EMPLOYMENT AND SKILL DEVELOPMENT: TOWARDS QUALITY

08

CHAPTER

Indian labour market indicators have improved in the last six years, as per the Periodic Labour Force Survey data, with the unemployment rate declining to 3.2 per cent in 2022-23. Rising youth and female participation in the workforce present an opportunity to tap the demographic and gender dividend. The factory employment data exhibits the bounce-back of the organised manufacturing sector in FY22, with continued rise in employment and the upscaling of factories. The net payroll additions under EPFO have more than doubled in the past five years, signalling healthy growth in formal employment. With artificial intelligence taking roots in several spheres of economic activity, job market must adapt while steering the technological choices towards collective welfare is key. To generate and sustain quality employment, agro-processing and care economy are two promising candidates, the latter also being a necessity for levelling the playing field for women in labour market. The fillip to skilling has yielded progress while there remains scope for more, as only 4.4 per cent of young workforce is formally skilled. Many regulatory clean-ups pose as low-hanging fruits of employment generation, including multiple state-level laws relating to use of land, sectors restricted for women workers, and apprenticeship promotion.

INTRODUCTION

8.1 Employment is the crucial link between growth and prosperity, and its quantity and quality determine the extent to which economic output translates into better quality of life for the population. To foster employment is to oil the engine of demand-led growth, kept running by a populace progressively less dependent on the Government for its dignified survival and sustenance. Generation of suitable employment opportunities, commensurate with the legitimate aspirations of India's youth, is also necessary to reap the country's once-in-a-lifetime demographic dividend.

8.2 This chapter explores various aspects of employment and skill development in the country. The first section dwells on the employment situation in the country, specifically focussing on women and youth employment. The structural transformation of the workforce and the trend

in factory employment are discussed, besides additions to EPFO's payroll and trend in rural wages. It also presents a bird's eye view of the government programmes to facilitate employment generation and promote labour welfare. The second section looks at the new forces shaping the labour market, including Artificial Intelligence (AI), gig work, climate change, etc. this is followed by an in-house simple estimation of the annual rise in job creation required to cater to the expanding working age population, rising female participation in labour force, and labour shifting out of agriculture. Next, agro-processing sector is proposed as a fertile sector for job creation in a pragmatic and decentralised manner. The next section discusses the felt need of a well-developed care economy, key to supporting workforce participation by women, and cater to an ageing population. The final section presents details of the country's skilling infrastructure and the outcomes of policies in enhancing skilling for employability.

CURRENT EMPLOYMENT SCENARIO

8.3 Over the past decade, India has witnessed a notable transformation in its employment landscape, marked by several positive trends contributing to economic growth and social development. This evolution is a result of various factors, including economic reforms, technological advancements, and an emphasis on skill development. The slew of structural reforms promoting ease of doing business, undertaken in the last decade and ongoing, remain crucial for productive employment generation in the current decade.

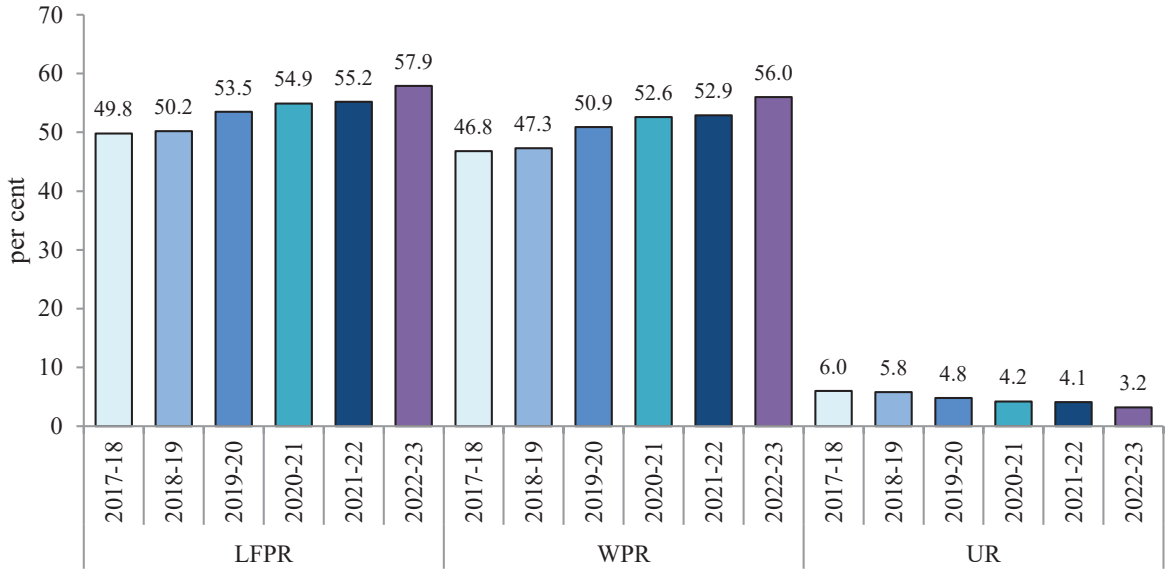
8.4 According to the annual Periodic Labour Force Survey (PLFS) by the National Statistical Organisation, Ministry of Statistics and Programme Implementation (MoSPI), the all-India annual unemployment rate (UR)[1] (persons aged 15 years and above, as per usual status[2]) has been witnessing a declining trend since the COVID-19 pandemic. This has been accompanied by a rise in the labour force participation rate (LFPR)[3] and worker-to-population ratio (WPR)[4]. Even by the relatively strict standards of current weekly status (CWS)[5], employment has recovered from the pandemic in urban and rural areas.

8.5 The quarterly PLFS reports for urban areas enable a more updated picture of employment. The quarterly urban unemployment rate for people aged 15 years and above declined to 6.7 per cent in the quarter ending March 2024 from 6.8 per cent in the corresponding quarter of the previous year, accompanied by a rise in the WPR and LFPR (Chart VIII.2).

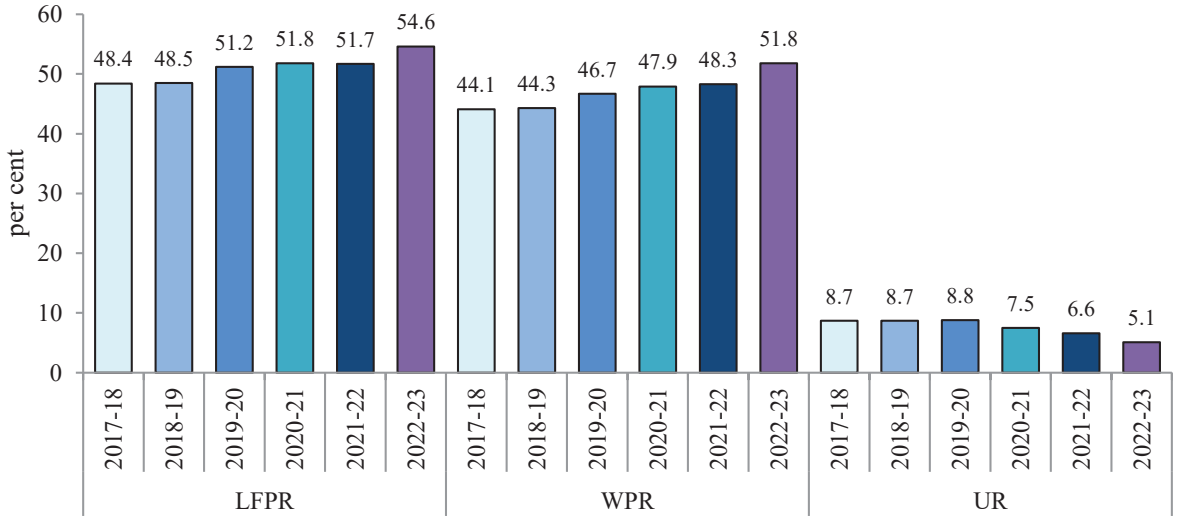
1 UR is defined as the percentage of unemployed persons in the labour force.
2 For a person to be categorised as employed as per usual status (ps+ss), he/she must have pursued an economic activity for at least 30 days during the 365 days preceding the date of the survey.
3 According to the PLFS, LFPR is the percentage of working-age population engaged in work or making tangible efforts to seek 'work' or being available for 'work' if it is available. 'Work' includes self-employment (subsistence agriculture and collection of firewood, poultry farming, etc., for self-consumption), regular wage/salaried employment, and casual labour.
4 WPR is defined as the percentage of employed persons in the total population.
5 In the case of CWS, the activity status is determined on the basis of a reference period of the last 7 days preceding the date of the survey

Chart VIII.1: Improving annual labour market indicators (July-June period)

(a) Usual status, aged 15 years and above

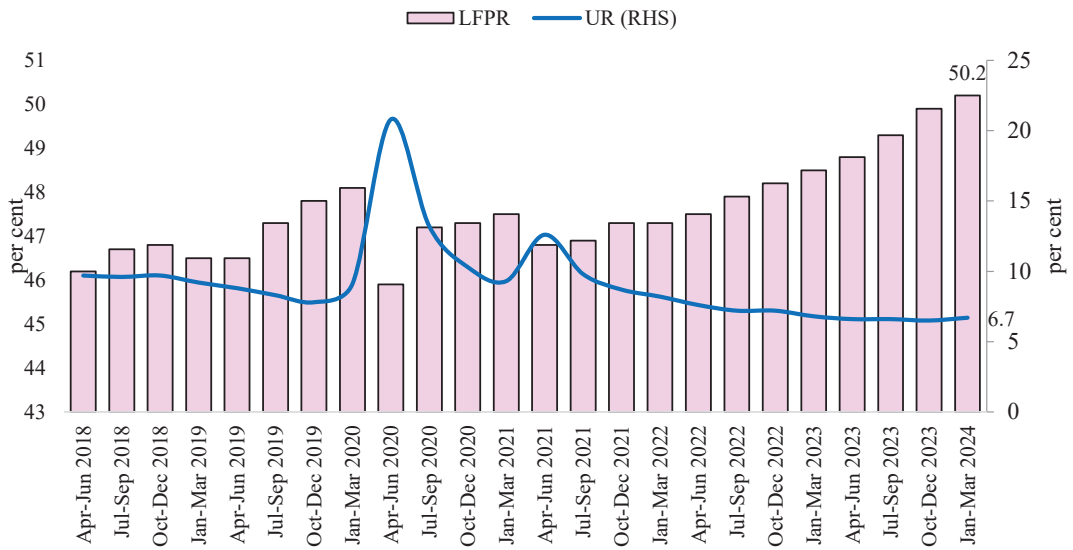


(b) Current Weekly status, aged 15 years and above



Source: PLFS, MoSPI
Note: Figures for ages 15 years and above, the period of the survey for 2022-23 is July 2023 to June 2024, and likewise for other years.

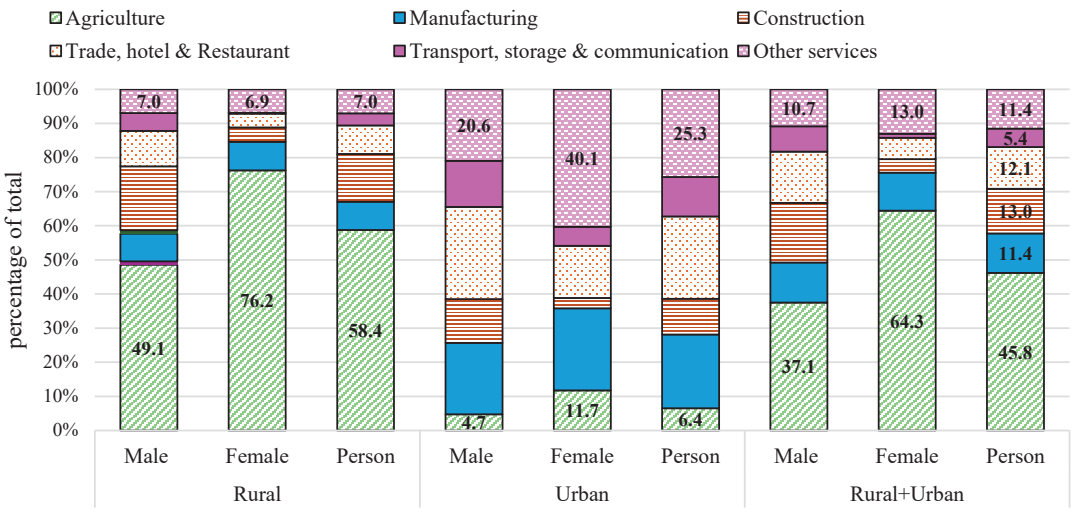
Chart VIII.2: Declining quarterly urban unemployment rate



Source: Quarterly PLFS, MoSPI
Note: Figures for Current Weekly Status, 15 years and above

8.6 India's workforce is estimated to be nearly 56.5 crore in 2022-23 using WPR from PLFS and MoHFW's population projections. According to PLFS, more than 45 per cent of the workforce is employed in agriculture, 11.4 per cent in manufacturing, 28.9 per cent in services, and 13.0 per cent is in construction. The predominance of agriculture in the providing employment to nearly half of the population, especially females, is both a challenge and an opportunity, as explained in the section on agro-processing in this chapter.

Chart VIII.3: Distribution of workers by broad industry divisions, 2022-23



Source: Annual PLFS report 2022-23, MoSPI
Note: The 'other services' category includes activities belonging to publishing, consultancy services, information services, financial and insurance services, real estate, legal and accounting, advertising, health and education services, tours and travels, arts, entertainment and recreation, etc.

8.7 In terms of employment status of workers, 57.3 per cent of the total workforce is self-employed, and 18.3 per cent is working as unpaid workers in household enterprises. Casual labour comprises 21.8 per cent of the total workforce and regular wage/salaried workers are 20.9 per cent of the total workforce. Gender-wise, it is the female workforce, which is shifting to self-employment, while the male workforce's share has been stable. This is evident in the sharp rise in female LFPR in the past six years (discussed in later in this chapter), driven by rural women joining agriculture and related activities.

Chart VIII.4: Trend in broad category wise employment status

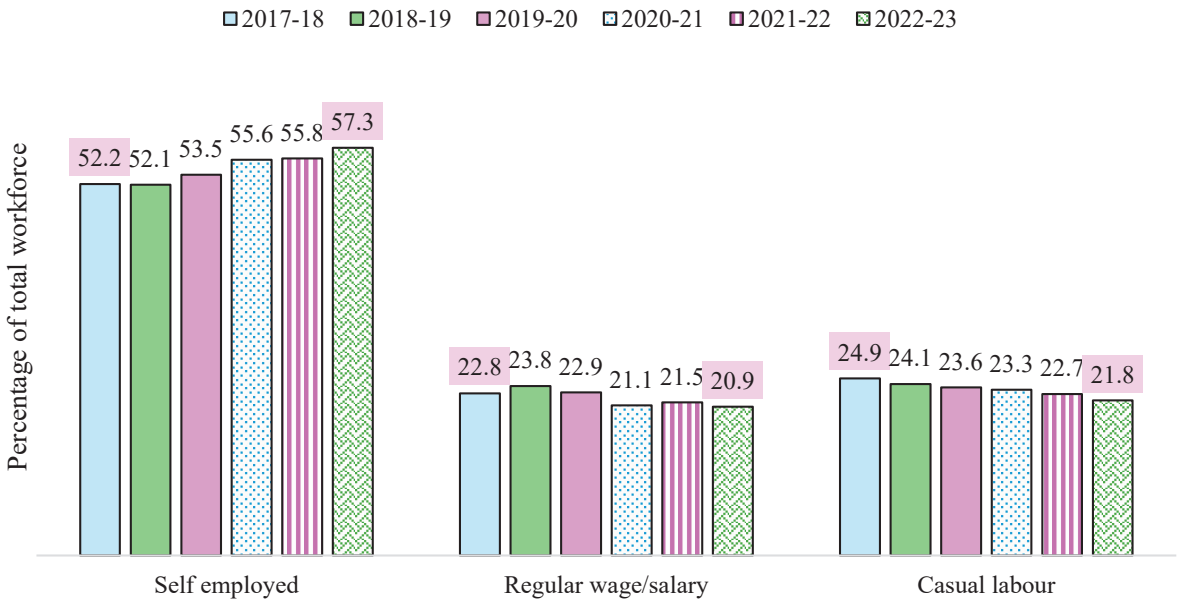
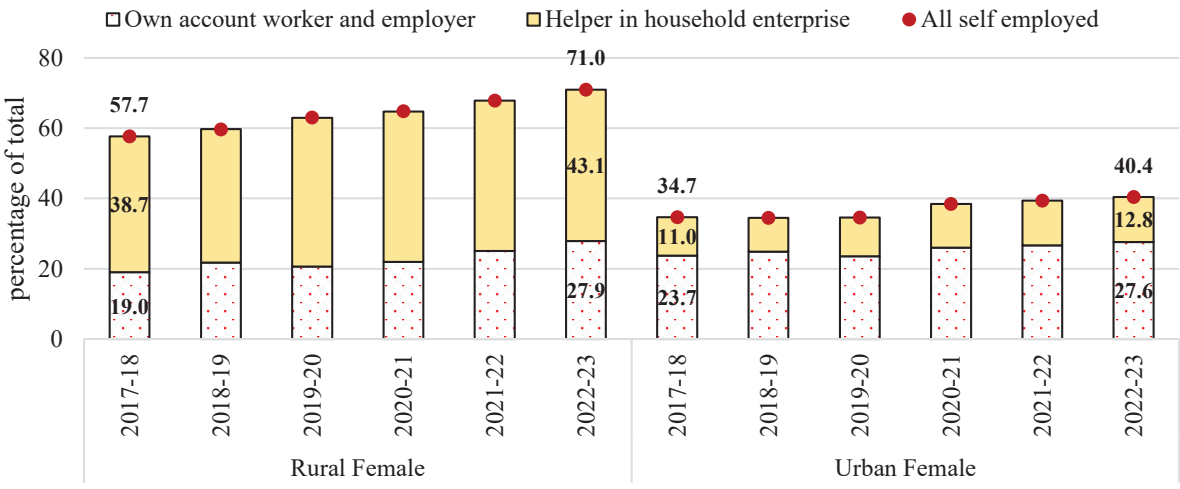


Chart VIII.5: Share of female workforce in self-employment



Source: Annual PLFS reports, MoSPI

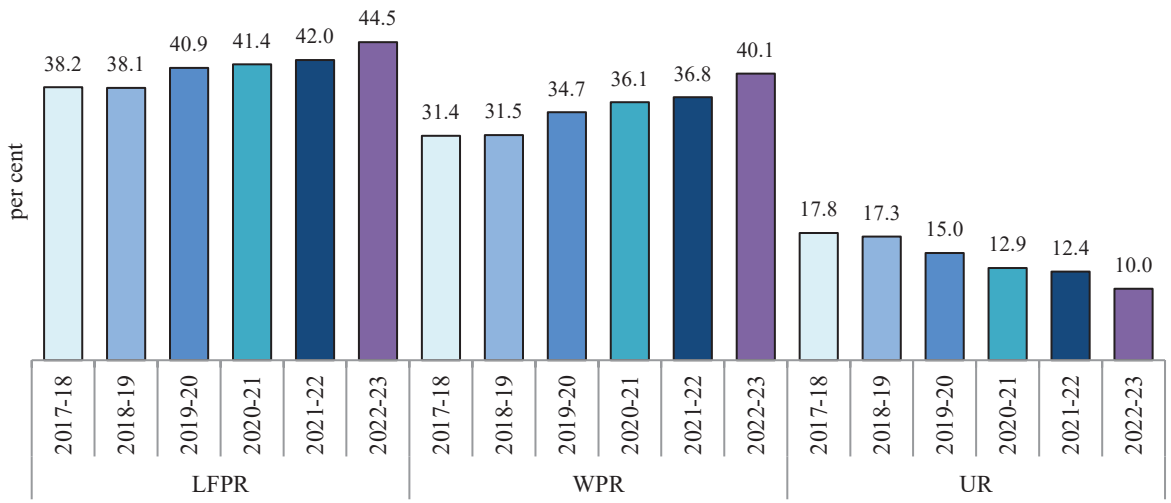
YOUTH AND FEMALE EMPLOYMENT

Rising youth employment

8.8 India's demographic dividend is a stepping stone for sustained high growth and global competitiveness in manufacturing and services. The decline in the annual youth unemployment rate accompanied by greater youth participation in the labour force indicates better utilisation of this dynamic resource.

8.9 According to PLFS, youth (age 15-29 years) unemployment rate has declined from 17.8 per cent in 2017-18 to 10 per cent in 2022-23, while other indicators have also improved over time. The rise in youth employment is also reflected in the formal employment figures, as per Employees' Provident Fund Organisation (EPFO) data, presented in latter section of the chapter. The annual new EPF subscribers aged 18-28 years have been following an upward trajectory after witnessing a decline during the COVID-19 pandemic. Nearly two-thirds of the new subscribers in the EPFO payroll have been from the 18-28 years band. Thus, youth employment has been rising in tandem with the youth population.

Chart VIII.6: Youth employment indicators



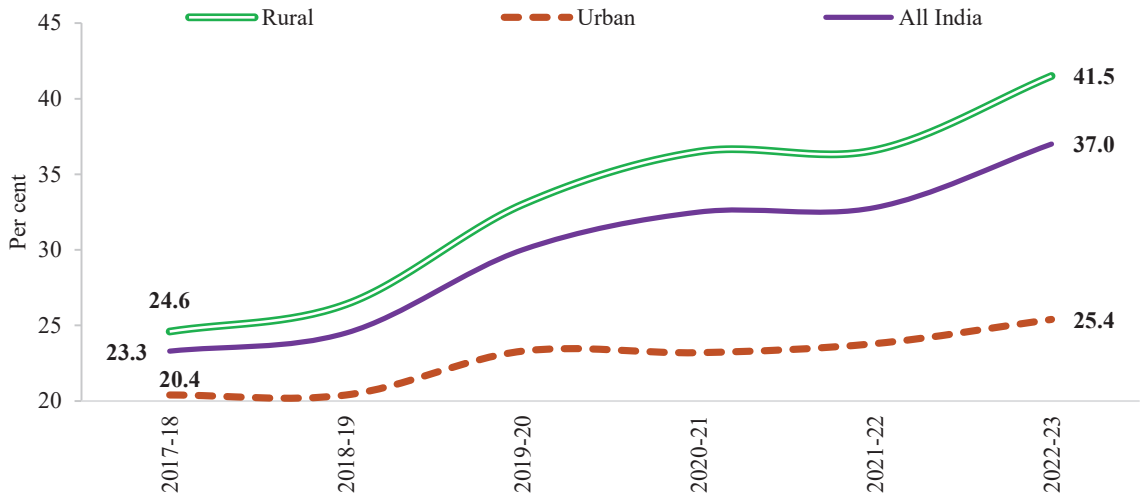
Source: PLFS annual reports, MoSPI

Rise in Female LFPR: Unfolding the gender dividend

8.10 From the gender perspective, the female labour force participation rate (FLFPR) has been rising for six years. While urban FLFPR has also been growing, the rural FLFPR has witnessed a steep rise of 16.9 percentage points between 2017-18 and 2022-23, indicating a rising contribution of women to rural production. This could culminate from multiple factors,

including continuous high growth in agriculture output and freeing up of women's time due to substantial expansion of access to basic amenities such as piped drinking water, clean cooking fuel, sanitation, etc. On the other hand, the possibility of the rise in FLFPR stemming from distress does not hold much ground since distress-driven FLFPR should have peaked during COVID-19 and declined afterwards instead of continuously rising since 2017-18. Other reasons that repudiate the thesis of distress-driven rise in FLFPR were elaborated in '*Indian Economy - A Review*', published by DEA, Ministry of Finance in January 2024.[6]

Chart VIII.7: Rural India drives the rise in female LFPR



Source: PLFS reports, NSO
Note: for usual status, 15 years and above

Employment in Factories

8.11 The Annual Survey of Industries[7] (ASI) results for 2020-21 and 2021-22 showcased the Indian manufacturing sector's resilience, given its turnaround after a marginal fall in employment in the pandemic year of 2020-21. As per ASI 2021-22, employment in the organised manufacturing sector recovered to above the pre-pandemic level, with the employment per factory continuing its pre-pandemic rise. The growth in wages per worker resumed after a brief hiatus. This, coupled with higher wage growth in the rural areas during the last five years, bodes well for demand creation in the countryside.[8] During FY15-FY22, the wages per worker in rural areas grew at 6.9 per cent CAGR vis-à-vis a corresponding 6.1 per cent CAGR in urban areas.

6 The publication is available at https://dea.gov.in/sites/default/files/Monthly%20Economic%20Review%20January%202024.pdf

7 The ASI, conducted by the MoSPI, covers the organised manufacturing sector of the economy. Its coverage extends to the entire Factory Sector comprising industrial units (called factories) registered under the Sections 2(m)(i) and 2(m)(ii) of the Factories Act, 1948, with ten or more workers with electricity or twenty or more workers without electricity.

8 It may be noted that, as of FY22, 42 per cent of factories and 45 per cent of workers are in rural areas.

Chart VIII.8: Trend in employment in organised manufacturing sector

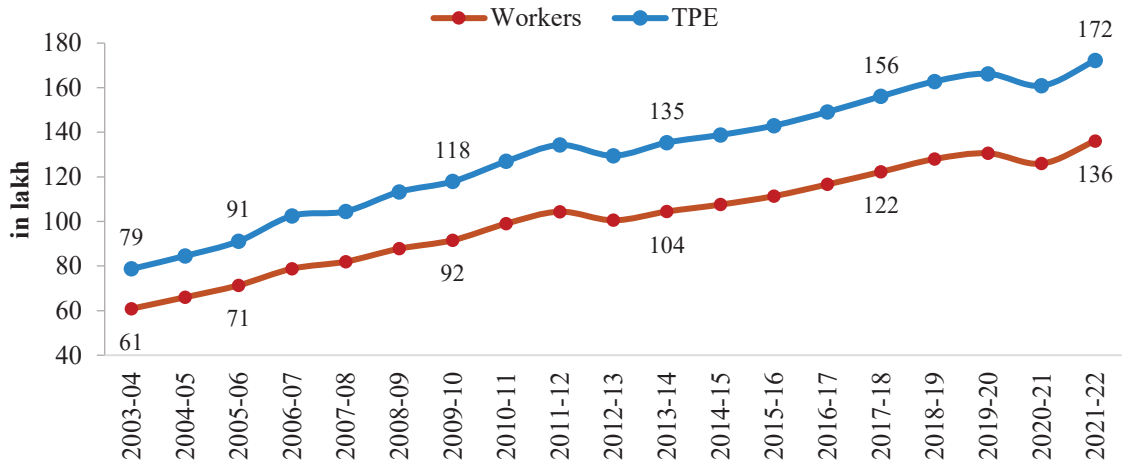


Chart VIII.9: Trend in employment per factory

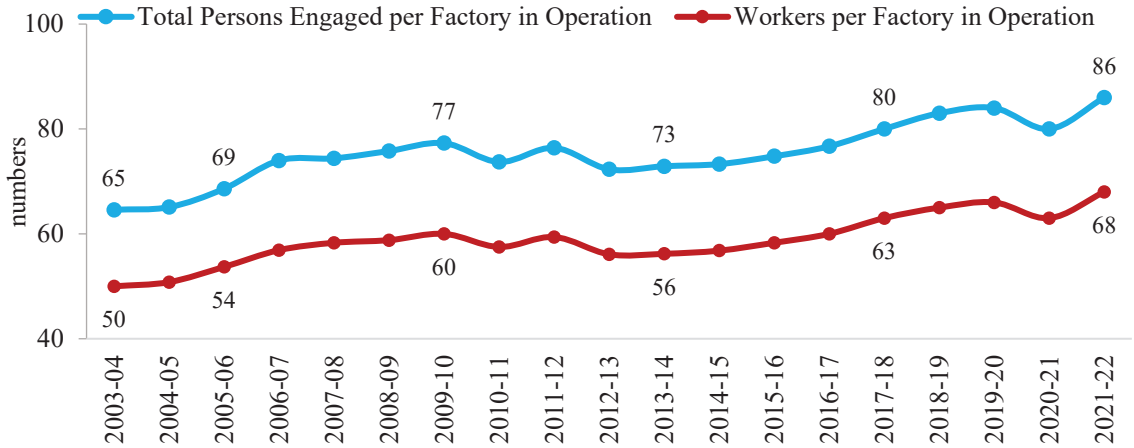
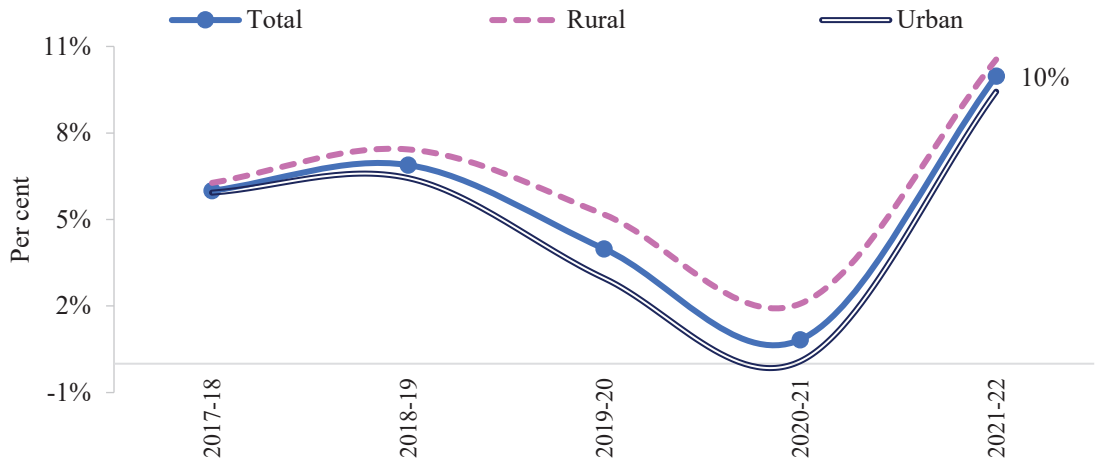


Chart VIII.10: YoY growth in wages per worker



Source: Annual Survey of Industries reports, MoSPI
Note: TPE: Total Persons Engaged

8.12 State-wise, the top six states in terms of the number of factories, were also the greatest factory employment creators. More than 40 per cent of factory employment was in Tamil Nadu, Gujarat, and Maharashtra. In contrast, the highest employment growth between FY18 and FY22 was seen in states with a higher share of young population, including Chhattisgarh, Haryana and Uttar Pradesh (Chart VIII.12).[9]

Chart VIII.11: Top six states in the number of factories and employment

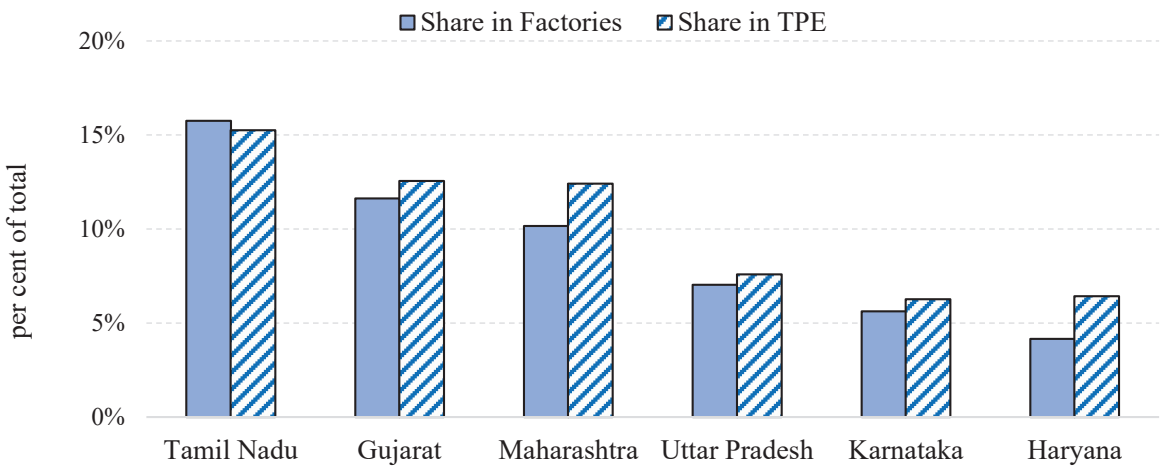
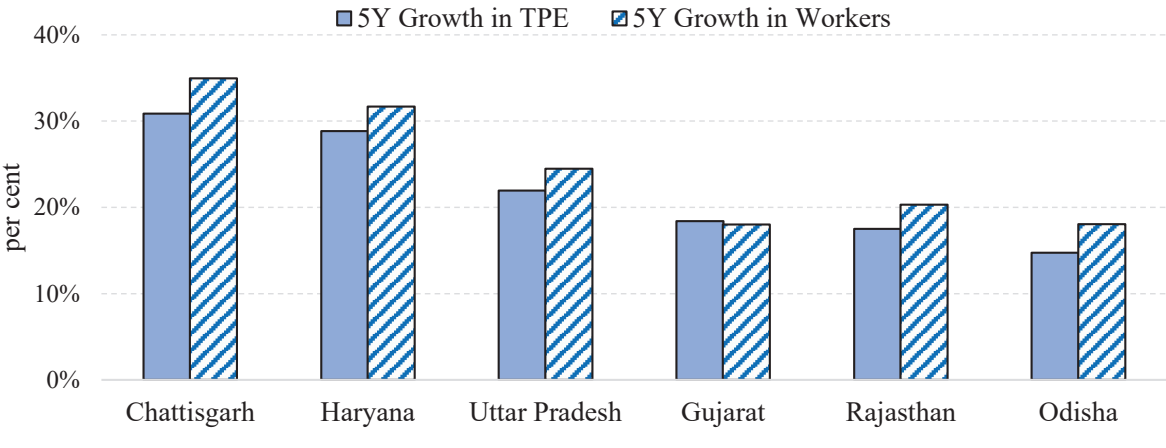


Chart VIII.12: Top six states in five years (FY18-FY22) growth in employment in factories



Source: Annual Survey of Industries reports, MoSPI
Note: TPE: Total Persons Engaged

8.13 In terms of number of establishments, the organised manufacturing landscape is dominated by smaller factories. In 2021-22, factories employing less than 100 people constituted 79.2 per cent of all factories while contributing only 22.1 per cent of total persons employed and 20.9 per cent of workers. This has been improving over time as there is a visible trend towards a rise

9 The projected share of population below 30 years is 55.5 % in Chhattisgarh, 52.8% in Haryana, and 60.1 per cent in UP. Source: M/o Health and Family Welfare projections available at https://tinyurl.com/2knzk5xe

in larger factories. Compared to a broadly constant number of smaller factories, the number of factories employing more than 100 workers saw 11.8 per cent growth over FY18 to FY22. Thus, in terms of total persons engaged, employment has been rising in bigger factories (employing more than 100 workers) than in smaller ones, suggesting a scaling up of manufacturing units. This is a positive development in terms of quality of employment, as wages per worker tend to rise with the employment size of factories.

Chart VIII.13: Predominance of smaller factories while larger factories generate greater employment

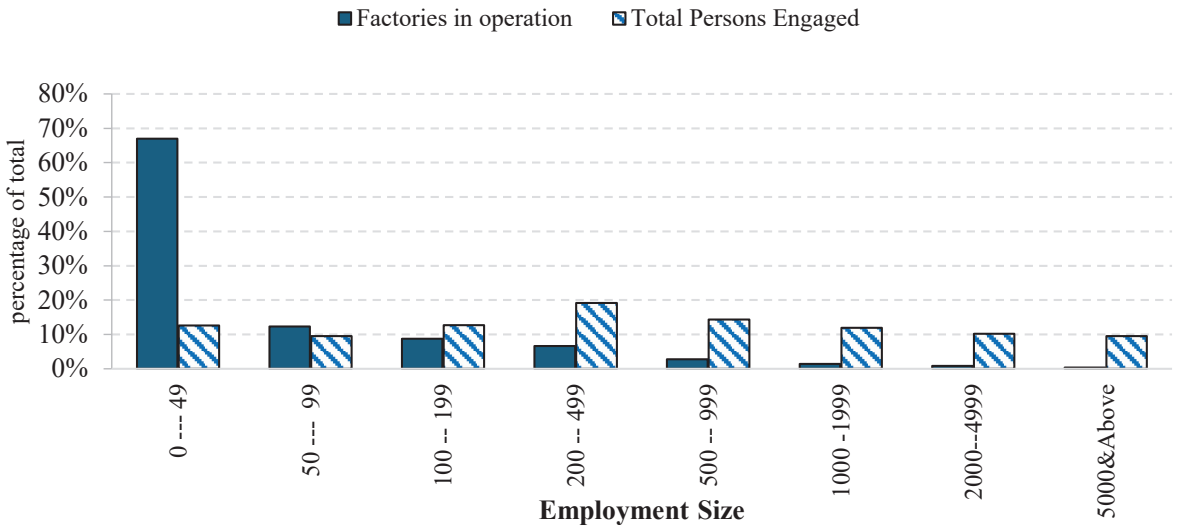
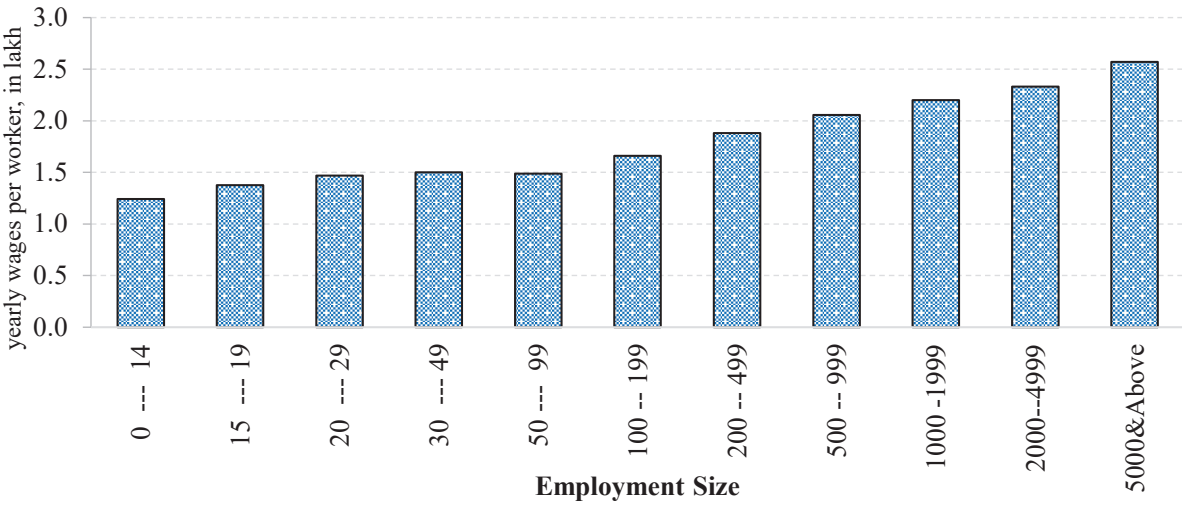
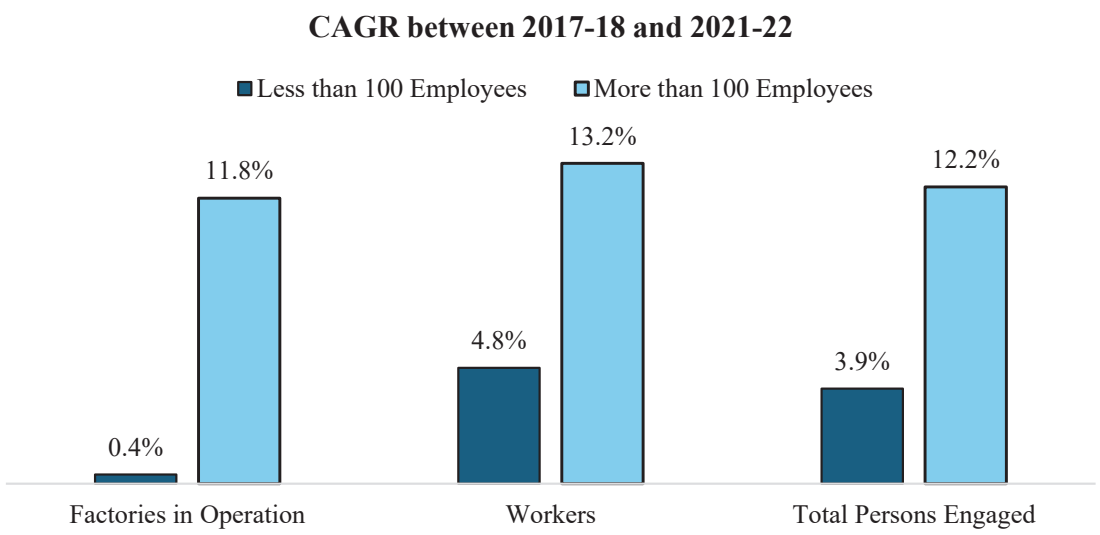


Chart VIII.14: Larger factories pay better wages



Source: Annual Survey of Industries reports, MoSPI

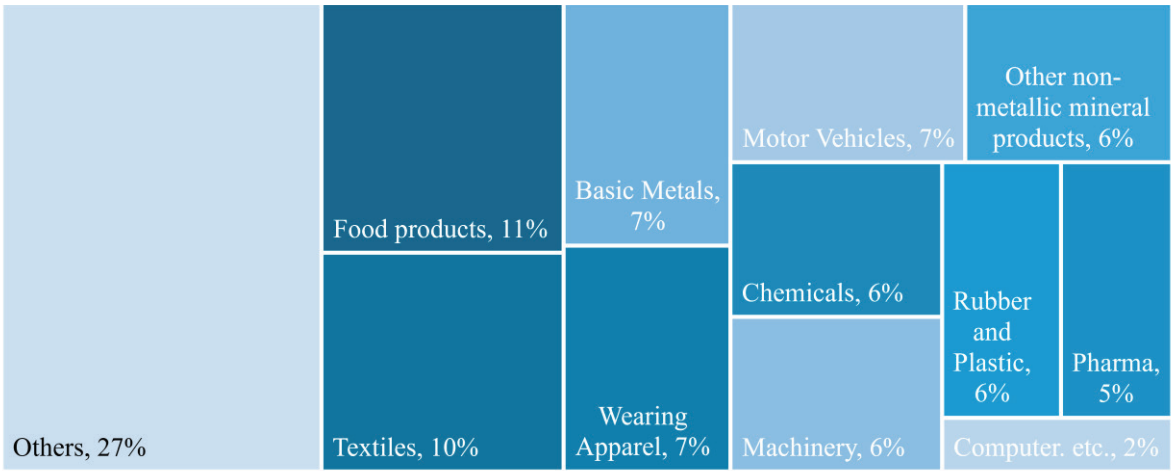
Chart VIII.15: Higher employment growth in larger factories



Source: Annual Survey of Industries reports, MoSPI

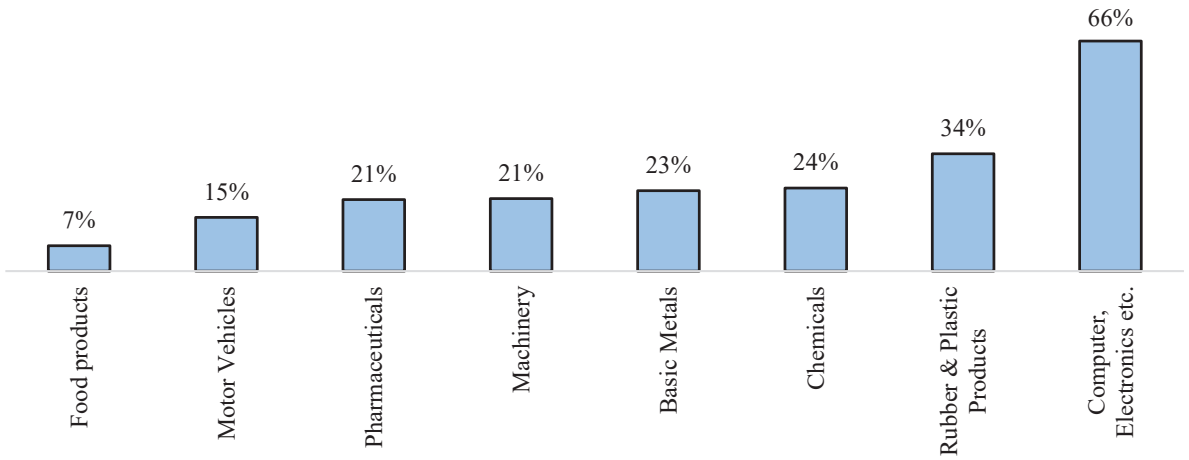
8.14 In terms of the sectoral share of factory employment (total persons engaged), the food products industry (11.1 per cent) remained the largest employer, followed by textiles, primary metals, wearing apparel and motor vehicles, trailers, and semi-trailers. However, in terms of growth in employment in the last five years, the rising heft of computers and electronics, rubber and plastic products, and chemicals indicates that Indian manufacturing is moving up the value chain and have emerged as sunrise sectors for manufacturing employment generation.

Chart VIII.16: Share in factory employment in FY22



Source: Annual Survey of Industries reports, MoSPI

Chart VIII.17: Total growth in employment in 5 years: FY18 to FY22

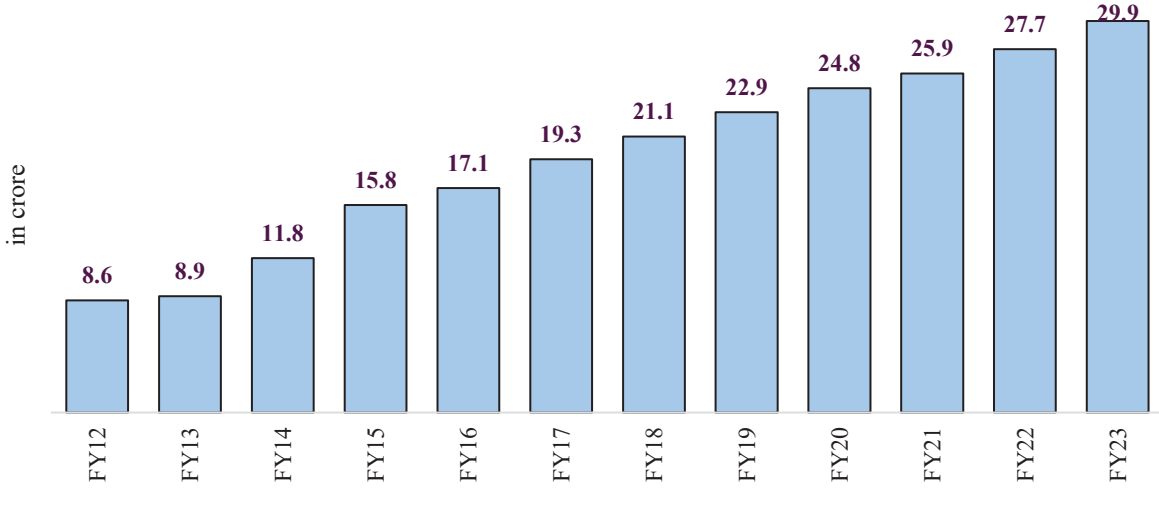


Source: Annual Survey of Industries reports, MoSPI
Note: Employment refers to the Total Persons Engaged

Enrolment in EPFO

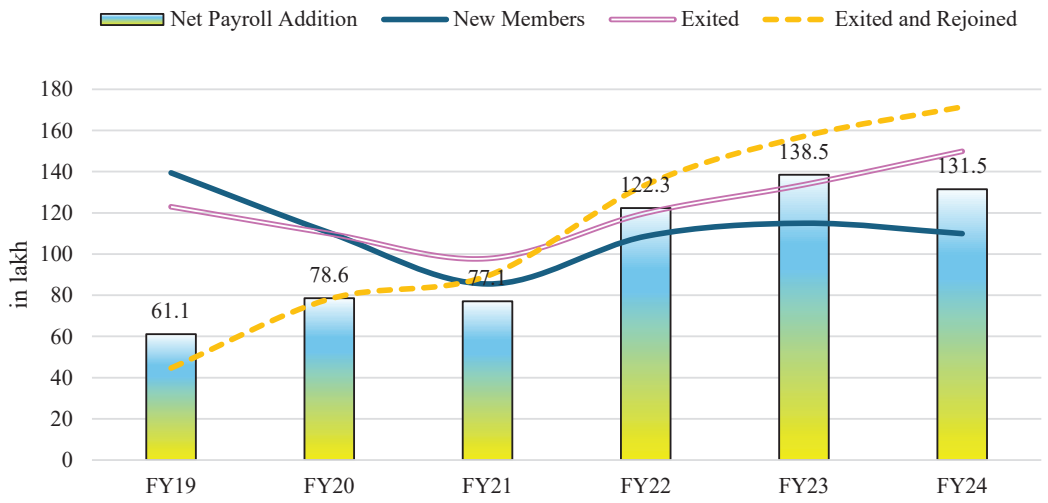
8.15 The organised sector job market conditions measured by payroll data for EPFO indicate a consistent year-on-year (YoY) increase in payroll addition since FY19 (the earliest since data is available). The yearly net payroll additions to the EPFO more than doubled from 61.1 lakh in FY19 to 131.5 lakh in FY24, swiftly recovering from the pandemic aided by the Aatmanirbhar Bharat Rojgar Yojana (ABRY). The EPFO membership numbers (for which older data is available) grew by an impressive 8.4 per cent CAGR between FY15 and FY24 (refer Chart VIII.18).

Chart VIII.18: Rising EPFO membership



Source: EPFO Annual Report available at https://www.epfindia.gov.in/site_en/Annual_Report.php

Chart VIII.19: Net payroll addition in EPFO



Source: EPFO Monthly Reports available at https://www.epfindia.gov.in/site_en/Estimate_of_Payroll.php

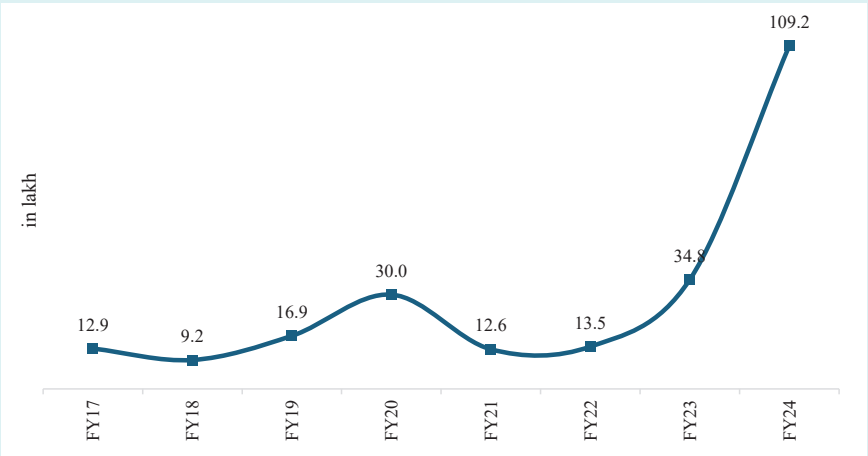
Government initiatives to boost employment generation

8.16 The Government has implemented a series of measures to boost employment generation, such as the rollout of the Production Linked Incentive (PLI) scheme to enhance India's manufacturing capabilities, increase in capital expenditure, etc., and to promote worker welfare. This has been accompanied by a boost to self-employment through easing of access to credit, and multiple process reforms. Some of the schemes to promote both job creation and job creators are summarised in the Box VIII.1.

Box VIII.1: Initiatives to foster job creation and workers' welfare

- Launched in 2015, the **National Career Service (NCS) Portal** offers employment and career services. By 31 March 2024, it has attracted 4.1 crore jobseekers and 25.6 lakh employers. The initiative includes 407 Model Career Centres and over 46,000 job fairs, with a 52 per cent increase in candidates shortlisted for jobs in FY24 compared to FY23, indicating a more competitive job market.

Chart VIII.20: Vacancies mobilised under NCS



- The **e-Shram portal is** the first-ever national database of unorganised workers with more than 29 crore workers registered. The portal has been integrated with the NCS portal to facilitate job search and aims to integrate with other relevant portals of different central Ministries/Departments in order to facilitate access of different Central Government schemes to unorganised workers at one place.
- In October 2020, the Government introduced the Aatmanirbhar Bharat Rojgar Yojana (ABRY) to boost employment with social security benefits post-COVID-19 job losses. By 31 March 2024, the scheme benefited 60.5 lakh individuals across 1.5 lakh establishments.[10]
- The Government has launched two significant contributory pension schemes to ensure **minimum pension for all workers**. The Atal Pension Yojana (APY), launched in 2015, has more than 6.5 crore subscribers now.[11] More than 50 lakh workers have enrolled under Pradhan Mantri Shram Yogi Maan-Dhan (PM-SYM) scheme, launched in 2019.[12]
- **Affordable insurance programmes**: Life and Disability cover is provided through Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY) of ₹2 lakh at an annual premium of ₹436 and ₹20 only.
- The new Labour Codes now provide **social security benefits to gig and platform workers** via a Social Security Fund, financed by contributions from the Central and State Governments, Aggregators, CSR etc. Additionally, the definition of Inter-State Migrant labour has been simplified.
- PM Street Vendor's AatmaNirbhar Nidhi (**PM SVANidhi**) Scheme, launched in June 2020 to facilitate collateral-free working capital loans to street vendors has more than 64 lakh beneficiaries to its credit.[13]
- The **One Nation One Ration Card** programme, launched in 2019, has enhanced migrant workers' welfare by allowing portable food security across India. Till December 2023, it facilitated over 124 crore portability transactions.[14]
- **Prime Minister's Employment Generation Programme (PMEGP)**: The Government is implementing PMEGP for assisting entrepreneurs in setting up of new units in the non-farm sector. It aims to provide employment opportunities to traditional artisans/ rural and urban unemployed youth at their doorstep. Since 2018-19 to 30 January 2024, estimated employment generated (no. of persons) are 37.46 lakhs.
- **Deendayal Antyodaya Yojana – National Urban Livelihoods Mission**: (DAY-NULM): The Mission aims to reduce poverty and vulnerability of the urban poor households by enabling them to access self-employment and skilled wage employment opportunities, resulting in an appreciable improvement in their livelihoods on a sustainable basis. Since 2018-19 to 30 January 2024, estimated number of skill trained candidates placed under DAY- NULM are 5.48 lakhs.

10 Success of AB-RPY, link available at: https://labour.gov.in/aatmanirbhar-bharat-rojgar-yojana-abry
11 As per information received from PFRDA
12 Includes bulk enrolments of 506603.
13 https://www.pmsvanidhi.mohua.gov.in/Home/PMSDashboard
14 Lok sabha unstarred question 1784 dated 13.12.2023.

- **Pradhan Mantri Mudra Yojana** (PMMY): PMMY is being implemented by the Government for facilitating self-employment. Under PMMY, collateral free loans up to ₹10 lakh, are extended to micro/small business enterprises and to individuals to enable them to set up or expand their business activities. Around 47.7 crore loans were sanctioned under the scheme as on 29 March 2024.
- **Stand Up India:** Launched on 5 April, 2016, the scheme aims to promote entrepreneurship among the SC/ST and Women by facilitating bank loans of value between ₹10 lakh and ₹1 crore to at least one SC/ ST borrower and one-woman borrower per bank branch of Scheduled Commercial Banks for setting up greenfield enterprises in trading, manufacturing, services sector and in activities allied to agriculture. In FY20, the Stand-Up India Scheme was extended for the entire period coinciding with the 15th Finance Commission period of 2020-25. As of 20 May 2024, loans of ₹51,724 crore have been sanctioned to more than 2.29 lakh accounts under the scheme.[15]
- **Start Up India:** Sustained efforts by the Government spanning "simplification and handholding", "funding support and incentives" and "industry academia partnership and in cubation" have led to an increase in the number of Department for Promotion of Industry and Internal Trade (DPIIT) recognised startups from over 300 in 2016 to 1,17,254, as on 31 December 2023.[16] These recognised startups are reported to have created over 12.42 lakh direct jobs creating significant economic impact.[17]
- **Programmes for promoting rural entrepreneurship,** including DAY-NRLM, RSETIs etc., as discussed in the chapter on Social Infrastructure.
- **Flagship programmes:** Besides these initiatives, various flagship programmes of the Government such as Make in India, Digital India, Smart City Mission, Atal Mission for Rejuvenation and Urban Transformation, Housing for All, Infrastructure Development and Industrial Corridors are also oriented towards generating employment opportunities.

8.17 Besides active interventions for social protection of workers, the Government has also promoted simplification of labour laws, as recommended by the National Commission on Labour in 2002. The Government rationalised and amalgamated 29 central laws into four Labour Codes in 2019 and 2020, after extensive consultations with stakeholders and public from 2015 to 2019. This was to promote employment creation and freeing workers from the web of legislations many of which trace their origins to the pre-independence period, reduce multiplicity of definitions and authorities relating to labour, and to induce transparency, accountability, and use of technology in enforcement of labour laws. Thereafter, the four Labour Codes; namely, the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020 and the Occupational Safety, Health and Working Conditions Code, 2020; have been enacted. The Code on Wages, 2019 was notified on 8 August, 2019 and the remaining three Codes were notified on 29 September, 2020.

15 Source: Inputs from Department of Financial Services
16 PIB release dated 12 Feb 2024 https://pib.gov.in/PressReleasePage.aspx?PRID=2005206
17 PIB release dated 2 Feb 2024 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2002100

8.18 "Labour" as a subject is in the Concurrent List of the Constitution of India and under the Codes, the power to make Rules has been entrusted to Central Government, appropriate Government and State Governments. There is also a requirement of pre-publication of Rules by states in their respective Official Gazette for public consultation. As per available information, 32, 30, 31 and 31 States & UTs have also pre-published their draft Rules under the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020 and the Occupational Safety, Health and Working Conditions Code, 2020 respectively.

8.19 However, there remains scope to expedite the enactment of Labour Codes by the states. In addition, there exist other regulatory hurdles to employment generation, some of which are stricter than advanced economies, as elaborated in the Box VIII.2

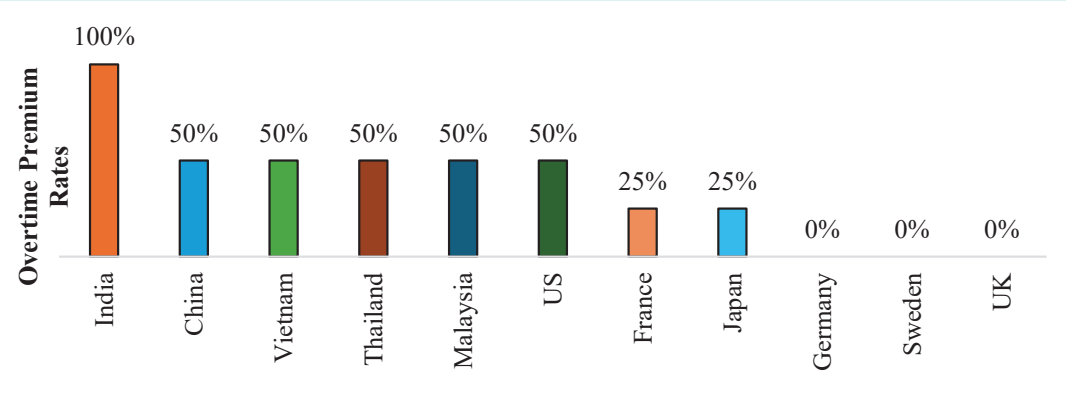
Box VIII.2: Re-balancing Labour Regulations to promote employment

Current labour regulations have unintended adverse repercussions for both the general workforce and women specifically. Although designed to safeguard women and enforce rigorous standards for all employees, these regulations inadvertently restrict employment opportunities and impede overall job creation. Some examples of these rules are mentioned below:

Higher overtime wage premium compared to peers and advanced economies

A comparison with other countries reveals that India's stricter overtime wage regulations are potentially hindering the growth of the manufacturing sector by driving production to nations with lower overtime costs (Dandekar and Roy, 2023).[18]

Chart VIII.21: India has a higher overtime wage premium



Source: Dandekar and Roy (2023)

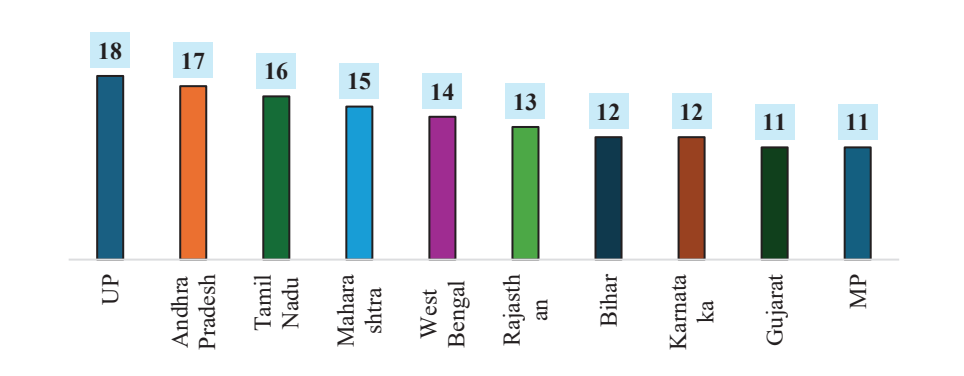
Systematic barriers to job opportunities for women

The 10 most populous states collectively impose 139 prohibitions on women from participating in factory processes such as electroplating, petroleum generation, manufacturing of products such as pesticides, glass, rechargeable batteries etc. (Singh, 2023).[19]

18 Dandekar, S. & Roy, S. (2023, August 23). Double or Nothing. Prosperiti Insights. https://prosperiti.substack.com/p/double-or-nothing

19 Singh, A. (2023, April 30). Laws that limit women's employment in India. India Development Review. https://idronline.org/article/gender/laws-that-limit-womens-employment-in-india/

Chart VIII.22: Number of activities restricted for women across states



Source: Singh (2023)

Welfare demand discourages growth

India prescribes higher floor space per worker on a factory floor compared to other countries. An Indian factory with 1,000 square metres (sqm) of usable floor space canemploy up to 82 more workers if India were to adopt Malaysia's standard.[20] Increases in space requirements can discourage the expansion of factories.

Table VIII.1: Indian factories could hire more workers by adopting competitive per-worker space standards

Country	Per worker space (sqm)	Additional jobs created
India	3.38	N/A
Singapore	2.88	52
Switzerland	2.86	54
Malaysia	2.65	82
Germany	'Sufficient' Space	N/A
Norway	'Sufficient' Space	N/A

Source: Kaur, Kaur, and Roy (2023)

Inflexibility in working hours

Many countries offer more flexibility in organising work hours and allow for more overtime compared to India. This is limiting the monetisable time for Indian workers and affecting their families and the country's prosperity (Roy, Saxena, and Singh, 2023).[21]

20 Kaur, E., Kaur, S., & Roy, S. (2023, September 20). (No) Room to Grow. Prosperiti Insights. https://prosperiti.substack.com/p/no-room-to-grow

21 Anand, B., Roy, S., Saxena, P., & Singh, A. (2023, October 04): "Lower the bar, increase the earnings", Prosperiti Insights. https://prosperiti.substack.com/p/lower-the-bar-increase-the-earnings

Country	Working Hours limit in a factory
India	10.5
Bangladesh	11
Vietnam	12
China	No limit
Denmark	No limit
Indonesia	No limit
Norway	No limit
South Korea	No limit
Sweden	No limit
Switzerland	No limit
Source: Roy, Saxena, and Singh (2023)	

Conclusion

The new Labour Codes marginally improve some of the observations above. In some cases, limits have been moved from the Law to Rules to be made by states. However, the Codes are yet to be fully operationalised and many states are found to be reintroducing the older restrictions under the new Laws.

Labour Laws need to be reviewed to re-evaluate incentives for employers, with a focus on achieving better outcomes for economic growth and prosperity in the manufacturing sector. Implementing more flexible labour laws could unleash substantial economic potential, promote gender inclusivity, and attract industrial investment.

8.20 The states would also do well to reduce the compliance burden of the Micro, Small and Medium Enterprises (MSMEs). The management bandwidth in MSMEs to grow business, seek new markets, get funding, and hire labour is limited, and this limited bandwidth is spent disproportionately on compliance. Whereas the Union Government frames the Rules, the implementation or supervision is in the hands of Inspectors and Supervisors who come from the relevant departments in the states. This is where senior levels of bureaucracies at the Centre and states can and should collaborate to make it easier for businesses to comply without being squeezed out of time and other resources.

Trend in rural wages

8.21 In FY24, rural wages rose at above-5 per cent every month, YoY. On an average, nominal wage rates in agriculture grew by 7.4 per cent for men and 7.7 per cent for women, benefitting from robust agriculture growth during the period. The wage growth in non-agricultural

activities was relatively lower, at 6.0 per cent for men and 7.4 per cent for women during the same period. Going forward, as inflation is expected to soften with the easing of international commodity prices and domestic food prices, it is expected to translate into a sustained rise in real wages.

Chart VIII.23 (a): YoY growth in nominal rural wages, Men

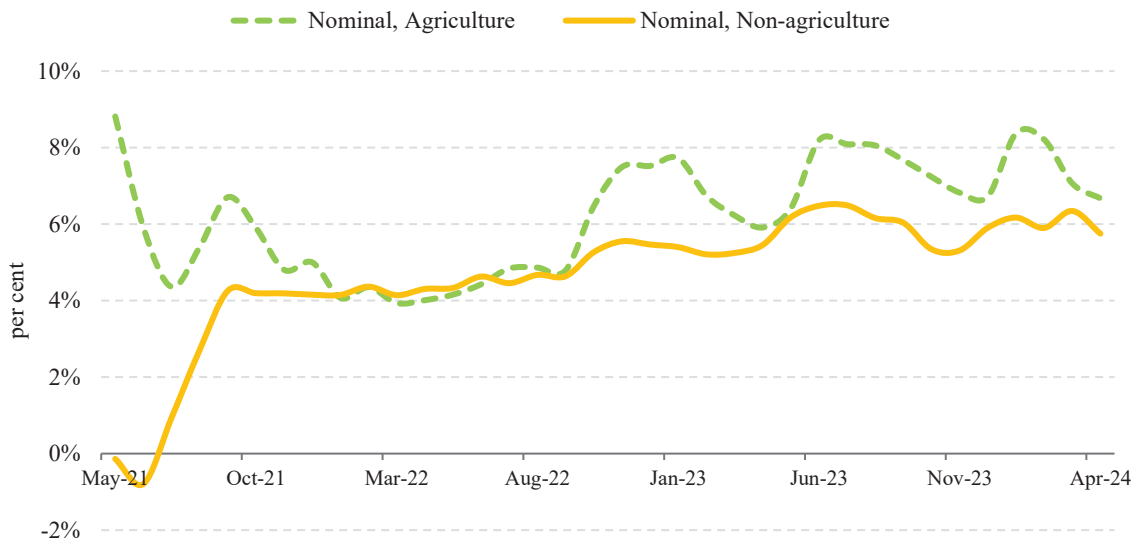
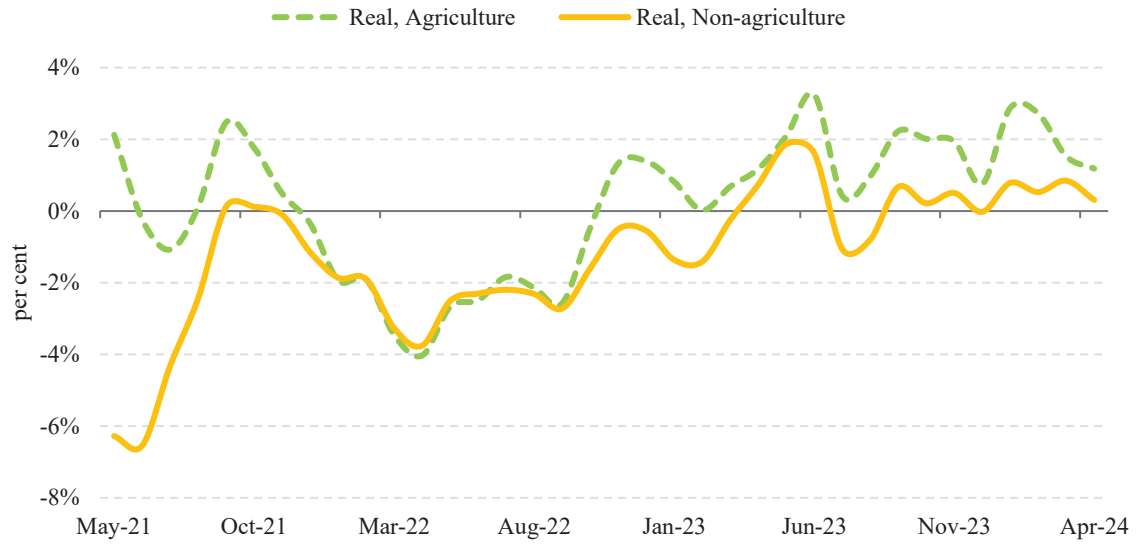


Chart VIII.23 (b): YoY growth in real rural wages, Men



Source: Monthly Rural Wage Rates by Labour Bureau
Note: For calculating real wages, nominal wages are divided from CPI-Rural Labour

THE EVOLVING LANDSCAPE OF JOBS IN INDIA

8.22 The interaction of various production factors in generating value-addition is constantly evolving in an economy that is in transition to middle-income status. The human resources who bring about this progression must also adapt to it to be employable in the changed scenario. The global labour market is amid a 'disruption,' constantly being reshaped by the fourth industrial revolution, concerted efforts by all economies to decarbonise in the wake of a looming climate crisis and other geopolitical vicissitudes. In a recent study, David Autor[22] wrote that changes in the nature of work in the last few decades—primarily technological—have been more disruptive and less beneficial for non-college workers.

8.23 According to the World Economic Forum's (WEF) Future of Jobs report, 2023[23], in the next five years, 23 per cent of the jobs are expected to change globally. This change is likely to consist of growth in 10.2 per cent of the jobs and decline in 12.3 per cent of the jobs. Employers anticipate 69 million new jobs to be created and 83 million eliminated - a net decrease of 14 million jobs, or 2 per cent of current employment. The following are some ways in which the work environment is evolving.

Fourth industrial revolution

8.24 Epochal changes in the economic structures manifested by three Industrial Revolutions (IR), starting from the 18th century, have caused technological disruption and significant job displacement. Each has resulted in transformations in the manner in which firms and individuals interact with the labour markets, redefining the relationship between technology and how work gets done.[24] Each IR caused a significant loss of livelihood for workers whose tasks were most susceptible to automation and those who could not quickly adapt to new technology. People have had to skill and reskill to maintain their place in the labour markets.

8.25 The world is in the midst of a fourth industrial revolution characterised by novel ways in which technology is becoming embedded within societies through 'cyber-physical systems,' Internet of Things (IoT), big data, nano-technology, and networks. Evolving forms of machine learning, AI, blockchains, genetic engineering, quantum computing, advanced analytics, automation, and advanced manufacturing technology are some examples of what constitutes this technological revolution. In the backdrop of this evolving revolution, the future of job markets in India is undergoing a significant transformation, as is happening in the rest of the world.

8.26 The demand for digital roles is proliferating, hastened further by the COVID-19 pandemic and its lingering impact. Technological advancements are leading to a growing demand for tech-savvy professionals trained in emerging areas such as big data, AI and machine learning, cybersecurity, cloud computing, etc. According to the WEF, the fastest-growing jobs in the next five years will be those of AI and machine learning specialists, sustainability specialists,

22 David Autor (2019), "Work of the Past, Work of the Future", NBER Working Paper No. 25588 http://www.nber.org/papers/w25588.

23 https://www.weforum.org/publications/the-future-of-jobs-report-2023/

24 For instance, Didier, N. (2024). Turning fragments into a lens: Technological change, industrial revolutions, and labor. *Technology in Society*, *77*, 102497, present how the labour market has evolved in the context of technological change.

business intelligence analysts and information security specialists; the largest absolute growth is expected in education, agriculture, and digital commerce.

Disruptions due to the adoption of AI

8.27 The biggest disruption for the future of work is the accelerated growth in AI, which is poised to revolutionise the global economy. India would not remain immune to this transformation. AI is being recognised as a general-purpose technology, like electricity and the internet, which is phenomenal in its rapid pace of innovation and ease of diffusion. As AI systems continue to get smarter and adoption increases, the future of work will be reshaped. While AI has considerable potential for boosting productivity, it also has the potential to disrupt employment in certain sectors. Routine tasks, including customer service, will likely witness a high degree of automation; creative sectors will see extensive usage of AI tools for image and video creation; personalised AI tutors can reshape education and sectors like healthcare can witness accelerated drug discovery. On the impact of AI on employment, insights can be drawn from Acemoglu and Johnson's work, presented in Box VIII.3.

Box VIII.3: Ricardo's Pivot and the Centrality of Technological Choices

Conventional economic wisdom would suggest that technological changes generate productivity[25] gains leading to higher wages and more economic opportunities in the long run. However, according to Acemoglu and Johnson (2024)[26], *"... taking such a long view ignores the struggles of workers to secure their fair share of prosperity made possible by the new machinery."* The authors take a cue from Industrial Revolution in Britain to understand the relationship between AI-induced rise in productivity and employment in the present. Specifically, the authors take the examples of automation of cotton spinning through the introduction of the spinning jenny in the late 18th century, automation of weaving by the power loom in the 19th century, and the advent of the railways and heavy industries in the second half of 19th century.

Spinning Jenny[27]

Power loom in a factory[28]

25 Productivity refers to how much output can be produced with a given set of inputs. Productivity increases when more output is produced with the same amount of inputs or when the same amount of output is produced with less inputs.

26 Acemoglu, Daron and Johnson, Simon, Learning from Ricardo and Thompson: Machinery and Labor in the Early Industrial Revolution, and in the Age of Ai (May 2024). NBER Working Paper No. w32416, SSRN: https://ssrn.com/abstract=4826001.

27 Source: https://kids.britannica.com/students/article/spinning-jenny/630347

28 Source: https://historyofinformation.com/detail.php?id=42

While spinning jennies reduced the cost of yarn and increased the productivity and demand of handloom weavers, the power loom led to labour substitution and halving of real wage of artisans between 1806 and 1820. The decline in real wages of weavers after the arrival of power loom is said to be behind Ricardo's change in opinion from "*machinery did not lessen the demand for labour*" in 1819 to "*If machinery could do all the work that labour now does, there would be no demand for labour"* in 1821. Likewise, the coming of the Liverpool and Manchester railways in 1830 spurred new jobs in modern manufacturing, including design, repair, maintenance, and clerical tasks.

The authors highlight the inadequacy of economic factors to explain the impact of automation on wages and emphasise on the forces of political economy, i.e., the balance of power between labour and capital. Here, the interpretation of E.P. Thompson, an English historian, seems more suitable to them in explaining the impact of power loom on weavers. According to Thompson, the movement of workers to factories led to their loss of autonomy, and, in the absence of any policy support or bargaining power, culminated in the deterioration of wages and worker conditions.

In simple words, it is how we use the technology- whether we use it for automation, surveillance and control or we use it for informed decision making, problem-solving and augmentation[29], that decides whether AI will facilitate the path of job creation or will be a hindrance to it. During Ricardo's time, this choice was made by the factory owners, employers and industrialists while labourers underwent harsh working conditions, surveillance and control. Times have changed now, workers are certainly more independent, and hold power through strict labour laws and trade unions. Several reports today mention that AI will not destroy jobs rather transform them. Studies emphasise the need for humans to guide this AI transition.[30] [31]

The paper concludes that automation may be good or bad, depending on how we deploy it, and the direction of the technology being implemented. New technology can hurt labour interests by reducing the marginal productivity of labour[32] while overall productivity may rise, thereby leading to substitution of labour by machines, as in the case of the handloom weavers. At the same time, automation can benefit labour in two ways. Firstly, if it significantly increases the marginal productivity of labour in the right sectors thereby increasing labour demand in non-automated tasks or in industries producing complementary products, as in the case of jennies. Secondly, when automation is accompanied by creation of new tasks and increase in marginal productivity of labour in new activities like in the railways example (Acemoglu and Johnson 2023). That said, political economy remains decisive in ensuring shared prosperity from technology. This is termed as the 'centrality of technological choices'.

29 https://www.project-syndicate.org/commentary/ai-automation-threatens-workers-lessons-from-industrial-revolution-and-david-ricardo-by-daron-acemoglu-and-simon-johnson-2024-04

30 https://www.ilo.org/resource/news/generative-ai-likely-augment-rather-destroy-jobs

31 https://hbr.org/2021/11/automation-doesnt-just-create-or-destroy-jobs-it-transforms-them

32 The marginal product(ivity) of labour is defined as the amount that output would be increased if one more unit of labour were employed, while everything else remains the same.

8.28 Research done in the context of the US informs that Generative AI (GenAI) may have a far higher impact on reshaping jobs than replacing jobs.[33] According to IMF (2023)[34] and IMF (2024)[35], almost 40 per cent of global employment is exposed to AI, with the exposure of advanced economies being 60 per cent due to the prevalence of cognitive-task-oriented jobs. The study develops an index of potential AI complementarity, which suggests that about half of these may be negatively affected by AI. At the same time, the rest could benefit from enhanced productivity through AI integration. It finds that employment highly exposed to AI is 26 per cent for India, divided into 14 per cent for occupations with high complementarity and 12 per cent for those with low complementarity.[36] [37]

8.29 India, with its vast demographic dividend and a very young population, is uniquely situated as AI poses both risk and opportunity. According to Capital Economics (2024), the current diffusion and adaptation of AI in India remains low compared to US, Europe, and the developed Asian economies. Manufacturing sector is less exposed to AI as industrial robots are neither as nimble nor as cost-effective as human labour. In inventory and supply chain management, AI applications could rather be complementary to labour. Nevertheless, at particular risk is the BPO sector, where GenAI is revolutionising the performance of routine cognitive tasks through chatbots, and employment in the sector is estimated to decline considerably in the next ten years. In the following decade, however, gradual diffusion of AI is expected to augment productivity. Uses of AI to identify health risks out of digitalised health data, predict weather, and complementing teachers in grading tests and translating texts are some of the development gaps that AI can plug.[38]

8.30 Widespread adoption of AI across the services sector can significantly reshape and even replace jobs. Based on job postings data from India's largest job website, Copestake, A. et. al. (2023) interpret a near-exponential increase in the demand for AI-related skills since 2016. They find that the demand for AI skills by businesses has a negative impact on the need for non-AI roles and on the top percentile of wages, due to the displacement of high-skilled, managerial positions and non-routine, intellectual tasks.[39]

8.31 Given the affinity of India's population to work with technology, as seen with the digital public infrastructure, proactive interventions by the Government and industry can position India as a key player in the AI age. Employees or job seekers would need skills beyond communication, collaboration, and presentation, such as analytical thinking and innovation;

33 Forrester's 2023 Generative AI Jobs Impact Forecast, US, https://www.forrester.com/report/forresters-2023-generative-ai-jobs-impact-forecast-us/RES179790.

34 Pizzinelli, C., A. Panton, M. M. Tavares, M. Cazzaniga, and L. Li, (2023) "Labor Market Exposure to AI: Cross-country Differences and Distributional Implication." IMF Working Paper 23/216.

35 Cazzaniga and others. 2024. Gen-AI: Artificial Intelligence and the Future of Work. *IMF Staff Discussion Note SDN2024/001*.

36 "Exposure" to AI is defined as the degree of overlap between AI applications and required human abilities in each occupation.

37 The 2023 IMF paper extends the standard measure of AI exposure, accounting for AI's potential as either a complement or a substitute for labour, where complementarity reflects lower risks of job displacement.

38 Shilan Shah, India's Economy in the era of AI, Capital Economics, 23 Jan 2024

39 Copestake, A., Marczinek, M., Pople, A., & Stapleton, K. (2023). AI and services-led growth: Evidence from Indian job adverts.

complex problem solving, critical thinking; learning and self-development; technology design and programming; and resilience and adaptability, to face the AI challenge

Making the most of AI in India

8.32 Despite India being one of the leaders in AI globally, a review of existing literature shows that not much prior research has been done in India. This gap highlights the need for research and development in this sector. The AI related research papers published by China in 2019 were 102,161, followed by 74,386 in US and 23,398 in India, which is less than one-fourth of China. Outputs in AI Research and Development are highly skewed, with concentration in only a few countries.[40] [41]

8.33 The US, being the leader in the AI R&D output, has clearly laid out a well-defined strategic plan to strengthen its AI sector. The plan consists of 9 steps, as mentioned in the latest 2023 report by its National Science and Technology Council[42], i.e., making long-term investments in AI Research, developing effective methods for human-AI collaboration, understanding and addressing implications of AI , ensuring the safety and security of AI systems, developing datasets for AI training and testing, measuring and evaluating AI systems, better understand national AI R&D workforce needs, expanding private-public partnerships, and establishing a coordinated approach to international collaboration in AI Research. This strategy marks a significant move of the US Government to address the challenges that cannot be resolved by the sectors alone.

8.34 A policy brief by Research and Information System for Developing Countries (RIS) suggested that there is a need for an Inter-Agency Coordination Authority for AI which would act as a central institution guiding the research, decision-making, policy planning on AI and job creation.[43] The brief also suggested that AI will create more jobs but may have a negative short-term impact, and to counter this impact there is a need to invest in capacity building, upskilling, training, and forming policies to ensure that low-skilled workers do not suffer from any potential job losses.

8.35 AI has made a significant growth in the agri-tech, industry & automotive, healthcare, BFSI and retail sectors in India. One of the significant examples include Praman Exchange, world's largest horticulture exchange, powered by Intello Labs which uses computer vision to map the quality of horticulture products. Pramaan's technology achieves quality assessment with 95 per cent accuracy, surpassing the manual assessment rate of 70 per cent. This gives the contractors the required time and flexibility to trade from anywhere in the world.[44]

40 https://thedocs.worldbank.org/en/doc/2e658ef2144a05f30e254221ccaf7a42-0200022021/original/DD-Analytical-Insights-Note-4.pdf
41 https://www.nature.com/articles/d41586-020-03409-8 (Savage 2020)
42 National Science and Technology Council | The White House https://www.whitehouse.gov/wp-content/uploads/2023/05/National-Artificial-Intelligence-Research-and-Development-Strategic-Plan-2023-Update.pdf
43 https://www.ris.org.in/sites/default/files/Publication/Policy%20brief-104_Amit%20Kumar.pdf
44 https://www.investindia.gov.in/team-india-blogs/artificial-intelligence-powering-indias-growth-story

8.36 The Government has launched several initiatives to ensure an AI enabled ecosystem and to connect AI to the youth of the country. Some of these include 'Future Skills Prime', 'YUVAi: Youth for Unnati and Vikas with AI' a national programme for school students and 'Responsible AI for Youth 2022'[45]. A budget of ₹10,300 crore has been provided in 2024 for the India AI Mission, a significant move to strengthen the AI ecosystem.[46]

Shift towards gig economy

8.37 A marked shift in the employment scenario has led to the rise of the gig economy globally. It encompasses freelancers, online platform workers, self-employed, on-call workers, and creative tech talent. In India, the rise of the gig economy is driven by the emergence of tech-enabled platforms, an increase in access to the internet backed by the development of digital public infrastructure, the demand for flexible work arrangements, and the focus on skills. According to NITI Aayog's indicative estimates based on national labour force survey data, in 2020–21, 77 lakh (7.7 million) workers were engaged in the gig economy. They constituted 2.6 per cent of the non-agricultural workforce or 1.5 per cent of the total workforce in India.[47]

8.38 Research studies have shown that participation in the gig economy is higher in developing countries (between five and 12 per cent) compared to developed economies (between one and four per cent), and most of these jobs are in lower-income job types, such as deliveries, ridesharing, microtasks, care and wellness (BCG 2021).[48] The continuing high demand for such services and job flexibility is boosting entry-level job creation in tier-2 and tier-3 cities, including part-time work for students entering the job market or as a shock absorber in case of temporary unemployment, with a high probability of workers moving to better-paying jobs after the platform experience (NCAER 2023).[49]

8.39 The gig workforce is expected to expand to 2.35 crore (23.5 million) by 2029–30. Gig workers are expected to form 6.7 per cent per cent of the non-agricultural workforce or 4.1 per cent of the total livelihood in India by 2029–30.[50] While the gig economy may open up employment opportunities for various sections of workers, including youth, persons with disabilities, and women, a significant issue in the Indian context and globally has been the creation of effective social security initiatives for gig and platform workers. The Code on Social Security (2020) marks a significant advancement by expanding the scope of social security benefits to encompass gig and platform workers.

Climate change and green energy transition

8.40 With climate change a hard reality of the present times and projections pointing towards an increase in the frequency and intensity of extreme weather events, the concomitant outcome is the possible loss of jobs and productivity. Heat is an occupational safety and health hazard. According to the International Labour Organization (ILO), projections based on a global

45 Parliament Question "Impact of AI" https://labour.gov.in/sites/default/files/pib2002657.pdf
46 PIB https://pib.gov.in/PressReleasePage.aspx?PRID=2012375
47 NITI Aayog, June 2022, India's Booming Gig and Platform Economy
48 BCG report "Unlocking the potential of Gig Economy in India" India-Gig-Economy-Report.pdf (bcg.com)
49 NCAER, August 2023, Socio-economic Impact Assessment of Food Delivery Platform Workers
50 Ibid. footnote 47

temperature rise of 1.5°C by the end of the 21st century and also on labour force trends suggest that in 2030,3.8 per cent of total working hours worldwide will be lost to high temperatures – the equivalent of 136 million full-time jobs– and economic losses of $2,400 billion.[51] The Report notes that India is one of the most vulnerable countries to productivity losses, given its high share of agricultural and construction employment and location within the tropical latitude.

8.41 Another aspect of climate change is the efforts to mitigate its impact by adopting green technologies and transitioning to greener energy alternatives. This trend is leading to businesses witnessing a strong job-creation effect driven by investments that facilitate the green transition of businesses and the application of ESG standards.

8.42 For instance, India's green transition is and is more likely to significantly impact job opportunities in the renewable energy sector. Tyagi et al (2021)[52] observes that, by 2030, clean energy initiatives can potentially create about 3.4 million jobs (short and long-term) by installing 238 GW of solar and 101 GW of new wind capacity to achieve the 500 GW non-fossil electricity generation capacity. These jobs represent those created in the wind and on-grid solar energy sectors. About one million can be employed to take up these green jobs.[53]

8.43 Climate change also affects worker well-being, as highlighted in a recent ILO report[54], creating a 'cocktail' of health hazards for 70 per cent of the world's workforce. Workers, especially those in manual jobs, thus need suitably designed policy support and private insurance products to protect their health and incomes from the vagaries of heatwaves, floods, cyclones, etc. Here, an innovative pilot programme by Self Employed Women's Association (SEWA) is noteworthy. Launched in 2023, a heat-linked parametric insurance covering 22,000 unorganised workers entails partial wage payment when temperature breaches 43.6° C with the premium borne partially by the worker and rest through charity. By helping the workers to cover food and medication requirement, the payout provides a shield against the scorching heat. Ultimately, SEWA plans to sign up 29 lakh members which would allow the premiums to be fully funded by the workers themselves.[55]

8.44 To sum up, as the country navigates the complexities of the future job market alongside the global trends, as discussed above, acceptance and adapting to change and encouraging innovation will be the key to harnessing the opportunities and dealing with the challenges presented before us. Dwelling deeper into these trends in the job markets and finding cost-effective solutions through careful planning and implementation would go a long way in mitigating the negative impacts on the job's ecosystem.

51 ILO (2019), Working on a warmer planet: The impact of heat stress on labour productivity and decent work. https://tinyurl.com/axn9bx8z

52 Tyagi, Akanksha and others (2021). *India's Expanding Clean Energy Workforce*. New Delhi: Council on Energy, Environment and Water, Natural Resources Defense Council, and Skill Council for Green Jobs.

53 Jobs created are different from the workforce needed, as one worker can perform more than one job.

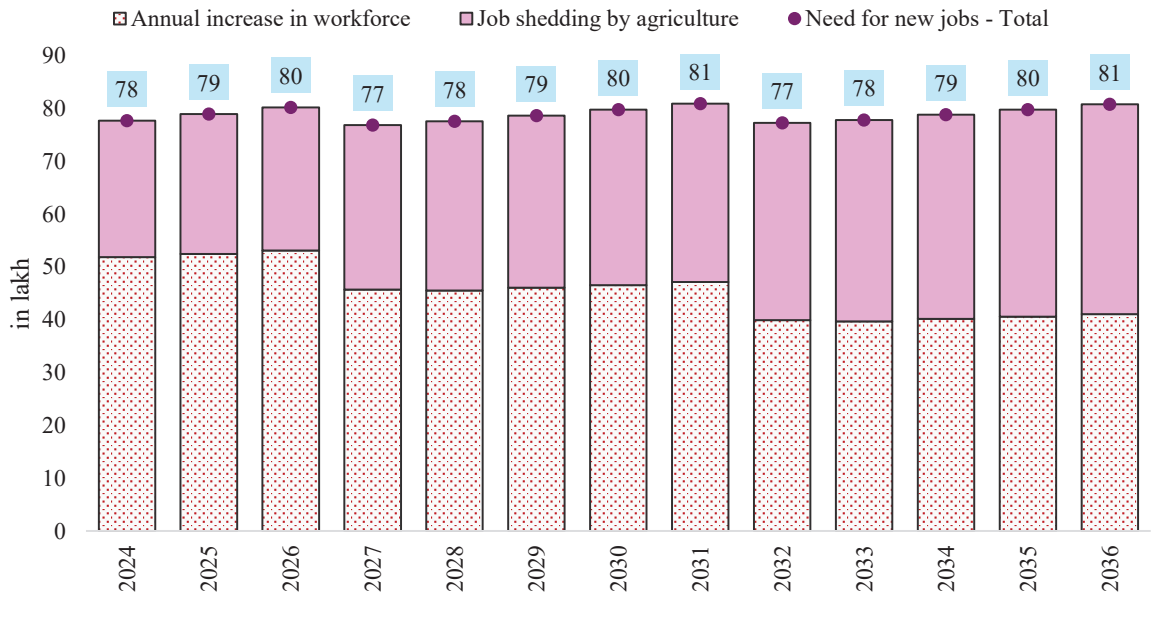
54 Ensuring safety and health at work in a changing climate, ILO, April 2024, https://www.ilo.org/publications/ensuring-safety-and-health-work-changing-climate

55 Rathi, A., Economic Times, 12 June 2024, "A 'kavach' helped 46,000 Indian women avoid deadly work during heat waves", accessed on 24 June 2024 https://tinyurl.com/4asjw7cw

REQUIREMENT OF JOB CREATION UNTIL 2036

8.45 This section attempts a broad estimation of the requirement for job creation in the non-farm sector, using a simple model and some assumptions. The current workforce in 2022-23[56] has been estimated using the WPR (usual status, all ages) for 2022-23 from PLFS and the corresponding population estimates by MoHFW.[57] The rise in workforce has been estimated assuming constant WPR for men (54.4 per cent in 2023) and rising WPR for women (from 27.0 per cent in 2023 to 40.0 per cent in 2036, increasing by 1 percentage point every year).[58] Further, to account for the structural transformation, it is assumed that the share of agriculture in workforce gradually declines from 45.8 per cent in 2023[59] to one-fourth in 2047,[60] and the corresponding workforce thereby leaving agriculture is added to the rise in workforce. This is a reasonable assumption to make given the sticky predominance of agriculture in employment, and the potential of high-value agriculture and allied activities to generate remunerative employment, especially for women. Consequently, Indian economy needs to generate an average of nearly 78.5 lakh jobs annually until 2030 in the non-farm sector to cater to the rising workforce (see Chart VIII.24 below).

Chart VIII.24: Annual requirement for non-farm job creation 2024-2036



Source: Calculated using PLFS, MoHFW population estimates.

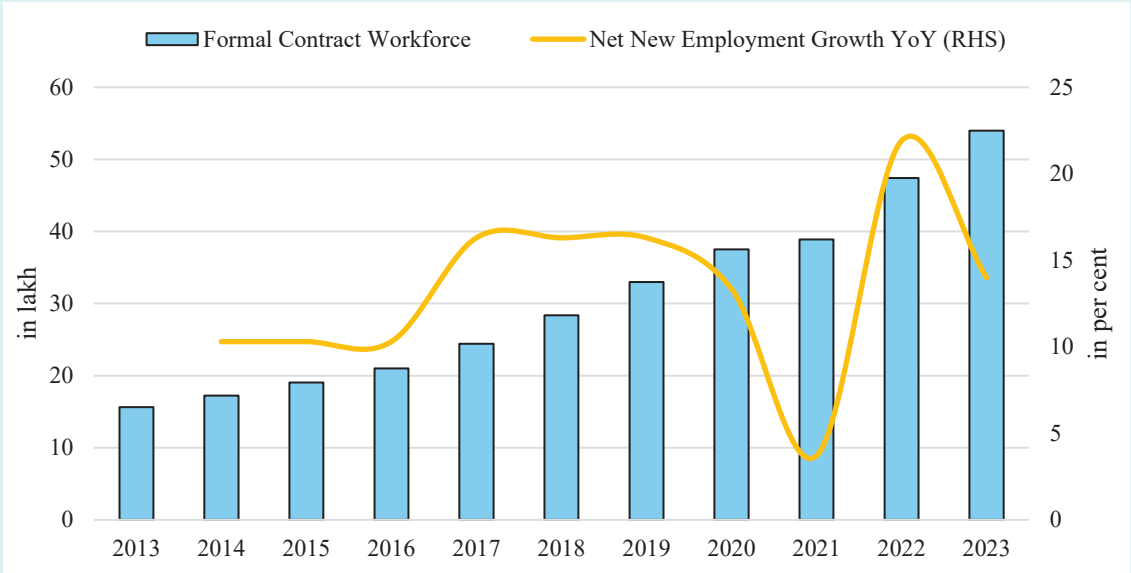
56 2022-23 is referred to as 2023 in the section.
57 Population estimates as of 1st March have been converted to estimates as of 1st January using linear method, since January is the middle point of the July-June timeframe used by PLFS.
58 At this rate, the female WPR will reach 51 per cent by 2047.
59 Source: PLFS 2022-23 annual report
60 This implies an yearly decline of 0.87 percentage points.

8.46 To meet the demand of 78.5 lakh jobs in non-farm sector per year, there is scope to supplement the existing schemes of PLI (60 lakh employment generation over 5 years),[61] MITRA Textile scheme (20 lakh employment generation),[62] MUDRA, etc., while boosting their implementation. In the following sections, two sectors for further job creation have been identified and elaborated upon. Over and above the quantity of employment, its quality and social security aspect has its own significance. The rising employment of flexi workers through staffing companies can be a channel for ensuring social security for informal workers, as briefed in Box VIII.4.

Box VIII.4: Flexi job market in India

There are nearly 5.4 million formal contract staff or flexi workers in India employed through organised contract/temporary staffing companies. These staffing companies are responsible for the timely payout of salaries/wages, social security/medical insurance towards their contract staff. Although they work on a contract, these workers are fully protected with social security, and the average length of contract has been rising with more than 75 per cent of the contracts in 2023 for over six months. The flexi workforce has grown at a CAGR of 13.2 per cent in the decade ending 2023, and remained positive even during the COVID pandemic. However, as a share of the total workforce, the contract staffing workforce is about 1 per cent only, compared to 2.2 per cent in Europe and Asia Pacific. The low percentage of flexi jobs in India indicates that the corporate sector has not replaced full-time workers with flexi workers.

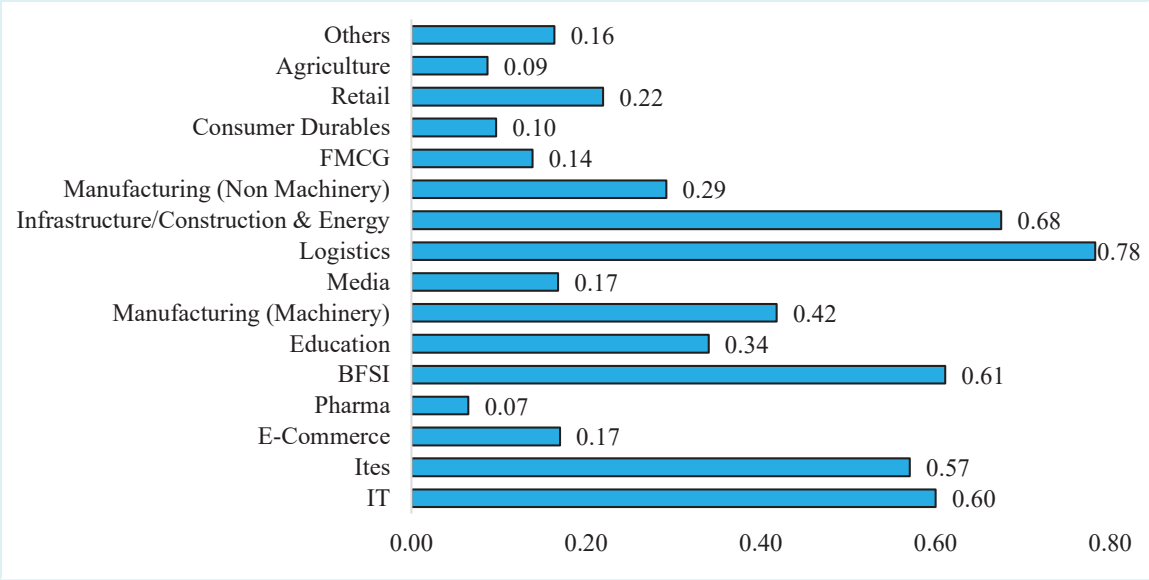
Chart VIII.25: Growth contract staffing workforce in past 10 years



Source: Inputs from Indian Staffing Federation

61 PIB release dated 05 Feb 2024 https://tinyurl.com/jr5e4m4v
62 PIB release dated 21 Dec 2023 https://tinyurl.com/desnm7um

Chart VIII.26: Sectoral distribution of flexi workforce in million



Source: Inputs from Indian Staffing Federation

80 per cent of the flexi workers are in the 21-30 age group, with an average salary of ₹ 20,000-22,000 a month. Most contract/flexi jobs in India continue to happen at the lower end of the skill spectrum such as data operations, accounts, sales, back-end operations, administration and marketing. Nearly 60 per cent of the flexi jobs are in logistics, infrastructure/construction & energy, BFSI, IT and IT Enabled Services.

AGRO-PROCESSING AS A PROMISING SECTOR FOR RURAL EMPLOYMENT AND GROWTH

8.47 The agro-processing sector lies at the intersection of multiple opportunities for rural growth besides being an intermediate sector for the 'farm to factory' transition. The following paras elaborate on the suitability of agro-processing for job creation, given India's stage of development.

8.48 *Demand for rural jobs:* MGNREGS data shows substantial demand for low-skill rural jobs (especially by women, who constitute more than half of MGNREGS workforce), and there remains ample scope for shifting MGNREGS labour to more productive and less fiscally-straining ventures. Given that agriculture and related industries remain the mainstay of the rural economy, increasing productivity in this sector is imperative to create jobs. Agro-processing can also accelerate crop diversification in areas such as Punjab and Haryana, where paddy cultivation faces serious challenges related to groundwater scarcity.

8.49 *Low value-addition in agriculture:* While India is endowed with 11.2 per cent of total arable land in the world and is ranked first in the production of milk, pulses, and jute, second in fruits and vegetables and third in cereals[63], value addition in agriculture continues to be low.

63 Annual Report, MoFPI, 2021-22

As per a study conducted on the Level of Food Processing in India (Deloitte, 2020-21)[64], the processing level in India is at 4.5 per cent for fruits, 2.7 per cent for vegetables, 21.1 per cent for milk, 34.2 per cent for meat and 15.4 per cent for fishery. In contrast, 30 per cent of food in China is processed as against 60-80 per cent in Western countries (Liu et al. 2007).[65]

8.50 *Rising demand for diverse and local food products:* A better connection of farmers with food processing units could bring a more extensive and diverse pool of agricultural products to the market, the demand for which has been rising with affluence and diet-consciousness in India and abroad. As per a report by InvestIndia[66], the Indian food processing market is estimated to reach USD535 billion by 2025, growing at a CAGR of 15.2 per cent. Tier-2 and Tier-3 cities could mirror the trend visible in metropolitan areas by consuming more processed food in the coming years. Further, the share of processed food exports in agri-exports has increased substantially from 13.7 per cent in FY15 to 25.6 per cent in FY23.

8.51 *Presence of precedents:* There are many success stories to emulate a bottom-up approach to agro-processing, such as the Sahyadri Farmer Producer Company in Maharashtra (refer to Box VIII.5), Araku Coffee plantations by tribals in Andhra Pradesh, Mahagrapes in Maharashtra supported by Mahindra Agro, and Synthites spice-processing group in Kerala.

Box VIII.5: Sahyadri's Success in Agro-processing

Sahyadri Farmer Producer Company (SFPC), an agro-processing unit based in Nashik, Maharashtra, has emerged as a beacon of agricultural innovation and socio-economic development in the region. Boasting more than 12 years of experience in the industry, Sahyadri crossed a remarkable turnover of ₹1000 crore in FY23.[67]. The impressive growth trajectory is attributed to a farmer-centric approach accompanied by a robust supply chain, efficient technology, and world-class infrastructure.

The exponential growth in Sahyadri Farms has led to the creation of 1300 full-time jobs and an additional 4000 seasonal jobs[68], thus contributing to the region's employment opportunities. With infrastructure spanning over 31,000 acres of land, SFPC holds the status of being India's largest exporter of fresh grapes and processed fruits such as tomatoes, mangoes, sweet corn, and cashew nuts.

The heart of SPFC's ethics lies in its unwavering support for small-scale farmers, with over 95 per cent of associated farmers owning less than one hectare of land.[69]. This not only fosters sustainable agricultural practices but also fuels the rural economy by boosting income levels within local communities.

64 https://tinyurl.com/4fmx4kjs
65 Liu, E., Taylor, D., & Zhang, S. (2007). Peoples Republic of China Food Processing Ingredients Sector. GAIN Report. Foreign Agriculture Service, United States Department of Agriculture.
66 https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity
67 https://www.sahyadrifarms.com/pr-media-products/sahyadri-farms-crosses-the-1-000-crore-turnover-milestone
68 Sahyadri Farms Official Website: https://www.sahyadrifarms.com/
69 Report by PROPARCO GROUPE: https://www.proparco.fr/en/actualites/grand-angle/report-india-sahyadri-farms-vines-are-joint-initiative

In a strategic move to strengthen the value chain for cashews, a vital crop in the region, SFPC has established Maharashtra's largest cashew processing facility at its Mohadi campus in Nashik.[70] This initiative represents a significant step in improving the value proposition of cashew production in the region. Additionally, Sahyadri has projected that this initiative will facilitate employment for over 300 women in the area, thereby contributing to the social and economic development of the region.[71]

8.52 *Avenues for captive demand of agro-processed output:* The local units can supply the Aanganwadis, mid-day meal in schools, while agglomerations can supply urban consumers with rising health consciousness and 'vocal for local' sentiment. Specialised products could be linked to export supply chains, and a national portal listing all such products could be linked to e-commerce entities.

8.53 *Convergence of multiple existing programmes:* The sector can benefit from utilising the synergies between Mega Food Park, Skill India, Mudra, one district-one product, etc., for labour, logistics, credit, and marketing. Such convergence of efforts would immensely benefit from a whole-of-government approach involving gram panchayat, block, and district administration. Organisations such as NABARD, Central Warehouse Corporation, Krishi Vigyan Kendra, etc., could be roped in for prompt handholding and troubleshooting, given their expertise and infrastructure in place. Women's self-help groups could be the foot soldiers in devising and implementing block- or panchayat-level plans, given their credibility, good repayment record, and rising relevance to women in farming.

8.54 Thus, India, being an agriculturally gifted country, can utilise the range of products on offer by its different agro-climatic zones and productively engage the sizeable rural workforce, comprising women who seek remunerative part-time employment and educated youth who can be technically skilled to handle small to medium scale agro-processing units.

CARING OUR WAY TO GROWTH: THE NECESSITY AND PROSPECTS OF A WELL-DEVELOPED CARE ECONOMY IN INDIA

8.55 The care economy is hitherto less known yet potentially significant for economic growth and well-being, especially for a young country like India, which has both demographic and gender dividends to reap. The interconnected dynamics of bolstering a care economy holds the promise of gender equity, human development, and economic growth. Developing a quality and reliable care sector can thus fill a critical efficiency gap in facilitating the best allocation of human resources, driven by comparative advantage and choice rather than dictated by gender. This sub-section explores the contours of the long-term benefits of prioritising care and proposes a few solutions to further develop this sector.

70 https://agrospectrumindia.com/2023/08/20/nashik-based-fpc-sahyadri-farms-kicks-off-the-biggest-cashew-processing-plant.html

71 Bhosale, J., 18 August 2023, Economic Times, "Leading grape exporter Sahyadri FPO enters cashew processing sector", https://tinyurl.com/wd344p4x

Defining care work - the first step to acknowledging care as 'work'

8.56 According to the ILO, care work consists of activities and relations involved in meeting the physical, psychological, and emotional needs of adults and children, old and young, frail and able-bodied. Care work falls into two categories: compensated and unpaid/underpaid. Unpaid or underpaid work related to caregiving and providing social support is often performed within households by females and usually consists of childcare, eldercare, domestic work, etc. Paid care work involves labour performed by nurses, caregivers, etc., for remuneration.

Increasing need for a well-developed care economy

Demographic transition – need to prepare for future care requirements of an ageing population

8.57 India's care needs are slated to expand significantly in the next 25 years, as an ageing population follows the ongoing demographic transition while the population of children stays relatively sizeable. According to the United Nations Population Fund (UNFPA)[72]as of 2022, one-fourth of India's population is aged 0-14 years (i.e., 36 crore persons), while one-tenth is above 60 years (i.e., 14.7 crore persons). By 2050, the share of children is estimated to decline to 18 per cent (i.e., 30 crore persons), while the proportion of elderly persons would rise to 20.8 per cent (i.e., 34.7 crore persons). Thus, compared to 50.7 crore persons in 2022, the country would need to care for 64.7 crore persons in 2050. The additional requirements for care would be further upscaled as more women participate in paid work, the rising prevalence of nuclear families[73], etc.

Equal opportunity for females – decoupling gender and unpaid care work

8.58 Developing an appropriate care economy is crucial when viewed through the lens of fairness and efficiency of increasing the FLFPR by affording equal opportunity to participate in paid work. This is especially important given the predominant burden of unpaid care work, including domestic work, childcare, and elderly care, falling on women, who are then too "time-poor" to participate fully in employment opportunities. This is a global phenomenon, which holds for India as well. The disproportionate burden of care on women is consequential to the low FLFPR across the world, including India.[74] According to Sinha et al. (2024), an additional hour of caregiving per day reduces women's labour market participation by 20 percentage points, with no effect on men.[75]

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72 International Institute for Population Sciences and United Nations Population Fund, "India Ageing Report 2023", https://india.unfpa.org/sites/default/files/pub-pdf/20230926_india_ageing_report_2023_web_version_.pdf

73 The share of nuclear families has been estimated to have increased from 37 per cent of total households in 2008 to 50 per cent of total households in 2022, according to data from a consumer survey company Kantar.

74 United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). (2022). Female Labour Force Participation and Care. Economy in Asia and the Pacific.

75 Sinha, A.; Sedai, AK; Rahut, DB, Sonobe, T. (2024). Well-being costs of unpaid care: Gendered evidence from a contextualized time-use survey in India. World Development, 173, ISSN 0305-750X, https://doi.org/10.1016/j.worlddev.2023.106419.

8.59 According to the NSO's Time Use Statistics for 2019, working-age women in India spend 5.6 hours per day on unpaid work, compared to only 30 minutes per day by men. Even women in paid employment spend nearly 6X time on unpaid care work compared to men in paid employment, culminating in the 'double burden' of performing both paid work and unpaid care responsibilities. This care burden-induced professional inequality is in contrast with the rising equality of opportunity in education, with the closing of the gender gap in higher education enrolment in India.

8.60 Specifically, the impact of childbearing and childcare is found to have a significant cost on women's careers, termed the 'motherhood penalty', depicted as a drop in FLFPR around childbearing years and a loss of income. Regarding the quality of employment, the motherhood penalty manifests in women tending to be concentrated in farming and informal jobs, as those workspaces are compatible with their personal care responsibilities (Palriwala and Neetha (2012)).[76] Even though the time spent on unpaid care work per day is only 9 minutes higher for rural women vis-à-vis urban women, higher rural FLFPR could be explained by the flexibility, in terms of timing and proximity of employment, which allows child supervision, that rural jobs typically provide (Gautham 2022).[77]

Economic potential – generating value by making the best use of human capital

8.61 This unpaid/invisible domestic work performed by women, which is usually neglected while calculating the labour force and the GDP, has been variously estimated as highly valuable yet invisible. A recent report by the Confederation of Indian Industry (CII) uses a standardised input-value method to estimate the economic value of women's unpaid domestic and care work in India as 15 – 17 per cent of GDP.[78]

8.62 The economic value of developing a care sector is twofold – increasing FLFPR (discussed previously) and promoting a promising sector for output and job creation. According to ILO (2018), the care sector is one of the fastest-growing sectors globally, and investments in the care services sector are estimated to generate 475 million jobs globally by 2030. In the case of India, direct public investment equivalent to 2 per cent of GDP has the potential to generate 11 million jobs, nearly 70 per cent of which will go to women.[79]

Multidimensional impact of creches - Empirical evidence

8.63 A wide range of research has emphasised the impact of affordable and reliable childcare on freeing women's time for paid employment, enhancing mental health and improving children's learning and nutrition. That said, the literature is mainly foreign and empirical studies on India are scarce.

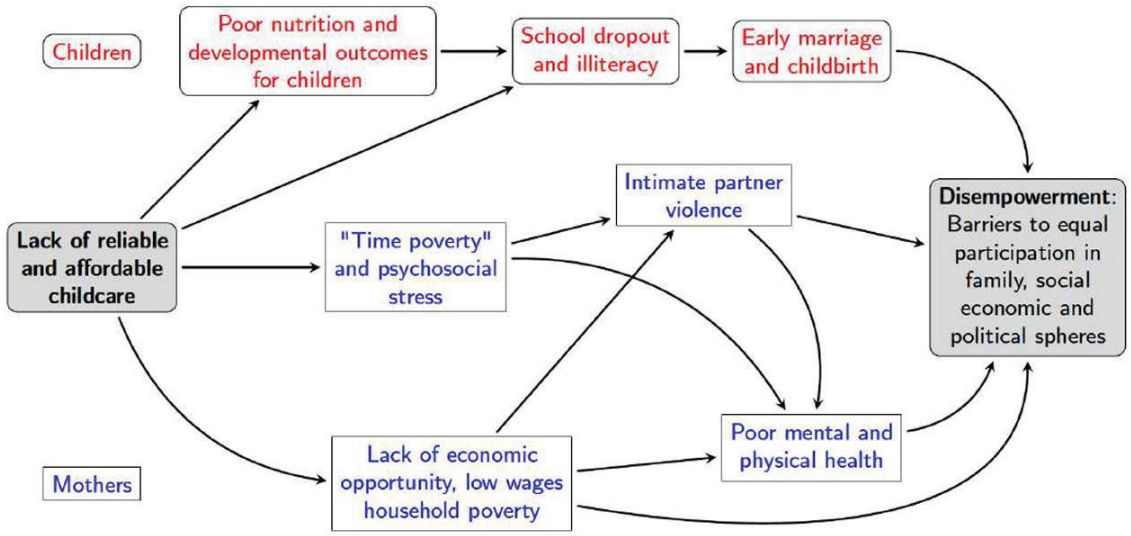
76 Palriwala, R. and Neetha, N. 2012. 'Between the State, Market and Family: Structures, Policies and Practices of Care in India', in S. Razavi and S. Staab (Eds.), 'Global Variations in the Political and Social Economy of Care: Worlds Apart' (pp. 176-197), UNRISD UK: Routledge.

77 Gautham, L. 2022. "It Takes a Village: Childcare and Women's Paid Employment in India," Population and Development Review, The Population Council, Inc., vol. 48(3), pages 795-828, September. https://ideas.repec.org/a/bla/popdev/v48y2022i3p795-828.html

78 Formulating a Strategy for India's Care Economy: Unlocking Opportunities, March 2024, CII, available at https://tinyurl.com/4y4eh462

79 Care work and care jobs for the future of decent work, International Labour Organisation, 2018, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_633135.pdf.

Chart VIII.27: Impact of lack of access to childcare: A conceptual model



Source: Nandi et al. (2020)

8.64 For example, the availability of public childcare services in Mexico through supply-side and demand-side incentives—such as subsidies to low-income earning women and grants for childcare facilities—had a dual effect on the involvement of women in the labour force. First, low-income mothers received assistance in finding paid employment. Second, the initiative created some 45,000 paid positions for caregivers and their assistants - the majority of whom were women (OECD 2012)[80].

8.65 In Brazil, children aged 0–3 who live in low-income neighbourhoods could access integrated social, health, and educational services through the Rio de Janeiro Public Day Care programme. According to Barros et al. (2011), the programme had significant impact on female economic opportunities as mothers' employment increased by 27 per cent, and a very high utilisation rate resulted from having access to the programme.[81] While India-specific research on the impact of access to childcare is very limited, some of the studies that examined the situation in India are presented below.

8.66 According to a qualitative study by Mobile Creches NGO in 4 states (Gujarat, Jharkhand, Odisha, Karnataka)[82] carried out in December 2021- February 2022, 61 per cent of employed women availing creches relied on NGOs, while the share of government-run creches was relatively small (21 per cent). The employed women not availing creches relied mainly on adult family members (41 per cent) and elder daughters (11 per cent). The study found a positive impact of quality creche facilities on women's well-being, income, child well-being, and relationships with family members.

80 OECD. 2012. Women's Economic Empowerment. The OECD DAC Network on Gender Equality (GENDERNET) (Paris)

81 de Barros, R. P., Olinto, P., Lunde, T., & Carvalho, M. (2011). The Impact of Access to Free Childcare on Women's Labor Market Outcomes: Evidence from a Randomized Trial in Low-income Neighborhoods of Rio de Janeiro.

82 Women need Creches, 2022; Rita Mishra, Nirupama Sarathy, Nainy Rao; Mobile Creches, https://ecdan.org/wp-content/uploads/2022/10/MC_WomenNeedCreches_Final-Study-Report_2022.pdf

8.67 A study on SEWA childcare centres[83] revealed that beneficiary women could work more hours during the day and more days during the month, leading to higher incomes and savings.

8.68 As per a recent Randomised Controlled Trial in Rajasthan of creches or *Balwadis* run by a local NGO, nearly half of the women offered day care used it. Creches helped reduce malnutrition, decrease stress, and increase the self-reported happiness of mothers (Nandi et al.)[84]

Government Programme: Revamped Palna scheme for creches

8.69 The Anganwadi-Cum-Crèche initiative under the Palna Scheme of the Ministry of Women and Child Development underwent revisions and was included in the Mission Shakti in April 2022. The scheme aims to address the gap that exists mainly in urban areas where support for childcare from family members is not available, and there is a need for institutional support to facilitate the contribution of women to the economy. The Government aims to establish 17,000 Anganwadi-cum-Crèches under the scheme, of which 5222 have been approved as of December 2023.[85] The scheme can significantly benefit from broader coverage in rural and urban areas.

Senior care reforms in India: Reimagining the senior care paradigm

8.70 As India strives to become a developed economy by 2047, it will also get older. According to the Asian Development Bank's (ADB) 'Ageing Well in Asia' report,[86] The old-age dependency ratio is expected to rise from less than 20 per cent in 2022 to over 30 per cent by 2050. The care responsibility associated with an increasingly older population necessitates initiating early dialogues around senior care to develop a future-ready elderly care policy.

The rising need for elderly care

8.71 The India Ageing Report 2023[87] by UNFPA and the International Institute for Population Sciences highlights that a significant portion of the elderly population suffers from chronic diseases, functional limitations, depressive symptoms, and low life satisfaction. As the elderly population is increasingly female and residing in rural areas, feminisation and ruralisation of the elderly are linked with poverty, dependency, and loneliness. The recommendations of the report are as follows.

- Including relevant questions in the National Sample Survey, the National Family Health Survey, and the Census of India to inform evidence-based policymaking.

83 Association for Stimulating Know How (2011), 'SEWA Childcare: Impact Assessment Report for Year 2011'. Gurgaon: India

84 Nandi, Arijit, Parul Agarwal, Anoushaka Chandrashekar, and Sam Harper. 2020. "Access to Affordable Daycare and Women's Economic Opportunities: Evidence from a Cluster-Randomised Intervention in India."Journal of Development Effectiveness 12, no. 3: 219–239.

85 PIB release dated 22 Dec 2023 https://tinyurl.com/yknf7u6d

86 Ageing well in Asia, ADB Policy Report, May 2024, The report uses Longitudinal Ageing Study in India (LASI) 2017-19 by Ministry of Health and Family Welfare, National Programme for Health Care of Elderly; International Institute for Population Sciences; Harvard T. H. Chan School of Public Health; and the University of Southern California; https://www.adb.org/publications/asian-development-policy-report-2024

87 Available at https://tinyurl.com/5n8rdehz

- Increasing awareness about existing schemes for older persons, bringing all Old Age Homes under regulatory purview, and encouraging the creation and running of elderly self-help groups.
- Emphasising the importance of elderly people living in multigenerational households. Encourage policies that facilitate and support this living arrangement.
- Encouraging in situ (at home) ageing as much as possible by creating short-term care facilities like creches or day-care facilities.

Need for a wholesome policy for elderly care

8.72 As per a recent position paper on senior care reforms by the NITI Aayog[88], while the elderly care industry is presently estimated at USD 7 billion (₹57,881 crore), there remain critical gaps in infrastructure, research, and know-how for geriatric illness management, monitoring mechanisms and emergency response systems. India, therefore, needs a structured elderly care policy framework.

8.73 According to the ADB report[89], the working capacity of older people is a sizeable economic resource. Utilising this 'silver dividend' of untapped work capacity of population aged 60-69 years is estimated to increase GDP by an average of 1.5 per cent for Asian economies. The report advocates for age-friendly jobs with a gradual work-to-retirement path encompassing lifelong learning and skill development. From the care perspective, suitable job roles for older population can offer social engagement, financial security, besides reducing the overall care requirement. Box VIII.6 presents some suggestions on building a care economy ecosystem in the country.

Box VIII.6: Building a better care ecosystem

Strategic reforms are required to build a solid structure of the care economy. The reforms could be along the following lines: (i) support for parental leave policies; (ii) subsidies for care services; (iii) public and private investments in building care infrastructure; (iv) mechanisms for skill training for care workers; and (v) mechanisms for monitoring service quality and benchmarks; offers a comprehensive framework for addressing the gender disparities in care and domestic work and boosting women's labour force participation. Some specific policy interventions could be:

- **Sector Skill Council for Care Services can be set up** to help develop a skill training framework for the care sector, formulate skilling modules, and undertake partnerships with international skill training institutes. There is a need for a dedicated Care Sector Skills Council.

88 Niti Aayog paper on " Senior Care Reforms in India - Reimagining the Senior Care Paradigm: A Position Paper", February, 2024
89 Ibid; Note 70.

- **Public-private partnerships (PPP)** could play a significant role in building the care infrastructure, especially institutions for childcare and the elderly. Policies may be formulated to invest in mobile creches in offices, hospitals, and other public areas, encouraging women to take up paid employment opportunities.
- Care services provision, both publicly run or privately operated facilities, would require **institutional oversight and continuous monitoring**. This ensures that the infrastructure is well-maintained and care services are satisfactory. In some countries, there are formal regulatory mechanisms to maintain defined minimum standards of infrastructure and service provision in care facilities.[90]
- **Collaboration with community-based and civil society organisations (CSOs)** can acquaint the system with ground-level reality and help address operational issues with the care infrastructure and financial constraints.
- **Subsidising care services** can be considered. The successful international models of Australia, Argentina, Brazil, and the USA in this sector may offer valuable insights for India. These countries provide financial assistance through vouchers and tax rebates to the care workers based on their income, child's age, number of offspring, etc.
- Owing to the SHGs' strong sense of entrepreneurship, the model of self-managed institutions, for example, Jeevika in Bihar, may be followed to provide a dedicated childcare services programme and a capacity-building programme for care workers.
- Generating awareness about creches to cater to informal workers' latent demand for affordable childcare.
- Ground-level work with community groups and local decision-makers would bring contextualised management innovations for quality and sustainability.
- Developing innovative business models – Start-up India can be leveraged to incentivise commercial and community-based models to pilot and scale up childcare support for women in the informal sector.
- A Rating system of creches and elderly homes – on the lines of OFSTED (Office for Standards in Education, Children's Services and Skills) of the UK.

8.74 The non-government sector has developed innovative solutions for the rising need for elderly care providers. Tata-funded start-up Goodfellows[91] is a leading initiative attempting to tackle the challenge of loneliness, which has been termed as a serious health issue putting individuals at a greater risk of dementia and mental decline.[92] This start-up hires young people called "grandpals" having emotional intelligence and empathy to interact with lonely senior citizens longing for companionship. It is also an excellent example of strengthening multigenerational communication and understanding, with mutual benefits.

90 For instance, in the United Kingdom, the Office for Standards in Education, Children's Services and Skills (OFSTED) inspects and regulates care services for children and young people. On similar lines, there is a need for institutional mechanisms in India for quality assurance of care service provision.

91 Link to the website: https://www.thegoodfellows.in/

92 Mushtaq R, Shoib S, Shah T, Mushtaq S. Relationship between loneliness, psychiatric disorders and physical health ? A review on the psychological aspects of loneliness. J Clin Diagn Res. 2014 Sep;8(9):WE01-4.

8.75 Other inspiring examples in actualising care ecosystem include Vedanta's comprehensive parenthood policy of 12 months sabbatical for new mothers and flexible working hours after maternity leave by Vedanta Ltd., and the provision of full-time childcare to 3639 children up to the age of six for children of informal women workers under the Sangini Model of the SEWA.[93] Internationally, Swedish Government recognition of 'even distribution of unpaid housework and care work' as a policy sub-target is inspiring. Closer home, Haryana's recent crèche policy is notable for being the pioneer among Indian states, as per which working women can keep their child aged six months to six years in the crèche for eight to ten hours where skilled and trained personnel will be deployed.[94]

8.76 To sum up, the care economy is a top-tier entry in India's to-do list for becoming a developed nation by 2047. Not only does the availability of care infrastructure and services reduce women's time poverty and enhance FLFPR, but the provision of care infrastructure and services also acts as a standalone business opportunity, particularly suited for women-led entrepreneurship and women's employment. The care sector thus offers a vast potential for India's economic growth. While the attitudinal shift towards gender-neutral sharing of parental responsibilities would be gradual, policies can accentuate the shift. That requires creating a fair, efficient, and contextual ecosystem of affordable care services. The prevalence of small-scale care models (such as Mobile Creches[95]) for more than half a century suggests that it is possible.

DEVELOPMENTS AND PROGRESS IN SKILLING

8.77 In order to reap the demographic advantage, it is necessary to equip our workforce with employable skills and knowledge that meet the requirements of the globalised labour market and Industry 4.0. Measures are being taken by Government to translate India's demographic dividend into a productivity dividend by enabling job and entrepreneurial opportunities that are in sync with the aspirations and abilities of India's youth. It is partnering with the industry to enhance skilling with employability (See Box VIII.7).

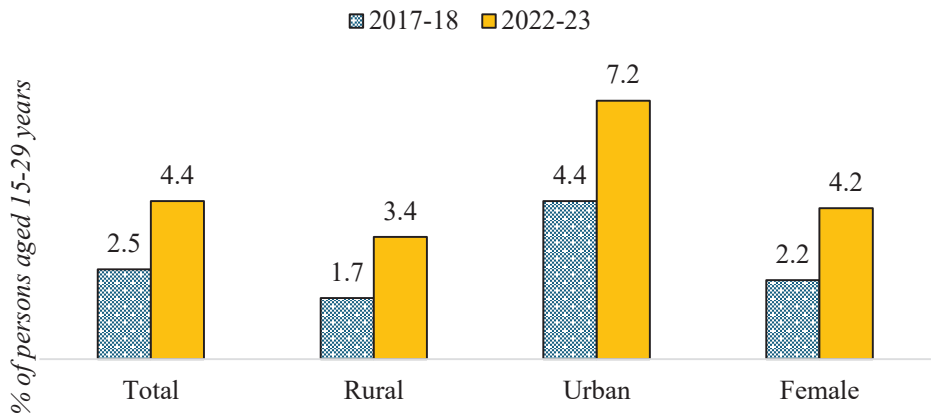
8.78 Over the period 2017-18 to 2022-23, there is a significant improvement in the proportion of skilled people across all socio-economic classifications, including rural, urban and gender classification, as indicated in Chart VIII.28. According to the Periodic Labour Force Survey (PLFS) report 2022-23, 4.4 per cent of the youth in the age cohort of 15-29 years have received formal vocational/technical training, while another 16.6 per cent received training through informal sources.

93 Confederation for Indian Industry (2024). Formulating a Strategy for India's Care Economy: Unlocking Opportunities.

94 Notification-Haryana State Creche Policy 2022 | Women and Child Development Department, Haryana | India (wcdhry.gov.in)

95 Link to the website: https://www.mobilecreches.org/

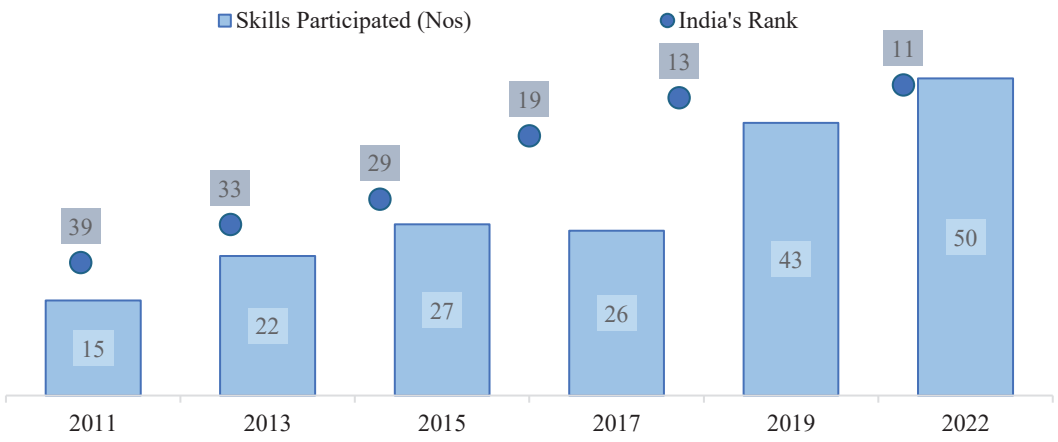
Chart VIII.28: Rise in the percentage of persons aged 15-29 years who received formal vocational/technical training



Source: Annual Report 2022-23, Periodic Labour Force Survey, NSO

8.79 The recent launch of the Skill India Digital platform[96] aimed at achieving skilling, education, employment, and entrepreneurship ecosystem marks another step towards the "ease of acquiring skill" in India. The rise in the number of candidates undergoing skill development through the Government's flagship programmes has underlined the thrust to 'Skill India', as highlighted in Table VIII.2. The across-the-board progress in skilling has manifested in India's rising position in WorldSkills Competitions, held every two years.[97]

Chart VIII.29: India at WorldSkills competition



Source: MSDE Annual Report 2022-23

96 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1957139

97 The WorldSkills Competition, a flagship event of the WorldSkills International, organised every two years, is the biggest vocational education and skills excellence event. WorldSkills competition 2022 was conducted by WorldSkills International from September to November 2022 across Europe, North America, and East Asia comprising over 1,000 competitors from 58 countries in 61 skills. India participated in 50 Skills (including 6 new future skills) with 56 Competitors and 50 Experts, spanning over construction and building technology, creative arts and fashion, manufacturing and engineering technology etc. More than 1000 contestants below the age of 23, compete over a span of four days working on test projects (16-22 hours) which are based on contemporary industry standards and infrastructure.

Various schemes for skilling

8.80 The details of progress in some flagship government schemes are mentioned below.[98] Box VIII.7 elaborates the promotion of industry's involvement in skill programmes.

Table VIII.2: Progress of skill development programmes

Schemes under MSDE	Overall Progress
Pradhan Mantri Kaushal Vikas Yojana (PMKVY) *free short-duration skill training and certification*	Since the scheme's inception in 2015, 1,42,67,888 persons have been trained, and 1,13,72,668 persons have been certified under its Short-Term Training (STT), Special Projects (SP) and Recognition of Prior Learning (RPL) components. • Reforms undertaken for greater relevance and industry connect • Compulsory inclusion of On-the-Job Training in short-term training courses • 1,000+ educational institutions nationwide have been on-boarded as Skill India Centres. • 119 new age and future skill courses were introduced across eight sectors. • Entities without permanent vocational infrastructure were eliminated from the training ecosystem. • Inclusion of 'Employability Skills' in all qualifications. • Under PMKVY, the participation of women among those trained has increased from 42.7 per cent in FY16 to 52.3 per cent in FY24.
Craftsmen Training Scheme at Industrial Training Institutes (ITIs) *Vocational training through a network of 14,955 ITIs*	• 1.24 lakh persons enrolled in long-term training between 2014 and 2023 • In sphere of long-term skilling, i.e., in ITIs and National Skill Training Institutes (NSTIs), women participation has gone up from 9.8 per cent in FY16 to 13.3 per cent in FY24. New Grading Mechanism for ITIs • Data-driven grading Methodology (DDGM), using the parameters/information available on the NCVT MIS portal, implemented from session 2023-24
Jan Shikshan Sansthan (JSS) *For skilling of non/neo literates and persons with a rudimentary level of education*	• From FY19 to FY24, 26,36,769 persons have been trained, and 24,94,807 persons have been certified. *Capacity Building of Jan Shikshan Sansthan (JSS)* • Setting up 30 Model JSS by upgrading the laboratories with new-age equipment, training 150 trainers

98 Source: Inputs received from Ministry of Skill Development and Entrepreneurship

Schemes under MSDE	Overall Progress
Jan Shikshan Sansthan (JSS)	• Capacity building of the staff in management, communication skills, etc. • Under JSS, women constituted about 82 per cent of the total beneficiaries.
National Apprenticeship Promotion Scheme (NAPS) *To promote apprenticeship training by reimbursing a partial stipend*	• 32.38 lakh apprentices engaged between FY17 and FY24. • NAPS portal: Rise in the number of registered 'Establishments' from 17,608 in March 2017 to 2.21 lakh till March 2024 • Under NAPS, participation of women has increased from 7.74 per cent in 2016-17 to 20.77 per cent in 2023-24. • Direct Benefit Transfer of Apprentices Stipend Support □ NAPS-2: Reimbursement of 25 per cent of the stipend (up to ₹1,500) directly to the Bank a/c of the Apprentices □ ₹320.88 Crore released as stipend through 22.46 lakh transactions since launch in August 2023 till March 2024
Entrepreneurship Training	• The National Institute for Entrepreneurship and Small Business Development (NIESBUD) provided training in the field of Entrepreneurship for 3.21 lakh beneficiaries between FY19 and FY24. • Indian Institute of Entrepreneurship (IIE), Guwahati, provided training and handholding services to 1.43 lakh beneficiaries between FY19 and FY24. □ IIE was the nodal entity that provided livelihood support to more than 1.78 lakh beneficiaries under projects like Pradhan Mantri Van Dhan Yojana, OIL Jeevika, SFURTI, etc.
Skill India Digital Hub platform *Convergence platform facilitating access to skilling, credit, and employment through AI/ ML technology.*	• Launched in August 2023 • Integration of skilling schemes, 690 online courses, 1650 QP-based e-books, eShram/EPFO/NCS, Udyam, DigiLocker, GatiShakti, UMANG, AgriStack, PLI Schemes, ODOP, etc. • Registration of 60 lakh learners and 8.4 lakh app downloads
New Age and Future Skills	• NCVET approved 200+ new age and future skill courses during the year • Collaboration with Delhi University to offer 100 new-age skill courses and labs at various Colleges • 23 new age courses introduced at ITIs. Guidelines for selecting at least one 'New Age' course out of 4 courses for affiliation of new ITIs.

Schemes under MSDE	Overall Progress
International Mobility	
G2G MoUs	MoUs with eight countries, namely Australia, Denmark, France, Germany, Japan, Qatar, UAE, and the UK, for cooperation in Information Exchange, Standard Setting, Mutual Recognition of Qualifications, etc.
Skill India International Centres (SIIC)	• Budget FY24 announced the setting up of 30 SIICs • Two centres at Varanasi and SDI Bhubaneswar have been made operational • Locations of the rest of the SIICs have been finalised, and seven centres will soon be set up under phase 1.
NSDC International Limited *Set up in 2021 for ethical and transparent international recruitment of skilled Indians.*	• Drives the Skill India International Mission focusing on priority sectors such as Information Technology, Construction, Hospitality, etc. • 20 NSDC-affiliated training centres for capacity building, 12 centres to provide language training • Efforts resulted in the deployment of over 26,000 candidates across multiple countries.
Targeted Skilling beyond MSDE Schemes	
Jal Jeevan Mission	Overall guidance and coordination of the multi-skilling course by MSDE
PM Vishwakarma	Basic' and 'Advanced' skill training of Vishakarmas, including usage of modern toolkits by MSDE
Green Hydrogen	Development of 50 new short-term qualifications for skilling, upskilling and re-skilling
PM-JANMAN	• Entrepreneurship and Skill Development, capacity building and handholding of identified PVTG beneficiaries by NIESBUD and IIE • Capacity building training of 5096 beneficiaries till March 2024, expected to reach 44,608 beneficiaries by 2025-26
Special Skill Provisions for Agniveers	• DGT has signed MoUs with Army, Navy and Airforce • Skill certification of Agniveers based on their qualification and experiential learning to ensure employment opportunities in industries after service of 4 years • Agniveer service modules: Basic Military Training; Trade Training; Security Training and Service/OJT

Box VIII.7: Partnering with industry for skilling

Industry connection is crucial to any large-scale skilling programme, enabling contemporary relevance and employability and ascertaining demand to absorb the newly skilled workforce. In cognisance of this, the Skill India mission actively collaborates with the industry through National Skill Development Council (NSDC)-driven partnerships for skill development, reskilling, and upskilling. Until March 2024 (starting date to be added), 131 projects have been undertaken by NSDC, with 62 corporate organisations benefitting over 3.10 lakh persons across the country, including 42 aspirational districts.

Skill Impact Bond

Launched in 2021, the Skill Impact Bond leverages an innovative and results-based finance mechanism - Development Impact Bond[99] model to attract private sector funds and expertise for skill development, job placements, and retention. This initiative by NSDC and its coalition partners[100] targets training 50,000 youth, ensuring at least 60 per cent are female, through selected and monitored NSDC-affiliated training partners over four years. Between November 2021 and March 2024, 29,365 candidates have been enrolled over five cohorts, 23,464 have been certified, 19,209 have been placed and 13,853 reported job retentions. The program has reported 74 per cent women enrolment so far.

Further, the Directorate General of Training (DGT) has also taken the following initiatives under Industry Partnerships:

- Under the **Flexi MoU Scheme** with prominent industry partners such as Maruti Suzuki India Limited, Gurugram, NMDC Chhattisgarh, Toyota Kirloskar Motor Pvt. Ltd, etc. - about 9600 trainees have been trained under this initiative from March 2019 to March 2024.
- Under the **Dual System of Training (DST)** initiative, skilling institution trainees get first-hand workplace experience. During the 2022 session, about 978 ITIs and 37,865 trainees were covered under DST.
- **DGT has collaborated with IT frontlines** like IBM, Microsoft, Cisco, Adobe, Amazon Web services, etc., to enable trainees to become Industry Ready as per IR 4.0, and more than 21.5 lakh trainees have been trained under these collaborations between November 2019 and March 2024.
- Besides mandated training of Instructor trainees, NSTIs are also **Skilling/Re-skilling/ Upskilling the existing industry workforce** by partnering with ISRO, ONGC, Indian Railways, Naval Ship Repair yard, Naval Ship Dockyard, and BHEL. Under this initiative, about 1400 participants were trained during the FY24 session.

99 Impact bonds shift the focus from inputs to performance and results. Rather than a government or a donor financing a project upfront, private investors initially finance the initiative and are repaid by 'outcome funders', only if agreed-upon outcomes are achieved. This mechanism creates incentives for every partner to achieve learning outcomes and not just deliver services.

100 Partners comprise of the Children's Investment Fund Foundation (CIFF), JSW Foundation, HSBC India, and Dubai Cares as outcome funders, the British Asian Trust as the transaction manager, USAID and FCDO (UK Government) as technical partners, Oxford Policy Manager as the independent evaluator, and NSDC and Dalberg Advisors as performance managers. NSDC and MSDF are the risk investors that have committed $4 million to provide upfront working capital to the service providers.

- **DGT is also collaborating with industry partners for infrastructure development/upgradation** in NSTIs/ITIs. Notable collaborators include Dassault for Aeronautical Structure and Equipment Fitter, Pidilite and Jaguar for the Plumbing sector, Skoda for the automobile industry, and HAL and Siemens for advanced CNC machinery training, among others.

8.81 The PM Vishwakarma scheme to provide end-to-end support to artisans and craftspeople is a new scheme (briefed in Box VIII.8) to address various constraints of artisans to upgrade their enterprise, thus infusing the traditional vocations with dynamism.

Box VIII.8: PM Vishwakarma Scheme: Making progress

The PM Vishwakarma programme was launched in September 2023 for recognition, skill upgradation, collateral free credit and marketing support to traditional artisan/craftsperson working with traditional tools. 18 trades are covered under PM Vishwakarma Scheme, including tailors, barbers, masons, carpenter, blacksmith, basket weaver, potter, cobbler, traditional toys maker, fishing net maker, etc. It is a Central Sector Scheme with practically useful components including recognition through PM Vishwakarma Certificate and ID Card, Skill Upgradation, Toolkit Incentive, Credit Support, Incentive for Digital Transactions and Marketing Support. Under the skill upgradation module, 5-7 days of basic skill training and advanced 15 days optional skill training is provided with stipend of ₹ 500 per day to offset wage loss and a travel allowance of ₹ 1000.

Currently 1,533 Centres covering 365 districts in 25 states/UTs are implementing training and additional 2000 centres are ready. For ease of credit, two bank officials each in all the 766 districts on pan India basis have been designated for information on know-how of availing credit under the scheme to the registered Vishwakarma. As on 27th May 2024, 2.14 crore applications have been received and 11.5 lakh have been verified through a 3-level verification, showing the latent demand for the scheme. 4.37 lakh candidates have been trained/undergoing training under the programme.

8.82 To maximise the outcomes from skilling initiatives, convergence, and utilisation of synergies with other employment-centric programmes would mutually benefit the two verticals. Linking skill development with PLI scheme and employment-linked incentive schemes in high-growth potential sectors like toy, apparel, tourism, logistics, textiles, leather sector etc. would aid upgrading of skills as production moves up the value chain. On the apprenticeship promotion front, there remains considerable scope to add flexibility to the regulatory framework, as elaborated in Box VIII.9.

Box VIII.9: Re-calibrating the apprenticeship framework

Learning while doing has been considered the best way of learning and this is the best way to bridge the gap from theory to practice. In the manufacturing /industry parlance, it is termed "apprenticeship" and in the knowledge-based professions it goes by "internships". Such learning opportunities act as the bridge that aids people to cross over from informal work to formal employment or to smooth the move from academics to the workplace. They are an essential component of the skilling ecosystem which is the backbone for both employment and entrepreneurship.

The Apprentices Act, 1961 (Act) provides for establishments in all sectors of manufacturing and services with more than 30 employees to mandatorily undertake apprenticeships in a range from 2.5 - 15 per cent of their workforce[101]. Any person over the age of 14 years and with a minimum education of 5th standard is eligible to take up apprenticeship. The Rules provide 6 – 36-month duration apprenticeship programmes with a minimum stipend of ₹5000 - 9000 per month to apprentices and the rate is linked to the educational qualification of the candidate. The Act and the Rules have been amended in 2014, 2015, and 2019, to make it more liberal for establishments and apprentices.

The National Apprenticeship Promotion Scheme[102] (NAPS) was introduced in August 2016 to meet the demand for a skilled workforce, promote the industrial economy, and provide experiential learning opportunities to the youth. The scheme governs the engagement of apprentices under the Act and is funded 100 per cent by the Ministry of Skill Development and Entrepreneurship. It incentivises establishments by reimbursing 25 per cent of the prescribed stipend (subject to a maximum of ₹1500 per month) and also partially supports the cost of basic training. The scheme covers apprenticeship in over 261 designated trades, managed through the Director General of Training and the state Governments, and over 200 optional trades, managed by the NSDC, in over 37 industry sectors. Under the scheme[103], over 2.21 lakh establishments are registered for taking up apprentices and over 32.38 lakh apprentices have been engaged from FY17 to FY24.

While the NAPS supports apprentices who have minimum formal education the National Apprenticeship Training Scheme[104] (NATS) covers Graduate, Diploma students and Vocational certificate holders for practical, hands-on On-the-Job-Training based skilling opportunities with a duration ranging from 6 months to 1 year. The scheme, implemented by the Ministry of Education, has over 43,000 registered establishments and 28.66 lakh students who have been engaged under the scheme. It supports 50 per cent of the cost of such apprenticeship stipend to the establishments.

101 FAQs – Apprenticeship under the Apprentices Act, 1961 accessed at https://nsdcindia.org/sites/all/themes/ibees/pdf/apprenticeship-faqs.pdf

102 Guidelines for Implementation of National Apprenticeship Promotion Scheme-2 (NAPS-2) accessed at file:///C:/Users/Dell/Downloads/NAPS+2.0_Guidelines_25-08-2023.pdf

103 NAPS Dashboard accessed at https://dashboard.apprenticeshipindia.org/

104 Content as accessed at :: National Apprenticeship Training Scheme (NATS) :: (education.gov.in).

Challenges

Apprenticeship training programs in India have the potential to bridge the skills gap in the workforce and enhance the employability of vocational students. Empirical evidence shows that, in a smooth functioning apprenticeship ecosystem, a large share of firms (30 per cent in Germany and 60 per cent in Switzerland) recoup their investment of hiring an apprentice by the end of the training period, while being guided by their cost-benefit analysis in hiring apprentices (Muehlemann and Wolter 2014).[105] Firms also retain the most eligible apprentices while the others seek employment elsewhere.

There exist significant challenges in the Indian apprenticeship ecosystem, such as lack of coordination between education institutions and industry, inadequate infrastructure, gaps in the regulatory framework (Ravichandran 2023).[106] Besides, the negative perception of vocational training as being inferior to academic education is one of the biggest challenges (Gupta and Dharap 2022).[107]

The outcomes from the apprenticeship schemes signal scope for improvement. The NAPS 2.0 set an ambitious target of enrol 46 lakh apprentices in the four years from 2022-23 to 2025-26, whereas the enrolments from 2016-17 to 2021-22 were 15.96 lakh. The technological intervention of having a unified portal and moving payments to the direct benefit transfer system may have helped increase enrolments from 2.90 lakh in FY 21 to 5.80 lakh in FY 22 but few systemic weaknesses need to be addressed if the target is to be achieved. Of more concern is that less than 50 percent of apprentices engaged have completed training. There is a lack of information on the final outcome of gainful employment for the trainees. Only around 47,000 of the 2.21 lakh establishments have active programmes, indicating a need to generate employers' interest in apprenticeship.[108]

The apprenticeship framework thus needs to be re-calibrated to provide flexibility and negotiability in work hours, compensation, and disengagement, emulating the Swiss and German models of apprenticeships where students work as apprentices on weekends on mutually agreeable terms. The regulatory framework needs to be mindful of the cost-benefit ratio of hiring apprentices for local firms. As it stands, apprentices' productivity and working hour may vary and flexibility in the contract terms could enable mutually beneficial arrangements rather than closing doors for any engagement. There is a need to minimise the role of Government agencies in order to address the delays in the programme and ease the compliance requirements of establishments. Establishing a mechanism to convert the skills acquired at apprenticeships into gainful employment by networking between registered establishments and industry clusters, forward linkages with entrepreneurship schemes etc. would also be useful. Operationalising the matching of opportunities and demand at local levels such as a district or satellites areas of cities, etc., would improve outcomes.

105 Muehlemann, S., Wolter, S.C. Return on investment of apprenticeship systems for enterprises: Evidence from cost-benefit analyses. IZA J Labor Policy 3, 25 (2014). https://doi.org/10.1186/2193-9004-3-25

106 Ravichandran, R., 2023, Bridging the Gap: The Role of Apprenticeship Training Programs, Journal of Vocational Education Studies, Vol. 6, No. 1, May 2023 DOI: https://doi.org/10.12928/joves.v6i1.8006

107 Gupta, R., & Dharap, O. (2022). How is India skilling its youth? A comprehensive study. Journal of Vocational Education & Training, 1-27.

108 https://dashboard.apprenticeshipindia.org/

According to Gayathri et.al.(2019), in the short term, it is important to gather statistical data to understand the working of the apprenticeship scheme in different sectors and regions. This data will help estimate the number of apprentices that can be absorbed by industries and workplaces. In the long run, the focus should be on effective implementation by raising awareness, incentivising industries, and engaging key stakeholders.[109]

The large share of the informal sector in employment is both a challenge and an opportunity. Interventions targeting skill development and upskilling in the informal sector can lead to an increase in productivity in these jobs and improve earnings for the cohort of unskilled and semi-skilled workforce. Strengthening and recalibrating the apprenticeship framework can be the means to make effective use of this opportunity.

CONCLUSION AND WAY FORWARD

8.83 To sum up, the employment situation in India has experienced a positive transformation over the last decade, with notable achievements in formalisation, skill development, entrepreneurship, industry diversification, and inclusive growth. These trends and the country's commitment to technological advancement and infrastructure development have positioned India as a dynamic and resilient player in the global job market. The Government is striving to nurture the foundations of employment creation by creating an ecosystem of ease of doing business, lower logistical costs, meaningful skill development, and easy credit for entrepreneurship. This approach may take some time to bear results, but with steadfast efforts and good intentions, it will facilitate sustainable employment creation for everyone in the country.

8.84 Nevertheless, there remain long-existing challenges of formalising a burgeoning workforce, facilitating job creation in sectors which can absorb workers shifting from agriculture, and ensuring social security benefits for those in regular wage/salaried employment (as per PLFS 2022-23, 53 per cent of regular wage/salaried employees are not eligible for any social security benefit). The state governments can grease the wheels of hiring by businesses by easing the compliance burden and reforming laws on land, etc., to suit the priorities of development.

8.85 The agro-processing sector lies at the overlap of India's requirements of productive, intermediate, and large-scale job creation for rural youth and women, with rich dividends to reap from the convergence of schemes and a mission-mode unwavering focus at a national scale. The Sahyadri farmer producer company is a shining example from a long list of success stories.

8.86 Concurrently, the employment landscape is fast changing worldwide, and India, aspiring to be a developed nation by 2047, must partake in the massive reshaping of jobs that AI has and is likely to further spin off. The impact of automation on workers being complex and uncertain, the direction of technological change remains susceptible to forces of political economy. India thus needs to invest in research and steer the AI bandwagon towards shared prosperity. At the same time, something as basic and age-old as unpaid care work needs our attention too. The

109 Gayathri, K., Tantri, M.L., Rajashekhar, D., 2019 "A Critical Review of Apprenticeship Policy in India", The Institute for Social and Economic Change, Bangalore, Working paper 440, ISBN 978-81-7791-296-8.

development of an affordable, reliable, and quality creche and elderly care infrastructure is the Achilles heel for female participation in paid work, which should be determined by comparative advantage and choice rather than dictated by gender.

8.87 Finally, jobs are created in the private sector. India's corporate sector has never had it so good as now, with profitability at a 15-year high in FY24. Profits had quadrupled between FY20 and FY23. Businesses are sometimes reluctant to make investments citing lack of demand visibility. This could be due to external factors and internal factors such as weak employment growth and income growth. To that extent, the lack of demand visibility is an endogenous factor. Privileging capital over labour is inimical to long-term corporate growth prospects. Businesses have an obligation to themselves to strike the right balance between deployment of capital and deployment of labour. As important, capital and labour shares of income have to be fair. In their fascination for AI and fear of erosion of competitiveness, businesses have to bear in mind their responsibility for employment generation and the consequent impact on social stability.

8.88 With respect to skilling too, it is a priority that lends itself to market-based solutions. There is a skill-seeker who benefits economically from better skills; there is a skill-provider who earns fee income for imparting it and there are employers who benefit from a skilled and productive workforce. Therefore, it is a challenge that the market can solve and to the extent that regulatory hurdles (including, for example, land availability for setting up skilling facilities) stand in the way of the market solving this problem, that is the responsibility of the Governments – union and states – to remove them.

8.89 This chapter has provided a broad estimate of the number of jobs that the economy has to generate. Of course, not all of them will seek jobs. Some of them will be self-employed and some of them will be employers too. More than jobs, economic growth is about generating livelihoods. Technological change, geopolitical churn and climate change combine to make this a formidable challenge. Rising to it requires us – Governments at all levels and the private sector – to strive together.

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