensure that the changes in the cost of living and other economic circumstances are duly considered.
- **Digital Learning Management Systems (DLMS) for teachers:** According to the NEP 2020, vocational education teachers training programmes for promoting new learning methods (experiential

learning, and use of digital tools like MOOCs), flipped learning and virtual learning methods) would be organized by NCERT, National Institute of Open Schooling (NIOS), Central Board of Secondary Education (CBSE), along with State Boards and State Education Departments. Accordingly, TVET teacher training within the State may focus on Digital Learning Management Systems (DLMS) for teachers, self-directed learning contents, fully online induction and refresher programmes, mobile reading applications, collaboration platforms with live video communications, external repositories of distance learning solutions, along with focus on faculty certification linked to career progression, and enhanced use of tools for teachers to create digital learning contents.

- **Reverse integration of retired citizens into TVET teaching:** Countries like Germany, Canada, UK have effectively reverse-integrated the retired citizen pool in their technical training and vocational education structures, and they call them career advisors or vocational mentors. Retired citizens can become mentors, and even teachers in the TVET ecosystem to the youth entering the workforce in the State. This is especially the case for students from low socio-economic backgrounds, who may not have support or role models that encourage their career aspirations. Consequently, MSSDS may devise a State-wide mentorship program, wherein retired citizens may handhold the youth, providing engagement opportunities to both sides of the stakeholders. A capacity building plan may be developed for the career advisors to help them in choosing the right trades, abreast themselves with latest skilling related information and further scope out the mentorship plans for their mentees. A classic example in the skills ecosystem is that of the erstwhile Security Sector Skill Development Council (SSDC), wherein they provided employment opportunities to retired defence personnel who are diligent, disciplined and are willing to skill using their vast experience, breaking down the conventional employment and industrial structures that impede access to work, mentorship and new types of learning experience.

3.4.3. Creating a mentor network to ensure equitable and easy access of vocational education

Improving access to skill trainings not only involves setting up right quality training infrastructure right at the block and GP level, but also increasing the capacity and quality of trainers/ mentors to ensure equitable and easy access of vocational education to every citizen of the State. The lack of qualified trainers in the vocational education system that contribute to the lack of quality in teaching in TVET has been given focus in the State since the last decade. However, another area of emphasis should be personalised career guidance by career advisors who are skilled to handle queries of candidates regarding career aspirations, labour market shifts, and future job-roles. Hence, considering shortages of qualified teachers and career advisors in the TVET ecosystem, along with the broadening curriculum offerings, and projected increase in the TVET student population, it, therefore, makes sense to create a mentor network for the students. The mentors could comprise retired or mid-career professionals, and industry veterans, who can contribute to improved and expanded skills and competencies of students, as well as provide career counselling to students. Such mentor-mentee network is envisaged to present career trajectory to the students with visibility on opportunities and an aspirational success story to motivate the students while changing the perception about vocational education as a career option at large.

Despite a general recognition of the importance of such mentoring, there is, however, a dearth of established and evidence-based tools for guiding individuals in determining their personal mentoring needs and establishing effective mentoring networks to support their aspirations in an individual-centred mentoring framework. Consequently, the State should first work towards developing a strategy for creating a pool of teachers, trainers, and key resource persons by engaging with mid-career professionals, industry veterans, post-retirement citizens, and the non-resident Marathi communities as mentors, resembling a *Guru-Shishya* model. All such mentors must necessarily be graduates from the State's ITIs, polytechnics, engineering colleges, other higher education institutes, and must possess a minimum of 10 years of professional experience in the sectors applied for.

Once such mentors are roped in, post verification of their education, experience and industry-exposure, they can be trained for career counselling and career guidance by MSSDS, through the Maharashtra International Centres, and can also be provided online access to knowledge and resources while counselling. An ongoing capacity building plan could also be developed for the mentors to help them in choosing the right trades, abreast themselves with latest skilling related information and further scope out

the mentorship plans for their mentees. All mentors interested in participating must be vetted in advance by a committee responsible for ensuring that the mentoring network works towards the intended objectives as well as enhancing the effectiveness of the network through periodic evaluations.

The empowered committee should keep close contacts with the mentors and offer support during the entire mentoring relationship. The committee should be available for one-on-one meetings with the mentor, either in person or online, in case he or she requires support or needs to discuss an issue relating the mentoring relationship. MSSDS should also organise bi-annual networking meetings for the mentors to enable them to get acquainted with each other and afford them the opportunity to exchange experiences and ideas. MSSDS should also offer workshops and thematic sessions for current and potential mentors concerning mentoring related issues and conduct workshops on a variety of counselling and youth issues in order to assist companies, public institutions, organisations and industry bodies to positively influence the image of young people and also to promote the mentoring network.

Countries like Germany, Canada, UK etc. have effectively reverse-integrated the retired citizen pool in their technical training and vocational education structures, and they call them career advisors or vocational mentors. Likewise, such mentoring network of the State should be created for all vocational education students in the State, including students from ITIs and polytechnics, starting from the first year of their academic programme. The mentoring programme should initially be started as a pilot initiative with about 100 mentors across districts by the end of 2025 and thereafter be scaled to 500 mentors by the end of 2028, and to 1,000 by 2030.

The mentors could be mobilised at a Panchayat level and students should be able to prebook an-hour long counselling session (either online or offline) through a dedicated portal, with the mentors of their choice (based on location, aspired trade, sector, industry etc.). The portal could also have the detail of the mentors where their detailed professional profile could be available for ease of shortlisting as per the candidates' career aspirations. In case of face-to-face career counselling, such meetings could be held in either mentors' place of work, or in the local Panchayat office accessible to both the mentor and the mentee and could be pre-booked through the portal.

During career counselling, students could be exposed to possible career paths based on current training options, industry needs and candidate aspirations, as well as behind-the-scenes look at some of the specific career options. Mentors could also guide students through their own career trajectories and experience on skills required to succeed in the workplace and this could include application of technical skills learned during training, and non-cognitive skills, such as communication, problem solving, critical thinking etc. that are essential for professional success. Mentors could also guide students on relevant opportunities in their organisations or others, in terms of full-time employment, internship, apprenticeship etc. which could be helpful in building students' learning, training, and career opportunities.

The mentoring network could also have mentors from diverse socio-economic background and different trades and sectors so that the student cohort can relate to the career trajectories accordingly. Women alumni/ professionals should be specially encouraged to become part of this mentoring network with one in every three such mentors being women, as this can lead to an increased enrolment of girl children in TVET, particularly in trades and courses which are perceived to be masculine in nature and wherein they have traditionally been underrepresented. Employed part-time under the MSSDS, the mentors could be paid a nominal fee of INR 250 (or as appropriate) for an hour-long counselling per candidate. Candidates could also be allowed to provide feedback regarding the relevance, applicability, and utility of career counselling provided through the portal.

3.4.4. Adopting a sector-aligned skill development and vocational education along the state and national priority areas

The State operates in an integrated environment wherein there are initiatives from the central level, mandates issued by international agencies (such as World Bank, ADB) and line ministries setting out the objectives which directly or indirectly influence the skill development and vocational education initiatives in the State. While such initiatives are integral to addressing poverty reduction by improving employability, productivity, and sustainable enterprise development at the local level, they must also be aligned to the broader priorities, sectors, industries, trades, and Missions and initiatives by the Central government for an inclusive growth.

At the time when the country is pushing hard to open up her markets, reduce regulatory roadblocks and develop innovative campaigns to attract more foreign direct investments in a bid to fuel growth and create job opportunities, the State has the potential to capitalize on the unique opportunities through sector-aligned skilling programmes for a fast-growing young workforce. Such initiatives could closely be aligned to the broader priorities, Missions and initiatives by the Central Government for an inclusive growth in areas including climate change, specialty chemicals, biomass, pharmaceuticals, ESDM, EV, urban infrastructure, and media and entertainment, as discussed below.

A. Climate change and sustainability

India is transitioning towards a sustainable and low-carbon future. However, this journey is fraught with complex transition challenges in the pursuit of achieving net-zero emissions. While policies aimed at boosting India's renewable energy strategy and reducing reliance on fossil fuels are already underway, these efforts require significant acceleration to realize India's climate change initiatives, particularly in terms of raising awareness among the communities as well as capacity building and skill development in sustainability practices. With an estimated 20 per cent of the country's workforce working in the green industries, estimates suggest that India could add 35 mn. incremental green jobs by 2047 across traditional and emerging sectors, including renewable energy, waste management, electric vehicles, green construction, and sustainable textiles.[18]

The State Government of Maharashtra is gradually recognizing that in order to meet citizens' basic development needs, it must integrate climate change concerns into its development planning and implementation processes. Over the past 3-4 years, the Government has transformed its policy framework and institutional approach to managing climate change, and the results are starting to show. However, for effective implementation of the policy framework, enhanced and sustained political will as well as mandating the need for training and research facilities and programmes on climate change are the need of the hour. Hence, skill development in the sector is required to ensure young individuals who are creative and can think refreshingly can synergise the elements of a circular economy and the green industry and help in restoring sustainability and environment conservation. Accordingly, district level CoEs may be designed to focus on climate change and sustainability, offering diploma, advance diploma, and degree programmes, apart from short-term community-oriented certification programmes in climate change and sustainability.

Further, such CoEs should focus on not only training the public administrators, corporates, and candidates, but the public at large, for the response mechanism to minimize the impact of such climate changes, on life and property of the people in the tribal belts and disaster-prone areas. The key areas for focus should include introduction to SDGs, Environment, Social and Governance (ESG), global climate change and adaptation strategies, responsible supply chain, carbon foot-printing, carbon management and optimization, water foot-printing, disaster resilient public infrastructure, solid waste management, energy security and efficiency, ecology and environmental systems, wildlife management, forestry and natural resources management, urban environment and sustainability etc. for corporates and public administrators; and responsible production and consumption, disaster recovery and management, fuel consumption and efficiency, scientific animal health management, breeding management, water use efficiency, public health and disease prevention etc. for the communities.

The CoEs could also offer teacher trainings to give teachers confidence in facilitating climate change and sustainability education both inside and outside the classroom (among the indigenous communities) so that they can help young people and communities understand the causes and consequences of climate change and bring about changes in attitudes and behaviours to reduce the severity of future climate. The CoEs should also introduce measures to impart green skills for sustaining the livelihoods of workers in the unorganised sector so that they can work their way out of poverty and contribute to a greener and sustainable planet. Additional modules of green skills may be reintroduced within cross-disciplinary courses and programmes that reinstate the importance of skills development for the green economy in India.

[18] 'Gearing Up the Workforce for a Green Economy', Skill Council for Green Jobs, 2023

B. Healthcare

In the globalised and technologically advanced world, healthcare is always regarded as a booming industry with emphasis being laid on quality, accountability, and transparency. The sector is currently one of the leading sectors in the country, both in terms of revenue and employment, and has gained significant growth and priority with the onset of the pandemic and its aftershocks. With strengthened coverage, services, and increasing expenditure by public as well as private players, the sector is growing at a brisk rate with an annual growth pegged at about 22-23 per cent in the last six to seven years.[19] As the Central Government intends to increase public health spending to 2.5 per cent of the country's GDP by 2025, Maharashtra is already en route with 10 per cent of state's public spending allocated to health services vis-à-vis 1.8 per cent for the country for FY 2024-25.[20]

The growth in the health sector also calls for investments in human resources for health that not only strengthens the health system, but also generates employment and continues to contribute to economic growth. The landscape of health services delivery has undergone significant transformation in the post-COVID era, from being fragmented and disease-centred towards integrated and people-centred care. Health workers find themselves at the crossroads of these transformations that demand from them commensurate changes in the skill sets employed in day-to-day practice, among other challenges. The State, therefore, recognises that vocational education in the sector should implement a multi-pronged approach by including a variety of modes of delivery and should, accordingly, undertake the below mentioned interventions towards achieving the goal.

- **Training on healthcare support areas**: Recognising the need to prepare health professionals for meeting the dual challenges of technically and emotionally complex healthcare workplace, the State should develop dedicated capacities to train workers in the areas of a) critical care workforce -lab technician, radiographers, dialysis technicians, microscopist, ICU specialist, oxygen ventilator operator paramedics etc.; b) healthcare logistics and supply chain; c) home care delivery, geriatric care, palliative care, especially for ageing people; and d) healthcare technologies including data science, mobile health, immersive technology, genomics, clinical psychology etc. Leading hospitals/ medical colleges having requisite infrastructure could be onboarded to provide training in these critical areas, while the State would take lead in developing a cohort of home care providers who would be aligned with specialist doctors and extend care to patient in their homes.

  Moving ahead from the more conventional trainings on general daily patient caretaking, general health and hygiene, and basic nursing skills, such training programmes would include tracheostomy and ventilator care, basic and advanced life support systems, intensive care nursing, orthopaedic care, cancer care etc. The in-home healthcare service providers should also be trained to assess depression and other cognitive deficits among patients, as well as trainings for safety and security for both caregivers and their clients, as they might be required to travel to far-flung unfamiliar neighbourhoods or rural locations. The workers would be trained in protecting themselves and their clients from harm, including learning the signs of violence and trusting one's judgement if situations were to feel dangerous. Consequently, safety training would include how to assess clients' homes for hazards, including chemical and environmental factors as well as slip and fall risks.

  The skill-gap in the healthcare sector is particularly pronounced in rural areas, where accessibility to quality healthcare is a significant concern and undoubtedly there are challenges that continue to persist. Insufficient infrastructure and resources in some regions also hinder healthcare services, particularly in the geographically disadvantaged and far-flung areas. Consequently, the State may target to create the country's largest such cadre of in-home healthcare providers by 2030, who, if needed, could travel outside the State or the country for geriatric care and in-home health services of patients. This would help in increasing the reach of healthcare services to large sections of society who are unable to pay high hospital fee and optimise hospital capacity for critical patients. The goal of creating such home health service providers would be to assist the patient to remain at home, avoiding hospitalisation or admission in long-term care institutions; help patients to improve function and live with greater independence; promote the client's optimal level of well-being.

[19] Department for Promotion of Industry and Internal Trade (DPIIT), RNCOS Reports, Media Reports, Press Information Bureau (PIB), Union Budget 2021-22

[20] Budget FY 2025, Govt. of Maharashtra

- **Capacity building of primary healthcare workers**: Another area of intervention planned under such training initiatives could be towards building and empowering primary healthcare teams for rural areas through trainings and capacity building. According to a 2020 study, 68 per cent of healthcare providers in rural areas of India have no formal training.[21] In order to augment the capacity of primary healthcare, specially designed training programmes should be curated for teams of healthcare professionals who can visit rural and tribal areas of the State. In addition to technical trainings, these programmes will also focus on rural culture, rural morbidity and mortality patterns, communication skills, empathy, and data collection and management. MSSDS may partner with leading healthcare providers/ hospitals and medical colleges for developing standard training modules, delivery of training, and joint certification. This will also ensure uniformity in training quality and curricula across different training institutes, crucial to producing consistently skilled healthcare professionals.

  The intervention should create a cadre of mid-level service providers, such as nurses, auxiliary nurse midwives, and rural medical assistants as anchors in the provision of comprehensive primary-care services at the district/ block/ Panchayat-level health and wellness centres. The cadre could offer primary-care services at the doorstep that cover minor ailments, communicable diseases, health promotion services, appropriate referral linkages, risk screening for early disease detection, and ensure that the rural people of the State receive care at a community level when they need it. The cadre would also be trained to familiarise them with the Emergency Triage Assessment and Treatment (ETAT) guidelines and to provide them with the necessary knowledge and skills for applying the guidelines to lower rural child mortality rates.

- **Enhancing reach and capacity of healthcare providers:** The state should also increase the capacity of healthcare training, creating a cadre of nurses and healthcare service providers with a minimum of 2.5 medical professionals (including physicians, nurses and midwives) for a population of every 1,000, in line with guidelines by the WHO. For this, aligned with the demand and supply scenario within and outside the State, the State would earmark about 10 per cent of all TVET initiatives in the State along the healthcare and allied sectors. As already discussed, a CoE could also be set up in Healthcare and Healthcare 4.0 offering certification, degree, diploma, and advance diploma programmes, R&D etc. in the sector. This would be accompanied by dedicated training facilities in the sector in all Government training institutes, including various teaching methods such as simulated learning, multimedia instructions, problem-based learning, seminars, and dialectic learnings such as lectures and laboratories. Courses could include programmes in areas including but not limited to Optometry, Emergency medical technology, Dialysis technology, Medical radiation technology, Clinical microbiology, Clinical psychology, Anaesthesia technology, Nutrition and dietetics, Health management and digital health, and Respiratory therapy.

  While traditional healthcare education has always relied on real patients in clinical settings, simulations in new-age laboratories would allow students to learn, practice, and repeat procedures as often as necessary. Gamified training platforms should be set up including education games, mobile healthcare applications, and virtual patient simulations. The current vocational curriculum in the healthcare sector do not normally include enhancing observational skills or visual diagnosis for early detection of health issues, and hence students could be trained in visual literacy through structured observation to help them apply these skills to patient care. A gradual shift should also be made from the traditional disciplinary-based curriculum to a problem-based learning curriculum in the health sector that are typically associated with improved quality improvement learning and implementation. Curricula should also be designed keeping in mind health professionals' preparation to work in underserved areas and with disadvantaged and diverse communities, mostly tribal.

  Focus would also be laid on transversal skills including disease management, facility management, interpersonal skills, such as person-centred communication, interprofessional teamwork, self-awareness and socio-cultural sensitivity, and the ability to use digital technologies effectively. SEEID should onboard specialised agencies to provide training in these areas who will work closely with hospitals/ medial colleges to develop well-rounded training content for healthcare workers.

[21] Das J, Daniels B, Ashok M, Shim EY, Muralidharan K. Two Indians: The structure of primary health care markets in rural Indian villages with implications for policy. Soc Sci Med. 2020 Jun 15

- **RPL for healthcare professionals:** Because the healthcare industry of the country is continuously evolving, technologies that are considered the best practices today can change significantly within a span of a decade. Consequently, healthcare professionals need to regularly stay abreast with new technologies and techniques, and expand their knowledge and skills, implying that continuous learning for health professionals is an absolute necessity and not merely a 'nice-to-have'. MSSDS, in partnership with leading medical facilities within the State, could also develop a quality improvement training program for mid-career professionals for nurses, midwives, healthcare technicians etc. within the State covering systems thinking and human factors analysis, root cause analysis, process mapping and other quality improvement techniques, considering the evolving healthcare needs of the communities. This should be developed across modules and into a web-based and action learning curriculum designed to increase mid-career healthcare providers' competence in quality, safety, and systems improvement. The State would also increase the annual RPL numbers for primary health professionals with a minimum 50,000 RPLs every year, for a 100 per cent coverage of public primary caregivers and a minimum 50 per cent coverage of private primary healthcare providers by 2030.

  The infrastructure shortfalls such as the required number of beds or the accessibility of advanced equipment that were highlighted during the pandemic mandates the need for a healthcare system that is 'emergency-proof' for such situations in the future. Consequently, specialty centres and hospital chains are coming forward to build more capacities, especially in Tier II and III cities. Hospital chains have started expanding in these cities by setting up small clinics and associating with reputed local doctors, and, therefore, the demand for health professionals is going to grow beyond the urban epicentres of Mumbai, Pune, Nagpur, Nashik, Shambhajinagar, and Amravati. With healthcare services getting more localised and community-oriented, the capacity and infrastructure must be uniformly rationalised across the state.

  The State should also take a lead in working closely with NSDC in accreditation of health professionals' education where it does not exist and strengthen it where it does exist; design a RPL framework in the sector to systematically align the competencies of primary care-givers, midwives and other informal health workers to already defined NSQF; offer higher NSQF courses in the health sector under the RPL framework; consider the expansion of faculty in the sector through the recruitment of community-based clinicians and health workers as educators; designing more community-oriented approaches to delivering the curricula, involving community placements/ learning etc.

- **Medical learning with Artificial Intelligence (AI):** Finally, with online consultations, telemedicine, technology platforms for contact tracing and primary health services growing in demand, the Government should also focus on creating a cadre of technology professionals in the healthcare services. The State should also encourage tech start-ups in the healthcare services for door-step medical facilities, telemedicine and self-assessments etc. Another area of focus within the healthcare sector is AI, which is poised to revolutionize the healthcare industry, transforming the ways in which medical professionals diagnose diseases, treat patients, and manage healthcare systems. Consequently, courses may be designed with pedagogy covering the areas of use of AI in early detection of diseases, creating personalized treatment plans, development of precision medicine and drug discovery, AI-assisted surgery and robotics, remote patient monitoring, healthcare data analytics, and streamlining healthcare operations. Interactive simulations may be introduced in teaching and pedagogy where interactive simulations can provide immersive experience mimicking real-life experiences. It could also play a crucial role in creating virtual patients and simulations, mimicking real-life clinical scenarios. Another area in medical training could be Virtual Reality (VR) that could transport clinicians to realistic scenarios where they can practice procedures in a safe and controlled environment. Such type of infrastructure and teaching-learning methodologies could be provided through the Maharashtra International Centres, Maharashtra State Skill Universities, as well as the district-level CoEs to students in the sector, thereby unlocking newer possibilities for immersive learning, personalized feedback and efficient assessments.

C. Agriculture

Despite being a highly industrialized State, agriculture continues to be the main occupation in the State with close to 50 per cent of the labour force engaged in agriculture and allied sectors of the State. The

State's agricultural and natural landscape, distinct agro-climatic zones, along with its vast coastline and forest area (16.51 per cent of area) offer immense potential for contributing towards nation's agricultural growth, increasing farmers' wealth, and providing sustainable employment across the agri-value chain.[22] However, as the country's population is touted to be the largest in the world by the next decade, the pressure on declining available agricultural land to produce more quantity, variety and quality of food for the populace will keep on increasing – an area that needs to be addressed through precision farming, cost-effective technologies with environmental protection and conservation of natural resources, and capacity building of the farmers. Beyond doubt, systemic and cohesive interlinkage between various dimensions of the agricultural system along with customised strategies would be the pre-requisites for such transformative changes.

The Nation's agriculture sector is gradually inclining towards different technologies such as financial technology, machine learning and digitisation. However, the lack of awareness about such technologies and knowledge regarding food science and technology, precision farming, biomedical engineering, food microbiology etc. are resulting in improper farming practices, inaccurate financial operations, and consequently stagnant growth. Crop and harvest related challenges are quite inevitable given to the dynamic nature of the industry. The industry, however, is taking great measures in damage control and wastage reduction with smart agriculture plans, risk financing and modern technology. But, above all, the workforce needs to be supplemented with the necessary skillsets across the value-chain so that the traditional, cost- and time-consuming methods are replaced by scientific, modern, economic, and efficient methods.

- **Setting up the CoEs in agriculture and food processing:** Observing the dearth of advanced vocational training for agri-workers across the value chain of agriculture as well as a platform for knowledge and intelligence exchange till grassroots, the State could establish CoEs specialising in agriculture and allied sector, with special focus on Climate Smart Agriculture (CSA). The centres could be established in districts including Pune, Ahmadnagar, Thane, Jalgaon, Kolhapur and other districts with significant agri-production and corresponding to the different agro-climatic zones. These could be designed to have a cumulative capacity of training in excess of 10,000 candidates annually, with a minimum of 50 per cent female candidates, across a combination of certification, diploma, advanced diploma, degree, B.Voc courses. These could be in the areas of agriculture technologies, farm mechanization, CSA, organic farming, nutrient management, genetics and plant breeding, regenerative agriculture, biomedical engineering, agri-supply chain management, cold-chain, dairy processing, food analysis and science, food microbiology, fruits and vegetable processing etc. The students could also receive unique opportunities of working on diverse problem statements that CoEs face through pro bono projects in varied kinds of agricultural challenges from pre-production to impact at environment at large, rolling out monthly newsletters and publications on agriculture, getting international exposure on AgriTech, pro bono consulting for developing business plans and setting up systems, mentoring by industry professionals and agripreneurs, scholarships for further learning and research work, e-promotion of ideas, incubation and seed-funding etc.

  With an understanding that to carry out agri-research of the highest quality, it can no longer be merely an 'in-house' affair, the CoEs could develop alliances and collaborations with national and international Universities/ research organizations to activate a platform for communication, collaboration and to promote research as well as academic activities. The CoEs could forge ties with a set of strategic collaborators and knowledge partners, from leading players in the sector and academia from countries such as Australia, Switzerland, Netherlands, and Germany, to develop industry-relevant and academically rigorous content, to source faculty/ trainer, to offer joint certification and to find suitable partners for infrastructure development. State-level academic collaborations, towards curriculum advisory, training of instructors, and faculty exchange, could be initiated with Maharashtra Council of Agricultural Education and Research (MCAER) with its complete network of constituent institutes, along with Indian Agricultural Research Institute, National Institute of Agricultural Marketing among many others.

[22] India State of Forest Report 2021

- **Empowering the KVKs:** The individual CoEs, corresponding to individual agro-climatic zones within the State, could act as 'Skilling Hub' for the indigenous crops and drive the end-to-end skilling initiatives in their respective zones. The CoEs could also work with the Krishi Vigyan Kendras (KVKs) in activating a complete agri-institutional framework within the State with the KVKs at the district level, the CoEs at the agro-climatic zone level working seamlessly towards the Vision of creating a cadre of next-generation farmers and agri-entrepreneurs within the State.

  The KVKs of the State perform frontline demonstrations in farmers' fields, upskilling of farmers on modern techniques of agriculture, and act as resource hubs for domain knowledge. The role of such KVKs should, hereby, be redefined to play an important part in transferring capacity enablement from the CoEs to the farms. To ensure the convergence and implementation at the grassroots, the State could equip the district level KVKs with adequate administrators, infrastructure, and resources for delivery. The State could also empower KVKs to have a dedicated lead, managing the grassroots trainers and helping in generating interests for being agri-entrepreneurs from the villages.

  Stronger linkages could be developed between the KVKs and the CoEs, ICAR, rural development institutes, line departments, banks working for the development of knowledge and resource sharing. The vision should be to remodel the KVKs to play a leadership role at the district-level in their respective areas of operations including applied research in agricultural extension. KVKs could be empowered to enhance the visibility of extension research, methodologies, approaches and outcomes for the benefit of the farming community and could provide capacity development of stakeholders in effective decision making in production, post-production and marketing by large scale adoption of technologies.

- **Creating village-level agri-entrepreneurs:** To ensure innovation across the agri-sector, the State should empower the Farmers Producers Groups and grass-root level training organizations to train and develop a cadre of village level agri-entrepreneurs or agripreneurs, aiming at supplementing the existing extension network to accelerate the technology transfer process. These activities and interest groups could train the entrepreneurs and beginning farmers in value-added services such as connecting with the market, leveraging seed bank, providing input support services, performing harvest and post-harvest activities, primary processing, organic farming, and marketing. They could teach last mile connectivity skills such as at-home para-vet services, mobile horticulture, and input services such as soil health, market Intelligence services, working with seeds, in detail. Another area of focus for such training initiatives would be in the areas of organic farming (with focus on soil health, traditional farming, agro-ecosystem, avoidance of over-exploitation, use of RE sources etc.) where the State clearly holds a potential by retaining its native and unspoiled soil profile and owing to the diverse climatic zones within the State.

  Such programme should enable the agripreneurs to pool funds via microfinance model and set up village-level agricultural cooperatives, organise brainstorming and ideation sessions in coordination with KVKs, and help prepare the beneficiaries at core for the innovative activities organised at the district level, by providing hands-on, season-long educational experience. The program could be designed to have a low beneficiary-instructor ratio and consist of weekly field work, classes, skill-building sessions and one-on-one mentoring. Hours spent by the cohort of agripreneurs alongside the farm mentor could provide ample opportunities for healthy discussions about farming methods and practices, as well as hands-on instructions and feedback. Under such initiative, a minimum stipend per month may be offered by the State to the agripreneurs along with facilities for credit linkages, through a network of rural banks and NBFCs, post completion of trainings.

D. Circular fashion and textiles

The Indian textiles and apparel industry employs over 6.2 crore people, contributes to 15 per cent of the country's exports earnings and about seven per cent of the country's industry output[23] and the sector employs second largest workforce after agriculture. The production commonly involves a popular linear "Take-Make-Dispose" model that relies on huge quantities of easily accessible resources and harms the

[23] "The state of circular innovations in the Indian fashion and textile industries" by Fashion for Good and Circular Apparel Innovation Factory, 2020, Ministry of Textiles, GoI, KPMG in India Analysis

planet economically and environmentally.[24] Therefore, it may well be said that circular business models that create viable business with rentals, re-commerce, recycle and rework, are more suitable alternatives for the entire value chain of fashion and is envisaged to become more dominant by the 2030s. A recent study by FICCI indicated that about INR 50 thousand crores' worth of economic value could be unlocked through such models in India by 2030.[25] Undoubtedly, to achieve such massive economic growth in the stipulated timeframe, the country needs streamlined skilling efforts, creating skilled workforce to manage the upcoming sector effectively – an area wherein the State of Maharashtra offers immense opportunities to accelerate the transition from traditional production mechanisms to circular business models.

Amongst the Indian states, Maharashtra's textile industry is one of the strongest in terms of production, supply of heritage fabric, as well as its capacity for skilled workforce, predominantly women. The State accounts for about 10.4 per cent of the country's textiles and apparel output and 28 per cent of India's total textiles exports.[26] The State recognizes that the transition from traditional to modern sustainable practices is a green transition that needs conducive infrastructure, policies, skilled workforce, resources, and a willingness to transition. Towards this direction, the State has been progressing by leveraging environmental policies and national development strategies that reference skills development for the green economy in India, including the PM-MITRA scheme and the State's fortified Integrated and Sustainable Textile Policy 2023-2028.

- **Create Infrastructure- Centres of Excellence for textiles design and sustainable fashion:** The State should establish Centres of Excellence on sustainable fashion and textile design within all Textiles Parks in Amravati, Thane, Solapur, Kolhapur, Nagpur, Nashik, Pune, and Nandurbar, focusing on skilling in the textiles, technical textiles, apparel, and sustainable and circular fashion, which would be a hub for all the skilling and R&D needs in the sector. These Centres could be built with a vision to train at least 5,000 students in five years (minimum 1,000 students per year), out of which at least 50 per cent should be women trainees across all courses.

  The envisioned centres may involve establishing state-of-the art campus with benchmark infrastructure and training facilities to support skilling pursuits of the region. Some of the facilities may include- a) Manufacturing as well as R&D labs and circular design labs as part of sustainable fashion and circular economy sector, b) production centres for equipment manufacturers with shared resources and common facilities, c) dedicated laboratory facilities aiming at bridging the gap between conventional and modern textiles manufacturing, d) plug and play floor for start-ups with required entrepreneurship support. Additionally, the centres may house a museum for circular economy, which would act as an epitome to showcase the strength of Maharashtra's rich textile heritage. The articles displayed may range from outputs of regenerative processing, innovative manufacturing equipment and resources, and creations from skilled workers in textiles/ handicrafts/ handlooms design, processing and production. The museum may also illustrate educating content on traditional processes, environmentally friendly processes, and the entire value chain of the circular economy model.

  R&D should be the bedrock of such CoEs and should involve areas such as specialty and multi-functional textiles, eco-friendly and sustainable technologies, protective textiles, geo-textiles, composites for automotive, aerospace, and architectural applications, biodegradable fibres, electro-textiles, nonwovens for apparel, medical, and specialty applications among many others. The research and innovation wing and textiles think tank within the CoEs may develop intelligent products, individual solutions and innovative concepts for textiles-related issues – polymer chemistry, mechanical engineering, textiles engineering, finishing technology or process engineering, bringing the threads of all disciplines together.

  As the textiles industry is at the cusp of radical transformations, the CoEs should provide access to industry-academia interface, bilateral relationships with international institutions, seed funding for innovative textiles solutions by startups, technology support by leading technology corporations, and textiles and circular economy education in niche areas, as highlighted. The education and training

[24] "Moving Towards a Circular Fashion Economy" by MOTIF
[25] "Accelerating India's Circular Economy Shift", by FICCI, 2018
[26] Central Silk Board, Economic Survey, 2020-21, News Articles

should involve certificate courses, diploma, and degree programmes in collaboration with leading industries and academia, that would equip the designers, artisans, and manufacturers, with the skills and perspectives to develop more inclusive, sustainable, and responsible future products and technologies. The centres may also offer PhDs allowing students to specialise in specific areas of research relating to technical textiles, sustainable design or cultural heritage. Apart from the sustained focus on education and training, customized courses for industry, sector-specific research, knowledge management and labour market studies, the CoEs may also focus on creating an ecosystem of trained trainers with requisite knowledge, skills and practical exposure in the sector.

Table 3: Courses/ job-roles/ programmes proposed to be offered at the CoEs

Course Type	Course/ Job-role
Certification course (Six months)	Circular fashion specialist; Fashion designer; Hand embroider; Fashion and circular economy; Circular design
Diploma (One year)	Fashion design and technology; Textiles mechatronics; Dress making; Textile wet processing technician; Sustainability in fashion; Farm to fashion technology; Digital fashion; Computer aided embroidery and designing
Advanced Diploma (Two years)	Circular fashion management; Design, science and value in sustainable clothing industry
Bachelor's (Three years)	Circular fashion designing; Fashion textiles and design; Sustainable fashion and textile design; Business of fashion, textiles and technology

The CoEs may be set up and managed by the State in the public-private partnership route as a way of introducing private sector technology and innovation in the sector. The trunk infrastructure could be developed by the State Government, which in turn could rope in a suitable anchor player for operations and management of the centre through a mutually agreeable MoU. The anchor player could be an academia, global industry house in the circular fashion and textiles industry, industry association, consortium of industries, angel investor/ VC firm/ accelerator/ incubator, industry within the Textile Park etc. The anchor player could have the autonomy to plan its activities, drive collaborations with network partners, training providers, and educational institutes, and other support partners aligned to the industry, design and develop sector-focused training curriculum, conduct applied research and development, encourage entrepreneurship, incubation and seed-funding in the industry, with minimal bureaucratic load to their efficient functioning. The anchor player might even rent out plug-and-play workspace to private circular fashion players and startups, while using a section of it for training and development, R&D and innovation, and in-house operations.

- **Establish national and global collaboration:** The CoEs for circular fashion are envisioned to emerge as the country's voice in academic design research and knowledge exchange by bringing together research staff, PhD students, national/ international academic researchers, cultural institutions, industry and commerce to create new connections to support people and the planet. In this regard, a set of strategic collaborators, from leading players in the circular fashion industry and academia, will enable the centres to develop industry-relevant and academically rigorous content, to source faculty/ trainer, to offer joint certification and to find suitable partners for infrastructure development.

  Strategic ties could be forged with industry and academia from countries like Italy, Denmark, and Switzerland, as knowledge partners, to license existing curriculum and develop new content for training, define and set standards for skilling education and capacity building, and provide insights to address the dynamic needs of international labour market. The centres could partner with leading industry players for aligning its academic offerings to industry needs, for sourcing faculty/ trainers and developing potential employment opportunities for graduates. Students could undergo on-the-job training or apprenticeships at premises of industry partners within the Textiles Parks. While further academic partnerships could be sought with institutes such as NIFT, NID etc. to name a few, institutional partners would include NSDC and SSCs that would help the CoEs set-up and efficiently manage its operations.

E. Renewable Energy

Globally, there is a shift towards going green, with majority of the countries targeting to reduce emissions to net zero by the year 2070 to save our planet from climate induced changes. India, one of the world's top emitters of carbon dioxide, has also pledged to achieve net-zero carbon emissions by

2070. According to a study by the World Economic Forum in 2021, India's shift to a net-zero economy could contribute more than INR one lakh crore in economic opportunity by 2030, and creation of over three million jobs by 2030. To drive this shift to Renewable Energy (RE) in the given timelines and realizing such opportunities in livelihood generation, India as well as the world needs to develop skilled workforce in the power and renewable energy sector. Key policy initiatives, like green hydrogen policy, offshore wind policy, promotion of electric vehicles, introduction of a green day-ahead market, and easing terms for open access to procure green energy, further propel the sustainability and green energy sector and hence employment in the sector.

RE technologies are more labour-intensive[27] than more mechanised conventional fossil fuel technologies and hence provide tremendous opportunity for creation of domestic jobs. At the same time, distributed renewables such as small-scale hydro, rooftop solar and biomass create maximum employment for every Mega Watt (MW) of installed capacity compared to other sources of conventional power generation.[28] With Indian Government´s pledge under the Nationally Determined Contributions (NDC) to scale up renewables in the country, net employment (measured in full-time employees) could be expected to increase by an additional 30 per cent by the current decade. Additionally, one in every two such jobs created in the country would require only primary or lower secondary education and three in every eight occupations would need only secondary education – an area that could be leveraged by the disengaged youth of the state of Maharashtra through relevant vocational education in the sector.[29] As in 2022-23, the State of Maharashtra has the fifth largest installed capacity in Renewable Energy (12,635 MW) accounting for about 10 per cent of the national capacity.[30] The State Government also aims to solarise 35 lakh agricultural pumps by 2025 under the PM-KUSUM Scheme, making it a model State in Renewable Energy implementation.[31]

- **Create Infrastructure – Centre of Excellence (CoE) for RE:** Acknowledging the requirement for leadership and an ecosystem of global standard for RE skilling, the State could establish a state-of-the-art CoE targeting the entire value chain of skilling in RE and Sustainability. The CoE should be a one stop shop for all the skilling needs aimed at 'Just Transition'[32] for the world economy – from manufacturing of various RE technologies, industrial products, home appliances/ vehicles, to servicing of the products lines, to production and transmission of the renewable energy across urban and rural areas. While the CoE should create industry ready professionals and promote the skill development interventions of the State, the centre should, by design, function as a hub along with district level model ITIs, polytechnics, and short-term training providers to create an entire roadmap of 'Just Transition'. Further, to fulfil the reskilling and upskilling requirements of existing workforce due to the transition to RE, the CoE should create an innovative reskilling model, mitigating job losses and ensuring their employability in the emerging RE technologies, to create the country's largest cadre of experienced and certified solar PV installers, rooftop solar grid engineers, RE maintenance technicians, solar PV BD executives, energy analysts, energy transition technical specialists, energy efficiency consultants, RE designers, RE account executives etc.

  The centre should be built with a vision to train at least 50,000 people in five years (minimum 10,000 students per year), out of which at least 50 per cent should be women trainees across all the courses. The CoE should offer world-class infrastructure with state-of-the-art classrooms, auditorium, seminar halls, NABL accredited solar photovoltaic module testing laboratories, lighting system test laboratory, battery testing facilities, hostels, library, guest houses, solar PV power system, and decentralized wastewater treatment plant to provide hands-on training to the trainees etc. The installation of solar PV system on campus could help in tapping the huge potential available for generating solar power, wherein the energy generated would be used to discreetly fulfil the energy requirements of the centre and excess (if any), can be fed into the grid.

  Another area of focus for the CoE could possibly be Green Hydrogen production workforce development. As per National Green Hydrogen Mission (NGHM), India targets 5MMT per annum of

[27] "Future skills and job creation with renewable energy in India" by CEEW, 2019
[28] "Renewable Energy in India: Employment Potential and Financing Solutions for Solar and Wind Energy" by NRDC, 2021
[29] "Renewable Energy and Jobs" by IRENA, 2021
[30] CMIE
[31] Government of Maharashtra
[32] "Just transition"- A report for the OECD, 2017

Green Hydrogen production capacity by 2030.This is potentially expected to increase to at least five times to 25 MMT by 2050 as India aims to grow into an export hub for Green Hydrogen.[33] From an overall sector perspective, the highest demand in Green Hydrogen space would be for engineers, prominently, Chemical engineers and Electrical engineers, followed by technical managerial skills such as Project Management and Managerial Finance. Mechanical, Electrical, Electronics, Electrochemistry and Chemistry are areas which would need curriculum revisions to include elements on hydrogen technology. Additionally, the net zero value chain needs to be included across all academic streams.

In Green hydrogen space, hiring of freshers alone will not suffice, necessitating development of expertise/ technical proficiency at the source level itself. Given the technicality in the Green Hydrogen space, it is highlighted that 'bridge courses' are key to upskilling workforce; finishing schools are of significance as well. The key skills and knowledge with international demand include Operation and Maintenance of Hydrogen Production Facilities; Hydrogen Storage Technologies; Hydrogen Distribution Technologies; Electrolysis Testing, Installation and Operation of Hydrogen Fuel Cells; Automation, energy optimization, quality assurance, and certification of electrolysis components; Hydrogen Carrier Production Process; Clean Hydrogen and carbon Recycling Technologies etc.

Consequently, B.Tech./ M.Tech. in Green Energy/ Renewable Energy/ Renewable Energy Technology with specialization in Green Hydrogen production and use as electives may be created and rolled out. Electives may include hydrogen energy production and management, hydrogen economy, hydrogen energy and fuel cells, hydrogen technology, hydrogen storage etc. as identified earlier. A set of micro-credentials may be created, collaboratively with industry subject matter experts, to bridge the immediate skills gaps while formal training packages are being developed. Online short-term courses for topics like Hydrogen production technologies, Electrolyser system overview, Electrolyser assembly techniques, Compression and storage, Regulations & standards, Plant operation & maintenance, and Hydrogen Safety etc. may also be created and rolled out as well. Hydrogen as an elective for engineering students may be offered in other cross-cutting programmes in other Schools and CoEs, for instance chemical engineering, mechanical engineering etc.

The admissions into the CoE should be provided to the graduates of ITI, polytechnic and grade 12 students who could demonstrate expertise and are keen to join the vocational stream, along with experienced professionals in RE for recognition of their skills and certification. Apart from the conventional short-term certificate courses in RE, the CoE could also offer diploma, advanced diploma, and bachelor's programmes in RE science & technology, energy policy and management, solar and alternate energy, energy and sustainability policy, among many others. The centre is proposed to fulfil the need for skills in the RE sector by offering a wide range of short-term and long-term training programs, as provided in the below table, supporting the human capital development, providing incubation and capacity building support.

Table 4: Courses/ job-roles/ programmes offered at the CoE

Course Type	Course/ Job-role
Certification course (Six months)	Solar PV installer; Wastewater treatment plant technician; Solar proposal evaluation specialist; Rooftop solar grid engineer; Solar PV business development executive; Solar PV Structural Design Engineer; Solar PV Manufacturing Technician; Solar lighting technician; E-waste recycling entrepreneur; Ecological economics and CSR
Diploma (One year)	Renewable energy science and technology
Advanced Diploma (Two years)	Energy management
Bachelor's (Three years)	Renewable and alternative energy; Energy policy and management; Solar and alternate energy; Renewable energy technology; Energy and sustainability policy; Environmental studies and sustainable development; ESG and climate change; Climate change and sustainable action; Climate resilience and sustainable economy; Urban design/ urban practices

[33] Ministry of New and Renewable Energy, Government of India

The CoE should endeavour to create a pool of well trained and skilled technicians who are able to address the skill gap in the RE technologies (with special emphasis on solar) and professionally support the on-going efforts of the Government of India and state Government of Maharashtra to exploit the potentials in the solar energy sector. It should also focus on creating a pool of master trainers to facilitate good quality of training in the sector, as well as RPL for experienced RE professionals in the State, in a hub and spoke model with the district-level ITIs. The CoE, in collaboration with the Solar Energy Training Network (SETNET) partners, could offer advanced certification programmes for experienced solar professionals, including Aryabhatta Certificate (for high level designers), Konark (graduate engineer project management course), Surya (for solar field technicians) and Bhaskar (for Business/ Financial Programs). The proposed centre is envisioned to emerge as the apex institute in RE for demonstration, standardization, interactive research, training and testing RE technologies and systems in the country. The centre could also maintain a pool of scientific manpower and management experts to handle various consultancy projects on solar photovoltaics and solar thermal technologies.

- **Collaborating with Global Partners:** Network of partners would be the bedrock of the proposed centre and establishing clearly defined partnerships would ensure that the CoE is able to benefit from partner's strengths and develop comprehensive offerings for students and other stakeholders. Accordingly, the centre should have outcome-based international collaborations from selected partners in industry, academic and other support areas from Germany and Japan. Such strategic partnerships are a critical aspect of the centre's operating model and would include funding support, curriculum advisory, global accreditations, global think tanks for knowledge and key insights, among many others. The centre should explore partnerships with the corporates working in RE for providing support in management of the centre, furnishing labs, funding the capital expenses and operational expenses, sponsoring its employees for training and providing guest faculty/ industry experts. The centre should also engage with National Institute of Solar Energy (NISE) for academic guidance and participate under the Suryamitra Skill Development Program. Also, suitable existing training providers such as Solar Energy International (SEI), NISE etc. could be engaged for mobilization, training, assessment and placement support for students. Other strategic partners might include International Solar Alliance (ISA), Solar Energy Corporation of India (SECI), Council on Energy, Environment and Water (CEEW), the Natural Resources Defence Council (NRDC), SSCs for Green Jobs, Energy and Hydrocarbon, and Electronics, and the Electric Vehicle Association (EVA), among many others.

F. Responsive Tourism

With a long coastline, age-old cultural heritage, a myriad of religious monuments, rich variety of flora and fauna, nature's bounties in biodiversity, resorts, national parks and sanctuaries, Maharashtra has always been one of the prime destinations of tourists, both domestic as well as international. According to the Ministry of Tourism, The State ranked second in terms of international tourist footfall with 1.51 mn. tourists visiting the State in 2022. In terms of domestic tourist footfall, the State accounted for about 111.30 million tourists in 2022.[34] With tourism and hospitality industry's profound impact on GSDP (in excess of INR 40,000 Cr. GSVA in 2023-24), it is important to note its consequential role in employment generation.[35]

According to the Tourism and Hospitality Skill Council (THSC), the incremental workforce requirement for the period of 2024-2028 in the State is about 3.4 lakh (11 per cent of national manpower demand), largest in the country in the tourism and hospitality sector. The State also has a potential trainable pool of about 5.5 lakh youth in the tourism and hospitality sector, accounting for about 10 per cent share of the entire available pool of youth in the sector in India. The State's ambitious Tourism Policy aims to attract INR 100,000 Cr. in investment and generate 1.8 million jobs over the next decade However, despite this potential, only one percent of the workforce in the tourism and hospitality industry is currently trained, but there remains a substantial scope for training within the sector.

- In view of technological advancements, according to THSC, the employers in the sector have automated fewer than 25 per cent of tasks in their organizations. However, they anticipate an

[34] Ministry of Tourism, Govt. of India
[35] CMIE

increase in automation in the future, expecting 25-50 per cent of tasks to be automated within the next three years. This means that existing skilling requirements are likely to change. As a result, roles such as assistant chef, bartender, commis chef, kitchen helper, and facility managers are expected to remain, while new roles such as digital marketer, social media manager, market analysis, intelligence, accounting, menu analyst, walk-in/special tour operators, revenue management, and data analysis are expected to emerge. At the same time, roles like back-end food production, check-in, ticketing, in-room billing and ordering, content writing, social media management, and cleaning may become obsolete.

- The Policy also aims to empower women through its five-point program ranging from women entrepreneurship to women safety and travellers' discounts incentives. While emphasizing women entrepreneurship and advancement, the State may prioritize advocating for training programmes and industry initiatives aimed at women-centric job roles such as culinary entrepreneurs and community engagement coordinators. Additionally, given the development of Agro Tourism and Adventure Tourism sub-sectors in Maharashtra, there is a demand for training youth in roles such as Farm Tour Guides and Wildlife Safari Guides.
- Regarding rural homestays, while the Central Government policy is appreciable, the real push for entrepreneurship and enterprise development through home stays can be promoted by the State Government. The specific training and upskilling needs can be addressed with support from the State Council of Vocational Training, THSC and NSDC. The State may either leverage existing qualification packs or create relevant curricula to provide homestay hosts and workers tailored advice and training to meet the requirements of the sector. The State may enhance its existing homestay policies to support the growth of homestay businesses, providing training and resources for homestays hosts and promoting quality standards for optimum employment potential for tourism sector. Instead of solely listing homestay tour operators on their tourism websites, The State may develop comprehensive policies that support the growth of homestay businesses. This could include providing training and resources for aspiring homestay hosts, promoting quality standards for homestay accommodations, and facilitating networking opportunities within the industry. By actively supporting and promoting homestays, Maharashtra can tap into the potential of this sector to create employment opportunities and enhance the tourism experience in the State.
- Religious tourism in the State has been gaining momentum and is anticipated to grow at an excess of 16 per cent annually and create employment for about 25,000 youth in the State in the next 4-5 years, according to industry estimates.[36] The State should set up specialized training institutes in prominent tourist destinations such as Nashik, Shirdi, Amravati etc. to provide training in hospitality management and tour guiding. Moreover, recognizing the significant potential for religious tourism, training programmes focusing on the history of the religious sites and monuments and sculptures should also be offered. This would require either developing newer job roles such as cultural interpreter, and/or reskilling and upskilling the workers in areas such as communication, and knowledge of the religious history of the region.
- The tourism sector of the State could also benefit from formal training of tour guides, cook and waiters, interpreters, receptionists, roadside vendors, homestay facility providers etc. through RPL programmes focusing on tourist-friendly etiquette lessons, responsible tourist behaviour, and soft-skills trainings. This will not only improve the tourist influx to the State but help improve local employment generation and revenue and economy for the State. Accordingly, the State should conduct a minimum of 10,000 RPLs of such tour operators, guides, interpreters, cooks and chefs, waiters and attendants, roadside vendors, homestay owners etc. annually through its network of empanelled training providers.
- Given the increasing importance of eco-tourism in the State, education and skill training of workers within the industry are crucial for enhancing eco-tourism experiences. This includes training programmes for guides and naturalists, covering various tasks such as interpretation and entrepreneurship in the hospitality industry. These specialized training modules could cover a range of tasks, such as tourist guides, natural science interpreters, patrol partners for protection work, and

[36] THSC

skill development for aspiring entrepreneurs in the small-scale homestead-based hospitality industry. Prioritizing specialized training for workers in various segments, including tourist touchpoints and street food vendors, will also not only enrich their contributions to the tourism experience but also foster inclusive growth within the industry. Likewise, short-term skill development initiatives may also be planned for gig workers including food delivery service providers, cab drivers, cleaners and cooks etc. in areas like communication, interpretation, and hospitality; technology and finance; critical thinking, stress management and logic etc. in areas close to airports, tourist touchpoints and street food vendors. This approach will facilitate equitable access to opportunities and support the diverse needs of individuals across various segments of the workforce.

- Another area of tourism and hospitality sector where the State stands out is the cruise liners sector, driven by increasing disposable incomes and Government support such as favourable policies and expansion of e-visa facilities to seaports. In this regard, in line with the State's policy aimed at creating a skilled workforce aligned with international cruise tourism standards, the Government can play a pivotal role. This involves assessing the market demand for cruise tourism workers, facilitating training for the State's youth tailored to both domestic and global markets, and offering sector-specific courses to enhance the development of workers in this segment. Currently, only about one per cent of the youth working in the sector are formally trained, thereby emphasizing the need for skilling for cruise tourism value chain, as well as destination-based skilling programs for upgradation and development of tourism skills.[37]
- Another area relevant for skill development in the sector is eco-tourism with the State being significant in the area owing to the diversity of climate and topography, long coastline and natural bounties. This includes training programs for guides and naturalists, covering various tasks such as interpretation and entrepreneurship in the hospitality industry, sustainable tourism, wildlife conservation, eco-tourism hospitality, and environmental education. These programs equip individuals with the relevant skills to work in eco-friendly tourism ventures, from guiding tourists to managing green hotels and resorts. Skilling initiatives could ensure that workers understand the balance required between tourism growth and environmental conservation, preparing them to operate and manage sustainable tourism businesses. Under National Strategy of Ecotourism, these specialized training modules cover a range of tasks, such as tourist guides, natural science interpreters, patrol partners for protection work, and skill development for aspiring entrepreneurs in the small-scale homestead-based hospitality industry.
- While safety and security have always been an indispensable condition for travel and tourism, the State should emphasise the need for skill development of police officials to create a cadre of Tourist-Oriented Policing (TOP) officers, to build the State as a safe, hospitable, and tourist-friendly destination. Such cadre of TOP officers are not only expected to ensure the safety and security of tourists, pay undivided attention to tourists, and allocate resources to investigate crimes against them, but to also be firm in their professional and legal obligations to promote responsive tourism in the State. This could be ensured by training police officers who are untrained in policing tourists. Lack of training means they are unaware of the emotions of traumatised tourists post victimisation, that could perpetuate further harm on the tourists due to insensitive questioning, and investigation.

  The State could, therefore, set up an academy for capacity building of tourist police in the districts known to be significant for tourist footfall, in association with the Indian Institute of Tourism and Travel Management (IITTM) and THSC. Under this programme, a minimum of 100 police officials (with a minimum of two officials from each police station), of the minimum rank of a Sub-Inspector, should undergo a week-long training focused on TOP. Depending on the success and effectiveness of the training programmes for TOP officers, in the enforcement and implementation of a safe, secure, and responsible tourism within the State, the same could be implemented in all districts of the State as well, known for tourist footfall.

  The trainings could focus on the definition and implementation of 'tourism policing' in the State - a philosophy that emphasises fear reduction among tourists through friendly and productive law enforcement mixed with crime prevention. The courses within such programme could focus on

[37] THSC

theories associated with TOP, including problem-oriented policing, community-oriented policing, situation policing, and crime prevention through environmental design. The key areas of focus for such TOP officers could include training on conceptual framework of tourism industry in the State; crime prevention strategies; travel formalities and sanitation requirements; facilities and amenities for tourists available; emergency handling skills; diplomatic skills etc.

A common course objective could be to enable such TOP officers to conduct thorough investigations, empathetically as well as proactively, of offences committed against tourists as well as those committed by tourists. Additional areas of instruction common to all courses could be the importance of strong communication skills, interpretation skills and need-based foreign-language proficiency, cross-cultural management for TOP officers and the significance of building ethical and professional working relationships with senior tourism professionals.

In seeking to protect visitors to heavily penetrated and frequented tourist neighbourhoods within the State (such as the Trimbakeshwar temple at Nashik etc.), the State could create and train a cadre of community workers who would voluntarily (or through alternative arrangements) serve as the eyes and ears of the TOP officers. In doing so, local businessmen, watchmen, vendors, and other individuals on the streets could provide early alerts to police regarding possible tourist victimisation, as well as provide the first-hand assistance to tourists in case of any harassments or crimes against tourists. All police stations in such vacation destinations, frequented by foreign tourists, should have a certified interpreter/ translator stationed and working closely with the TOP officers, for seamless communications and tourist services.

G. ESDM

Maharashtra occupies a share of more than 30 per cent in the industrial output of India's machinery, computer, electronics, optical products and equipment manufacturing sector, 12 per cent share in India's electronics exports and 17 per cent share in India's electronics manufacturing units.[38] The sector has been identified as a focus sector and 3 brownfield EMCs are planned to be setup in Pune, Shambhajinagar and Navi Mumbai with common facilities for production, R&D, test and measurement, prototyping, calibration and funding support. Currently, 8 manufacturing clusters have been notified in the State by the Government of India, and these are Nashik, Thane, Navi Mumbai, Mumbai, Pune, Shambhajinagar, Ahmednagar and Nagpur. Accordingly, the State Government through the State's Electronics Policy intends to initiate effective measures in active collaboration with industry stakeholders to enhance the availability of skilled manpower in the sector.

ESDM has one of the most distributed global value chains; hence every investor needs to ensure that manufacturing is competitive and should be comparable or better than other global destinations, and they get access to a pool of skilled and highly skilled personnel with strong technical acumen to work in the sector. Accordingly, the State should model district level CoEs in the above-mentioned electronics manufacturing clusters in the ESDM sector, with strong synergies from the industry and academia to offer specialized certification, diploma, advance diploma, and degree programmes in the ESDM sector within VLSI, Embedded systems, communications engineering, semiconductor (FAB) manufacturing, integrated device manufacturing, digital manufacturing technology, semi-conductor assembly and testing, networking and telecommunications etc. Another area of focus would be to develop future-oriented and industry-aligned course curriculum in the areas of electronic equipment manufacturing, semiconductor manufacturing, integrated device manufacturing etc. in association with Electronics Sector Skill Council of India (ESSCI), MSSDS and MSBSVET. The existing curriculum are more aligned towards lower value-chain activities involving equipment assembly, repair and maintenance alone, with little focus on design and fabrication.

R&D is the bedrock of the ESDM industry, and a tech-centric ecosystem should be created on the backing of strong research fundamentals. Accordingly, the State could enhance the number of PhDs and doctoral candidates in the ESDM and IT-ITeS sector of the state leveraging the 'Visvesvaraya PhD Scheme for Electronics and IT' launched by the Department of Electronics and Information Technology, Ministry of Electronics and Information Technology. The State could also encourage all private ITIs,

[38] MIDC

Polytechnics, and engineering colleges within the State to set up joint R&D labs with industries and could also encourage an internship programme with industries for diploma, bachelor's and master's degree students (in ESDM and related disciplines) to make them employable and industry-ready.

H. Specialty Chemicals

Specialty chemicals is perhaps one of the very few sectors in the country that have defied the COVID19 induced slowdown and most companies in this sector are now poised to deliver growth over the next few years. At the same time, the shift of manufacturing to the East along with India's export competitiveness are expected to strengthen India's position as a manufacturing hub for specialty chemicals. The country is currently the sixth largest manufacturer of chemicals, commanding a five per cent global share of specialty chemicals, and has consistently been one of the leading producers of dyes, pigments, polymers, agrochemicals – segments.

The State of Maharashtra accounts for about 17 per cent of the country's chemical productions and 16 per cent of the total number of chemical factories of the country. There are a total of 13 chemicals manufacturing zones in Maharashtra with The Mumbai-Thane-Raigad region housing a major chemical manufacturing cluster. According to the State skill-gap study, the incremental workforce requirement in the sector is about 45,000 people between 2024 and 2028.[39] Considering its significant competitive strengths to support the growth of the sector, the chemicals and petrochemicals sector has already been classified as a focus sector and due focus is being given towards fast-tracking development of infrastructure facilities, development of specialty chemicals clusters, setting up technology upgradation funds, incentivisation of investments in chemical R&D institutions, along with improvement in skilled labour availability.

As already mentioned earlier, district-level CoEs in the districts like Thane, Shambhajinagar, Pune, Raigad, Ratnagiri, Kolhapur, Nanded and Nagpur could offer specialized courses and programmes (certification, diploma, advance diploma, degree courses) in the hydrocarbon/ specialty chemicals sectors in the segments of chemical processes, plastics and polymers, industrial adhesives, surfactants, industrial gases, waste management, and active pharmaceutical ingredients. Apart from the regular academic programmes, the institutes could organize meetings, conferences and seminars; arrange workshops, refresher courses, counselling sessions; promote research; guide chemical engineering students in career planning; initiate any other activities which are of social, technical and professional relevance to the society at large, in collaboration with the Indian Institute of Chemical Engineers. As also highlighted, the State Government would work in collaboration with industries to upgrade the current chemical departments in Tier-II universities to become state of-the-art departments (in terms of infrastructure, faculty qualifications, industry interaction, and administration). Short-term vocational courses could focus on job-roles such as industrial and chemical manufacturing attendants, process attendants, manufacturing assistants, technician – pipeline maintenance and production, lab attendants, equipment operators, sales personnel etc.

I. Pharmaceuticals

Rapid digital transformations, changing socio-economic dynamics, and evolving regulatory landscape and the rising wave of consumerism are anticipated to play a pivotal role in shaping the future of the pharmaceutical and life sciences sector of the country as well as the State. According to industry estimates, the sector is expected to register about 8-9 per cent growth since FY23 driven by such push from domestic and emerging markets to reach US $194 bn. by FY32, and the Union Cabinet's nod for the amendment of the existing FDI policy in the sector would only bolster its growth.[40] Between 2015 and 2024 the sector is expected to have added an incremental 1.31 people, with the manufacturing segment experiencing the maximum skill-gap. With such unprecedented changes touted to affect the sector, the State needs to rethink the impact those changes will have on the job-mix, skills required and workforce mindset, and employee practices or value proposition.

Today's pharma workforce needs to radically change to create different careers, job-roles, mindsets, skills, and expectations. With the advent of modern digital technologies, patient engagement and

[39] MIDC, Government of Maharashtra
[40] ICRA

relationship management would emerge as important functions. The role of the pharmacists would change from being 'pill providers' to 'disease managers' and they would work with patients to ensure overall well-being. Additionally, to unleash the power of digital, the State also needs to ensure that skilling interventions involve digital initiatives and data analytics. The State's pharmaceutical sector holds immense potential for growth and innovation and houses over 3,000 pharmaceutical units, including 347 bulk drug units and 693 formulation units. The State accounts for 20-25 per cent of the country's pharmaceutical exports being a leader in vaccine production.[41] The Government has launched initiatives like the approval of a bulk drug park in Raigad and medical equipment parks in Shambhajinagar, thus boosting the domestic manufacturing, reducing dependency on imports, and contributing to the self-reliance of India's pharmaceutical sector.

However, the industry must address the critical skill gaps that currently exist across various segments, including manufacturing, research, regulatory affairs, and digitalization. Incidentally, maximum skill-gaps are experienced in the areas related to exposure to advanced technologies and tools, especially in bioinformatics and system biology; regulatory affairs, intellectual property management, and quality control; skills related to managing digital tools, data analytics, and cybersecurity; and supply-chain management and raw materials procurement. Overcoming these challenges requires a collaborative effort between Government bodies, educational institutions, and pharmaceutical companies. Accordingly, the efforts should focus on equipping the workforce with the latest technical skills, enhancing digital competencies, and fostering a culture of lifelong learning with upskilling being mandated for all employees in industries to stay updated with the latest advancements, regulations, and technological innovations.

Consequently, a state-of-the-art CoE could be set up in either of Pune, Nashik, Shambhajinagar or Mumbai offering training and R&D in the pharmaceuticals sector in association with bulk drug park in Raigad and medical equipment parks in Shambhajinagar and the Life Science Sector Skill Development Council to create a cadre of pharmaceutical sales representatives, regulatory specialists, clinical data managers, pharmaceutical research scientists, biotechnology consultants, IT specialists etc. within the State. The Government could aim to address the shortage of skills through the provision of a wide variety of training programmes and to address the core competencies required, including product innovation, drug development, quality control and assurance, drug approvals, supply chain management, technology innovation and regulations. Advanced courses (diploma, advanced diploma, and degree-level courses) could be conducted with testing and R&D facilities along with master's and doctoral degree courses in pharmaceutical sciences.

The State Government could also extend financial support towards setting up and upgrading biotechnology incubation centres or bio-incubators within the campus of registered private academic and research institutions. Such incubators could also be encouraged to provide mentoring support and training and information to help biotech startups in the State develop viable projects having both social impact and commercial sustainability. The State could invite units engaged in pharma production in the State to set up Polytechnics to provide industry-ready skills in Nashik, Pune, Shambhajinagar, and Mumbai regions. These units could be facilitated in the form of PPP with hard facility provisioning by the Government and courses and training curriculum to be administered by the pharma industry body. A national science base could also be built up strategically to compete in the world market by allocating funds in technology platforms.

J. Design Industry

In the traditional sense, the design industry of the country is age old, and over the years has grown from strength to strength. As in FY 2018-19, the market size of the design industry of the country was about INR 750 crores (USD 100 million), with the State of Maharashtra accounting for the bulk of it, growing at an excess of 25 per cent annually since the last decade.[42] It is envisaged that driven by the demand for design, which is essentially derived from varied sources such as interior designing, architecture and landscape designing, industrial and product designing, new media, HCI, packaging designing etc. the market for the sector is anticipated to have witnessed a tenfold growth by FY 2024. The huge untapped potential of design, considering its multi-disciplinary and multi-layered applications, offers opportunities for

[41] Life Sciences Sector Skill Development Council (LSSSDC)
[42] KPMG in India Analysis

the domestic companies to start building global brands and at the same time MNCs to outsource or shift their design functions to the State in the top design destinations of the country of Mumbai and Pune.

The strength of design in the State of Maharashtra propagates from its deep cultural roots, and its industrial, commercial and economic position. The growth of the sector is further influenced by the rising urbanization of the State (fifth largest among Indian states according to Census 2011), growing middle-class, and increasing disposable income with an attitudinal shift in preference towards fashion brands and products with innovative design. Consequently, given the huge untapped market potential, positive demographics, and rising aspirations among students to pursue alternate careers, design industry presents a huge opportunity for the State in terms of investments, collaboration, employment, and design education.

With the rising awareness about importance of design education, more students opting for alternate careers in design, and growing propensity to spend more on higher education, the State Government should plan to invest heavily in increasing the number of seats in design institutes and encouraging them to offer full-time degree courses. Such courses may include Bachelor of Design-Product Design; Bachelor of Media and Communication; Bachelor of Digital Media and Design; Bachelor of Science Animation & Multimedia; Bachelor of Design-Interior Design; BBA in Digital Media and Marketing; BSc. in Animation & VFX etc. The State should respond to the demand for qualified designers alongside its enhanced support for design education through setting up new design institutes and enhancing the capacity of existing ones in the State. A large proportion of design education institutes in the State are still restricted to traditional silo-based thinking and require a targeted convergence of design thinking, technology, user-centred design in partnership with international design institutions. Even the programmes in the master's and PHD level are like under-graduate programmes and do not, in the true sense, add on to the knowledge acquired by students during the under-graduate studies.

Consequently, greater focus should be laid in the areas of developing and delivering niche programmes in the emerging domains of design such as packaging design, Human Computer Interaction (HCI), new media design etc. Efforts should also be taken to enhance design curriculum planning, effecting a convergence of design thinking, technology, and user-centred design and experience design. The evolution of AI tools is also reshaping workflows across graphic design, industrial product design, precision design, web design and animation etc. Consequently, design curriculum must have modules on AI design algorithms, Machine Learning (ML) models, VR labs, data-driven design technologies, 3D modelling etc. incorporating personalized design experience.

Design curricula should also be rationalised to be more multi-disciplinary, and less compartmentalised, allowing enhanced choice, flexibility, and coverage to students, and making it more relevant for innovative thought process and practical outcome. Higher education institutes could also be encouraged to embed design as a subject in the teaching and learning of other disciplines such as management, engineering, technology, science etc. and be introduced earlier in secondary schools. The State should also emphasise the teaching of design in vocational institutes oriented towards the needs of the State design industry, especially small scale, and cottage industries in primary and secondary schools as well as tertiary educational institutions.

As already discussed, design in the State and in the country is gradually branching out of the core sectors, such as textiles, engineering, jewellery, and leather, and is involving new tools and methodologies, with a systematic blending of user experience. Given such untapped potential of the sector in the region, the Government should set up a centralised, state-of-the-art institute, in what could be the country's leading Design Hub, providing commercial space for design industry, enterprise incubation services, design education, and handholding and mentoring support. The Hub could act as a common platform and network enabler between multiple designers and consumers across industry sectors and sub-sectors. It could act as a node between design centres and institutions spread across the country and facilitate development and dissemination of innovative and affordable design solutions for industries.

As the design industry of the country is at the cusp of radical transformations and internationalisation, the Design Hub could provide access to industry-academia interface, bilateral relationships with international institutions, seed funding for innovative design solutions by start-ups, technology support by leading technology corporations, and design education in niche areas such as interaction design, instruction

design, transformation design, and service design. The Hub could provide close industry-academia collaborations for design education and producing proprietary and need-based design know-how, while encouraging creation of new design-led enterprises for wealth creation. Design education and training by the Hub may involve certificate courses, diploma, advanced diploma, and degree programmes in design in collaboration with leading design institutes (NIFT, NID, IITs and IIMs etc.) and may equip designers with the skills and perspectives to design more inclusive, sustainable, and responsible future products, systems, organisations, and societies.

The Design Hub could be set up and managed by the State in the state capital or in Pune in the public-private partnership route. The same could be developed by the State Government, which in turn could rope in a suitable anchor player for operations and management of the Hub through a mutually beneficial Memorandum of Understanding (MoU). The anchor player could be an educational institute, design institute, an industry house in the design or associated sector/ industry, industry association, consortium of industries, angel investor/VC firm/accelerator/incubator etc. The selection of the anchor player could be done by the State Government through an EoI followed by a competitive quality-cum-cost based selection procedure.

The anchor player could be given the autonomy to plan its activities, drive collaborations with network partners, training providers, and educational institutes, and other support partners aligned to the industry, design and develop sector-focused training curriculum, conduct applied research and development, encourage entrepreneurship, incubation, and seed-funding in the design industry, with minimal bureaucratic load to their efficient functioning. The anchor player may even rent out plug-and-play workspace to private design players and start-ups (post verification of their technical and design capabilities and credentials), while using a section of it for training and development, and for its in-house design operations. The multi-functional open workspace could offer facilities like meeting rooms, event facilities, display centre, fixed and flexible desks, maker's space, meeting rooms etc.

The management of operations could be done by dedicated Action Groups overseeing infrastructure maintenance, contract management, branding and promotion, relationship management, security, training, and education etc., and could have equal representation from the State Government and the anchor player. While periodic evaluation of the performance of the Hub along with financial arrangements for start-ups could be done by the Directorate of Industries, the training and certification programmes and design entrepreneurship development could be overseen by the SEEID.

K. Biomass

Another area of focus within the renewable energy segment for the Central and State Government is the biomass sector, with about 32 per cent of the country's energy consumption still derived from biomass and more than 70 per cent population still dependent on biomass for energy needs.[43] With a total installed capacity of about 2,584 MW, as in March 2023, the State Government of Maharashtra, in a bid to further augment power generation capacities from biomass, is setting up biomass-based power projects in several districts.[44] The Maharashtra Energy Development Agency (MEDA) is currently the nodal authority for biomass-based power projects in the State and is undertaking resource assessment studies and supply chain mechanisms and identifying biomass catchments to harness the targeted capacity. The idea is to promote and propagate the generation of energy from biomass-based power projects in the State, which in turn leads to potential for employment generation in the sector.

As the State is striving to increase the share of biomass and renewables in the power sector to boost the net employment, skilling in the sector continues to be the primary future challenge to harness the potential opportunities. A systematic manpower development effort in the sector by the Ministry of HRD was started as early as 1999-2000 with the introduction of a scheme for renewable energy training and the National Renewable Energy Fellowship Scheme. In addition to these, in order to create skilled manpower within the field of solar energy particularly in the view of growing demand of trained persons to install, operate and maintain SPV systems under the National Solar Mission, the Ministry also launched the Suryamitra Skill Development Program in 2015.

[43] Ministry of New and Renewable Energy
[44] Govt. of Maharashtra

In line with the Central Government's developmental initiatives in skill development and training within the biomass sector, the State should offer relevant courses and programmes through the district-level CoEs in the biomass sector offering specialized certificate, diploma, and degree level programmes in waste to energy conversion process; technologies involved; installation, maintenance and repair of biomass equipment; pellet production; environmental impact and analysis etc. along with regular short-term courses in the segment. Institutional capabilities among public administrators should also be enhanced in association with MEDA for a better understanding of the skilling needs across the entire biomass value-chain. It may also be mentioned that while there are dedicated short-term courses offered, there is still dearth of diploma or bachelor-level courses in the sector. To meet the potential requirement, institutions for higher learning including leading universities and premier institutes should introduce application oriented and industry relevant courses in these areas, both for undergraduate programmes and for specialised post-graduate level degrees.

Further, the biomass industry is providing job opportunities, contributing to the growth of the rural economy, and helping farmers get additional pay by providing their waste for energy conversion, and a large section of such workforce involves the women. Therefore, higher level policies and institutes should focus on improving the existing skilling programmes to ensure women participation by providing online courses and career guidance to improve retention across sectors. This can play a critical role in creating employment and entrepreneurial opportunities for women, both in rural and urban areas.

L. Sports

Sports play an integral part of culture in the State of Maharashtra with the availability of world-class and state-of-the-art infrastructure. Over the decade, the State has invested significantly in making the State the preferred sporting destination and has in fact been the most enterprising State in the country when it comes to support in sports. The State has invested significantly on developing sports infrastructure– sports complexes, stadiums, mini stadiums, indoor halls, and it is envisaged that this infrastructure development, designed to host state-, national-, and even international-level competitions will help athletes climb the next rung of the sporting ladder. Promoting sports education within the State, the Government of Maharashtra has recently established Shiv Chhatrapati Kridapeeth in Pune and nine Krida Prabodhinis under the purview of Kridapeeth where trainings is imparted in 16 games. During 2023-24, in all 472 players were undergoing training in these Krida Prabodhinis. It may, therefore, be well said that with such concerted efforts by the State Government towards developing sports infrastructure and popularising sports education among the youth of the State, Maharashtra is poised to become the country’s as well as East Asia’s leading sports destination in the years to come.

As discussed, the State has been at the forefront of popularising sports by providing the best infrastructure and facilities to athletes and budding sportspersons, right from the gram panchayat level up till the State level. Setting up a strong talent pathway from the grassroots to elite, the State is poised to see a larger representation in the national/ international sports arena in the years to come. Realising such vision for sports of the State would also require popularising sports among the youth, right from the primary school level, as well as focusing on sports research, sports science, professional development of sports mentors, coaches, promotion of indigenous sports, setting up sports research labs etc., as discussed in the entailing sections.

- **Early introduction of sports and physical education in schools:** As the State envisions to make Maharashtra the hub of sports in the country as well as the entire East Asia, it is important that sports and physical education is introduced early in schools, as early as primary levels. This will help to identify exceptional sporting talent early, to be carefully nurtured for the future on one hand, and to provide access to health-enhancing physical activities to all students, on the other. Sports and physical activity are vital to the holistic development of young people, and the value of educational benefits of sports can never be denied. Consequently, MSSDS could work with the School Education and Sports Department of the State, in designing and introducing a curriculum for sports in schools as a compulsory vocation for students in all Government and Government-aided schools. The curriculum for physical education has already been incorporated in primary and secondary education in the State vide the State’s Sports Policy.

Accordingly, professional sportsmen and women, and physical trainers could be roped in for such education, and the professionals may undergo a week-long training and certification programme, prior to joining, jointly by MSSDS and the Department of School Education and Sports to provide basic sports and physical education information. A State-level governing body, comprising sports men and women, could be constituted to provide overall direction, programme management, and continuous curriculum advisory for such education programme, and encourage the introduction of similar education initiatives at the primary level in the State's registered private schools as well. Periodic evaluations could be conducted to assess the technical capacities of the trainers and the commitment of the schools' administration towards running such programmes. As already envisioned in the Sports Policy of the State, school-level sports competitions could be regularly organised every academic calendar for scouting as well as for early identification of exceptional sporting talent, and scholarships could be awarded to such talent for further sports education and physical training for the future.

- **Advanced Centre for Sports Skills and Research:** Maharashtra could develop an Advanced Centre for Sports Skills and Research that would provide an inclusive ethos maximising the potential of the Marathi youth in sports as well as promote R&D in the areas of sports education, sports science, sports medicine etc. The centre could aim to provide the foundation infrastructure for athletes of the future and the much-needed focus on science, research, and analytics on health-related fitness, skill-related fitness, nutrition, and life skills. The centre would be established in in collaboration with leading sports universities, such as Loughborough University, Sheffield Hallam University, University of Queensland, etc. and could have facilities for Sports Biomechanics Lab, Exercise Physiology Lab, Anatomy Lab, Fitness Assessment Lab, Fitness Rehabilitation Facility, Centre for Sports and Exercise Medicine etc. In this regard, MSSDS could work closely with the Department of School Education and Sports in curriculum designing and providing training and certification in critical areas including Sports and Exercise Science, Fitness Assessment and Rehabilitation, Nutrition, Sports Management, Sports Analytics, Sports Psychology, Biomechanics, Sports Anthropometry, Injury Management etc. The centre could offer certification, diploma, advanced diploma, and degree level programmes in these areas through a certified team of academics and applied sports rehabilitators, physiotherapists, sports psychologists, nutritionists, health professionals etc.

  The centre could partner with leading hospitals and reputed health and fitness organisations within the country in setting up fitness assessment and rehabilitation facilities. It could also utilise public sports complexes and stadiums for utilising sports-specific infrastructure. Collaborations could also be made with sports franchisees for providing exposure and on-the-job training to students of sports management courses. It could also work with schools on a combination of approaches to give select students, who would have excelled in sports and related fields, the best opportunities in physical education, school sport, physical activity, and health, and thus providing them early grooming which would also help in scouting for future talent in the State. While the School Education and Sports Department could focus on providing the core sporting facilities including sports complexes, stadiums, MSSDS could focus on training and certification, curriculum advisory etc.

  The promotion of sports and physical education within the State would also require creating a cadre of certified elementary physical instructors and coaches, sports scouts, fitness specialists etc. They would help teach amateur and professional sports athletes, sports enthusiasts, school students, analyse the strengths and weaknesses of individual athletes, and identify and nurture sports talent at the grassroot level. Consequently, the State could offer certificate courses in sports coaching, diploma in sports coaching, Bachelor's and master's in physical education, to churn out such certified elementary coaches and scouts every year. The coaches and scouts could be required to undergo annual refresher courses in sports coaching and scouting to help them stay abreast with latest sports skills, gain knowledge and wisdom to further add to their skills for larger interest of sports enthusiasts in the State.

- **Promotion of indigenous sports:** Maharashtra has always been the land of diverse cultures and rural/ indigenous games, and due to urbanisation, many of these rural community games, lately, have been losing their sheen (including Kho kho and Viti-Dandu etc.). As the Central Government's Khelo India Scheme aims to encourage and promote rural and indigenous/ tribal games across the country,

the State Government should also make attempts to popularise rural, indigenous, and tribal sports and games, disseminate the information about such sports among the present generation. This will also encourage the youth to take up such games by creating opportunities for training in them through MSSDS and creating career pathways in such games. Annual district level competitions in rural and tribal areas in such games could be conducted in encouraging the youth of the State to take up these games paving the way for their mainstreaming. Financial support could also be provided to NGOs, Sports Federations/ Clubs/ Associations that are associated with such games for the training, physical education, and fitness enhancement of the local youth interested in such games.

M. Urban Infrastructure

As the country eyes about US $700 billion (INR 5.25 lakh Cr.) investments between 2021 and 2031 to boost its urban infrastructure services like affordable housing, urban mobility, water security, Clean India mission, and Smart Cities mission,[45] it is envisaged that a large portion of it would be towards improving the urban infrastructure of the state of Maharashtra, that experienced about 24 per cent growth in urban population between 2001 and 2011.[46] At the time of such accelerated changes and with complex issues such as climate change, growing migration, and frequent pandemic challenging the ability to respond to such changes, urban centres in the State have to adopt new strategies and technologies, and emerge as leaders. It may, hereby, be said that while urban area corresponds to only about 2.9 per cent of the State's geographical area, it houses about 48.9 per cent of the State's population, as in 2024, having grown from 45.2 per cent in 2021.[47]

As per an estimate, by 2030 the urban population of the State is going account for 76 million people with net migration accounting for about 31 per cent – which means by 2030 an incremental 2.4 million people are anticipated to migrate to urban and peri-urban areas within Maharashtra.[48] Accommodating such influx sustainably would depend on the State's ability to implement a sustainable urbanization strategy, incorporating an integrated approach to skill development in construction and urban infrastructure sectors. Accordingly, a CoE could be set up focusing on construction, construction technologies, urban design, planning and practices, and urban infrastructure, thereby creating a cadre of not only conventional masons and construction workers, but also water supply technicians, fitters, waste disposal technicians, sewage works technicians, hydraulic engineering technicians, pipe layers, duct builders, metal workers, smart metering technicians, solar PV installers, smart plumbers etc. The State should also conduct a minimum of 1,00,000 RPL every year for general masons, electricians, fitters, welders etc. in the State involving the State empanelled training providers to offset the growing skill-gaps in the State.

Recognition of the certificates of skills training should also be improved by mandating that a minimum of 50 per cent of workers for any Government contract in the urban development and construction sectors should have to be certified for appropriate skills under the ongoing skill development initiatives/ schemes. Smart Cities specific training curriculum (including Bachelor of Urban Design/ Town Planning/ Urban Management/ Urban Practices etc.) could be designed and rolled out by MSSDS in collaboration with Ministry of Urban Development (Maharashtra), concerned industries, NSDC and SSCs. The training curriculum and program could focus on smart technological solutions, energy and environment, housing and social sectors, sanitation, solid waste management, urban transport, water supply, landscaping, town planning, and heritage conservation.

N. Electric Vehicle

The Indian Electric Vehicle industry is currently valued at US $3.2 bn. in 2022 and is anticipated to reach US $114 bn. by 2029, thereby registering an unprecedented 67 per cent CAGR.[49] The growth and penetration of the industry is touted to be particularly significant in a state like Maharashtra that topped the list of states in terms of public EV charging stations in 2024 and in terms of sale of EVs through the FAME Scheme. The State's EV policy 2021 intends to accelerate the pace of adoption of electric vehicles with a minimum adoption of 10 per cent in terms of new vehicle registrations by 2025, thereby requiring

[45] Ministry of Housing and Urban Affairs, Government of India
[46] Census 2011
[47] Centre for Monitoring Indian Economy
[48] "Assessing Urban Vulnerabilities in Maharashtra", UNICEF & Govt. of Maharashtra, 2019
[49] Confederation of Indian Industries (CII)

sustained efforts in skill development, training and employment generation in non-motorised transport infrastructure, battery manufacturing and EV charging.

As envisioned in the EV policy, the State intends to amend existing courses and/or create new courses on electric vehicle ecosystem as well as develop skill enhancement centres for delivering vocational courses on the EV ecosystem. The State should also set up a dedicated CoE for EV, as one of the firsts in the segment in India, focusing on design and use of EVs, improving the usage and efficiency of EVs and charging equipment, and offering a multi-disciplinary collective approach to understanding the impact of electrification on the future of mobility and the future of the industry. The CoE should offer facilities for further research in the areas of vehicle autonomous control, wireless charging of EVs, modelling of future transport systems, smart grids, battery reliability and safety requirements, e-motor efficiency, energy demand scenarios for EVs, regulatory options, and consumer barriers and incentives. The CoE should have a thriving innovation culture, through collaborations with national/ international academia, auto OEMs, and energy operators, EV associations, and must offer a portfolio of programmes (certification, diploma, advanced diploma, and degree programmes) for nurturing student entrepreneurship and championing grass-roots business development. Key programmes should include EV technology and operations; Battery technologies and design; Powertrain – design and simulation; EV auxiliary systems – Design and simulation; Vehicle dynamics and instrumentation; Advanced Driver Assistance System (ADAS); Infotainment design and support; EV maintenance and support systems; Battery management systems; Production – Assembly and disassembly; Charging station – Infrastructure and design; Statutory safety regulations; EV aesthetics, Automotive security etc.

The State should also take a lead in designing/ updating qualification packs and occupational standards for newer job-roles within the sector (such as Electric Motor Design Engineer; Quality Control Inspector – EV; Battery Packs Tester; Battery Technician; Electric Vehicle Technician, EV Sales Lead, Regional Sales Manager etc.), in collaboration with NSDC, SSCs for Power, Automotive, Electronics and Hardware, and Green jobs, along with Auto OEMs, EV manufacturers, and energy operators, so that new skills required by industry or changes in supply of labour are speedily adjusted with adequate and efficient training programs. Experts from OEMs could be roped in as professional advisors to provide the much-needed industry insights in understanding the electric and hybrid electric vehicle technology and design a curriculum that is up-to-date, comprehensive, and adapts fast enough for the industry. Prioritization may also be given on rationalizing the curricula towards experiential learning, introducing multi-entry and multi-exit options, and emphasis on soft skills in alignment with NEP 2020.

Such CoE may be set up in any of the districts of Nagpur, Pune, Shambhajinagar or Nashik, with already available infrastructure, resources and ecosystem for EV, remodelled to offer customized certification courses in the EV sector emphasizing cross-domain engineering skills, embedded product development, prototyping including hardware design, software development, EMC compliance, and functional testing etc. In order to popularize such courses among the youth, such institutes must democratize knowledge on EV so that it is available widely and without the usual restrictions of merit and affordability, through suitable EdTech platforms, free of cost. Students opting for two-year advanced diploma, or three-year degree programmes or B.Tech in EV would also be allowed to take a break of one or two years for gaining relevant industry experience, as well as work as an intern in the state-level EV CoE for a minimum duration of six months.

O. Industry 4.0

With the movement towards Industry 4.0 being getting galvanized into action in the economy, virtually every conceivable industry today is being impacted by the disruptive power of technology. Industry estimates suggest that by 2029, the global Industry 4.0 is anticipated to grow to US $377 bn. with India accounting for more than 10 per cent. Additionally, US $957 bn. is estimated to be derived from AI in the next 15 years in the country with an incremental employment opportunity for 60 mn. people.[50] What this major change means for the future of businesses in emerging technologies globally is clear – there has never been a better time to upskill with the relevant skills to meet the challenges of Industry 4.0 head-on. The best way for the Government to stay ahead of the digital curve is by making sure the skills of workforce are up to speed. This could mean linking with local universities, vocational education and

[50] Bloomberg, Morgan Stanley, ILO

training providers to shape the skills industries need and inject fresh ideas into the business as well as reskill the existing workforce to adapt to the requirements of the digital economy.

According to the World Economic Forum, on average, workers can expect that two-fifths (39 per cent) of their existing skill sets will be transformed or become outdated over the 2025-2030 period.[51] AI and big data top the list of fastest-growing skills, followed closely by networks and cybersecurity as well as technology literacy. AI and information processing technologies are expected to have the biggest impact in terms of transforming businesses and skills, followed by the use of robots and autonomous systems. Generative AI (GenAI), in particular, has witnessed a rapid surge in both investment and adoption across various sectors. Since the release of Chat GPT in November 2022, investment flows into AI have increased nearly eightfold. This influx of capital has been accompanied by investment in the physical infrastructure needed to support these emerging technologies, including servers and energy generation plants. Consequently, by 2030, the fastest growing job-roles in the country include Big Data Specialist, FinTech Engineers, AI and Machine Learning Specialists and Software and Applications Developers.

According to the World Economic Forum, given these evolving skill demands, the scale of workforce upskilling and reskilling expected to be needed remains significant: if the world's workforce was made up of 100 people, 59 would need training by 2030. Of these, employers foresee that 29 could be upskilled in their current roles and 19 could be upskilled and redeployed elsewhere within their organization. However, 11 would be unlikely to receive the reskilling or upskilling needed, leaving their employment prospects increasingly at risk. A growing focus is therefore required on continuous learning, upskilling and reskilling programmes, enabling companies to better anticipate and manage future skill requirements with special emphasis on Industry 4.0.

In response to the expected AI disruption, reskilling and upskilling of the existing workforce to work more effectively alongside AI emerges as the most anticipated workforce strategy. In this regard, the State's envisioned AI University will serve as a cornerstone in the State's efforts in technological and educational advancements in the country. To empower the future workforce by integration of technology into education, the University should closely work as a Hub to the district-level CoEs, Model ITI and Polytechnics as Spokes to create opportunities for innovation and growth at a grass-root level. All such CoEs and Model ITIs and Polytechnics must have close to 70 per cent of their programme offerings aligned with the Future of Jobs with special emphasis on area like Technologies such as Cyber Physical Systems (CPS), Industrial Internet of Things (IIoT), Cloud Computing, Machine Learning, Cybersecurity and Data Analytics.

The University along with the district-level CoEs should be focused on creating widespread and definitive awareness of the industrial revolution among the Indian manufacturing industry, as well as creating talent and skills in the Industry 4.0 among the State's youth. These network of CoEs could offer state-of-the-art facilities in Industry 4.0 covering a wide area of topics related to AI, PLCs, IoT, Sensors, Robotics and SCADA; facilities for upskilling/ reskilling of workforce, faculties and industry personnel; industry collaboration for internships, placements, curriculum design, certifications etc. Programmes may include graduate and post-graduate courses in AI-ML, IIoT, Smart Manufacturing & Automation, Digital Manufacturing, Cybersecurity, AR/ VR, additive manufacturing, VLSI, 3D Printing etc. Dedicated facilities for experiential learning may include labs for IoT, AI-ML, FinTech and Cybersecurity, Robotics, Sensors, 3D Printing, AR/ VR, SCADA, Advanced Electronics and Electrical etc.

While technical skills continue to be the cornerstone of the fourth industrial revolution, complementing these technological skills, creative thinking and two socio-emotional attitudes – resilience, flexibility, and agility, along with curiosity and lifelong learning – are also seen as rising in importance. These skills highlight the need for workers who can lead teams, manage talent effectively and adapt to sustainability and green transitions in an increasingly complex and interconnected world. While such skills are critical and are envisaged to be more important in the years to come, all such diploma, graduate, and post-graduate courses must mandatorily have such modules. These emerging skills represent areas where businesses may need to anticipate growing demands and develop capabilities before they become critical.

[51] "Future of Jobs", World Economic Forum, 2025

As disruptive technologies within Industry 4.0 transform job requirements, building workforce capabilities and shifting mindsets through upskilling/ reskilling of the existing workforce is vital. As employers are increasingly focusing on work experience and experiential learning over traditional credentials like university degrees, there is a growing recognition that practical skills and cognitive abilities may be more indicative of future job performance than formal educational qualifications. Consequently, regular labour market studies and training needs assessments need to be conducted, as the anticipated need for training varies significantly across industries and geographies. However, the share of employees estimated as unlikely to receive upskilling opportunities is somewhat uniform across industries, suggesting that while the demand for skills may vary, access to reskilling and upskilling opportunities remains constrained. Consequently, a strong need is also felt in enhancing the capacities for reskilling/ upskilling for such disruptive technologies in the State through Government-led and industry-driven certification programmes.

P. Media and Entertainment

The future of skill ecosystem of the State will be incomplete without adding a dimension of skilling in media and entertainment sector. The modern generation of youth aspire to choose media, journalism and entertainment domain as a career. Today media and entertainment sector has passed beyond INR 2.55 trillion, as in 2024, and is anticipated to reach INR 3.08 trillion by 2026.[52] With the current trajectory the M&E sector in India is expected to cross INR 4.5 trillion by 2030, with a CAGR of close to 10 per cent. Being the hub of entertainment industry of the country, and with several natural, cultural and religious tourist destinations in the State, Maharashtra offers unparalleled opportunities in training the interested youth and artists in the film, media and entertainment sector. M&E sector opens up large opportunity for local employment, film and entertainment industry, media (including digital, print, electronic, social media etc.) economic activities for tourism and hospitality, art & craft and culture and heritage in the current decade.

With globalization of economies and services, the geographical borders seem to have been blurred by technological advancements. Therefore, building pool of talent with skills at par with international standards, if not better, is extremely important and developing courses with this in mind shall prove to be crucial. Higher standards need to be set in the creative curricula of schools, which will stimulate students in their creative talents and further motivate them to pursue their interests. At a post-graduate level, research projects based upon industry challenges could be offered that are practical in nature, such as budgeting crises, data privacy concerns, licensing requirements, etc. The academic curriculum can have apprenticeship and internship opportunities constructed with objectives pertaining to school-level expected outputs, in the M&E sector companies. The opportunities could be spread across various departments and disciplines along with established mentorship programmes that connect PG students with experienced professionals. RPL could be offered to talented individuals with experience in film and TV production in areas including Performance and acting; Animation and visual effects; Digital media and content creation; Advertising and public relations; Journalism and media communication etc. Bachelor's courses could include Bachelor of Design – Product Design; Bachelor of Design – Sustainable Fashion and Textile Design; Bachelor of Design – Communication Design; Bachelor of Media and Communication with specialization in Animation; B.A. in Film Making and Production etc.

Additionally, district-level CoEs could be remodelled as a CoE focusing on the M&E sector towards developing dedicated capacities among the Marathi youth in the areas of advertising, public relations, marketing, sales, journalism, content management, photography, creative writing and event management. The state could take a lead in designing diploma, advanced diploma, and degree courses, together with NSDC and NCVET and the Media and Entertainment Skill Council (MESC), in the areas of integrated brand management, television production and programming, social media marketing, public relations and talent management, event management, VFX, radio programming and film production techniques. Just as the industry has become driven by innovation and technological possibilities, all such programmes should have integrated modules focusing on innovation, non-cognitive skills and advanced digital literacy to provide a holistic professional development of M&E personnel. The State should also tie up with international M&E players to prepare international content and at the same level, offer ToT program by

[52] Media & Entertainment SSC, KPMG Analysis

exploring the possibilities of joint certification by international players. The sector also offers unparalleled opportunities for entrepreneurship as hair-dressers, make-up artists, layout designers etc. and would accordingly scale up the capacities for RPL in such job-roles to a minimum of 20,000 every year.

Q. Beauty and Wellness

Extremely fragmented with more than one million outlets, the Indian Beauty and Wellness industry currently employs close to about 12.3 million people. While the sector is largely considered to be geography agnostic, in terms of GVA contribution of the individual states by the Beauty and Wellness industry the state of Maharashtra currently leads with close to 13 per cent share and provides employment to about 1.1 million people, accounting for about 8.7 per cent of the national workforce in the sector. The sector is anticipated to provide an incremental employment of close to 1.2 million people between 2022 and 2030 in Maharashtra, highest among all states of the country, thereby more than doubling the workforce in the sector of the State.[53] Some of the key initiatives that may be undertaken to improve the skill development ecosystem within the sector of the State include the below mentioned.

1) **Enhanced courseware for niche and new areas:** There has been attempts to address the negative perception and the fear of lack of a career pathway associated with the Beauty and Wellness industry through various initiatives over the years. Lack of integration between formal education and vocational/ skilling courses in the sector also tends to decrease the aspirational value of TVET programmes in the sector, thereby hampering the expected increase in enrolments. While there has been further attempts towards mainstreaming vocational education through the introduction of B.Voc and M.Voc and even B.Sc. and M.Sc. in Beauty and Wellness, there has not been many takers for these programmes due to lakh of awareness about career pathway and limited seats offered.

   A need is also felt to design more such B.Voc and M.Voc courses with multiple entry and exit points and with application-based studies in areas such as Beauty Culture and Cosmetology; Yoga and Ayurveda Dietetics; Sports Nutrition and Physiotherapy; Beauty and Fitness; Salon Management; Beauty Therapy and Aesthetics; Aesthetic Dermatology; Beauty, Cosmetology, Hair Dressing and Makeup; Spa Therapy etc., rather than focusing on only theoretical knowledge. Academic content of TVET programmes should also be increased in favour of new and niche services, thereby facilitating students to move between the two streams and continue higher levels of education not only through B.Voc and M.Voc but through all Bachelors/Masters/doctoral programmes. There could be alternative pathway to bachelor's through completion of a one-year ITI programme followed by another year of equivalent industry experience.

2) **RPL for informal workforce:** As already highlighted, more than 60 per cent of the workforce in the Beauty and Wellness industry of the country are school dropouts with minimal or no access to even vocational education. Many of these work in the unorganised sector, where, despite possessing the required skills in varying degrees of competencies, skill levels are highly underreported. Significant proportion of learning for such workforce happens on the job, which is difficult to quantify and certify. While candidates with industry-specific skilling and certifications have been able to gain skill premium, workers without formal certification of skills are often deprived of a wage premium despite equivalent or even better skills standards.

   Here RPL can act as the desired option for enabling the existing untrained/ informally trained workforce to become certified. This will on one hand improve the productivity and ensure reduced dependency of labour market on non-formal and informal workforce against a skilled one on the other. Development of RPL framework, whereby current workforce across subsectors within the Beauty and Wellness industry can register and be certified by the B&WSSC, can go a long way in increasing the employability quotient of such workers. This is a critical step to increase the outreach and access of RPL to boost the morale of those who may not have a complete schooling but have been a part of the workforce over the years. However, at the same time, it is important to offer higher NSQF level courses under the RPL framework and there is a need to expand eligibility to those already in the formal workforce (seeking re-skilling and part times) and for being prepared for the upcoming challenges.

[53] Beauty & Wellness Skill-gap study, 2022-30, Beauty and Wellness Sector Skill Council

3) **Promotion of female entrepreneurship:** Under the initiative, young female entrepreneurs in the Beauty and Wellness industry could be provided with new and improved business management skills to run their enterprises successfully. This could focus on enabling female entrepreneurs to develop concrete business ideas, develop a bankable and investable business plan, develop skills and improvement plans in procurement, stock control, marketing, costing, record keeping, business planning and resource management, and develop a business growth strategy. Small groups of 10-12 women entrepreneurs could be formed to share their experiences, lessons, knowledge, and support to help enrich each other's businesses. Monthly technical assistance programmes in the sector could be held to focus on improving marketing and communications, growth planning, leveraging investments, managing businesses and family obligations etc.

4) **R&D and innovation across domains:** Focus on R&D and innovation will not only help the sector move up the value-chain, but also help improve perception about the industry within the community as an economic driver and not merely an employment provider for disadvantaged and disengaged youth. On the research and development front, sustained efforts are required in undertaking cutting edge research in the areas like biology of hair, skin, teeth; dermatology; product ingredients; product innovations and testing; product development according to age, gender, ethnicity, geography, lifestyle, health and well-being; B2B analytics; digital interventions etc. Enhanced focus is required in such interventions including involving focus on R&D in TVET in the sector, institutional arrangements for R&D through regional incubation hubs, R&D centres, CoEs focusing on such product, technology and innovations etc. Such interventions by the Government, through industry involvement, could go a long way in not only making R&D the bedrock of the sector but also making the sector aspirational among the youth.

5) **Improved perception of the sector:** Awareness needs to be created among the school students through vocational education in the sector during secondary school education, creating awareness of opportunities in the sector. Further, inclusion of Beauty and Wellness in Home Science option can be considered. The Government must encourage Beauty and Wellness courses as an option in popular ITI institutes to avoid isolation of the industry-related courses. It would be equally important to engage with the students and candidates to understand their aspirations and aptitude for the sector and set the job expectations right. There has to be a paradigm shift in perception regarding the sector, and parents and students have to look beyond traditionally preferred sectors and jobs.

   Successful image-promoting activities that accompany programmes emphasising both aspects—the potential economic benefits arising from participation in the sector and the effects on identity and social recognition would go a long way in enhancing employment in the sector. This means that they can be particularly fruitful if they manage to involve trustworthy partners in their measures. Accordingly, local personalities should be encouraged to come forward and narrate their experiences with the larger communities and encourage youth participation in the sector.

   Another key area of focus for improving the image and perception of the Beauty and Wellness industry of the country would be to improve and enforce regulatory measures to govern quality standards, particularly among the unorganised entities in the sector, and address issues around credibility. This can be enabled through tailored guidelines for various segments of the Beauty and Wellness industry, and handholding such units through the process of accreditation to result in higher acceptance within the industry. Such seals of accreditation and quality are certificates that are, analogous to brand labels, awarded to make high quality visible for companies and individuals seeking education. Additionally, enforcement of quality guidelines and regulations, continuous monitoring and punitive action against defaulters, and raising consumer awareness regarding accreditation could go a long way in improving compliance and enhancing the credibility of the Beauty and Wellness industry.

   Finally, media could play a significant role in cleansing the Beauty and Wellness industry of the societal stigma associated with the sector. Conceptualising contest-cum-TV reality shows (in the lines of 'MasterChef' or 'Khana Khazana' in culinary sector), integrating a 360^{o} promotional campaign and communication plans for the sector across electronic, print, digital and social media, involving role-models and celebrities from the sector in generating awareness about the new and niche areas in the sector and employment opportunities in them, setting up collaboration platforms for candidate

mentorship in the sector, identifying, recognising and rewarding aspiring and early-stage entrepreneurs in the sector, sharing of success stories etc. could be implemented to promote the industry as well as TVET in the sector among the youth.

3.4.5. Developing the State's first World Skill Centre (WSC) on advanced manufacturing and automation

The country's second most industrialised State and leading contributor to manufacturing, Maharashtra accounts for 20 per cent of India's industrial output.[54] However, over the past two decades, the services sector grew rapidly without a significant manufacturing boom in the State, unlike other countries where the manufacturing growth precedes services. Going forward, growth in the manufacturing is a must if the State wants to achieve the projected one trillion USD economy by 2030. With the right measures and rigorous execution, the State's manufacturing sector has the potential to exceed one trillion USD by 2047. Today, manufacturing employs 50-60 mn. people in the country, and even with a conservative projection has the potential create an incremental 85 mn. jobs by 2047, with the State touted to account for a quarter of the same – a big boost for income and a multiplier for economic growth.[55] However, achievement of such ambitious targets is also contingent on the way human beings are skilling themselves such that the workforce has the right skillsets by way of improved learning.

The manufacturing sector expects to undergo transformation shaped by increased investments to reduce carbon emissions and adapt to climate change and rising cost of living. The State's technology stack is a leading example of digital disruption at scale and showcases Maharashtra's capabilities for innovative solutions. Opportunities are emerging in renewables, aerospace, and hi-tech semiconductors as the world transitions to a green and connected future. A similar innovative leap in the manufacturing sector, oriented toward the next generation of smart industrial clusters, connected factories, high-productivity assets, and end-to-end value chain transparency, and tech-enable real-time interventions will be big differentiators. Consequently, the future of manufacturing sector of the State will depend on how easily our education systems are able to respond to such structural changes in economies and the resultant fourth industrial revolution and technological breakthroughs.

A World Skill Centre (WSC), focusing on advanced manufacturing, automation and sustainable and green practices, can be the State's answer to such high-end and future-aligned skills to emerge as the global manufacturing powerhouse. The WSC's core objective could be to bridge the skills gap by providing world-class training, equipped with cutting-edge laboratories, state-of-the-art simulation tools, and specialized industry-focused programmes. By aligning with global industry standards, the WSC could ensure that individuals are prepared for the evolving demands of the job market, fostering a highly skilled and competitive workforce. Proposed to be established in a PPP mode, the WSC could be established within the vicinity of a key industrial cluster, including Mumbai Metropolitan Region (MMR), Pune Industrial Cluster, MIDC industrial Areas Amravati.

The WSC could be conceptualized to offer industry aligned training programmes in partnership with local and global industries to design curricula that meet current and future workforce demands, with emphasis on the high-demand sectors within manufacturing (Smart manufacturing and automation, AI-ML, Robotics, Green Energy, Advanced Manufacturing, Precision Manufacturing etc.). It could offer state-of-the-art facilities with modern labs and workshops equipped with advanced tools, machinery, and technology for hands-on training, real-world work environments for practical learning and digital classrooms incorporating e-learning platforms, virtual reality (VR), and augmented reality (AR) for immersive training. The WSC should also emphasize on international partnerships with global organizations to adopt best practices and standards, international faculty exchange and development programmes, language trainings, international placements/ internships, and student exchange programmes.

The programmes/ curricula offered by the WSC would be specially designed jointly with the industry addressing the increasing complexities of modern manufacturing environments, the integration of new technologies, and the growing need for sustainability. Laying emphasis on experiential learning, the curriculum would be rationalized incorporating industry internships, OJT, and immersive learning

[54] Govt. of Maharashtra
[55] KPMG Analysis

methodologies. Courses could be tailored to different levels of expertise, from beginner to advanced, and can be offered as short-term workshops, certification programmes, or full-fledged diploma/ degree/ post-graduate courses in the areas of Additive Manufacturing (3D Printing); Robotics and Automation; CNC Machining and Precision Engineering; Smart Manufacturing and Industry 4.0 (Smart Factories, IoT, Cyber Physical Systems, Data Analytics and Big Data in manufacturing); Mechatronics and Embedded Systems; Advanced Welding and Joining Technologies; Digital Manufacturing and CAD/ CAM; Quality Manufacturing and Lean Manufacturing; Micro and Nano Manufacturing; Green Energy and Sustainability. Additionally, courses could be provided in teacher training covering the broad areas of Pedagogy Strategies; Assessment Techniques; Curriculum Design; Counselling, Mentoring and Coaching etc. The WSC could act as the Hub for all staff capability development initiatives with the Model ITIs/ Polytechnics spread across the State acting as the Spokes.

With a proper blend of traditional manufacturing processes and digital technologies like advanced automation, IIoT, robotics, 3D printing, AI-ML, enhanced M2M, the WSC could offer access to Smart Factories. Such smart factories could offer real-time aspects of application and performance across production line and supply chain offering flexible, adaptive, and proactive production. The WSC should also provide impetus to R&D in the manufacturing sector through collaborative research by partnership with universities, research institutions, and industry leaders to conduct cutting-edge research in advanced manufacturing. Innovation labs could be established equipped with the latest technology for prototyping and testing new manufacturing processes. Demonstration centers could be set up to showcase the latest manufacturing technologies and their applications. A Technology Innovation Hub could also be conceptualised promoting product design and prototyping; R&D facilities; plug-and-play infrastructure; mini production centres; collaboration platforms etc.

3.4.6. Conducting short-term trainings and RPL at sourcing clusters and regions

Migration from rural to urban areas for jobs is a phenomenon that cuts across sectors and states. Interestingly, about 53 per cent of the inbound migration that happens in Mumbai comes from within the State.[56] Consequently, most of the migrants who seek entry level jobs are often unskilled and the cost of living in urban areas and new environment often deter them from training. Hence, an integrated effort from employers, training providers, and Government bodies like Panchayats, DICs, DSCs and district administration to train people at the source i.e., cluster level or specific geography could help mobilize more people to take up training, as well as would ensure gainful employment of the beneficiaries at the local level post completion of trainings. Since in a cluster-based skills development model, workers are equipped to seek employment in multiple enterprises in many parts of the cluster, this could also help in arresting forced migration. Additionally, often, the presence of skilled manpower also acts as a catalyst for additional workers with the same skills, thus making those clusters vibrant sources of gainful employment.

Attracting, training, and retaining people from a broad range of labour sources into quality workplace environments would also empower the regional businesses to meet their potential and maximise the opportunities that the growing demand for new industries provide. So, it is win-win situation for both the employer and employees. Once the employees, who would wish to migrate for even better opportunities, reach the cities for jobs, they would not have to invest in training and would be paid premium salaries, and the employers also get day-one ready employees and can cut down on time and resources in training them. For example, primary interactions suggest that a majority of textiles workers moving to Amravati, Thane, Solapur, Kolhapur, Nagpur, Nashik, Pune, and Nandurbar come from the districts of Gadchiroli, Ahmednagar, Akola, Shambhajinagar, Yavatmal, Washim etc., and hence it is important that training centres are set up there so that more and more students take up vocational training in the textiles sector in that region. In this regard, the role of MSME clusters in a way of improving employment, productivity, competitiveness and export performance is significant.

The state of Maharashtra already has a vibrant MSME sector with the presence of more than five million registered MSMEs – fourth largest in the country.[57] Consequently, the State could develop dedicated training infrastructure close to (within a vicinity of five kilometres) each such clusters along with common facilities and tailored courses in the PPP route to promote lifelong learning of the artisans and craftsmen.

[56] Census 2011
[57] Annual Report, 2022-23, Ministry of MSME

Training centres could also be developed within the Common Facility Centres (CFCs) in association with the SPVs managing the clusters. In absence of dedicated infrastructure in geographically disadvantaged geographies, the State could allow the training providers/ SPVs to leverage unused Government premises within Government departments, Panchayat offices, GMDICs, local Government schools and colleges, Government tool rooms etc. In such cases, the training provider may only have to pay a nominal 10 per cent of the project value to MSSDS as User Charge Deducted at Source (UCDS) for using government infrastructure.

The State could also offer flexibility and autonomy in terms of program delivery, curriculum design, infrastructure requirements etc. for training centres within clusters that are in geographically disadvantaged areas. Considering the various demographics of the beneficiaries and their commitment to various work/ education, such training centres would have the flexibility in terms of programme schedules and relaxations in infrastructure, as approved. Flexibility could also be offered in terms of programme curriculum to increase opportunities of wage employment by captive business units under the SPV by integrating modules of local business needs as add-ons to NSQF/ NQR approved curriculum. Such additional modules could be designed to be offered in the form of individual specialist training later.

The training facilities should also have collaboration with the local schools, vocational training institutes, ITIs, and polytechnics, thereby providing a steady stream of skilled candidates to be readily hired by the local industries and cluster participants as full-time engagements as well as apprentices. Regional clusters and networks can increasingly be a flourishing environment for innovation processes these days, primarily concerning workforce development and education. At an international level as well, a tendency for a closer collaboration between the fields of R&D, innovation, economic and education policy can be seen. In the field of education policy this has led to new and developed institutions and supplies to address regional development requirements and changing labour market needs. Therefore, regional innovation systems and clusters can best be described as favourable 'biotopes' for collaborative developments in the education sector. All such training initiatives within the clusters would be, hence, primarily initiated by industry, coordinated by the cluster management/ SPV, and funded by the Government, thereby enabling a Triple Helix model of implementation. The development of training infrastructure could either be funded through the central/ State Government cluster development schemes and programmes, or by the cluster management/ SPV or the training provider/ industry. The Government may also facilitate the necessary matchmaking between such training providers/ SPVs with the leading academia and industries from the other parts of the country/ State for necessary collaboration and such trainings, primarily short-term and RPL, should also involve industry visits, exposure tours etc.

Cluster organisations also serve as ‘clearing houses’ for linking the available talent pool to employment opportunities at the local level. In this regard, the State may start an ‘internship challenge’ program to encourage registered small and medium enterprises within such clusters to offer paid internship positions to students and recent graduates from local ITIs, polytechnics, and vocational training institutes, for a period of minimum two months and maximum six months, directed at the goal of enhancing the talent pipeline for the cluster. Under this programme, the State may reimburse the host company (a registered MSME within the cluster) 50 per cent of the salary paid to the selected interns, subject to a maximum of INR 5,000 per intern per month.

The State should also encourage such cluster-level training centres to emerge as mini-innovation centres and provide advocacy activities to promote the general enabling conditions that sustain the sectoral growth and employment opportunities. The State may also incentivise the cluster organisations/ SPVs to organise yearly conferences which highlight the current issues facing their respective industries, including qualified workforce recruitment issues. In this regard, the State may reimburse a section of the cost of organising such conferences and limited to one such event every year. Similarly, the day-to-day activities of these organisations could also contribute to the recruitment and establishment of the companies within the cluster, that would further expand employment opportunities and skills development incentives.

Promotion of RPL: Another area of focus for cluster-based skilling interventions is capacity building of informal and unorganised workers. It may hereby be mentioned that more than half of the population of Maharashtra are engaged in informal sectors. Here, RPL can act as the desired option for enabling the existing untrained/ informally trained workforce to become skilled. This will not only improve the productivity but also ensure reduced dependency of labour market on non-formal and informal workforce

against a skilled one. While the PMKVY Scheme has RPL as one of the key components, where the individuals with prior learning experience or skills are assessed and certified, the same could be integrated with the State's flagship PMKUVA Scheme as well. This is a critical step to increase the outreach and access of RPL to boost the morale of those who may not have a complete schooling but have been a part of the workforce over the years. However, at the same time, it is important to offer higher NSQF level courses under the RPL framework and there is a need to expand eligibility to those already in the formal workforce (seeking re-skilling and part times) and for being prepared for the upcoming challenges. The RPL component of the PMKUVA Scheme should be suitably amended to a blended training model, wherein candidates can assess their skills online, access study materials and if required can approach brick and mortar training institutes to further upskill in a course of their choice. Recognition of the certificates of skills training could also be improved by mandating that at least 50 per cent of workers for any State Government contract must be certified for appropriate skills through RPL or short-term training under the ongoing skill development schemes/initiatives.

Empathy Museum: The State of Maharashtra is inhabited by a large number of castes and tribes, which, however, are not of one uniform mass but present a wide linguistic, ethnic and cultural varieties in various states of economic and cultural development. The confluence and frictionless blending of these castes, tribes, and culture within the State have all led to the origin of a diverse, yet vibrant and utilitarian art and craft form of the State, that range from stone work, wood craft, Paithani sarees, brass and silver work, lacquer work, Solapur chaadar, Kolhapuri chappal, Warli paintings, Puneri Pagadi to name a few - barely known to the world.

In this regard, the State Government could set up the country's first ever Empathy Museum - a platform to spread awareness about the State's rich and vibrant indigenous artform, manufacturing and culture, and educate the people about the skills involved in the manufacture of such products. The museum could involve unique display of such products and artforms through art installations, podcasts, videos and storytelling, talking about the diversity, uniqueness and exquisiteness of the artform. The Empathy Museum could also be integrated with the Maharashtra Tourism programme to further promote tourism - aligned to indigenous manufacturing.

One District One Skill: Considering the demography of the State, it is certain that providing employment opportunities to more than a million youth getting added into the job-seekers population every year is a herculean task. Also, it is not possible for the organised sector within the State and the country to absorb all the skilled youth that the State churns out every year. To reverse this trend, the State could look to the indigenous sectors, trades, craft and culture that could offer suitable livelihood opportunities for skilled artisans and youth across districts. As traditional skills are at the forefront of indigenous identity, culture, heritage, and livelihoods of the State, one skill from each district of the State, that is native to that district, could be identified, protected, preserved and encouraged to enable profitable trade in that skill and generate sustainable employment around it, under a 'One District One Skill' initiative. This is envisaged as a transformational step towards fuelling local economic growth, promoting rural entrepreneurship, and generating employment in the lines of 'Aatma Nirbhar Bharat'. Such idea of transforming districts into export hubs and linking local production houses to global supply chains would, therefore, mandate skill development at the local level.

3.4.7. Enabling professional development of the youth through finishing schools/ life-skills schools/ Skill2Work Studios

To build the workforce of the future–people who can take up the challenges and cope with the requirements of futuristic jobs–the State needs to have a pool of workers that are not only technically proficient at their jobs, but also have the necessary soft skills and behavioural outlook to keep up with the challenges of working in any job, in any location. Migration of workers due to economic reasons is a major issue in any State wherein jobseekers often travel to other states (often far away states) in search of jobs. However, many of them struggle to cope with the modified work and living environment due to not having adequate life skills to adjust to different situations. A lot of such workers that are unable to adapt and adjust quit their job and return to their home location, sometimes even without jobs at hand. One important aspect that needs to be a part of skill development curriculum is training candidates to adjust or adapt to lifestyle changes when one needs to travel to other places for jobs. Since people often must

travel to other locations and even other states for jobs it is imperative that they are trained to adapt to the lifestyle, culture, food, people etc, of the location.

Other than migrant workers, workers in the State have also seen to be struggling to keep up with their job requirements in terms of soft skills, digital literacy, communication skills. A socially responsible system of education must have a cardinal focus on developing life skills including non-cognitive skills in students as they are the most important building blocks for a dynamic citizen, who can cope up with future challenges, and survive. With the fast-evolving nature of jobs there must be a focus on building such life skills including non-cognitive skills to help workers match the requirements of jobs through not just technical acumen, but the ability to adapt to any situation or demand of the job having been equipped with extensive life skills. Often conventionally skilled workforce lags behind in these areas and loses potential to get employed even if one is technically strong.

According to the State, at the entry level, major focus is on providing technical skills related to the job (67%), followed by communication skills (22%), personality development (20%) and proficiency in computer skills (16%). Whereas at the mid-level, the focus of training on communications skills (32%), personality development (30%) and proficiency in computer skills (27%) increases considerably. At the senior level, greater emphasis is provided on proficiency in computer skills (27%), training on management / people management (26%), communication skills (26%), personality development (22%), training on leadership skills (21%) and proficiency in English (21%). Nonetheless, employers across all sectors have acknowledged the limitations on inter-personal skills and communication skills among the youth, as constraining their effective performance of work. Therefore, MSSDS needs to consider designing a targeted intervention on improving the soft-skills and employability skills of the State's youth. MSSDS can learn from the experiences of other States in this regard, and develop a custom-pack of the interventions, encompassing 21st century employability skills and soft-skills, in addition to spoken-English and basic information and communication technology (ICT).

While life skills are part of curriculum in ITIs and some short-term training courses, including the State-sponsored PMKUVA, in line with the NEP, they are often side-lined with respect to the technical courses which are offered much more focus in these programmes. Consequently, the integrated life skills building aspect in these curricula, without standalone focus and assessments, are often overlooked by the candidates rendering their intended impact inconsequential. A standalone programme dedicated towards building best-in-class life skills and soft skills for the candidates in the State could help integrate such skills among the students and worker pool in the State. Candidates from ITIs/ skill development institutes could all benefit from the exclusive focus on building life skills that would be offered by a standalone programme dedicated to the cause.

The State could also set up dedicated Skill2Work Studios/ finishing schools/ life-skill schools–institutions focused only on building best-in-class life skills for personality and all-round development of students and jobseekers in the State, in CoEs, ITIs and Polytechnics of the State, ensuring that there in one such institute in each block. The proposed institutes could aim at training about a lakh youth per year and could target to equip all graduate level students and students of ITIs, Polytechnics, vocational training institutes and skill development institutes within the State with necessary skills. The institutes could offer various courses in life skills including critical thinking, emotional intelligence, financial literacy, digital literacy, business etiquettes etc., as well as need-based proficiency in foreign languages, that are beyond the State and NSDC mandated curriculum but are integral to the strengthening of the ability of the candidates to meet the needs and demands of the present society. It could tie-up with leading global institutions such as Life Skills University Singapore, ITEES, British Council for course content and curriculum design, special sessions etc., as well as relevant industry partners and life skills partner for programme delivery, assessment and certification of candidates.

Another broad agenda for the Skill2Work Studios of the State could be to create a cadre of AI-ready workforce through adequate reskilling/ upskilling initiatives of early-career and mid-career professionals. In the future, most jobs will use AI, with some tasks fully automated and others made easier and more efficient. Specific courses could be designed in collaboration with the IT-ITeS SSC and the MeitY aiming at the reskilling/ upskilling of the workforce. Through such initiatives, foundational AI skills could be provided universally to everyone and across all sectors preparing them for a dynamic job landscape with changing demands.

The institutes could be an initiative of the State Government and work in a hybrid offline/online model. There could be provisions of online classes for special sessions/ seminars with industry people/guest lectures with personnel from industry or global academic institutions. Students, on successful completion, could jointly be certified by the partner organization, and the MSBSVET. Some of the modules and areas of focus could include communication and presentation skills; people management skills; stress management; leadership skill development; public relations and personal grooming; change management; personal branding, grooming and behaviour; work ethics and culture; diversity in workplace; team management and team building; digital and financial literacy.

Primarily a government-driven initiative, the majority of courses could be offered free of cost to existing students of ITIs/ Polytechnics/ vocational training institutes/ engineering and other technical institutes, with provisions for advanced skill training and need-based language training for entry-level and mid-career professionals at nominal fee should they desire to upskill themselves. Teaching-learning could follow effective methods including conversation simulations; scenario-based learning; role-plays; instructor-led workshops; synchronous and self-paced online soft-skills trainings; team building and peer learning; assessment and performance tracking etc.

3.5. Inclusivity: Ensure 'Inclusivity' for all sections of society in skill development

TVET policies and programmes are of core importance to ensure that all people can enjoy inclusive skill development leading to both individuals' affirmation and the creation of diversified learning environments. TVET has long played a crucial role in ensuring pathways to further learning or employment for disengaged youth from socio-economically backward communities, school/ college dropouts, students who are the most geographically disadvantaged, migrant workers, marginalized workers, PwDs etc. This makes particular sense for a state like Maharashtra, a land of veritable cauldron shelters, involving highly diverse population compositions in terms of ethnicity, religion, geographies of origin, and culture. Consequently, the success of the State's skilling interventions would depend upon how effectively and quickly the State initiates the transformation enablers towards embracing an inclusive skill development ecosystem within the State.

While, according to training data, the proportion of students studying in TVET courses across all disadvantaged communities has increased over the last decade, there has been minimal change in participation by PwDs and students from remote or very remote areas within the State. Hence, if on one hand, the TVET system of the State can justifiably claim that a large number of disadvantaged groups are well catered for, there are, on the other hand, still opportunities for the State towards extending TVET to cover a more inclusive society.

3.5.1. Facilitating vocational education for tribals and PwDs with a slew of targeted reform measures

Inclusivity is an essential element for public policies across the globe, with Governments supporting interventions that aim to improve lives of disengaged or disadvantaged or disabled. Vocational education and trainings provide pathways to further learning, employment opportunities and a 'second chance for learning' to people from such disadvantaged backgrounds. Inclusion leads to improving confidence, self-respect, interpersonal and life skills, and engagement with the larger community. It facilitates changes at systemic level that enables people to start participating in skill development activities. This makes all the more significance for a State like Maharashtra, the home to the second largest tribal population (1.05 Cr.) in the country after Madhya Pradesh, many of them being first generation learners, and the second largest Divyang population of the country after Uttar Pradesh.[58]

Even, the problems faced by the PwDs are multifaceted, the most significant being that they are universally perceived to be less productive, resulting in a lower market wage and lower economic participation among the PwDs. Incidentally, according to industry reports about 43 per cent of the disabled population of the country are employable and only about 26 per cent of them are employed as in 2021[59] – an area that would require a mix of encouragement or outreach programmes, increased community interactions, special arrangements for entry, training participation, and provisions for financial,

[58] Census 2011, NSSO 75th Round
[59] https://unearthinsight.com/

academic, personal and social support, to mitigate. Consequently, recognizing the importance of creating such inclusive culture, inclusive policies and inclusive practices in higher education and vocational education in order to improve access, quality of life and economic growth of tribals and PwDs, the State could act through the initiatives as given below.

- **Generating awareness via targeted campaigns:** The State recognizes the importance of the enablement of youth through appropriate skill trainings and furthering in entrepreneurial routes thereby creating succinct pathways to spurring inclusive growth through vocational education. In this regard, the State could launch a targeted campaign to enable the different ethnic groups and disadvantaged communities to formally acknowledge the importance of vocational education, and to communicate the larger vision of the State on empowering disadvantaged communities by increasing their participation in skilling and employment.

  To accomplish these distinctive activities, the State could set up a taskforce of around 8-10 members at the block level, called 'Change Agents', working voluntarily (or through some alternative arrangements under the MGNREGA), comprising local influencers, mobilisers, WSHG members, Anganwadi workers, local role models, entrepreneurs, local NGOs, social workers and sympathisers, Panchayat workers, local schoolteachers etc. Key activities could include educational campaigns on themes such as diversity and inclusion, disability awareness, busting myths around training and employment, relevant trades, incentives on participation in vocational education, key entitlements and benefits under such programmes etc. This would also involve personal campaigns involving a mix of interpersonal ('doo-to-door' participatory approach) campaigns to break stereotypes, myths and perceptions among tribals, disadvantaged communities and PwDs about vocational education and employment opportunities thereafter.

  The initiative should also target breaking the stereotypical thinking of the society at large that persons with certain types of disabilities should only be given access to selected training options, disregarding their abilities and aspirations. Such initiatives should also include involving champions as role models, such as instructors who have included students with disabilities in their classrooms; developing partnerships with disability organizations to mobilize and motivate PwD students and their families; celebrating the International Disability Day and having disability experts speak during such events; motivating students with disability graduating the State's TVET to become role models for mobilizing more such students.

- **Enhancing access to skill training with reservations for PwDs:** Equal access to TVET for someone with disability is a human rights issue of major concern. The society and the Government have the obligation to remove hurdles by making the physical environment useable, information accessible, legislations and policies implemented, and the attitudes about disability rooted on acceptance of diversity. Hence, towards extending the Government's commitment in disability inclusion in TVET, the State could increase the reservation of PwDs in all Government and Government-aided TVET institutes to six per cent, while allotting remaining seats as per the State or Central norms.

- **Tribal skill development centres in Aspirational districts:** For decades, tribes and native communities have been striving to create education systems that are reflective of the tribal community's needs, enable tribes to own responsibility for the development of their students, and empower communities to educate their students consistent with their values. Tribal skill development centres are generally innovative centres that are often not traditional skill development centres and seek to fulfil the needs of native students through unique models. Accordingly, such tribal skill development centres could be set up in each of the four Aspirational districts of the State, that cumulatively account for about a third of the State's tribal population and could cater to students of neighbouring districts as well.[60]

  There are two distinctions in a tribal skill development centre - the first is recognition of tribal skills and strengths and providing programmes that are most suited to their aspirations, aptitude, and physic. The second distinction is that tribal skilling is grounded in native epistemology – native ways of knowing and believing. A distinctive native education system, guided by native epistemology,

[60] Census 2011

creates an environment that meets the student's needs academically, socially, culturally, psychologically, and spiritually. As such tribes often face unique challenges such as geographic isolation and socio-economic marginalization, tailored education and skill development initiatives may include such short-term certification courses that make advantage of their unique physical and mental strength while also providing them much-needed exposure to newer technologies and education systems. Financial assistance through a term loan scheme may also be provided to eligible candidates for undertaking any income generation activities/ self-employment via such centres through linkages with NBFCs.

- **Capacity building of instructors:** Including persons with disabilities in classrooms would also require instructors to apply their teaching methods with due consideration to the diverse needs of the students. The focus should be on the use of an individualised approach as well as disability etiquette and disability-sensitive communication, multi-lingual program delivery to overcome language barriers, and inclusive delivery and assessment methodologies by them.

  Recognising such emergent need for skills among instructors, including the use of sign languages, demonstrations, role-plays, disability etiquette and behaviour, special training programs could be designed for such instructors, providing unique facilities and giving different examples of assistive technology designed specifically to empower future teachers. On similar lines, MSSDS may focus on policy analysis, research, advocacy for subjects related to PwDs inter-alia, and assist in developing body of work and research for training people with disabilities for future references. MSSDS may explore creation of an assistive technology lab to support the think tank's efforts in providing pre-service instructors with exposure and experiences with assistive technology so that they are equipped to empower individuals with disability. The State may also take a lead in designing such PwD-aligned adaptive pedagogy, curriculum, instructional delivery trainings, e-content etc. for persons with disabilities/ impairments.

3.5.2. Providing migration support with destination-specific migration counselling centres and community hostels

The contribution of migration in sustaining rural livelihoods in any State/ Nation can never be denied, particularly in developed States like Maharashtra.[61] With declining agricultural incomes across most states, and inability of rural households to sustain with farming alone, rural Maharashtra is witnessing large-scale outbound migration, leading to the emergence of what one should term 'migrarian' livelihoods. Incidentally, according to estimates, migration within the State is almost five times than that from the other parts of the country, although the rate has declined due to improved access to various amenities in the rural hinterland and improvements in their connectivity and level of economic activities.[62]

While there is no reliable account of seasonal labour movement at any level of governance, the major target destinations include the urban agglomerations of Mumbai, Pune, Nashik, Nagpur, Amravati, Thane, and Shambhajinagar, with about 53 per cent of the migrants in Mumbai from within the State alone. These streams are diverse, organized across particular industries of work, and have identifiable social footprints through tribes or castes practising specific kinds of migration over time. In addition to seasonal migration to Mumbai during the agricultural off-season, a notable stream of intrastate migration is from the drought-prone Marathwada region to districts such as Kolhapur, Satara, Solapur and Sangli, to work as seasonal migrants. Other streams include migration for fisheries in the Konkan region and short-term migration in sand mines, stone quarries and limestone caverns of eastern Maharashtra.[63]

It is widely seen that such migrant workers often face various challenges in accessing quality and demand-oriented training and decent jobs, such as under-utilization of skills, lack of information, lack of training and employment opportunities, and exploitation of low-skilled workers. In many instances, being less familiar in their new environments in urban conglomerations in which the migrant workers temporarily live, they are prone to various social, psychological, and emotional trauma in such situations, emanating from the fear of neglect by the local community and concerns about wellbeing and safety of their families waiting in their native places. These are perhaps the most marginalised sections of the society who are

[61] Census 2011, KPMG in India Analysis
[62] Census 2011, Govt. of Maharashtra, International Organization for Migration, KPMG in India Analysis
[63] "Improving Social Protection Portability for Migration-Affected Children", UNICEF, 2021

dependent on daily wages for their living, and in times of such distress like the pandemic, need sympathy and understanding of the society. Immediate concerns of such workers on migration relate to food, shelter, fear of discrimination and social exclusion, concerns about the family, anxiety, and fear. Consequently, a strong need is felt to ensure the social, emotional, psychological security, and access to health services of such migrant workers through an institutional mechanism by the Government.

In order to mitigate such concerns, bolster candidates to make an informed and supported migration, as well as facilitate them in integrating with local culture and environment, the State Government could set up Migration Counselling cum Registration Centres (MCRCs) in the major urban destinations including, but not limited to Mumbai, Nashik, Pune, Amravati, Nagpur, Kolapur, Shambhajinagar. Such MCRCs could provide migrants from within the State counselling services; temporary accommodation assistance; identity documentation needs; better job opportunities; post placement support; social/ welfare entitlements; healthcare services; banking services; remittance etc. and function for addressing all such sensitive issues of State migrants on time, along with pre-migration assistance, and even opportunities for upskilling/ reskilling. The key activities would include the below mentioned.

i. Providing temporary accommodation (depending on availability) or accommodation assistance through a network of community hostels for a period of two months from the date of migration. Accommodation could include food, common kitchen, showers and laundry room, medical care etc. at concessional rates.
ii. Developing livelihood competences for migrant workers by skill assessment and certification through RPL under Centrally- and State-sponsored schemes through empanelled training providers.
iii. Providing a range of recreational and psychological support activities including discussions, dialogues, cultural, educational and livelihood initiatives, and psychological counselling with an aim to improve integration and resilience building.
iv. Assisting migrants to develop and gain recognition of their existing skills and learn new ones, improving their capacity to find better work, through job trainings and referrals through industry associations and placement agencies.
v. Empowering migrants with information and advice on safe migration, with awareness on their rights, entitlements, social security, labour laws, laws and procedures related to migrants' rights and responsibilities etc.
vi. Providing free personalised psychological counselling, legal advice, and support services to migrants to enable them to cope with migration-related fear and anxiety, and for a seamless intra-state portability.
vii. Facilitating migrants in emergency situations and providing remedial healthcare support in situations like accidents, casualties etc. at workplace through liaison with local administration as well as the Government.

The State-level MCRCs and community hostel networks could be set up jointly by the SEEID, together with support from the local administration of the destination district/ municipality. Each MCRC could have one programme manager for liaising with local municipality and city administration, industries, industry associations etc. There could be one full-time psychological counsellor proficient in Marathi, Hindi, and local language of the place, and one office executive to maintain records. Such MCRCs and community hostels could include, wherever possible, the engagement of the wider community through activities such as training and awareness-raising on migrants' rights and responsibilities. They could also implement good practices in relation to gender-specific needs for increased sensitivity to problems that many women migrants and returnees face.

District level-counselling facilities could also be set up within the Employment Exchanges, whereby the following could be offered to both intra-state and inter-state economic migrants.

i. Designing and implementing sound labour market information systems, enabling accurate labour market needs assessment.
ii. Mapping skillsets, competences, and education standards of migrant workers and maintaining a dynamic database of intra-state/ inter-state migrant workers from the district.

iii. Ensuring that migrants are able to apply for and obtain the correct documentation and understand the implications of their status.

iv. Conducting pre-migration counselling (need-based) to enable them to overcome migration-related fear, stress, and trauma.

v. Providing them with tools to identify concrete job, study, and scholarship opportunities in the destination state/ geography.

vi. Assisting to build links between the migrants and the state level MCRCs by maintaining continuous dialogues and initiating co-development type activities.

3.5.3. Launching geography specific short-term trainings for international migrants from the State

Migration can be a means to respond timely and effectively to labour supply and demand needs, to stimulate innovation and development in countries of origin and destination, as well as to transfer or update skills, particularly in a State like Maharashtra which has an overall migration rate of 29.3 - higher than the national average of 28.9.[64] Interestingly, about 3.5 million people migrated to other international destinations from the country between 2010 and 2021 and accordingly migration policies and skill development need to be supportive of them. Consequently, the State recognises that early, tailored and need-based provision of training and information is key to empowering migrants and thereby paving the way for their successful integration.

Destination-specific migrant trainings do make a lot of sense given that migration numbers are anticipated to surge due to the favourable demographics of the State's populace compared to other nations and with the State's attempts at the internationalisation of the skilling interventions with the setting up of the Maharashtra International Skill Centers. Therefore, the State should earmark at least five per cent of its skilling capacity for international migrants travelling to countries like US, UK, Singapore, UAE, Canada, Japan, Germany, France, Singapore, Australia and Saudi Arabia, that together account for more than 80 per cent of the international migration from the State.[65] Some of the other key initiatives would include the below mentioned.

- **Providing destination-specific short-term trainings for migrants:** The State recognises the fact that migration is demand-oriented, that migrant workers' rights need to be protected, and hence must enable migrants to integrate into the labour market and destination society through access to education and training. Consequently, migration training includes a wide range of activities that should be designed to prepare and empower migrants for a successful integration in their destination countries. Such trainings, typically delivered over a period of one to three months and as close as possible to the migrants' departure date, may vary largely depending on the destination country and the type of migrant beneficiaries such as pre-employment orientation, cultural integration, language proficiency training and technical or vocational training. Migrant training programmes and curricula could be designed by MSSDS, in association with the concerned SSCs and NSDC and NSDC International, while taking into consideration a range of factors including migrants' cultural, educational and socio-economic backgrounds as well as the specific integration challenges they may face.

  The programmes should provide the migrants with accurate information on the life in the destination country, as well as help them in developing realistic expectations about their future. Such programmes by the State should also manage and oversee global and regional initiatives on migrant integration and trainings, such as diversity, inclusion and social cohesion initiatives, international cultural orientations, and should also include assessment studies and measurement tools to effectively capture the multidimensional integration outcomes of migrants. Special programmes may be designed to develop the skills and awareness necessary for successful integration in a new society by female migrants as well. Such trainings may be delivered through the International Centres as the Hubs and the district-level CoEs and Model ITIs and Polytechnics as the spokes.

[64] Census 2011, NSSO 75th Round, KPMG in India Analysis, India Employment Report 2024
[65] Census 2011, KPMG in India Analysis

- **Focusing on labour market intelligence and needs assessments:** Work to improve skills identification and matching should be effectively combined with broader efforts towards enhancing coherence between employment, skills, education, and migration policies, with the active participation of Government institutions and the social partners. Accordingly, joint working committees could be set up between the MSSDS, Government of Maharashtra, Marathi international clubs/ organizations, global Marathi non-profit institutions aiming to bring Marathi diaspora globally on one platform, and the chambers of commerce in destination countries. Such coordinated efforts will result in better information exchange between the labour market and the education system, thereby providing the basis for up-to-date skills information, forecasting, and knowledge about the areas/ sectors for skilling. Accurate international labour market needs assessments and skills anticipation would therefore help in designing geography-specific tailored programmes.
- **Recognition of internationally acquired skills and qualifications:** The State should also acknowledge the importance of skill recognition for migrant workers who would have returned to the State, and should facilitate the recognition, certification, accreditation and use of skills and qualifications of such migrants through specially designed programmes. The objective is not only to work on the recognition process concerning provisions and procedures, but also on a higher social acceptance of internationally acquired skills and qualifications. Such programmes should focus on training opportunities for adapting the skills of returning migrants to those on demand in the domestic labour market, offer, if available, self-employment opportunities, as well as options for re-integration within the labour market of the state. Overseas returnees also present an added advantage to the State, in terms of gain in knowledge, new skills, ideas and know-how, experience, technology and repatriable funds, and could be adequately onboarded as mentors to potential international migrants.
- **Setting up 'Port of Calling' within the State:** International migration also requires institutional strengthening specially in terms of protection of the migrant workforce from international laws, immigration procedure, health care, workplace exploitation and distress returnees. In this regard, the State may set up an All-Purpose 'Port of Calling' in Maharashtra that would help resolve several issues and ensure seamless documentation, provide necessary information, legal advice, and support regarding labour rights, as well as ensure safety and security of the migrants. The State should also maintain strong ties with various State-led processes, UN agencies and a wide-range of stakeholders who are active and reputed in the field of migration management, such as European Migration Network, UN Migration Network, and the Red Cross.
- **Operationalising international MCRCs:** The State should also be among the first few states in the country to set up international MCRCs/ migration helpdesks in each of the cities of Houston, London, Dubai, Doha, Kuala Lumpur, and New York (cities attracting maximum international Marathi diaspora) that would help international migrants, once they have landed in the destination countries, with foreign language proficiency; integration with local cultures; knowledge of local labour laws; minimum wages and employee entitlements; psychological counselling or job counselling; financial assistance for business start-ups; support for housing or medical needs; connecting with International Marathi organisations; and even return and reintegration options. Such initiatives could be adopted in collaboration with the Ministry of Overseas Indian Affairs and Ministry of External Affairs and their counterparts in the destination countries in the form of joint working groups.

  In addition to these, a knowledge platform, like the European Commission-United Nations Joint Migration and Development Initiative, could also be set up for information sharing and cross-fertilisation of good practices, providing an e-mail distribution list through which questions can be asked of experts in different countries, as well as online forums and blogs to promote sharing of experience and information.
- **International Mobility Agency:** To facilitate effective international mobility of skilled manpower, an Overseas Development and Employment Promotion Agency could be setup under the Skilling/ Employment wing of the SEEID, to be registered under Ministry of External Affairs. The agency could provide migrants counselling services; temporary accommodation assistance; identity documentation needs; better job opportunities; post placement support; social/ welfare entitlements; healthcare services; banking services; remittance etc. and function for addressing all such sensitive issues of international migrants on time, along with pre-migration assistance, and even opportunities for

upskilling/ reskilling. The envisioned agency could have separate divisions including Recruitment Division, Training Division and Travel Assistance Division.

The main objectives of the agency would be: (i) To initiate a contractual agreement between the employer and the candidate, with regard to an employment relationship, which beneficiates both parties (ii)To promote foreign and domestic employment by introducing aspirants to the domestic and international job market (iii)To assess potential job market and give guidance on need-based education available and thereby bridge the gap between requirements of organizations and qualifications acquired by individuals (iv)To function as a matchmaker between the employers and the prospective candidates (v)To provide suitable guidance on Visa formalities and travel regulations (vi) To undertake air ticket booking in domestic and international flights to the best satisfaction of the customers.

3.5.4. Developing a network of artisan villages for a progressive indigenous sector and skills development

Considering the demography of India, it is certain that providing employment opportunities to more than a million-youth getting added into the job seekers population every month is a herculean task for any Government. India has a rich history of heritage, craft and culture and the country before independence was a hub of an informal economy, which got destroyed and demolished by the invaders. Weaving of Varanasi, textiles of Surat, brassware of Moradabad, Tussar silk of Bhagalpur, Makhana and Mithila paintings of Mithila region of Bihar, Dhokra art of Jharkhand are very popular worldwide but are heading towards extinction in the rush for modern economy. Similarly, arts and handicrafts of the State, paintings, lacquer work, brass and silver work, native textiles are world famous. The State's art is the sheer hard work of thousands of unknown, undervalued artisans and craftsperson. These craftspeople are the backbone of the non-farm rural economy of the State. The need of the hour, therefore, is to recognise, rejuvenate and promote these dimensions of the informal economy of the State and connect it to the world market through a network of artisan villages as well as recognise the contribution of such indigenous skills and creative arts to the informal economy of the State. The State has already set up the Tribal Research and Training Institute (TRTI) to undertake research studies on various aspects of tribals and to assess the impact of developmental programmes / schemes on the life of the tribal people.

- **Creating a network of artisan villages:** One of the key interventions towards promotion of the State's rich heritage of indigenous crafts and skills could be the development of a network of artisan villages in major urban locations of the State, including the outskirts/ suburbs of cities in the PPP route. The State Government could also explore the opportunity of integration of such artisan villages within the State-owned industry parks with a reservation of 10 per cent area of industrial parks for such indigenous artisan villages. The State could start this initiative as a pilot project with three such artisan villages in the suburbs of Pune, Nashik and Nagpur by 2027, and could then be scaled up to one in each district by 2030 depending on the success and feasibility of the pilot.

  The artisan villages could be conceptualised as a place where one gets to know the traditions of a community, their historical interests, and skills of making artefacts, with an atmosphere and infrastructure that are very true to their culture. A melting pot of key indigenous crafts scattered throughout neighbouring areas/ clusters, such artisan villages would serve as a link between artisans from rural areas to benefactors and consumers in urban centres, as well as a platform to spread awareness about the region's rich and vibrant indigenous artform, manufacturing and culture, and educate the people about the skills involved in the manufacture of such products. It would also offer programmes and workshops for general masses to learn about the State's crafts from the artisan itself and felicitate a unique exchange of ideas, experience and crafts practice amongst the artisans and designers from diverse backgrounds.

  The artisan villages could also provide platform for Entrepreneurship Development Programmes (EDPs) to upgrade the creativity and productivity skills of rural people of the district in collaboration with the TRTI. In addition to advanced trainings in art and craft practices, the artisans could be trained on business aspects, such as market linkages, credit linkages, financial management, supply chain, quality control, process improvement, digital literacy etc. under the programme, in collaboration with reputed management institutions. The primary objective of this programme is to support and improve

the existing organisational infrastructure that serves to enhance the livelihoods of rural natives in a socially and economically sustainable manner. The artisan villages could also offer platform for developing tinkering workshops for master artisans to experiment and come up with designs catering to modern tastes while blending the spirits of indigenous culture and original designs, in collaboration with industry and academia such as NIFT and NID. Thus, the artisan villages could also act as touchpoints for collaboration with designers and industry from across the country and internationally.

The State could further promote its living heritage and cultural history of indigenous skills, wherein the State could integrate its skilling initiatives with tourism initiatives, by identifying and integrating new tourism circuits involving art and craft villages, indigenous product clusters, creative art form, dance, music, architecture, and cultural initiatives. While traditional handicrafts and indigenous products can be displayed in showrooms in the major tourist hotspots, very few promote the process of producing such items, stories of craftsmen behind it, and the skills involved, hence, commanding a premium price. Consequently, linking tourists to artisans through such artisan villages, could help them understand and appreciate the artform. This could go a long way not only in promotion of the State's unique traditions and the skills and craft behind it, but also in creating indigenous employment to thousands within the State. Therefore, the artisans could also be trained by MSSDS in basic modules of tourism and communications to help them in interacting with tourists, getting them introduced to the local culture, and giving them a picture of the working conditions and mechanisms used by the artisans.

- **Fellowship programme for artisans:** Fellowship programmes for the indigenous artisans in the State could also be launched in the fields of creative arts or for revival of some of the traditional forms of art. In the last few decades, this sector has been facing some grievous challenges including low penetration of technology, lack of capacity building and proper guidance, absence of market linkages and intelligence, and poor institutional framework. These have resulted in a dwindling number of indigenous artisans. The fellowship programme could be designed to provide capacity building and the basic financial support either for very advanced training or individual creative effort for revival of some of the State's traditional forms of arts.

  Under the programme, eight-to-ten artisans from each district could be selected for a six-to-eight-week residential programme, wherein capacity building initiatives could be undertaken in the areas of design, marketing, and technical support to build entrepreneurship skills and business acumen among the artisans as well as enable them to make sustainable changes at the community level. The fellowship should also offer a platform to artisans to foster dialogue, exchange ideas and innovative thinking, and interact with established entrepreneurs, design, and fashion professionals. Under the programme, the artisans should also be offered basic financial support by integrating with the State's other schemes and initiatives to provide the much-needed congeniality of atmosphere and support of the ecosystem for further works in the field.

- **Promotion of indigenous skills:** As discussed, the traditional skills and creative arts are passed on from generation to generation and due to lack of marketability and recognition, these skills run the risk of being lost, since the younger generation do not want to associate themselves with trades which neither give financial stability nor recognition. Consequently, role models from among the fellows (as discussed previously) in indigenous skills and creative art could be recognised and celebrated to create awareness about possibilities in indigenous crafts and arts sector. A district level documentation of ethnic skills and techniques in the form of skills catalogue could be developed by the DICs which would help preserve the knowledge and techniques and provide ready reference for new generation of artisans.

  Traditional skills are at the forefront of indigenous identity, culture, heritage, and livelihoods, of any nation and its transmission from one generation to the other must be protected, preserved, and encouraged to share innovations and practices developed in indigenous communities over centuries. Accordingly, the State could select, promote, and brand one product from each district of the State that is native to that district, to enable profitable trade in that product and generate sustainable employment around it. This is envisaged as a transformational step towards fuelling economic growth, promoting rural entrepreneurship, and generating employment in the lines of 'Aatma Nirbhar

Bharat'. Such idea of transforming districts into export hubs and linking local production houses to global supply chains could, therefore, mandate skill development at the local level.

For any State to expand its economical and inclusivity horizons, the need for consideration of streamlining the workstreams and trades that are prevalent at the grassroots is paramount. This calls for focused interventions (Central/ State driven and managed) towards the neglected workstreams of which the indigenous workstreams/ trades are arguably the prime concern, given that more than 90 percent workforce are engaged informally. Within this mandate, mapping at least one ethnic/ indigenous sector/ product in each district of the State and designing detailed action plan for the promotion of the product at a national/ international level will go a long way. This could include sector-aligned training, creation of forward-backward linkages for participants/ workers/ entrepreneurs, access to credit, export promotion initiatives etc. along with special focus on sector-aligned entrepreneurship development and training.

The State could develop curriculum for such indigenous skills with MSSDS and MSBSVET and consider the expansion of faculty for such curricula through the recruitment and certification of community-based workers and artisans as educators. While a wide range of courses in agriculture, food processing, automobiles, healthcare, and hospitality are offered within diploma, advanced diploma, and B. Voc courses within the State, the same cannot be said about such indigenous skills. Accordingly, the state could introduce long-term courses in such indigenous skills within vocational education. The students opting for such long-term courses, in government colleges and universities within the State could be offered scholarships, equivalent to 50 per cent of course fees. All scheduled caste and scheduled tribe category students opting for such long-term courses in indigenous sectors (as prescribed by the Government), could be exempted from paying course fees in all Government colleges and universities in the State.

3.5.5. Rolling out Aadhaar-linked Digital Skill Card for vocational students of the State

Maharashtra's skilling paradox can be explained by the situation that its labour market is characterized by dwindling opportunities in one sector, while there is much higher potential for jobs in another sector, but with not enough people with the right skills. Thus, indicating skill shortage which usually refers to the situation where it is difficult to fill vacancies or there are unfilled vacancies due to lack of qualified candidates. There are two broad categories in which we can categorize the job market needs and skill requirement mismatch in the State and in India. Primarily being skill gap, wherein a worker's skill is not up to the requirements of the job. Secondly, there is skill underutilization, which happens when education level or skills exceed those required in the job. The presence of underemployed or unemployable skills in the education process leads to wastage/ misallocation of sparse resources.

Therefore, as there is a strong demand for strategies, or even simply procedures, that are capable of rapidly satisfying labour market needs, a comprehensive assessment and skill profiling exercise could be conducted for all vocational graduates to understand the skills and competencies possessed by them as well as for the graduates to demonstrate their qualifications to potential employers. The exercise shall include:

- Profiling of education, skills, competencies of the vocational graduates by means of self-assessments and evaluations,
- Mapping the skill profile of the graduates with the existing labour market needs for data-driven insights for decision making and policy-level interventions,
- Charting of existing skillsets, career progression, sector-wise mapping of graduates through the creation of a unified portal,
- Creation of digital profile linked ID card for vocational graduates showcasing the skill proficiency levels leading to career opportunities and employment.

The exercise could help in better policy-level interventions by identifying skill-gaps, learning needs, labour shortages as well as understand requirements for curricula revisions for technical and vocational education. Additionally, this could help in identifying mismatches between the skills available and those required by industries and accordingly guiding the formulation of targeted training and skill development programmes; helping graduates identify the skills in demand and facilitating better job matching through

structured databases; acting as a baseline to measure the effectiveness of the skill development interventions over the time and accordingly formulating evidence-based strategies and sector-aligned policies for skill development and training. This could be attempted in a few vocational institutes as pilot to start with and then rolled out in all vocational training centres gradually going forward basis the success of the pilot.

Accordingly, an integrated, dynamic, customisable and user-friendly Digital Skill Card portal shall be developed with Cloud/ Data Centre-backed storage facilities wherein candidates can do their self-assessment/ enumeration and download the Digital Skill Card. Post self-assessment/ enumeration, the graduates could receive a unique Digital Skill Card by accessing the Digital Skill Card portal, where they can check their current skill profile, training needs, as well as opportunities for further learning basis existing skill proficiency, as well as employment opportunities through integration with the Mahaswayam portal and the National Career Services (NCS) portal.

The Digital Skill Card could have a unique Skill ID that could be linked to Aadhaar as an authenticated ID profile enhancing transparency and credibility for industry adoption and validating the individual's proficiency in various skills including NSQF levels, technical skills, soft skills, digital skills etc. Information and updates on skilling, education and employment opportunities could be customised to the individual's profile promoting lifelong learning, entrepreneurship and overseas placements. The Digital Skill Card portal could additionally have the features of asset management systems, facial recognition for security, convergence with line departments, integration with GoI portals, single platform for all skill development interventions of the State etc. Candidates shall also be incentivized to regularly update their employment, further learning and education profiles by issuing Skill vouchers/ wallets that can be redeemed for advanced courses of their choices thereby encouraging further and lifelong learning and capturing the entire candidate lifecycle.

3.6. Innovation: Cultivate and nurture 'Innovation' and entrepreneurial culture in the State

The economy at large is exposed to a lot of emerging segments wherein there is an abundance of economic opportunity however limited skill capital. With the tectonic shifts in the technology leading to digital innovations, along with emergence of the gig-economy, e-commerce, agri-tech, fin-tech to name a few, and the exponential growth in tech startups in the State, Maharashtra is poised to take giant leap from incremental innovation to radical innovation (both technology and non-technology-led innovations) in the current decade. While the State has the potential to create capabilities for growth and new solutions leading to limitless opportunities at the international front, without building the skills and competencies necessary to drive such innovation, any State risks stagnation. Hence, as the State eyes on better-educated graduates entering the workforce with stronger and employable skills, some of the key milestones for the State to achieve, in this regard, will include the below mentioned.

With a major part of demand for future workforce of the State, over the current decade stemming from such emerging and niche sectors and startups in the State, the Government must focus on such sectors through innovation and other tech-based capacity building programmes. Another area of focus for the State would be entrepreneurship building, given the multi-faceted impact that entrepreneurship has on the economy. The State understands the relevance of entrepreneurship education and training and could accordingly design a State-specific entrepreneurship development roadmap with the ethos of 'Aatma Nirbhar Bharat Abhiyaan' which would have elements of coaching from national and international practitioners, capacity building through relevant skill training programs, platform to access market linkages with go-to-market planning, selection of right product-mix, customer segmentation techniques among others.

3.6.1. Transforming the State into a leading international startup destination with focus on start-up education

Entrepreneurship has multi-faceted impact on the economy of a Nation/ state. Two important ones are innovation driven growth and increase in MSME activity which act as building blocks for the manufacturing sector. The Government already intends to establish Mumbai as the preferred start-up-hub nationally as well as internationally among the focus sectors, and to this end, various initiatives including funding of start-ups, setting up of certified incubators, CoEs, introducing the State Startup Policy are being undertaken to give a boost to this segment of economy. The State has the largest share (19 per

cent) in terms of startups recognized by DPIIT, GoI with the presence of at least 10 startups in each district of the State and more than 60 incubators at the State-level. With Central Government's focus also on promoting entrepreneurship and innovation, now is the right time to promote the State and Mumbai as the leading start-up hub internationally and the Government should consider undertaking the following steps.

- **Educating start-ups on statutory compliances and regulatory hurdles:** Since many start-ups are initiated by university, college and technical institute students, there is little awareness or dexterity among them in dealing with bureaucratic and regulatory hurdles. The State could, therefore, dedicate a special cell in partnership with an agency or an incubator to handhold these units through their dealings with the Government such that these start-ups, already short of people and capital, are able to focus their energies towards building the business. It will also help entrepreneurs and start-ups with knowledge on different incentives and schemes under the different policies and programmes of the Government of India and the Government of Maharashtra in the concerned sectors of operations. Regular workshops could be held in the district level CoEs regarding the regulatory processes and statutory compliances required with start-up registration and functioning within the State.
- **Conceptualising a body for bringing synergies among industry, academia, and the government:** In addition to the existing skilling organisational structure of the State, the State Government may form a body which can formalise the required cooperation from all three stakeholders viz. industry, academia, and the government, in a triple helix model. While the State has set up the MSINS as the nodal agency for startups and innovation, the same is not free from bureaucratic hurdles and lacks autonomy. This body could be on the lines of SME Portal of Singapore and of TASK of the Government of Telangana, India and could act as an Incubation Platform initiative by the Government. Broad guiding principles of this body would include:
    - Formal universities and colleges mapped against special skills or courses could be networked with this body in an outreach programme,
    - Online facilities to be able to raise request for special modules/access courses and modules would be available to all students, people and colleges registered with the body. This will be coordinated on a centralized MIS, with some generic courses offered for free, while others available at a nominal price,
    - An online repository of courses and modules could be maintained by the body,
    - The body could also actively engage corporates present in the State, for they can best assess the skill suitability of the market. Some member firms could also be roped in to hold positions on the Board,
    - Apart from a seed funding by the Government, participative corporates could support the body with limited yearly membership funds. Revenue could also be targeted from the body's website which will eventually act as a marketplace model for technical institutes offering courses and people accessing course catalogues,
    - Opportunity listing on the website could help increase the traffic and interaction with the portal helping it achieve its intended objectives,
    - In the wider interest of the State's skill development, it is imperative that the body remains not-for-profit.
- **Encouraging start-up education and internships with start-ups:** Start-up activities in the State have not only grown significantly in numbers, but also in terms of creating a vibrant support system to foster entrepreneurship, higher levels of innovation and employment generation. The most significant trend is that education institutions in the State are beginning to play a vital role in developing entrepreneurial competencies, and accordingly the State Government could introduce 'start-up' as a subject in colleges, universities, ITIs, polytechnics as an optional specialization or a mandatory credit-based module with the objective to make the youth of the State 'job providers' rather than be just 'job seekers'. Universities are allowed to offer an option of undertaking a Minor(s) in Entrepreneurship, Innovation, and/or Creativity Development along with their primary course degree which are designed in conjunction with top academic institutions and industry veterans. Additionally, according to the

State Innovation Policy 2025, the State will develop and rollout entrepreneurship mindset curriculum in schools, Higher Education Institutes (HEIs) etc. through digital platform in order to inculcate and implement an entrepreneurial mindset followed by seed funding and incubation support. The Government has already introduced policy under which students studying in their final year graduation and post-graduation in colleges and universities will get one-year study leave to work on their start-up ideas. Shortlisted start-up entrepreneurs, working on start-up ideas, are also permitted to convert their start-up project as their final-year project towards degree/ diploma completion.

- **Facilitating Ease of Doing Business for entrepreneurship:** Governments play a key role in developing an enabling regulatory environment to unleash the potential of entrepreneurship within any nation. By reforming their policies, laws and regulations, governments ensure that entrepreneurial activities are not stifled by an unstable policy environment, excessive regulation and taxation, and unfair competition. In this regard, a special division within the MIDC, chaired by the MD, could be set up to fast-track the process of registration of women enterprises in priority sectors and to simplify and streamline other administrative processes, as may be applicable.
- **Introducing entrepreneurship as an elective subject within school education:** The State Government of Maharashtra has already drafted strategies to conduct workshops to inculcate entrepreneurial skills i.e., risk taking, critical thinking, digital literacy etc. at school-level in association with organizations that specialize in this field. The SEEID and the school education and sports department should collaborate to provide guidance on teaching entrepreneurship and recommend new, creative teaching methods in primary and secondary schools with a focus on entrepreneurship as a career choice. Entrepreneurship courses, as elective subjects, could be introduced in all secondary schools, and character development and mindset development for entrepreneurship could be embedded within such courses. MSSDS could also work towards improving the flow of information on current and future entrepreneurial skills and needs to assist in the design of technical and vocational education and training curricula for entrepreneurship that better respond to market needs.
- **Innovation at the grassroot level:** Based on the original charter to make Maharashtra a sandbox for innovation globally, the State may introduce a 'Nano Unicorn' programme to promote entrepreneurship at grassroots level. As we all know, a Unicorn is an Internet start-up with a valuation of USD one billion or more. India has a some 117 such entities from Ola to OYO to Paytm to Byju's etc. But India's true progress would depend on how many 'Nano Unicorns' we can create at the grass-root level. These are tiny enterprises set up by skilled youth who may generate just one or two jobs at a village or small-town level. To build a prototype for this, the State may launch its Nano Unicorn programme wherein skilled youth with entrepreneurial mindset and potential would be identified and their skill set would be enhanced through structured training and mentorship. Selected candidates may be sent for a two-week, mini-MBA program where the person can further hone the business idea. At the end the programme, candidates may be provided financial support of INR one lakh through philanthropic capital. A pilot may be launched with 100 such Nano Unicorns and the plan may be scaled up to cover about 5,000 by 2030. This programme is envisaged to help develop role models and build aspirational stories which would inspire youth to look at skilling as a route to entrepreneurship. Candidates that are domicile of Maharashtra from ITIs or Polytechnics that have attended short-term training courses could be eligible and may be shortlisted via dedicated portals based on their business proposals.

  As the State should increasingly focus on creating entrepreneurs and local employers among the youth, a need is felt to set up facilities for incubation, financial intermediation, and entrepreneurship facilitation and training with promotional measures for grass-root-level entrepreneurship. Key measures may be taken to train a minimum of 10,000 candidates (with minimum 25 per cent being female) in the State as a pilot measure under micro-entrepreneurship/ self-employment initiatives through sustainable intervention of developing the employable youth or livelihoods options through self-employment/ entrepreneurial routes and support systems. Such micro-entrepreneurship development programmes can help such trainees in designing, launching and running their venture/ start up after their training is over or during the training period. Adequate forward/ backward linkages, marketing support systems, financial intermediation, facilitation for statutory compliances, mentoring/ handholding etc. can also go a long way in creating local entrepreneurship and employment generation as a part of such initiatives.

3.7. Promotion: Use 'Promotion' to improve perception for all the stakeholders about skill development

Employment is the force behind the social and financial development of any Nation, and skill building is the force behind gaining meaningful employment. However, it has been seen that there is a limited acceptance of the vocational and skilling courses as an alternative to the traditional formal education, and vocational training is considered as the last option for those students who have not been able to optimally participate in the formal education system. Some of the reasons for such perceptions include lack of awareness among the youth with respect to the different TVET schemes and programmes and post-training employment opportunities, increase in aspirations for white collar jobs that require higher qualifications, and a perception that skill development is associated with blue collar jobs, which are considered of low dignity and offer less wages, making TVET less aspirational.

Therefore, a promotional and communication strategy is essential for maximizing the appropriateness and relevance of any scheme for its stakeholders i.e. the trainees, training providers, industry and employers among others. A robust communication strategy will ensure that various stakeholders connected with the schemes, programmes, processes are well aware of the content, benefits and various processes associated. In this regard, while the State's existing initiatives have been instrumental in creating brand building and facilitating image building of skill development programmes, the State should further revamp and rework on its promotional and outreach initiatives to enhance awareness, mass outreach and build a strong brand value, as well as messaging structures focused on creating an enabling environment for the youth to take up more skill trainings.

3.7.1. Reimagining and rebranding vocational education, skill development, and apprenticeship training

Vocational education in India is still perceived to be inferior to mainstream education and meant largely for students who are unable to cope with the latter. Viewed as a poor cousin to mainstream education, the TVET system has been stigmatised by the perception among the youth that skill-based and manual qualifications lead to less prestigious careers. It is true that the early introduction of vocational education and the emphasis on the dual TVET systems will help the children and parents make alternative career choices and develop, to some extent, a positive mindset towards dignity of labour, which is linked mostly with vocational education. The development of the Maharashtra State Skill University, offering occupation-ready courses using authentic learning facilities and the latest education technologies, will also go a long way in improving the perception and acceptance of TVET as a livelihood option among the youth of the State. Despite the fact still remains, the Indian education needs a paradigm shift in the perception regarding vocational education within the society through a complete reimagination and rebranding of such education systems.

- **Introducing 'advanced career training institutes':** The State Government should, therefore, attempt to make vocational education more attractive and aspirational by changing the name of 'vocational training institutes' to that of 'advanced career training institutes' with an aim to rebrand the way students and society perceive the courses as 'blue-collar' education for less-talented candidates with restricted career prospects. This is to hammer home the word 'advanced career' associated with skill development. All such institutes would portray common professional outlook and branding mandates, in order to make the candidates feel confident as well as instil a feeling of pride and accomplishment within them and the society at large.
- **Introducing vocational training colleges:** The State may also attempt to create 'vocational training colleges' through a process of merger or through collocating training institutes for better utilisation of resources. The new vocational training colleges could comprise campuses within a relatively close geographic locality depending on the geographic profile of the district. In the process, the integration of previously disadvantaged institutes with previously advantaged ones would not only elevate the quality of overall vocational education system, but also eradicate the longstanding, stereotyped views about the 'superiority' of academic learning compared to vocationally oriented learning.

  The State may emphasise nurturing intercultural networking skills and give students opportunities to study abroad and participate in exchange programmes. While the Government has already initiated concrete measures towards partnering with international bodies, through such collaboration with

international training partners, industry associations, industry houses and corporates, ITI/ Polytechnic students may be encouraged to take part in international programmes like study tours, exchange programmes, overseas industry attachments and more, each year.

- **Involving local role-models and clear benefits communication:** Successful image-promoting activities that accompany TVET programmes emphasise not only the potential economic benefits arising from participation in the programme, but also the effects on identity and social recognition. For TVET such image campaigns can be particularly fruitful if they manage to involve trustworthy partners in their measures. Accordingly, local personalities could be encouraged to come forward and partner with MSSDS. Such role models could be on-boarded to share their experiences with the larger communities and encourage youth participation in the skill development space through platforms (Facebook page, national television, WhatsApp group etc.) that will allow TVET aspirants to freely interact with the role-models. Campaigns involving success of TVET graduates, and statements like *'Having graduated from a vocational education and training programme, I was able to find this job and can now contribute to the success of the company by doing meaningful work'* can be convincing and may encourage more candidates to join TVET.

  Reiterating its commitment for skill development of the youth in the State, the State Government may also introduce *'Skill Caravans'* from Mumbai, Pune, Nagpur, Amravati, Shambhajinagar and Nashik to different districts with these role models to create a sense of connection with larger society and district administration. This would further reinforce the successful stories and create buzz among prospective students and parents that vocational education may be worthwhile.

- **Industry/Government certifications for quality education:** TVET institutions providing high quality education and certificates of acceptable market value (certifications by the Government, industries of repute etc.) often enjoy a good reputation, even if the TVET ecosystem within a region is not very well recognised. MSSDS, through an outcome-oriented 'Rating and Grading' framework of vocational training institutes within the State, may identify a number of such vocational training institutes and institutions that are able to provide services of such high quality. The State may accordingly identify seals of quality and accreditations, such as 'Certified by the Government of Maharashtra', 'Highest graded institute by the Government of Maharashtra' etc. Such certificates, analogous to brand labels, would not only create a positive perception about TVET among the youth but would also encourage TVET institutes to enhance their quality and standards of education provided, to be eligible for such society acknowledged and industry acclaimed certifications.

- **Recognition of sectors with traditionally subordinate perceptions:** Maharashtra is home to several traditional vocations of handicrafts, handlooms and arts such as Warli paintings, wooden toy making, coir making, idol making etc. However, many of these are at the risk of dying out owing to lack of appropriate patronage, documentation and transmission of skills and suffer from problems with the image that can arise due to cultural perceptions of physical work. These are the sectors with the capacity to absorb high percentages of migrant workers who may have poor skill sets but face socio-economic hindrances. The partial lack of success in attempting to transform such system in the past few decades failed due to socio-culturally driven perceptions and mindsets in the community. This is where social marketing initiatives, tying in with existing cultural attitudes and behavioural patterns, creates a lot of impact. Such initiatives may include TV reality shows, soap opera with a number of episodes (focussing on individual trades in each episode), folk songs, media competitions etc. At an individual level, the State may involve local personalities in furthering the skills agenda in such sectors and at the same time instilling the confidence among other stakeholder groups through speaker series, short-term advisory assignments, mentorship to groups etc. Initiatives through empathy museum could also be planned to educate the society about the skills and craftsmanship involved in such trades and sectors, thereby commanding respect and recognition for such trades within the society.

- **Increasing focus on R&D within TVET education of the State:** As envisioned in SANKALP, focus on R&D and innovation will not only help TVET move up the value-chain within education sector, but also help improve perception about TVET within the community as an economic driver and not merely an employment provider for disengaged youth. On the R&D front, MSSDS should identify global think-tanks and knowledge-based forums to partner with. This channel could help the State in

undertaking cutting edge research and policy work in the skill development and allied spaces. For instance, Solutions for Youth Employment (S4YE), a multi-stakeholder coalition among public sector, private sector, and civil society actors, aims to provide leadership and resources to increase the number of young people engaged in productive work, could be one such partnership. These partnerships could focus on bringing together policy makers, social partners, researchers, and practitioners to share their ideas on ways to improve vocational education and skill development status in the State.

- **Making apprenticeship training aspirational:** While apprenticeships can play a significant part in the task of up-skilling the Maharashtra workforce, there is nevertheless concern in some quarters that apprentices are not being properly trained in companies, and a perception that they are sometimes used as cheap labour, leading to low enrolments in apprenticeship-oriented training programmes. Accordingly, the State may create dedicated Apprenticeship Cells in each district of the State (within the placement cells of Employment Exchanges/ Career centres) to generate awareness and drive apprenticeship opportunities through workshops and one to one interaction. Besides this, apprenticeship can be rebranded by positioning it as 'aspirational' for candidates and 'value adding' for employers. The employers need to be explained the long-term value in the apprenticeship programme, rather than focusing on financial incentives. The Maharashtra Apprenticeship Promotion Scheme (MAPS), wherein 75 per cent of the stipend payable to the apprentices or maximum of Rs.5,000/- per month, whichever is less, is reimbursed by the Government, can be a gamechanger for apprenticeship education in the State and adequate promotion of the same is required to be done not only by the Government but by the industry forum as well. The State should also develop apprenticeship standards by involving industries to ensure demand led development of curriculum and content. Such frameworks could clearly outline the standards that apprentices must achieve within their industry–the skills, knowledge, and attitudes they need to demonstrate to be a successful apprentice–together with how these should be assessed.
- **Branding of Maharashtra Skills:** A promotional and communication strategy is essential for maximising the outreach and relevance of any scheme for its stakeholders i.e., the potential trainees, skilled candidates, training providers, industry and employers among others. A robust communication strategy will ensure that various stakeholders connected with the schemes articulate a standardised response in terms of the content, benefits and various processes associated with it. Consequently, branding the skill development initiatives of the State under a common brand (for instance '*Skill Maharashtra*') and common emblem can go a long way in creating a common identity and recognition of the skill development initiatives of the State nationally as well as globally. In order to improve the self-confidence of the vocational institute trainees of the State, the Government may design and introduce new sets of uniforms, including salwar-kameez and dupatta to *Skill Maharashtra* monogrammed pant and shirt for girls, and equally smart uniforms for boys. Sportswear may also be introduced as weekend attire.

3.7.2. Leveraging right amount of counselling and career advisory at each level of vocational education

The changing face of the economic, social, and political and labour market worldwide have led to new education reforms/ policies with emphasis on guidance and counselling and vocational and technology education geared towards helping people to be self-reliant. Guidance and counselling, as a helping relationship, is an avenue for individuals to achieve greater awareness not only of what they (skills) are but more importantly of what they can become (career). This awareness will enable such an individual to live a more functional and happier life capable of ensuring personal harmony and national development. This makes more sense for a developed economy like Maharashtra where, according to the youth aspiration survey under the State Skill-Gap Study, among more than 50 per cent of the respondents who reported not having attended any training programme, there is no awareness on any employment-oriented training initiatives that help gain expertise/ enhance job skills. While the various bodies and schemes show the Government's intention to push the agenda of skill development, the outcome has not been satisfactory primarily because of lack of awareness as well as the right amount of counselling at each level of mobilization and academic setup.

Additionally, it would be equally important to engage with the students and candidates to understand their aspiration and aptitude for a particular sector or job role and set the job expectations right. It would not only help in getting right kind of resources for respective roles but also curb on dropouts during training as well attrition. Further a robust pre-screening of candidates to enrol in various schemes basis eligibility criteria such as demographic profile, aptitude level, sector and job-role specific requirements, medical health history, etc. can also ensure a higher passing rate among candidates making them more employable.

- **Involving guardian counselling in TVET:** While mainstream education system in India does engage the parents and family members into the education and career development of a child in schools, in the form of Parents Teacher Meeting (PTM), Report Card reviews, career counselling etc., there is hardly such evidence associated with youth joining a skill school for career counselling, trade selection etc. The State should, therefore, encourage the training institutes in actively involving the family members/ influencers/decision makers/ guardians in the aptitude test, career counselling and trade selection of their child etc., for the skill ecosystem to gain recognition, respect, and relationship for the skill career. An instance can be drawn from ITEES Singapore that regularly conducts such parents and family member visits to their campus in Singapore, along with the new entrants before the children embark upon their skilling journey, thus instilling a feeling of pride and confidence about their children's prospects.
- **Mobilising a cadre of mobilisers:** MSSDS should mobilise a cadre of trained mobilisers/ influencers for the last mile outreach and doorstep counselling of youths, parents, guardians, and they could go into the community and become key influencers. The mobilisers should help the youth and their parents, with awareness on what kind of career opportunities are out there and provide information on what kind of courses would be suitable for them; how they can benefit from attending these training programmes and give confidence on placements post training etc. They would impress the need for certification and skill training upon the youth who are socially and economically deprived, who might not have done academically well and would benefit from short-term skilling.

  The State should also ensure that at least 50 per cent of such mobilisers are women mobilisers, as this can lead to an increased enrolment of girl children in TVET, particularly in trades and courses wherein they have traditionally been underrepresented. It is normally seen that when such women mobilizers go and interact with parents and guardians, the confidence with which the enrolment of women candidates happen is different. MSSDS should also conduct quarterly interaction workshops for training, capacity building and handholding of the mobilisers in association with NSDC, wherein the mobilisers would also get to connect with other mobilisers and their State-level counterparts and discuss key aspects. The mobilisers may operate at a GP level, sitting at the Panchayat offices, and report to the district offices of MSSDS. Such mobilisers could also undergo annual performance appraisals based on number of candidates mobilised and accordingly would have the opportunity of vertical career mobility where they get to work as a district-level Chief Influencing Officer or work from the State-level MSSDS office overseeing a group of mobilisers.
- **Involving trainings for career counselling for teachers:** Career counselling is not a one-time activity and involves a comprehensive and developmental process to help students make and implement informed educational and occupational choices. Hence, career counselling should happen at all levels of academic set up and be an integral part of academic calendar for exploration of a student's aspirations and guiding them with knowledge of trades, occupations, and careers, thereby setting them up for future success. This could be operationalised by making each teacher in TVET acting as 10-15 per cent career counsellor who would help the students in bridging the gap between academic education and the diverse career opportunities such academic knowledge can support. This also takes away the biggest afflictions affecting classroom education–boredom and disengagement, and turns students into voracious learners, invested in their futures.

  Effective career counselling can only take place when teachers have access to comprehensive training and resources to best guide their students. Hence, to make career guidance and counselling systematic and professional and improve career information and awareness among students, the State should integrate programmes on career guidance, behavioural science, and psychological counselling within pre-qualification diploma education, induction programme, and annual refresher

trainings of all TVET teachers. All TVET teachers must mandatorily undergo eight hours of such programmes on psychological counselling and career guidance as a part of their annual refresher trainings, and such qualifications should be integrated vertically with their career mobility across all TVET institutes within the State.

- **Involving technology-backed pre-registration psychological testing:** The State recognises the importance of psychological testing as a means of making TVET aspirational and ensuring that such trainings result in less emotional distress, increased self-esteem, and greater productivity for participants post training. Accordingly, MSSDS should mandate pre-registration psychological testing for all aspirants and candidates in the State's skill development ecosystem, through technology-backed tools and methodology combining an aptitude component with an interest inventory, with the goal of guiding the youth into a career track that will be both interesting and aspirational as well as suitable for the person's skills. Such career guidance solution can be based on AI-linked scientific assessment of personality types, mapping it with career choices through a web and mobile application and designed to improve the employability for the young professionals by making them aware of their personality traits. Scores in such tests would strongly indicate the likelihood of a respondent choosing a trade and remaining in the trade (if entered).

3.7.3. Strengthening vocational education with unique awareness campaigns and promotional initiatives

It is normally perceived that skill development is way below the requirements in the country due to dearth of awareness on the kind of courses and information on the resulting livelihood prospects. Importantly, there is also limited acceptance of skill development and vocational courses as a viable alternative to formal education. Moreover, skill development is often associated with blue collar jobs, perceived to be of low dignity and providing low wages and salaries. This perceived stigma has resulted in low enrolments in several courses.

Owing to high capital requirements and low return on investments, skill development is often looked at as a non-scalable model and remains underinvested. Consequently, skill development has traditionally been dependent on government funds alone. The fee-based model also faces challenges as students are unwilling to pay high fee with limited perception on post-training employment opportunities. The same needs to change and the State Government should work towards developing and implementing an effective communication strategy to enhance the public understanding about skill development trainings and its intended benefits, attracting better public support, managing stakeholder perceptions and thereby addressing the concerns of stakeholder groups on an on-going basis. In this regard, the Government should focus on repositioning the perception of vocational education within the society and spread awareness about the different interventions through a slew of measures highlighted below.

- **Celebrating 'Maharashtra Skills Week':** The week of 15th July, coinciding with the International Youth Skills Day, every year may be celebrated as the 'Maharashtra Skills Week' across the State to celebrate the strategic importance of equipping young people with employable skills for employment and entrepreneurship. This should be remembered through organizing district level workshops, seminars, IEC and outreach programmes, Skill Melas, job fairs and to provide a unique opportunity for dialogue between young people, TVET institutions, firms, employers' and workers' organizations, policy makers and development partners. A unique campaign 'Tell Us Your Story' may be initiated wherein TVET youths would be encouraged by MSSDS to submit video stories of how they are coping and continuing to learn amid adversities, and such stories may be shared as a part of the Skills Week highlighting the importance of skill development for a resilient youth. The best entries could be identified as the 'Face of Maharashtra Skills' as brand ambassadors in order to inspire the prospective candidates and help them take first strides in under-taking skill development training.
- **Organizing district-level skills competition:** Amid the growing popularity and potential of World Skills Competition and the performance of the State's youth in the same, the State should take the competitive federalism to the next level by organizing the Maharashtra Skills Competition - a state level championship of vocational skills among ITI and Polytechnic students from across districts to win opportunities for placements, pre-placement interviews, cash rewards, foreign exchange opportunities etc. The State has been organizing the Maharashtra Skill Competition and the latest

edition of the same saw participation by 263 candidates from 36 districts in 45 skill trades in 2021. Accordingly, the skill competitions may be designed to demonstrate the highest standards of skilling and could provide a platform to the youth of the State to showcase their talent at the State-/ national-/ international-level. Apart from the new-age and next-generation trades, the skill competitions may also have dedicated focus on the State's indigenous and native skills and trades to enhance their recognition and social acceptance.

- **Organizing Reality Shows for entrepreneurship promotion:** The State Government could organize a contest cum entrepreneurship TV reality show, identifying, recognizing and rewarding aspiring and early-stage entrepreneurs having unique and innovative startup ideas across sectors. Through this TV show, the State may seek entrepreneurs with potentially bright ideas, who, with little recognition and help, may become successful entrepreneurs, creating wealth and employment opportunities within the State of Maharashtra. The contest will follow rigorous multi-stage screening process to identify promising entrepreneurs. In a society that is marred by a cultural aversion towards risk-taking and entrepreneurship, the contest has the potential to create disruptive impact in a relatively short time by making entrepreneurship more socially desirable and aspirational in the State. Finally, such kind of an initiative also helps in cleansing certain sectors and trades of the societal aversion and stigma associated with them by generating awareness about the new and niche areas in the sector and employment opportunities in them, sharing of success stories etc. The State could also create rural-specific initiatives like "Village Shark Tank" or competitions to encourage innovation and entrepreneurship in rural communities. This could be accompanied by sharing of success stories, appointing brand ambassadors, and providing mentorship programs to inspire individuals, especially in rural areas, to stay in the skill ecosystem.
- **Sector/ trade level role modelling:** At an individual level, role models play a significant role in furthering the skills agenda and at the same time instilling the confidence among the youth about career and employment opportunities post skilling across trades. Within this mandate, the State could identify sector/ trade level role models from local entrepreneurs, personalities, performers in World Skills Competitions as local icons/ ambassadors for candidates to emulate. Such role models could be on boarded to share their experiences with the larger communities through speaker series, short-term advisory assignments, mentorship to research groups, Q&A sessions, live videos etc. and encourage youth participation in the skill development space within the State.
- **Setting up a platform for interaction with alma maters:** One scheme that works well in several states is the interaction with the alma maters. The erstwhile pass out students and their interaction, feedback with the existing students play a big role in forming an opinion of the current students, regarding the benefits of skilling, employment opportunities, future prospects etc. The State could encourage all institutes to develop and facilitate such interaction, whenever their old students visit their hometown, to have a group interaction, Q&A session with their old students, who may already be employed elsewhere. Such feedback and experience sharing are much more trustworthy than any other message by authorities or institutions. The State could also set up an online collaboration platform for candidate mentorship by vocational institute passouts where students can post their queries, chat one-to-one with the alumni, and share information on employment opportunities and other detail related to TVET.
- **Publishing weekly skill bulletin:** The State, in collaboration with local vernacular newspapers and print media, could also publish a weekly bulletin (every Sunday) that could highlight the initiatives taken by the State in the field of TVET, the achievements of students, teachers and institutes in the TVET ecosystem, the outlook across many occupations and job roles within the State/ country, emerging TVET trends and the overview of the State's/ national labour market at occupational level, student success stories etc. Such initiative is envisaged to build about awareness and create buzz around on various schemes, incentives and employment opportunities to youth across sectors, markets and future potential.
- **Designing skill mascot:** The State could identify a logo or an emblem for skill development that could bring up the brand identity of the mission as a global standard of excellence in skill training. Taking the initiative one step further, the State could also design a mascot for skill training in the State, embedded in a simple but effective way to recognize the brand, particularly among the youth of

the State. The mascot could suitably be mobilized to convey information on importance of skilling, Government interventions in skill development, labour market trends and occupational employment opportunities etc. through simple yet communicative visuals and stories.

- **Mobilizing ground-level government functionaries for last-mile outreach:** Since the target beneficiaries of the various schemes of the State extend right up to the district level, the communication strategy needs to adopt specific approaches to reach up to the grass-root level. In addition to the grass-root level mobilizers/ influencers, the Government could, hence, also render the services of ground-level Government functionaries, such as AWWs, ASHAs, ANMs, Pranimitras etc. and folk artists of the State with their grass-root level community connects for last mile outreach. Folk artists of the State, who regularly spread messages on health and sanitation, awareness against evils of dowry, child marriage and trafficking etc., would effectively be mobilized to propagate different unique schemes of the State including the schemes for skill development. Some of the other methods for last mile outreach could include setting information kiosks in major fairs, promotional videos in movie theatres, TV advertisements aired during prime timeslots, radio jingles, short films on skilling, hoardings on billboards in the suburbs etc.
- **Model Career Centres (MCCs) in all districts:** It is a well-accepted fact that there has to a paradigm shift in perception regarding vocational education, and students have to look beyond traditionally preferred job-roles for getting gainfully employed. More often than not, in absence of pre-registration counselling, there also remains a mismatch between what students study and what they aspire to do post training. With these gaps in mind, more than 20 Model Career Centres (MCCs) have been set up in Maharashtra, within the Employment Exchanges, under the National Career Service (NCS) Scheme of Ministry of Labour and Employment, to provide counselling services to students and jobseekers. Aiming to connect the local labour force with all possible opportunities in a transparent and effective manner through NCS portal as well as to conduct periodic recruitment drives for the placement of unemployed youths, the State could look to establish MCCs in all districts of the State connecting the local youth with the possible/ available employment opportunities in the vicinity.

3.8. Governance: Strengthen 'Governance', build capacity, and achieve convergence at all levels

An effective governance structure would not only help clarify relationships and roles and responsibilities but also, supervisory or reporting lines. The structure also helps to manage complexities and allow stakeholders to understand how the overall system works. Consequently, as the State intends to effectively implement the skilling reforms, it is necessary to have a coordinated and collaborated interaction with all stakeholders, including Government bodies and agencies at the state and Central Government levels. It is also equally important to augment the institutional capabilities among public administrative personnel for improving the overall on-ground program delivery and governance.

It may be easier said than done, however, it is a recognized fact that the implementation of inter department programmes are not easy. There are bottlenecks associated in bringing together all the initiatives under one roof. The State should involve all the departments/ agencies/ bodies at the state/ district/ block level in refocusing and streamlining structure, processes, management resources and abilities of the Government machineries to plan and implement the activities as envisaged under State Skill Policy. The State understands that the next leg of skilling and capacity building might be challenging owing to its progressive vision and goals and must ensure that the changes made are well-absorbed and sustainable beyond the life of the intervention.

3.8.1. Strengthening existing institutions focused on implementation and conceptualizing the MSSDS 2.0

An effective organisation structure would not only help clarify relationships and roles and responsibilities but also, supervisory or reporting lines. The structure also helps to manage complexities and allow stakeholders to understand how the overall system works. The State shall focus on capacity building and planning for strengthening institutions that are focused on getting priority skilling projects off the ground in a time bound manner. The existing mechanism to track the progress of such priority projects in the State should also be strengthened accordingly.

The key lesson learned is that skilling is a highly localised issue, and models need to be adapted to target groups rather than be force-fitted using a one-size-fits-all kind of approach. Accordingly, the Maharashtra

State Skill Development Society (MSSDS), the nodal authority, responsible for all State-level skill development initiatives and the implementation of the Policy, should be strengthened with a network of district level satellite offices. Such offices should oversee the skilling at a local/ regional level, thereby decentralising the skill development to the grassroot level, strengthening district level skill development, and bringing in market connectivity and inclusivity of the marginalised sections of the society. As MSSDS ensures standardization and uniformity in the curricula/ course content, training duration, assessment and certification procedures, training costs and other related aspects, it must integrate efforts by the individual Government departments in the implementation of the different Government schemes and programmes for vocational and skill development interventions within the State.

It may hereby be mentioned that most of the work of MSSDS currently seems to be focused on the implementation of skilling schemes (both Central and State-specific), rather than on State-level strategic thinking, analysis, and planning. The broad assumption made within the State framework is that MSSDS should primarily focus on setting policy and targets at the highest levels and ensure monitoring/ mentoring to achieve those targets. Accordingly, MSSDS could be strengthened to play a pivotal role in transitioning the State into a knowledge economy and making it the Nation's as well as East Asia's Skill Capital. All skill development and capacity building interventions by the different departments/ agencies/ authorities could accordingly be routed through MSSDS, that will provide policy direction and guidance to all stakeholders in the skill development and entrepreneurship ecosystem, apart from ensuring quality, industry alignment, and conformance to NSQF/ NCrF. The emphasis should be on cross-departmental convergence initiatives in skilling and capacity building allowing for a better and effective planning and an optimum usage of skilling infrastructure. Currently, the skill development initiatives within the State have been fragmented across multiple departments and a need is felt to reorganize and streamline the same.

Consequently, the MSSDS of the future would not merely be looked at as a provider of employment/ livelihood opportunities to disengaged and disadvantaged youth of the State, but also as a knowledge partner and economic driver, contributing to structural transformation, enhancing employability and labour productivity within the State. Apart from the focus on skills development and capacity building, entrepreneurship development, and employment and livelihood generation, MSSDS could also increasingly focus on the below initiatives.

- Jumpstarting a diversifying and credentialing ecosystem within the education marketplace with a focus on lifelong learning in 21st century skills, capabilities, and attributes through blended systems.
- Focusing on nurturing human skills that AI and machines seem unable to replicate, fostering innovation and creativity, active collaboration, abstract and systems thinking, complex communications etc.
- Conducting periodic (at least once annually) national and state-level labour market studies, employment trends, next-generation job-roles, skill-gap studies, skills mapping and assessments, State skills development plans etc.
- Enhancing global cooperation, exchange, and communication with industries, academia, governments, and ministries for concepts like future skills, knowledge, employment, start-ups and entrepreneurship.
- Leading the future of education and skills within the State through policy design and curriculum design, high-end skills, and education programmes, applied research, advisory and consultancy etc.
- Enhancing institutional capabilities and leading the professional development of Government functionaries across Government departments/bodies/agencies in the State.

The District Skilling Committees (DSCs) could be strengthened and made responsible for IEC and promotional activities at ground level and could play a pivotal role in ensuring quality standards through a stringent monitoring and evaluation of skills training, as well as providing valuable inputs for the data analytics and BI which in turn could lead to effective decision making; labour market studies; sector studies and trends analysis; impact assessment and course correction at the State-level. The DSCs could also be strengthened to conduct periodic youth aspiration studies, interest studies and tracer studies to track the aspirations and aptitude of the youth and making skill development more demand-driven, aspirational, and decentralised in its approach.

At the district level, the DSCs, with equal representation from industry, academia, and Government, should be providing valuable inputs for the Data Analytics and BI which in turn would lead to effective decision making and course correction at the State level. Initially, these committees could help identify skill gaps at each district across sectors and focus on curricula design at the regional level. The DSCs could be responsible for IEC activities at ground level and play a pivotal role in counselling youth in their districts. Data provided by the DSCs could help determine the outcome and impact of the project undertaken and thus help in better convergence of the skilling programmes undertaken by the State and districts. The PMKKs in the State could be responsible for handholding upcoming new institutes and facilitate ToTs of all institutes in the district. It could also endeavour to create entrepreneurship opportunities and facilitate linkages with financial institutions. The PMKKs can be assisted by the model ITIs and vocational training providers (VTP) for these tasks. These institutes could send consolidated reports at a defined frequency to the umbrella State agency, i.e., MSSDS. The GPs could be strengthened, with a cadre of mobilisers/ influencers to be stationed in every Panchayat office, to provide career counselling at the local level and for last mile outreach. The GPs could also assist MSSDS in leveraging unused Government premises for vocational education in case suitable training infrastructure is not available at the GP level, as well as devising offline public information channel and feedback mechanisms for continuous and real-time impact evaluations at the local level. MSSDS could also work closely with the central agencies such as NSDC, DGT, NCVET and SSCs for regulatory compliances and other forms of handholding support. NSDC should be closely consulted for accreditation and affiliation compliances and registration for Government schemes like PMKVY.

A critical component of TVET ecosystem is the active involvement of employers and other social partners/ stakeholders at all levels of decision making. Lack of such an arrangement can result in misalignment between demands of the labour market and recognition of qualification by industry. To address this, the SEEID should involve active participation of its social partners at all levels of the system. Such collaborations, to help meet the demand of the labour market and ensure that the qualifications are accepted by the industry and businesses, should be at three levels – viz local (with the DSCs at the district level), state (at the level of MSSDS), and national (at the level of SEEID) through the formation of councils that would monitor trends and patterns in the labour market and accordingly recommend the creation of new TVET qualifications, and the adaptation or abolition of existing ones, at all the three levels mentioned.

This is to ensure that the apprenticeship and job opportunities are created as per the local needs of the market. The existing interaction between SSC and employers can further include three levels at which data is generated. After collecting industry information from these three levels, the data can be analysed to take informed decisions that can provide solutions that cater to larger audience divided in both rural and urban areas.

Capacity building of Government functionaries: Many countries are actively augmenting skill sets of their public administrative personnel for improving on-ground program delivery and governance. For instance, Singapore Govt. has tied up with an EdTech platform to offer 2,000+ courses to its employees. UK has established Government Digital Service (GDS) Academy which offers range of courses for public sector professionals so that they may acquire the requisite digital skills needed to transform public services. Even the Central Government has launched the Mission Karmayogi to align India to global standards of capacity building for civil servants and build a state-of-the-art online learning platform to enable personnel to access the best and most relevant training material virtually. Accordingly, MSSDS could structure an apt model (partnering with learning platforms or setting up in-house learning CoE, collaborating with leading service providers in PPP modes) for enhancing the capacity of government employees. This could be in line with the Annual Capacity Building Plan by the Capacity Building Commission under the Mission Karmayogi and would aim on improvising the public service delivery via innovation and other tech-based capacity building programmes.

3.8.2. Developing a strong monitoring mechanism towards ensuring quality and relevance of TVET

To ensure that the State's vision for transforming the TVET and skill development ecosystem is properly implemented, there must be in place a system of processes pertaining to effective monitoring and evaluation of the entire ecosystem for proper quality assurance. Keeping track of what is being

implemented and how the implementation is being done would enable the State to undertake measures for improvement. Monitoring and evaluation needs to happen at the level of each stakeholder viz. beneficiaries, institutions, training service providers, Government officials etc. in order to inculcate accountability in the stakeholders as well as for effective handling of their respective responsibilities.

An effective monitoring mechanism is paramount for implementing new policies and laws, reviewing progress of skill development initiatives across the State, addressing concerns of various stakeholders, keeping tabs on any compliance issues and malpractices, thereby ensuring higher efficiency of the entire TVET ecosystem in the State. It is also vital, that opinion is sought from all concerned stakeholders to build an effective governance framework that is supportive of all-round development of the skilling ecosystem.

- **Outcome based payment disbursement model for skill development training providers**: To ensure that the short-term skill development training service providers perform exceptionally at every step of the skilling life cycle (mobilisation, training, assessment, placement), provisions could be made to release funds to the training providers based on outcomes for each batch depending on the training targets allocated to the particular training providers. The payment disbursement model may depend on completion of the desired outcomes which could include training completion rate, placement rate (wage/ self-employment), assessment and certification rates, dropout rates, retention rate in industries post six months of employment, absorption as full-time employee rate, beneficiary and industry feedback etc., apart from the enrolment numbers.

  An attempt should also be made to ensure that all trainings follow SSC designed/ QP-NOS or the curriculum designed by the MSCVET or the MSBSVET. There is currently lack of uniformity in the outcomes associated with different qualifications across institutions (even within the Government bodies), each with its own duration, curriculum, entry requirements as well as title. Private firms who conduct skill training as a part of CSR activities must be NSDC aligned to ensure that a minimum level of training is being provided across programmes. This will lead to less discrepancy in assessing and expecting the minimum required qualifications from a trainee. Clear guidelines should be laid out, in association with NCVET and NSDC, on methods and methodologies to conduct assessments in the State to regulate assessments in the skilling ecosystem as well as to bring consistency in the assessment, examination and accreditation criteria across institutes.

- **Tracer study of passed out candidates**: The State should also have provisions for periodic tracer studies of candidates that have completed their studies/ training in skill development institutes to understand their career progression along the entire life-cycle of the passouts and to understand the quality and market relevance of vocational training provided through vocational institutes. The candidates could be monitored over different points of time in their career to assess their employment (wage employment or self-employment) status and benefits they accrue to the industry in terms of enhanced employability, skills, and competence, career trajectories, migration as well as for developing alumni connect and mentor network. This kind of tracer studies could help the State and MSSDS understand the correlation between the TVET/ skill development processes underway and employability of trained candidates. Corrective measures could then be undertaken to address the potential gaps and further strengthen the ecosystem.

- **Rating and grading framework**: A mechanism for continuous monitoring of training providers should be designed with the objectives of tracking achievement with respect to targets, taking timely corrective measures, identifying and prioritising required course correction. Accordingly, a structured rating and grading framework for all TVET institutes within the State may be institutionalized for effective and real-time assessment and evaluation of all skill development institutes to identify the higher performing institutes, centres, and training providers as well the ones not performing up to the mark. Training targets could be allocated based on performance of training centres according to the performance-based grading.

  The framework should have parameters with weightages assigned to each parameter resulting in a final score and rating for each institute/ training centre. The parameters for the framework could be quantitative as well as qualitative in nature - Quantitative parameters could include mobilization rate, completion rate, retention rate, certification percentage; Qualitative parameters could include

infrastructure availability, equipment and toolkits available, trainer qualification, beneficiary feedback etc. Training provider selection methodology should also be supplemented with geography wise, sector wise ranking for efficient target allocation and empanelment.

- **Mobile app for hassle free and transparent monitoring**: Based on the rating and grading framework, the State Government may develop mobile apps for quick, easy, hassle-free and transparent monitoring and evaluation of ITIs/ skill development training centres. The mobile app could be used by the inspectors to inspect such institutes at the district/ subdivision/ block levels and provide real time feedback on the performance of the institutes. This would reduce the latency in the entire process of monitoring and evaluation in favour of instantaneous reporting and elimination of reporting biases. Along with enhanced features and reduced lead time, the app could allow geotagged and timestamped photographs to be taken for centre verification and monitoring during inspections as evidence.

- **Decentralisation of inspection process**: Inspection of ITIs/ skill development institutes should be decentralized to the district/ subdivision/ block level involving Government officials at each respective level. This could help streamline the process of monitoring and evaluation leading to an easy and hassle-free process. Accordingly, a quality assurance inspectorate, comprising district/ bock level inspectors, could be set up within SEEID with powers to remove, suspend and/ or terminate low quality training providers.

  The State may also empanel inspection agencies to conduct regular/ time-bound inspection and approve training centres at their discretion in adherence to overall guidelines issued by NSDC. Data validation mechanisms through dedicated call-centres to assist OTP based tele-verification of candidates on sampling basis to eliminate malpractices may also be put in place.

- **Performance based rewards**: As means to incentivise institutes and training service providers to perform their functions more effectively, the Government should provide intrinsic rewards and benefits to the high performing training providers and institutes linked to their performance-based grading. Such rewards could include:

  - ✓ Government recognition/ accreditation/ certification as best-in-class institute across categories
  - ✓ Preferential and performance-linked allocation of training targets
  - ✓ Enhanced focus in terms of industry association for collaborative efforts (industry sessions, infrastructure and tools, guest faculty), placements, and OJT.

- **Centralized web-portal for training life-cycle management across departments:** The current skill development schemes within the State are aimed at various sectors and of various scales are being offered by multiple Government departments including Agriculture, Labour, Industries, Women and Child Development, Minority Development etc. This mechanism is plagued with different design, different implementation mechanism, different curriculum, different assessment and certification mechanism leading to the challenges of redistribution of resources, diverse scheme objectives and varied target groups. The overlapping of objectives across schemes also results in duplication of efforts and resources. Consequently, to improve the efficiency of expenditures on skills and to avoid duplication of efforts and resources, an umbrella scheme targeting all such schemes targeting the divergent sectors and beneficiary groups may be considered for rationalisation and convergence. This will also ensure uniformity and standardization in terms of curricula, assessment procedures, sector focus, benefits, resources, outcomes associated with different qualifications across institutions etc.

  Schemes of similar objectives must be rationalised and converged to ensure that there is minimum duplication of resources and centrally operated web portal must be launched and periodically updated to have parity of information across departments and schemes. Division of responsibility between the different Government departments with respect to data ownership and updating on the single multipurpose information system should also be outlined. The single window may ease the process of registering on multiple portals easy for employers as well. The employer will then need to operate through a ‘single window’; however, the information may be used by multiple bodies. The Government may also consider outsourcing the updating and management of the portal to an

external organization, which has expertise in information technology (however, proper checks on prevention of data leakage must be ensured). Key Performance Indicators (KPIs) such as metrics should be tracked, such as completion rate, certificate rate, absorption as Full Time Employee Rate, Apprenticeship Rate, satisfaction with training provided etc., apart from the enrolment numbers.

- **Aadhar linkage for entire life-cycle management of candidates**: There should be provisions for Aadhar linkages or provisions of facial recognition-based systems at candidate level to avoid frauds and duplication thereby easing the process of monitoring and evaluation. Aadhar linkages could also help in provisions of Direct Benefit Transfer for candidates. Scholarships and incentives awarded to SC, ST, BPL, and PwD candidates should also be linked to Aadhaar to avoid duplication in the award of scholarships to beneficiaries. The unique identifier should also be used for tracking of lifecycle of candidates being trained and passing out of the ITIs and the vocational training institutes.

- **Incentivisation of candidates based on attendance**: A slab-wise incentive structure based on attendance percentage should be put in place to encourage trainees to attend classes. Under such incentive structure, trainees could be awarded a wage-loss compensation for subsistence and alternative livelihood option during training-period, in line with the State's Minimum Wages for semi-skilled workers, on completion of 80 per cent of the training hours. Recognition awards/ certificates could also be provided to the candidates for incentivising them. Such an incentive structure is expected to reduce the drop-out rate, increase the numbers of candidates trained and assessed, thereby improving the overall outputs of the scheme.

  Additionally, the State's youth could be incentivized to take on skilling programmes by issuing Skill vouchers/ wallets that can be redeemed by students after the skills training is imparted and on attaining a minimum 80 per cent attendance. It is expected to empower the youth to opt for courses of their choices besides ensuring trainers impart quality training. These vouchers could be 100 per cent redeemable and should help the youth with further learning in sectors where the salary is generally not enough for the youth to spend on any sort of training.

- **Voice of stakeholders**: The State may also have provisions to accept and collate feedback from stakeholders – candidates, institutes, training service providers, industry personnel – through various online and offline channels involving surveys, one-to-one interviews, focused group discussions (FGDs). The State may involve officials at the district/ subdivision/ block level to undertake such exercises in periodic intervals. Additionally, a public information channel could be devised to spread awareness about new and existing schemes and interventions, laws and policies, and a grievance redressal mechanism to assess the efficiency and effectiveness of skill development programmes. There could be an option for public/ industry to provide timely feedback to the Government on the scheme, law and policy structure, and skill development interventions of the State.

- Currently, the target allocation mechanism does not take into account geographical and cultural needs of the State and is based on a top-down approach. Target allocation in smaller numbers is also leading to inefficient planning from training provider's end and they are reluctant to invest in quality improvement. Therefore, target allocation mechanism needs to be changed from a top-down to bottom-up approach factoring in local skills requirements. Training providers may also be provided yearly targets, so that they can plan and sustain their expenses over a longer term, leading to sustained assurance of their businesses and hence investments in quality improvements.

3.9. Technology: Achieve digital inclusion and 'Technology' integration for all stakeholders

To unlock the full potential of the skilling ecosystem it is necessary to introduce innovations through technology-led changes. Until now, technology has played an enabling role in making existing systems and processes become smoother and more efficient. However, with the outbreak of the pandemic and the advent of industry 4.0, its significance in skill development has grown manifold. Today, technology-enabled learning has made significant inroads and the pace at which technology is changing, it will be right to assume that the future of learning is going to be tremendously different from what it is today.

Very rightly, the State recognizes the ubiquity and increasing reach of technology in skilling and intends to reap the benefits of technology inclusion and a technology-driven teaching, learning, and management of skill interventions. With the State's extensive agenda for skill development and vocational education,

technology, with its multiplier effect, would become a mighty social leveller, creating access and insightful education for all in the State. This would, however, need concerted efforts towards thinking about the next-generation trends and disruptions and incorporate them in education and skills delivery.

3.9.1. Developing Labour Market Information Systems (LMIS) and capacity for skills analysis and forecasting

With a significant labour pool and a large number of candidates (about 4.5-5 lakh candidates annually) being trained each year across ITIs/ TVET institutions/ skill development institutions, it is imperative that the State has provisions to track the existing labour force/ work force as well as the additions to the same post completion of such trainings. Needless to say, that a central database with information of skilled and certified candidates for various training programmes, locations, sectors, trades, competency levels, experience etc. would be a key enabler to cater to domestic demand arising from Make in Maharashtra and other Government and industry initiatives as well as to cater to global demand for skilled workforce. Accordingly, the State should remodel and refurbish the Mahaswayam portal into a Labour Market Information System (LMIS), that would act as a centralised database with information on skilled and certified candidates across various vocational training programmes (PMKUVA, PMGKVK, Acharya Chanakya Skill Development Centres, DDUGKY, PMKVY, ITIs, polytechnics, other short term skill development), and integrate the same with candidate information from mainstream education to present a holistic and real-time picture of the State's supply-side scenario. The platform should also be integrated with the National Career Service (NCS) Portal in an attempt towards aligning the supply with demand for skilled resources within and outside the state, and subsequently with the proposed Digital Ecosystem for Skilling and Livelihood (DESH)-Stack e-portal.

To effectively implement the skilling reforms, a cumulative intersection of labour market, industrial interface, education, training and policies is required. Further, in order to synchronise their initiatives, it is necessary to have a coordinated and collaborated interaction with the other stakeholders. Effective tracking and analysis of such data can provide the State Government with a clear snapshot of competencies and skills or lack thereof across districts/ blocks as well as the performance of various institutes, districts/ blocks. This data could be used to effectively map courses/ trades/ skills based on sectoral demands and presence of industries across districts in the State. This could also act as a ready reckoner of available manpower for industry players interested in hiring skilled candidates in the State. Currently there are individual tracking and information systems for each individual programme (ITIs, short-term skill development etc.) and individual department. While that is essential, a centralised database/ information system could be highly convenient to track, analyse and monitor for all the stakeholders viz. Government, institutes, industries, candidates, SSCs etc.

The refurbished Mahaswayam portal should provide information pertaining to labour market trends, employment and labour policies, details of jobseekers (education, work experience, skills, and competencies), projections of labour demand/ supply at State and district levels. The data obtained is critical from the point of view of policy making as well monitoring of the schemes. Integrating a module containing detailed information on available job vacancies and jobseeker pool available for employment, this would also form a basis of an employment exchange platform for skilled trainees by providing their relevant information to potential employers. The portal could be modelled like the AI-based Atmanirbhar Skilled Employee-Employer Mapping or ASEEM portal launched to act as a workforce market policy instrument to improve the information regarding all the data, trends and analytics that describes the workforce market and map demand of skilled workforce to the supply available from all the States in the country. The employer candidate match making can be improved using smarter algorithms, and awareness about the upgradation of the portal may be ensured by field staff and advertised through social media campaigns and local associations. This AI driven synergy of information is expected to scale-up, and details of all migrant workers, their skill sets may also be uploaded on this portal.

The portal could also be integrated with Central Government's e-Shram portal to ensure the optimum realization of the employability of the State's unorganized workers (including migrant workers) and extend the benefits of social security schemes to them. The portal should have role-based access control to different modules based on the type of stakeholder. The key stakeholders that would benefit from the portal include:

- Public administrators and government officials looking to monitor and keeping track of training and skill development progress or job market trends across districts/ blocks. They would also keep tabs on the performance of different training centres across the State in terms of candidates trained, certified, passed out, and placed. They may also look at the migrant labour data to shape policies to help them, ensure promotion of their welfare and the provision of social security to them.
- Industry personnel looking for ready pool of skilled workers in the State may examine the candidates available based on the kind of experience/ skills they are looking for and then reach out to the prospective candidates directly or via the job portal in the refurbished Mahaswayam portal.
- ITIs/ TVET institutes/ Skill development training institutes may use the portal to understand the industry requirements and labour market trends to customize their course offerings. They may also use the portal to keep tabs on competitors across districts to understand their strengths and shortcomings vis-à-vis the others.
- Students undergoing training and skill development in the State may look at job market demands and make career choices accordingly and may also use the jobseekers' portal to apply for job opportunities.

3.9.2. Initiating technology driven teaching and learning for broader access and outreach in TVET

Technology would play perhaps the most significant role in shaping the workforce of the future and therefore the skills of the future. As the trends shift towards automation and digital transformation, it is vital to understand the technological requirements that would drive the shift and be necessary to acquire the skills of the future. With the ubiquity and increasing reach of technological interventions, it is only justified that it be used to spread awareness about and help the youth of the State be acquainted with the necessary skills that would enable them to sustain their livelihoods in the workplace of the future.

- **Dedicated online website for e-learning and micro-assessments**: The State should either revamp the existing Mahaswayam portal or commission the development of a dedicated online website acting as information repository as well as platforms for development of skills and competencies. This online website should contain course content, study material on important topics across various relevant disciplines and subjects pertaining to multiple industries and sectors. Information could be available in the form of documents, illustrations, videos, pictorials for easy access and usage. The website could also contain provisions for short-term courses and certifications that students could avail to earn certificates to strengthen their credentials. Considering the lack of linguistic competence among the youth, such content would be made available in Marathi language, apart from English and Hindi.

  The Government could take steps to enhance the legitimacy of such dedicated portals through tie-ups with industry players as well as academic institutions relevant to various sectors. These external stakeholders may support in content creation, video lectures or live sessions, providing real time updates on labour market trends and significant happenings across various sectors. A one-stop web portal for course content/ skilling and certification/ industry-academia connect could help strengthen the learning and development process as well as enhance the industry readiness and employability of the candidates through relevant industry-academia collaborations and certifications.

- **Self-paced learning using mobile app**: An extension to dedicated web portals could be mobile apps featuring online courses, certifications, and even learning credentials. With the increasing penetration of the internet and smartphones, candidates should be able to access learning materials and content on-the-go as per their convenience and preferred timing. This would help increase the number of people accessing skill development training due to elimination on geographical and chronal constraints. Like the web portals, the mobile app could feature functionality such as self-paced learning, tracking of progress, courses across relevant sectors, materials in the form of documents, videos, illustrative in local vernacular and English. Interactive discussion forums could also be integrated to facilitate collaborative learning wherein students may discuss concepts and doubts with peers or trainers.

- **Simulative learning experience**: Simulation modules help learners in better understanding and visualisation of concepts and functioning of the machines or processes. Important physical scenarios/ tasks in the courses could be simulated and should be part of video sessions/ post-session reading. Simulation modules should also be in the form of interactive games which promote learner engagement and enable understanding of concepts and retaining the knowledge.

- **Virtual Labs**: Virtual Labs are interactive simulators to mimic the physical laboratory set-ups. They allow students to conduct an experiment or solve a given problem statement with required components, apparatus, and materials. Depending on the programme and discipline of study, the virtual labs may be a replacement for physical lab sessions, or they can only be supplementary learning aid to a few hours of physical laboratory sessions.

- **Career Counselling using Artificial Intelligence (AI) and Chatbots:** Many a times, candidates end up choosing the wrong trade/ course, since the existing counselling methodologies do not align candidate aspiration with industry requirements. At other times, people may be unaware of the skill development/ TVET trainings happening in the State and hence are unable to access such programmes. The State Government could leverage AI to facilitate a counselling process wherein prospective candidates could enter their details (education, work experience) and proper matching could be provided regarding courses, programs, possible career trajectory etc. AI-powered neural networks could be used to chart out learning plan and career paths for prospective students – subjects that should be opted for, best suitable programmes, possible job opportunities post-completion, etc. Technology enabled career counselling via centralised websites or mobile apps could also eliminate the geographical barriers as well as enable students/ candidates to access the benefits at the time of their convenience. This could be linked with geo-tagged ITIs, polytechnics and vocational training institutes for possible admission and career opportunities.

- **Chatbots to address queries**: Intelligent chatbots in websites for the purpose of disseminating information, addressing queries, and providing general guidance could be of great benefits to the various stakeholders in the skill development/ TVET ecosystem – candidates, institutes (ITIs, Polytechnics, skill development institutes), industry players. The key functions of such chatbots could include the below mentioned:

    - Ask interactive questions to understand the profile of the stakeholder,
    - Refer to relevant websites, links for proper information,
    - Provide information on available courses, programmes, trades, QPs, sector overviews etc.,
    - Chart out career paths and offer career advice to students and candidates,
    - Set up a public information dissemination channel and online grievance redressal platform,
    - Help institutes screen candidate applications based on candidate profile.

- **Conducting sessions via online collaboration platforms to enforce *'Learn from Anywhere, Anytime'***: The Government should encourage ITIs/ TVET institutes to look at leveraging technology to ensure training reaches out to people from across the State. Digital platforms could be extensively used in institutions to conduct online classes some days every week along with offline sessions, thereby overcoming barriers of time and physical distance. These would:

    - Help candidates get familiar with such online platforms for future use,
    - Reduce the need to physically traverse to the classrooms every day,
    - Provide a suitable work around in case of unforeseen situations.

- **Tracking of learning outcomes digitally**: Tracking of learning outcomes on a real-time basis at State/ district/ training centre/ candidate level would help paint a robust picture on the progress of the trainings across ITIs/ Polytechnics/ skill development institutes in the State. Dashboards featuring seamless integration and flow of data between training centres, districts, and the State could help illustrate the performance of various districts, blocks, training centres in the State. QR codes specific to each candidate across institutions could be used to track their performance, ensure that students cannot avail multiple scholarships/ benefits under the same category, and in turn the overall

performance of the institute, blocks, districts, as well as lifecycle tracking of such candidates after they pass out. This would help track the exceptional as well as the unsatisfactory performances at the district/ block/ institute level and accordingly appropriate remedial measures could be undertaken.

- **Online trainer induction and refresher programs**: Selecting the best-in-class trainers and a process of continuous professional development of trainers would be of paramount importance to the skill development/ TVET ecosystem of the State. There can be dedicated web portal for registration, onboarding, induction, upskilling and even applying for TOT/ CIT certification for trainers in the State. This web portal dedicated to the trainers could act as a one-stop shop for all trainer related activities in the skill development/ TVET ecosystem in the State. Along with the commissioning and development of a comprehensive web portal the State could need to undertake the exercise of registering the existing trainers in the State in the web portal. Along with this new trainer registration/ onboarding could be done via the portal. This website could therefore be a comprehensive database of all available trainers in the State linked with their individual Aadhar number, thereby tackling supply constraints and facilitating interchange of trainers across institutes.

- **Introduction to Learning Factory 4.0**: Learning factories are dedicated environments for advanced education research and innovation. Implementation of Learning Factories 4.0 at ITIs/TVET institutes would promote the development of subject-related technical competencies as well as digital competencies pertaining to Industry 4.0. To train candidates to be proficient with the interconnected working environments of Industry 4.0 (AI, IoT, Blockchains, Analytics, Clouds etc.), institutes (ITIs/ TVET institutes) could use Learning Factory 4.0 to simulate Industry 4.0 production lines as part of the learning environment. As a start, the State Government could tie up with industry players that work extensively on industry 4.0 facets to set up simulative/ virtual labs or workshops in 10 select ITIs in the State as a pilot, to instruct and educate the candidates on Industry 4.0 concepts. Based on the success and acceptance of the same among the institutes and students, the same could be scaled up to include other Government ITIs of the State.

- **Connected portals to target school dropouts:** As has already been mentioned the GER at Secondary, Higher Secondary, & Higher Education levels in the State are ~94 per cent, ~72 per cent, & ~35 per cent respectively, implying high dropouts at each level.[66] The State Government recognizes the embedded hazards of this exclusion to the social fabric of the State wherein the disengaged youth can wander into morally abhorrent paths and hence the need for re-integrating the school dropouts into mainstream education through the avenues of vocational education and skill development and the need for overarching institutional reforms. This could be facilitated with the convergence of the portals of the department of school education and sports affair with the SEEID to congregate the data related to school dropouts who could be mobilized for vocational education and skill development. This could lead to an integrated information system to manage the data and information related to school dropouts resulting in better outreach, increased access, and improved governance. The dropouts are also equally benefited with easy information and access to available opportunities in vocational education and skill development. The access to available pool of dropouts could also help the Government, stakeholders and policymakers with accurate, unique and detailed information for easy decision-making in terms of setting up training centres close to such catchment area; offering online counselling to such school dropouts; adopting outreach measures to approach target candidates etc.

[66] UDISE 2022-23, AISHE 2022-23

4. Implementation Roadmap and Budgetary Provisions

State Skill Policy 2025-2030 will require a coordinated, coherent, and evidence-based approach for all nine levers and corresponding critical interventions with each of them to bring out desired changes in skills development in the State of Maharashtra. An effective and efficient implementation of the Policy will also help the State's aspirations in achieving its sustainable economic and social growth. Therefore, the implementation plan for the Policy is designed considering the following factors of a) Institutional Arrangements, b) Result Monitoring and Evaluation and c) Budget and Funding Sources.

A. Institutional and Implementation Arrangement

a) **Diversified implementation responsibilities:** Skill Policy is a large multi-intervention programme, implementation of which would require a multi-level approach reflecting the complex structure of the skills development ecosystem with its different layers of action and responsibilities. One or more government department along with other stakeholders are needed to implement different interventions as proposed in the Policy. Therefore, for every intervention within each lever, responsibility matrix is defined as part of implementation plan.

b) **Implementation Support:** A nodal office housed within MSSDS would have the responsibility to coordinate and facilitate the implementation of the Policy and provide overall guidance to different departments. The nodal office may be support by a Program Management Unit (PMU), which will also help in capacity building of other departments to efficiently run various interventions and implement large-scale policy reforms.

c) **Strengthening Visioning, Financing and Coordination:** The nodal office supported by the PMU will help the State in achieving gradual and steady systemic changes. The system will be strengthened at all the levels of visioning, financing and coordinating with multiple stakeholders within and outside government. For achieving the Policy and the Vision, the government will also have the long-term sustainability plan as well as ownership of the outcomes achieved for the Vision.

d) **Empowered Committees for monitoring:** The State recognizes that the success of the Policy is largely dependent on having a having a robust on-ground implementation plan which will, in turn, be largely dependent on having a real-time monitoring framework and responsive institutional mechanism. Therefore, to build capable and effective institutions within the Government machinery to catalyse the overall efforts by various stakeholders and implementation of initiatives this large and expansive, several empowered committees should be created as given in the below sections.

- **Governing Body (GB):** In order to refocus and streamline structure, processes, management resources and abilities of the Government machineries to plan and implement the activities as envisaged under State Skill Policy, the Government should constitute a Governing Body (GB), chaired by the Chief Secretary and with representation of all Govt. entities involved with skill development and vocational education, responsible for the overall direction and policy advocacy. Other members from industry/ associations etc. may be coopted by the Chairman at his discretion for better planning and implementation of the schemes. The GB shall be responsible for consensus building in policy measures and reform initiatives, guiding policy setting for collective action, and fostering synergies in the field of skill development and vocational education in the State. The key responsibilities shall include the below mentioned.

    a. To provide policy direction, advocacy and overall guidance in implementation of the State Skill Policy,

    b. To approve the Annual Plan of action and supplementary budget proposals of the State for skilling,

    c. To review overall progress and development of Policy activities,

    d. To make, inform, adopt, amend, vary or rescind from time-to-time rules and by–laws related to skilling,

e. To overlook convergence of all skill development initiatives/ schemes across Departments/ Ministries etc.,

f. The sole authority for resolving any doubts as to the interpretation of these provisions and its ruling shall be final and binding.

- **Executive Council:** The State shall constitute an Executive Council, chaired by the Additional Chief Secretary/ Principal Secretary/ Secretary, SEEID and convened by the CEO, MSSDS, to ensure implementation, review progress and enforce quality as per Governing Body direction and standards set.

  a. Overall responsibility for the administration and implementation of skill development interventions in the State,

  b. To receive grants and contributions and to have custody of the funds for skilling,

  c. To coordinate with industry partners and facilitate industry involvement in the space of TVET,

  d. To strategize the convergence for skilling activities across all sectors of State/ national priorities and skill-gap findings,

  e. To prepare the budget estimates of the SEEID and MSSDS each year and sanction expenditure within the limits of the budget approved by the GB,

  f. To prepare and maintain accounts and other relevant records of skilling,

  g. To fix levy and receive such fees and other charges for the service rented by the MSSDS/ SEEID,

  h. To perform such additional functions and carry out such duties as may from time to time be assigned by the GB,

  i. To establish procedures in respect of services and technical advice to be rendered by the MSSDS/ SEEID,

  j. To cooperate any other organization in the matter of education, training, management and allied services,

  k. To enter arrangements for and on behalf of the MSSDS/ SEEID,

  l. To sue and defend all legal proceedings on behalf of the MSSDS/ SEEID,

  m. To appoint committees or constitute sub missions to dispose any businesses of the MSSDS/ SEEID,

  n. To consider and pass such resolutions on the annual report, the annual accounts and the financial estimates of the MSSDS/ SEEID,

  o. To delegate powers as it may consider appropriate.

- **District Project Management Units (DPMUs):** To ascertain quality, enhance outreach and foster better industry collaboration for the implementation of the State Skill Policy, MSSDS shall set up District Project Management Units (DPMUs) in each district under District Magistrates, responsible for the below mentioned.

  a. Implementing District Skill Development Plans (DSDPs) to achieve the targets being set by MSSDS at the district level,

  b. Continual upgradation and skilling of the teaching faculty within the district,

  c. Managing risks and issues in skilling and taking corrective measurements,

  d. Monitoring and supervision including periodic reviews, inspections, and submission of quarterly reports to MSSDS,

  e. Ensuring enhanced vocational education awareness among all youth through last-mile outreach,

f. Facilitating connect with industries and handholding support for placement/ self-employment etc.

g. Ensuring that skilling initiatives reach marginalized and disadvantaged groups, thereby promoting social and economic inclusion,

h. Contributing to the holistic and inclusive economic development of the district by creating a skilled workforce.

- **Sectoral Advisory Committees:** To enhance and augment the skill eco-system through improvement of pedagogical approach and methodology, standardisation of processes especially teaching-learning, R&D, assessment and certification, and to keep up with nationally and globally accepted standards in skilling, the State shall set up Sectoral Advisory Committees in all relevant and priority sectors of the State. The committee(s) shall involve industries, academia, accreditation/ certification bodies, concerned Govt. departments, industry associations/ chambers, and any other relevant stakeholders at the discretion of the Chairperson of the committee. The key responsibilities shall include the below mentioned.

    a. Identifying the skill development needs, determining skill/ competency standards and development of a sector skill development plan,

    b. Facilitating industry-led customisation of course curricula to enhance skills and employability,

    c. Fostering sector-aligned R&D facilities with institutes and academia for knowledge and technology enhancement,

    d. Facilitating setting up CoEs with industry-academia collaborations and designing industry-relevant training programmes,

    e. Monitoring the effectiveness and quality of skill development programmes and bridging the gap between industry-required skills and qualifications available in the workforce,

    f. Working towards connecting skilled individuals with employment/ livelihood opportunities available within their sectors and helping industries meet their workforce requirement.

B. Results Monitoring and Evaluation

- **Monitoring mechanism:** The nodal office within the MSSDS and SEEID will have a well-defined institutional mechanism for planning, managing, and monitoring during the entire duration of implementation of the Policy 2025-2030. The nodal office will lead the overall M&E arrangements supported by the PMU. Major activities undertaken by the nodal office on M&E will include (a) designing detailed program activities and program progress reviews; (b) consolidating and disseminating information on program progress reports; (c) reporting on KPI achievements and providing evidence; and (d) commissioning surveys, studies, and assessments as necessary.

- **MIS:** An important focus will be on establishing effective MISs across the sector. As part of this, the PMU will ensure that the MIS is collecting all data required for effective program monitoring and that a special purpose data analytics dashboard is established to enable regular program monitoring against the specific monitoring requirements of the Results Framework and the KPIs. These data will be subject to periodic randomized audits and third-party validation to ensure its accuracy.

- **Studies:** Primary data collection including outcomes and prospective experimental impact evaluations to test programmatic and policy alternatives will be undertaken. In addition, beneficiary assessments will be undertaken to improve program impact.

C. Budget and Funding Sources for the programme interventions

The estimated capital investments for all the interventions within nine levers is about INR 2,250 crores till year 2030, with government contributions of about 67 per cent, and the remaining being private investments. The interventions would also necessitate an incremental operating expense of about INR

450 crores annually. A few interventions don't have any associated cost as they are policy interventions and therefore do not have cost implications.

Sources of Fund: State Skill Policy 2025-2030 implementation aims to achieve convergence for different types of funding sources. The skills financing would be done through two ways – Direct Funding - Government (Grants, Debt) and Private Sector (Equity, Debt, Partner to Partner Basis, CSR) and Indirect Funding - Government (Grants, Debt, Entrepreneurship) and Private Sector (Debt, CSR). Aligning with Government of India development agenda and working closely with GoI to dovetail the national priority would be the primary source of funding for Policy 2025-2030. Secondly, for some of the interventions, Govt. of Maharashtra would also design innovative financing mechanism as well as tap the pool of international capital available for 'Just Transition' such as green finance for WSC and CoEs in the Green Energy, Sustainability and Climate Change areas. Some of the emerging trends in Skills Financing would include Development Impact Bonds, Impact Financing, Private Equity (PE)/ Venture Capital Funding, Customised Drop Line Limit Facility (Working Capital Financing), Support from Multilateral/ Bilateral Agencies and from Social/ Private Foundations. Thirdly, many of the interventions require close involvement of private sector, which requires government nudge for using capital in the priority areas. With the right kind of policies and investment friendly environment, Maharashtra could attract private sector investments. Lastly, India has unlocked philanthropic capital available to fund development programme from private sector and HNIs. Sources of funding and an indicative break for these sources are provided in the below result and action matrix. The matrix also includes KPI for every intervention under nine levers, key stakeholders to implement, timeline and budget for the same.

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
Access: Deepen 'Access' to skill development and vocational education among youth					
1	Integrating vocational education to mainstream education at an earlier stage in schools and through an appropriate credit-based framework	Maharashtra State Skill Development Society (MSSDS) and Skill Education and Sports Department • Enabling early introduction of vocational education within school education. • Setting up skill development centres within premises of secondary and higher secondary schools using existing resources and infrastructure of schools. • Creating horizontal and vertical pathways between mainstream and vocational education, thereby, making vocational education more aspirational. • Designing flexible and credit linked modular and/ or unitised structures within TVET.	Medium term (2-3 years)	INR 80 crore capex (state government)	• Horizontal and vertical career pathways created between mainstream and vocational education in the state, • No. of skill development centres set up within schools and colleges.
3	Developing Skill Hubs as integrated campuses in the PPP route in select urban/ peri-urban areas	Maharashtra State Skill Development Society (MSSDS) • Setting up Skill Hubs in the urban/ peri-urban conglomerations of the State providing an SEZ-like ecosystem dedicated to skill development. • Leveraging public-private partnerships, wherein infrastructure could be provided/ developed by the State Government and the Hub	Medium term (2-3 years)	INR 100 crore capex (70-80 per cent state government and 20-30 per cent private players)	• No. of Skill Hubs set up in the PPP route, • No. of candidates trained annually in the Skill Hubs.

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		could be managed and operated by private players.			
Equity: Mainstreaming 'Equity' in all aspects of technical, vocational education & training initiatives					
1	Effecting systemic transformations towards gender inclusivity in vocational education and societal perception	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Ensuring equitable and easy access of vocational education for all females, WSHGs, and female entrepreneurs in the state. • Promoting female participation of women in TVET with additional benefits for mobilization, counselling, safety, security, hygiene, and promotional measures. <u>MSSDS and Women & Child Development Dept.</u> • Mobilizing and ensuring capacity building of WSHGs through TVET initiatives • Establishing Institute for Equity Research (IER) as a federally funded R&D corporation managed by the Department in a quasi-governmental arrangement. • Setting up joint steering committees and working groups at different stages of the policy making and designing the State Skill Vision. • Setting up community spaces at the Panchayat level to inspire a paradigm shift in the societal perception towards gender inclusivity and women's participation in TVET.	Long term (3-5 years)	INR 10 crore of capex (state government) and INR 10-15 crore of opex annually (state government)	• Number of females trained and certified, • Number of female start-ups incubated, • Number of WSHG members trained and certified, • Number of community spaces created at the Panchayat level.
Collaboration: Achieve sustainable and gainful 'Collaboration' with all stakeholders					
1	Enabling industry collaboration for need-based and industry aligned TVET in the State	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Forming a model of Dual TVET in collaboration with the industry by bringing them into a closer relationship with TVET institutions. • Introducing Industry-led training program with industries acting as experiential training providers. • Promoting micro-entrepreneurship and apprenticeship models for MSME clusters. • Conducting continuous industry census and skill gap assessments for demand-led skill development. <u>MSSDS and MIDC</u> • Mandating development of skill	Long-term (3-5 years)	INR 50-100 crore opex annually (state government)	• Percentage of TVET initiatives involving a dual-track, apprenticeship training, RTD, and other industry-participatory models.

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		development centres with all premises of Industry Parks.			
Relevance: Remain 'Relevant' in alignment with industry, national, international priorities and youth aspiration					
1	Introducing an Aspirational Sector driven skill development ecosystem for the State	Maharashtra State Skill Development Society (MSSDS) • Responsible for identification, development, and promotion of one or few aspirational sectors for a district and aligning all training interventions to trades and courses from the aspirational sectors along with emerging sectors. • Developing dedicated infrastructure and resources for skilling and capacity building in targeted courses within the districts. • Identifying district wise anchor industries to anchor skill development and capacity building within the districts.	Medium term (2-3 years)	INR 300-400 crore of capex (50-60 per cent state government and 40-50 per cent of private investments)	• Aspirational sectors and trades identified for all districts, • Collaboration set up with district level anchor industries.
2	Ensuring industry alignment of teacher training for TVET teachers within the State	Maharashtra State Skill Development Society (MSSDS) • Setting up CoEs for teacher training and certification. • Encouraging people with valuable industry experience to enter teaching in TVET, either full or part-time. • Ensuring consistency in teaching standards through common assessments. • Enhancing capacity of teacher training in the vocational education space.	Short term (1-2 years)	INR 10-20 crore of capex and INR 40-50 crore of opex annually (State government)	• Number of vocational teachers trained every year, • Teacher training CoE set up, • Review of quality and standards of teacher training
3	Creating a mentor network to ensure equitable and easy access of vocational education	Maharashtra State Skill Development Society (MSSDS) • Creating a pool of mentors, counsellors, and career advisors by engaging with mid-career professionals, industry veterans, post-retirement citizens etc. • Reverse integrating retired citizen pool of the state as career advisors/ mentors in the TVET space.	Short term (1-2 years)	INR 1-2 crore opex annually (state government)	• Number of mentors/ career advisors onboarded, • Number of candidates counselled through such model.
4	Adopting a sector-aligned skill development and vocational education along the state and national priority areas	MSSDS and Agriculture, Animal Husbandry, Dairy Development & Fisheries Dept. • Setting up CoEs in agriculture and food processing with special focus on Climate Smart Agriculture (CSA). • Empowering KVKs to have a	Long term (3-5 years)	INR 300-400 crore capex (state government) and INR 150-200 crore opex annually	• Number of trainees trained in the initiatives annually, • Industry/ private sector feedback on employability, • No. of sector aligned

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
	a) Agriculture	dedicated lead, managing the grassroots trainers and helping in generating interests for being agri-entrepreneurs from the villages. • Empowering Farmers Producers Groups and grass-root level training organizations to train and develop a cadre of village level agri-entrepreneurs.		(state government)	CoEs set up, • No. of courses created/ updated in the sectors with industry linkages.
	b) Healthcare	<u>MSSDS and Public Health Department</u> • Creating a cadre of in-home healthcare providers by training on healthcare support areas. • Empowering primary healthcare workers with capacity building. • Developing a quality improvement training program for mid-career professionals for nurses, midwives, healthcare technicians etc. through RPL. • Designing courses with pedagogy covering the areas of use of AI in early detection of diseases, creating personalized treatment plans, development of precision medicine etc.			
	c) Circular Fashion and Textiles	<u>MSSDS and Cooperation, Marketing and Textile Department</u> • Creating CoEs for textile design and sustainable fashion focusing on skilling in the textiles, technical textiles, apparel, and sustainable and circular fashion. • Establishing close ties with international industry & academia as knowledge partners, to license existing curriculum and develop new content, define standards for skilling education and capacity building, and provide insights to address the dynamic needs of international labour market.			
	d) Climate Change, Sustainability & Renewable Energy	<u>MSSDS and Industries, Energy and Labour Department</u> • Setting up CoEs on climate change, sustainability, ESG, responsible supply chain, carbon foot printing and management etc. • Creating CoE in RE CoE targeting the entire value chain of skilling in RE and Sustainability.			
	e) Electric Vehicles	<u>MSSDS and Industries, Energy and Labour Department</u>			

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		• Setting up CoEs in EV for skilling and further research in vehicle autonomous control, wireless charging of EVs, modelling of future transport systems, smart grids, battery reliability and safety requirements, e-motor efficiency, regulatory options, and consumer barriers and incentives etc.			
	f) Responsive Tourism	<u>MSSDS and Tourism Department, Home Department</u> • Prioritizing training programmes and industry initiatives aimed at women-centric job roles in tourism. • Enhancing existing homestay policies to support growth of homestay businesses, providing training and resources for homestays hosts & employees. • Setting up specialized training institutes in prominent tourist destinations. • Providing RPL & soft skills training for tour guides, cook & waiters, interpreters, receptionists, homestay facility providers etc. • Planning training programs for guides & naturalists, covering tasks such as interpretation and entrepreneurship in the sector. • Assessing demand for cruise tourism workers and facilitating training for youth aligned to both domestic & global markets. • Creating cadre of Tourist-Oriented Policing (TOP) officers, to build the State as a safe, hospitable, and tourist-friendly destination.			
	g) Design	<u>MSSDS and Industries, Energy and Labour Department, SEEID and MSBSVET</u> • Setting up a Design Hub as a common platform and network enabler between multiple designers and consumers for design education. • Rationalising design curricula to be more multi-disciplinary allowing enhanced choice and flexibility.			
	h) Industry 4.0 and ESDM	<u>MSSDS and Directorate of IT and MSBSVET</u> • Offering programs on AI, PLCs, IoT, Sensors, Robotics & SCADA; facilities for upskilling/ reskilling of workforce, and industry personnel;			

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		industry collaboration for placements, curriculum design, certifications etc. • Providing courses on VLSI, Embedded systems, communications engineering, semiconductor manufacturing, integrated device manufacturing, digital manufacturing technology, semi-conductor assembly and testing, networking & telecommunications etc. • Developing future-oriented and industry-aligned course curriculum in areas of electronic equipment manufacturing, semiconductor manufacturing, integrated device manufacturing etc.			
	i) Other sectors	<u>MSSDS and Industries, Energy and Labour Department and MSBSVET</u> • Creating and offering courses in in the hydrocarbon/ specialty chemicals sectors in the segments of chemical processes, plastics & polymers, industrial adhesives, surfactants, industrial gases, waste management, and active pharmaceutical ingredients etc. • Setting up a CoE offering training and R&D in the pharmaceuticals sector in product innovation, drug development, quality control and assurance, drug approvals, supply chain management, technology innovation and regulations. • Designing training programs in the urban infrastructure focusing on construction, construction technologies, urban design, planning and practices, and urban infrastructure etc. • Developing programs in the Media and Entertainment sector focusing on the areas of advertising, public relations, marketing, sales, journalism, content management, photography, creative writing and event management. • Designing courses & programs in the Beauty & Wellness sector in areas such as Beauty Culture & Cosmetology; Yoga and Ayurveda Dietetics; Sports Nutrition and Physiotherapy; Beauty and Fitness; Salon Management; Beauty Therapy and Aesthetics; Aesthetic Dermatology; Beauty,			

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		Cosmetology, Hair Dressing and Makeup; Spa Therapy etc.			
5	Developing the State's first World Skill Centre (WSC) on advanced manufacturing and automation	Skill, Employment, Entrepreneurship and Innovation Department (SEEID) • Setting up the State's first World Skill Centre focussing on advanced manufacturing, automation and sustainable and green practices. • Providing impetus to R&D in the manufacturing sector through collaborative research by partnership with universities, research institutions, & industries	Long term (3-5 years)	INR 600-800 crore of capex (state government through IFI funding)	• Setting up of the World Skill Centre, • No. of candidates trained annually at the WSC.
6	Conducting short-term trainings and RPL at sourcing clusters and regions	Maharashtra State Skill Development Society (MSSDS) • Developing dedicated training infrastructure close to/ within each MSME cluster along with common facilities and tailored courses in PPP route. • Expanding capacities, access and outreach of RPL programmes for enabling the existing untrained/ informally trained workforce to become upskilled. • Encouraging cluster-level training centres to emerge as mini-innovation centres.	Medium term (2-3 years)	INR 50 crore of capex (70-80 per cent state government and 20-30 per cent private investments); INR 15-20 crore opex annually (state government)	• RPL trainings conducted annually, • Number. of cluster-based training facilities set up.
7	Enabling professional development of the youth through Skill2Work Studios/ finishing schools/ life-skills schools	Maharashtra State Skill Development Society (MSSDS) • Setting up dedicated Skill2Work Studios focused only on building best-in-class life skills for personality and all-round development of students and jobseekers. • Creating a cadre of AI-ready workforce through adequate reskilling/ upskilling initiatives of early-career and mid-career professionals	Short to medium term (1-3 years)	INR 5-10 crore capex (60 per cent state government, 40 per cent private sector) 5-10 crore of opex annually (state government)	• No. of Skill2Work Studios set up, • No. of participants trained in foundational AI courses
Inclusivity: Ensure 'Inclusivity' for all sections of the society in skill development					
1	Facilitating vocational education for tribals and PwDs with a slew of targeted reform measures	Maharashtra State Skill Development Society (MSSDS) • Designing and implementing tailored TVET programmes for disadvantaged groups and ensuring equitable and easy access of vocational education for all. • Introducing reforms to make vocational education more aspirational among the tribals and PwD youths and well recognized by	Long term (3-5 years)	INR 50 crore of capex (state government) and INR 8-10 crore of opex annually (state government)	• No. of tribal skill development centres set up, • No. of tribal and PwD trainees trained annually, • No. of teacher training initiatives every year focusing on disability etiquettes and

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		society. • Setting up tribal skill development centres in each of the aspirational districts providing skilling through a distinctive native education system.			communication, • No. of scholarships offered to tribal students every year.
3	Providing migration support with destination-specific migration counselling centres and community hostels	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Setting up Migration Counselling and Registration Centres (MCRCs) in the major urban destinations to bolster candidates to make an informed and supported intra-state migration, as well as facilitate them in integrating with local culture and environment. • Providing temporary accommodation or accommodation assistance through a network of community hostels	Medium term (2-3 years)	INR 80-100 crore capex (state government) and INR 8-10 crore of opex annually (state government)	• No. of MCRCs and community hostels set up in urban centres.
4	Launching geography specific short-term trainings for international migrants from the State	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Providing destination specific short-term trainings and RPL for international migrants. • Setting up a better information exchange between the labour market and the education systems for a better needs assessment in association with multiple stakeholders. <u>Home Department and MSSDS</u> • Setting up an All-Purpose 'Port of Calling' in the state and operationalizing international Migration Support Centres. <u>MSSDS, Home Department & MEA</u> • Setting up an Overseas Development and Employment Promotion Agency to facilitate international mobility. • Setting up International Migration Support Centres (MSCs) for post-migration services to international migrants.	Short term to medium term (1-3 years)	INR 25-30 crore capex and INR 15-20 crore opex annually (state government)	• Number STTs and RPLs conducted for international migrants, • International MSCs set up and operationalised, • Overseas Development and Employment Promotion Agency set up and operationalised.
5	Developing a network of artisan villages for a progressive indigenous sector and skills development	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Developing standard training framework for artisans and craftsperson through the network of the artisan villages • Offering fellowship programmes for indigenous artisans and scholarships for students opting for long-term indigenous courses	Long term (3-5 years)	INR 150-200 crore capex (70-80 per cent state government and 20-30 per cent of private investments)	• Number of artisan villages set up, • Number of artisans enrolled in fellowship programme, • Number of artisans trained and certified, • Number of

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		• Onboarding agencies for training delivery on soft skills, financial literacy and business aspects and business acumen of artisans <u>MSSDS and Directorate of Industries</u> • Creating a network of artisan villages in major urban locations and outskirts/ suburbs of cities in the PPP route • Overseeing and managing all non-training specific activities and overall performance evaluation of the artisan villages		INR 15-20 crore opex (state government)	scholarships awarded.
Innovation: Cultivate and nurture 'Innovation' and entrepreneurial culture in the State					
1	Transforming the State into a leading international startup destination with focus on start-up education	<u>Maharashtra State Skill Development Society (MSSDS), MSBSVET</u> • Providing startup education and curriculum advisory. • Conceptualising a body for bringing synergies among industry, academia and government. • introducing a 'Nano Unicorn' programme to promote entrepreneurship at grassroots level through structured training and mentorship. • Introducing 'start-up' as a subject in colleges, universities, ITIs, polytechnics as an optional specialization or a mandatory credit-based module. • Developing and rolling out entrepreneurship mindset curriculum in schools, HEIs etc. through digital platform. • Introducing entrepreneurship as an elective subject within school education. <u>Private sector</u> • Offering seed funding, angel investment, and incubation support in partnership with the state	Medium term (2-3 years)	INR 80-100 crore of opex annually (state government)	• No. of Nano Unicorns mentored and trained, • No. of applicants and students of startup courses,
Governance: Strengthen 'Governance', build capacity, and achieve convergence at all levels					
1	Strengthening existing institutions focused on implementation and conceptualizing the MSSDS 2.0	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Responsible for all short-term skill development interventions within the State integrating efforts by all government departments. • Conducting periodic national and state-level labour market studies, employment trends, future job-roles, skill-gap studies etc.	Medium to long term (2-5 years)	-	• Robust and responsive institutional framework and governance set up

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		• Enhancing global cooperation, exchange, and communication with industries, academia, governments for concepts like future skills, knowledge, employment, and entrepreneurship. • Promoting quality and innovation in vocational education and training and making the youth of the State globally employable. <u>Concerned line departments</u> • Aligning training interventions with standard NSQF/ NCrF framework and in close convergence with initiatives by MSSDS. <u>DSCs</u> • Providing valuable inputs into labour market which in turn would lead to effective decision making and course correction. • Facilitating identification of skill gaps at each district across sectors and focusing on curricula design at the regional level. • Responsible for IEC activities at ground level and playing a pivotal role in counselling youth in their districts. • Responsible for determining the outcome and impact of the projects undertaken and thus help in better convergence of the skilling programmes undertaken by the State and districts.			
2	Developing a strong monitoring mechanism towards ensuring quality and relevance of TVET	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Formulating policies and rules pertaining to outcome-based payment disbursement, framework for rating and grading etc. • Developing rules and responsibilities of government officials and institutions pertaining to monitoring and inspection. • Conduct periodic tracer studies for tracking of career progression and life cycle of participants. • Conducting periodic inspections of institutes across districts/ subdivisions/ blocks. • Carrying out detailed investigation as per the parameters of the rating and grading. • Collating inspection records and observations and assessing the	Short Term (1-2 years)	INR 5 crore opex per year (State government)	• Establishment of Rating and Grading framework, • Mobile app for rating and grading, • Outcomes for payment disbursement (training hours, assessment, placements), • Number of inspections carried out annually, • Rating and Grading of institutes, • Creation of a centralised portal, • Introduction of an umbrella scheme for all skill

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		performance of the institutions, basis rating/ grading framework. MSSDS along with all line depts • Rationalising and converging schemes of similar objectives to optimise resources and avoid duplication. • Creating an umbrella scheme covering all schemes targeting the divergent sectors & beneficiary groups. • Developing a single centralised web portals for training life cycle management across departments.			development initiatives of the state,
Promotion: Use 'Promotion' to improve perception for all stakeholders about skill development					
1	Reimagining and rebranding vocational education, skill development, and apprenticeship training	Maharashtra State Skill Development Society (MSSDS) • Rebranding initiatives of skill development and vocational education through initiatives like role modelling, quality certifications, industry accreditations, R&D focus etc. • Branding the skill development initiatives of the State under a common brand and common emblem for better outreach. • Designing and implementing a promotional and communication strategy for maximising the outreach and relevance of skill development to the beneficiaries. • Making apprenticeship training aspirational among the youth and developing apprenticeship standards by involving industries.	Short-term (1-2 years)	INR 5-10 crore of opex annually (state government)	• State TVET branding initiatives implemented, • Number of apprenticeship training programmes conducted.
2	Leveraging right amount of counselling and career advisory at each level of vocational education	Maharashtra State Skill Development Society (MSSDS) • Introducing reforms to make vocational education more aspirational and well-recognized among the youth and the society at large. • Mobilizing a cadre of mobilizers/ influencers at GP level for the last mile outreach and doorstep counselling. • Integrating trainings on psychological counselling and career advising within teacher training for teachers/ practitioners. • Involving guardian counselling in the entire process of mobilisation, counselling, and registration of	Short to medium term (1-3 years)	INR 75-100 crore of opex annually (state government)	• Number of GP level mobilisers/ influencers mobilised, • 100 per cent integration of counselling to vocational education • Annual youth aspiration studies conducted

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
		trainees.			
3	Strengthening vocational education with unique awareness campaigns and promotional initiatives	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Designing, implementing, and funding innovative campaigns and initiatives across media for outreach and promotions. ○ Maharashtra Skill Week ○ District skill competitions ○ Sector/ trade-level role models ○ Platform for alumni interactions ○ Skill logo/ emblem/ mascot ○ Weekly skill bulletin/ newsletters <u>MSSDS and all line departments</u> • Mobilising ground-level government functionaries across departments/ bodies for last-mile outreach	Short term (1-2 years)	INR 10-15 crore opex annually (state government)	• Number of outreach initiatives and campaigns launched, • Awareness about TVET and various schemes among the youth.
Technology: Achieve digital inclusion and 'Technology' integration for all stakeholders					
1	Developing Labour Market Information Systems (LMIS) and capacity for skills analysis and forecasting	<u>Maharashtra State Skill Development Society (MSSDS) and Directorate of IT</u> • Refurbishing the Mahaswayam portal into an LMIS, acting as a centralised database with information on skilled & certified candidates across vocational training initiatives & mainstream education presenting a holistic supply-side scenario. • Presenting information pertaining to labour market trends, employment & labour policies, details of jobseekers, projections of labour demand/ supply at State and district levels via the portal. • Integrating the portal with Central Government's e-Shram portal and other relevant portals. <u>Other line departments</u> • Providing data pertaining to skill development trainings conducted • Providing data pertaining to inbound and outbound migrant workers • Supporting with labour market news and information related to labour market and demand-supply scenarios.	Short term (1-2 years)	INR 5-10 crore of capex (state government) and INR 2-3 crore of opex annually (state government)	• LMIS for skills analysis and forecasting created, • Number of skilled labourers registered in the LMIS, • Number of migrant labourers registered.
2.	Initiating technology driven teaching and learning for	<u>Maharashtra State Skill Development Society (MSSDS)</u> • Conducting overall program management for driving	Short term (1-2 years)	INR 5 crore capex (state government)	• Setting up and operationalizing different technology interventions in

#	Action Item	Responsibility	Timeline	Budget/ Funding	KPIs to monitor
	broader access and outreach in TVET	technological innovations and teaching and learning. • Creating a dedicated online website acting as information repository as well as platforms for all skill development interventions of the State. • Monitoring and assessing effectiveness and impact of each intervention. • Undertaking steps to update, enhance, or take corrective measures against each intervention. <u>Directorate of Information Technology</u> • Overseeing the technical implementation of the interventions in association with MSSDS. • Designing and developing the various technological interventions and providing technical support for operation and maintenance of such interventions.		INR 3-5 crore opex annually (state government)	teaching and learning, • Dedicated online platform for information, teaching and learning created, • Industry/ candidate feedback, • Time and cost saved due to streamlined processes.

Table 5: Result and action matrix for implementation of State Skill Policy 2025-2030

5. Annexure

5.1. Approach & Methodology

The Policy Draft has been developed in a consultative approach through discussions and deliberations by key stakeholders including Government, industries, academia, Sector Skill Councils etc. adopting a *'future backwards approach'*. The distinctive characteristics of using a 'future backwards' approach for planning is that it accounts for sustainability of chosen interventions to reach the ideal future State while also giving a strong emphasis on achieving immediate outcome and impact. Additionally, the 'Nine Levers of Value' framework has been deployed which is the guiding framework for designing the State's skill vision and preparing the implementation roadmap. This framework is based on an outcome-based planning and implementation and ensures that every single gear in the skilling machinery of the State aligns with the expected outcomes. This framework looks at skill development and vocational education from nine different perspectives - Access, Equity, Inclusivity, Relevance, Promotion, Collaboration, Governance, Innovation and Technology. The different consultations, discussions, and deliberation sessions held till date (8th February 2025) are listed in the below table.

Meeting	Date	Participants
Stakeholder Meetings held in Mumbai/ Maharashtra	07.01.2025	ITIs/Polytechnics heads
	08.01.2025	Industry and MSME players
	09.01.2025	Sector Skill Council Officials
	16.01.2025	Incubation Centre Heads, Start-ups, and Entrepreneurs
	17.01.2025	Private Training Providers
	31.01.2025	Confederation of Indian Industry (CII), Shambhajinagar
One on One Interactions with members of Skill Policy Committee	15.01.2025	Smt. Akansha Pandey (Regional Director, Directorate of Skill Development and Entrepreneurship (RDSD&E))
	15.01.2025	Mr. Mohammad Kalam (Divisional Head (West), National Skill Development Corporation (NSDC), Mumbai)
	17 .01.2025	Mr. Vishal Tibrewala (Managing Director, ICEM Engg Pvt Ltd)
	20.01.2025	Mr. Nikhil Nangude (OSD to Minister of Skill and Employment)
	21.01.2025	Shri. Soumya Ranjan (COO- B.F.S.I. Sector Skill Council)
	30.01.2025	Dr. Apoorva Palkar, Vice Chancellor, Maharashtra State Skills University (MSSU)
	14.02.2025	Mr. Anand Mapuskar, Invited Expert Member and OSD to Hon'ble Minister
	18.02.2025	Prof. Bhagawantrao N. Jagtap, Invited Expert Member

5.2. Key Informant Interview Updates

Dr. Apoorva Palkar

Vice Chancellor, Ratan Tata Maharashtra State Skills University

Dr. Apoorva Palkar is the Vice Chancellor of Ratan Tata Maharashtra State Skills University, with over 28 years of experience in higher education and skill development. She has led initiatives across entrepreneurship, skilling projects, collaborating with various universities, organizations, and governments. An alumna of IIM-Ahmedabad, Dr. Palkar has authored 5 books, published 50 papers, and received several awards, including the Ravi J Mathai Fellow Award and the Academic Leadership Award from the Higher Education Forum (HEF).

Key Insights and Recommendations

- A **Digital Skills Card** should be introduced to capture certifications, skill acquisitions, and map the entire journey of a candidate from training to placement. This card could be linked to the Aadhaar card for seamless integration.
- A high incentivization mechanism, including financial rewards and creating aspirational value, should be implemented to attract candidates to the Technical and Vocational Education and Training (TVET) sector.
- The upward **mobility of the workforce from the informal to the formal sector** should be facilitated through upskilling and reskilling initiatives. Additionally, candidates with skill-relevant course experience should be transitioned into the formal education system.
- **Aspirational districts** should be mapped to their respective skill bases, and appropriate skilling programs should be designed tailored to these regions.
- The inclusion of the tribal population in Maharashtra needs to be focused on by establishing **tribal skill centers** in districts with high tribal populations. These centers should serve as one-stop solutions, providing access to various schemes, ITI programs, and short-term training initiatives.
- Skill infrastructure should be consolidated and aggregated by establishing **Skill Hubs**. These hubs should offer plug-and-play infrastructure to skill centers, industry centers, incubation centers, and Centers of Excellence (CoEs).
- A comprehensive portal listing of all available skill infrastructure in the state should be created to ensure absolute visibility and accessibility of these centers.
- **Skill-based entrepreneurial electives** (30-60 hours) should be mandated in higher education curricula to enhance the employability of students, particularly in technical courses.
- Aspirational skills in areas such as waste management, pollution management, alternative textile development, and electric vehicle/battery manufacturing should be focused on.
- Bachelor's in Vocational Education through State Skills Universities should be introduced in fields such as AI and Cybersecurity to motivate youth to pursue skill-based degrees and enhance employability in emerging sectors.
- Skill scholarships should be introduced to promote and encourage participation in skilling programs, ensuring accessibility for candidates from diverse socio-economic backgrounds.
- The role of the Maharashtra Industrial Development Corporation (MIDC) in the TVET ecosystem should be enhanced. All MIDC centers should function as upskilling centers to train candidates in industrial trades.

" We need to ensure that every community has access to quality training and opportunities. Consolidating skill infrastructure, empowering aspirational districts and including the tribal population in our skilling initiatives is imperative."

Mr. Mohammad Kalam

Divisional Head (West), National Skill Development Corporation (NSDC).

Mr. Mohammad Kalam is the State Engagement Officer Regional Head - West at the National Skill Development Corporation. With 14 years of experience in public policy, vocational education, skilling, employment, and entrepreneurship, Mr. Kalam has made significant contributions to the sector. He has extensive experience in project handling, planning, and executing projects and schemes, as well as development activities.

Key Insights and Recommendations

- The policy needs to focus on the disruptive changes taking place in the job market and focus on relevant roles in domestic as well as international job market.
- Maharashtra's manufacturing sector is huge, yet rural areas have not reaped any employment benefit. There remains a lot of potential in this sector, and it is crucial to understand the job roles required in these regions and identify the demands of local markets.
- Prominent sectors that could be focussed while framing policy are Manufacturing, Agriculture, Food processing and Agro industries.
- Agriculture and tertiary food processing industries are rapidly expanding in Maharashtra, representing significant opportunities for skilling and employment in the rural regions.
- To ensure industry participation in policy development, a detailed **Industry survey** should be conducted to identify workforce demands, job roles, and industry-specific requirements. NSDC is currently performing such survey for the state of Maharashtra.
- **Integration of vocational and higher education** through schemes like Acharya Chanakya Kaushal Vikas Yojana is the need of the hour. Students in the 2nd and 3rd year of their academic programs should be the primary focus, helping them gain market-relevant skills to boost employability.
- Dedicated apprenticeship offices need to be established under **MAPS (Maharashtra Apprenticeship Promotion Scheme)** to promote awareness and ensure smooth implementation. Effective promotion on delivering apprenticeships is highly required in districts.
- Place and structure multiple schemes to maximize benefits for both candidates and industry (e.g., Vocational training through PMKVY, OJT/apprenticeship through NAPS + 6 months under PM Internship). A **well-structured cascading model**, integrating multiple schemes like PMKUVA, NAPS, Acharya Chanakya Kaushal Vikas Scheme, can significantly boost employment outcomes.
- Industries often find the Sector Skill Council (SSC) curriculum irrelevant to their specific needs. Engage and provide autonomy to bodies such as MSBVET or Maharashtra State Skill University to create curriculum aligned to local needs and allow industries to tweak curriculum as per their requirement.
- Maharashtra International Centers should focus on teaching foundational domain knowledge with a strong emphasis on language skills. Language training needs to be prioritized over domain skills, as communication is often the main barrier for international employment.
- **Utilize district employment centres to source candidates** and disseminate information about the benefits of enrolling in these centers and taking language courses. These offices could be utilized to identify potential candidates and promote awareness of the benefits of enrolling in international training programs.

"By prioritizing apprenticeship programs and implementing a well-structured scheme cascading model, we can bridge the skill gap and enhance employability. This approach will ensure that our workforce is equipped with market-relevant skills, driving sustainable growth and making Maharashtra a leader in skill development."

Smt. Akansha Pandey

Deputy Director, the Ministry of Skill Development and Entrepreneurship (MSDE)

Smt. Akansha Pandey is Deputy Director at the Ministry of Skill Development and Entrepreneurship and currently posted at Regional Directorate of Skill Development and Entrepreneurship (RDSDE). She is an electronics engineer turned civil servant, and her current role involves effective grievance redressal, simplifying processes, and improving collaboration among various stakeholders. She has a robust professional background, is an alumna of Indian School of Business and a member of the Indian Skill Development Service (ISDS).

Key Insights and Recommendations

- The skill development policy should be more implementation-oriented rather than overly strategic and general in nature.
- Some of the current challenges encountered by ITIs are:
    - The trained candidates lack relevant technical and soft skills. To address the skill mapping issue, industry should engage in skill development through Training of Trainers and knowledge sharing.
    - Training is not resulting in successful placements. An efficient mechanism to track candidates' journeys and identify roadblocks is required.
    - Continuous upgradation in ITI infrastructure, curriculum and new-age relevant roles is essential.
- Addressing the above challenges would require a better understanding of District/local industry requirements of trades. Here, industries could intervene by organizing training at their campuses.
- Views on **ITI upgradation** policy:
    - A staggered approach is necessary due to regional differences in trades and industry requirements.
    - **Youth aspirations** vary by region and should be considered when introducing new trades and programs. Conducting **aspiration surveys** among the youth is essential.
    - Industries should setup mini production centres and skilling centres at vocational institutes.
- **Promotion** is another aspect that is crucial while framing the policy as there is lack of awareness about the schemes and the centres among candidates.
- Change agents (participants from school, NGOs, local authorities) could be onboarded as mentors to promote vocational education in the state.
- The focus should also drift away from only ITIs as epicenters of training. Centers of Excellence need to be established, enabling a one district-one COE setup focusing on both future skilling and local industry trades.
- Schemes should be implemented and coordinated through MSSDS as nodal agency. A single portal for all training programs (Mahaswayam) and a single database for efficient record maintenance are necessary.
- Foundations and NGOs like Wadhwani Foundation and Reliance Foundation shall play a pivotal role in skill development by providing funding, resources, and expertise. They could facilitate specialized training programs, mentorship opportunities, and industry partnerships.
- On the **Regulations front**, **more autonomy at field level** is required for all the involved bodies. There is a need for a common goal orientation among field manpower.
- To develop entrepreneurial spirit among candidates, incubation setups should be established in major ITIs at the district level. Industry alignment with startups and incubators would be highly beneficial. The model of **Atal Tinkering Labs** in schools shall be replicated at vocational training centers.

"The benefits of a robust skill development policy can be realized when industry is onboarded, and the aspirations of the youth are taken into consideration. The policy should become an enabler for the industry, fostering continuous improvement in infrastructure and curriculum. By integrating industry expertise and youth aspirations, we can create a dynamic ecosystem that drives sustainable growth and innovation."

Mr. Vishal Tibrewala

Managing Director – ICEM Engineering Pvt. Ltd

Mr Vishal Vinod Tibrewala is a third-generation entrepreneur and MD of ICEM Engineering Pvt. Ltd. The enterprise is engaged in manufacturing of steel components for oil and gas industry and is a rated export house by Government of India. He has done diploma in mechanical engineering is the founder of an NGO called My Green Society working towards making Mumbai a carbon neutral city. He also runs his you tube channel called DIL SE DESH KI BAAT which covers topics of national interest.

Key Insights and Recommendations

- The major challenge currently faced by the industry is finding relevant skilled workforce. New techniques and training methodologies need to be updated in both educational and vocational training setups.
- **GI tagged production** needs to be escalated in Maharashtra. There should be definitive data on the number of GI tagged products available in Maharashtra, their market capitalization, and employment statistics.
- **Skill mapping** is essential for aligning skill requirements with upcoming sector policies in the state (for instance, clearly mapping workforce needs for infrastructure projects over the next five years in the state).
- **Interlinking industry and education** is critical and urgent. Increasing industry internships and apprenticeships for candidates could be a viable solution.
- The policy should include strategies to position Maharashtra as the skill capital of India in sustainability practices across sectors.
- An often-overlooked sector in Maharashtra is Tourism and Hospitality. Enhancing professional skills in the tourism sector, such as guides and interpreters, could be beneficial.
- Common Facility Centres are key to sustainable and efficient production techniques. Local training centers and offices for the industrial body (MIDC) should be established/tagged with every industrial cluster.
- Industry should be onboarded as a training provider within the skilling ecosystem, with training fee being partially reimbursed through government schemes.

"Industry involvement is the cornerstone of effective skill development policy. By addressing skill gaps in emerging sectors like green energy and tourism, we can empower our workforce and drive sustainable growth. Together, we can transform Maharashtra into the skill capital of India, fostering innovation and prosperity for all."

Mr. Nikhil Nangude

OSD to Minister of Employment and Education, Maharashtra

Mr. Nikhil Nangude is an experienced professional with a strong background in policy planning, project management, and leadership. He is currently serving as an Officer on Special Duty at the Ministry of Skills, Employment, Entrepreneurship and Innovation. Additionally, he has been spearheading KUKAN Enterprises for over 15 years, specializing in project management consultancy in civil engineering and real estate.

Key Insights and Recommendations

- The TVET system lacks focus in initiating cohesive efforts, resulting in diluted impact due to siloed operations.
- **Defining and identifying target groups** is essential for focused action. Youth and women in rural areas should be major target groups for upskilling. The skilling objectives also need to be different for urban and rural areas as the local skill requirements vary region wise.
- Female participation in the TVET space should be promoted by defining a minimum percentage for the recruitment of women trainers in ITIs. This initiative will encourage female participation in training programs.
- The skill development schemes should be designed to target specific groups. Additionally, all schemes should be analyzed for their impact, and non-performing ones should be discontinued.
- The strongest pillars for Maharashtra in the TVET space are the **ITIs (1000+),** which have extensive coverage across the state, including interior zones. Focus should be on improving their physical infrastructure, labs, and technical equipment.
- Prominent sectors to focus on in Maharashtra include Travel, Tourism and Hospitality, Dairy Farming, EV, and the Solar sector. Identifying 5-6 traditional and emerging sectors with high employment potential is crucial for ecosystem development.
- **Placement** should be the primary focus when training candidates, with a long-term perspective on employment generation. The apprenticeship scheme (NAPS) needs to be relooked as industries often discard candidates after their paid tenure ends, and the work allocated is not correlated with training.
- **Capacity building initiatives for trainers** at vocational training institutes needs to be strengthened. The policy should mandate the recruitment of trainers possessing a minimum of 5-6 years of industry experience to attract highly skilled industry professionals.
- On the **entrepreneurship** front, MSIS (Maharashtra State Innovation Society) incubation centers need to be equipped with relevant human and capital resources. MSIS should expand its presence at the district level with more staff and offices.
- For encouraging **international mobility**, the government should create a bridge between MICs (Maharashtra International Centres) and other training institutions. MICs should focus on addressing international skill gaps, providing language training, and handling visa and immigration requirements online.

"We can revolutionize our skill development ecosystem by transforming the ITIs into world-class institutions. As the core pillars of vocational training in the state, ITIs hold the key to empowering our workforce with the skills needed for a prosperous future."

Mr. Anand Mapuskar

Educationist

Mr. Anand Mapuskar is a distinguished educationist with expertise in policymaking and implementation. He has worked as a consultant to the Ministry of Higher and Technical Education, Government of Maharashtra (2015-2019), contributing to key policy initiatives, including the Maharashtra Public Universities Act 2016 and the globalization of higher education. Since 2022, he has been consulting for the Ministry of Skill Education, Government of Maharashtra, leading skill development programs and conducted over 50 workshops on the National Education Policy (NEP).

Key Insights and Recommendations

- It is imperative to involve other departments, including the Ministry of Labour, Industry, and Education, as stakeholders in the formulation of the skill development policy. If we limit the scope to the Skill Department alone, the desired objectives shall not be met.
- Skill-based electives (30-60 hours) should be mandated in higher education curricula to enhance the employability of students, particularly in technical courses.
- A working group, chaired by the Chief Secretary or Chief Minister, should be established to oversee the skilling initiatives within the state.
- An implementation plan or Policy Roadmap should be developed following the acceptance of the skill policy.
- It is essential to incorporate stakeholder views and recommendations from district-level officials and training centers into the policy to address real-time challenges in implementing schemes and initiatives.
- A comprehensive resource plan for the Maharashtra State Skill Development Society (MSSDS) should be created, including manpower assessment and budgetary provisions based on the planned initiatives for the year.

"Involving key departments, mandating skill-based electives, forming a high-level working group, and incorporating district feedback with a comprehensive resource plan are crucial for effective skill development policy implementation."

Prof. Bhagawantrao N. Jagtap

Prof. Bhagawantrao N. Jagtap is a guiding educationist at both school and higher education levels. His wealth of experience includes being a former distinguished scientist and director at the Bhabha Atomic Research Centre (BARC) in Mumbai, India, where he also headed the Atomic and Molecular Physics Division and served as the director of the Chemical Group. Additionally, he is a Professor at the Department of Physics, IIT Bombay.

Key Insights and Recommendations

- True progress in skill development demands earnest commitment from both individuals and systems, requiring a robust and meticulous mechanism for effective policy implementation to ensure success in the long term.
- The economy's inability to create sufficient jobs often leads to the blame being placed on the workforce's lack of skills, highlighting significant employment challenges. There is an urgent need for job creation to support the growing workforce and effectively address the employment challenges faced by the economy.
- While advanced manufacturing processes, like semiconductor fabrication, would be difficult to deliver in skill training, training for ancillary jobs supporting the main process is both feasible and required. A similar approach is essential when creating job roles and training programs, focusing on supporting industries and peripheral roles to ensure employability and industry relevance.
- A clear definition of what constitutes 'skill' is essential, along with a change in the approach to how students pick courses and training programs to better align with their interests and career goals.
- Grading and ranking systems can lead to dishonest practices, making it challenging to establish a trustworthy and well-rounded system in the skill ecosystem. Additionally, assembling a team capable of conducting accurate ranking and grading for the skill ecosystem is difficult, as expertise in specific skill domains is not as readily available as in the higher education sector.
- There is a limited availability of training programs for advanced topics such as climate change and sustainability, which become challenging to deliver without structured programs. Additionally, universities and colleges lack courses related to climate change, sustainability as well as green fuels, making it difficult to integrate these aspects into the skilling ecosystem effectively.

“The persistent job scarcity often unfairly shifts the blame onto the workforce's skill gaps. To truly address this, the focus needs to shift to job creation and fostering a thriving environment for the growing workforce, ensuring a brighter future for all.”

Mr. Soumya Ranjan

COO, BFSI Sector Skill Council

Mr. Soumya Ranjan is the Chief Operating Officer at the BFSI Sector Skill Council of India (BFSI), based in Mumbai, Maharashtra. With over 6 years of experience at BFSI, Soumya has held various key positions, including Head of Business Operations and Head of Business Development. His diverse experience of over 20 years across several banking and finance organizations has equipped him with a deep understanding of the sector.

Key Insights and Recommendations

- Comprehensive **entrepreneurship** programs accessible to micro and medium enterprises need to be developed. Modules on essential skills for startups, such as **digital marketing and funding strategies**, need to be incorporated in vocational education curriculum.
- Courses aimed at enabling the **adoption of technological advancements**, highlighting the benefits of using IoT and similar tools need to be designed and incorporated in curriculum.
- Skilling bodies need to foster collaborations with the industries to create virtual and live simulations labs. It is important to emphasize project-based learning and interactive discussions to encourage critical thinking and problem-solving.
- Promotion and awareness through **success stories and marketing campaigns** featuring industry involvement to generate interest is critical.
- Skilling initiatives need to be demand driven with designing **courses tailored to local needs,** enabling communities to leverage localized resources effectively.
- Local counseling centers or a district resource hub should be established to provide detailed guidance on available career paths, courses, and opportunities.
- The candidates need to be equipped with the necessary skills to operate modern machines through digital training initiatives and virtual courses offered on a single digital platform.

" Promoting and raising awareness of skilling initiatives is essential to making skilling more aspirational through effective campaigns and success stories."