DISTRICT SKILLS OUTLOOK - Yamunanagar, Panipat, Karnal, Jhajjar

Gaps and Future Opportunities

Submitted by

SDGCAC

SUSTAINABLE DEVELOPMENT GOALS
COORDINATION AND ACCELERATION CENTRE

OUTPUT- 5 : Sustainable Skilling and Living

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April 2026

Reference No.: 0011/2026

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Executive Summary

This report presents the findings of a comprehensive district-level skills, employment, and livelihood assessment conducted across four districts of Haryana: Yamunanagar, Panipat, Karnal, and Jhajjar. The assessment integrates primary employer surveys, training institution data, and youth aspiration surveys with secondary research on the full ITI infrastructure in each district to produce a demand-supply analysis that accounts for both documented employer needs and existing training capacity.

The integrated analysis reveals that while the four districts collectively host an estimated 14,521 annual training seats across approximately 47 ITIs (20 Government and 27+ Private), the alignment between these seats and actual employer demand is critically poor. The Net Unmet Skill Gap – employer demand for roles where no training provision exists – totals 766 positions across the four districts, concentrated in technical trades such as welding, industrial painting, textile operations, CNC machining, healthcare support, and emerging technologies.

Integrated Assessment at a Glance

Indicator	Yamunanagar	Panipat	Karnal	Jhajjar
Surveyed Workforce	8,811	422	1,326	4,234
Total Employer Demand (Skill Gap)	316	172	175	322
Demand Met by Existing ITIs	90 (28.5%)	22 (12.8%)	37 (21.1%)	70 (21.7%)
Net Unmet Skill Gap	226	150	138	252
Net Skill Gap as % of Workforce	2.56%	35.55%	10.41%	5.95%
Est. District Training Capacity	~4,060 seats	~2,866 seats	~3,678 seats	~3,917 seats
Government ITIs in District	5	4	5	6
Youth Salary Expectation	₹38,620/mo	₹28,000+/mo	₹39,208/mo	₹36,500/mo
Entry-Level Wage Offered	₹10.5K–20K	₹14K–18K	₹12K–18K	₹16K–20K
Wage Mismatch Ratio	2–3×	1.75×	2.6×	2.0×
Govt. Job Preference (Youth)	74.6%	Not reported	82.1%	68%
Revised Proposed Training Seats	620/year	450/year	330/year	460/year

Key Finding: The Misalignment Problem

The central finding of this assessment is that the skills challenge in Haryana is fundamentally one of misalignment, not capacity. The four districts collectively have over 14,500 training seats – more than sufficient to address the combined employer demand of 985 positions. However, the majority of these seats are in trades that do not match local industrial demand. In Yamunanagar, approximately 69% of documented employer demand is for roles with zero training provision despite the district hosting 15+ training institutions. In Panipat, 88.5% of training capacity is in service-oriented roles while 100% of employer demand is for textile manufacturing trades. This “training misalignment” is the defining structural challenge.

Strategic Response

The report recommends 1,860 new annual training seats across the four districts (revised from earlier estimates after accounting for existing ITI supply), phased over three years and focused exclusively on roles where no training currently exists. This is complemented by recommendations for career counselling, apprenticeship expansion, gender-responsive transport, and outcome monitoring systems.

Introduction

Background and Purpose

Effective workforce development requires alignment between three forces: what employers need, what training institutions supply, and what young people aspire to. This assessment examines that alignment across four strategically selected districts of Haryana: Yamunanagar (heavy engineering and metal fabrication), Panipat (textile manufacturing and petrochemicals), Karnal (agro-processing and emerging pharma), and Jhajjar (automotive, healthcare, and logistics within the NCR).

A distinctive feature of this assessment is its integration of primary survey data with secondary research on the full ITI infrastructure in each district. This enables a more accurate calculation of "net unmet skill gaps" – employer demand that cannot be addressed by any existing training institution – rather than treating all employer demand as unmet.

Haryana's Training Infrastructure

The Directorate of Skill Development and Industrial Training, Haryana, operates 172 Government ITIs (139 co-educational and 33 for women) and oversees 246 Private ITIs under the Craftsman Training Scheme. Combined state-wide capacity exceeds 121,600 sanctioned seats across 81 different trades. The four assessed districts host an estimated 20 Government ITIs and 27+ Private ITIs with a combined capacity of approximately 14,521 seats. Despite this substantial capacity, the trades offered at district level are poorly calibrated to local industrial demand – a gap this assessment quantifies and addresses.

Role of HSDM

The Haryana Skill Development Mission (HSDM) is the nodal agency for skill development coordination. This report's findings are addressed to HSDM and District Skill Development Authorities to inform annual training plans, trade rationalisation, and institutional reform.

Methodology

Study Framework

The study applies a demand-supply-aspiration framework across all four districts, integrating three primary data sources with secondary institutional research:

- Employer Survey: Workforce composition, vacancies, projected demand, hiring challenges, wages, and apprenticeship willingness.
- Training Institute Survey: Intake capacity, enrolment, completion/placement rates, faculty strength, NSQF alignment, and industry linkages.
- Youth Aspiration Survey: Employment status, sector preferences, salary expectations, skill confidence, and employment barriers.
- Secondary Research: Full district ITI infrastructure (Government and Private), trades offered, estimated capacity, using data from the Directorate of Skill Development & Industrial Training, NCVT records, and HSIIDC.

Analytical Innovation: Net Unmet Skill Gap

This assessment introduces a refined metric: the Net Unmet Skill Gap. Rather than treating total employer demand as the gap, we subtract demand for roles where existing ITIs already provide adequate training supply. The resulting figure represents positions for which no training pathway currently exists in the district – the most actionable gap for policy intervention.

Estimated ITI capacity is derived from Haryana state averages: ~430 seats per Government ITI and ~191 seats per Private ITI, cross-referenced with known trades and institutional profiles. These estimates are indicative and should be validated through a comprehensive institutional audit.

Survey Coverage

Parameter	Yamunanagar	Panipat	Karnal	Jhajjar
Employers Surveyed	13	Multiple (textile)	Multiple (mfg.)	Multiple (multi-sector)
Workforce Covered	8,811	422	1,326	4,234
Primary Institutions Surveyed	4	Limited	1	Multiple
Total District ITIs (Secondary)	~15 (5 Govt + 10 Pvt)	~10 (4 Govt + 6 Pvt)	~13 (5 Govt + 8 Pvt)	~13 (6 Govt + 7 Pvt)
Est. District Training Capacity	~4,060 seats	~2,866 seats	~3,678 seats	~3,917 seats
Youth Surveyed	236	Survey-based	Survey-based	Survey-based

DISTRICT SKILLS OUTLOOK

YAMUNANAGAR

Heavy Engineering | Metal Utensils | Sugar & Paper | Plywood

KEY PERFORMANCE INDICATORS

226	8,811	₹38.6K	620
NET UNMET SKILL GAP (2.56%)	WORKFORCE SURVEYED	YOUTH SALARY EXPECTATION	PROPOSED ANNUAL SEATS

Chapter 1: Yamunanagar District Skills Outlook

1.1 District Overview

Yamunanagar district occupies a strategically significant position in north-eastern Haryana on the western bank of the Yamuna River. Spanning 1,768 sq. km with a population of 1,214,205 (Census 2011, 61% rural), the district's economy is defined by heavy manufacturing: engineering, sugar processing, paper and pulp, metal utensil fabrication, and plywood.

Key anchors include Saraswati Sugar Mills (one of Asia's largest), ISGEC Heavy Engineering (global leader in presses and boilers), the Northern Railway Workshop at Jagadhri (major carriage/wagon repair facility), and the Yamunanagar-Jagadhri metal utensil cluster (national hub for brass, aluminium, and stainless steel). The district hosts 6,500+ registered MSMEs and 1,000+ plywood/timber units.

1.2 Economic Profile

Indicator	Data
Area / Population	1,768 sq. km | 1,214,205 (Census 2011)
Rural Population	741,370 (61%)
MSMEs (Udyam 2025–26)	6,500+
HSIIDC Estates	Manakpur & YNR Phase-I (225+ units); Phase-II (104 ha, ~290 plots)
Key Industries	Heavy engineering, sugar, paper/pulp, metal utensils, plywood
Major Employers	ISGEC, Saraswati Sugar, Northern Railway Workshop, BILT, DCRTPP (600 MW)

1.3 Employment Landscape

The employer survey covered 13 establishments with a combined workforce of 8,811 (90.5% manufacturing, 9.5% automotive). Large enterprises (250+) represent 94.8% of the workforce. Total current vacancies: 117 positions across 10 employers. 60% report hiring difficulty, with 83% citing lack of technical skills and 83% citing high wage expectations.

Key demand-side indicators: 85% of employers recruit from ITIs; 77% are willing to offer apprenticeships; Fitter, Electrician, and Welder are the top three employer-priority training roles.

1.4 Skill Gap Analysis

Job Role	Current Vacancies	3-Year Projected	Total Demand
Painter / Industrial Painter	13	85	98
Fitter	19	35	54
Machine Operator	20	25	45
Welder	12	30	42
Machinist	0	20	20
Crane Driver	0	12	12
CNC Operator	11	1	12
Turner	10	1	11

Gas Cutter	0	10	10
Electrician	5	0	5
Total	97	219	316

1.5 Training Ecosystem

1.5.1 District ITI Infrastructure (Integrated Assessment)

Yamunanagar hosts approximately 15 training institutions: 5 Government ITIs (Govt. ITI Yamunanagar, Govt. ITI Sadhaura, Govt. ITI Jagadhari, Govt. ITI Radaur, and Govt. ITI Women Yamunanagar) and 10+ Private ITIs (including Yamuna Private ITI, Shivalik Private ITI, Sant Balwant Singh Private ITI, Pandit Ram Dayal Private ITI, Women League Girls Private Industrial Centre, and Mass Infotech Private ITI). Additionally, Hartron Skill Centre and ITCE operate as digital/service-sector training providers.

Estimated total annual training capacity across all institutions: approximately 4,060 seats. Trades offered include Fitter, Electrician, COPA, Turner, Machinist, Wireman, R&AC, Sewing Technology, Stenography, and various digital/computer courses.

1.5.2 Supply-Demand Integration

Job Role	Employer Demand	Est. ITI Supply (Seats/Yr)	Status
Fitter	54	~200	COVERED – Supply exceeds demand
Electrician	5	~160	COVERED – Significant surplus
Machinist	20	~60	COVERED – Supply adequate
Turner	11	~80	COVERED – Supply adequate
COPA / Data Entry	Not demanded	~150	OVERSUPPLY – No employer demand
Sewing / Steno	Not demanded	~140	OVERSUPPLY – No employer demand
Painter / Industrial Painter	98	0	CRITICAL GAP – Zero supply
Welder (MIG/TIG)	42	0	CRITICAL GAP – Zero supply
Machine Operator	45	0	CRITICAL GAP – Zero supply
CNC Operator	12	0	CRITICAL GAP – Zero supply
Crane Driver	12	0	CRITICAL GAP – Zero supply
Gas Cutter	10	0	CRITICAL GAP – Zero supply

1.5.3 Net Unmet Skill Gap

Of the total employer demand of 316 positions, existing ITIs adequately cover 90 positions (28.5%) through Fitter, Electrician, Machinist, and Turner trades. The remaining 226 positions (71.5%) are in roles with zero training provision anywhere in the district. This net unmet skill gap of 226, representing 2.56% of the surveyed workforce, defines the actionable training deficit.

Simultaneously, an estimated ~290 seats in COPA, Stenography, and Sewing Technology serve trades with no documented employer demand in the manufacturing sector – highlighting the

misalignment between training supply and industrial need. Average placement rate across surveyed institutions is ~51%, with placement data missing for 5 of 7 NSQF-aligned roles.

1.6 Youth Aspirations

The youth survey (n=236; 53% male, 47% female) reveals: 67% are unemployed and seeking work; 44% aspire to government services; 74.6% prefer government over private employment; 64% prefer office-based work. Average salary expectation: ₹38,620/month – a 2–3× gap above ITI placement salaries of ₹10,560–14,000.

The top employment barrier is lack of vacancy information (49%), above lack of opportunities (46%) and low wages (42%). 77% express willingness to join employment-linked training. Skill confidence scores average 3.02–3.73 out of 5 (lowest: English; highest: communication).

1.7 Proposed New Training Roles

Based on the integrated analysis, 620 annual training seats are proposed – targeting exclusively roles with zero existing supply. Trades already covered by existing ITIs (Fitter, Electrician, Machinist, Turner) are excluded:

Proposed Role	Priority	Annual Seats	Demand Basis
Industrial Painter & Surface Finisher	Immediate	60	98-position gap; zero supply
Welder (MIG, TIG & Manual)	Immediate	60	42-position gap; zero supply
Machine Operator (General)	Immediate	50	45-position gap; zero supply
CNC Machine Operator/Programmer	Immediate	40	12 vacancies; employer priority
Gas Cutter & Fabrication Fitter	High	30	10 projected; zero supply
Crane Driver & Rigging Operator	High	25	12 projected; safety cert. required
Electroplating Technician	High	25	78 employed; specialist finishing
Quality Inspector & Checker	High	30	99 employed; employer priority
Draughtsman Mechanical	High	25	Employer priority; design capacity
B/Smith (Blacksmith/Lohar)	High	20	Employer-cited; traditional trade at risk
Digital Marketing Executive	Medium	40	1,130 NCS vacancies; youth aspiration
Data Entry & Back Office	Medium	50	1,448 NCS vacancies; reduced – Hartron overlap
Warehouse & Logistics	Medium	40	1,308 NCS vacancies; logistics corridor
Solar PV Technician	Emerging	25	Green transition; energy sector
Sustainable Wood Processing	Emerging	20	Plywood sustainability certification
Boiler Attendant (IBOS)	Medium	20	Sugar and heavy industry
Robotics & Automation	Emerging	15	Industry 4.0; ISGEC pathway
Green Maintenance & Energy Audit	Emerging	15	Environmental compliance
E-Commerce & Digital Sales	Medium	20	MSME D2C transition
Instrument Technician	Emerging	10	Process industry; ISGEC
Total		620	

1.8 Key Recommendations

1. Launch Painting, Welding, and CNC training at Govt. ITI Jagadhari and Govt. ITI Yamunanagar, targeting 60 seats per trade in Year 1. These three zero-supply roles account for 152 of 226 unmet positions.
2. Establish a District Apprenticeship Coordination Cell targeting 200 registered apprenticeships in Year 1, leveraging the 77% employer willingness for apprenticeships and existing ITI-employer pipelines.
3. Launch a Career Information Programme addressing the vacancy information gap (cited by 49% of youth) through employer site visits, digital outreach, and bi-annual District Skills and Jobs Fairs.
4. Rationalise existing ITI trade mix: reallocate surplus COPA and Stenography seats (~290 seats with zero employer demand) toward high-demand manufacturing trades.
5. Formalise Industry Advisory Boards at Government ITIs with representation from ISGEC, Northern Railway Workshop, and the Jagadhari metal cluster for curriculum review and placement feedback.
6. Integrate green skills modules: sustainable wood processing for the plywood sector and energy efficiency for existing Electrician trades.
7. Deploy a District Training Outcome Tracking System – placement data is currently missing for 5 of 7 NSQF-aligned trades.

DISTRICT SKILLS OUTLOOK

PANIPAT

Textile Export Hub | Technical Textiles | Petrochemicals

KEY PERFORMANCE INDICATORS

150	14%	1.75×	450
NET UNMET SKILL GAP (35.55%)	FEMALE WORKFORCE	WAGE MISMATCH RATIO	PROPOSED ANNUAL SEATS

Chapter 2: Panipat District Skills Outlook

2.1 District Overview

Panipat has evolved from its handloom heritage into a globally competitive hub for automated textile manufacturing, technical textiles, and petrochemical production. The IOCL Panipat Refinery (15 MMTPA capacity) anchors the petrochemical sector alongside the dominant textile cluster comprising thousands of powerloom, rapier, and Jacquard loom units serving domestic and international markets.

2.2 Economic Profile

The textile cluster produces blankets, carpets, furnishing fabrics, and technical textiles. The shift toward capital-intensive, technology-driven manufacturing has created the “Skilling Paradox” – industry demand for advanced machine-intensive roles while training institutions focus on service-sector skills. Population: ~1.2 million (Census 2011) with significant urban concentration.

2.3 Employment Landscape

Surveyed workforce: 422 with 56 current vacancies (12.4% employment gap). When three-year projections are included, total demand reaches 172 positions. The net unmet skill gap after accounting for existing ITI supply stands at 150 positions (35.55% of surveyed workforce) – the highest ratio among the four assessed districts, reflecting the near-total absence of textile-specific training.

88.5% of training capacity is in soft/service roles; 100% of employer demand is for hard manufacturing roles. Women constitute only 14% of the workforce, with transport and infrastructure barriers as primary constraints. Youth salary expectations exceed ₹28,000/month against entry-level wages of ₹14,000–18,000 (1.75× gap).

2.4 Skill Gap Analysis

Rank	Job Role	Current Vacancies	Projected (3 Yrs)	Total Demand
1	Spinner / Auto-coner Operator	15	30	45
2	Weaver (Powerloom / Rapier)	12	26	38
3	Dyeing & Printing Technician	8	14	22
4	Quality Control (Textiles)	5	10	15
5	Industrial Electrician	4	8	12
6	Fitter (Mechanical)	3	7	10
7	Machine Operator (General)	2	8	10
8	Packaging & Folding Executive	4	5	9
9	Logistics / Warehouse Supervisor	2	4	6
10	Boiler Attendant	1	4	5
	Total	56	116	172

2.5 Training Ecosystem

2.5.1 District ITI Infrastructure

Panipat hosts approximately 10 training institutions: 4 Government ITIs (Govt. ITI Panipat, Govt. ITI Samalkha, Govt. ITI Israna, Govt. ITI Women Panipat) and 6+ Private ITIs. Estimated total annual capacity: ~2,866 seats. Trades include Fitter, Electrician, COPA, Sewing Technology, Stenography, MMV, and Wireman.

2.5.2 Supply-Demand Integration

Job Role	Employer Demand	Est. ITI Supply	Status
Fitter	10	~120	COVERED
Electrician	12	~100	COVERED
COPA / Steno / Data Entry	Not demanded	~600+	OVERSUPPLY – 88.5% of capacity
Spinner / Auto-coner	45	0	CRITICAL GAP
Weaver (Powerloom/Rapier)	38	0	CRITICAL GAP
Dyeing & Printing	22	0	CRITICAL GAP
Quality Control (Textiles)	15	0	CRITICAL GAP
Packaging & Folding	9	0	CRITICAL GAP
Logistics Supervisor	6	0	CRITICAL GAP
Boiler Attendant	5	0	CRITICAL GAP

Net unmet gap: 150 positions (87.2% of total demand). The textile industry that defines Panipat's economy has no corresponding representation in the formal vocational training infrastructure. Workers in these roles are trained through informal apprenticeship within family-run units – inadequate for modern automated manufacturing.

2.6 Youth Aspirations

Youth expectations exceed ₹28,000/month against ₹14,000–18,000 market wages. High attrition at entry level undermines employer investment in OJT. The key challenge is youth migration away from textile manufacturing toward perceived 'cleaner' service roles, even though textiles remain the district's primary employer.

2.7 Proposed New Training Roles

Proposed Role	Priority	Annual Seats	Demand Basis
Advanced Textile Weaver	Immediate	100	Rapier/Jacquard/Sulzer looms; export houses
Industrial Spinner	Immediate	80	Largest gap; yarn and spinning mills
Quality Control & Testing	High	50	High female employment potential
Textile Chemist (Dyeing)	High	35	Environmental compliance; modern techniques
Industrial Maintenance	Medium	30	Reduced – partial Electrician/Fitter coverage
Packaging & Logistics	Medium	25	Packaging (9) + Logistics (6) combined
Boiler Attendant	Medium	20	Sugar/petrochemical requirement
Digital Literacy & Soft Skills*	Universal	110	Embedded across all trades

Total		450	

2.8 Key Recommendations

1. Establish a Textile Skills Centre of Excellence offering NSQF-aligned weaving, spinning, dyeing, and quality control courses with direct export-house placement linkages.
2. Launch ‘Nari Shakti’ Industrial Transport Links: subsidised shuttle for female workers connecting rural blocks to textile manufacturing clusters.
3. MSME Apprenticeship Facilitation Cell: assist textile MSMEs with NAPS registration and cost reimbursement.
4. Realign ITI trade mix: phase out surplus Data Entry/Stenography seats (~600+ with zero employer demand) toward textile-specific and industrial maintenance trades.
5. Career Literacy workshops in all ITIs and polytechnics demonstrating long-term career progression and earnings growth in textile manufacturing.

DISTRICT SKILLS OUTLOOK

KARNAL

Rice Bowl of India | Agro-Processing | Farm Machinery | Pharma

KEY PERFORMANCE INDICATORS

138	2.6×	94.9%	330
NET UNMET SKILL GAP (10.41%)	WAGE MISMATCH	FACULTY VACANCY RATE	PROPOSED ANNUAL SEATS

Chapter 3: Karnal District Skills Outlook

3.1 District Overview

Karnal, the “Rice Bowl of India,” sits on NH-44 with excellent Delhi–Ambala connectivity. Home to the National Dairy Research Institute (NDRI), the district is transitioning from agriculture toward manufacturing in agro-processing, farm machinery, and emerging pharma. Population: ~1.5 million (Census 2011).

3.2 Economic Profile

Key sectors: Basmati rice processing, dairy (NDRI anchor), farm equipment manufacturing, emerging pharmaceutical units. HSIIDC industrial estates host a growing manufacturing base. The district’s proximity to Delhi-NCR (~130 km) provides market access but creates competition for skilled workers.

3.3 Employment Landscape

Total employer demand: 175 positions (48 current + 127 projected). 75% of employers report hiring difficulty; 50% cite lack of technical skills. After accounting for existing ITI supply of standard trades, the net unmet gap stands at 138 positions (10.41% of surveyed workforce of 1,326). Youth expect ₹39,208/month against ₹12,000–18,000 offered – a 2.6× mismatch, the highest among assessed districts. 82.1% of youth prefer government employment.

3.4 Skill Gap Analysis

Role / Trade	Positions Required	Share of Total Gap
Labour (General Worker)	42	24.0%
Welder / MIG Welder	33	18.9%
Industrial Painter	30	17.1%
Pressman (Press Machine Op.)	25	14.3%
Robot & Laser Operators	8	Industry 4.0
Other Roles	37	21.1%
Total	175	100%

3.5 Training Ecosystem

3.5.1 District ITI Infrastructure

Karnal hosts approximately 13 training institutions: 5 Government ITIs (Govt. ITI Karnal, Govt. ITI Gharaunda, Govt. ITI Nilokheri, Govt. ITI Indri, Govt. ITI Women Karnal) and 8+ Private ITIs including Ladies Industrial Home Seva Samiti Private ITI. Estimated annual capacity: ~3,678 seats. Trades: Fitter, Electrician, COPA, MMV, Wireman, Sewing Technology, Stenography, Draughtsman Civil.

The Nilokheri ITI, associated with India’s earliest planned rehabilitation townships, has a long vocational training tradition. However, no ITI offers Industrial Painting, MIG/TIG Welding at NSQF standard, Press Machine Operation, or Robotics/Laser Operation.

3.5.2 Supply-Demand Integration

Job Role	Employer Demand	Est. ITI Supply	Status
Fitter	~15 (est.)	~140	COVERED
Electrician	~12 (est.)	~120	COVERED
MMV / General Mech.	~10 (est.)	~80	COVERED
COPA / Steno	Not demanded	~400+	OVERSUPPLY
Industrial Painter	30	0	CRITICAL GAP
Welder (MIG)	33	0	CRITICAL GAP
Pressman	25	0	CRITICAL GAP
General Labour	42	0	GAP (no formal training req.)
Robot / Laser Op.	8	0	EMERGING GAP

Net unmet gap: 138 positions. The surveyed government college offers only general academic programmes with a 94.9% faculty vacancy rate (8 of 158 positions filled), zero MoUs, zero industry visits, and a 3.7% training completion rate. While the broader ITI network covers standard trades, employer-critical roles remain entirely unserved.

3.6 Youth Aspirations

82.1% government-job preference (highest in study). Youth self-rate skills 4.24–4.61/5 yet 50% of employers cite lack of technical skills. This confidence-competence mismatch, combined with the 2.6× wage gap, creates the most extreme aspiration-reality disconnect among the four districts.

3.7 Proposed New Training Roles

Proposed Role	Priority	Annual Seats	Demand Basis
Industrial Painter	Immediate	45	30-gap; zero training
Welder (SMAW/MIG)	Immediate	45	33-gap; zero training
Press Machine Operator	Immediate	35	25-gap; zero training
General Labour / Helper	Immediate	25	42-gap; reduced – limited formal training need
Industry 4.0 / Robot & Laser	Planned	30	8 projected; automation transition
Agri-Tech / Food Processing	Medium	25	NDRI linkage; agri-manufacturing bridge
Cross-Cutting Module*	Immediate	80	Communication, Digital Literacy, Safety
Faculty Recruitment (Prerequisite)	–	45 positions	94.9% vacancy must be resolved first
Total (excl. faculty)		330	3-Year Phased

3.8 Key Recommendations

1. Introduce vocational trades at Govt. ITI Karnal and Govt. ITI Nilokheri: Industrial Painter, Welder (SMAW/MIG), and Press Machine Operator as NSQF-aligned 3–6 month programmes.
2. Resolve the 94.9% faculty vacancy crisis through emergency recruitment, industry guest faculty deployment, and position rationalisation.

3. Employer-Anchored Apprenticeship Corridors: leverage the 40% employer OJT willingness through NAPS.
4. Address the 2.6× wage expectation gap through structured career counselling targeting the 82.1% government-job fixation.
5. Partner with NDRI to develop agri-tech and food processing skill modules bridging agriculture and manufacturing.
6. Develop Industry 4.0 pathways for Robot and Laser Operators as 2–3 month add-on modules for ITI-qualified candidates.

DISTRICT SKILLS OUTLOOK

JHAJJAR

NCR Gateway | Automotive | AIIMS-II Healthcare | KMP Logistics

KEY PERFORMANCE INDICATORS

252	3	55%	460
NET UNMET SKILL GAP (5.95%)	ECONOMIC CLUSTERS	YOUTH CITE TRANSPORT BARRIER	PROPOSED ANNUAL SEATS

Chapter 4: Jhajjar District Skills Outlook

4.1 District Overview

Jhajjar (carved from Rohtak, 1997) spans 1,834 sq. km with 956,907 population (74.6% rural). Its "Dual-Engine" economy combines Bahadurgarh–Jharli automotive manufacturing with AIIMS-II Badsa healthcare and KMP Expressway logistics. Located within the NCR, it is positioned for multi-sector growth.

4.2 Economic Profile

Indicator	Data
Area / Population	1,834 sq. km | 956,907 (Census 2011)
Industrial Belt	Bahadurgarh–Jharli (250–300 ancillary units)
Healthcare	AIIMS-II Badsa (national-scale)
Logistics	KMP Expressway corridor (e-commerce warehousing)
Key Sectors	Auto components, ceramics, healthcare, logistics

4.3 Employment Landscape

Total employer demand: 322 positions across automotive, healthcare, and logistics clusters. 72% of employers report hiring difficulty. After accounting for existing ITI supply, the net unmet gap is 252 positions (5.95% of surveyed workforce of 4,234). Female workforce participation: 9.23%. Youth salary expectations: ₹36,500 vs. ₹16,000–20,000 (2.0× gap). 68% government-job preference; 55% cite transport as barrier.

4.4 Skill Gap Analysis

Rank	Job Role	Current Vacancies	Projected (3 Yrs)	Total Demand
1	Welder (MIG / TIG)	56	26	82
2	Drone Technology Operator	26	43	69
3	Fitter (Mech. / Auto)	32	16	48
4	Warehouse Supervisor	16	12	28
5	CNC Machine Operator	18	10	28
6	Patient Care Assistant	14	12	26
7	Electrician (Industrial)	4	5	14
8	Medical Lab Technician	6	8	14
9	Inventory Mgmt. Operator	3	7	10
10	Plumber (Advanced)	4	4	8
	Total	179	143	322

4.5 Training Ecosystem

4.5.1 District ITI Infrastructure

Jhajjar hosts approximately 13 training institutions: 6 Government ITIs (Govt. ITI Jhajjar at Gudha (est. 2010), Govt. ITI Bahadurgarh (est. 1980), Govt. ITI Beri, Govt. ITI Machhrauli, Govt. ITI Bhaproda, Govt. ITI Women Jhajjar) and 7+ Private ITIs. Estimated annual capacity: ~3,917 seats. ITI Bahadurgarh, the district's oldest institution, collaborates with Maruti Suzuki for apprenticeships. Trades: Fitter, Electrician, COPA, Wireman, Plumber, Carpenter, Draftsman, MMV, Sewing, Stenography.

4.5.2 Supply-Demand Integration

Job Role	Employer Demand	Est. ITI Supply	Status
Fitter	48	~240	COVERED – ITI Bahadurgarh anchor
Electrician	14	~200	COVERED
Plumber	8	~80	COVERED
COPA / Steno	Not demanded	~500+	OVERSUPPLY – 45% of enrolment
Welder (MIG/TIG)	82	0	CRITICAL GAP – highest mfg. gap
Drone Technology	69	0	CRITICAL GAP – emerging demand
Warehouse/Logistics	28+10	0	CRITICAL GAP – KMP corridor
CNC Operator	28	0	CRITICAL GAP
Patient Care Assistant	26	0	CRITICAL GAP – despite AIIMS-II
Medical Lab Technician	14	0	CRITICAL GAP
EV Technologies	Emerging	0	ZERO – no MMV upgrade

Net unmet gap: 252 positions (78.3% of total demand). The 'Generalist Training Trap' is acute: ~500+ COPA/Stenography seats serve trades with zero manufacturing demand, while three distinct economic clusters (auto, healthcare, logistics) have zero-supply roles. MMV trades have not been upgraded for EV technologies.

4.6 Youth Aspirations

Jhajjar youth face a triple challenge: aspirational misalignment (68% government-job preference), geographic inaccessibility (55% transport barrier), and wage gaps (2.0×). The 12% NAPS participation among firms results in 80% of employers citing 'Lack of Practical Exposure' as a key deficiency.

4.7 Proposed New Training Roles

Proposed Role	Priority	Annual Seats	Demand Basis
Patient Care Assistant	Immediate	70	26-gap; AIIMS-II Badsa ecosystem
Automotive EV Technician	Immediate	50	Future-proofing Bahadurgarh auto cluster
Advanced Welder (MIG/TIG)	Immediate	55	82-gap; highest manufacturing deficit
Logistics & Warehouse Mgr.	High	80	38-gap; KMP corridor expansion
CNC Machine Operator	High	35	28-gap; zero supply
Drone Pilot / Technician	Medium	35	69-gap; agri/industrial/delivery
Medical Lab Technician	Medium	25	14-gap; healthcare cluster

Soft Skills & Digital Literacy*	Universal	110	Embedded across all trades
Total		460	3-Year Phased

4.8 Key Recommendations

1. Establish a Healthcare Skill Centre of Excellence at AIIMS-II Badsa with formal MoUs for clinical practicum placements, guest faculty, and curriculum validation.
2. Upgrade MMV and Electrician trades at ITI Bahadurgarh to include EV Battery Management and Charging Station Installation modules.
3. Launch the KMP Logistics Manpower Initiative: Warehouse Management courses with mandatory 2-month apprenticeships and 60% guaranteed absorption.
4. Bridge the Last-Mile Mobility Gap: subsidised transport connecting residential areas to Bahadurgarh industrial estates for the 55% of youth unable to commute.
5. Introduce Drone Technology Training with DGCA-compliant certification at Govt. ITI Jhajjar.
6. Rationalise COPA/Stenography seats (~500+ with zero demand) toward welding, CNC, and healthcare trades.

Chapter 5: Cross-District Comparative Analysis

5.1 The Misalignment Problem

The four districts collectively host an estimated 14,521 annual training seats across ~47 institutions. Yet the combined net unmet skill gap stands at 766 positions. This is not a capacity problem – it is a misalignment problem. Thousands of seats exist in COPA, Stenography, and Sewing Technology with minimal employer demand, while hundreds of positions in welding, painting, textile operations, healthcare, and logistics have zero training provision.

5.2 Comparative Net Skill Gap

Metric	Yamunanagar	Panipat	Karnal	Jhajjar	Combined
Total Employer Demand	316	172	175	322	985
Demand Met by Existing ITIs	90	22	37	70	219
Net Unmet Gap	226	150	138	252	766
% of Demand Unmet	71.5%	87.2%	78.9%	78.3%	77.8%
Gap as % of Workforce	2.56%	35.55%	10.41%	5.95%	–
Est. Total ITI Seats	4,060	2,866	3,678	3,917	14,521
Revised Proposed Seats	620	450	330	460	1,860

5.3 Universal Zero-Supply Trades

Trade	Yamunanagar	Panipat	Karnal	Jhajjar	Combined
Welder (all types)	42	–	33	82	157
Industrial Painter	98	–	30	–	128
CNC/Machine Operator	57	10	25	28	120
Spinner/Weaver	–	83	–	–	83
Drone Technology	–	–	–	69	69
Patient Care	–	–	–	26	26

5.4 State-Level Interventions

- State-Wide Welding & Painting Initiative: 157 combined welding positions and 128 painting positions with zero supply – launch dedicated trades in every assessed district ITI.
- Trade Rationalisation Directive: mandate reallocation of COPA/Stenography oversupply (~1,500+ surplus seats across 4 districts) toward employer-demanded technical trades.
- Unified Career Counselling Platform: address the 68–82% government-job fixation and 1.75–2.6× wage gaps through standardised career literacy programmes.

- District Apprenticeship Cells: scale work-based learning leveraging 40–77% employer willingness for apprenticeships.
- State Training Outcome MIS: enable evidence-based planning across all 172 Govt ITIs.

Chapter 6: Strategic Recommendations

6.1 State-Level Recommendations

A. Institutional Mechanisms

1. Establish District Skill Development Cells within each DIC with a Skill Development Officer for demand assessment and placement monitoring.
2. Mandate Industry Advisory Boards at all government ITIs with minimum 3 employer representatives and annual curriculum review.
3. Deploy a State-Level Training Outcome Tracking System capturing employment status at 3 and 12 months post-completion.

B. Training Ecosystem Restructuring

1. Launch State-Wide Welding & Painting Programme: 55–60 seats per trade per district in Year 1.
2. Issue a Trade Rationalisation Directive: mandate reallocation of surplus COPA/Stenography seats toward employer-demanded trades in all assessed districts.
3. Introduce 3–6 month modular courses in high-demand roles with NSQF certification, at ITI or employer premises.
4. Address faculty shortages through recruitment, industry guest faculty, and blended learning models.

C. Industry Linkage

1. Expand NAPS participation through dedicated MSME facilitation cells in each district.
2. Require Employer Placement Agreements before launching any new training programme.
3. Bi-annual District Skills and Jobs Fairs linking employers with trained graduates.

D. Career Counselling

1. Unified Career Information Programme across all ITIs with realistic salary benchmarks and career progression data.
2. Mandatory Pre-Enrolment Orientation with salary reality communication at all government-supported institutions.

E. Green & Future Skills

1. Integrate green modules: sustainable wood processing (Yamunanagar), environmental compliance for dyeing (Panipat), EV technologies (Jhajjar).
2. Pilot Solar PV Technician and Green Maintenance training in Yamunanagar and Jhajjar.

F. Gender & Mobility

1. State-subsidised ‘Industrial Shuttle’ programmes in Panipat and Jhajjar as pilot districts.
2. Female-friendly ITI infrastructure compliance audit and monitored female enrolment targets.

6.2 Phased Timeline

Phase	Timeframe	Key Actions
Phase I	0–12 months	Launch zero-supply trades (welding, painting, spinning, weaving, patient care); establish apprenticeship cells; career counselling; resolve Karnal faculty crisis; trade rationalisation directive
Phase II	12–24 months	Scale CNC, logistics, EV, QC roles; formalise Industry Advisory Boards; transport links; deploy outcome MIS; drone technology training
Phase III	24–36 months	Introduce emerging roles (robotics, green skills, solar, agri-tech); consolidate partnerships; evaluate using outcome data; scale statewide

Conclusion

The four assessed districts collectively host over 14,500 training seats and nearly 1,000 unfilled or projected positions. The problem is not capacity – it is misalignment. 77.8% of employer demand is for roles where no training exists, while thousands of seats serve trades with minimal employer absorption.

The revised proposal of 1,860 targeted annual seats, focused exclusively on zero-supply roles and complemented by trade rationalisation of existing surplus capacity, represents a high-efficiency intervention. Combined with career counselling to address the 68–82% government-job fixation, apprenticeship expansion leveraging 40–77% employer willingness, and transport solutions for the 55% of youth unable to commute, these measures can transform the training-to-employment pipeline within three years.

The evidence base is clear. The interventions are actionable and affordable. What is required is coordinated, urgent implementation.

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