Final Report

Study on Assessment of Future Demand for Skill Sets in Bihar

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New Delhi

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PREFACE

For last half a century human capital has been recognized as a critical factor in economic growth and productivity. However, in developing country, emphasis has been laid on physical capital as it was woefully inadequate in terms of physical infrastructure as well as machinery and equipment. It is well recognized that there is a man behind the machine. So he has to be well trained. Over time it was also recognized that much of production, would shift towards services where too well-trained manpower would be needed. So, we need a labour force which is equipped with hard skills as well as soft skills.

Eleventh Five Year Plan 2007-2012, while emphazing an inclusive strategy, did recognize the importance of move towards knowledge economy and laid emphasis on advancement of skills, including those which are beyond manual skills. It therefore launched a Skill Development Mission to be completed within time frame of five to eight years, with a National Council, a Coordination Board and a Development Corporation. It also proposed actions by State Governments and involvement of private sector.

In this background, the Department of Labour Resources, Government of Bihar, commissioned the Indian Institute of Public Administration to carry out a study on Assessment of Demand for Manpower with Vocational Skills from Domestic/National and Oversees Market by 2025" with a view to chart out its supply response to meet the challenge of emerging demand.

In the course of study we interacted with so many people from across avocations that it is difficult to name everybody and every contribution. Yet the team is beholden to Shri Vyas Ji, the Principal Secretary, who not nly entrusted this important study to the IIPA but guided the team at various stages with his views on the subject. We would like to especially thank Shri Sanjay Kumar, Assistant Director, Employment and Training, who was our nodal resource person in Patna. We would also like to place on record the help rendered by Shri Jitendra Kumar Sinha, Additional Director and Shri Nirbhay Kumar, Deputy Director, Directorate of Statistics and Evolution, Shri S. N. Prasad, Deputy Director (Dept. of Secondary Education) and Shri Prabhakar, Office Assistant (Para Medical/Para Dental Examination Committee, Department of Health).

The Department of Labour Resources was kind enough to organize a workshop on May 5, 2011 in collaboration with the UNDP at AN Sinha Institute of Social Science at Patna. We owe our special gratitude to the Minister Shri Janardan Singh Sigriwal who sat through the complete presentation and made valuable observations. We are also grateful to Dr. K. N. Pathak, Joint Advisor, LEM, Planning Commission, who went through the draft and organized on interactive session at the Planning Commission.

Dr. Sant Lal Arora, a consultant in the project, was a solid rock throughout the study. His endeavours to incorporate whatever was worth at every stage are commendable. Shri S. K. Sengupta was also a Consultant for a brief while and gave valuable insinght. Shri Swarup Santra, appointed a Research Officer, could not continue for long but prepared a solid background. Shri Safayat Karim, another Research Officer, to carry forward the data work with sincerety. Ms. Bhawana Bhatt, Research Officer for a brief while, collected material from different agencies and brought quality inputs from it is in Delhi. They all deserve my thanks. However, at the final stages, it was writing effort on the part of Ms. Seema Girdhar that the Report has taken an admirable shape. I wish to thank her from my heart.

However, weakness that still remain in the report are my monopoly.

P.K. Chabuey
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1. The study on 'Assessment of Future Demand for Skill Sets in Domestic/ National and Overseas Markets by the Year 2025 in Bihar' was commissioned by Department of Labour Resources, Government of Bihar to the Indian Institute of Public Administration, New Delhi.

Objectives

1. To estimate the industry-wise economy demand for manpower with Vocational Education and Training in Bihar by the years 2009-10, 2014-15, 2019-20 and 2024-25.
2. To allocate the demand for manpower with vocational training from ITI/ITCs of Bihar and to estimate the demand-supply gap for ITI/ITCs by the years 2009-10, 2014-15, 2019-20 and 2024-25.
3. To estimate the shortage of ITI/ITCs in the State by the years 2009-10, 2014-15, 2019-20 and 2024-25.
4. Identification of new trades (skill-sets) having employment potential in which training should be imparted/arranged by the different agencies–government or otherwise.

Methodology and Data-sources

1. In this study our concern has been in vocational education and training, not in high level skills provided in professional colleges (engineering colleges, medical colleges, agriculture colleges, polytechnics and other professional colleges). Our concern of vocational training here is to provide the skills to the youth to make

them employable for the opportunities that exist in the state and outside the state and earn the income which can meet the basic needs of their families.

2. The study is primarily based on the secondary data available from quinquinnial surveys conducted by the NSSO, national accounts statistics complied by CSO, Ministry of Statistics and Programme Implementation, Government of India and Ministry of Labour Resources, Government of Bihar and various other Departments of Government of Bihar.
3. For identification of trades, resources of Bihar and trends in its economy provide a good idea about the trades which will be demanded in future. Planning Commission, Government of India has identified 20 Growth Sectors—10 in manufacturing sector and 10 in service sector— which have employment potential in the country. While doing this exercise we have kept in view the Growth Sectors identified by Planning Commission, and discussion with officers of various departments of the State and the Union. Officials of industries and other offices located at Delhi viz. FICCI, Planning Commission and DGE&T were also consulted to firm up our idea about the high growth sectors where employment could be generated and new trades could be introduced or vice versa. Reports, papers and articles published by different organizations viz. DGE&T, IAMR, Department of Industries, Government of Bihar and IGNOU were also consulted.
4. Information was collected about the long duration courses (one year and more duration) and short duration courses (less than one year duration) which are taught in ITIs/ITCs and other

Institutions/Departments of Bihar . We also, consulted the reports of labour departments of two developed states viz. Maharashtra and Gujarat for knowing the trades which are presently covered by these developed states but are not available in the state of Bihar but have employment potential in the state of Bihar.

5. We employed a variety of tools to estimates of demands emanating from various sources. They include employment elasticities with respect to sectoral State Gross Domestic Product, share of technical manpower in total employment, share of vocational manpower within technical manpower, pass-percentage in ITI/ITCs, and average intake of ITI/ITCs.
6. We kept in mind economic performance of the State in the recent past, as it was much higher compared to the past experience and exceeded the plan targets, current growth and employment trends, and policies of the present government and finally the age structure of the population in Bihar vis-à-vis India and the world.
7. We have placed a great reliance on prospects of reaping demographic dividend as we expect the work participation ratio from around 30.0 in 2010 to reach around 38.0 by 2025.

Status of Vocational Education and Training in Bihar

1. As per the NSS Survey, in Bihar state, of the persons of age 15-29 years, during the year 2004-05 (i) only 0.3 per cent of this group was receiving formal vocational training (as against 1.3 percent in the country as a whole), (ii) 0.2 per cent reported to have received formal vocational training (as against 2.0 in the country as a whole) and (iii) another 1.3 percent reported to have received non-formal vocational

training (as against 8.0 percent in the country as a whole). Total stock is shockingly low of 1.8 percent, compared to 11.3 percent in the country, which too is low. If we assume that another one per cent of these persons were receiving the non-formal vocational training then we can say that only 3 per cent of the persons in this age group were either receiving any vocational training or they have received any vocational training (formal or non-formal), which is very low percentage, even compared to average scene in India.

2. As per the data received from Institutes/Centers associated with various Departments of Bihar, there are many training institutes/centers, though not adequate yet, run, supported, facilitated, controlled or regulated by different departments in Bihar, which impart vocational training programmes to make available supply of skilled personnel to the industrial sectors. The purpose of these institutes is to generate skilled manpower to fulfill the demand of industries. But definitive data are available only about ITI/ITCs.

3. There were only 45 Government Industrial Training Institutes (ITI) and 207 private Industrial Training Centers (ITC) in the state in the year 2010. Against this, in the country as a whole there were more than 2100 ITIs and about 6000 ITCs. Bihar's share was thus little over 2.0 percent in ITIs and about 3.5 percent in ITCs whereas it population share is over 8 percent.

4. Actual intake in different trades of ITIs during the year 2009 was 12,143 out of which 5,769 took admissions in one year courses and the remaining students 6,374 took admissions in two year courses.

Similarly in ITCs actual intake in different trades during that year was 18,859 out of which 2,625 took admissions in one year courses and the remaining 16,234 students took admissions in two year courses. There is a kind of asymmetry in division of duration between ITIs and ITCs. Total admissions in ITI/ITCs in 2010 were about 31000.

5. Besides ITI/ITCs, there are several institutions supported or regulated by various departments of the state, other than Labour Department, which provide vocational educational and training. Actual number of institutions is not very clear but actual intake of these institutions during the year 2009 was about 27 thousands, out of which about 7000 students have taken admission in schools for vocational courses under the Department of Education and the rest of them around 20000 in the institutions under the care of the Department other than Labour and Education. There is big discrepancy between the number of students in vocational schools and sections as Annual Reports of MHRD give the figure to be 375000.

Demand for Vocational Education and Training for the State

There are three components in the exercise of assessment of demand for vocationally equipped manpower: Demand from within the State of Bihar (WIS), Demand from the rest of the country (ROI), and Demand from the rest of the world (ROW).

Demand for Vocational Education and Training Within the State (WIS)

1. The principal tool of estimation of demand of technical manpower is employment elasticity of a sector along with its growth. We stipulate

both elasticities and growth rate, and where necessary, proportion of technical manpower in the total work force.

2. We have estimated the demand of persons with vocational skills within the state by two methods: Direct Method and Indirect Method.
3. In the Direct Method, employment elasticity of technical employment and gross state domestic product of the state are used to estimate technical manpower. In the Indirect Method employment elasticity of total employment and gross state domestic product of the state are used to estimate total employment. Imposing an increasing proportion of technical manpower in the total workforce, technical manpower is estimated.
4. There is not much difference in these two estimates. As per the direct method, there was a demand of 1.4 lakh persons with vocational training in the year 2005 in the state, which would be increasing to about 9.5 lakhs in the year 2025. As per the indirect method, the demand would be increasing to about 9.2 lakhs in the year 2025 through 2.4 lakh in 2010, 4.0 lakh in 2015 and 6.2 lakh in 2020.
5. Out of the two methods, indirect method is considered to be better than the first method. In the indirect method we have assumed that share of personnel employed with technical skills to total employment would be increasing from one per cent in the year 2005 to 4 per cent in the year 2025. Beside this fact, the estimates of the second method are more consistent as compared to the first method for inter-terminal years. Therefore, we have used the second set of the estimates for rest of the work.
6. In the wake of liberalization, share of technical manpower to total manpower is going to increase very fast in future. This factor is well

taken into consideration in the Indirect Method. Further on, we have used only the estimates obtained through Indirect Method.

7. In annual terms the additional demand that would be generated by the domestic economy of Bihar, by use of inter-terminal growth rate and smoothening, would be around 26.4 thousand in 2010-11 (currently), 40.3 lakh in 2014-15, 50.4 thousand in 2019-20 and around 70.0 lakh in 2024-25. The State of Bihar has to gear itself to these levels of capacities if its institutions try to meet only the domestic demand. But there is demand from other quarters as well.

Demand for Manpower from Bihar with Vocational Skills by Other States of India (ROI)

1. Even if we go by conservative estimates, out of 1.25 lakhs economic labour migrants in the year 2010 from Bihar, which is about 55 percent of the total migration, to other states of India about 12,500 (10 per cent of out-migrants) could be imparted vocational training in the State. In other words, there would be an additional demand of 12,500 in that year from the state by other states of India (ROI) for vocationally trained persons.
2. Future demand of vocationally trained persons within the state, as discussed above, would increase roughly at the rate of about 10 per cent per annum. If we assume that additional demand from other states (ROI) for vocational manpower would also increase at the same rate of 10 percent per annum, it would increase from 12,500 in the year 2010 to about 16000 by the year 2015, more than 20000 by the year 2020, and to 26000 by the year 2025.

3. It may be noted that economic migration from Bihar within the country and outside are completely different in composition. Within the country or ROI migration is mostly non-technical or non-vocational whereas that outside the country is mainly vocational.

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Demand for Manpower from Bihar with Vocational Skills by Other Countries of the World (ROW)

1. Past trend of out-migration from Bihar shows that in the year 2004, there were only around 22000 out-migrants to different countries, which increased to close to 63000 in the year 2010. In other words there was a growth of about 19 per cent per annum during the last six years.
2. As per the Annual Report (2009-10) of the Ministry of Overseas Indian Affairs, the demand for unskilled workers is declining in the overseas employment market and the future belongs to the skilled workers, preferably with multiple skills. It is, therefore important for Bihar to upgrade the skills of its young workforce to meet the challenges of future needs in the overseas employment market, which is having flux of emigrant labourers from neighboring countries.
3. Out-migrants data from Bihar to other countries (ROW) by type of skills during the last three years (2008-2010) also shows that 90-95 per cent of migrants were in those occupations which require some diploma or certificate in vocational skills. Remaining 10 per cent of the migrants were those who were either professionals on higher side (engineers, doctors, agriculturists) or were simply unskilled workers.
4. Another important point worth mentioning about these out-migrants is that share of persons who migrate permanently is not very large. They actually roll over rather each batch goes and settle and then next year there is another fresh batch.
5. If we assume, on a safer stable side, that in the year 2010, there were 50000 out-migrants, rather than actual 62000. Of these, 40,000 (80

per cent instead of 90 percent) were the persons having certificate or diploma in vocational skills. Further out of 40,000 out-migrants only 20 per cent were the new migrants and the remaining 80 per cent were the rolling ones (old migrants getting extension in their work permits in the same countries or getting job in a different country). Under such reasonable assumptions, there was an additional demand of 8000 persons in year 2010 for the vocational institutions under the care of different departments.

6. If we assume that additional demand from other countries would also increase at the same rate as from within the state (10 per cent per annum), which is half the rate obtained in the recent past, then the additional demand of vocationally trained persons from other countries would increase from 8000 in the year 2010 to around 10000 by the year 2015, to about 13000 in the year 2020, and to about 16500 in the year 2025.

Total Demand for Manpower with Vocational Skills

1. Aggregating the WIS, ROI and ROW components of the demand for vocational manpower, total demand is expected to rise from around 47300 in 2010-11 to over 100000 in 2024-25.

2. Domestic demand increases 2.4 times, demands from ROI and ROW becomes almost double. As a result, the share of domestic demand increases from 56 percent in 2010-11 to 65 percent in 2024-25. Correspondingly, share of ROI demand decreases from 26 percent to 23 percent and that of ROW demand from around 18 percent to 15 percent during the same period.

Supply of Manpower with Vocational Skills

1. There are several departments, besides the Department of Labour Resources, under whose support, facilitation, control and regulation, institutions of vocational training operate. Unfortunately, the data pertaining to Boards/ Councils other than that of Labour Resources are too scanty and too sparse to engage in a serious exercise. For example, while intake of certain boards/institutes is known, the pass-out number thereof is not available for the country as a whole or for any State.

2. Even the data on pass-out from ITIs/ITCs is not available for Bihar. We fall back upon one such estimate available for Kerala, which is 60 percent for average of three years 2005 through 2007. In the absence of any better information, we can impose this pass-out or out-turn percentage on intake of ITIs/ITCs Bihar.

3. Applying this pass-out rate to 31,000 students who appear in different trades in ITI/ITCs of Bihar state, then about 18600 students are passing out every year. This number gives an additional (annual) supply of vocationally equipped manpower from ITI/ITCs per year.

4. In the stagnation scenario of constant intake and constant pass-out percentage, the shortage will keep increasing from year to year.

Allocation of the Demand Ought to be Met by ITI/ITCs in Bihar

1. As per the intake data of ITIs/ITCs received from the Department of Labour Resources, Government of Bihar, and other departments of the State for the year 2009, share of ITIs/ITCs to total vocationally trained

persons having diploma or certificate (below graduate) was about 53 per cent.

2. In future this ratio would depend upon the expansion plan of private agencies funded by the National Skill Development Corporation on the one hand and expansion plan of different state government departments on the other. However we have assumed that ITI/ITC passed would be about 50 per cent of the total vocationally trained manpower demanded.

3. We have marginally toned down share, other institutions are supposed to be growing faster as there has been in a past few years a big spurt, thanks to new initiatives and encouragement by the government, in number of private institutions and support of the National Skill Development Corporation, not just under Craftsman Training Scheme.

4. We hope that vocational education would also be encouraged by bringing students post 8 standard, though unfortunately it is found that of the allocated budget of over Rs 40 crore, not even Rs 13 crore was spent.

5. Under such assumptions we allocate demand for vocational training to be conducted by the ITI/ITCs to be around 24000 in 2010-11, 31000 in 2014-15, 41000 in 2019-20 and 54000 in 2024-25.

Shortages of ITI/ITCs Trained Manpower in Bihar

1. It is estimated that, in the year 2010 there was a shortage of 5050 pass-outs in the expected supply of vocational manpower by the ITI/ITCs in the state.

2. If the existing trends of intake and pass percentage continue, which implies there is no increase in the intake capacity of ITIs/ITCs or in pass percentage in the state, then there would be a shortage of over 12500 persons in the year 2015 and this shortage would further increase to over 35000 in the year 2025.

Future Shortage of ITI/ITCs in Bihar

1. There were 45 Industrial Training Institutes and 207 Industrial Training Centers in the state in the year 2009, totaling to 252. Actual intake in these institutions was about 31,000 in that year. On an average this gives 125 students per Institute/Center.

2. We have noted that intake of ITIs is much larger than ITCs: On an average, an ITI admits around 270 trainees while an ITC admits only around 93 trainees. We guess a typical ITI is designed to admit 300 students while a typical ITC is there for about 100 students.

3. An ITI may have facilities for many more trades than an ITC would be prepared for. But in the days to come more ITCs are more likely to come in existence, thus depressing the average further. Assuming that ITCs also consolidate rather than proliferate in number and would be slightly bigger with time, the average may remain intact as in underprovided regions ITI would be an answer.

4. We also know that actual intake per year in these institutes should be much higher than the pass-outs per year. Applying this average to the shortages of ITI/ITC pass-outs, we get year-wise intake and shortage of IT Institutes/Centers. It is observed that there was a shortage of

about 86 Industrial Institutes/Centers in the year 2010-11 but this would increase to 218 in the year 2014-15, 340 in the year 2019-20 and 550 in the year 2024-25.

5. As of now there ought to be about 340 ITI/ITCs. In next five years their number should increase to 470. By 2019-20, they should number around 600 and by 2024-25, 800.

6. There are 534 community development block. Each block should have at least an Industrial Training Institute or an Industrial Training Centre in next five-seven years. There are 103 towns. Generally speaking, each town also deserves an Industrial Training Institute or an Industrial Training Centre. And each municipal corporation would deserve on an average more than half a dozen Institutions.

Other Vocational Institutions

1. Needless to say, we have carried out shortage exercise for Industrial Training Institutes and Industrial Training Centres as more definitive information about them in terms of intake, pass percentage or courses, etc. We guess Bihar needs vocational institutions that are supported by Departments other than Labour Resources.

2. The target should be to turn out about 100000 vocationally equipped persons. It implies there should be capacity to enroll about 150000 students. At an average of 150 students per institution, there ought to be around 1000 institutions and at average of 100 students per institution, there is need for 1500 industrial/vocational institutions.

3. Regional dispersion of the institutions should be ensured while location should be dovetailed with industrial demand and industrial location.

4. Support from neighboring polytechnics, engineering colleges, technology institutes, medical college/institutes, agricultural colleges/institutes/ universities, schools of fine arts, visual arts and performance arts like (dance, drama and music), institutions of nutrition, nursing, etc should be sought in earnest.

5. Some of the institutions could specialize in traditional and folk cultures, medicines, arts, artistry, and handicrafts of various regions in Bihar. Alternatively or in addition, institutions located in relevant regions can have such courses as utilize the local cultural resources. May be one in each division.

Industry-wise Increase in Demand for Vocationally Trained persons

1. From the industry-wise total demand industry-wise increase in demand was obtained for the periods 2005-10, 2010-15, 2015-20 and 2020-25 . It is estimated that this increase in demand for vocationally trained persons during the period 2005-10 was about 99 thousand. It would increase to about 1.6 lakhs during the period 2010-15 to 2.1 lakhs during 2015-20 and 3.0 lakhs during 2020-25. Total increase during the period 2010-25 would be about 6.8 lakhs.

2. If we look at the industry-wise increase during the period 2010-25, highest increase would be in agriculture and allied activities (2.7

lakhs), followed by construction sector (1.8 lakhs) and trade hotels and restaurants (1.2 lakhs).

Identification of Skill-Sets having Future Demand in the State

1. After analyzing information available, we have suggested some new trades of different durations which may be introduced in Bihar. These trades are in addition to the existing trades in the state.

2. Growth sector -wise distribution of these new trades suggested are given in Chapter VIII. In all 98 new trades have been suggested for the state. Out of 98 trades, 34 trades are of six months duration, 34 trades are of one year duration, 20 trades are of two year duration and remaining 10 trades are of 3 months duration.

3. Out of 98 new trades suggested, 64 trades belonged to the growth sectors suggested by Planning Commission. Among these 64 trades highest number of trades suggested were in 'Health Care Services Sector—9 trades' followed by 'Tourism, Hospitality and Travel Sector – 7 trades' 'Building and Construction Sector—6 trades' and 'Textile, Apparel and Garments Sector—6 trades'.

4. It was noted that the existing training institutes/centers do not have any vocational trades falling under the employment intensive growth sectors of (i) Electronics Hardware (ii) Gem and Jewelry (iii) Media, Entertainment, Broadcasting, Content creation and Animation (iv) Organised Retail Trade (v) Real Estate Services (vi) Transport logistics, (vii) Ware housing and Packaging (viii) Construction Material/Building Hardware.

5. Study Team has suggested some trades under each of these growth sectors which may be started on priority basis by the state government.

Other Observations

1. Vocational Education is being given in 25 different trades in schools at 11^{th} and 12^{th} classes since 1980s in the state. Enrolment in these vocational classes is decreasing because these courses lack vertical and horizontal linkages. Practical training relating to vocational courses covered in theses trades is very low. After passing 12^{th} class with vocational education they are not getting any weightage in admission in Engineering and Polytechnic colleges.
2. Even in apprenticeship training provided by the industry the students of vocational educational stream are not treated at par with the ITI/ITC pass outs. It is important to improve the horizontal and vertical linkages of these courses along with the quality of vocational education in schools.
3. Multiple skills such as communication and presentation, team work, English language, basics of computer applications, use of internet, working techniques, basics of entrepreneurship training are very important and should be taught to the students of all trades.
4. In Bihar, average productivity per worker is very low as compared to that of at all India level. Short duration training of the multiple skills, enumerated above, can improve the productivity per worker in the state.

5. Encouragement of women, SC/ST students, and the students of other minority communities in vocational training is very important. They should be provided some special incentives during their training.
6. Time to time it is very important to upgrade the skills of the teachers/instructors of vocational institutes/centers in the state. Some teachers training institutes/centers should be established where they can get advanced training in their field. Still better, they should be exposed to the environment of higher technical institutions.

Chapter I

Introduction

1.1 Introduction

The prevailing employment strategy emphasizes the need for high growth as a necessary condition for increase in employment. But high growth requires, in the long run, adequate, qualified manpower with appropriate skills as well. Importance of skilled manpower is further increased with the increasing pace of globalization which has intensified the race of competitiveness among the producers world over to deliver the goods at cheaper prices.

Recent data has shown that our education system and vocational training programmes have not been able to provide the adequate size of skilled manpower. As per the NSSO survey conducted in the year 2004-05, among the persons of age 15-29 years, only two per cent are reported to have received formal vocational training and another eight per cent, to have received non-formal vocational training (NSSO, 2006). This indicates that very few young persons with formal vocational training enter the workforce. This proportion of trained youth is one of the lowest in the world (Govt. of India, Planning Commission, 2006).

It is not necessary that high growth with better skilled manpower would always generate higher growth in employment. In India, during the recent past, growth in organized sector, high as it was, has been jobless (Chaubey, P.K. 2005; Arora and Saxena, 2003). So we may have to identify an appropriate combination of sub-sectors from the unorganized sector where potential of employment growth is higher than that of organized

sector. It is important, therefore, that unorganized sector gets the qualified manpower with appropriate skills. But most of the skills in the personnel this sector gets are traditional in nature viz. weaving, cutting, tailoring, construction activities, and motor vehicle driving, etc, which are acquired through non-formal training.

In India different types of institutions/schools running under or controlled by different departments of government, which impart the formal vocational training are:

1. Industrial Training Institutes (ITIs)
2. Industrial Training Centres (ITCs)
3. Schools offering vocational courses (Secondary, Higher Secondary level)
4. Tailoring, embroidery and stitch craft institutes
5. Recognized motor driving schools
6. Institutes run by companies/corporations

They together had played a major role in providing training to the youths (NSSO, 2006).

Industrial Training Institutes have been set up by the respective State Governments under Craftsman Training Progrramme of Government of India while Industrial Training Centres are self-financed and run by private sector but controlled by respective State Governments. These Institutes aim at meeting twin objectives of creating skilled manpower to enhance the employability of the youth and meet the industry demand for skill sets. Students are imparted long term and short term vocational training in various trades, presuming that it would enhance their employability, build their capabilities for self-employment avenues and supply quality skill sets to the industry.

But in India, in most cases, the lack of demand orientation in vocational training and skill development projects often resulted in unemployment, while at the same time a large number of activities could not grow because of lack of appropriate skilled manpower (Gupta, 2006). However, things are changing apace as is evident from recent growth of Industrial Training Centres where the trainees have to pay the fee. Keeping these facts in view, it is very important to assess the demand for these skill sets for the future in different states. For this a demand-oriented approach to vocational training needs to be adopted giving due weight to general developmental activities in those states.

Bihar state is one of the most backward states in the matter of vocational training. As compared to 2 per cent for the country as a whole only 0.2 per cent of persons in 15-29 years age group have received the formal vocational training in the state during the year 2004-05 (NSSO, 2006). However, now the state government has realized the importance of vocational training and given high priority in its Eleventh Five Year Plan (Government of Bihar, Planning Department, 2006).

At the request of Department of Labour Resources, Government of Bihar, IIPA has conducted this study on "Assessing the Demand for Skill Sets in Domestic/National and Overseas Markets by the Year 2025 in Bihar State". Following paragraphs state the objectives of the study, discuss methodology adopted in the study and outline of chapter scheme.

1.2 Objectives

1. To estimate the industry-wise economy demand for manpower with Vocational Education and Training in Bihar by the years 2009-10, 2014-15, 2019-20 and 2024-25.

2. To allocate the demand for manpower with vocational training from ITI/ITCs of Bihar and to estimate the demand-supply gap for ITI/ITCs by the years 2009-10, 2014-15, 2019-20 and 2024-25.
3. To estimate the shortage of ITI/ITCs in the State by the years 2009-10, 2014-15, 2019-20 and 2024-25.
4. Identification of new trades (skill-sets) having employment potential in which training should be imparted/arranged by the different agencies–government or otherwise.

1.3 Methodology

Manpower demand is a derived demand. Since a large part of the manpower demand is likely to be locally generated in an area, for knowing the demand of a particular manpower group in an area, it is important that the planner is knows full well about the resources of that area and the kinds of products that industries need to produce. The resources of the area include natural resources, human resources and infrastructure resources. It is also important to know about the amount of investments, likely to be made in the sector in which that manpower group can get the employment.

The challenge before India is to develop a vocational education and training system that will enable employers to find the skilled labour inputs they need. At the same time currently unskilled workers must also be empowered to develop skills in a trade and become upwardly mobile participants in the economy (FICCI, "Skill Development in India", 2009).

One may argue that demand for a given skill arises when a person is interested in the skill and can afford to bear the cost of that skill. But if a person is poor and illiterate who neither has the money to bear the cost of receiving the skill nor does know the benefit of the skill, then there would be

no demand for that skill by that poor person, even if there demand by the industry. The situation in Bihar state is such that a large number of persons cannot afford the vocational skills. As per the NSSO Survey conducted in the year 2004-05, in rural areas of the state 52 per cent of the population could spend only up to Rs. 410/- per month per person and in urban areas 57 per cent of the population could spend less than Rs. 580/- per month per person. In case of females in the age-group of 15-29 years, in rural areas, it was intriguing to note, in that survey, that the predominant reason for not having attended any educational institution was 'education not considered necessary' in the kind of occupation they are likely to be in. Such persons might have the opinion that vocational training is not going to increase their productivity.

Because of poverty and lack of quality education there may not be enough demand for vocational training by the individuals. But there exists demand for such personnel. And given the current trends in Bihar, the demand for skilled manpower would expand in future. But the society demands to empower such unskilled workers to develop skills and make them upwardly mobile participants in the society. This means that in addition to the economy demand of vocationally trained persons we should also have some estimates of 'society demand' - which we have called the requirement of vocationally trained persons. This we have done in an annexure.

Here our concern is vocational training, not high level skills provided in professional colleges (viz. engineering colleges, medical colleges, agriculture colleges, polytechnics and other professional colleges). Our concern of vocational training here is to provide skills to make the trainees employable whenever the opportunity exists in the state or outside the state

and earn income which can meet the basic needs of their families. A large number of the unskilled laborers who are going every year from Bihar to other developed states should go with some skills so that they can have a better bargaining power.

Realizing this, the Eleventh Five Year Plan of India had set up a Skill Development Mission (SDM) consisting of an agglomeration of programmes and appropriate structures aimed at enhancing training opportunities four-fold. New entrants to the labour force in the non-agricultural sector should increase from the existing 2.5 million to 10 million per year in the country, and they need to be trained. By 2020, it is underlined that total skilled manpower in the country should be around 500 million.

In Bihar state, it is observed that drop out rate is very high in schools due to which work participation rate is very high among the age group of 15-29 years. In the age-group of 5-19 years, about 45 per cent were attending the school at primary level, but due to higher dropout rate (i.e. 54.2 per cent) it reduces to 22 per cent at middle level. High dropout rate and low infrastructure of formal vocational training in the state compels a large proportion of persons in the age-group of 15-29 to join the work force without any skill training. In the year 2004-05, only 0.3 per cent was receiving formal vocational training, 0.2 per cent reported to have received formal vocational training and another 2.3 per cent reported to have received non-formal vocational training. This means that more than 97 per cent of the persons in this age-group had neither received nor were receiving any vocational training (whether formal or non-formal). One may argue that some of the persons who are not engaged in vocational education and training, may be engaged in higher technical skills viz. professional degrees in engineering, medicine and agriculture etc or diploma/certificate in

vocational education &training equal to graduate level. But their number is less than those engaged in vocational education and training. Conceding that a number of them may be engaged in non-vocational pursuits, we may still hold that a large percentage still needs to undergo some kind of vocational training to fruitfully engage in productive activities—which include service sector activities like education and health besides ITES.

Employment strategy of Eleventh Five Year Plan emphasized the need for high growth in the country. High growth is also expected to require skilled manpower. Not only this, in the process of liberalization in our country, youth without any vocational training can easily be exploited or can get involved in destructive activities. Bihar is already suffering from naxalite activities which, many analysts feel, partly owe to twin whammy of unemployment and poverty.

Keeping in view the high poverty and surplus labour in the state as discussed above, we can assume enough supply of the people who can be drawn into the fold of vocational training. There is justification for estimating the economy demand of persons trained in vocational skills.

Further flow-demand estimates for skilled manpower have to be matched with the flow-supply of such persons. However, due to data constraints this exercise has been restricted to the institutes (ITIs/ITCs) in Bihar. Gap between these two is the estimate of shortage of ITI/ITC trained persons in the state.

After estimating the total number of persons demanded by economy to be trained, trades have been identified, which will have demand in the market. Vocational training and skill development cannot tackle the problem of unemployment, unless the products these people are capable of turning out satisfy the demand pattern of market. Thus different skill-sets/trades

have been identified by keeping in view the market demand pattern of the state and elsewhere.

1.4 Chapter Scheme

Besides this chapter the report consists of seven more chapters. Second chapter has discussed the procedure along with the computation steps for various estimates of skilled persons in Bihar for the years 2005, 2010, 2015, 2020 and 2025. Next chapter is on 'Skill Development and Training in India'. It has discussed the existing vocational training system in the country, quantitative and qualitative aspects of skill deficiencies and the strategy outlined in the Eleventh Five Year Plan. Fourth chapter is about the resources of Bihar State. It has discussed about the natural resources, human resources and infrastructural resources of the state. Fifth chapter is about the status of vocational education and training in the state of Bihar in comparison to that of India as whole and other major states. It is based on the NSSO survey on "Status of Education and Vocational Training in India" conducted in the year 2004-05.

Sixth chapter has discussed the demand of vocational education and training in Bihar. Demand of these persons has been estimated for three segments: (a) within the state of Bihar (WIS) (a) in other states of India (ROI) and (c) in other countries of the world (ROW). There are many institutes/schools, under the aegis of different departments, which impart the vocational training in the state. Among all these institutes, Industrial Training Institutes/Industrial Training Centers under the Ministry of Labor Resources have played the major role in imparting the vocational training to the youths of the state. So the total demand of ITI/ITC trained persons in the state in the years 2010, 2015, 2020 and 2025 has been estimated separately.

Chapter seventh has discussed about the new trades which are likely to have demand and employment potential and should be included in the list of skill-sets for which vocational training should be imparted in the state. Last chapter of this report gives the summary and conclusions of the report..

Chapter II

Procedure for Estimation of Demand for Vocational Manpower

2.1 Introduction

This study is based on the analysis of secondary data. Therefore, type of the methodology used is subject to the availability of secondary data from the different departments of the State and the Union as well as other agencies. Keeping in view the objectives of the study and availability of data three exercises given below have been attempted.

These three exercises are:

1. Estimating the industry-wise economy demand of persons with vocational education and training in the state in the years 2010, 2015, 2020 and 2025.
2. Distributing the economy demand with vocational education and training between ITIs/ITCs and in institutions supported/controlled by other Departments of the state in the years 2010, 2015, 2020 and 2025.
3. Assessing the gap to be filled by the IITs/ITCs.
4. Identification of new trades having employment potential in the state.

2.2 Industry-wise Economy Demand for VET

Economy demand has two components – (A) demand from within the states (WIS) and (B) demand from outside the state and component B itself has two subcomponents—from rest of the country (ROI) and from rest of the world (ROW). See Chart II.1.

Component A itself has been approached through two methods viz. Direct Method and Indirect Method. In the Direct Method, industry-wise

elasticity of employment (with technical skills—including professional and vocational levels) with respect to GSDP during the period 1993-94 to 2004-05 has been used. See Chart II.1. In the Indirect Method industry-wise elasticity of employment, again with respect to GSDP during the same period has been used. Total employment of manpower is then broken into technical and non-technical parts.

Chart II.1

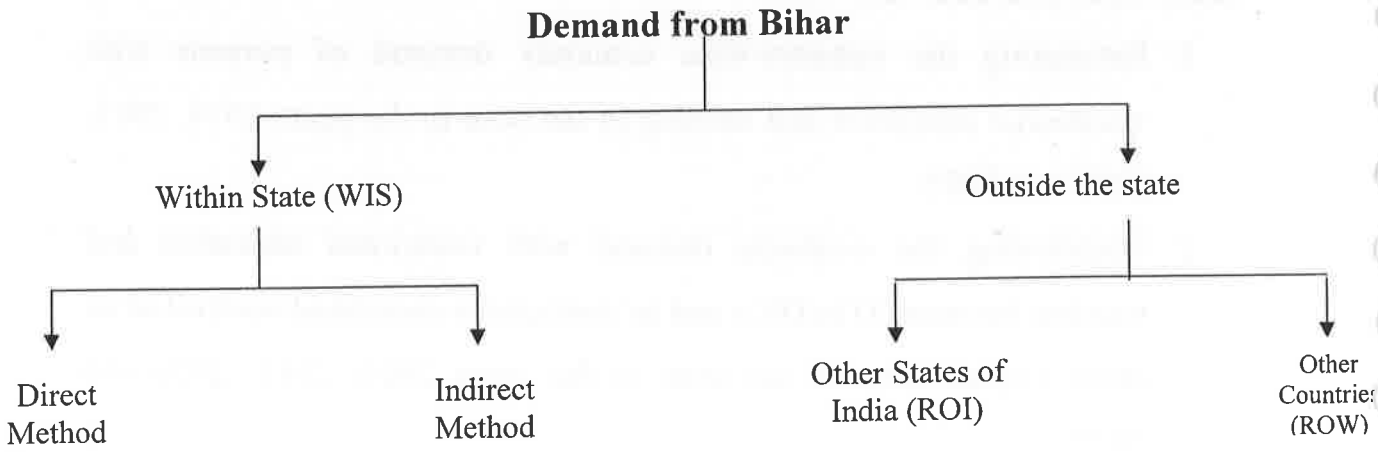
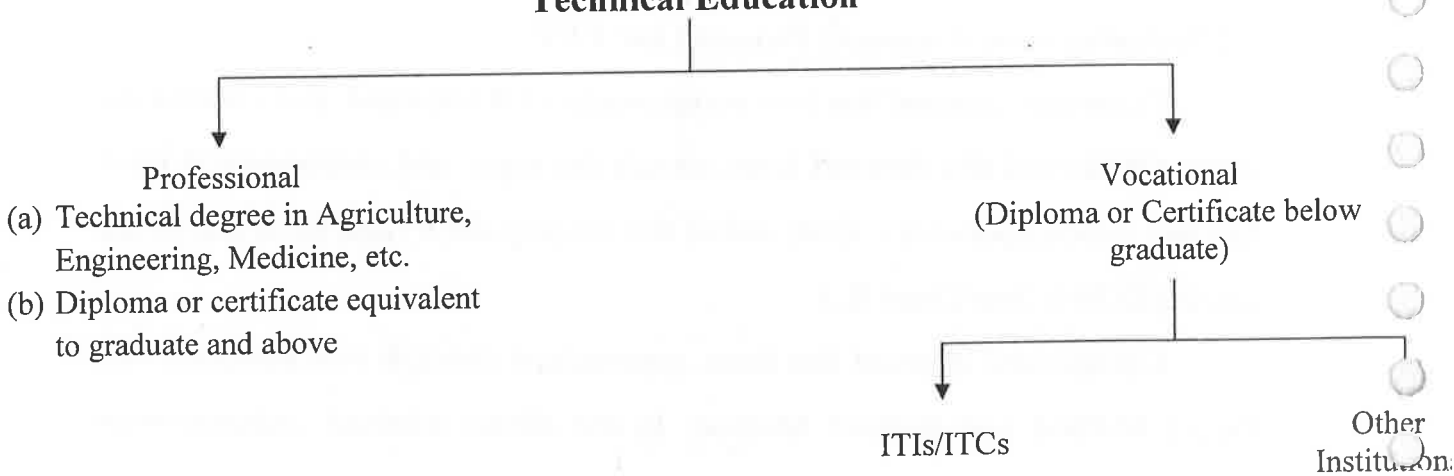


Chart II.2



In both the cases technical manpower demand is staggered into professional and vocational. Within vocational part, we find it expedient to distribute demand between ITIs/ITCs and other institutions so that the responsibility of the Department of Laour Resources could be highlighted. See Chart II.2.

2.2.1 Demand for Vocational Manpower from Within State (WIS)

NSSO surveys on employment and unemployment give the distribution of total number of persons employed in the state both by industry and by age-groups. It also gives the distribution of technical persons employed in the state by industry. Various classifications, along with the codes, used in the distribution of technical persons are given below in Table 2.1.

Table 2.1 Codes used for Classifying Technical Education in NSSO Reports

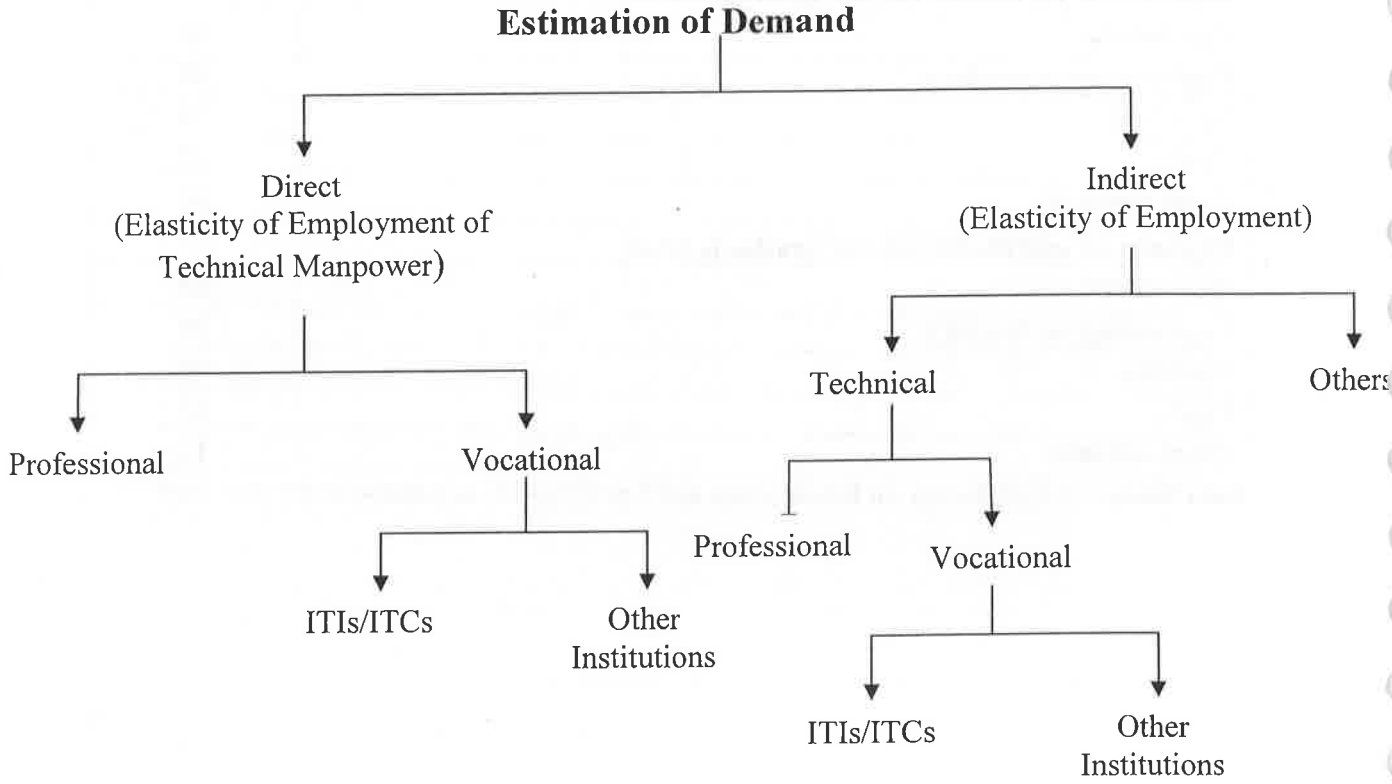
Classification	Code
Technical Education	
No technical education	01
Technical degree in agriculture/engineering/technology/medicine etc.	02
Diploma or certificate (below graduate level)	
Agriculture	03
Engineering/technology	04
Medicine	05
Crafts	06
Other subjects	07
Diploma or certificate (above graduate level)	
Agriculture	08
Engineering/technology	09
Medicine	10
Crafts	11
Other subjects	12

Data Source: NSSO Survey on Employment and Unemployed conducted in the year 2004-05.

Persons having diploma or certificate (below graduate level) - codes 03 to 07 - would give an estimate of persons with vocational training in the state in that year. It also includes the technical persons having Diploma (below graduate level) but their number would be very small as compared to certificate holders (below graduate level). The major difference between Diploma and Certificate is usually the duration of training. Long-term courses award diploma while short-term ones award certificate.

The number of technical persons with diploma or certificate (below graduate level) employed in the state in a particular year would also give an estimate of demand of persons with vocational training in the state during that year. In fact, in the base year it would be taken as supply too under a restrictive assumption that there exists no surplus (unemployment) and no shortage.

Chart II.3



As indicated earlier, two methods have been adopted for estimating the demand (Chart II.3). In both the methods industry-wise Compound Annual Growth Rates (CAGRs) of GSDP at constant prices have been estimated for the periods 2005-10, 2010-15, 2015-20 and 2020-25. CAGR for the period 2005-10 was obtained on the basis of actual values of GSDP of the years 2004-05 and 2009-10 by solving the following equation:

$$Y_{t+5} = Y_t(1+g)^5$$

Where,

Y_{t+5} = GSDP in year 2009-10

Y_t = GSDP in year 2004-05

g = CAGR during the period between 2004-05 and 2009-10

Industry-wise proposed CAGRs of GSDP during the periods 2010-15, 2015-20 and 2020-25 were assumed on the basis of achievements during 2005-10, targets of Elevenths Five Year Plan (2007-12), and agenda of newly elected government of Bihar state.

After getting the industry-wise CAGRs of GSDP during the periods 2005-10, 2010-15, 2015-20 and 2020-25 employment of persons with vocational skills for the terminal years was obtained by two different methods. These methods have been discussed below:

2.2.1.1 Direct Method

In this method industry-wise employment of persons with technical skills for the years 1993-94 and 2004-05 and GSDP of different has been used for projecting the employment. As we are depending on NSSO data, which is not dependable for 1999-2000 for comparison purposes, we are constrained to use data for a remote year 1993-94. We would have preferred to use the data for years 1999-2000 and 2004-05. However, we keep this

limitation in mind while proposing prospective growth rates and elasticities so that we are on a more realistic ground.

Step 1: Industry-wise Elasticity of Technical Manpower Employment

Industry-wise employment of technical manpower in the state was obtained at two points of time viz. 1993-94 and 2004-05 from NSSO surveys. Industry-wise GSDP at constant prices was also therefore obtained for these two years 1993-94 and 2004-05 from the Directorate of Statistics, Bihar state. Employment Elasticity (EE) in each industry was obtained by applying the following equation:

$$EET_i = \frac{r^T{}_i}{g_i}$$

Where, EET_i = employment elasticity in industry i for technical personnel

$r^T{}_i$ = rate of growth in technical employment in industry i

g_i = rate of growth in GSDP of industry i

Step 2: Growth Rates of Employment of Technical Manpower

EETs estimated above were applied after incorporating minor changes for the years 2005-10, 2010-15, 2015-20 and 2020-25.

Industry-wise growth rate of employed (with technical skills) was estimated by applying the following equation:

$$r_i^T = EET_i \times g_i^T$$

Where, r_i^T = growth rate of technical employment in industry i during period T

EET_i = elasticity of employment technical personnel in industry i, duly modified

g_i^T = growth rate of GSDP of industry i during period T

T = 2005-10, 2010-15, 2015-20 and 2020-25

Step 3: Employment of Technical Manpower

Employment of technical manpower in each industry was obtained by applying the following equation:

$$ET_i^T = ET_i^{T-5} (1+r_i^T)^5$$

where, ET_i^T = technical employment in rate T

r_i^T = rate of growth of technical employment computed for period T

T = year or period as per the context

Step 4: Employment of Manpower with Vocational Skills

Employment with technical skills was distributed by levels of technical skills viz. (1) Technical degree, (2) Diploma or Certificate holder (above graduate level) and (3) Diploma or Certificate holder (below graduate level). (1) and (2) can be considered professional and (3) as vocational. Vocationally trained persons have diploma or certificate (below graduate level).

While distributing the employment with technical skills into different levels of technical education, ratios of NSSO survey conducted in the year 2004-05 were applied. Mathematical equation for computing the employment with vocational skills is given below:

$$VE_i^T = \pi_i \times ET_i^T$$

Where,

VE_i^T = employment of vocationally trained

ET_i^T = Employment with technical skills

π_i = proportion of those with below graduate diploma or certificate

2.2.1.2 Indirect Method

In this method industry-wise total employment for the years 1993-94 and 2004-05 and GSDP of different years has been used for projecting the employment with vocational skills.

Step 1: Industry-wise Elasticity of Total employment

It was obtained in the same way as EET of employment (with technical skills) with respect to GSDP in First Method. The only difference is that here industry-wise total employment was taken instead of employment of manpower with technical skills.

Industry-wise total employment of the state was obtained at two points of time viz. 1993-94 and 2004-05 from NSSO surveys. Industry-wise GSDP at constant prices was also obtained for these two years from the Directorate of Statistics, Bihar state. Employment Elasticity (EE) in each industry was obtained by applying the following equation:

$$TEE_i = \frac{r_i}{g_i}$$

Where,

TEE_i = Total employment elasticity in industry i

r_i = rate of growth in total employment in industry i

g_i = rate of growth in GSDP of industry i

Step 2: Growth Rates of Total employment

Method of obtaining these growth rates was also same as in First Method. The difference is that here we get the CAGRs of total employment instead of employment of manpower with technical skills.

EEs estimated above were applied after incorporating minor changes for the years 2005-10, 2010-15, 2015-20 and 2020-25.

Industry-wise growth rate of employed was estimated by solving the following equation:

$$r_i^T = TEE_i^* \times g_i^T$$

Where,

r_i^T = growth rate of total employment in industry during period T

TEE_i^* = elasticity of total employment in industry I duly modified

g_i^T = growth rate GSDP of industry I during the period T

T = 2005-10, 2010-15, 2015-20 and 2020-25

Step 3: Total Employment

Method of estimating the total employed is also same as in First Method. The difference is that here we get the total employment instead of employment of manpower with technical skills.

Total employment in each industry was obtained by applying the following equation:

$$TE_i^T = TE_i^{T-5} (1+r_i^T)^5$$

where,

TE_i^T = Total employment of industry i and year T

r_i^T = rate of growth of total employment computed for period T

T = year or period as per the context

Step 4: Employment of Manpower with Vocational Skills

Total employment estimated for each year was distributed into employment with technical skills and employment with no technical skills.

In the year 2005 as per NSSO Survey, employment of manpower with technical skills was about one per cent in the total employment in Bihar. It was assumed that this percentage would gradually increase to four per cent in the year 2025. Mathematical equation for computing the employment with technical skills is as under:

$$SE_i^T = \alpha_{TS} \times TE_i^T$$

Where,

SE_i^T = employment of persons with technical skills in the year T

α_{TS} = proportion of those with technical skills to total employment

TE_i^T = Total employment in year T

Further, employment with technical skills was distributed by levels of technical skills viz. Technical degree, diploma/certificate holder (above graduate level) and diploma/certificate holder (below graduate level). Employment of persons having diploma/certificate (below graduate level) gives the demand of vocationally trained person in the state. While distributing the total employment into different levels of technical education, ratios of NSSO survey conducted in the year 2004-05 were applied. Mathematical equation for computing the employment with vocational skills is given below:

$$VE_i^T = \beta_i \times SE_i^T$$

where,

VE_i^T = employment of vocationally trained in year T

β_i = proportion of those with below graduate diploma or certificate

SE_i^T = employment of persons with vocational skills in the year T

2.2.2 Demand for Vocational Manpower from Outside the State (OSS)

Demand of persons with vocational training outside the state has two segments: (a) in other states of India (ROI) and (b) in other countries of the world (ROW). In case of other states of India (ROI), there are two major sources which give estimates of the incidence of migrations from Bihar. The first is the Population Census conducted after every ten years and the other is the periodic (quinquemial) survey conducted by NSSO. Extent of migration from Bihar to other states, along with the background (i.e. age, qualification and sex etc.) of migrants and reasons of migrations was obtained from these two sources. Besides these two official sources, there are a number of studies on "Migration from Bihar state".

It is observed from the Population Census data and other studies that a large number of migrants from Bihar to other states are unskilled. If some of these unskilled workers are provided some skills in the state, they can get higher wages in the other states and can have a better bargaining power. This would also increase the demand of skilled labour from the state.

Skilled workers have also a great scope of employment in other countries of the world (ROW) also, particularly the countries where old dependency ratio is very high. In the year 2001, about 43 percent of total population of the state was in the age-group of below 15 years (Census of India, 2001). A high proportion of this population has actually entered the working population by now. Bihar can reap demographic dividend if its manpower is managed and utilized properly. Once this young stock is trained, they can have a great scope of employment in other countries. Ministry of External Affairs and the Ministry of Overseas Affairs provide data on International Migration from India to different countries.

Before estimating the demand of persons with vocational training outside the state, estimates of net out-migration from the state for employment purpose was obtained from the sources mentioned above. These estimates of out-migration were obtained separately for other states of India and for outside India. From the total net out-migration share of vocationally trained persons was also obtained. Keeping in view the large number of unskilled migration from Bihar to outside the state and demographic dividend of Bihar, demand of persons with vocational training outside the state was estimated.

2.3 Manpower for Vocational Training to be trained by ITIs/ITCs

Section 2.2 gives the estimates of manpower to be trained in all the institutes/departments of the state. Keeping in view the past trend of the share of students who were admitted in ITIs/ITCs to all the students admitted in all institutes/departments and the policies of the state government, the numbers of persons to be trained in ITIs/ITCs for the years 2010, 2015, 2020 and 2025 were obtained.

2.4 Identification of New Trades with Employment Potential in the State

Eleventh Five Year Plan of India has identified 20 growth sectors having high employment potential in the country. These sectors are also relevant for Bihar state where employment can be generated and pass outs of vocational institutes can be absorbed.

Keeping in view the resources of Bihar state, sectors/industries were identified where employment could be generated in future. It also gave an idea of the trades that were specific to the growth sectors identified. While doing this exercise the study team had discussion with officers of various departments of the state and the centre. Reports published by various

institutions and officials of the institutions located at Delhi viz. FICCI, IGNOU, Planning Commission and DGE&T also gave an idea about the new trades which can be introduced.

Information was collected about the trades of different duration which were taught in ITIs/ITCs and other Departments of the state.

The trades in which vocational training is being provided in developed states (such as Gujarat and Maharashtra) and the Modular Employable Skills (MES) courses which are approved by National Council of Vocational Training (NCVT) but are not covered in Bihar state, were considered in the list of trades identified above. However before including these trades in the modified list it was ensured that these trades should have employment potential in the state. Scope of employment potential of new trades included in the list was analyzed, keeping in view the market demand, infrastructure facilities and resources of Bihar State. Duration and minimum qualification required for each trade were also suggested in the list wherever possible.

2.5 Discussion on the Draft Report in the Workshop

Finally the draft of this report was presented in a workshop which was organized by the Department of Labour Resource, Government of Bihar and UNDP office at Delhi. The workshop was attended by various administrative personnel and representatives of industries of the state, and experts of Bihar and other states as well as representatives of consultancy firms engaged in the manpower business. List of participants who attended the workshop is given at the end of the report (Annexure I.1). The Study Team took due note of suggestions made by the participants of the workshop and incorporated the same wherever possible.

Chapter III

Skill Development and Vocational Training in India

3.1 Introduction

It is now very well recognized that skill and knowledge are the driving forces of Economic Growth and Social Development of any country. As Paul Krugmen said, it is inspiration not perspiration that matters in economic growth. Skill building and training contributes significantly for promoting the interests of individuals, enterprises, economy and society. Skill building and vocational training, a central pillar of decent work, is a means to empower people, improve the quality and organization of work, enhance citizens' productivity, raise workers' incomes, promote job security and social equity and help individuals become more employable in rapidly changing internal and external labour markets. In fact they have become more important in the era of globalization because countries with higher and better levels of skills adjust more effectively to the challenges and opportunities of globalization (Government of India, Planning Commission, 2008).

In the old economy, skill development was mainly considered as the development of shop floor or manual skills. In the new economy the skill sets can range from professional, conceptual, managerial, operational, behavioral to inter-personal skills and inter-domain skills. To deal with this level of complexity, Government of India has given a very high priority to higher and technical education in the Eleventh Five Year Plan (Government of India, Planning Commission, 2008). However, in this chapter we have confined our discussion to skill development in different trades at the mass scale through ITIs, vocational schools and other institutions.

As discussed in the previous chapter, India's record in the area of skill development has been very poor. One of the reasons for poor performance is the total reliance upon a few training courses (just about 100 courses) of long duration (2 to 3 years) with no up-gradation from time to time (Government of India, Planning Commission, 2008).

Vocational training is a subject in the concurrent list of the Constitution. Therefore, the Union Government and the State Governments both share responsibilities. At the national level, Director General of Employment & Training (DGE&T), Ministry of Labour is the nodal office for formulating policies, laying down standards, conducting trade testing and certification, etc. in the field of vocational training. At the State level, the government departments, mainly related with labour and education, are responsible for vocational training and education programmes.

3.2 Demographic Dividend

The demographic dividend is reckoned as a rise in the rate of economic growth due to rising share of working age people in a population. This usually occurs late in the demographic transition when the fertility rate falls significantly and the youth dependency rate declines. During this demographic window of opportunity, output per capita rises. Low fertility initially leads to low youth dependency and a high ratio of working age to total population. However as the relatively large working age cohort grows older, population aging sets in.

3.2.1 Demographic Transition in India

In case of India due to demographic transition there has been continuous increase in the working population of India and in recent years it has been noticed that population has become more of an asset than a burden because India's

population comprise more of youth and their contribution has been increasing for quite a few years.

In the population dividend model, it is the dependency ratio (that is, dependent population relative to the working-age population) rather than the absolute increase (or decrease) in the size of the working-age population that is the economically most relevant. If the dependency ratio declines, i.e. if the working-age population as a share of the total population increases, per-capita growth is likely to accelerate. By the same token, a rising dependency ratio is likely to be a "drag" on growth.

As per the projected population by Registrar General and Census Commissioner of India, population growth rate is likely to decrease from 1.6 per cent per annum during 2001-06 to 0.9 per cent during 2021-26. Share of working population to total population is expected to increase from 57.7 per cent in 2001 to 64.3 per cent in 2026 (Table 3.1).

Table 3.1: Projected Population by Broad Age-groups and Dependency Ratio in India

	2001	2006	2011	2016	2021	2026
Population by Broad Age-groups (000s)						
0-14 (Young)	364582	356998	346942	340291	336906	327004
15-59 (Working Age)	593342	671608	747094	810571	859590	899651
60+ (Old)	70686	83580	98470	118099	143244	173182
Total	**1028610**	**1112186**	**1192506**	**1268961**	**1339740**	**1399837**
CAGR (Over previous year)		1.6	1.4	1.3	1.1	0.9
Median Age (Years)	22.5	23.9	25.5	27.4	29.3	31.4
Dependency Ratio						
Young (0-14)	614	532	464	420	392	363
Old (60+)	119	124	132	146	167	192
Total (Young & old)	734	656	596	566	559	556

Note: Young Dependency Ratio is the Population of Young per 1000 population in the 15-59 years. Similarly, old age dependency ratio is the population of old per 1000 population in the 15-59 years.
Data Source: RG&CCI, State-wise population projection 2001-2026.

Dependency ratio of India is expected to decrease in future. It includes young dependency ratio and old dependency ratio. Young dependency ratio is the population of young per 1000 population in the 15-59 age-groups. Similarly, old dependency ratio is the population of old per 1000 population in 15-59 years. Total dependency ratio in the country was 73.4 per cent in the year 2001. This is expected to reduce to 65.6 per cent in 2006, 59.6 per cent in 2011, 56.6 per cent in 2016, 55.9 per cent in 2021 and 55.6 per cent in 2026 (Table 3.1). At the same time median age of the country was 22.5 years in 2001 and it is expected to increase to 31.4 years in 2026 (Table 3.1). This is reflected in rising labour force participation rate despite the fact that early youth are now more in educational streams and growing proportion of old-age persons.

If properly harnessed demographic potential will result in change in savings and investment behavior, improving financial market growth prospects and finally economic growth prospects.

Age-group wise and sex-wise distribution of population of country is shown for the years 2001, 2006, 2011, 2016, 2021 and 2021 by Chart III.1 to III.6. These charts are also showing that young population of the year 2001 will become slowly the working age population in the year 2026. It will be seen that broad bottom gradually shifts upward and middle ranges start bulging. If population growth rate does not drastically fall as a result of sudden drop in birth rate, we can stretch population dividend a little longer.

Chart: III.1: Age Pyramid of India in 2001

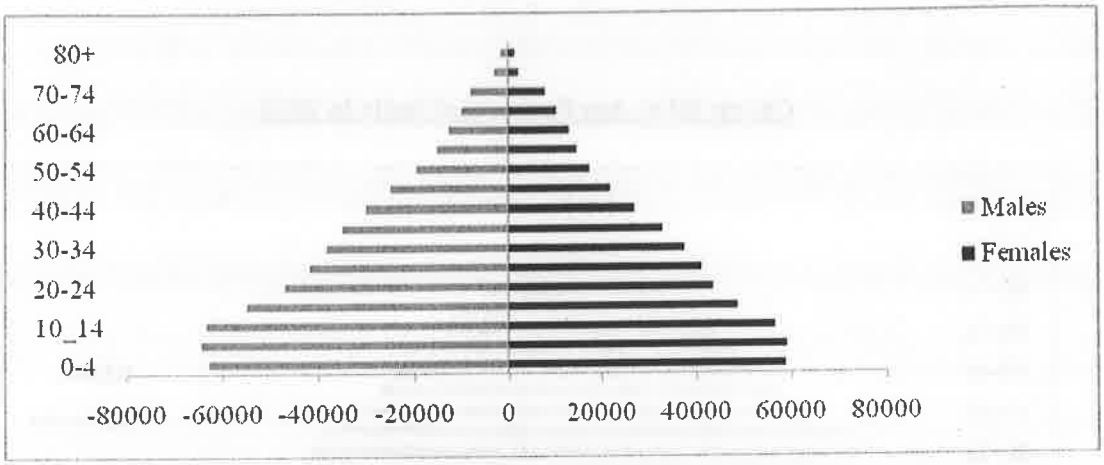


Chart: III.2: Age Pyramid of India in 2006

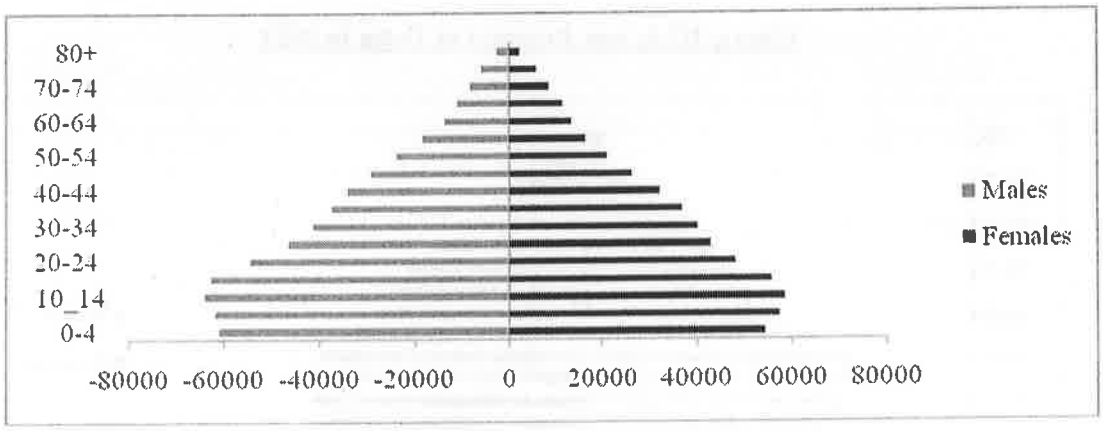


Chart: III.3: Age Pyramid of India in 2011

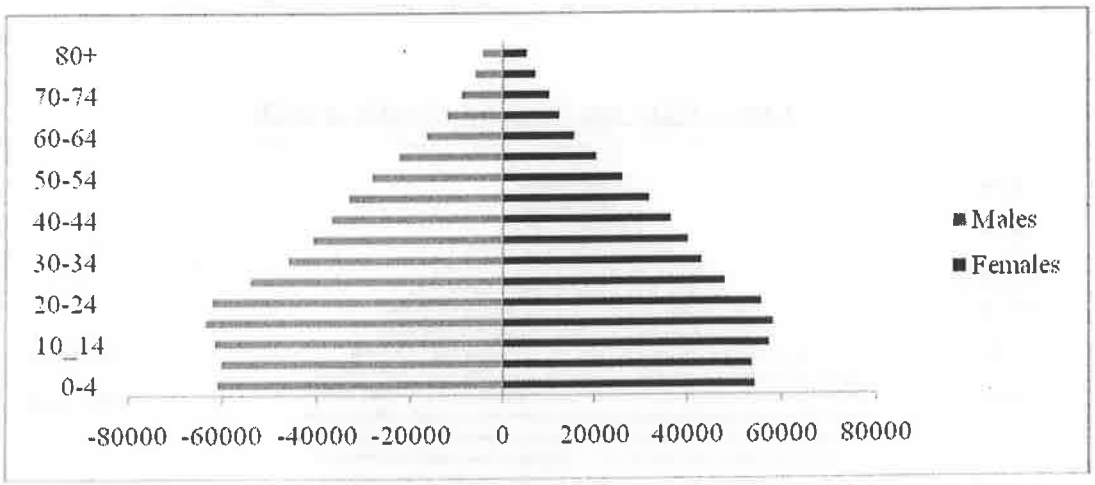


Chart: III.4: Age Pyramid of India in 2016

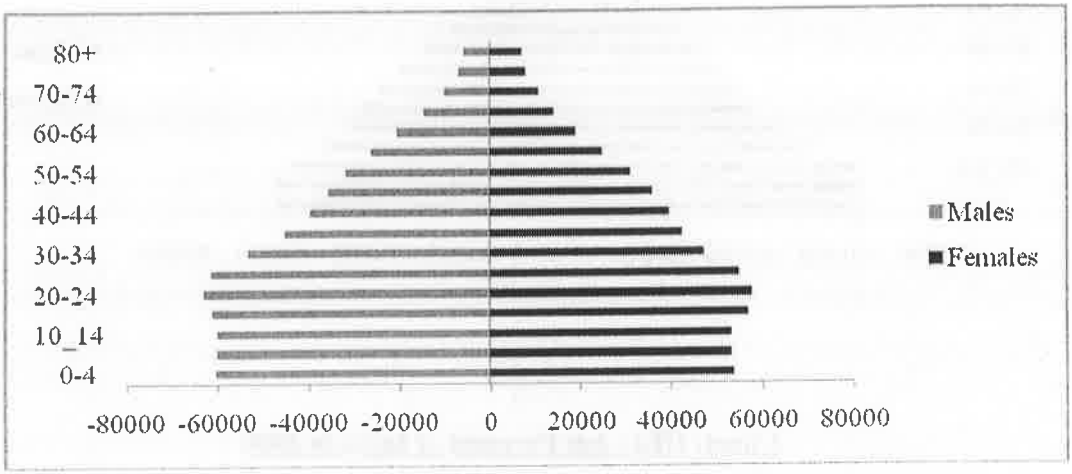


Chart: III.5: Age Pyramid of India in 2021

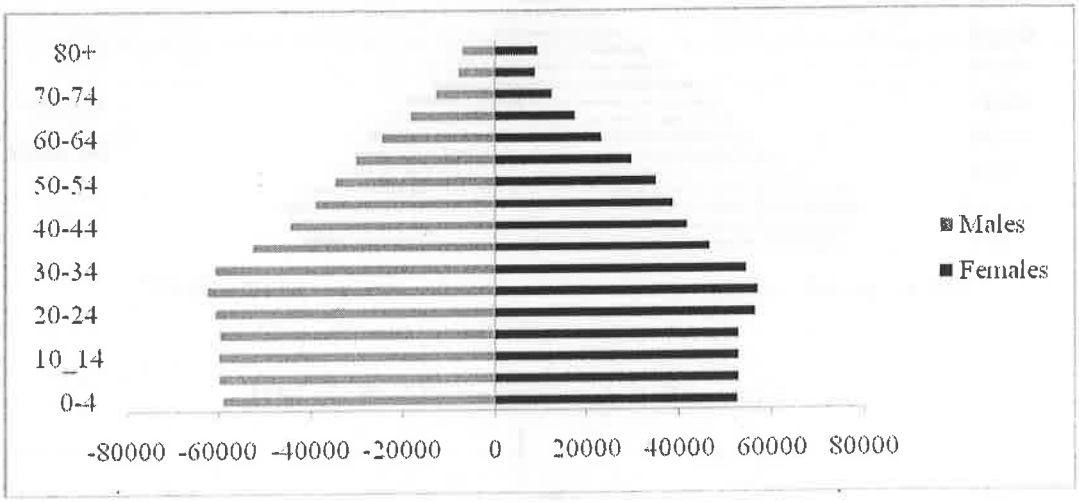
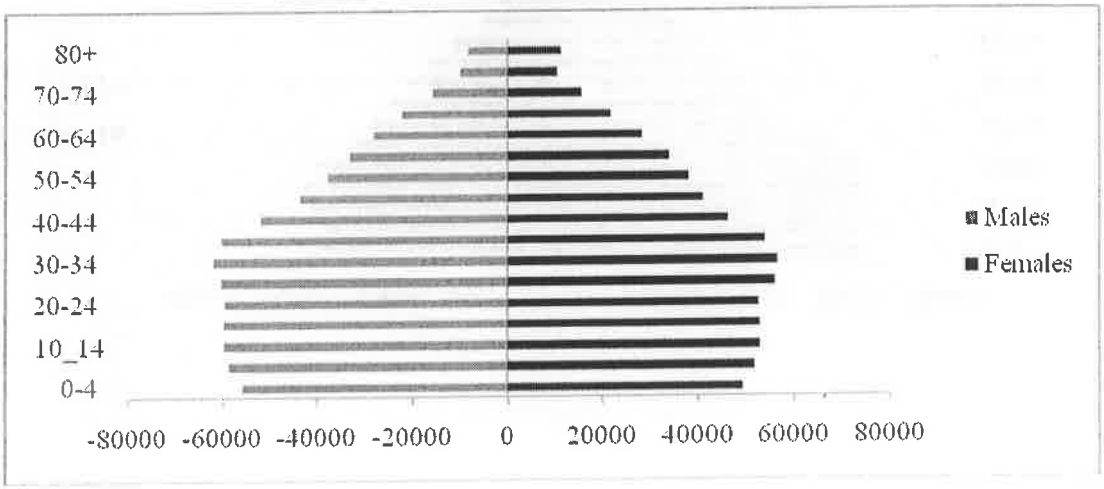


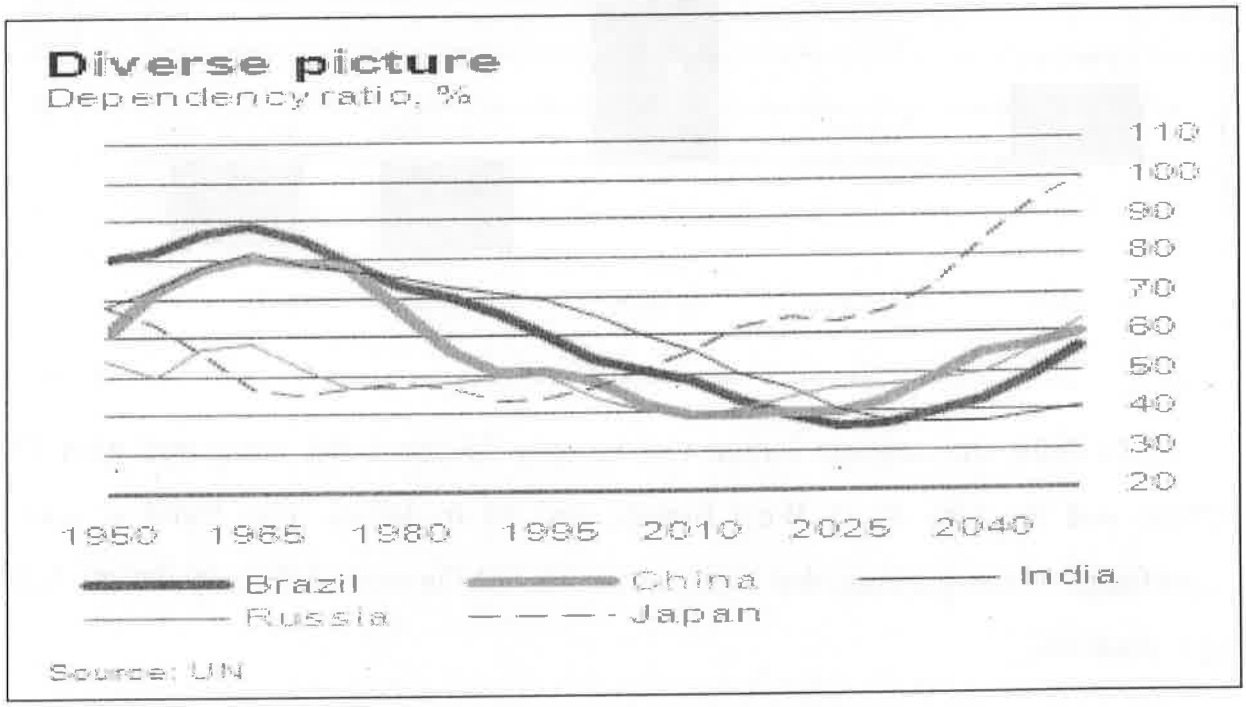
Chart: III.6: Age Pyramid of India in 2026



3.2.2 Some International Contrasts

If we look at demographics of the BRIC countries which comprises of four highly populated countries of the world (Brazil, Russia India and China), we find a great variation. The differences in the projected change in the working-age population are very significant in both absolute and relative terms. See Chart III.7 which includes Japan also. Brazil and India are demographically in a substantially more favorable position than China and Russia. Japan clearly shows worsening dependency ratio. With the exception of India, demographic developments in coming decades do not speak well about BRIC countries exception being India. We may note that there are some definitional and some projection differences. Therefore, figures of Table 3.1 do not match with those in the Chart III.7.

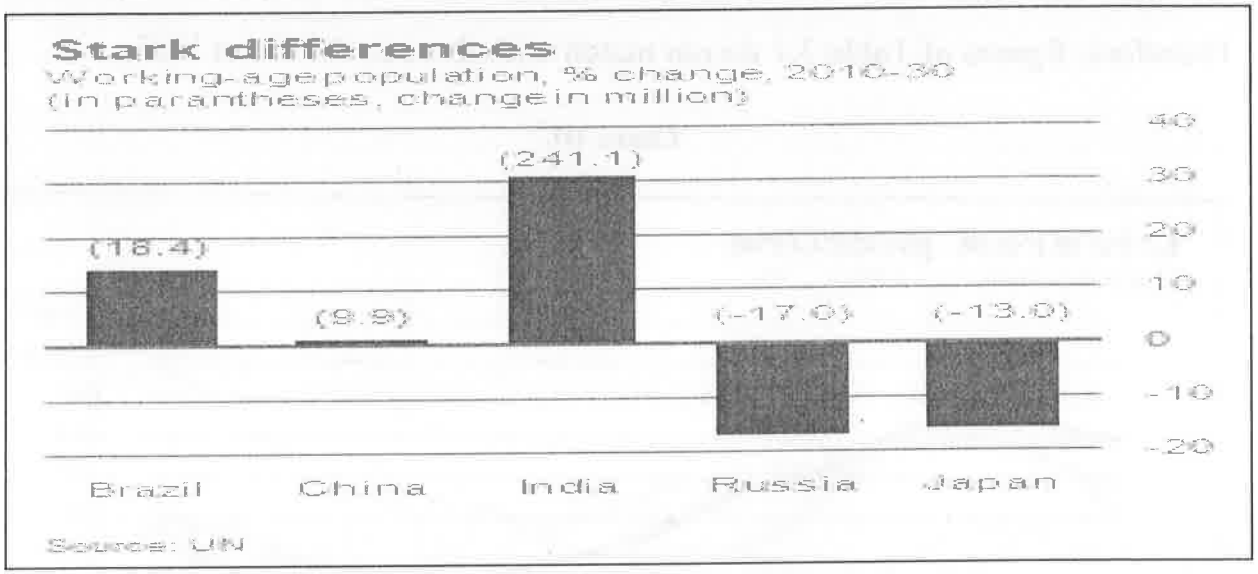
Chart: III.7



According to UN projections the working-age population in India will increase by a stunning 240 m (equivalent to four times the total population of the

UK) over the next two decades, compared with 20 m in Brazil. The working-age population in Russia, by contrast, will decline sharply by almost 20 m. China's working-age population will peak in 2015 and then gradually decline. By 2030 it will be merely 10 m larger than today—a negligible change given a total population of 1.35-1.45 bn. By 2030, India will also be overtaking China as the world's most populous country (Chart III.8).

Chart II.8



In 2020, the average Indian will be only 29 years old, compared with 37 in China and the US, 45 in West Europe and 48 in Japan. This trend is seen as significant on the grounds that what matters is not the size of the population, but its age structure.

3.3 Existing Vocational Training System

In India, vocational education and training is being imparted in two ways—one through formal system and another through informal system. Share of informal system is much larger than the formal system. Formal system includes: (i) higher technical education being imparted by professional colleges (ii) vocational

education being imparted in secondary schools (iii) technical training being imparted by specialized institutions and (iv) apprenticeship training provided by the industry. A number of agencies provide vocational education/training at various levels (Government of India, Planning Commission, 2008).

Presently there are two advisory bodies on vocational training in Ministry of Labour to help the Union Government. One, National Council for Vocational Training (NCVT) which is a tri-partite body headed by Union Minister for Labour and Employment. The second is, Central Apprenticeship Council (CAC), which is again a tri-partite body and advises the Central Government on different aspects of apprenticeship training in the county. There are two parallel bodies at the State Government level also, known as State Council for Vocational Training (SCVT) and State Apprenticeship Council (SAC). Likewise, vocational education is the responsibility of the Ministry of Human Resource Development which carries out policy formation, training standards and procedures, certification and coordination. There is an All-India Council for Vocational Education for planning, guiding and coordinating the programme at the national level and there are counterpart State Coucils of vocational Education to perform similar function at the state level.

Generally speaking vocational training is imparted through two major schemes, one, Craftsman Training Scheme (CTS) and the other, Apprenticeship Training Scheme (ATS). Industrial Training Institutes (ITIs)/Industrial Training Centres (ITCs) are running under the Craftsman Training Scheme.

The number of ITIs/ITCs were 4647, 5114 and 7605 in 1999-2000, 2005-06 and 2008-09 with a seating capacity of 6.8 lakh, 7.4 lakhs and 10.6 lakhs in those years. It shows that growth of institutions and their seating capacity has accelerated in the later period. Number of trades in which training was imparted, increased

only marginally from 107 to 114. See Table 3.2 for details. Duration of these courses varies from six months to 3 years.

In case of apprenticeship training there were 28,650 establishments under apprenticeship training scheme in the country with a seating capacity of 2.5 lakhs in the year 2005-06 (DGE&T, Government of India, 2009).

Table 3.2: Details of Industrial Training Institutes and Industrial Training Centers

Year	Number			Seating Capacity (lakhs)			Trades (Number)		
	ITIs	ITCs	Total	ITIs	ITCs	Total	Engg.	Non-Engg	Total
1	2	3	4	5	6	7	8	9	10
1999-00	1798	2849	4647	3.73	3.05	6.78			
2005-06	1896	3218	5114	4.00	3.42	7.42	57	50	107
2008-09	2076	5529	7605	4.24	6.39	10.63	60	54	114

Data Source: DGE&T, Government of India, 2009.

There are also specialized Advanced Training Institutes (ATIs) which impart training to trainers, upgrade skills of in-service industrial workers, train supervisors and middle management level in the industry, train Training Managers and Principals of ITIs, and National and Regional Vocational Training Institutes for Women which offer basic, advanced and instructor training courses for women. Both these institutes are under DGE&T.

Existing 500 ITIs are being upgraded into Centers of Excellence (CoE) with the World Bank assistance. In each of these ITIs, a Broad Based Basic Training course would be provided to the trainees and then multi skilling courses would be offered in the trades of their choice so that they are better employable. An Institute Management Committee (IMC) is being constituted in each of the ITIs, which is to be headed by a

prominent industrialist of the area and all industrial guilds are supposed to be represented in the IMC.

In order to offer employment opportunities to physically challenged persons, 20 Vocational Rehabilitation Centers (VRCs) are also being run in 19 States of the country. Similarly, Coaching-cum-Guidance Centers (CGCs) for providing larger employment opportunities to members of SCs and STs are run in 22 States of the country. There is also one specialized institute, National Instructional Media Institute (NIMI) for development of course curricula and instructional media packages in different languages for the benefit of ITI trainees and instructors (DGE&T, Government of India, 2009).

In addition to above, there are 16 other Ministries and Departments of Government of India like Health and Family Welfare, Human Resource Development, Information Technology, Micro, Small and Medium Enterprise, Tourism, Urban Development, Urban Employment and Poverty Alleviation, Agro Rural Industries, Agriculture, Textiles, Heavy Industry and Public Enterprises, Food Processing Industries, Rural Development, Tribal Affairs and Women and Child Development, which are involved in vocational training in their respective domains. All institutions functioning with the support of these Ministries and Departments taken together train about 1.5 million persons every year (Gupta, S.P., 2006).

The critical appraisal of the present state of affairs would however indicate that our base of skilled and particularly knowledge workers is rather narrow. One way of looking at this problem is to make a general assessment as to how vocational education and training (VET) has failed to make an impact in this country. In order to make the existing vocational education and training system

more efficient and effective some new initiatives will have to be taken by the Government.

There is also need for strengthening the certification system in vocational training. Though Directorate General of Employment & Training has been conducting trade tests and awarding National Trade Certificates and National Apprenticeship Certificates which make these certificate holders employable within the country and abroad, the set up is becoming unequal to the task in future as against certification of one million at present, it will require to certify about 10 million persons every year for which the infrastructure is awfully inadequate. It will, therefore, be worthwhile to consider setting up a National Trade Testing, Certification and Accreditation Authority to take care of the growing numbers for certification. (DGE&T, Government of India, 2009).

At present, vocational education and training is regulated by both the All India Council of Technical Education (AICTE) and the National Council for Vocational Training. This has led to an element of duplication. The Task Force on skill development and vocational education set up by Planning Commission, Government of India has recommended that the NCVT should be the *sole* regulatory authority for vocational training and that the AICTE's role should be confined to institutions of higher learning that fall within its sphere, and polytechnics.

3.4 Dimensions of the Need for Vocational Training

The mismatch between the quality of technical manpower demanded and its availability needs to be analyzed and quantified. This will ultimately require reorientation of India's educational system, particularly existing vocational education and training programmes, as well as enhancing their capabilities. It has

been observed that vocational training and skill development can be imparted better among persons with basic education rather than to illiterates. Therefore the present drive for literacy and basic education should continue along with more vocational education and training programmes. As it had been stipulated in the Tenth Five Year Plan that India will grow at 8 percent per annum and will rank as a developed country by the year 2020 so, the capacity of the appropriate formal vocational education training programmes needs to be expanded significantly.

It was pointed out that unemployment on the Daily Status basis in 1999-2000 was as high as 26.5 million (7.4 percent of the total labour force), 10.8 million of whom were educated (41 percent of the unemployed). Compared to this large, unemployed number of persons, the existing available training and skill development facilities in formal training and institutions and agencies throughout India exist for around one and a half million (Gupta, S.P., 2006).

Further, of the 104 to 114 million educated and employed workers, nearly 50 to 55 percent are self employed. Hence, special vocational training and entrepreneurship development for the self employed need to be developed. Indeed, educated youth are the primary source of future potential entrepreneurs. As to semi educated youth (up to primary class), there have also been large number of unemployed or under–employed and they need a different type of education and vocational training. There is a vast area where formal and informal training is required particularly where workforce engaged in low productivity and low earning jobs. The earnings of this group in most cases are well below the norm for the decent living so to discover new opportunities in these sectors suitable programs for vocational training and skill development will be needed, some on part time basis so that the enhanced training program will not cause disruption in their running sources of earning. Here, again a different nature of skill

development programme is required. All this statistics gives a sense of the magnitude of need for large scale vocational education and training programmes (Gupta .S.P., 2006).

3.5 Prioritization of Skill Building and Vocational Training

There is an urgent need to identify the priority areas in selected sections of the labour force to render appropriate training and skill. The first priority should be given to the new entrants (from class VIII, IX, X and XI) in the labour force. All these entrants need gainful employment. The second priority group is the incremental educated youth. With a high unemployment rate of 12.1 percent among the educated youth against the national average of 7.3 percent as per CDS in the year 1999-2000. In this group unemployment rate of female was as high as 22.5 percent. Third priority group should be all the other youth who are in the labour force, whether illiterate or semi literate. The fourth priority should largely comprise of underemployed working people.

Another aspect that should be covered under prioritization of skill development is that vocational training should be given on recent trades. That means the trades which are in demand or the skill which the market requires has got the capacity to absorb those skill sets. Plumbing, air conditioning and refrigeration, secretarial practice, beauty culture, auto fitter, mobile repairing etc. are recent trades and there should be training in these skill sets.

3.6 The Quantitative Aspect of the Skill Shortages

The quantitative aspect of skill shortage is one of the areas of concern because there is always mismatch between the availability of number of jobs and the number of people available for particular jobs. The huge number of people added to the workforce each year and their low preparedness to avail of the

emerging employment opportunities make the issue of skill development self evident.

FICCI has estimated the demand of vocationally trained persons till 2022. Details of which have been discussed below:

On a long-term basis, up to 2022, it is expected that India's GDP will grow at a CAGR of about 8%. With these growth rates, we expect that the employment in the economy will be about 500 million by 2022 (Tables 3.3 and 3.4)). Table 3.3 gives the projected employment by broad sectors and Table 3.4 gives the share of employment of different sectors. It is observed that there would not be significant change in the proportion of employment in different sectors between 2017 and 2022. For an economy to sustain the growth rate of 8% it is essential that the workforce be exposed to some form of skilling or the other (could be through higher/technical education or vocation skills or a combination of both). Thus it is expected that in India there would be a skilled workforce of 500 million persons by 2022.

Table 3.3: Projected Employment in Agriculture, Industry, and Services

By Year	GDP Growth Rate	Projected Employment (in million)			
		Agriculture	Industry	Services	Total
2011-12	9%	229.2	105.0	153.5	487.7
	7%	225.4	102.0	149.0	476.4
	5%	221.5	99.1	144.6	465.2
2016-17	9%	240.2	126.2	189.5	555.9
	7%	232.0	116.8	174.8	523.5
	5%	224.0	108.1	161.2	493.3

Data Source: *'The Challenge of Employment in India – An Informal Economy Perspective' (April, 2009)*

Table 3.4: Share of Employment of Different Sectors till 2022

By Year	GDP Growth Rate	Agriculture	Industry	Services	Total
2007-08	Actual	51%	20%	29%	100%
2011-12	9%	47%	22%	31%	100%
	7%	47%	21%	31%	100%
	5%	48%	21%	31%	100%
2016-17	9%	43%	23%	34%	100%
	7%	44%	22%	33%	100%
	5%	45%	22%	33%	100%
2021-22	**7% to 9%**	**41%**	**23%**	**36%**	**100%**

Data Source: *'The Challenge of Employment in India – An Informal Economy Perspective' (April, 2009) and IMaCS analysis*

From the Tables 3.3 and 3.4 it is observed that the employment in the manufacturing and services sector would be in excess of 250 million persons. Illustratively, the sectors that would drive a significant portion of the employment are mentioned in Table 3.5.

Table 3.5: Requirement of persons till 2022—Select sectors (million)

Select Sector	2008	2022	Increment till 2022
Textile and clothing	35.4	61.6	26.2
Building and construction industry	25.0	58.0	33.0
Auto and auto components	13.0	48.0	35.0
Real estate services	11.0	25.0	14.0
Organised retail	0.3	17.6	17.3
Banking, Finance, Insurance	4.3	8.5	4.2
Gems and jewellay	3.3	8.0	4.7
IT and ITES	2.2	7.5	5.3
Leather and leather goods	2.5	7.0	4.5
Furniture and furnishings	1.4	4.8	3.4
Electronics and IT Hardware	0.9	4.2	3.3
TOTAL	99.3	250.2	151.0

As is obvious, the above sectors would, amongst themselves, have a demand of about 150 million of the 250 million that is required in the manufacturing and services sectors. While observing the demographic patterns that are expected to emerge, about 860 million persons would be in the age

group of 15 to 59 by 2022 (as compared to about 725 million currently). In other words, about 12 million persons are expected to join the workforce every year.

Thus with about 12 million persons expected to join the workforce every year, and an existing skill development capacity of about 3.4 million—including technical/professional/vocational education, it is thus required to enhance the skilling and technical education capacity for about ***15 million*** (considering that even sections of the existing workforce would have to be trained). It is expected that this 15 million would be the required skill development capacity in vocational training in itself as a large portion of the employment (as well as workforce input) would occur in the lower portions of the skill pyramid.

3.7 The Qualitative aspect of Deficiencies

For quite some time now concern has been expressed about the mismatch between the job market's requirements on the one hand and the inputs provided by our education/training system in general on the other hand. This has become one of the major areas of concern and our Prime Minister has also emphasized it. The quality of technical education which is given in our country is not up to mark and it is not fulfilling the market requirement. This is an area where the Prime Minister has welcomed Chambers of Commerce and Industry (CII) to join hands with the Government and create a public-private partnership model for designing and implementing the scheme.

In vocational education and training there are too much structural deficiencies. The courses which are provided through ITIs/ITCs are very traditional and they are not according to the market demand. This is one of the reasons for the poor performance of the vocational education and training in India. It has also been observed that the quality of vocational education and training

which is being provided is very poor. There are not enough teachers available for the courses offered. The seating capacity is also very less. There are not any arrangements of new courses. There is not any proper placement cell.

It has also been observed that there is difference in fee structure in different states. The general feeling is that the fee charged from the trainees is much less than the cost of actual training. But that is not the case. Moreover whatever fee is charged from the candidates, it directly goes to the Consolidated Fund of the State and in the allocation of resources for vocational training, generally a very low priority is accorded by the State Government as a result of which almost 90% of resources go towards payment of salaries and only 10% are spent on other inputs required for the actual training. The result is that the quality of training is not up to the mark. The effort, therefore, should be made to increase the sources of revenue and try to plough them back for improving the quality of training and meeting the requirement of raw material for training purposes as well as up-gradation of tools, equipments, machinery and technology. Greater priority is accorded to create new institutions by the State Governments, as compared to the upkeep of the existing institutions which is not a good practice.

Training is a critical input for up-scaling the informal sector activities. This is highlighted in various workshops. There are issues that need serious attention. They include extending training to workers who are not necessarily educated or those who are scattered over wide geographic locales and without easy access to stipulated centres of training, to those who are not necessarily able to pay for it.

It is difficult to address the issue of training in the conventional training framework, given the broad band of activities in the informal economy. Most studies suggest that there is very little training available for informal sector

activities, and whatever is available, is not necessarily relevant or effective. Some characteristics of a successful approach to training have been identified. These include:

(1) the design of effective training programmes requires knowledge of labour markets;

(2) the whole training approach should be demand-driven and job-linked, so as to minimize skill mis-match;

(3) multi-skilling should be a part of the training process;

(4) effort should be made to ensure that training is skill oriented and cuts across occupational specificity;

(5) training, as a matter of principle, should be of relatively short duration, if possible, it should be field based and cost effective and there should be stakeholder participation in the design of training schemes; and

(6) training for the informal sector work should not be linked to degrees or diplomas.

It has been argued by a number of economists, that India should use its service sector more than its manufacturing sector to solve its unemployment problem. At the same time our education system and society follow the lowest common denominator in assigning young people to the service sector, a problem which may continue for a couple of decades. Our focus therefore should be on the manufacturing sector as well, as it is the basic engine of growth for the nation.

In order to enhance the training capacity, the State Governments should persuade the ITIs and ITCs to run 2-3 shifts, wherever it is feasible. In fact, the

Apprenticeship Training System also needs expansion as well as modification because in a country like India where there is a huge requirement of skilled workforce, there is a need to increase the number of participating enterprises in the services sector and in the unorganized sector as majority of the job opportunities are available in these sectors.

3.8 Efficiency and Organization of ITIs

The Industrial Training form the backbone of the vocational training structure in the states, yet the government institutes generally suffer from the sluggishness and inadequacies in management and financial support processes. A recent study by the ILO (International Labour Organization) shows that there are problems of internal as well as external inefficiencies with the ITI setup. The study also shows that there is a wide variation in the coverage, both in terms of area and the trades. Regarding the private institutes (ITCs) the study says that, generally the instructors are often not paid adequately, resulting in poor standard of training offered.

One trend that has been noticed is the long term regular training programmes is not a good trend. In case of women, their low enrolment and graduation is due to sociological reason and because of non availability of hostels, proper transport arrangements and security issues. Another trend which has been noticed is that majority of unorganized sector establishments are in urban areas and serve mainly urban needs, while the educated youth in the rural areas are without access to adequate training opportunities. The original purpose of setting up these institutions was to strengthen the urban industrialization process, not as skill development agencies for the rural poor.

There is a need for decentralized decision making at the district levels and for the coordination of training needs and ensuring commensurate response from these institutions. The most important aspect which needs more attention is that training facilities should be coupled by placement cells. It is necessary to give them inherent strength and flexibility to meet the changing demands of the market (Gupta, S.P., 2006).

It is necessary to develop a national portal which can keep the details of each and every trainee passing from any ITI/ITC with his name, address, educational qualification, technical qualification, telephone number, mobile number, etc. so that any industry wanting to recruit persons with certain skills may access this portal and select the best amongst them for his purpose. This database will have to be developed at the ITI level and then networked with the national portal so that the information is updated regularly. The Directorate General of Employment & Training has started the exercise but it needs to be done expeditiously so that it can serve the growing needs of the industry and the skilled youth. In order to attract a larger number of youth to the vocational training, it may be worthwhile to consider change the name of ITIs/ITCs to "Skill Development Institute/College" and carry out massive publicity campaign to change the mind set of parents and young persons and make them realize that going to a Skill Development College provides much better career prospects than going to a general education stream.

3.9 Eleventh Five Year Plan Strategies

The Eleventh Five Year Plan is mainly emphasizing on creating a pool of skilled personnel in appropriate numbers and skills in line with the requirements of ultimate users such as industry, trade and services sector. In this way it will lead to expansion of employment including shift of surplus labour from agriculture to non-agriculture sector. So it was proposed to launch a major "Skill Development

Mission" during the Eleventh Five Year Plan with an outlay of Rs. 22800 crore (Government of India, Planning Commission, 2008).

While imparting the training, it is pointed out, emphasis would be given to twenty high growth sectors identified by the Confederation of Indian Industries (CII) and Federation of Indian Chambers of Commerce (FICCI), which would create employment. Details of these growth sectors has been discussed in Chapter VIII on "Identification of Trades for Training". It is also proposed to increase the training facilities for the new entrants to labour force from the existing 2.5 million per year to 10 million per year in non-agriculture sectors.

3.9.1 Skill Development Mission (SDM)

I) Mission Goal

Government has launched a skill development mission in order to create a pool of skilled personnel in a period of 5 to 8 years to meet the increasing demand of the skilled workforce in domestic economy. The mission would also create a surplus of skilled persons to meet the requirement of other aging economies in the world.

The mission would ensure that our supply side responses are moving in the same way as our demand. These responses should move in the same way as demand not only in the present but in the future also. For this the mission will involve both public and private sectors in such a way that it is beneficial to both.

II) Mission Objectives and Functions:

Main objectives and functions of the mission are:

a) To identify skill deficits sector-wise as well as region-wise and then

meet their demand through planned action in a given time period.

b) To reposition and change the existing ITIs, polytechnics and vocational education in schools in a Public Private Partnership mode. Private institutions should be given functional as well as governance autonomy.

c) To establish a 'credible accreditation system' and a 'guidance framework ' for all accrediting Agencies, set up by various ministries and or by industry associations.

d) To establish a National skill inventory and another National database for skill deficiency mapping on a national web portal for exchange of information between employers and employment seekers.

e) To enlarge the 50000 Skill Development Centers (SDCs) programme eventually into a 'virtual skill development resource network' for web-based learning.

Apart from all these objectives and functions there should be an establishment of trainee placement and tracking system for effective evaluation and enable employment exchanges to function as career counseling centers.

III) Mission Strategies

Main strategies of the Mission are:

a) To encourage Ministries to expand, in 5 to 8 years, existing public sector skill development infrastructure and its utilization by a factor of five which will increase the vocational education training capacity from 3.1 million to 15 million so that it could meet the growth of the annual workforce which is of the order 12.8 million. This infrastructure should be shifted to private management in period of next 2 to 3 years. States should be guided to act as a facilitator to manage this transition.

b) To make a distinction between structural, interventional and last mile un-employability and correspondingly set up programmes for 24 months, 12 months and 6 months duration. Encourage 'Finishing Schools' to take care of last mile un-employability.

c) To encourage accreditations agencies in different areas to move away from regulation to performance measurement and rating and ranking of institutions.

d) To institute a National Qualification Framework which establishes equivalence and provides for horizontal mobility between vocational education, technical and academic streams.

e) To expand vocational education and training by moving from post matriculation classes to cover 9th class dropouts and then 7th class dropouts.

IV) Mission Structure and Compositions

Skill development efforts by the Central Ministries will be reviewed from time to time by the Prime Minister's Council on Skill Development. The council will be supported by National Skill Development Coordination Board (NSDCB) and National Skill Development Corporation/Trust. The NSDCB will coordinate the governments' initiatives for skill development by seventeen central ministries and state government.

Mission Structure

National Council of skill Development (NCSD)
(Under the chairmanship of Prime Minister)

National Skill Development Co-ordination Board (NSDCB)	National Skill Development Corporation/Trust (NSDC)
(Under the chairmanship of Deputy Chairman, Planning Commission, Government of India)	(Under the chairmanship of a person of eminence/ reputed professional in the field of skill development)

National Skill Development Corporation/Trust would be set up to encourage the private sector in this mission. In private sector, knowledgeable persons especially representing the twenty high growth sectors will be involved in the planning process.

3.9.2 Action plan for Government Initiatives

Over the years about 20 ministries have created an infrastructure for skill development. There are as of now about 2100 ITIs (under government), 5500 ITCs (under private sector) and 9600 secondary school (with vocational education stream). These institutions have support from the Ministry ofLabour and Employment and Ministry of Human Resource Development alonfg with their counterparts in the State Governments. Besides these, other ministries of the Union and State Governments also play a significant role. Some of the Union Ministries are: Ministry of Rural Development, Ministry of Micro, Small and Medium Enterprises, Ministry of Tourism & Culture, Ministry of Health & Family Planning, Tribal Affairs. They have their own schemes and establishments. Likewise, State Government departments are also involved in vocational training. All this needs to be restructured and repositioned in collaboration with private enterprises. New capacities are also to be created by the different ministries under Public-Private Partnership (PPP) mode.

I) ITI's by the Ministry of Labour and Employment

Complete up-gradation of 500 ITI's by investing Rs.2.0-3.5 crore in each into institutions of excellence and up-gradation of remaining ITI's in PPP mode by providing interest for loan up to Rs. 2.5 crore each. World Bank is playing a major in this up-gradation programme by supporting 400 ITI's. It is also proposed to set up 1000 new ITI's in underserved regions in PPP mode.

Beside this it is also proposed to set up 500 new ITIs in industrial clusters/special economic zone on a demand led basis, quadruple ITI capacity by encouraging them to run two or more shifts, start intensive training programmes for the faculty and reforming the MOUs between states and private agencies to transform the ITIs in PPP mode.

II) Vocational Education by the Ministry of HRD.

It is proposed to expand the vocational education currently undertaken in 9500 senior secondary schools with an intake capacity of 1.0 million to 20000 schools with an intake capacity of 2.5 million by encouraging public-private partnership in schools. It is proposed to move the vocational education progressively from 2-year stream, starting after class 10, to a stream that captures 9^{th} class drop outs. It is proposed for future that it should commence from class 7, capturing 7^{th} class drop outs. In these schools emphasis whould be given to soft skills which can help in getting employment viz. English language skills, quantitative skills, computer literacy, spread sheet, word processing, computer graphics, presentation skills, behavioral and interpersonal skills etc.

III) RUDSETIs (Rural Development Self Employment Training institute) by Ministry of Rural Development.

It is proposed to set up 600 RUDSETIs, one in each district. State government will provide land and Union Government will meet 75% of the capital cost and the remaining 25% will be provided by the banks.

IV) Setting up a virtual Skill Development Resource Network Linking 50000 Skill Development Centers (SDCs) under the Ministries of Information Technology, Small and Medium enterprises, Rural Development and Textile

These ministries have proposed to set up 50000 SDCs to train approximately 200 persons per centre per year. These SDCs will deliver training capsules of 8-12 week duration. Training material will be created by participating ministries, enterprises, industry associations with the help of NASSCOM. Mentor Groups for tutorial support in online interactive mode will be provided by industry associations. At the end of the programmes there will be Employment Melas for placement of unplaced trainees.

3.9.3 Private Sector

Ten high growth sectors of industries and ten high growth sectors of services have been identified. These sectors will have the potentiality to provide employment. The mission will involve the association of these 20 sectors to identify and quantify skill deficiencies in their respective sectors and will prepare the sectoral plan to meet their growing skill needs. Skill Development Corporation Trust will make periodic as well as annual report of its plans and activities and put them in public domain. It will also identify the areas where government support is required.

3.9.4 Ministries having Skill Development Programmes

According to Eleventh Plan document, line ministries/departments will be responsible for the implementation of the skill development programmes which would be modified ones in line with the policies and strategies by the apex committee suggested by Skill Development Mission.

3.9.5 State Governments

As per the Eleventh Five Year Plan document:

I) State Government were to transform Employment Exchanges so as to act as Career Counseling Centre.

II) State Council of Vocational Training were to be upgraded and strengthened.

III) The existing ITI's were to be modernized and the effectiveness of the ongoing programmes were also be enhanced by the respective states.

IV) Personnel Policy to ensure accountability and outcomes was to be framed by the states.

V) Plan was to be drawn for strengthening the existing infrastructure.

VI) Powers were to be delegated to local management of institutes

VII) Institute's management committees were to be revamped to give more autonomy in the management of institutes.

3.9.6 State Skill Development Mission

Further the Eleventh Plan has suggested that the state Governments may establish the state-level missions. The main aim of State Skill Development Mission would be to gear up skill development activities, in the mission mode.

Chapter IV

Resources of Bihar State

4.1 Introduction

Bihar is one of the major states of India, located in the eastern part of the Indo-Gangetic plain of the country. It has an incredible and glorious history as a major centre of the culture and politics in Indian subcontinent since ancient times. Through its history spread over a millennium from the 6th century BC to 5th century AD, Bihar had been a centre of major empires of Indian subcontinent.

The State of Bihar is situated between 83°19'50"E and 88°17'40"E longitude and 24°20'10"N and 27°31'15"N latitudes with an area of over 94 thousand sq. km. constituting 2.86 per cent of the geographical area of India. Of this, over 92 thousand sq. km. (about 98 per cent of total area of Bihar) is rural and only 1.8 thousand sq. km. (less than 2 per cent) is urban area in Bihar.

Bihar is a landlocked state that has borders with West Bengal in the east and Uttar Pradesh in the west, Nepal in the north and Jharkhand in the south. Bihar lies mid-way between the humid West Bengal and sub-humid Uttar Pradesh which provide it with a transitional position in respect of climate, and culture and economy as well. The Bihar plain is divided into two unequal halves by the river Ganges that flows through the middle of the State from west to east.

After bifurcation, Bihar is the third largest state by size of population after UP and Maharashtra. As per Census of India, 2001, its total population figure was about 83 million, which is about eight per cent of total population of India. From the administrative point of view, Bihar is divided into 9 divisions, 38 districts and 101 sub-divisions. It has 534 community development blocks,

8,471 gram panchayats and 45,103 revenue villages. There are nine urban agglomerations and 130 towns.

4.2 Agriculture and Animal Husbandry

4.2.1 Agriculture:

The Bihar economy is substantially agrarian in nature with agriculture and animal husbandry contributing to about 31–35 per cent of the NSDP of Bihar. Degree of dependence of Bihar on agriculture in terms of income as well as employment is much higher than at the national level. Yet, Bihar is the eighth largest producer of food grains in the country—showing its deficiency. The major agricultural products of Bihar are cereals, pulses and cash crops. The major cereals are rice, wheat and maize and major pulses are masoor, khesari, *gram and arhar* while the major cash crops are potato, sugarcane, jute, tobacco, and spices. (Table 4.1).

Table 4.1: Production of Selected Crops in Bihar (in thousand MT)

Crops	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Cereals						
Rice	5444	5204	5085	5448	2625	3710
Wheat	4438	4391	4040	3689	3280	2821
Barley	26	27	23	24	20	17
Maize	1497	1488	1250	1473	1490	1520
Pulses						
Gram	79	65	72	79	61	59
Masoor	170	138	157	160	131	118
Arhar (Tur)	59	48	43	48	49	45
Khesari	140	130	115	123	85	79
Peas	25	23	21	22	21	23
Commercial Crops						
Sugarcane	3988	5211	4521	4286	3769	4240
Tobacco	16	15	17	16	19	17
Potato	1400	1412	1477	1352	1111	1226
Chilies	4	4	5	2	2	3
Jute (in '000 bales)	1134	996	974	1147	1224	1329

Note: Total may not tally due to rounding of the figures. **Data Source:** Directorate of Statistics and Evaluation, Bihar.

Bihar is the third largest producer of vegetables in India after West Bengal and Uttar Pradesh. Bihar is the largest producer of okra (Govt. of Bihar, Department of Industries, "Bihar: A Land of Immense Opportunities for Food Processing Industry"), second largest producer of cabbage—about 10 per cent of national production in 2005 (Govt. of Bihar, Department of Industries, "Fact Sheet", 2006), third largest producer of potato (about 4 per cent), brinjal (about 14 per cent), onion (about 18 per cent), *bhindi* (about 28 per cent) and cauliflower (about 20 per cent), and significant producer of other vegetables within India.

Bihar is the fourth largest producer of fruits with different varieties (Govt. of Bihar, Department of Industries, "Bihar: A Land of Immense Opportunities for Food Processing Industry"). Bihar is the largest producer of litchi (about 88 per cent of total national production) (Govt. of Bihar, Department of Industries, "Fact Sheet", 2006), third largest producer of pineapple (about 9 per cent) and fourth largest producer of mango in India (about 15 per cent) (Govt. of Bihar, ILFS, "Food Processing in Bihar, The road Ahead").

The major fruit producing districts mostly overlap with the vegetables producing ones. Muzaffarpur and Vaishali lead in litchi and banana production. Darbhanga, Champaran (east & west) and Vaishali lead in mango production and Rohtas and Bhojpur lead in guava production. A variety of spices are produced in Bihar. Chilli accounts for about 48 per cent of the area under spices and 40 per cent of the total production, followed by turmeric which occupies about 26 per cent of the area under spices and accounts for 36 per cent of the production of spices in Bihar. Bihar is the only state commercially producing *Makhana* (gorgon nut).

The soil of Bihar is very fertile, which is revealed by the high share of net sown area in the total geographical area (about 60 per cent)—which with irrigation facilities get augmented by 33% (Govt. of Bihar, "Bihar at a Glance, 2008", Directorate of Statistics and Evaluation, Patna). Important though to note is that, in recent years, there is decline in net sown area and increase in cultivable waste. See Table 4.2.

Table 4.2: Classification of Land in Bihar

Details		Area (in 000s Hec.)		% to Geographical Area	
		2000 - 01	2005-06	2000 - 01	2005-06
Total Geographical Area according to village paper		9360	9360	100	100
Land not available for cultivation	Forest	616	622	6.6	6.6
	Barren and Uncultivable Land	437	436	4.7	4.7
	Land put to non-agricultural uses	1638	1647	17.5	17.6
	Total	2691	2705	28.8	28.9
Cultivable Waste Land	Permanent Pasture and other Grazing Land	18	17	0.2	0.2
	Cultivable Waste other than Fallow land	46	46	0.5	0.5
	Land under Misc. Tree crop & Groves not included in net sown area	231	240	2.5	2.6
	Current Fallow	576	666	6.2	7.1
	Other Fallow Land	135	129	1.4	1.4
	Total	1006	1098	10.8	11.8
Sown Area	Net Sown Area	5663	5556	60.5	59.4
	Area Sown more than once	2330	1840	24.9	19.7
	Total	7993	7396	85.4	79.1

Note: Total may not tally due to rounding of figures
Data Source: Directorate of Statistics and Evaluation, Bihar

However, there has not been any change in the share of net sown area in the recent years, and the cropping intensity for the agricultural economy now stands at only 1.3–1.4 which is not so impressing. Although Bihar is endowed with rich soil and adequate rainfall but significant portion of land is prone to both floods and droughts resulting in low agriculture productivity. Around 41 percent of cultivated area is flood prone and about 40 per cent is drought prone (NABARD 2006). This stagnation in agriculture in Bihar has been attributed to several factors including the state's colonial inheritance, ecological

environment, demographic pressure, technological improvement and most notably, the tenure system of agricultural land (Kishore, 2004).

The agricultural productivity of Bihar is one of the lowest in the country, leading to rural poverty, low nutrition and migration of labour. The land productivity level of Bihar, in terms of value of production, is at just over of Rs 7000 per hectare per year as against Rs 11600 thousand per hectare per year for the country, coupled with dominance of low valued crops and absence of crop diversification in Bihar. Average yields (measured in kg per hectare) of almost all major crops are showing decreasing trends, except few crops like Jute, *Arhar*, etc., during 2000-2005 (Govt. of Bihar, "Bihar at a Glance", 2008, 2005 and 2003, Directorate of Statistics and Evaluation, Bihar, Patna). See Table 4.3.

Table 4.3: Average Yield of Principal Crops in Bihar (in Kg Hectares)

Crops	2000-01	2001-02	2002-03	2004-05
Summer Rice	1701	1933	1642	1415
Wheat	2147	2065	1896	1622
Gram	1034	959	1010	832
Arhar (Tur)	1350	1155	1140	1394
Masoor	986	799	872	731
Khesari	915	826	801	720
Sugarcane	42635	45938	42141	36084
Chillies	1060	1170	673	729
Jute	1508	1258	1186	1564
Potato (Agahani)	9960	8680	9820	7659

Data Source: Directorate of Statistics and Evaluation, Bihar.

Per capita annual agricultural production of Bihar is only Rs 661 as against Rs 2,304 for India as a whole—almost one-forth. This may be the result of relatively low level of technology and input usage. According to the CMIE estimates (2006) fertilizer consumption of Bihar is only 96.79 kg per ha against 184.25 kg per ha in Punjab.

4.2.2. Animal Husbandry

Animal husbandry and its allied activities, such as poultry farming, fisheries and so on is the root of rural economy of Bihar along with agricultural sector. Income of about 90 per cent population of Bihar is directly or indirectly linked with agriculture farming, animal husbandry, poultry farming and fisheries activities. The multifaceted scope of animal husbandry activities depend upon animal protein availability for human consumption, sufficient and sustainable wealth generation for rural people, and creation of self employment opportunity for unemployed youth. Bihar state has sizeable share of goat (12 per cent) and cattle (8 per cent) population of the country (Govt. of Bihar, Industries Department, "A Presentation on Leather Industries in Bihar and Its potential"). In case of goats, Bihar state accounts for third rank in the country next only to West Bengal and Rajasthan. Bihar ranks fourth in term of meat production in India after Andhra, West Bengal and Uttar Pradesh. There is however no abattoir and no processing facility within the state. Most of the animals are slaughtered in municipal slaughter house and meat sold is fresh to cater to the local demand. It is envisaged that modern slaughter house with processing facilities having backward and forward linkage can contribute significantly to the growth of value added product within this sector. The buffalo meat production in India is growing at an Average Annual Growth Rate (AAGR) of 5 per cent and the outstripping of demand vis-à-vis supply of lamb and mutton present a huge opportunity for Bihar to tap its large livestock resources which will create job opportunity both for skilled and unskilled worker.

In 2006-07, the state's annual meat production was 178 thousand MT. Annually 0.7 to 1 million small and large animals are slaughtered in Bihar for the purpose of meat. The production of eggs amounted to 9455 million eggs in Bihar in 2006-2007 (Table 4.4). Poultry meat is the fastest growing animal

protein in India with an annual growth rate of 11 per cent during 1991–2003 and estimated to increase further. Bihar produces about 55 lakh tons of milk. The technology being used in milk processing capacity in Bihar is now decades old with no primary processing or cooling facility at the farm or village level. Bihar is the largest producer (about 50% of national production) of honey in India with total production of about 3900 MT in 2002 and about one lakh families directly engaged in honey production activities in Bihar (Govt. of Bihar , "Fact Sheet", Department of Industries, 2006). The productivity of honey production is almost thrice (about 60 kg per box) of national average.

Table 4.4: Production of animal husbandry in Bihar

	2000-01	2002-03	2005-06	2006-07
Production of Milk (in Lakh ton)	24.89	28.69	50.6	54.5
Production of Eggs (in million number)	718	737	10012	9455
Production of Meat (in thousand MT)	140	173	176	178
Production of Fish (in thousand MT)	-	-	279.53	267.04

Fish is one of the popularly consumed items in Bihar, particularly in Mithila region. The fishery sector provides employment to a large section of population. According to reports of NABARD, the fishery sector is the fastest growing sub-sector indicating a growth rate of over 10 per cent per annum (NABARD, 2006). The annual consumption of fish within Bihar is nearly 4.5 lakh tonnes, against the present annual production of around 2.50-3.0 lakh tons (Government of Bihar, Planning and Development Department, "Bihar Approach to 11th Five Year Plan: Vision for Accelerated Inclusive Growth", Patna, 2006). The under-utilization of aquaculture resources, unscientific management of water bodies and lack of entrepreneurship are some of the most obvious reasons for the gap between demand and supply. Farmers will need to be given proper technical training to increase the skill sets for fishery sector and incentives for composite fish culture.

4.3 Natural Resources

The geographical features of any region are, other things remaining the same, among the basic determinants of whether that region would be resource rich or not. And these natural resources are the main force for having a specific type of cultural and socio-economic base of the people living with the natural resources of that region through the continuous influence of the pattern of production as well as consumption behaviour. Water resources, land, forest products, minerals etc are the main natural resources which also enter into the production process as a factor of production, apart from capital and labour. The skill sets development of the local people is also associated with the nature of the natural resources. The natural resources decide about the kind of industries which should come up in that region from both production as well as consumption point of view. Therefore natural resources determine the level of derived demand for manpower (skilled as well as unskilled) in that region.

Bihar is very rich in terms of natural resources. Although, it has comparatively less proportion of forest and minerals as against national average availability, Bihar has a vast area of fertile land, huge volume of water resources and hard working manpower. To assess the demand for skill sets in Bihar, it is necessary to give a look on the natural resources of Bihar.

4.3.1. Forest

Forest products are one of the major resources for the production as well as direct consumption. Bihar lies in the tropical to sub-tropical region. Rainfall here is the most significant factor in determining the nature of vegetation. Out of total geographical area of Bihar, only 6.6 per cent is under the forest cover. See Table 3.2. The sub Himalayan foothill constitutes the belt of moist deciduous forests. These consist of scrub, grass and reeds. Since the annual rainfall in this region is more than 1600 mm, it favours the luxuriant Sal forest

in this area. Due to the hot and dry summer, the deciduous forests also abound there, which consist of Sal, *Shisham*, *Cendrela Toona*, *Khair*, and *Semal,* etc. This type of forest can be seen in the eastern part of Bihar mainly in Saharsa and Purnia districts.

4.3.2. Soil

The Bihar plain consists of a thick alluvial layer of drift origin overlying in most part of the state. The soil is mainly young loam rejuvenated every year by constant deposition of silt, clay, and sand brought by different streams. This soil is deficient in phosphoric acid, nitrogen, and humus, but potash and lime are usually present in sufficient quantity. There are three major types of soil in Bihar: Piedmont Swamp Soil -- found in north western part of west Champaran district; Terai Soil – found in northern part of the state along the border of Nepal; and the Gangetic Alluvium – the plain of Bihar is covered by Gangetic alluvium (both new as well as old). Almost all the economic activities are directly or indirectly dependent on soil. Thus soil is the backbone of agricultural and industrial development.

4.3.3. Water

Bihar is abundantly endowed with water resources, both ground and surface water. Besides high rainfall, it has considerable water supply from the rivers, which flow through the entire territory of Bihar. The Ganges is the main river, and it has so many tributaries originating in the Himalayas. Among these rivers, *Saryu* (*Ghaghra*), *Gandak*, *Budhi Gandak*, *Bagmati, Kamla-Balan, Kosi and Mahananda* are major ones. Some of the other rivers which flow through Bihar are *Sone, Kosi, Uttari Koyal, Punpun, Panchane and Karmnasha*. All the above rivers have their impact on the economy of Bihar. These rivers make the water available for irrigation purpose, provide a medium for water transport and provide fishes for fishery industry. See Table 4.5.

Table 4.5: Irrigation Potential in Bihar

Surface Water	6.33 Million Hectares
Ground Water	4.85 Million Hectares
Total	11.19 Million Hectares

Data Source: Bihar at Making: A Presentation to Investment Commission, Ministry of Industries and Government of Bihar.

Though Bihar is getting benefited from her abundant water resources, yet, Bihar is suffering from the devastation by flood in rainy seasons in almost every year. Out of 38 districts of Bihar, 29 districts are flood prone covering about 75 per cent of total geographical area of Bihar (Dr. M S Ahluwalia, Dy. Chairman, Planning Commission; and Govt. of Bihar "Water Resources: A Presentation by Water Resources Department"). The flood in Bihar destroys the agricultural products, cattle, infrastructure, and so on, and shake the Bihar's economy frequently.

4.3.4. Minerals

Manufacturing needs two types of raw materials viz. agriculture/forest and minerals. In undivided Bihar, there were so many mines which is the main mine belt in India. After bifurcation of Bihar in 2000, this minerals rich region is now a part of Jharkhand. However, there are some kinds of mineral which can also be found till now in Bihar. The important minerals which are found in Bihar are limestone, mica (crude), quartz, quartzite, steatite, etc. The total production of lime stone was about 250 thousand Tons, that of quartzite was about 13 thousand Tons in 2004-05 in Bihar (Indian Bureau of Mines). See Table 4.6. There fore, there is a scope to develop some industry through exploring these minerals available in Bihar and it may create some skill based job opportunities (alongwith unskilled job also) in the State.

Table 4.6: Production of Selected Minerals in Bihar

	Value of Output (in Rs. Lakh)		Total Production (in Thousand Tonnes)	
	2000 - 01	2004-05	2000 - 01	2004-05
Limestone	1330.04	639	533.0	244.3
Mica (Crude)	4.24	0.24	0.05	0.003
Quartzite	20.84	44	9.0	13
Steatite	0.48	1.27	0.9	0.8

Data Source: Indian Bureau of Mines, Nagpur; Statistical Pocket Book, India, 2003; Directorate of Statistics & Evaluation Bihar, Patna.

4.4 Population

Population of an economy can be viewed both as a burden as well as a dividend of that economy depending upon the way in which the economy manages its total population. Over population may create a burden for the economy if it crosses the limit of carrying capacity of the environment of that region (Chaubey, P.K., 2003). On the other hand, high population keeps a continuous flow of work force to the production process of the economy. However, the unskilled manpower is just merely labour. Proper utilization of workforce in high productive and complex production processes, by improving the skill sets of its working population is the basic requirement of an economy. Bihar exhibits almost all kind of features of an under-developed economy.

After bifurcation, Bihar is the third largest populous state in India after UP and Maharashtra. According to Census of India, 2001, its total population figure was about 83 million (which is about 8.3 per cent of total population of India). The decadal growth rate of population for the decade 1991-2001 was 28.43 per cent (as against 21.34 percent in India), which was the highest in the country among the major states. Bihar occupies only 2.86 per cent of geographical land of India, however more than 8 per cent of population of India lived in Bihar in 2001. According to 2011 Census, the population of Bihar has grown to 10.3 crore. Thus, the growth over the decade of 2000's was still over 25.0 percent as against of India's 17.5 percent. Of this population only 10.5 per

cent is residing in urban areas of Bihar – which is very low as compared to all India figures of about 28 per cent, in 2001 (Census of India, 2001) It is a clear indication of the low level of urbanization in Bihar. See Table 4.7.

Since 1971 Census, sex ratio has always remained unfavourable to females and the general trend, over the decades, is that of decreasing sex ratio. There has been an increase of 14 points in the sex ratio of Bihar at 2001 Census from that of 1991 Census (907) but has slid down marginally to 919. However, the sex ratio of Bihar (921/919) is worse than that of all India (933/940) but than that of UP.

Table 4.7: Features of Population of Bihar and India

2001		**Bihar**	**India**
Population	**Total (in '000)**	82999	1028610
	Male (in '000)	43244 (52.10%)	532157 (51.74%)
	Female (in '000)	39755 (47.90%)	496454 (48.26%)
Rural-Urban population distribution	**Rural (in '000)**	74317 (89.54%)	742491 (72.18%)
	Urban (in '000)	8682 (10.46%)	286120 (27.82%)
Population Density	**Total**	881	325
	Urban	4809	3660
	Rural	803	238
Sex Ratio		921	933
2011		Bihar	India
Population	**Total (in '000)**	103904	1210193
	Male (in '000)	53045 (52.11%)	623810 (51.54%)
	Female (in '000)	49759(47.89%)	586383 (48.46%)
Rural-Urban population distribution	**Rural (in '000)**		
	Urban (in '000)		
Population Density	**Total**	1102	382
	Urban		
	Rural		
Sex Ratio		919	940

Data Source: Census of India, 2001. Census of India, 2011.

Bihar is most densely populated states among the 28 states of India, followed by West Bengal. Till 2001, West Bengal was most dense with population density of 904 persons per sq km. Bihar now has a population density of 1102 compared to its level of 881 persons per sq km in 2001.

Demographic figures can be seen as dividend if it is managed and utilized properly. According to the Census of India, 2001, about 41 per cent of total population of Bihar is in the age group of below 15 years (Census of India, 2001). See Table 4.8. A large proportion of this population, at present, has entered into the working population.

As per the projected population by Registrar General and Census Commissioner of India, population growth rate is likely to decrease from 1.61 per cent per annum during 2001-06 to 0.80 during 2021-26. The boom generation in population of now will become the workforce of tomorrow in the state. Dependency Ratio of Bihar is expected to go down further in future.

Young dependency ratio is the population of Young (0 to 14 years) per 1000 population in the 15-29 age-groups. Similarly, old dependency ratio is the population of old (60 and above years) per 1000 population in 15-59 years. Total dependency ratio in the state was 90.7 per cent in the year 2001. This is expected to have reduced to 81.0 per cent in 2006 and 69.8 per cent in 201. In coming years it is likely to become 61.3 per cent in 2016, 58.0 per cent in 2021 and 55.9 per cent in 2026. At the same time median age of the state was 19.1 years in 2001 and it is expected to increase to 29.0 years by 2026. See Table 4.8.

Table 4.8: Projected Population by Broad Age-groups and Dependency Ratio in Bihar

	2001	2006	2011	2016	2021	2026
Population by Broad Age-groups (in 000s)						
0-14 (Young)	34349	34861	33191	30944	29816	28347
15-59 (Working Age)	43515	50151	57536	64438	69250	73007
60+ (Old)	4534	5740	6993	8525	10365	12493
Total	82998	90495	97490	103704	109249	113699
CAGR (Over previous year)		1.81	1.5	1.24	1.05	0.8
Median Age (Years)	19.11	20.14	22.11	24.11	26.58	29.05
Dependency Ratio						
Young (0-14)*	803	695	577	480	431	388
Old (0-60)	104	114	122	132	150	171
Total (Young & old)	907	810	698	613	580	559

Note: Young Dependency Ratio is the Population of Young per 1000 population in the 15-59 years. Similarly, old age dependency ratio is the population of old per 1000 population in the 15-59 years.
Data Source: RG&CCI, State-wise population projection 2001-2026.

Age-group wise and sex-wise distribution of population of Bihar is shown for the years 2001, 2006, 2011, 2016, 2021 and 2026 (Chart IV.1 to IV.6). These charts are also showing that larger share of population of young in the year 2001 will be shifted to a larger share of working age population in the year 2026. It will be instructive compare Bihar pyramids with those of India given in the previous Chapter. It would be discovered that Bihar is more advantageous position in terms of age-structure. However, this population needs massive improvement of facilities of skill sets development in Bihar to provide quality employment to all.

Chart: IV.1: Age Pyramid of Bihar in 2001

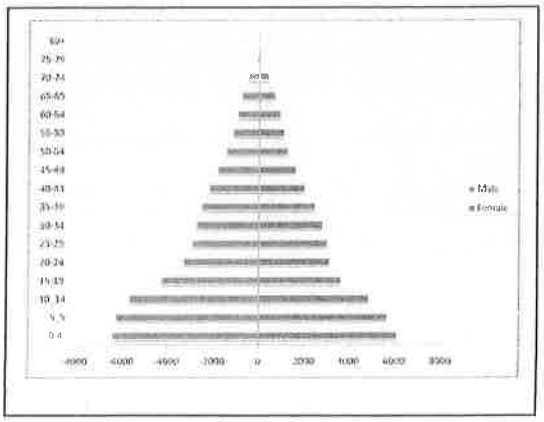


Chart: IV.2: Age Pyramid of Bihar in 2006

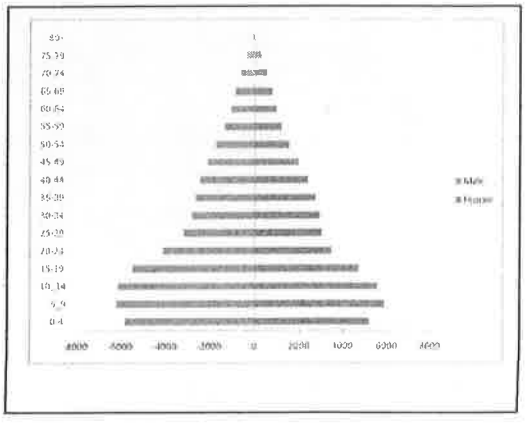


Chart: IV.3: Age Pyramid of Bihar in 2011

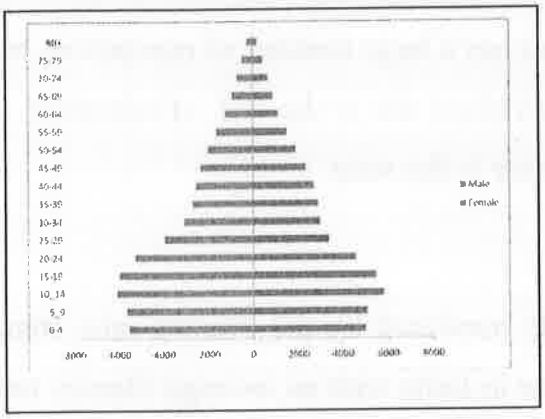


Chart: IV.4: Age Pyramid of Bihar in 20016

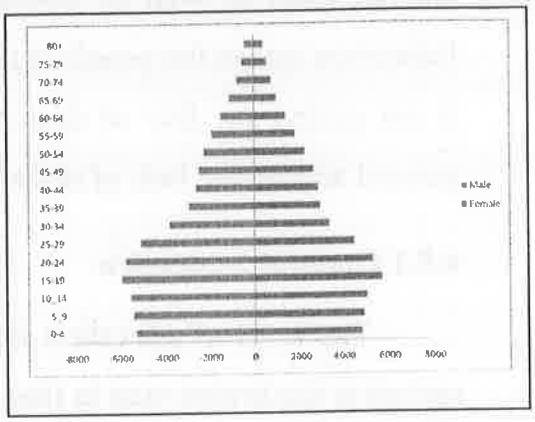


Chart: IV.5: Age Pyramid of Bihar in 2021

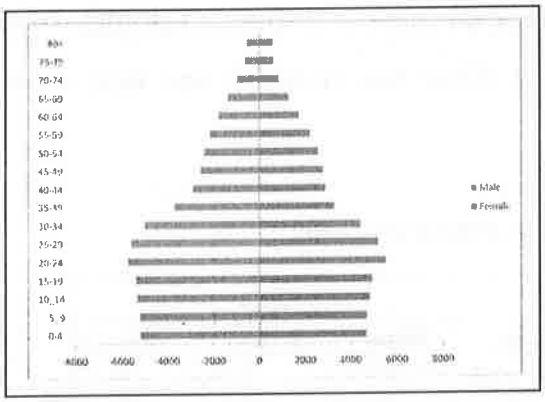
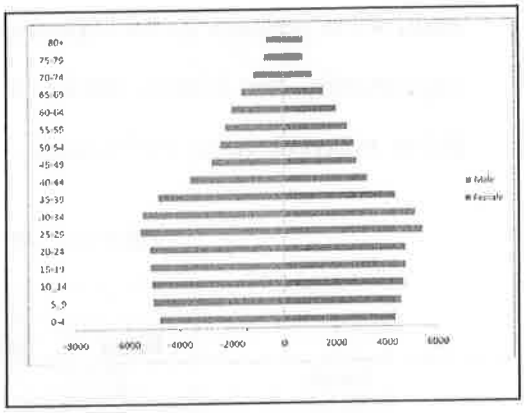


Chart: IV.6: Age Pyramid of Bihar in 2026



4.5 Education

Education provides the knowledge base for the production process and hence provides the employment opportunity to the people for their livelihood. Only education gives the power to invent, control, maintain and even change the

technological as well as institutional relationship of the production process. Education makes the people skilled. Bihar has a large number of manpower, but is not getting any fruit of demographic dividend due to the lack of education in general and severe lack of skilled manpower in the state.

4.5.1 General Education

The level of education is primarily measured by the literacy rate. Bihar ranked at the lowest step in literacy ladder in India with an average literacy rate of 47 per cent (of this, male 60 per cent and females only 33 per cent) as compared to national average of 65 per cent (Table 4.9). It is said that even educated women can build a nation. Two-third of the female population of Bihar cannot even make a signature (Ability to sign is the criteria of being a literate person, in census of India). However, the scene has drastically changed in 2011. There has been a great leap forward in literacy by 17 percent point from 47.0 percent to 64.0 percent, compared to India's 10 percent points. More importantly the hiatus between India and Bihar has reduced and that within Bihar between men and women.

Table 4.9: The literacy rate of Bihar and India

	2001			2011		
	Bihar	**India**	**Gap**	**Bihar**	**India**	**Gap**
Total	47.0	64.8	17.8	63.8	74.0	10.2
Male	59.7	75.3	15.6	73.4	82.1	8.7
Female	33.1	53.7	20.6	52.7	65.5	12.8
Gender Gap	26.6	21.6		20.7	16.6	

Data Source: Census of India, 2001 and 2011

In case of other educational indicators also Bihar scores low, as compared to the national average. The Gross Enrolment Ratio (GER) which is a basic indicator of education showing the intensity of school goers was 74 percent, which is less than the national average (97 percent) for the year 2006-07 in the case of children in the age group of 6-14 years (Selected Educational Statistics, 2006-07). These low ratios of gross enrolment in school leave the children

uneducated as well as unskilled and hence agricultural or less skilled economic activities are the only way of means for livelihood. The gender gap in GER was also wide in Bihar in 2006-07. See Table 4.10.

Table 4.10: Gross Enrolment Ratio (GER) in Bihar

Classes	2004-2005			2006-2007		
	Boys	Girls	Total	Boys	Girls	Total
Classes I-V (6-11 Years)	95.4	71.18	83.75	106.34	82.32	94.67
Classes VI-VIII (11-14 Years)	39.66	24.29	32.43	45.8	31.54	39
Classes I-VIII (6-14 Years)	74.95	54.43	65.16	83.74	63.8	74.12
Classes IX-X (14-16 Years)	29.11	14.84	22.47	30.6	17.44	24.42
Classes XI-XII (16-18 Years)	13.63	5.35	9.82	13.13	8.94	11.19
Classes IX-XII (14-18 Years)	21.64	10.31	32.23	22.01	13.32	17.96
Classes I-XII (6-18 Years)	58.81	41.61	50.68	64.12	48.47	56.65
Higher Education (18-24 Years)	8.44	3.19	6.02	-	-	-

Data Source: Selected Educational Statistics, 2004-05, and 2006-07.

The high dropout rate has been a major challenge to the whole country. In Bihar, the dropout rate is too high. The dropout rate in primary as well secondary education in Bihar has increased during the time period of 2004-05 to 2006-07 (Selected Educational Statistics, 2004-05 and 2006-07), in spite of a continuous campaign of Sarva Siksa Abhiyan (SSA) during the last few years. See Table 4.11. Although, the dropout rate for boys of Classes I-V has dropped during the time period 2004-05 to 2006-07, but that for girls of same classes has increased during the same time period. In fact, for all the classes of secondary education, except the primary classes, the dropout rate for boys has increased, though slightly, during the above mentioned period. This is same for girls also for all classes, except a slight decline in classes of VI-VIII during the same time period. In Bihar, dropouts have been high largely due to socio-economic reasons and also the infrastructure of school education, absence of adequate number of schools and teachers. The dropout students enter into the labour market without any formal skill development and increase the rate of

unemployment in absence of proper absorption capacity of the under developed economy like Bihar.

Table 4.11: Dropout Rate in Bihar

Classes	2004-2005			2005-2006			2006-2007		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Classes I-V	53.37	48.62	51.59	47.37	45.25	46.55	49.65	54.1	51.63
Classes I-VIII	73.57	76.44	74.69	72.3	75.0	73.37	76.03	76.23	76.11
Classes I-X	81.46	85.64	83.06	81.4	85.64	83.07	83.95	86.99	85.14

4.5.2. Skill Sets Development:

Knowledge and skills are the driving forces of economic development of any region. These two are becoming more crucial in globalised and technologically ever changing world. India is moving gradually towards becoming a 'knowledge economy', to be a part of India, Bihar state should be a part of that knowledge based economy (Government of India -2008, "Eleventh Five Year Plan: 2007-2012, Volume I, Inclusive Growth", Planning Commission).

4.5.3. State Departments Providing Vocational Training:

There are so many training institutes/centres, though not adequate yet, under different departments in Bihar for imparting the vocational training programmes to make supply of skilled personnel to the industrial sectors. Among all these departments, Department of Labour Resources is dominant.

Department of Labor Resource

Among the institutes/centres of different departments, government Industrial Training Institutes (ITIs) and private Industrial Training Centres (ITCs) under administrative control of the Department of Labor Resources, Government of Bihar, play a very important role in development of skill-sets in Bihar. The purpose of these institutes is to generate skilled manpower to fulfill the demand of industries. The skills imparted by ITIs/ITCs are to keep pace

with the technological demands of industries and the expanding universe of knowledge. There were 45 Govt. ITIs and 207 Private Industrial Training Centres (ITCs) in the state in the year 2010. See Table 4.12.

Table 4.12: Industrial Training Institutes (ITIs) and Industrial Training Centres (ITCs) in Bihar

ITIs/ITCs	Number of ITIs/ITCs						
	2000	2004	2006	2007	2008	2009	2010
ITIs	28	28	28	29	34	45	45
ITCs	13	na	28	na	59	na	207
Total	41	na	56	na	93	na	252
	Seating Capacity						
ITIs	10256	10496	10496	n.a	11154	n.a	12143*
ITCs	2172	4344	4472	n.a	8070	n.a	18859*
Total	12968	14840	14968	n.a	19224	n.a	31002*

Note: na stands for not available. * Refers to intake.

Data Source: Department of Labour, Government of Bihar; Manpower Profile, IAMR (2003, 2007, 2009)

Actual intake in different trades of ITIs during the year 2009 was 12,143 out of which 5,769 took admissions in one year courses and the remaining students 6,374 took admissions in two year courses. Similarly in ITCs actual intake in different trades during that year was 18,859 out of which 2,625 took admissions in one year courses and the remaining 16,234 students took admissions in two year courses. See Table 4.13. There is some discrepancy in data due to differences in data sources. However, the tendency of increase in number of institutions and increase in seating capacity and intake is not in doubt. Details of the courses along with their duration are given in chapter VIII on "Identification of Skill-sets in Bihar".

Table 4.13: Growth of Actual Intake in ITIs/ITCs of Bihar by duration of course

Year	Duration of Courses		Total
	1 Years	2 Years	
	AI	AI	
A. ITI			
2004	868	1366	2234
2005	1393	2506	3899
2006	1316	2609	3925
2007	2875	5145	8020
2008	3102	4605	7707
2009	5769	6374	12143
B. ITC			
2009	2625	16234	18859

Data Source: Department of Labour, Government of Bihar.

Other Departments/Institutes

Beside the Department of Labor Resources there are at least ten other departments/institutes in the state which impart vocational education and training in different trades as per their requirement in their field. Sanctioned intake (SI) and actual intake (AI) of last two years for all the departments except two departments (i.e. education and health) is given in Table 4.14. Actual intake in these departments during the year 2009 was about 20 thousands. In Education Department about 7000 students have taken admission in schools for vocational courses. This information is furnished by the State department though various documents of the Government of India show an invariant figure of 37500 from 2000 onwards.

4.6 Employment Scenario

Employment is the main source of livelihood for most of the people. It is critical to the way women and men live and view their lives. A well-nurtured and productive labour force contributes towards a dynamic economy and equitable society. Lack of access to employment lowers self-esteem and leads to denial of basic needs of the individual and the family, and can lead to social instability.

Table 4.14: Sanctioned Intake(SI) and Actual Intake (AI) of Vocational courses in institutes run by Other Departments for the years 2008 and 2009

Sl. No.	Name of department/institute	2008		2009	
		SI	AI	SI	AI
1	Upendra Marathi Ship Anushadhan Sansthan, Dept. of Industries, Govt. of Bihar	104	66	104	59
2	Micro, Small and Medium Enterprise (MSME) Development Institute, Govt. of India	-	51	-	67
3	Sericulture Section, Department of Industries, Govt. of Bihar	140	86	140	111
4	Directorate of Handloom, Dept. of Industries, Govt. of Bihar	204	184	204	165
5	Dr. Rajendra Prasad Multi-disciplinary Training Centre, KVIC.	na	592	na	1177
6	State Board of Technical Education, Department of Science and Technology, Govt. of Bihar	3335	2303	4405	3589
7	Khadi and Village Industries Board, Govt. of Bihar.		570		
8	Bihar Urban Development Authority , Urban Development and Housing Dept., Govt. of Bihar	na	na	15000	15000
Total					**20168**

Notes: 1. na stands for not available.
2. Data for Dr. Rajendra Prasad Multi-disciplinary Training Centre, KVIC, and State Board of Technical Education, Department of Science and Technology, Govt. of Bihar pertains to the years 2007 and 2008.
3. It does not include the vocational education provided in schools by the education department.

As per the Employment and Unemployment surveys conducted by NSSO, total employment of Bihar (bifurcated) by Usual Status (including subsidiary workers) was 243.3 lakhs in the year 1993-94 which increased to 277.2 lakhs in the year 2004-05, showing a Compound Annual Growth Rate (CAGR) of 1.19 per cent. Share of primary sector has decreased from 80.5 per cent to 75.4 percent during this period. Shares of Secondary and Tertiary sectors in total employment have increased from 5.4 per cent to 8.7 per cent and 14.1 per cent to 16.0 per cent respectively during this period. See Table 4.15.

Industry wise growth of employment during 1993-94 to 2004-05 shows that it was highest in construction industry (10.5 per cent per annum) followed by Transport, Storage & Communication (6.5 per cent per annum), Banking & Insurance, Real Estate and Ownership of Dwellings (6.0 per cent per annum), Manufacturing (4.5 per cent per annum) and Trade, Hotel & Restaurants (4.2 per cent per annum).

Growth of employment in Agriculture & Animal Husbandry, Forestry & Logging and Fisheries industry was very low at the rate 0.6 per cent per annum as the sector has a surplus of work force and even this increase may be due to non-employment of these workers elsewhere.

Two industries namely Electricity, Gas & Water Supply and Public Administration and Other Services showed negative growth of employment during 1993-94 to 2004-05 which reflects privatization of generation and distribution of power in one case and downsizing policy of the Government in the other. See Table 4.15. They are refelective of structural changes, which are considering for future.

According to the Census of India, 2001, about 66 per cent of total population of Bihar is of non-workers. Out of total work-force of Bihar, main workers and the marginal workers are in 75 per cent and 25 per cent ratio. Out of these main workers, about 32 per cent are cultivators, 43 per cent are agricultural labours, 4 per cent are in household industry and 21 per cent are in other services. In case of marginal workers about 20 per cent are cultivations, 64 per cent are the agricultural workers, 5 per cent are in household industry and the remaining 11 per cent are in other services. So, there is a large population in Bihar whose occupation is agriculture (including main and

marginal workers). The household industry provides very little employment, compared to the other sectors.

Table 4.15 Industry-wise Employment Growth during 1993-94 to 2004-05

INDUSTRY	EMPLOYMENT				Growth rate
	1993-94		2004-05		1994 to 2005
	(in 000s)	%	(in 000s)	%	
Agriculture & Animal Husbandry, Forestry & Logging, Fisheries	19565.80	80.41	20852.14	75.23	0.58
Mining & Quarrying	21.21	0.09	29.33	0.11	2.99
Manufacturing	966.21	3.97	1575.65	5.68	4.55
Construction	269.68	1.11	812.60	2.93	10.55
Electricity, Gas & Water Supply	79.03	0.32	19.15	0.07	-12.09
Trade, Hotel & Restaurants	1542.90	6.34	2421.36	8.74	4.18
Transport, Storage & Communication	336.46	1.38	669.82	2.42	6.46
Banking & Insurance and Real Estate, Ownership of Dwellings	83.69	0.34	159.42	0.58	6.03
Public Administration and Other Services	1466.78	6.03	1177.52	4.25	-1.98
TOTAL	24331.75	100	27717	100	1.19
Primary Sector (0 and 1)	19587.01	80.50	20881.47	75.34	0.58
Secondary (2&3, 4 and 5)	1314.93	5.40	2407.40	8.69	5.65
Tertiary (6,7, 8 and 9)	3429.82	14.10	4428.13	15.98	2.35

In order to link skills development with the actual productive use, it is suggested that the steps would be taken in the 11th five year plan of the state by providing adequate incentives in terms of skill and entrepreneurship development, credit facilities of self-employment, and would encourage the forward and backward linkages to finance, marketing and human resource management.

4.7 Health

There is a proverb, Health is Wealth. Living with good health is one of the basic needs of human being. Good health improves the standard of living and vice versa. Although the population provides the labour force to the country, the healthy population provides the efficient and more productive work

force. To increase the skill sets for the economy of the Bihar, a healthy population is a pre-requisite.

4.7.1. Health Status

The health status in Bihar is not satisfactory. The maternal mortality rate (MMR) is 371 per one lakh live births in Bihar, which is 4th highest among states in India. Full immunization has very low coverage in Bihar, with only 33 per cent (National Family and Health Survey (NFHS)-III, 2005-06). Institutional deliveries are undertaken only for 23 per cent of total deliveries, which is almost half of national average of 41 per cent. More than 50 per cent of the girls are getting married below the age of 18 years whereas national average is 28 per cent. Infant mortality rate (IMR) in Bihar is a bit higher at 58 per 1000 live births compared to national average of 55 in 2007. See Table 4.16.

The life expectancy at birth during the year 2001-2005 in Bihar was 61.4 years which is much closer to the national average of 63.2 years. Bihar is the only state where the life expectancy for female is less than that of male. Although the death rate of Bihar is more or less similar to that of all India average, but it is exhibiting higher birth rate than that of national average (Govt. of Bihar, "Bihar at a Glance, 2007 and 2008, Directorate of Statistics and Evaluation", Patna). See Table 4.16. Birth rates being 25 percent higher in Bihar does not bid well for Bihar.

Table 4.16: Birth rate, Death rate and Infant Mortality Rate (IMR) in Bihar and India in 2007

	Birth Rate		Death Rate		Infant Mortality Rate	
	Bihar	India	Bihar	India	Bihar	India
Combined	29.4	23.1	7.5	7.4	58	55
Rural	30.2	24.7	7.6	4.0	59	61
Urban	22.9	18.6	6.2	6.0	44	37

Data Source: Directorate of Statistics and Evaluation, Bihar, Patna.

4.7.2. Health Service Delivery

The national criterion of one health sub-centre is for 5000 people but Bihar has one sub-centre for 10,000 people. Moreover, Bihar has one Primary Health Centre (PHC) for one lakh population whereas there should be one for every 30,000 population (Government of Bihar, Planning and Development Department, "Bihar Approach to 11th Five Year Plan: Vision for Accelerated Inclusive Growth, Patna, 2006). There is a shortage of 7718 health sub-centres (required 16576 health sub-centre), 135 block-level PHCs (total required 533). The percentage of PHCs adequately equipped with equipments stands at only 6 per cent which is much lower than the national average of 41 per cent. Out of 38 districts hospitals only 24 hospitals are currently functioning. Keeping this reality in mind, the State has to work hard to build up the health infrastructure to meet the national norms.

According to an estimate of 11th Plan, there is a shortage of more than 5500 female health workers and almost 9700 male health workers in Bihar. Moreover, there is a shortfall of about 20 thousands Auxiliary Nurse Midwife (ANM). The national norm is one ANM per 2500 population. As technically skilled people are in short supply in Bihar, an effort of skill sets development has to be made in health sector. The state has to boost up its capacity further to provide health services at the grass-root level by appointing approximately 75 thousands Accredited Social Health Activists (ASHA) under National Rural Health Mission (NRHM) (Government of Bihar, Planning and Development Department, "Bihar Approach to 11th Five Year Plan: Vision for Accelerated Inclusive Growth, Patna, 2006). Comprehensive Training Policy has to be drawn to administer all the capacity building initiatives in Health sector. An attempt has to be made during the 11th five year plan and thereafter to train more personnel to increase the skill sets for health sector and to operate more

vocational institutes (for Nurses and other Paramedics including Laboratory Technicians) using Public Private-Partnership (PPP) mechanism.

4.8 Economy of Bihar

Bihar remains one of the least developed states of India, with a per capita annual income of Rs. 7,928 in 2007-08 which is less than one third of India's average of Rs. 24,256 at constant price of 1999-2000. This divide has become wider during 1993-94 to 2007-08, the so called period of liberalization. While the state's per capita income was around 40 per cent of national figure in 1993-94, it got reduced to only 32.68 per cent in 2007-08. Bihar ranks at the bottom of the 18 major States in India in terms of socio-economic development.

Gross State Domestic Product (GSDP) of Bihar state (bifurcated) was Rs. 50174 crores in the year 1999-2000 at 1999-2000 prices. It increased to Rs 65909 crores in the year 2004-05 at the CAGR 5.6 per cent per annum. Growth rate of GSDP was highest in Tertiary sector (6.25 per cent) followed by Primary sector (5.10 per cent) and Secondary sector (4.33 per cent) (Table 4.17).

Industry wise growth of GSDP shows that, it was highest in Construction sector (13.7 per cent), followed by Trade, Hotel & Restaurants (13.0 per cent), Banking & Insurance and Real Estate, Ownership of Dwellings (5.3 per cent) and Agriculture & allied activities (5.2 per cent).

Growth rate of GSDP was very low in Transport, storage and communication (3.4 per cent) and Public administration and other services (2.3 per cent) and it was negative in Mining & Quarrying during this period. See Table 4.17.

Table 4.17: Sector-wise, Industry-wise GSDP (Rs. Lakhs) at 1999-2000 prices for the years 1999-2000, 2004-05 and 2009-10 and their growth rates-Bihar state

Sector/Industry	1999-00	2004-05	2009-10	CAGR	
				2000-05	2005-10
Agriculture & Allied Activities	1680995	2163229	2270765	5.17	0.98
Mining & quarrying	9444	4649	6160	-13.22	5.79
PRIMARY	**1690439**	**2167878**	**2276925**	**5.10**	**0.99**
Manufacturing	361406	352707	480562	-0.49	6.38
Construction	190330	352612	1602006	13.12	35.35
Electricity, gas and water supply	71853	65452	87360	-1.85	5.94
SECONDARY	**623589**	**770771**	**2169928**	**4.33**	**23.00**
Trade, hotels and restaurants	754097	1388261	2987340	12.98	16.56
Transport, storage & communication	372397	439113	945165	3.35	16.57
Banking, insurance, & real estate	391539	506288	862146	5.27	11.23
Public admin. and other services	1185314	1327238	1700486	2.29	5.08
TERTIARY	**2703347**	**3660900**	**6495137**	**6.25**	**12.15**
Total	**5017376**	**6599548**	**10941989**	**5.63**	**10.64**

However, in recent times, Bihar is experiencing a very high growth rate – more than 11 per cent which is second highest among the states in the country just behind Gujarat. GSDP of the state has increased from Rs 65995 crores in the year 2004-05 to Rs 109420 crores in the year 2009-10, registering a CAGR of 10.6 per cent during this period. Secondary and Tertiary sectors have shown a very high growth of 23.0 per cent and 12.2 per cent respectively during this period.

It is really a happy situation that secondary sector is taking lead in Bihar in growth. It is true that the share of secondary sector was very low in both 1999-2000 and 2004-05 and stagnant during this period at 12 percent. With more than double the rate of overall growth rate, the share has improved to almost 20 percent in 2009-10. Loss of share of agriculture was made by secondary sector. If this trend of growth of secondary sector continues there

would be stupendous demand by the industry and in turn by people for such skills as required by this sector. There has to be assured an adequate supply of such technical manpower. However, we shall see below, it is not manufacturing per se nor supply of electricity, gas and water, but construction that boom in last four years and hopefully in infrastructure led by government though much of construction work is carried out through private contractors and casual construction worker.

Industry-wise growth of GSDP shows that except Agriculture & allied activities, all other industries at one digit level of NIC have shown a growth of more than five per cent. It was highest in construction sector (35.0 per cent) reflecting improvement in infrastructure like road etc. followed by Trade, Hotels and Restaurants (16.6 per cent), Banking, Insurance and Real Estate (11.2 per cent), Manufacturing (6.4 per cent), Electricity, Gas and Water supply (5.9 per cent) Mining & Quarrying (5.8 per cent), and Public Administration & other services (5.1 per cent). At the same time it was very low in Agriculture & allied activities (1.0 per cent).

Some structural change over the years has also been experienced in Bihar due to differential growth across sectors. Bihar is a predominantly agrarian economy with a small manufacturing hold. While the share of agriculture has hardly declined in early years of the new centaury from 33 per cent in 1999-00 to 32 per cent in 2004-2005 despite good growth of the sector but it has drastically come down to about 21 per cent in 2009-10, partly because of stagnation in absolute production. See Table 4.18. The share of manufacturing sector has also decreased from 7 per cent in 1999-00 to 5 per cent in 2004-05 and further to about 4 per cent in 2009-10. However, the contribution of the secondary and tertiary sectors has improved in recent times. Secondary sector has increased from nearly 12 per cent of GSDP in 1999-00 to 20 per cent in 2009-10. See Table 4.18. It is mainly because of the increase in the share of

Construction sector in Secondary sector. Tertiary sector has increased from 54 per cent to 59 per cent of GSDP during this period, surpassing its share in the country as a whole.

Table 4.18: Percentage distribution of GSDP by Industry at constant (1999-2000) prices

Sector/Industry	1999-00	2004-05	2009-10
Agri & Allied	33.50	32.78	20.75
Mining & quarrying	0.19	0.07	0.06
PRIMARY	**33.69**	**32.85**	**20.81**
Manufacturing	7.20	5.34	4.39
Construction	3.79	5.34	14.64
Elect., gas and water	1.43	0.99	0.80
SECONDARY	**12.43**	**11.68**	**19.83**
Trade, hotels and rest.	15.03	21.04	27.30
Trans., storage & com.	7.42	6.65	8.64
Banking, insu., & real est.	7.80	7.67	7.88
Public adm. and other services	23.62	20.11	15.54
TERTIARY	**53.88**	**55.47**	**59.36**
Total	**100**	**100**	**100**

One of the goals of Millennium Development Goals (MDG) is of halving the percentage of population living below poverty line (BPL) by the year 2015. Accompanied with a target of reducing the percentage of rural BPL families from 44 percent in 2000 to 22 percent in 2015 (Old estimates). This implies that about 50 lakh rural families (i.e., about 16.7 lakh families during the Eleventh Plan, 2007-12, or 3.3 lakh rural families per year during this period) have to be raised above the poverty line from BPL by the year 2015 in Bihar. The growth rate of agriculture is still too low in Bihar to pull the BPL families above the poverty line. Thus, an effort is necessary for having faster growth of non-farm sector coupled with the strategies to rapidly increase agricultural productivity. The farm and non-farm sectors in rural areas are basically labour intensive in nature which might require a huge number with skill sets in Bihar.

Inclusive growth or development strategy also suggests that people of all sections and regions get an opportunity to participate in the growth process, which implies engendering the policy design that includes the people who get excluded in normal course as also to make a variety of provisions and services accessible to all sections including those who got excluded so far (Chaubey, P.K., 2009). There are sections and regions which have gone relatively speaking backward. While practically all sections and all regions might have advanced in absolute terms, growth experience has been widely different across sections/ regions. Per capita income of say Bihar, may be double in its own absolute terms, has steadily declined from $1/3^{rd}$ to $1/5^{th}$ of that of richest state in the course of last eleven years between 1993-94 and 2004-05. Likewise the share of poor persons within the states of Bihar has increased much beyond the increase in their population share. The rural-urban divide is as well on increase in India: with more than 50 per cent of GDP and a little more than 25 per cent population in urban areas enjoying per capita income 2.8 times of their rural counterpart.

Although the state is almost at the lowest step of the economic development, a process of rapid growth based on Bihar's incredible potential has been set in motion during the last few years in the State of Bihar.

4.9 Industry in Bihar

Industrial development of any under-developed economy is necessary when its agricultural sector becomes stagnant. The population pressure on agricultural land is very high in Bihar and in addition to that the productivity in agriculture sector is very low compared to all India average. The industrial development with agricultural reform can break the ice of the stagnant economy like Bihar through the backward and forward linkages.

Importance of inclusive growth in industrial sector of Bihar has been highlighted by interpreting the data of latest Economic Census conducted in the year 2005. This census has covered all establishments of all economic activities

except agriculture proper viz. crop production and plantation. If we now compare the position of Bihar with respect to India in terms of both number of establishments and number of workers, we find that there were in India in 2004-05 around 4.2 core establishments—all tiny, small, medium, large and super large, with around 10 crore workers - self employed or wage employed but on a regular basis. See Table 4.19.

Table 4.19: Number of Establishment and Workers in Non-farm Activities in Bihar and India in 2005

AGR	Establishments				Workers			
	OAE	NDE	DE	ALL	OAE	NDE	DE	ALL
Bihar	25154	9454	365	34973	38149	21461	3411	63021
India	5132219	879554	68210	6079983	7838895	1988568	1086138	10913601
NAGR								
Bihar	795636	366783	27260	1189679	992514	823640	390381	2206535
India	21807829	12065677	1873500	35747006	27893191	28162861	33934468	89990520
ALL								
Bihar	820790	376237	27625	1224652	1030663	845101	393792	2269556
India	26940048	12945231	1941710	41826989	35732086	30151429	35020606	100904121

Note: OAE - Own Account Establishment, **NDE** - Non-Directory Establishment, **DE** - Directory Establishment, **AGR** - Agriculture, **NAGR** - Non-agriculture.

Data Source: Economic Census 2005 (All India report).

As per the Economic Census, for the country as a whole, 85 per cent establishments and 90 per cent workers are engaged in non-agricultural non-farm activities. Of which the share of Bihar in terms of number of establishments is only 3 per cent and in terms of workers is 2 per cent. These small facts indicate that, compared to its share in population or labour force, the level of non-farm activity is indeed very low—only one-fourth the level that it ought to be. They also indicate that size of establishments in general, on an average is also smaller.

When we look at Tables 4.19, 4.20 and 4.21, we find that non-farm agriculture activity (other than crop production and plantation) in Bihar is very much dismal. That is an indication that agriculture itself is not progressing well

and therefore agricultural services (other than modern practices) are not needed at a high scale. Larger enterprises are still scarcer. As the size of establishment goes on rising, the share of Bihar in the category goes on becoming slimmer. For example, in non-agricultural enterprises while their share in number is 3.3 per cent, it is own account enterprises which has 3.7 per cent share while directory enterprises are only 1.5 per cent share in their respective categories in the country. See Table 4.20.

Table 4.20: Share of Establishment and Workers in non-farm activities in Bihar in 2005

	Establishments				Workers			
	OAE	NDE	DE	ALL	OAE	NDE	DE	ALL
AGR	0.49	1.07	0.54	0.58	0.49	1.08	0.31	0.58
NAGR	3.65	3.04	1.46	3.33	3.56	2.92	1.15	2.45
ALL	3.05	2.91	1.42	2.93	2.88	2.80	1.12	2.25

Data Source: Table 3.19

Comparing the number of workers per establishments for India and Bihar, we find that it is the self-employment activity, known as own account establishment, in non-farm agriculture where the average number of workers is the same as in India (1.5 persons per establishment). See Table 4.21.

Table 4.21: Number of Workers per Establishment in Bihar in 2005

AGR	OAE	NDE	DE	ALL
Bihar	1.52	2.27	9.35	1.80
India	1.53	2.26	15.92	1.8
NAGR				
Bihar	1.25	2.25	14.32	1.85
India	1.28	2.33	18.11	2.51
ALL				
Bihar	1.26	2.25	14.25	1.85
India	1.33	2.33	18.04	2.41

Data Source: Table 3.19

Bihar with only 0.5 per cent of total directory establishments in agricultural sector has an average size of 9.3 workers as against all-India average of 16. See Tables 4.20 and 4.21. As this may have significant wage

employment component, there is little likelihood of un-employment. But establishments are fewer than the size of Bihar should normally have. Average size of non-agricultural directory establishment in the state is 14.3 (as compared to 18.1 for all India). It is not significantly low in the state but their share is hardly 1.5 per cent.

One could well conclude that Bihar is not well included in the industrial development of the country also. Self-employment agriculture (non-farm) business is less developed by number and seems to be the last resort activity. Wage-employment establishments are less than proportionate though average employment is not very low.

4.9.1 Food Processing Industry

Bihar is an agriculture based economy and a large percentage of the people of Bihar are employed in the agriculture sector. While the agricultural sector became just stagnant, the agro-based industries can pull up the agricultural sector through its backward linkages. There is a huge scope of food processing sector for grains like, rice, maize, pulses and oilseeds; fruits like litchi, mango, banana, *makhana*, *amla;* and vegetables like tomato, potato and chilly in Bihar. So, there is a scope of up lifting the agro-based industries. And it can be done by the improvement of skill sets, encouragement of entrepreneurship and sufficient credit facilities.

4.9.2 Handloom Industry

Handloom industry in Bihar is one of the major employment generating sectors, basically in rural area. Even as the sector has shown a gradual decline over the years, it remains a significant component of the textile industry, providing employment to over 50 thousand people in Bihar though accounted for merely 2 per cent of handloom units of the country (ILFS: "*Diagnostic Survey and Business Plan for handloom Sector in Bihar*," Submitted to

Department of Industries, Govt. of Bihar, submitted by Infrastructure Leasing and Financial Services Limited). More importantly, the sector remains a source of livelihood for the most marginalized population of Bihar. Despite various training institutions of Bihar, state government has opened for the weavers, viz. Weavers Training Centres at Chakand, Kako, Obra, Jhingnagar, Puraini, Amarpur, Central Design Centre at Rajendra Nagar, Polyster & Silk Vastra Training Cum Production Centre at Bhagalpur, etc., most of weavers have not been able to take advantage of them. To help them take advantage, the training institutes should be properly managed, well equipped. Hiring 'quality trainers' and development of infrastructure is needed, so that they can produce skill sets for the handloom industry. However, it is said that progress is slow because of severe lack of resources with state government organizations, both in terms of physical and financial resources.

4.9.3 Leather Industry in Bihar

The leather and allied industries play a significant role in terms of providing employment to the large number of artisans in India and also earning foreign exchange through exports. However, the leather industry of Bihar has failed to grab the opportunity to make a gain from it, although Bihar is known for very good quality of cow hides, buffalo calf skins and goat skins – the basic raw material for the leather industry. Though Bihar has considerable share of goat and cattle population of the country the tanning industry of Bihar is functioning with a few working tanneries in Muzaffarpur and another BATA tannery at Mokhamaghat, therefore most of the raw material is drained to the tanneries hubs in Kolkata, Kanpur and Chennai (Govt. of Bihar, Industries Department, "A Presentation on Leather Industries in Bihar and Its potential"). There is a sufficient local demand for footwear and other leather goods within Bihar. At present, a large quantity of footwear is being brought into Bihar from places like Kanpur, Kolkata and Agra. The leather tanning industry in Bihar

consists of three important segments (a) units established under Bihar Leather Development Corporation (BLDC) and its sister concern viz. Bihar Finished Leather Ltd. (b) a few private tanneries working at Muzaffarpur and (c) BATA tannery at Mokhamaghat (Govt. of Bihar, Industries Department, "Leather and Allied Industries in Bihar – An Overview and Prospects"). There are other artisanal units (including about 1000 household or cottage footwear units) located in all urban and semi-urban centers, namely Muzaffarpur, Bettiah, Danapur, Patna etc, employing about 50 thousand footwear artisans in Bihar. Now these days, all these tanneries and footwear artisanal units are suffering from the lack of necessary financial support for working capital needs and skill up-gradation. Although, Bihar has large number of footwear workers, but most of them have migrated to centers like Kolkata, Mumbai etc due to the lack of job opportunity in the leather industry in Bihar. However, there is enough scope to develop leather and leather based industries in Bihar. Only the raw material can't show the magic, Bihar needs an improvement of technical skill of the leather workers. Only the skill sets development along with sufficient investment can make Bihar's leather industry profitable.

4.10 Infrastructural Development

Sound Infrastructure is viewed as the basement of overall development of an economy. Improved infrastructure creates a favorable environment for the investment in industrial sector. To create gainful employment and to increase the skill sets, it is necessary to create Bihar as another destination of investment in India through the proper infrastructural facilities.

4.10.1. Transportation

Road connectivity which is one of the basic infrastructural requirements for development is in miserable shape in Bihar. It is poorly developed and is in need of major revamp. Bihar has 3734 km of national highways, about 4

thousand km of state highways and about 8200 km of major district roads in 2009 (Govt. of Bihar, Road Construction Department, "Road Infrastructure: An Evolving Transformation"). As per 2001–02 data, road density per 1000 sq km is 80.7 km in Bihar, which is higher than average road density for the country as whole (74.7 km) but lagging behind the states like Kerala (388.2 km), Orissa (169 km). However, a World Bank estimate shows that roads do not still connect 70 per cent of inhabited areas. Railways have a good network in Bihar and as per 2004–05 statistics, railway line density per 1,000 sq km was 35.88 km as against 19.3 km for India as a whole. Only two states West Bengal & Punjab do better than Bihar. (The states of West Bengal (43.43 km) and Punjab (41.66 km) had higher railway line density than Bihar.)

4.10.2. Power Generation

The rapid acceleration of power generation capacity should be an earnest priority for the state government and a crucial pre-requisite to achieve its socio-economic growth targets during the Eleventh Plan (2007-12). Power generation and availability rates both are the lowest in Bihar compared to all India average. The average per capita consumption of electricity in Bihar was only around 76 kwh in 2005 (Government of Bihar, Planning and Development Department, "Bihar Approach to 11th Five Year Plan: Vision for Accelerated Inclusive Growth", Patna, 2006) which was only 1/8th of all India's annual per capita electricity consumption level of 612 kwh. One of the aims of the National Electricity Policy is to increase the average annual per capita consumption to 1000 units by 2012. Both the electricity generation and the electricity purchased have decreased substantially during the period of 2000 to 2005 (Table 4.22) (Govt. of Bihar, Bihar State Electricity Board, Patna). The electricity system in Bihar covers only around 53 per cent of total villages and just over 10 per cent of the households. However, it is expected that the coverage should have increased as Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) under

Central government grants amounting to 90 to 100 per cent, had targeted to electrify all villages by 2009. There has to be concerted effort to check the loss of electricity.

Table 4.22: Production and Distribution of Electricity in Bihar

	2000 - 2001	2002-03	2004-05
Energy generated (Million kWh)	2212.11	543.52	153.49
Energy Purchased (Million kWh)	8692.02	5972.85	6555.20
Energy Sold (Million kWh)	7620.91	3640	4071.97
Energy used as auxiliaries in power station and sub-station (Million kWh)	307.45	82.95	30.79
Energy lost and uncounted for (Million kWh)	2975.77	2975.77	2793.42
Loss percentage against the energy generated and purchased	28.08	40.85	37.88

Data Source: Bihar State Electricity Board, Patna.

4.10.3. Financial Sector in Bihar

Bihar has one of the least developed financial sectors in India, due to both demand and supply side factors. The weak capital market is the major hindrance for development of Bihar. There is considerably low household bank account usage – 21 per cent as compared to 73 per cent nationally. In rural areas of Bihar only 19 per cent households have their bank accounts. The average population covered by a single bank branch in Bihar is about 21 thousand which is higher than the all India average of 16 thousand per branch. However, banks in Bihar also have higher depositor numbers per branch and very low credit to deposit ratios despite reasonably high savings rates, thereby reflecting the banks' perceptions of high risk and general lack of quality lending opportunity. Lower credit-deposit ratio than country's average, also implies that savings in Bihar are flowing out as that is low level economic activity. See Table 4.23.

Table: 4.23: Households availing banking services in Bihar in 2001

Total	Rural	Urban
21.30%	18.60%	47.20%

Data Source: Table H-13 India: Census of India, 2001.

Chapter V

Status of Vocational Education and Training in Bihar

5.1 Introduction

An all-India quinquennial survey of employment and unemployment in India was carried out during the period from July, 2004 to June, 2005 as a part of the 61st round of the National Sample Survey (NSS). In this survey, in addition to employment and unemployment details, information on some general particulars of the household members such as age, sex, level of general and technical education attained, current attendance in educational institutions, etc. along with vocational training received was also collected in the survey. Based on the data collected on educational particulars of the individual members of the household members, NSSO has published a report on "Status of Education and Vocational Training in India: 2004-05". This report has discussed mainly the status of education and vocational training at all-India level. However some sections of the report have discussed state-wise situation also.

Present chapter is based on the data collected by NSSO in the above survey as a part of 61st round. Some of the Data Tables were generated from the unit level data collected in this survey—particularly with regard to the status of vocational education and training in Bihar. However wherever felt necessary, comparison of the situation in Bihar has been made with that of all-India and other states.

Besides the Introduction Section, this chapter has four more sections. Second section has discussed about the distribution of population by monthly per capita expenditure class. Third section has discussed about the literacy and educational level in the population. Fourth section has discussed the current attendance in educational institutions and also by level of education, age-groups,

type of institution, and reasons for currently not attending the educational institutions. Last section is on 'Vocational Education and Training' (VET). It has discussed the status of vocational education and training received/being received, age-specific rates for vocational education and training received, formal vocational education and training and broad activity status, field of vocational education and training, and institution of formal vocational education and training.

5.2 Population by Monthly per Capita Consumer Expenditure (MPCE)

As it is difficult to collect reliable income data, the NSSO collects data on consumption expenditure in its surveys. Population of the state has been distributed by MPCE which is expected to serve as a reasonable proxy for income. The class limits of MPCE classes are determined, separately for the rural and urban sectors of all-India, in such a manner that each of the first two and last two classes contained about 5 percent of the population and each of the remaining classes contained about 10 percent for the country as a whole. Naturally, states will differ widely. The distribution of population by MPCE class for Bihar state as well as for all-India is given in Table 5.1.

Table 5.1: Per 1000 Distribution of Population by MPCE (Rs.) Class during 2004-05

MPCE class (Rs.)	Rural				MPCE class	Urban			
	Bihar	Cum. Freq.	India	Cum. Freq.		Bihar	Cum. Freq.	India	Cum. Freq.
1	2	3	4	5	6	7	8	9	10
less than 235	53	53	34	34	less than 335	127	127	44	44
235-270	53	106	38	72	335-395	100	227	45	89
270-320	132	238	88	160	395-485	157	384	95	184
320-365	156	394	105	265	485-580	185	569	114	298
365-410	129	523	106	371	580-675	108	677	111	409
410-455	107	630	100	471	675-790	80	757	100	509
455-510	121	751	108	579	790-930	48	805	101	610
510-580	105	856	113	692	930-1100	49	854	91	701
580-690	84	940	115	807	1100-1380	47	901	97	798
690-890	45	985	101	908	1380-1880	68	969	97	895
890-1155	11	996	52	960	1880-2540	18	987	56	951
1155 and above	4	1000	40	1000	2540 & above	13	1000	49	1000
Total	1000		1000			1000		1000	
Mean (Rs.)	429		531			689		991	
Median (Rs.)	402		470			545		780	

Data Source: NSSO Report No. 515 (61/10/1), Statements 3.5 and 3.5.2

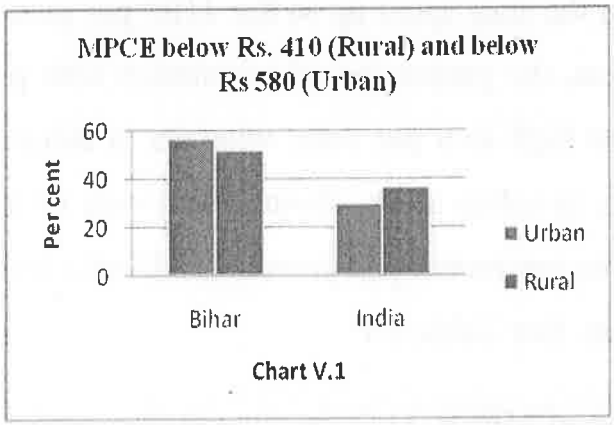


Chart V.1

The 'level of living' is very poor in Bihar state. In urban areas of the state, about 57 per cent of the population spent less than Rs. 580/- per month per person. This MPCE of Rs 580/- is very close to the poverty line (Rs 526/-) for urban areas in the state of Bihar (Government of India, Planning Commission, 2009). Thus people below poverty line easily come to about 50 per cent, almost double the level for the country as a whole.

In rural areas of the state 52 per cent of the population could spend only up to Rs. 410/- per month per person. This MPCE of Rs 410/- is also very close to the poverty line (Rs 433/-) for rural areas in the state (Government of India, Planning Commission, 2009). Thus people below poverty line are well above 55 per cent. The proportion of population with per capita spending Rs. 890/- or more was as low as 1.5 per cent in rural areas. Compared to this, in urban areas, about 19 per cent of the population was spending Rs. 930/- or more per month per person.

If we compare the situation of Bihar with all-India, the average spending in the state was much less than that of all-India. In urban India, about 30 per cent of the population, compare to 57 per cent in the state, spent less than Rs. 580/- per month per person. On the other hand, in rural areas, 37 per cent of the population at all-India level, compared to 52 per cent in the state spent up to Rs. 410/- per month per person. At all-India level in rural areas, the proportion of population with per capita spending Rs. 890/- or more was as high as 9 per cent, whereas in Bihar it was hardly 1.5 percent. Compared to this, in urban areas, about 39 per cent of the population was spending Rs. 930/- or more per month per person at all India level as compared to only 19 per cent in the state. See Table 5.1.

If we consider the mean and median of MPCE, both the averages are quite a bit lower for Bihar as compared to all India for rural as well as urban areas. In rural areas of Bihar, mean and median of MPCE were Rs 429 and Rs 402 respectively as compared to Rs 531 and Rs 470 for all India. Similarly, in urban areas of Bihar, mean and median of MPCE were Rs 689 and 545 respectively as compared to Rs 991 and 780 for all India. For rural areas, Bihar averages are about 80-85 percent whereas for urban areas they are about 70 percent. In fact, inter-rural disparity between Bihar and India is not very high—because consumption cannot go down below a certain level.

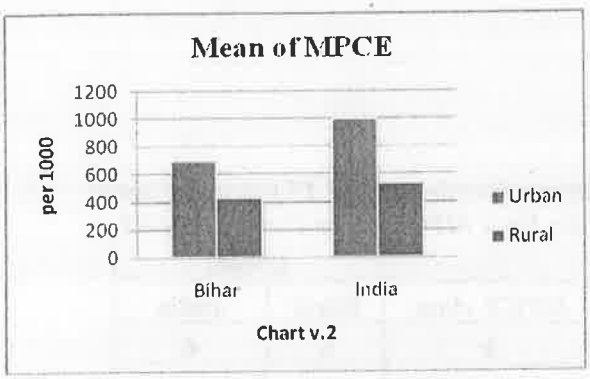


Chart v.2

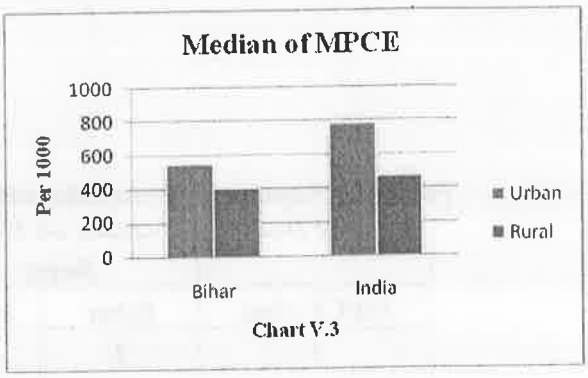


Chart V.3

5.3 Literacy and Educational Level in the Population

5.3.1 Literacy among Household Members and MPCE

The proportion of households with no literate members among the adults is given in Table 5.2 for each monthly per capita consumer expenditure (MPCE) class for Bihar state and all-India. As expected, the proportion of households with no literates among the adult members is observed to be higher in the lower MPCE classes and gradually decreases with increase in MPCE. For instance, in Bihar state 63 per cent of the households belonging to the bottom MPCE class (i.e. MPCE below Rs. 235), in rural areas, did not have any literate among their adult members. This proportion for the top MPCE class (i.e., MPCE more than or equal to Rs. 1155) was only 13 per cent. Similarly 49 per cent of the households belonging to the bottom MPCE class (i.e. MPCE below Rs. 335), in urban areas of the state, did not have any literate among their adult members. This proportion for the top MPCE class (MPCE more than or equal to Rs. 2540) in the state was almost nil.

Table 5.2: Number of Households with no Literate Member of Age 15 years and above Per 1000 Households among all Members for Each MPCE Class during 2004-05

	Rural			Urban	
MPCE class	**Bihar**	**India**	**MPCE class**	**Bihar**	**India**
1	**2**	**3**	**4**	**5**	**6**
less than 235	630	444	**less than 335**	485	270
235-270	623	436	**335-395**	342	219
270-320	544	382	**395-485**	228	198
320-365	448	352	**485-580**	124	145
365-410	384	306	**580-675**	193	120
410-455	382	292	**675-790**	58	83
455-510	325	271	**790-930**	90	71
510-580	316	243	**930-1100**	8	53
580-690	195	209	**1100-1380**	20	46
690-890	246	186	**1380-1880**	4	23
890-1155	100	141	**1880-2540**	0	9
1155 and above	128	88	**2540 & above**	0	2
Mean	**394**	**308**	**Mean**	**132**	**110**

Data Source: NSSO Report No. 517(61/10/3), Statement 3.5.1

If we compare percentages of Bihar with India level, we find they are higher for Bihar in the bottom MPCE for rural areas (Bihar: 63; India: 44) as well as for urban areas (Bihar: 49; India: 27). In case of top MPCE class percentages for all-India were higher than that for Bihar in urban areas (Bihar: 0; India: 2) but lower in case of rural areas (Bihar: 13; India: 9). In case we calculate the means, it is clear that percentages of households with no literate members clearly higher in Bihar than in the country as a whole.

5.3.2 Literacy and Educational Level

In the survey, the general educational level of the household members was determined considering the highest level of education (general, technical and vocational education & training) successfully completed. The level of general education is categorized in seven

groups: not literate, literate & up to primary, middle, secondary, higher secondary, diploma/certificate, graduate and above. The general educational level was recorded as 'diploma/certificate' for those who completed diploma or certificate course that was below graduation level. Diploma/certificate courses of graduation level or above, were classified under the respective class of general education (graduate and above). Table 5.3 presents the distribution of the persons of age 15 years and above by level of general education separately for each sex and sector for the Bihar state and all-India. Literates with general educational level secondary and above including diploma/certificate course have been considered to be educated.

Table 5.3: Per 1000 Distribution of Persons of 15 years and above by General Educational Level for Bihar State

Location/Sex	State	General Educational Level							
		Not Literate	Literate & Upto Primary	Middle	Secondary	Higher Secondary	Diploma/ Certificate	Graduate & above	All (incl. n.r.)
1	2	3	4	5	6	7	8	9	10
Rural Male	Bihar	386	239	156	121	55	3	39	1000
	India	320	277	191	107	55	10	38	1000
Rural Female	Bihar	706	163	70	46	10	0	3	1000
	India	585	199	113	57	27	5	13	1000
Rural Person	Bihar	545	201	113	84	33	2	21	1000
	India	452	238	152	82	41	7	25	1000
Urban Male	Bihar	156	158	168	165	138	8	207	1000
	India	121	202	194	169	116	35	162	1000
Urban Female	Bihar	380	191	141	165	73	0	48	1000
	India	279	197	168	135	90	16	115	1000
Urban Person	Bihar	238	173	156	165	108	4	135	1000
	India	196	200	182	153	104	26	140	1000
Total Male	Bihar	361	231	158	125	64	4	57	1000
	India	264	256	192	125	72	17	73	1000
Total Female	Bihar	676	165	77	58	16	0	7	1000
	India	504	199	128	78	44	8	44	1000
Total Persons	Bihar	516	198	118	92	40	2	33	1000
	India	382	228	160	102	58	12	57	1000

Data Source: NSSO Report No. 517, Statement 3.8.1

It is seen from Table 5.3 that in Bihar state general educational level of household members was very low. Among all the persons on the state only about 17 per cent of persons were educated upto secondary and above including diploma/certificate course, and about three per cent were graduate and above. Among different categories of persons of 15 years and above, that is, rural male, rural female, urban male and urban female, the proportion of educated to total persons was higher in urban areas (UM: 52 per cent; UF: 29 per cent) as compared to rural areas (RM: 22 per cent; RF: 6 per cent). This percentage was higher for males (RM: 22 per cent; UM: 52 per cent) as compared to females (RF: 6 per cent; UF: 29 per cent). Interestingly, this percentage of rural males (22 per cent) was even less than those of urban females (29 per cent). Similar pattern was observed for the proportion of persons with level of education at graduate and above to the total persons of age 15 years and above.

If we compare the percentage of person who were not literate, it was much higher for Bihar (52 per cent) as compared to all India (38 per cent). At all other levels of education (viz. literate & upto primary, middle, secondary, higher secondary, diploma/certificate, and graduate and above) percentage of persons with different educational levels to total persons in the state was much lower in comparison to that at all India level.

If we compare general educational level of Bihar state with other 15 major states of India its rank is very poor. In case of "not literate" and "Diploma/Certificate below graduate level" its rank was 15. This means in all other states percentage of "not literate" to total persons was

lower in comparison to Bihar (because not-literate is not a good indicator) but percentage of persons with "Diploma/Certificate below graduate level" was higher in comparison to Bihar (because diploma/certificate below graduate level is a better indicator). In case of "higher secondary" and "graduate and above" its rank was 14. In other words for these two levels of education percentage of persons was lower in the state in comparison to 13 other states. It was higher in comparison to only one state. Similarly in case of "literate & up to primary", "middle" and "secondary" its rank was 13, 12 and 8 respectively.

5.4 Current Attendance in Educational Institutions

5.4.1 Current Attendance and level of Education

The current attendance status refers to whether a person was attending any educational institution on the date of survey and the information was collected for each individual of age-group 5-29 years from the respondent household. It may differ from the formal attendance status ascertained from or reported by educational institutions. Persons were classified as attending or not attending; if not attending, it was ascertained whether one ever attended or never attended. Those who were attending were again classified according to the level of education: below-primary, primary, middle and secondary & above.

Table 5.4 presents the distribution of persons of age 5-29 years by level of current attendance separately of each sex and sector for Bihar state and all-India. It is found that in Bihar state about 45 per cent

of the people in the age-group 5-29 years were currently attending any educational institution. The said proportion was much higher for males at 51 per cent than from females at 37 per cent. Similar patterns, as in the case for literates, exist over rural-urban and male-female categories. The current attendance rate is found to be highest among urban males (62 per cent) and lowest among the rural females (35 per cent). On the other hand, among persons who were not currently attending, about 2/3rd never attended any educational institution. This proportion is found to be the lowest among the urban males (40 per cent) and the highest among rural females (73 per cent).

Table 5.4: Per 1000 Distribution of Age 5-29 years by Level of Current Attendance

Location/ Sex	State/ India	Level of Current Attendance								
		Currently Not Attending			Currently Attending					All (incl. n.r.)
		Never Attended	Ever Attended	All	Below Primary	Primary	Middle	Secondary and Above	All	
1	2	3	4	5	6	7	8	9	10	11
Rural Male	Bihar	295	193	488	14	312	86	90	502	1000
	India	151	312	462	16	271	121	124	532	1000
Rural Female	Bihar	458	171	630	10	245	63	35	353	1000
	India	260	295	556	15	242	98	81	436	1000
Rural Person	Bihar	372	183	554	12	281	75	65	433	1000
	India	204	304	507	15	257	110	103	485	1000
Urban Male	Bihar	150	227	377	23	229	108	254	615	1000
	India	77	380	456	22	196	112	210	541	1000
Urban Female	Bihar	226	197	423	22	269	99	180	570	1000
	India	115	363	477	22	195	114	187	519	1000
Urban Person	Bihar	185	213	398	23	247	104	220	594	1000
	India	94	372	466	22	196	113	199	530	1000
Total Male	Bihar	281	196	477	15	304	89	107	514	1000
	India	132	329	461	17	252	119	146	534	1000
Total Female	Bihar	436	174	610	11	247	66	49	374	1000
	India	224	312	536	16	231	102	107	456	1000
Total Person	Bihar	353	186	539	13	278	78	80	449	1000
	India	176	321	497	17	242	111	128	497	1000

Data Source: NSSO Report No. 517, Statement 3.12.1.

Percentage of persons who were currently attending the educational institutions is lower in Bihar (45 percent) as compared to all-India average (50 per cent). If we compare the current attendance status of Bihar state with other major states of India its performance was very poor and its rank was 14 in 15 major states. Further, among persons who were not currently attending, percentage of persons who never attended any educational institution in Bihar (66 per cent) was almost twice as high as at all-India level (35 per cent).

The distribution of currently attending persons by level of education reveals, to some extent, the drop-out rate at different levels of education. After successfully completing a particular level of education (say, L_1), in the next level (say, L_2) some individuals either do not enroll their names or even after enrolling do not successfully complete that level. The number of persons who either do not enroll in the next level (L_2) or do not successfully complete after enrolling in this level has been termed, as drop-outs at level L_2. Although these dropouts include the persons who could not complete the level L_2 because of their death but their number would be very small. The ratio of drop-outs at level L_2 and the persons successfully completing level L_1 is defined as the drop-out rate at level L_2. As per this definition, one can measure the drop-out rate from the number of persons attending in two consecutive levels of education. Though drop-out rates can be calculated at all the levels of general education, for inter-level comparability, number of years in different levels should be the same. Moreover, we assume the data in Table 5.4, represent a cohort of currently attending persons across board levels of education as on the

mid-point (January 01, 2005) of the survey period and further assume a steady-state distribution of persons across each individual level. Under these conditions, the drop-out rate at 'middle' level only has been calculated here since the duration of both the 'primary' and 'middle' levels of education generally being four years each though in some states duration of the primary education in five years and that of the middle-level education is three years.

Table 5.5 gives drop-out rate at 'middle' level for currently attending persons of age 5-29 years for Bihar and all-India. It may be seen that in Bihar about 27.8 per cent were attending at primary level, 7.8 per cent in next middle level. The drop-out rates at the 'middle' level were pretty high irrespective of area of residence and sex— rural females (74.3 per cent), rural males (72.4 Per cent), urban males (58.0 per cent) and urban female (63.2 per cent).

Table 5.5: Dropout rates at middle level for the age group 5-29 years

Location/ Sex	State/India	Dropout rate	Location/ Sex	State/India	Dropout rate
1	2	3			
Rural Male	Bihar	72.4	Rural Person	Bihar	73.3
	India	55.3		India	57.1
Rural Female	Bihar	74.3	Urban Person	Bihar	57.9
	India	59.5		India	42.3
Urban Male	Bihar	58	Total Male	Bihar	70.7
	India	42.9		India	52.8
Urban Female	Bihar	63.2	Total Female	Bihar	73.3
	India	41.5		India	55.8
			Total Person	Bihar	71.9
				India	54.1

Data Source: NSSO Report No. 517, Statement 3.12.1

Drop-out rate at 'middle' level was higher in Bihar as compared to all-India for all categories of persons i.e. rural male (Bihar: 72.4 per cent, all-India: 55.3 per cent), rural female (Bihar: 74.3 per cent, all-India: 59.5 per cent), urban male (Bihar: 58.0 per cent, all-India: 42.9 per cent) and urban female (Bihar: 63.2 per cent, all-India: 41.5 per cent).

5.4.2 Age-specific Current Attendance Rate

Table 5.6 presents the current attendance rate in Educational Institutions per 1000 persons for different age-groups for Bihar and all-India. It is seen that in Bihar, the current attendance rate is higher for the age-group 5-14 years compared to the age-groups 15-19, 20-24 and 25-29 years for obvious reasons of discontinued or drop-out cases as the age of a person progresses. For instance, while the overall current attendance rate was 45 per cent for the age-group 5-29 years, it was 65 per cent for the age-group 5-14 years, 43 per cent for the age-group 15-19 years, 9 per cent for the age-group 20-24 years which further dropped to two per cent for the age-group 25-29 years.

If we compare the attendance rates of Bihar with all-India, these were lower in Bihar for all age-groups except in the age-group of 25-29 years. Overall attendance rate in the age-group 5-29 years for Bihar and all-India was 45 per cent and 50 per cent respectively.

If we compare the current attendance rates (per 1000 population in that age-group) of different age-groups of Bihar with the corresponding age-groups of 15 major states of India, its rank was very poor in the age-groups of '5-14', '20-24', and '5-29'. Ranks in these

age-groups were 15, 14, and 14 respectively. In other words, in the '5-14' age-groups current attendance rate of 14 other states was higher in comparison to Bihar. But in the age-groups '20-24' and '25-29' current attendance rate of 13 states were higher and of only one state was lower than that of Bihar. The rank of Bihar in the age-group 25-29 years was only four in 15 states. One may perhaps argue that it is due to the late starting of education by the students in the state.

Table 5.6: Current Attendance Rates in Educational Institutions Per 1000 Persons of Different Age Groups

Location/ Sex	State/ India	Age Groups				
		5—14	15—19	20-24	25-29	5--29
1	2	3	4	5	6	7
Rural Male	Bihar	691	460	124	24	502
	India	835	471	114	16	532
Rural Female	Bihar	574	293	11	4	353
	India	767	333	45	11	436
Rural Person	Bihar	639	388	62	14	433
	India	803	407	79	13	485
Urban Male	Bihar	805	671	372	139	615
	India	890	593	232	40	541
Urban Female	Bihar	764	650	170	9	570
	India	879	571	164	21	519
Urban Person	Bihar	785	662	295	79	594
	India	885	583	200	31	530
Total Male	Bihar	700	490	158	36	514
	India	847	504	151	23	534
Total Female	Bihar	593	344	23	4	374
	India	792	396	77	14	456
Total Person	Bihar	652	427	86	20	449
	India	821	454	114	18	497

Data Source: NSSO Report No. 517, Statement 3.14.1

5.4.3 Reasons for Not Currently Attending

The reasons for not attending any educational institution were ascertained by the NSSO for persons who were not currently attending. Table 5.7 gives per 1000 distribution of persons of age 5-29 years who were currently not attending any educational institution by status and broad reason for non-attendance for Bihar state as well as for all-India.

Table 5.7: Per 1000 Distribution of Persons of Age 5-29 Years Who were Currently Not Attending Any Educational Institution by Status and Broad Reason for Non-Attendance

Location/ Sex	State/ India	Reason for Not Attending Educational Institution					All
		School too Far	Has to Supplement hh. Income	Education Not Considered Necessary	Has to Attend Domestic Chores	Others	
1	2	3	4	5	6	7	8
Rural Male	Bihar	45	371	169	16	400	1000
	India	21	522	117	26	314	1000
Rural Female	Bihar	50	19	278	249	403	1000
	India	31	107	217	277	368	1000
Rural Person	Bihar	48	184	227	140	402	1000
	India	26	303	170	159	343	1000
Urban Male	Bihar	12	502	151	20	315	1000
	India	6	621	83	20	270	1000
Urban Female	Bihar	9	18	283	383	307	1000
	India	11	111	146	380	352	1000
Urban Person	Bihar	10	267	215	196	311	1000
	India	8	375	113	194	310	1000
Total Male	Bihar	42	381	167	16	393	1000
	India	17	547	108	25	303	1000
Total Female	Bihar	47	19	278	258	397	1000
	India	27	108	201	300	365	1000
Total Person	Bihar	45	190	226	144	395	1000
	India	22	320	156	167	335	1000

Data Source: NSSO Report No. 517, Statement 3.19.1

In Bihar the main reason (among specified reasons) for not attending any educational institution for males was 'to supplement household income' in rural as well as urban areas (Chart V.4).

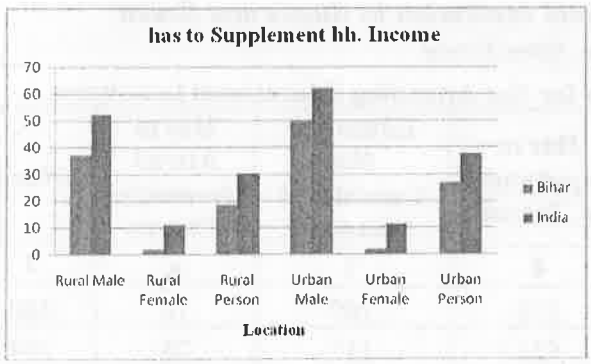


Chart V.4

In case of females, the predominant reason among specified reasons for not attending any educational institution was 'education not considered necessary' in rural areas and 'to attend domestic chores' in urban areas (Chart V.5 and Chart V.6). In the rural areas, about 37 per cent of males who were currently not attending any educational institution reported the reason 'to supplement household income' and in urban areas it was 50 per cent for males. The reason 'education not considered necessary' was reported by 28 per cent females in rural areas and the reason 'to attend domestic chores' was reported by 38 per cent of females in urban areas. Note that about 40 per cent reported 'others', that is, reasons other than the specified ones in the survey, had been the cause for not attending. This percentage is pretty high.

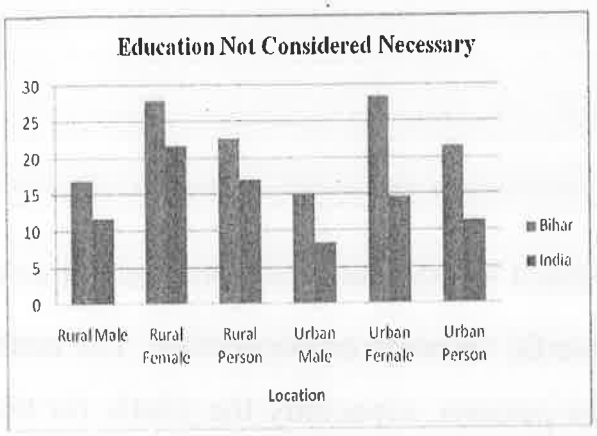


Chart V.5

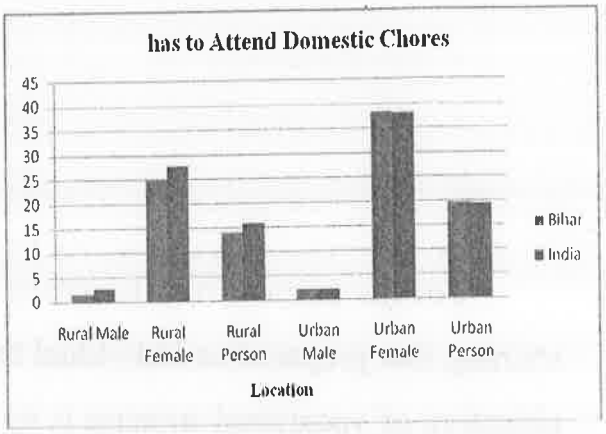


Chart V.6

At all-India level the predominant reason among specified reasons for not attending any educational institution was 'to supplement household income' for males and 'to attend household chores' for females in rural as well as urban areas (Chart V.4, V.5 and V.6).

Ignoring significant 'other reasons', while for India majority holds 'supplement income' as the reasons for not attending educated institutions, for Bihar it is 'education not considered necessary'.

5.5 Vocational Education and Training

In 61st round survey, information in respect of both non-formal and formal vocational training was collected for persons of age 15-29 years. In case of non-formal vocational training, information available was about the persons who received the vocational training and in case of formal vocational training, information available was about the persons who received the vocational training as well as of the persons who were receiving the training. It is important to note that the details of persons who were receiving non-formal education was not collected by NSSO available.

For the purpose of this survey, vocational training was broadly defined as a training that prepared an individual for a specific vocation or occupation. The main objective of vocational training is to prepare persons, especially the youth, for the working life and make them employable for a broad range of occupations across various industries and other economic sectors. It aims at imparting training to persons in very specific field by providing significant 'hands on' experience in acquiring necessary skill, which make them employable or create for them opportunities of self-employment.

The training that took place in institutions which followed a structured training programme and led to recognized certificates, diplomas or degrees was treated as formal vocational training. When the expertise in a vocation or trade was acquired from family members which enabled one to carry out the trade or occupation of one's ancestors over generations, or from any other 'non-formal' sources, vocational training was considered as 'non-formal' vocational training.

5.5.1 Status of Vocational Training Received/being Received

Table 5.8 presents the distribution of persons of age 15-29 years by status of vocational training received/being received, separately for each sex and sector at Bihar and all-India level. In Bihar state, of the persons of age 15-29 years, (i) only 0.3 per cent reported to be receiving formal vocational training as on the date of survey, (ii) 0.2 per cent reported to have received formal vocational training and (iii) another 1.2 per cent reported to have received non-formal vocational training. If we assume that another one per cent of the persons were receiving the non-formal vocational training then we can at most say that only 3 per cent of the persons in this age group were either receiving or have received any vocational

training (formal or non-formal). This is a very low percentage. The proportion of the persons who received/receiving the vocational training was further lower in the case of females than in the case of males in both the rural and urban areas. Moreover, as expected, the proportion of such persons was higher in the urban areas than that of rural areas.

Table 5.8: Per 1000 Distribution of Persons of Age 15-29 Years by Status of Received or Receiving Vocational Training

Location/ Sex	State/ India	Receiving Formal Vocational Training	Received Vocational Training				Did not Receive Vocational Training	Total (incl. n.r.)
			Formal	Non-Formal		All		
				Hereditary	Others			
1	2	3	4	5	6	7	8	9
Rural Male	Bihar	4	2	8	7	1	978	1000
	India	10	15	58	37	110	871	1000
Rural Female	Bihar	0	0	2	3	5	995	1000
	India	5	13	32	30	74	910	1000
Rural Person	Bihar	2	1	5	5	11	986	1000
	India	8	14	45	34	92	890	1000
Urban Male	Bihar	15	4	13	30	47	938	1000
	India	33	52	31	61	144	817	1000
Urban Female	Bihar	4	8	3	12	23	973	1000
	India	19	45	17	32	94	881	1000
Urban Person	Bihar	10	6	9	22	37	953	1000
	India	27	49	25	48	121	847	1000
Total Male	Bihar	6	2	9	10	21	973	1000
	India	17	26	50	44	120	855	1000
Total Female	Bihar	0	1	2	4	7	993	1000
	India	9	21	28	31	8	902	1000
Total Person	Bihar	3	2	6	7	14	983	1000
	India	13	24	39	38	100	878	1000

Data Source: NSSO Report No. 517, Statement 3.20 and Unit Level Data

At all India level also the status of vocational training received/receiving was not satisfactory. However, it was many times better than that of Bihar. Of the persons of age 15-29 years, about one per cent was receiving formal vocational training as on the date of survey, about two per cent reported to have received

formal vocational training and another eight per cent reported to have received non-formal vocational training. Here again if we assume that another 4 per cent of the persons were receiving the non-formal vocational education/training, then about 15 per cent of the persons in this age group were either receiving any vocational training or they have already received some vocational training, whereas this ratio for Bihar was only 3 percent. In each category, all-India averages were 4 to 12 times their Bihar counterpart. Most surprising part of the story is that non-formal training is so low in Bihar.

5.5.2 Age Specific Rate for Formal Vocational Training Received

The proportion of persons in the age group 15-29 who received formal vocational training in different age groups is given for Bihar state and all-India in Table 5.9. As discussed above, in Bihar state, only 0.2 per cent of the persons of age group 15-29 received the formal vocational training. Same percentage was observed in all the age-sub-groups viz. 15-19, 20-24 and 25-29. However the age-specific proportions for females are lower than that for the males in different age groups. Similarly these proportions are lower for rural areas than for urban areas.

What is intriguing is that urban male in Bihar is absent in 15-19 age-group when urban female is not, though rural female is absent altogether across age groups.

At all India level it is observed that the proportion of persons who received formal vocational training generally increases with age of persons. In fact, the proportion increased from 0.6 per cent for the age group 15-19 years to 1.8 per cent for the age group 20-24 years and then, to 1.9 per cent for the age group 25-29 years in the rural areas. The corresponding movement of the said proportion over

these age groups, in urban areas, had been from 1.8 per cent to 6.7 per cent and then, to 6.3 per cent.

Table 5.9: Number Per 1000 Persons of Different Age Groups Who Received Formal Vocational Training

Location/ Sex	State/ India	Age-Group				
		15-19	20-24	15-24	25-29	15-29
1	2	3	4	5	6	7
Rural Male	Bihar	2	2	2	1	2
	India	5	21	12	23	15
Rural Female	Bihar	0	0	0	0	0
	India	7	15	11	16	13
Rural Person	Bihar	1	1	1	1	1
	India	6	18	11	19	14
Urban Male	Bihar	0	12	5	0	4
	India	19	72	45	69	52
Urban Female	Bihar	11	0	7	11	8
	India	18	63	4	55	45
Urban Person	Bihar	5	8	6	5	6
	India	18	67	43	63	49
Total Male	Bihar	2	4	3	1	2
	India	9	36	21	37	26
Total Female	Bihar	2	0	1	1	1
	India	10	28	19	26	21
Total Person	Bihar	2	2	2	1	2
	India	9	32	20	32	24

Data Source: NSSO Report No. 517, Statement 3.21 and Unit Level Data

5.5.3 Formal Vocational Training and Broad Activity Status

The proportion of persons in the age group 15-29 who received formal vocational training by broad activity status is given in Table 5.10 separately for each sex and sector at Bihar state and all-India level. It is important to note that the proportion is found to be the highest among the unemployed as compared to employed or those who were not in the labour force. In Bihar state, as compared to 0.2 per cent for all categories of persons who received vocational training, 1.7 per cent are unemployed, 0.2 per cent of those who were not in labour force and almost

negligible per cent of those who were employed had received the vocational training. Another interesting point is that most of the unemployed persons in the state who received the formal vocational training were male unemployed.

Table 5.10: Number Per 1000 Persons of Different Broad Usual Principal Activity Status in the Age -Group 15-29 Who Received Formal Vocational Training

Location/ Sex	State/ India	Usual Principal Activity Status			
		Employed	Unemployed	Not in Labour Force	All
1	2	3	4	5	6
Rural Male	Bihar	0	18	4	2
	India	14	69	9	15
Rural Female	Bihar	1	0	0	0
	India	15	124	8	13
Rural Person	Bihar	0	18	1	1
	India	14	88	8	14
Urban Male	Bihar	2	15	4	4
	India	54	121	33	52
Urban Female	Bihar	0	0	8	8
	India	89	174	32	45
Urban Person	Bihar	2	13	6	6
	India	60	138	32	49
Total Male	Bihar	0	17	4	2
	India	24	91	17	26
Total Female	Bihar	1	0	1	1
	India	26	143	15	21
Total Person	Bihar	0	17	2	2
	India	25	108	16	24

Data Source: NSSO Report No. 517, Statement 3.22 and Unit Level Data

Here, we should not conclude that vocational training is not useful for getting employment. In a recent study being conducted by Institute of Applied Manpower Research, Delhi, on 'Evaluation of apprenticeship training scheme in India' most of the enterprises are preferring ITI pass outs as compared to those who have not done any training from an ITI though had received general education (secondary, higher secondary or graduation in general subjects). Some of the persons who do apprenticeship training get absorbed in that enterprise itself. In case of others, chances of employment are improved.

At all India level also the proportion of persons who received the formal vocational training is found to be the highest among the unemployed particularly unemployed females. The proportion was as high as 12 per cent in rural areas and 17 per cent in urban areas among the female unemployed. In case of unemployed males, it is 7 per cent and 12 per cent in the rural and urban areas, respectively. The proportion was around two per cent for persons not in the labour force and 2.5 per cent for the employed.

5.5.4 Field of Formal Vocational Training

Field of training signifies the specific area of the training that a person has obtained in the past and tallies broadly with the specific trade. In the survey, data in respect of 21 specific areas of trade were collected and the results are presented in Table 5.11 It gives the distribution of persons, in the age group of 15-29 years who received formal vocational training by field of training at Bihar and all India level. But in case of Bihar state a large proportion (44 per cent) of persons were non-respondent compare to all India rate of 1.5 per cent. This speaks of general gloom over the years. Hopefully the things are improving. The descriptions of the field of training and corresponding codes are given in the Appendix to Table 5.

Usually, vocational training has been oriented towards a number of engineering and technical trades. Though they continue to form the core of vocational training, its scope was considerably widened to include many non-engineering trades also. In Bihar state, Table 5.11 shows that there was a limited choice for different trades. In case of males, the most demanded field of training was found to be 'Mechanical engineering trades' (code 01: 32 per cent) followed by 'Electrical and electronic engineering trades' (code 02: 12 per cent) in the rural areas; and 'Computer trades' (code 03: 31 per cent) followed by 'Electrical and electronic engineering trades' (code 02: 21 per cent) in the urban areas. Among

rural female youths, the demand was a little different. About 21 per cent of them, in the rural areas, the highest proportion among all fields had formal vocational training in the field of 'Computer trades'. Among the urban female youths, the most important choices in terms of proportions were: 'Textile related trades' and 'Artisan/Craftsman/Handicraft and cottage based production trades'. Each of these two trades had a share of about 31 per cent of total urban females in this age-group.

At all India level for obvious reasons the choice for different trades was larger in comparison to Bihar. In India, it is observed that for males, the most demanded field of training was found to be 'Computer trades' (code 03: 21 per cent) followed by 'Textile related trades' (code 07: 15 per cent), 'Electrical and electronic engineering trades' (code 02: 11 per cent), 'driving and motor mechanic work' (code 15: 10 per cent) and 'Mechanical engineering trades' (code 01: 8 per cent) in the rural areas; and 'Computer trades' (code 03: 38 per cent) followed by 'Electrical and electronic engineering trades' (code 02: 11 per cent) and 'Mechanical engineering trades' (code 01: 6 per cent) in the urban areas. As in case of Bihar, at all India level also among rural female youths, the demand was a little different. About 31 per cent of them, in the rural areas, the highest proportion among all fields had formal vocational training in the field of 'Textile related trades'. This was followed by the 'Computer trades' (code 03: 21 per cent) and 'Health and paramedical related trades' (code 13: 10 per cent). Among the urban female youths, the most important choices in terms of proportions were: 'Computer trades' (code 03: 39 per cent), Textile related trades' (code 07: 18 per cent) and 'Health and paramedical related trades' (code 13: 9 per cent).

5.5.5 Institution of Formal Vocational Training

Some of the major sources from where vocational training could be received were collected in the survey and the distribution of persons, in the age group of 5-29 who received formal vocational training by institution of training has been presented in Table 5.12, separately for each sex and sector at Bihar state and all-India level. Major sources from where vocational training could be received were classified into 24 different types of institutes. The types of institute of training and corresponding codes are given in the Appendix to Table 5.12. It is important to note that in case of Bihar the proportion of non-respondents was very large (44 per cent). Beside this about 20 per cent of the respondents in the state reported their institute of training as 'Other institutes' - which means all-India classification did not suit Bihar well.

In Bihar, Industrial training institutes (ITIs)/Industrial training centers (ITCs) played the major role in providing training to male youths. The institutes of 'Tailoring, embroidery and stitch craft' and 'Handloom/handicraft design training centers/KVIC' together played the major role in providing training to female youths.

At all India level Industrial Training Institutes (ITIs)/Industrial Training Centers (ITCs), recognized Motor driving schools, Schools offering vocational courses, Polytechnics, Institutes run by Companies/Corporations and UGC together played the major role in providing training to male youths. The Craft institutes, Industrial training institutes (ITIs)/Industrial training centers (ITCs), Schools offering vocational courses, Nursing institutes, Hospital and medical training institutes, Institutes run by Companies/Corporations and Nursery teacher's training institutes together played the major role in providing training to female youths in the country.

Table 5.11: Per 1000 Distribution of Persons of Age 5-29 Years by Status of Received or Receiving Vocational Training

Location/Sex	State	Field of Training (Code)																							
		01'	02'	03'	04'	05'	06'	07'	08'	09'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	99'	n.r.	All
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Rural Male	Bihar	318	121	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	560	1000
	India	128	188	212	44	2	1	21	15	12	4	6	9	41	41	166	0	0	2	1	2	4	83	18	1000
Rural Female	Bihar	0	0	205	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	795	1000
	India	17	16	213	15	0	0	305	4	20	2	7	9	100	63	10	24	1	0	34	0	10	133	17	1000
Rural Person	Bihar	270	103	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	596	1000
	India	78	111	212	31	1	1	149	10	16	3	6	9	68	51	95	11	1	1	16	1	6	105	18	1000
Urban Male	Bihar	0	214	307	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	479	0	1000
	India	101	171	370	34	2	3	23	4	10	7	6	3	34	43	85	0	0	3	0	0	8	88	6	1000
Urban Female	Bihar	0	0	12	0	0	0	310	0	308	0	0	0	0	0	0	8	0	0	0	0	0	7	355	1000
	India	7	29	388	9	0	1	179	9	20	22	0	3	87	57	6	55	0	0	21	1	5	80	20	1000
Urban Person	Bihar	0	88	133	0	0	0	183	0	182	0	0	0	0	0	0	5	0	0	0	0	0	200	210	1000
	India	61	110	378	23	1	2	90	6	14	14	3	3	57	49	51	24	0	2	9	1	7	84	12	1000
Total Male	Bihar	242	144	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	116	425	1000
	India	112	178	305	38	2	2	22	8	11	6	6	5	37	42	118	0	0	3	0	1	6	86	11	1000
Total Female	Bihar	0	0	66	0	0	0	223	0	221	0	0	0	0		0	6	0	0	0	0	0	5	479	1000
	India	11	23	312	12	0	1	234	7	20	14	3	6	93	60	7	41	1	0	26	1	7	103	19	1000
Total Person	Bihar	163	97	71	0	0	0	73	0	72	0	0	0	0	0	0	2	0	0	0	0	0	80	443	1000
	India	68	110	308	27	1	2	115	8	15	9	5	5	61	50	69	18	0	1	12	1	7	93	15	1000

Note: Codes of field of training are given in appendix to Table 5.12 given at the end of the chapter.
Data Source: NSSO Report No. 517, Statement 3.23 and Unit Level Data

Table 5.12 Table 5.12: Per 1000 Distribution of Persons of Age 5-29 years Who Received Formal Vocational Training by Institution of Training

Location/Sex	State	Institution of Training (Code)																									
		01'	02'	03'	04'	05'	06'	07'	09'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	99'	n.r.	All
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Rural Male	Bihar	318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	121	560	1000
	India	352	71	16	31	5	1	5	5	0	9	3	4	10	23	4	9	2	1	128	3	0	26	2	262	18	1000
Rural Female	Bihar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	205	795	1000
	India	90	83	5	21	12	0	1	3	1	238	52	1	10	36	37	6	4	1	6	8	10	36	0	306	29	1000
Rural Person	Bihar	270	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	596	1000
	India	234	77	11	27	8	1	3	4	1	113	25	2	10	29	19	8	3	1	73	5	5	31	1	282	23	1000
Urban Male	Bihar	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	735	0	1000
	India	248	35	44	59	5	5	2	7	4	9	2	1	9	16	1	4	0	0	66	11	0	49	2	411	9	1000
Urban Female	Bihar	0	0	12	0	0	0	0	0	0	310	0	0	0	0	0	0	0	308	0	0	0	0	0	15	355	1000
	India	63	42	34	12	6	0	4	2	5	139	42	5	3	26	28	2	0	2	2	24	39	43	3	448	21	1000
Urban Person	Bihar	88	7	7	0	0	0	0	0	0	183	0	0	0	0	0	0	0	182	0	0	0	14	0	309	210	1000
	India	169	38	40	39	5	3	3	5	4	65	19	3	6	20	12	4	0	1	38	17	17	46	3	427	14	1000
Total Male	Bihar	293	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	269	425	1000
	India	291	50	32	48	5	3	3	6	2	9	3	2	9	19	2	6	1	1	91	8	0	39	2	350	12	1000
Total Female	Bihar	0	0	9	0	0	0	0	0	0	223	0	0	0	0	0	0	0	221	0	0	0	0	0	68	479	1000
	India	75	60	22	16	9	0	3	2	4	182	46	3	6	31	31	4	2	2	4	17	26	40	2	387	24	1000
Total Person	Bihar	198	3	3	0	0	0	0	0	0	73	0	0	0	0	0	0	0	72	0	0	0	6	0	204	443	1000
	India	196	54	28	34	7	2	3	4	3	85	22	3	8	24	15	5	1	1	53	12	12	40	2	366	17	1000

Note: Codes of institutions of training are given in appendix to Table 5.12 given at the end of the chapter.

Data Source: NSSO Report No. 517, Statement 3.24 and Unit Level Data

Appendix 1 to Table 5.11

Field of Training in Which Vocational Training is Imparted

Sl. No.	Name of the field	Code
1	Mechanical engineering trades	01
2	Electrical and electronic engineering trades	02
3	Computer trades	03
4	Civil engineering and building construction related works	04
5	Chemical engineering trades	05
6	Leather related work	06
7	Textile related works	07
8	Catering, nutrition, hotels and restaurant related work	08
9	Artisan/craftsman/handicrafts and cottage based production work	09
10	Creative arts/artists	10
11	Agriculture and crop production related skills and food preservation related works	11
12	Non-crop based agriculture and other related activities	12
13	Health and paramedical services related work	13
14	Office and business related work	14
15	Driving and motor mechanic work	15
16	Beautician, hairdressing and related work	16
17	Work related to tour operators/travels managers	17
18	Photography and related work	18
19	Work related to childcare, nutrition, preschool and crèche	19
20	Journalism, mass communication and media related work	20
21	Printing technology related work	21
	Others	22

Data Source: NSSO Report No. 517, Statement 3.23

Appendix 2 to Table 5.12

Institutions Providing Vocational Education Training

Sl. No.	Name of the field	Code
1	Industrial Training Institutes/Centres (ITIs/ITCs)	01
2	School offering vocational courses (secondary, higher secondary level)	02
3	UGC (first degree level)	03
4	Polytechnics	04
5	Community Polytechnics/Jansikshan	05
6	National Open Schools	06
7	Hotel Management	07
8	Food craft and catering Institutes	08
9	Small Industries service Institutes/District Industries centres/Tool Room centres	09
10	Fashion Technology Institutes	10
11	Tailoring, embroidery and stitch craft Institutes	11
12	Nursing Institutes	12
13	Rehabilitation/Physiotherapy/Ophthalmic and Dental Institutes	13
14	Institutes giving diploma in pharmacy	14
15	Hospital and medical training institutes	15
16	Nursery teachers training institutes	16
17	Institutes offering training for agriculture extension	17
18	Training provided by carpet weaving centres	18
19	Handloom/Handicrafts design training centres/KVIC	19
20	Recognized motor driving schools	20
21	Institutes for secretariat practices	21
22	Recognized beautician schools	22
23	Institutes run by companies/corporation	23
24	Institutes for Journalism and Mass Communication	24
25	Other Institutes	99

Data Source: NSSO Report No. 517, statement 3.24

Chapter VI

Demand for Manpower with Vocational Education and Training

6.1 Introduction

Vocational Education and Training includes two parts viz. Vocational Education and Vocational Training. Vocational Education in India refers specifically to vocational courses offered in school Grades 11 and 12. Now the Government is encouraging these vocational courses in school for lower grades also. Vocational Education falls under the purview of Ministries of Education of State Governments supported by the Ministry of Human Resource Development, Government of India. Vocational Training is imparted in a variety of institutions which are supported and/or regulated by various ministries but most of them are supported by the Departments of Labour in States while they may make use of the central funds under various schemes.

Vocational Training is a concurrent responsibility but there is some practical division between the Union and the States. While development of training schemes, laying-down of training norms, evolution of training policy, conduct of examination and certification are the responsibilities of the Union Government, implementation is largely the responsibility of State Governments. The Directorate General of Employment & Training, Ministry of Labour and Employment is the nodal agency at the Union level. Under its Craftsman Training Scheme, ITI/ITCs are run under the supervision of Labour Department of the State Government in a state. While ITIs are the training institutes established by the governments, ITCs are managed by the private players on self-financing basis—though sanctioned and regulated by

the DGE&T (IAMR, 2010). But there are sixteen or seventeen other departments in the Government of India which facilitate vocational training in their respective domains. Likewise, there are several departments in the State Government which run, support, facilitate or regulate vocational training institutes and programmes.

In Bihar state, besides Department of Labour Resources running ITIs, there are several other Departments, Directorates, Divisions, Councils, Boards and Institutes, belonging to the Union Government or State Government, which impart vocational training. Some of them are: Khadi & Village Industries Commission; Bihar Urban Development Authority (BUDA); Directorate of Handloom, Department of Industries; Sericulture Division, Department of Industries; Upendra Maharathi Shilp Anushandhan Sansthan, Department of Industries; and Micro, Small and Medium Enterprise Development Institute; Department of Education and Department of Health.

The main objective of vocational training is to prepare persons, especially the youth, for the working life and make them employable in various industries and other economic sectors where there is demand for skilled personnel. It aims at imparting training to persons in very specific fields by providing significant 'hands on' experience in acquiring necessary skill, which make them employable or create for them opportunity of self employment (NSSO, 2006) .

We have discussed in Section 1.3 (Methodology) that it is very important to know about the requirement of Vocational Education and Training in Bihar. The word 'requirement' has different meaning than 'actual demand'. 'Actual demand' is the 'Industry demand'. Other two terms which can be used here for requirement are 'Social Demand' and 'Need'. In

this study though our main concern is about the estimation of demand, but we had also given an illustration to estimate the requirement of vocationally trained persons, which we have decided to give as an Annexure at the end of this report (Annexure II).

In this chapter demand of persons with vocational education and training, has been estimated for Bihar state for the terminal years of 2010, 2015, 2020 and 2025. Demand of these persons has been estimated for three segments: (a) within the state of Bihar (WIS) (b) in other states of India (ROI) and (c) in other countries of the world (ROW). Beside this, the chapter includes the estimates of shortages of persons with vocational training in the state in terminal years, with reference to ITI/ITCs.

6.2 Demand for Manpower with VET within the State (WIS)

NSSO surveys on employment and unemployment give the distribution of total number of persons employed in a state for the year of the survey by industry, and by age-groups. Various classifications, along with the codes, used in the distribution of technical persons are given in Chapter I (Introduction). As per the NSSO, estimates of persons having diploma or certificate (below graduate level) are also available. It does not separate out diploma and certificate. So the estimates of persons with Diploma/Certificate (below graduate level) have been accepted as vocationally trained persons. In our view, persons having Diploma (below graduate level) from professional/technical institutions should not be included in vocational training but in professional training. As their number is very small, compared to certificate holders (below graduate level), we have not tried to exclude them.

This demand of persons (who would be employed in the state) would be considered as stock demand. If we add the number of surpluses

(unemployed) with vocational training in those terminal years to this demand it would give the stock supply in those years. If we take the difference of stocks of demand in two terminal years it would give the additional demand generated between those two years. For estimating the demand (in stock sense) of vocationally trained persons two methods have been employed. They were discussed in detail in Chapter II.

Growth Rates of GSDP

In both these methods Compound Annual Growth Rates (CAGRs) of industry-wise GSDP at constant prices have been estimated for the periods 2005-10. See Tables 6.1.

The CAGR for the period 2005-10 has been obtained as the growth of GSDP during the period 2004-05 to 2009-10 by solving the following equation for g.

$$Y_{t+5} = Y_t(1+g)^5$$

where

Y_{t+5} = GSDP in year 2009-10

Y_t = GSDP in year 2004-05

g = CAGR during the period between 2004-05 and 2009-10

During the period 2005-10 growth of GSDP in Bihar was very high at 10.64 per cent per annum. It was higher than the targeted growth rate of Eighth Plan (2007-12). CAGR of primary, secondary and tertiary sectors during 2005-10 in the state were found to be about one per cent, 23 per cent and 12 per cent respectively. The sector/industry wise growth rates for past two quinquennia are given in Table 6.1.

Table 6.1: Sector-wise/Industry-wise GSDP (Rs. Lakhs) and CAGR at 1999-2000 Prices

Sector/Industry	1999-00	2004-05	2009-10	CAGR	
				2000-05	2005-10
Agriculture & Allied Activities	1680995	2163229	2270765	5.2	1.0
Mining & quarrying	9444	4649	6160	-13.2	5.8
PRIMARY	**1690439**	**2167878**	**2276925**	**5.1**	**1.0**
Manufacturing	361406	352707	480562	-0.5	6.4
Construction	190330	352612	1602006	13.1	35.4
Electricity, Gas and Water Supply	71853	65452	87360	-1.8	5.9
SECONDARY	**623589**	**770771**	**2169928**	**4.3**	**23.0**
Trade, Hotels and Restaurants	754097	1388261	2987340	13.0	16.6
Transport, Storage & Communications	372397	439113	945165	3.4	16.6
Banking, Insurance & Real Estate	391539	506288	862146	5.3	11.2
Public Administration and other services	1185314	1327238	1700486	2.3	5.1
TERTIARY	**2703347**	**3660900**	**6495137**	**6.3**	**12.2**
State domestic product	**5017376**	**6599548**	**10941989**	**5.6**	**10.6**

Targeted Growth Rates for Eleventh Plan

Targeted growth rate of eleventh five year plan in the state was 8.5 per cent per annum (Table 6.2). Targets of CAGR for agriculture and allied sector, industry sector and service sector during this period in the state were about 5 per cent, 11 per cent and 10 per cent respectively.

Targeted CAGRs of industries under industry sector (viz. mining & quarrying, manufacturing, construction and electricity, gas & water supply) were not available. These have been calculated by multiplying the actual growth rates of these industries (given in Table 6.1) during the period 2005-10 by the ratio of targeted growth rate to actual growth rate of industry sector as a whole (as an illustration, CAGR of manufacturing=6.4*11/23). Targeted CAGRs of industries under service sector were also not available. These have been calculated in the same manner as of industry sector. See Table 6.2.

Table 6.2: Sector-wise/Industry-wise Targeted Growth Rates of GSDP at 1999-2000 Prices for the Period 2007-12 (Eleventh Plan)

Sector/Industry	Targeted CAGR
Agriculture & Allied Activities	**5.0**
Mining & quarrying	2.8
Manufacturing	3.1
Construction	16.9
Electricity, gas and water supply	2.8
Industry Sector	**11.0**
Trade, hotels and restaurants	13.6
Transport, storage & communications	13.6
Banking, insurance. & real estate	9.2
Public administration and other services	4.2
Service sector	**10.0**
State domestic product	**8.5**

Expected Growth Rates for Future

Industry-wise proposed/expected CAGRs during 2010-15, 2015-20 and 2020-25 have been given in Table 6.3. Proposed growth rates of industries have been assumed by keeping in view the past trend of growth rates, targeted growth rates in Eleventh Five Year Plan of the state and the future agenda of present elected government in the state.

Where the growth rates in the immediate were very high, they have moderated and where the growth rates were unduly low, they have been enhanced. For example, growth of construction sector during 2005-10 was over 35 percent per annum, which shows extra efforts on infrastructure like roads. This is likely to come down as we reach saturation as roads will have to be repaired or widened but not to be constructed. Despite good intentions of growing at around 6 percent, electricity, water and gas supply actually grew at 2.8 percent during 2005-10, which was a good performance

compared to that negative during 1999-2004. Electricity being critical, with renewed emphasis on it, we have gradually increased growth rates for coming quinquennia. In this exercise, the growth rates proposed/targeted for the Eleventh Plan were kept in mind so that they reflect the resolve of the Government for a particular sector.

Table 6.3: Industry-wise Actual and Proposed Growth Rates of GSDP at 1999-2000 Prices for the Period 2005-25 in Bihar State

Industry	CAGR (2005 to 2025)					
	Actual		Targeted (plan)	Proposed		
	2000-05	2005-10	2007-12	2010-15	2015-20	2020-25
Agriculture & allied activities	5.2	1.0	5.0	2.5	4.0	5.5
Mining & quarrying	-13.2	5.8	2.8	6.0	5.5	5.0
Manufacturing	-0.5	6.4	3.1	6.5	7.0	7.5
Construction	13.1	35.4	16.9	35.0	30.0	25.0
Electricity, gas and water supply	-1.8	5.9	2.8	6.0	6.5	7.0
Trade, hotels and restaurants	13.0	16.6	13.6	16.5	16.0	15.5
Transport, storage & communications	3.4	16.6	13.6	16.5	16.0	15.5
Banking, insurance & real estate	5.3	11.2	9.2	11.5	11.0	10.5
Public administration and other services	2.3	5.1	4.2	5.0	5.0	5.0

6.2.1 Estimation of Demand for Manpower with Technical Skills

After estimating the CAGRs of industry-wise GSDP during the periods 2005-10 and proposing prospective growth rates for 2010-15, 2015-20 and 2020-25 as mentioned above, employment estimates of manpower with vocational skills during these years were obtained by two different methods, which we reckoned as demand as they were based on industrial growth rather than growth of training institutes.

First method may be called as direct method and second method may be called as indirect method. Details of these methods along with the steps used have been discussed below.

6.2.1.1 Direct Method

Step I: Industry-wise Elasticity of Manpower with Technical Skills

Industry-wise employment (with technical skills) in the state has been obtained for the period 1994-2005 by considering two NSSO surveys conducted during 1993-94 and 2004-05. It has to be noted that, employment estimates in "Mining & Quarrying", "Manufacturing", "Construction" and "Electrical, Gas and Water" there was some reduction in employment of technical persons during the period 1994-2005. It is possible that scenario in 1993-94 or 2004-05 was particularly peculiar in case of certain sectors – particularly where substantial employment was in public sector. It expected that structure of the industries, say between public and private ownership, is not going to change substantially nor is technology going displace manpower drastically.

NSSO has also conducted a quinquinnial survey, which gives employment data for the year 1999-00. But the estimates of employment for this year are not considered comparable by many researchers/agencies. So the estimates of the year 1999-00 have not been used in the estimation of elasticities. Even Planning Commission has used the employment estimates of the years 1993-94 and 2004-05 for projecting the labour force employment in Eleventh Five Year Plan.

It is important to note that sector growth rates of GDP between 1993-94 and 2004-05 are all positive but two of them were negative between 1999-2000 and 2004-05. It is possible that employment did reduce during the latter quinqennium. Could we use 1999-2000 employments, two of the negative elasticities could turn positive. It was therefore safe to assume for the purpose of future forecast as if there was no change in employment (with technical skills) in these two industries during this period.

Keeping consistency in view industry-wise GSDP at constant prices has also been obtained for these two years (1993-94 and 2004-05) for which data has been sourced from the Directorate of Statistics, Bihar (Table 6.4).

Employment Elasticity of Technical manpower (EET) in each industry has been obtained by applying the following equation:

$$EET_i = \frac{r_i}{g_i}$$

where, EET_i = employment elasticity in industry i

r_i = rate of growth in employment in industry i

g_i = rate of growth in GSDP of industry i

Table 6.4: Employment Elasticity of Employment (With Technical Skill) during 1994-2005

Industries	GSDP (Rs. Crores)			Emp. with Tech. Skills (Nos.)			Employ-ment Elasticity
	1994	2005	CAGR	1994	2005	CAGR%	
Agriculture & allied activities	1584487	2162930	2.9	53150	99554	5.9	2.1
Mining & quarrying	4909	6849	2.6	751	751	0.0	0.0
Manufacturing	304002	459322	3.2	10704	8000	-2.6	-0.8
Construction	99163	303713	10.7	2570	1682	-3.8	-0.3
Electricity, gas and water supply	37085	65444	5.3	2413	1243	-5.8	-1.1
Trade, hotels and restaurants	569233	1388048	8.4	7266	19184	9.2	1.1
Transport, storage & communications	261544	493795	6.0	4380	4527	0.3	0.1
Banking, insurance & real estate	246432	513174	6.9	6033	11999	6.5	0.9
Public administration and other services	775538	1306717	4.9	88239	129240	3.5	0.7
Total	**3882393**	**6590861**	**4.9**	**175505**	**272768**	**4.1**	**0.8**

Note: i) In "Ministry & Quarrying" and Manufacture industries GSDP is for the year 2007 instead of 2005.

It has been observed that EE of technical persons was highest for 'agriculture and allied activities' among all the industries (2.1) during the period followed by 'trade, hotels & restaurants' (1.1), 'banking, insurance & real estate' (0.9) and 'public administration & other services' (0.7). Employment estimates showed that there was some reduction in three industries of "Manufacturing— from 10703 to 8000", "Construction—from

2570 to 1682" and "Electricity, gas and water—from 2412 to 1243" during the period 1994-2005. It was assumed that there was no change in employment in these industries during this period when future demands were to be assessed.

Step II: Proposed Growth Rates of Employment (Technical Manpower)

Keeping in view the low level of existing skills in the state, and higher competition in this period of globalization, the state government is emphasizing on the growth of skilled manpower in the state and taking various measures. Therefore, the EET for the periods 2005-10, 2010-15, 2015-20 and 2020-25 have been moderated in such a way that these would not be less than 0.5 for any industry even if technology is labour displacing and none should generally exceed 1.0 so that productivity growth is also ensured. However, tendency in traditional sectors like agriculture where it is already very high cannot be reversed. It is expected that technical power is displacing raw labour in fast growing sectors also. See Table 6.5. Moreover, none of the sectors are supposed to be downsizing anymore. Whatever had to be happened has happened.

Industry-wise growth rates of employment of personnel with technical skills were estimated by using the growth rates of corresponding industrial GSDP and proposed EETs by solving the equation given below:

$$r_i^T = EET_i^* \times g_i^T$$

Where, r_i^T = growth rate of employment in industry i during period T

EET_i^* = elasticity of employment in industry i, duly modified

g_i^T = growth rate of GSDP of industry i during period T

T = 2005-10, 2010-15, 2015-20 and 2020-25

Table 6.5: Actual & Proposed Employment Elasticity of Technical Manpower with respect to SGDP During 2005 to 2025

Industry	Actual	Proposed			
	1994-2005	2005-10	2010-15	2015-20	2020-25
Agriculture & allied activities	2.1	2.5	2.0	2.0	1.5
Mining & quarrying	0.0	0.5	0.5	0.5	0.5
Manufacturing	0.0	0.5	0.5	0.5	0.5
Construction	0.0	0.5	0.5	0.5	0.5
Electricity, gas and water supply	0.0	0.5	0.5	0.5	0.5
Trade, hotels and restaurants	1.1	1.5	1.5	1.5	1.0
Transport, storage & communications	0.1	0.6	0.6	0.6	0.6
Banking, insurance & real estate	0.9	1.0	1.0	1.0	0.8
Public administration and other services	0.7	1.0	1.0	1.0	0.8

Industry-wise CAGRs of technical manpower for the other periods, viz. 2010-15, 2015-20 and 2020-25 were estimated in a similar manner as for the period 2005-10.

It will be observed that growth rates of various sectors would gradually reduce from quinqennium to quinquennium. During the period 2020-25, CAGR of employment of technical manpower was highest for 'trade, hotels & restaurant (15.5)' followed by 'construction (12.5)', 'transport, storage communication (9.3)', 'banking, insurance & real estate (8.4)', and 'agriculture & allied Activities (8.3)'.

Table 6.6 combines parts of Table 6.3 and Table 6.5, to give a clear picture of computations of employment growth rates of technical personnel for future periods.

Table 6.6: Estimating the Projected Growth Rates of Employment (Technical)

Industry	Growth Rates of GSDP			
	2005-10	2010-15	2015-20	2020-25
Agriculture & allied activities	1.0	2.5	4.0	5.5
Mining & quarrying	5.8	6.0	5.5	5.0
Manufacturing	6.4	6.5	7.0	7.5
Construction	35.4	35.0	30.0	25.0
Electricity, gas and water supply	5.9	6.0	6.5	7.0
Trade, hotels and restaurants	16.6	16.5	16.0	15.5
Transport, storage & communications	16.6	16.5	16.0	15.5
Banking, insurance & real estate	11.2	11.5	11.0	10.5
Public administration and other services	5.1	5.0	5.0	5.0
	Proposed elasticity of technical manpower			
Agriculture & allied activities	2.5	2.0	2.0	1.5
Mining & quarrying	0.5	0.5	0.5	0.5
Manufacturing	0.5	0.5	0.5	0.5
Construction	0.5	0.5	0.5	0.5
Electricity, gas and water supply	0.5	0.5	0.5	0.5
Trade, hotels and restaurants	1.5	1.5	1.5	1.0
Trans., storage & communications	0.6	0.6	0.6	0.6
Banking, insurance & real estate	1.0	1.0	1.0	0.8
Public administration and other services	1.0	1.0	1.0	0.8
	Growth rates of technical manpower			
Agriculture & allied activities	2.5	5.0	8.0	8.3
Mining & quarrying	2.9	3.0	2.8	2.5
Manufacturing	3.2	3.3	3.5	3.8
Construction	17.7	17.5	15.0	12.5
Electricity, gas and water supply	3.0	3.0	3.3	3.5
Trade, hotels and restaurants	24.8	24.8	24.0	15.5
Trans., storage & communications	9.9	9.9	9.6	9.3
Banking, insurance & real estate	11.2	11.5	11.0	8.4
Public administration and other services	5.1	5.0	5.0	4.0

Note: Third panel of the table is derived from first and second panel

Step III: Estimating the Projected Manpower with Technical Skills

Employment of technical manpower in each industry has been obtained by applying the following equation.

$$ET_i^T = ET_i^{T-5} (1+r_i^T)^5$$

where, E_i^T = employment in rate T

r_i^T = rate of growth of employment computed for period T

T = year or period as per the context

Similarly, employment for the years 2015, 2020 and 2025 has been obtained in the same manner as for the year 2010.

It has been observed that in Bihar state, in the year 2005, employment (of technical manpower) was 2.7 lakhs which is likely to have increased to 3.8 Lakhs in the year 2010, would hopefully increase to 6.0 lakhs in the year 2015, 11.1 lakhs in the year 2020 and 18.7 lakhs in the year 2025. Employment of technical manpower according to industry is given in Table 6.7.

Table 6.6 combines parts of Table 6.3 and Table 6.5, to give a clear picture of computations of employment growth rates of technical personnel for future periods.

6.7: Estimates of Employment of Technical Manpower (in Numbers) in Terminal Years

Industry	2005	CAGR	Growth Factor	2010 (5) = (2)*(4)	CAGR	Growth Factor	2015 (8) = (5)*(7)
1	2	3	4	5	6	7	8
Agriculture & allied activities	99554	2.5	1.1	112636	5.0	1.3	143755
Mining & quarrying	751	2.9	1.2	866	3.0	1.2	1004
Manufacturing	8000	3.2	1.2	9365	3.3	1.2	11015
Construction	1872	17.7	2.3	4229	17.5	2.2	9471
Electricity, gas and water supply	1243	3.0	1.2	1441	3.0	1.2	1670
Trade, hotels and restaurants	19184	24.8	3.0	58077	24.8	3.0	175824
Trans., storage & communications	4528	9.9	1.6	7259	9.9	1.6	11637
Banking, insurance & real estate	11999	11.2	1.7	20401	11.5	1.7	35159
Public administration and other services	129240	5.1	1.3	165734	5.0	1.3	211523
Total	**272768**			**380007**			**601059**

Industry	2015	CAGR	Growth Factor	2020 (13)=(10)*(12)	CAGR	Growth Factor	2025 (16)=(13)*(15)
9	10	11	12	13	14	15	16
Agriculture & allied activities	143755	8.0	1.5	211223	8.3	1.5	314691
Mining & quarrying	1004	2.8	1.1	1153	2.5	1.1	1305
Manufacturing	11015	3.5	1.2	13082	3.8	1.2	15764
Construction	9471	15.0	2.0	19050	12.5	1.8	34328
Electricity, gas and water supply	1670	3.3	1.2	1964	3.5	1.2	2333
Trade, hotels and restaurants	175824	24.0	2.9	515451	15.5	2.1	1059492
Trans., storage & communications	11637	9.6	1.6	18403	9.3	1.6	28707
Banking, insurance & real estate	35159	11.0	1.7	59245	8.4	1.5	88674
Public administration and other services	211523	5.0	1.3	269963	4.0	1.2	328451
Total	**601059**			**1109535**			**1873745**

CAGR in the Table above stands for compound annual growth rates for respective periods whereas 'growth factor' denotes total growth in five years. Thus, growth rate of 8.0 percent per annum in five years gives a growth factor of 1.5 whereas growth rate of 24.0 percent per annum gives a growth factor of 2.9 in five years. Growth factor G can be written as a function of growth rate in terms of $G = [(100 + g)/100]^5$.

It is observed from Table 6.7 that in 2025, highest share of demand of technical manpower would be in "Trade, hotels and restaurant" (56 per cent) followed by "Agriculture & allied activities" (17 per cent), "Public Administration and other services" (17 per cent) and "Banking, insurances and real estate" (5 per cent).

Step IV: Estimating the Projected Employment with Vocational Skills

Technical manpower could be divided in three levels. Employment with technical skills has therefore been distributed by levels of technical skills viz. (i) Technical degree, (ii) Diploma/Certificate holder (above graduate level) and (iii) Diploma or Certificate holder (below graduate level) (Table 6.8).

While distributing the employment of technical manpower into different levels of technical education, ratios among these categories obtained in NSSO survey conducted in the year 2004-05 were applied. As per the NSSO survey, share of employment with 'Technical/Professional degree', 'Diploma or certificate above graduate level', and 'Diploma or certificate below graduate level' in the total employment with technical skills was 20 percent, 30 percent and 50 per cent respectively. Thus, around 50 per cent of technical manpower was vocationally equipped (trained or educated).

Therefore, employment of vocationally trained personnel for each year (say 2010) was obtained as given below.

$$VE_i^T = \pi_i \times ET_i^T$$

where,

VE_i^T = employment of vocationally trained

ET_i^T = Employment with technical skills

π_i = proportion of those with below graduate diploma or certificate

Table 6.8: Distribution of Technical Employment Manpower (in 000s) by Levels of Skills in 2010, 2015 2020 and 2025

	Total Employment (Technical)	Technical degree	Diploma or certificate (graduate and above)	Diploma or certificate (below graduate)
1	2	3	4	5
2005	272.8	54.6	81.8	136.4
2010	380.0	76.0	114.0	190.0
2015	601.1	120.2	180.3	300.6
2020	1109.5	221.9	332.9	554.8
2025	1873.7	374.7	562.1	936.9

Note: Employment with different technical skills have been estimated by applying the ratios of the year 2005obtained from NSSO survey which are given below: Share of employment with 'Tech. degree', 'Diploma or graduate level', and 'Diploma or certificate below graduate level' in the total certificate above employment with technical skills was 20 percent, 30 percent and 50 per cent respectively.

It has been observed that in the year 2005, 1.36 lakhs of persons with vocational training were employed in the state which would be increasing to 9.37 lakhs in the year 2025 (Table 6.8). In other words there was a demand of 1.36 lakhs persons with vocational educational and training in the year 2005 in the state, which would gradually increase to about 9.37 lakhs in the year 2025.

6.2.1.2 Indirect Method

Step I: Industry-wise employment elasticity of total employment

It has been obtained in the same way as EET of employment (with technical skills) w.r.t. GSDP discussed in step I of Direct Method. The only but crucial difference is that here industry-wise total employment has been taken instead of employment (of technical manpower) in the first step (Table 6.9). There was some reduction in the employment in "Electrical, gas and water Supply" industry and "Public administration and other services" during the period 1994 to 2005. Reduction in Employment in "Electrical, gas and water supply" sector from about 79000 to 39000 was treated as nil as this reduction may owe to reasonable excess employment in 1994, propelled by non-economic forces later on. It is not likely to continue. However in case of "Public administration and other services" the reduction may continue due to downsizing policy of the Government (See Table 6.9).

Table 6.9: Employment Elasticity of Total Employment with respect to GSDP during 1993 to 2004

INDUSTRY	GSDP (in Rs. lakhs)			EMPLOYMENT (No.)			EMP. Elasticity
	1994	2005	CAGR	1993-94	2004-05	CAGR	
Agriculture & allied activities	1584487	2162930	2.9	19565800	20852144	0.6	0.2
Mining & quarrying	4909	6849	2.6	21206	29328	3.0	1.2
Manufacturing	304002	459322	3.2	966211	1575646	4.5	1.4
Construction	99163	303713	10.7	269684	812602	10.5	1.0
Electricity, gas and water supply	37085	65444	5.3	79033	39000	-13.2	-2.5
Trade, hotels and restaurants	569233	1388048	8.4	1542898	2421359	4.2	0.5
Trans., storage & communications	261544	493795	5.9	336455	669823	6.5	1.1
Banking, insurance & real estate	246432	513174	6.9	83685	159421	6.0	0.9
Public administration and other services	775538	1306717	4.9	1466781	1177524	-2.0	-0.4
Total	**3882393**	**6699992**	**5.1**	**24331753**	**27776880**	**2.0**	**0.2**

Note: i) GSDP for the "Ministry & Quarrying" and manufacture industries relate to the years 1994 and 2007.

It has been observed that among different industries, during the period 1994 to 2005, EE was highest for 'manufacturing' (1.4) followed by 'mining & quarrying' (1.2), 'transport, storage, & communication.' (1.1). EE of 'electricity, water and gas supply' and 'pubic administration and other services' are negative. They appear to be so due to downsizing policy in employment in this industry during this period in the state.

More importantly, during the period 1994-2005, it is noticed that elasticity of general employment in all sectors was totally different than that of technical manpower.

Step II: Projected Growth Rates of Total Employment

Method of obtaining these growth rates is also same as for technical employment in step II of First Method. The difference here is that we get the CAGRs of 'total employment' instead of 'employment with technical skills'. However, same EEs were suitably changed for the periods 2005-10, 2010-15, 2015-20 and 2020-25 keeping in view initiatives undertaken in the economy. Industry-wise proposed EE of total employment with respect to GSDP and industry-wise projected growth rates of employment are given in Tables 6.10 and 6.11.

Table 6.10: Actual & Proposed Elasticity of Total Employment with respect to GSDP During 2005 to 2025

Industry	Actual	Proposed			
	1994-2005	2005-10	2010-15	2015-20	2020-25
Agriculture & allied activities	0.20	0.15	0.10	0.00	0.00
Mining & quarrying	1.15	0.80	0.60	0.40	0.30
Manufacturing	1.41	0.90	0.60	0.30	0.25
Construction	0.98	0.70	0.40	0.30	0.25
Electricity, gas and water supply	0.00	0.10	0.15	0.20	0.25
Trade, hotels and restaurants	0.50	0.45	0.40	0.30	0.25
Trans., storage & communications	1.09	0.80	0.50	0.30	0.30
Banking, insurance & real estate	0.88	0.70	0.50	0.30	0.25
Public administration and other services	-0.41	-0.35	-0.35	-0.35	-0.35

Table 6.11: Estimating the Projected Growth Rates of Total Employment

Industry	Growth Rates of GSDP			
	2005-10	2010-15	2015-20	2020-25
Agriculture & allied activities	1.0	2.5	4.0	5.5
Mining & quarrying	5.8	6.0	5.5	5.0
Manufacturing	6.4	6.5	7.0	7.5
Construction	35.4	35.0	30.0	25.0
Electricity, gas and water supply	5.9	6.0	6.5	7.0
Trade, hotels and restaurants	16.6	16.5	16.0	15.5
Trans., storage & communications	16.6	16.5	16.0	15.5
Banking, insurance & real estate	11.2	11.5	11.0	10.5
Public administration and other services	5.1	5.0	5.0	5.0
	Proposed employment elasticity			
Agriculture & allied activities	0.15	0.10	0.00	0.00
Mining & quarrying	0.80	0.60	0.40	0.30
Manufacturing	0.90	0.60	0.30	0.25
Construction	0.70	0.40	0.30	0.25
Electricity, gas and water supply	0.10	0.15	0.20	0.25
Trade, hotels and restaurants	0.45	0.40	0.30	0.25
Trans., storage & communications	0.80	0.50	0.30	0.30
Banking, insurance & real estate	0.70	0.50	0.30	0.25
Public administration and other services	-0.35	-0.35	-0.35	-0.35
	Growth rates of employment			
Agriculture & allied activities	0.15	0.25	0.00	0.00
Mining & quarrying	4.63	3.60	2.20	1.50
Manufacturing	5.74	3.90	2.10	1.88
Construction	24.75	14.00	9.00	6.25
Electricity, gas and water supply	0.59	0.90	1.30	1.75
Trade, hotels and restaurants	7.45	6.60	4.80	3.88
Trans., storage & communications	13.26	8.25	4.80	4.65
Banking, insurance & real estate	7.86	5.75	3.30	2.63
Public administration and other services	-1.78	-1.75	-1.75	-1.75

It will be observed that growth rates of various sectors would gradually reduce from quinqennium to quinquennium. During the period 2020-25, CAGR of total employment was highest for 'construction' (6.3)

followed by 'transport, storage & communication.' (4.7) and 'trade, hotels and restaurant' (3.9). It is negative for 'public administration and other services'. See Table 6.11.

Step III: Projected Total Employment

Again method of estimating the total employment is also same as for employment of technical manpower in Step III of Direct Method. The difference here is that we will get the total employment instead of employment of technical manpower at this page. See Table 6.12.

It has been estimated that in Bihar state total employment in the year 2005 was 277 lakhs which would increase to 316 lakhs in the year 2010, 365 lakhs in the year 2015, 411 lakhs in the year 2020 and 458 lakhs in the year 2025 (Table 6.12 A and 6.12B).

Table 6.12A: Estimating the Employment (in numbers) in 2010 and 2015

Industry	2005	CAGR	Growth Factor	2010 (5) = (2)*(4)	CAGR	Growth Factor	2015 (8) = (5)*(7)
1	2	3	4	5	6	7	8
Agriculture & allied activities	20852144	0.15	1.01	21009005	0.25	1.0	21272934
Mining & quarrying	29328	4.63	1.25	36776	3.60	1.2	43890
Manufacturing	1575646	5.74	1.32	2083034	3.90	1.2	2522168
Construction	812602	24.75	3.02	2455163	14.00	1.9	4727208
Electricity, gas and water supply	39000	0.59	1.03	40164	0.90	1.0	42004
Trade, hotels and restaurants	2421359	7.45	1.43	3468097	6.60	1.4	4773944
Trans., storage & communications	669823	13.26	1.86	1248368	8.25	1.5	1855591
Banking, insurance & real estate	159421	7.86	1.46	232727	5.75	1.3	307786
Public administration and other services	1177524	-1.78	0.91	1076390	-1.75	0.9	985445
Total	**27717000**			**31649725**			**36530970**

In these two Tables (Table 6.12 A and 6.12B), CAGR stands for compound annual growth rates for respective periods whereas 'growth factor' denotes total growth in five years. Thus, growth rate of 0.15 percent per annum in five years gives a growth factor of 1.01 whereas growth rate of 7.86 percent per annum gives a growth factor of 1.46 in five years. Growth factor G can be written as a function of growth rate in terms of $G = [(100 + g)/100]\text{^}5$.

Table 6.12B: Estimating the Total Employment (in numbers) in 2020 and 2025

Industry	2015	CAGR	Growth Factor	2020 (5)=(2)*(4)	CAGR	Growth Factor	2025 (8=(5)*(7)
1	2	3	4	5	6	7	8
Agriculture & allied activities	21272934	0.00	1.0	21272934	0.00	1.0	21272934
Mining & quarrying	43890	2.20	1.1	48935	1.50	1.1	52717
Manufacturing	2522168	2.10	1.1	2798355	1.88	1.1	3071479
Construction	4727208	9.00	1.5	7273395	6.25	1.4	9848767
Electricity, gas and water supply	42004	1.30	1.1	44806	1.75	1.1	48866
Trade, hotels and restaurants	4773944	4.80	1.3	6035089	3.88	1.2	7300345
Trans., storage & communications	1855591	4.80	1.3	2345788	4.65	1.3	2944319
Banking, insurance & real estate	307786	3.30	1.2	362035	2.63	1.1	412213
Public administration and other services	985445	-1.75	0.9	902184	-1.75	0.9	825958
Total	**36530970**			**41083521**			**45777598**

With this increase in employment, workforce participation rate would also increase from 288 per thousand population in the year 2005 to 305 in the year 2010 to 331 in the year 2015 to 353 in the year 2020 to 378 in the year 2025 (Table 6.13).

Table 6.13 Workforce Participation Rates (WFPR) per Thousand Population in Bihar

Year	Employment (in 000s)	Population (in 000s)	WFPR per thousand
2005	27717	96356	288
2010	31650	103804	305
2015	36535	110420	331
2020	41083	116325	353
2025	45778	121063	378

Step IV: Projected Manpower with Vocational Skills

'Total employment' projected includes both 'employment with technical skills' and 'employment with no technical skills'. Total projected employment, percentage of technical employment to total employment and estimated employment with technical skills is given in Table 6.14.

Further, 'employment with technical skills' was distributed by three levels of technical skills viz. (i) Technical/professional degree (ii) Diploma or certificate holder (above graduate level) and (iii) Diploma or certificate holder (below graduate level). Percentage of technical employment to total employment and employment with different technical skills have been estimated by taking into consideration ratios that obtained in the year 2004-05 for these categories of persons from NSSO survey. Ratio of "employment with technical skills" to "total employment" in Bihar was just about one percent in the year 2005, which is too low. It is assumed that this ratio would gradually increase from one per cent in the year 2005 to 1.5 per cent in 2010, 2.2 per cent in 2015, 3.0 per cent in 2020 and 4.0 per cent in the year 2025. Share of employment with 'Technical degree', 'Diploma or certificate above graduate level', and 'Diploma or certificate below graduate level' in the total employment with technical skills was about 20 per cent, 30 per cent and 50 per cent respectively. Taking these ratios for next 15 years,

employment of persons having diploma or certificate (below graduate level) gives the demand of vocationally trained persons in the state.

It has been estimated that in the year 2005, 1.4 lakhs of persons with vocational training were employed in the state which would increase to about 9.2 lakhs in the year 2025 (Table 6.14). In other words there was a demand of 1.4 lakhs persons with vocational training in the year 2005 in the state, which would gradually increase to about 9.2 lakhs in the year 2025, around six fold in 20 years.

Table 6.14: Estimating the Employment of Technical Manpower by levels) (in 000s)

Year	Employment (in 000s)	Per cent of Technical Manpower to Total Employment	Employment Technical Manpower			
			Total Employment with Technical skills	Technical degree	Diploma or certificate (graduate and above)	Diploma or certificate (below graduate)
2005	27717	1.0	271.6	54	81	136
2010	31689	1.5	474.8	95	142	237
2015	36568	2.2	803.8	161	241	402
2020	41118	3.0	1232.5	246	370	616
2025	45808	4.0	1831.1	366	549	916

Note: Employment with different technical skills have been estimated by applying the ratios of the year 2005 obtained from NSSO survey which are given below: (i) Ratio of "employment with technical skills" to "total employment" is about one percent (0.98 percent) (ii) Share of employment with 'Technical degree', 'Diploma or certificate above graduate level', and 'Diploma or certificate below graduate level' in the total employment with technical skills was 20percent, 30 percent and 50 per cent respectively.

6.3 Comparison of two methods of estimation for WIS Demand

In the above section we have estimated the demand for employment of persons with vocational skills within the state by two methods. As per the Direct Method, demand of persons with vocational skills would increase from 1.4 lakhs in the year 2005 to about 9.4 lakhs in the year 2025 (Table 6.8). As per the Indirect Method, demand of manpower with vocational skills would increase to about 9.2 lakhs in the year 2025. See Table 6.14.

In the period of liberalization, share of technical manpower to total manpower is going to increase very fast in future. This factor is well taken into consideration in the Indirect Method. Beside this, the estimates of Indirect Method are more stable as compared to the Direct Method. So we hold that the estimates of Indirect Method are better than those obtained by the Direct Method. Further on, we shall use only the estimates obtained through Indirect Method.

6.4 Annual Flow of Additional Demand for Manpower with Vocational Skills (WIS)

It may be noted that what was so far estimated was the stock demand in the terminal years. What is important is the increment in the demand from the viewpoint of preparation to be made to meet the demand.

We find that our exercise shows that demand of manpower with vocational skills has risen by 11.75 percent, 11.15 percent, 8.9 percent and 8.2 percent per annum for the periods of 2005-10, 2010-15, 2015-20 and 2020-25 respectively. Under the assumption that during 2005-10 the demand rose as per our estimates, we can project demand for next 15 years by applying appropriate growth rates for interpolation between terminal years. See Table 6.15.

It may be seen that annual increment in demand for manpower with vocational skills increases from 26400 in 2010-11 to 40300 in 2014-15, to 50400 in 2019-20, and to 69900 in 2024-25.

At the juncture of two periods, we notice, because of sudden moderation in growth rate, even with higher base, additional demand seems to be slackening in the beginning but then rise again. We therefore need to smooth the curve. For the purpose, we note that total rise is around 43500 over 26400 in 14 years between 2010-11 and 2024-25. We adjust the annual

increment at around 3150. We resort to this technique because there is no predictable reason for belief that the demand can slack down for two years of 2014-17 and stay put 2019-21. We shall therefore be using adjusted additional demand in further exercises. They are estimated to be 37900, 53000 and 70150 for which we to generate capacity of vocational education and training by 2014-15, 2019-20 and 2024-25.

Table 6.15: Additional Annual Demand for Manpower with Vocational Skills (WIS)

Year	Stock Demand	Additional Demand	Additional Demand Adjusted	Year	Stock Demand	Additional Demand	Additional Demand Adjusted
2009-10	237000			2017-18	519300	42500	47050
2010-11	263400	26400	26400	2018-19	565600	46200	50200
2011-12	292800	29400	29200	2019-20	616000	50400	53400
2012-13	325400	32600	32050	2020-21	666900	50900	56650
2013-14	361700	36300	34950	2021-22	721900	55000	59950
2014-15	402000	40300	37900	2022-23	781600	59006	63300
2015-16	437800	35800	40900	2023-24	846100	64500	66700
2016-17	476800	39000	43950	2024-25	916000	69900	70150

6.5 Demand for Manpower with Vocational Skills from Outside Bihar

Skilled workers have a great scope of employment in other states of India (ROI) as well as in other countries (ROW).

A recent study of Bihari migrant labourers by IIPA (IIPA, 2010) has estimated that around 45 to 50 lakhs Bihari migrant labourers are working in other states of India. A large number of migrants from Bihar to other states are unskilled. If some of these unskilled workers are provided some skills in the home state, they can get higher wages in the other states and can have a better bargaining power. This would increase the demand of skilled labour with vocational skills. Their remittances to home state would hopefully trigger economic activity backyard or at least improve living conditions of family members left behind. Multiplier would rejuvenate economic activity in the state.

Skilled workers would have a great scope of employment in other countries also (ROW), particularly in the developed countries where dependency ratio is expected to increase very high. In the year 2001, about 43 percent of total population of the state was in the age-group of below 15 years (Census of India, 2001) (and it might be well 40 percent by 2011.) A high proportion of this population has entered in the working population by now. Another advantage is that with increasing participation of female work force in the state, dependency ratio is going to decrease significantly in future. It would increase per capita income of the state which may have a direct bearing on the individuals demand for vocational training. Once they are trained, they can have a great scope of employment in other countries and this way Bihar's share in total outmigration from India to other countries can increase.

There are two major sources which give estimates of the incidence of migrations from Bihar. The first is the Population Census conducted every tenth years and the other is the periodic survey conducted by NSSO. Data for estimating the extent of migration from Bihar to other states, along with the background (age, qualification and sex etc.) of migrants and reasons of migrations has been obtained from these two sources. Besides these two official sources, there are a number of studies on "Migration from Bihar state". Main sources of data on International Migration from India to different countries are the Ministry of External Affairs and the Ministry of Overseas Indian Affairs, Government of India.

6.5.1 Demand for Manpower with Vocational Skills from Bihar from Other States of India (ROI)

If we look at the characteristics of migration for Bihar, out-migration is much higher as compared to in-migration. As per the NSSO survey on "Migrant in India" conducted in the year 2007-08, out-migration from the state (47.1 lakhs) by place of residence was about ten times as compared to in-migration (5.5 lakhs) in the state (NSSO, 2009). Net migration (difference of out-migration and in-migration) in the state during that year was about 42 lakhs. This gives us out-migration rate of around 6.5 per cent and net migration rate of 5.6 per cent, which are quite high compared to other Indian States. See Table 6.16.

Table 6.16 Net migration in Bihar state

In-migration	550500
Out-migration	4707700
Out-migration to abroad	104600
Net out-migration	4261800
Population	75501700
Net outmigration rate (per 1000 population)	56

Data Source: NSSO, 64th Round (2007-2008), Migrant in India, Statement 6.5.1

Secondly, about the reasons of migration, there was one major difference among the males and females. Main reason of out-migration for males was employment whereas main reason for out-migration for females was marriage. While former could be said to be economic, the latter is social. In the year 2007-08, 87.7 per cent of male out-migrants from Bihar migrated to other states for employment related reasons, whereas 78.4 per cent of female out-migrants migrated from the state because of their marriage. See Table 6.17.

Table 6.17 Distribution (per 1000) of Out-migrants by Reason for Out-migration

Reasons	Out-migrants (per 1000)		
	Male	Female	Persons
Employment related	877	13	565
Studies	30	18	25
Marriage	6	784	286
Movement of parent/ earning member	56	178	100
Others	21	4	15
All (Including not reported)	1000	1000	1000

Data Source: NSSO, 64th Round (2007-2008), Migrant in India, statement 6.3.1

NSSO gives the details of the migrants of states by place of residence only. It does not give the migration with respect to its last survey on migration. But population census gives the details of migrants of states by place of birth as well as with respect to its last census. As per census estimates, migrants by place of last residence means a person might have migrated during the last ten years. In-between too, people might have migrated more than once. It gives an estimate of migrants during the last ten years, which can be used for estimating the average migration per year for different states.

Distribution of out-migrants by reason of migration is given by NSSO (Table 6.17). It is observed that 56.5 per cent of these migrants (males and females combined) are migrating for employment related activities. In other words, out of 2.20 lakhs of out-migrants, 1.25 lakhs are migrating every year to other states of India for employment related activities.

As per 2001 Population Census, Bihari migrants in different states of India by place of birth were about 55 lakhs whereas the NSSO estimates by place-of-birth in the year 2007 were 47 lakhs which are very close to the estimates given by the census for the year 2001. The Census also gives migration figures by place of last residence, which is about 22 lakhs.

Delhi attracts most of the Bihari migrants. Its neighbours Jharkhand and West Bengal attract Biharis almost in equal number. One can well imagine that migration to Delhi may be economic one whereas that to neigbouring states may primarily be social. Next in order are Maharashtra, Uttar Pradesh, Haryana and Punjab. One can again find that migration to Uttar Pradesh may predominantly be social whereas that to Maharashtra, Haryana and Punjab is primarily economic.

Table 6.18: Bihari Migrants by Place of Last Residence (Duration 0-9 Years)

Place of enumeration	Persons	Share %
Delhi	410275	18.84
Jharkhand	299525	13.76
West Bengal	289594	13.30
Maharashtra	223752	10.28
Uttar Pradesh	217156	9.97
Haryana	149701	6.88
Punjab	146131	9.71
Gujarat	101554	4.66
Rajasthan	50261	2.31
Madhya Pradesh	43523	2.00
Assam	33805	1.55
Chhattisgarh	32369	1.49
Orissa	27685	1.27
Uttaranchal	22496	1.03
Karnataka	19609	0.90
Chandigarh	19296	0.89
Himachal Pradesh	17763	0.82
Andhra Pradesh	14314	0.66
Others	58385	2.69
Total	**2177194**	**100.00**

Data Source: D-12: Census of India, 2001

A recent study of Bihari Migrant labourers, conducted by the Indian Institute of Public Administration (2010) highlights that migration is not necessarily prevalent among very poor and illiterate persons alone. See Table 6.19. But nevertheless they are not highly educated either.

Table 6.19 Percentage Distribution of Migrant labour from Bihar by Level of Education

Sector	Total
Illiterate	29.00
Semi Literate	5.00
up to 3rd level	10.00
4th to 8th level	24.33
Below 10th level	10.83
Below 12th level	12.67
Under Graduate	5.17
Post Graduate	1.67
Others	1.33

One can see that one-fifth (20 per cent) of the migrants surveyed claimed to have received education of matriculation and above level.

The study further emphasizes that most of the labour that migrates is either unskilled or have low level of skills. Their earnings consequently are low. There is a strong market for various types of skills in sectors to which the migrant labour has been flowing. Training Bihari labour in different skills will considerably improve their earning capacity and prospects of employment.

We also strongly feel that if the unskilled economic/labour migrants from Bihar are imparted vocational training in the state, they would get the employment in other states at higher wages. Even by conservative estimates out of 1.25 lakhs migrants per year from Bihar who are migrating for employment related activities about 12,500 (10 per cent of out-migrants) may demand vocational training per year in the state. In other words an additional demand of 12,500 vocationally trained persons was generated in the year 2010 in the state from other states of India.

Table 6.15 shows that future demand of vocationally trained persons within the state by Indirect Method would increase from 2.38 lakhs in the year 2010 to 9.16 lakhs in the year 2025. In other words it would increase at

the rate of about 10 per cent per annum. As pointed out earlier, growth rate of demand by Direct Method is also more or less same but there is more stability in the estimates of Indirect Method as compared to Direct Method during different years. If we assume that additional demand from other states would also increase at the same rate then the additional demand of vocationally trained persons from outside the state would increase from 12,500 in the year 2010 to 15954 in the year 2015 to 20361 in the year 2020 to 25987 in the year 2025. See Table 6.20.

Table 6.20: Additional Demand for Manpower with Vocational Skills from ROI, 2010 to 2025

Year	Additional Demand	Year	Additional Demand	Year	Additional Demand
2010-11	12500	2015-16	15955	2020-21	20360
2011-12	13125	2016-17	16750	2021-22	21380
2012-13	13780	2017-18	17590	2022-23	22450
2013-14	14470	2018-19	18470	2023-24	23570
2014-15	15195	2019-20	19390	2024-25	24750

6.5.2 Demand for Manpower with Vocational Skills from ROW

Year-wise labour outflows from India to different countries of the world during 2004 to 2009 is given in Table 6.21 It shows that every year about 6 lakh persons migrate to other countries. Main destination countries of these migrants are the countries in the Middle East, like UAE, Saudi Arabia, Oman, Qatar, Kuwait and Bahrain but also Malaysia. Looking at the past trend of out-migration, one may argue that during next two decades their number would increase further. In the year 2004, there were 4.7 lakhs out-migrants from India but their number increased to 6.1 lakhs by the year 2009 in five years time— at the rate of 5 per cent per annum.

Table 6.21: Labour Outflows from India by destination 2004-2009

Country	Bahrain	Kuwait	Malaysia	Oman	Qatar	Saudi Arabia	UAE	Others	Total
2004	22980	52064	31464	33275	16325	123522	175262	20068	**474960**
2005	30060	39124	71041	40931	50222	99879	194412	23184	**548853**
2006	37688	47449	36500	67992	76324	134059	254774	22126	**676912**
2007	29966	48467	30916	95462	88483	195437	312695	8027	**809453**
2008	31924	35562	21123	89659	82937	228406	349827	9163	**848601**
2009	17541	42091	11345	74963	46292	281110	130302	6628	**610272**

Data Source: Annual report, 2009-10, Government of India, Ministry of Overseas Indian Affairs

Year-wise number of out-migrants to various countries from Bihar are given in Table 6.22. It is observed that in the year 2004, there were only 21812 out-migrants to different countries, which increased to 62633 in the year 2010. In other words there was a growth of about 19 per cent per annum during the last six years. This also shows that growth of international migration from Bihar is at least four times higher. Its growth rate of 19 per cent per year during 2004 to 2010 stands distinctly above in comparison to that to the rest of the country as all-India rate is only 5 per cent per annum.

Table 6.22: Number of Out-migrants from Bihar to Various Countries, 2004-2010

Year	2004	2005	2006	2007	2008	2009	2010
Out-migrants	21812	9366	36493	51805	60642	50227	62633

Data Sources: (i) Annual report, 2009-10, Government of India, Ministry of Overseas Indian Affairs. (ii) Through E-mail from the Ministry of Overseas Indian Affairs.

At present, Ministry of Overseas Indian Affairs is the nodal ministry for administration of Emigration Act, 1983. As per the Annual Report (2009-10) of the Ministry, the demand for unskilled workers is declining in the overseas employment market and the future belongs to the skilled workers, preferably with multiple skills. It is, therefore important for India to upgrade the skills of its young workforce to meet the challenges of future needs in the overseas employment market which is having flux of emigrant labourers from neighboring countries.

Data on out-migrants from Bihar to other countries by type of skills during the last three years (2008-2010) shows that more than 95 per cent of migrants were in the occupations which require some diploma or certificate in vocational skills. Remaining less than 5 per cent of the migrants were those who were either professionals (engineers, doctors, agriculturists) or were simply unskilled workers or were there for social reasons. More details of these out-migrants by type of skill/occupation, for the last three years is given in Appendix VI.1 at the end of this chapter. Another important point worth mentioning about these out-migrants is that out of these out-migrants, share of persons who migrate permanently is not very large.

If we assume, taking a safer side, that during the last five years, out of 50,000 out-migrants per year, 40,000 (80 per cent) were the persons having certificate or diploma in vocational skills. Further, we also assume that out of 40,000 out-migrants per year only 20 per cent were the new migrants and the remaining 80 per cent were the old migrants who got extension in their work permits in different countries. There was thus an additional demand of 8000 vocationally equipped manpower from Bihar.

Table 6.14 shows that future demand of vocationally trained persons within the state (by Indirect Method) would increase from 2.37 lakhs in the year 2010 to 9.16 lakhs in the year 2025. In other words it would roughly increase at the rate of about 10 per cent per annum. But it is the growth of stock demand. When we calculate the growth rate of demand for additional flow, it is found to be around 6.7 percent per annum. See Table 6.15. If we assume that additional demand from other countries would also increase at half the rate of the present growth rate of international migration, hoping that there would less incentive for people from Bihar to the countries of present destination, then the additional demand of vocationally trained manpower

from Bihar would increase from 8000 in the year 2010 to 10210 in the year 2015 to 13030 in the year 2020 to 16630 in the year 2025. See Table 6.23. In 15 years hence, the demand at 10 percent per year would roughly double.

Table 6.23: Additional Demand for Manpower with Vocational Skills from ROW, 2010 to 2025

Year	Additional Demand	Year	Additional Demand	Year	Additional Demand
2010-11	8400	2015-16	10720	2020-21	13680
2011-12	8820	2016-17	11255	2021-22	14365
2012-13	9260	2017-18	11820	2022-23	15085
2013-14	9725	2018-19	12410	2023-24	15840
2014-15	10210	2019-20	13030	2024-25	16630

6.6 Total Additional Demand for Manpower with Vocational Skills

We have estimated in previous sections three components of demand for manpower with vocational skill sets from within Bihar (WIS), from other states of the country (ROI) and from other countries of the world (ROW). As WIS demand was computed through employment elasticities at terminal years, the same was converted into incremental form. Collecting these estimates from different sections, we present the total as below.

Table 6.24: Year-Wise Total Additional Demand for Manpower with Vocational Skills from Bihar

Year	Additional Demand			
	(WIS)	(ROI)	(ROW)	Total
1	2	3	4	5
2010-11	26400 (55.8)	12500 (26.4)	8400 (17.8)	47300
2011-12	29200 (57.1)	13125 (25.7)	8820 (17.2)	51145
2012-13	32050 (58.2)	13780 (25.0)	9260 (16.8)	55090
2013-14	34950 (59.1)	14470 (24.4)	9725 (16.5)	59145
2014-15	37900 (59.9)	15195 (24.0)	10210 (16.1)	63305
2015-16	40900 (60.5)	15955 (23.6)	10720 (15.9)	67575
2016-17	43950 (63.8)	16750 (24.3)	11255 (16.3)	68905
2017-18	47050 (64.1)	17590 (24.0)	11820 (16.1)	73360
2018-19	50200 (64.4)	18470 (23.7)	12410 (15.9)	77930
2019-20	53400 (64.6)	19390 (23.5)	13030 (15.8)	82620
2020-21	56650 (64.8)	20360 (23.3)	13680 (15.6)	87440
2021-22	59950 (64.9)	21380 (23.1)	14365 (15.5)	92395
2022-23	63300 (64.9)	22450 (23.0)	15085 (15.5)	97485
2023-24	66700 (65.0)	23570 (22.9)	15840 (15.4)	102710
2024-25	70150 (65.0)	24750 (22.9)	16630 (15.4)	108080

Note: Figures in the parentheses are shares in percentage.

It can be seen from the Table 6.24 that total demand is expected to rise from around 47300 in 2010-11 to over 100000 in 2024-25. Domestic demand increases 2.4 times, demands from ROI and ROW becomes almost double. As a result, the share of domestic demand increases from 56 percent in 2010-11 to 65 percent in 2024-25. Correspondingly, share of ROI demand decreases from 26 percent to 23 percent and that of ROW demand from around 18 percent to 15 percent during the same period.

6.7 Supply of Manpower with Vocational Skills

We ought to now know the supply side of manpower trained in Bihar with vocational skills. There are several departments, besides the Department of Labour Resources under whose aegis—support, control and regulation—institutions of vocational training operate. Some of these departments have their own boards (like Khadi & Village Industries Board) and authorities (like Bihar Urban Development Authority). In some cases, like Department of Industries, there are directorates/sections running vocational training courses. Departments of Education and Health do have their systems of providing vocational education and/or training. There are also Jan Shikshan Sansthan supported by the Union Ministry of HRD. Then, there are stand-alone institutions of governments of the Union and the State.

Unfortunately, the data pertaining to Departments/Boards/Councils other than that of Labour Resources are too scanty and too sparse to engage in a serious exercise. For example, while intake of certain boards/institutes is known, the pass-out number thereof is not available for the country as a whole or for any State. Even the data on pass-out from ITIs/ITCs is not available for Bihar. There is one such estimate available for Kerala (Government of Kerala, Department of Industries Department, 2008). In the

absence of any better information, we can impose this pass-out or out-turn percentage on intake of ITIs/ITCs Bihar.

During three years (2005, 2006 and 2007) total intake of ITIs/ITC students in Kerala was 71,115. Out of these who appeared in different trades, 43,355 had passed out. This gives a pass out rate of about 60 per cent in Kerala state. If we apply the same pass-out rate to 31,000 students who appear in different trades in ITI/ITCs of Bihar state, then about 18 thousand students are passing out every year. This number gives an additional supply of vocationally equipped manpower from ITI/ITCs per year.

6.8 Allocation of the Demand Ought to be Met by ITI/ITCs in Bihar

As per the intake data of ITIs/ITCs received from the Department of Labour Resources, government of Bihar, and other departments of the State for the year 2009, share of ITIs/ITCs to total vocationally trained persons having diploma or certificate (below graduate) was about 53.0 per cent. Total intake in all these institutions in that year was about 58160. See Table below. Out of these 58160 students who took admission, 31000 students were admitted in ITIs/ITCs (with distribution between ITIs and ICT being 40:60).

Institution	ITIs	ITCs	Education+	Industries +	Total
Number	12143	18859	7000	20168	58170

In other words about 53 per cent students got admission in ITIs/ITCs and remaining 47 per cent were in other institutions of the state including those belonging to department of industries, education, health, khadi board or urban development authority.

In future this ratio would depend upon the expansion plan of private agencies funded by the National Skill Development Corporation on the one

hand and expansion plan of different state government departments on the other. However we have assumed that ITI/ITC passed would be about 50 per cent of the total vocationally trained persons.

Actual supply would really depend, generally speaking, on the result of the certificate examination. Under a not-so-heroic assumption that pass-out ratio would be the same across the institutions irrespective of the administrative dispensation, 53 percent of the demand would be met by the institutions run or controlled by the Department of Labour Resources of the Bihar Government. We have marginally toned down this ratio as other institutions are supposed to be growing faster as there has been in a past few years a big spurt, thanks to new initiatives and encouragement by the government, in number of private institutions, as indicated in Chapter IV. But they may look for consolidation of efforts rather than expansion.

All departments are supposed to be undertaking new initiatives, particularly those taking care of high growth sectors. Vocational education is also be encouraged by bringing students post class 8, though unfortunately it is found that of the allocated budget of over Rs 40 crore, not even Rs 13 crore was spent. We also believe that private initiatives would not be forthcoming only under Craftsman Training Scheme. But at the same time, Craftsman Training Scheme will not lag behind. We are encouraged by recent development in private sector run vocational institutes, known as Industrial Training Centres, supported and encouraged by the Department of Labour Resources. The share of ITCs within Craftman Training Centre would now be taking lead and ITIs should be playing complementary role. So we assign a share of 50 percent to the Department of Labour Resources to meet the demand for manpower with vocational skills through ITIs and

ITCs. The additional accretion to vocationally equipped manpower that ought to be met ITIs and ITCs is presented in Table 6. 25.

Table 6.25: Additional Demand to be Met by ITI/ITCs for Manpower with Vocational Skills

Year		Year		Year	
2010-11	23650	2015-16	33785	2020-21	43720
2011-12	25570	2016-17	34450	2021-22	46200
2012-13	27545	2017-18	36680	2022-23	48740
2013-14	29570	2018-19	38965	2023-24	51355
2014-15	31265	2019-20	41310	2024-25	54040

The Table shows that ITIs and ITCs as friends in enterprise should prepare themselves for producing around 24000 personnel in 2010-11 and progressively equip to turn out a force of around 55000 by 2024-25. The ITIs/ITCs in Bihar will have to increase in number, enhance their intake and introduce new skill sets in order to meet at least 50 percent of the likely industrial demand for manpower with vocational skills. We shall be projecting the shortage scenario on the basis of present supply of the ITIs/ITCs.

The ITIs/ITCs of Bihar state are at present supplying about 18600 personnel with various vocational skill sets while they admit around 31000. In the stagnation scenario of constant intake and constant pass-out percentage, the shortage will keep increasing from year to year.

6.9 Shortages of ITI/ITCs Trained Persons in Bihar

It is estimated that, in the year 2010 there was a shortage of 5050 pass-outs in the expected supply of vocational manpower by the ITI/ITCs in the state. If the existing trends of intake and pass percentage continue, which implies there is no increase in the intake capacity of ITIs/ITCs or in pass percentage in the state, then there would be a shortage of over 12500 persons

in the year 2015 and this shortage would further increase to over 35000 in the year 2025. See Table 6.25 and Charts VI.1 and VI.2.

Table 6.26: Additional Demand, Additional Supply and Shortages of ITIs/ITCs Trained Persons on Yearly Basis

Periods	Additional Demand	Additional Supply	Shortages
1	2	3	4
2010-11	23650	18600	5050
2011-12	25570	18600	6970
2012-13	27545	18600	8945
2013-14	29570	18600	10970
2014-15	31265	18600	12665
2015-16	33785	18600	15185
2016-17	34450	18600	15850
2017-18	36680	18600	18080
2018-19	38965	18600	20365
2019-20	41310	18600	22710
2021-21	43720	18600	25120
2021-22	46200	18600	27600
2022-23	48740	18600	30140
2023-24	51355	18600	32755
2024-25	54040	18600	35440

Chart VI.1 shows the yearly demand and supply whereas Chart VI.2 shows yearly shortages of ITIs/ITCs in the state.

Chart VI.1: Additional Demand, Supply and Shortages of ITIs/ITCs Trained Persons in Bihar

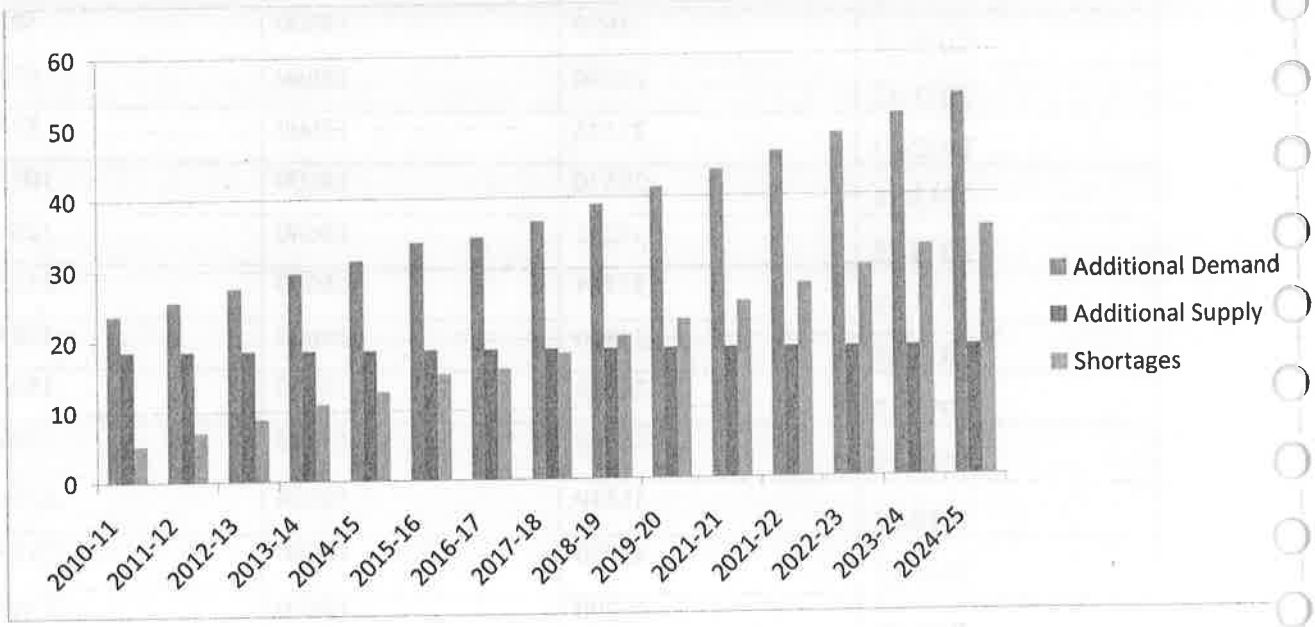
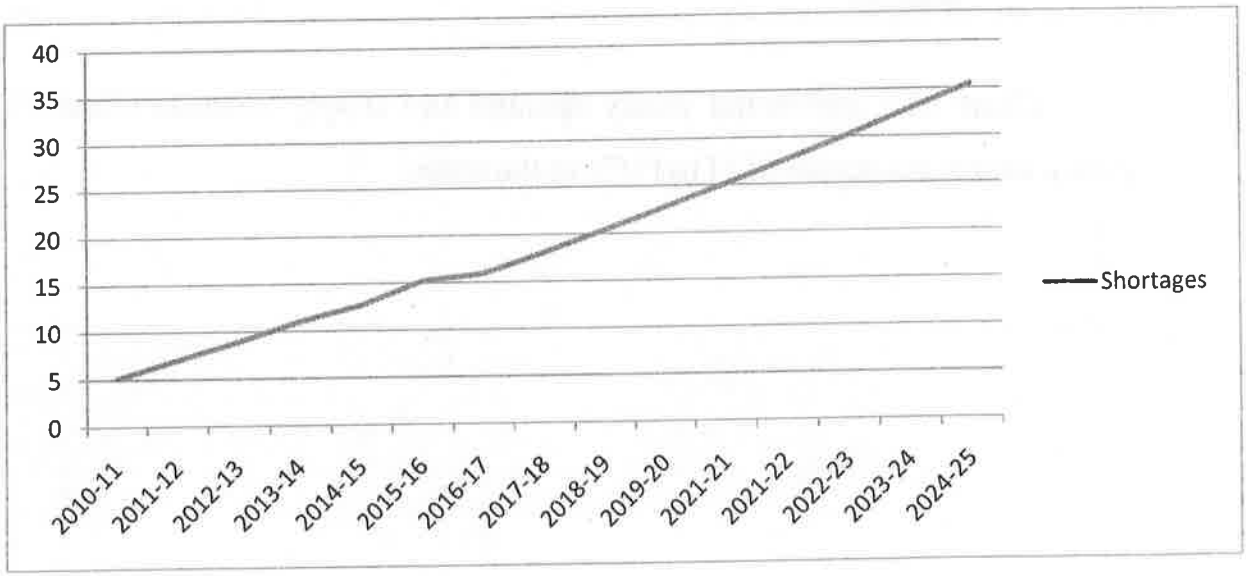


Chart VI.2: Shortages of ITIs/ITCs Trained Persons in Bihar



6.10 Future Shortage of ITI/ITCs in Bihar

It has been mentioned in sub-section 4.5.3 on "State Departments Providing Vocational Training" in Chapter IV that there were 252 Industrial Training Institutes/Industrial Training Centers in the state in the year 2009. Actual intake in these institutions was about 31,000 in that year. On an average this gives 125 students per Institute/Center. We do note that intake of ITIs is much larger than ITCs: On an average, an ITI admits around 270 trainees while an ITC admits only around 93 trainees. We guess a typical ITI is designed to admit 300 students while a typical ITC is there for about 100 students. An ITI may have facilities for many more trades than an ITC would be prepared for. But in the days to come more ITCs are more likely, thus depressing the average further. Assuming that ITCs also consolidate rather than proliferate in number and would be slightly bigger with time, the average may remain intact as in underprovided regions ITI would be an answer.

We also know that actual intake per year in these institutes should be much higher than the pass-outs per year. Applying this average to the shortages of ITI/ITC pass-outs, we get year-wise intake and shortage of IT Institutes/Centers. See Table 6.31.

It is found that there was a shortage of about 86 Industrial Institutes/Centers in the year 2010-11 but this would increase to 218 in the year 2014-15, 340 in the year 2019-20 and 550 in the year 2024-25. See Table 6.31. As of now, there ought to be about 340 ITI/ITCs. In next five years their number should increase to 470. By 2019-20, they should number around 600 and by 2024-25, 800.

There are 534 community development block. Each block should have at least an Industrial Training Institute or an Industrial Training Centre in next five-seven years. There are 103 towns. Generally speaking, each town also deserves an Industrial Training Institute or an Industrial Training Centre. And each municipal corporation would deserve on an average more than half a dozen Institutions.

Table 6.27: Shortages of Industrial Training Institutes/Centers in Bihar

Periods	**Shortages ITI/ITC Trainees**	**Shortage of Intake in ITI/ITCs**	**Shortages of IT Institutes/Centers**
(1)	(2)	(3) = (2)*100/60	(4)
2010-2011	5050	10300	86
2011-2012	6970	13800	115
2012-2013	8945	17500	146
2013-2014	10970	21600	180
2014-2015	12665	26200	218
2015-2016	15185	23300	195
2016-2017	15850	27200	227
2017-2018	18080	31400	262
2018-2019	20365	36000	300
2019-2020	22710	40800	340
2021-2021	25120	43000	358
2021-2022	27600	48100	401
2022-2023	30140	53700	447
2023-2024	32755	59600	497
2024-2025	35440	66000	550

Other Vocational Institutions

Needless to say, we have carried out shortage exercise for Industrial Training Institutes and Industrial Training Centres as more definitive information about them in terms of intake, pass percentage or courses, etc. We guess Bihar needs vocational institutions that are supported by Departments other than Labour Resources.

The target should to turn out about 100000 vocationally equipped persons. It implies there should be capacity to enroll about 150000 students. At an average of 150 students per institution, there ought to be around 1000 institutions and at average of 100 students per institution, there is need for 1500 industrial/vocational institutions.

Regional Dispersal

Regional dispersion of the institutions should be ensured while location should be dovetailed with industrial demand and industrial location.

Support from Higher Level Institutions/Industry

Support from neighbouring polytechnics, engineering colleges, technology institutes, medical college/institutes, agricultural colleges/institutes/ universities, schools of fine arts, visual arts and performance arts like (dance, drama and music), institutions of nutrition, nursing, etc should be sought in earnest.

Support of industry should also be enlisted as they would be ultimate beneficiaries.

Traditional and Folk Culture

Some of the institutions could specialize in traditional and folk cultures, medicines, arts, artistry, and handicrafts of various regions in Bihar. May be one in each division.

Challenge

It is possible that economy demand does not turn into individual demand. An effort may have to be made that people demand vocational education and training. The moment some of them are not admitted it will be realized that there is demand. Then over time we need reassessment.

Appendix VI.1: Number of Out Migrants from Bihar to Other Countries by Type of Skill/Occupation during 2008, 2009 and 2010

		Year		
	Type of Skills	2008	2009	2010
A	SKILLED			
1	Mason	8035	4550	5301
2	Carpenter	8433	2826	2797
3	Steel fixer	2778	1266	1158
4	Electrician	3212	1729	
5	Driver	1306	1416	1553
6	Heavy vehicle driver	1027	851	756
7	Plumber	1833	1396	1289
8	Pipe fitter	1782	876	695
9	Painter	957	711	697
10	Draftsman	29	19	2010
11	Welder	864	352	276
12	X ray welder	526	81	45
13	Rigger	790	462	358
14	Fabricator	555	219	216
15	Tailor	217	270	266
16	Foreman	264	111	146
17	A/C mechanic	209	88	127
18	Scaffolder	255	118	103
19	Blacksmith	269	139	102
20	Electronic technician	227	125	67
21	Tile fixer/brick mason	134	190	135
22	Operator	116	93	165

23	Auto mechanic	211	80	47
24	Insulator	170	84	50
25	Security guard/ watch man	31	99	94
26	Plasterer	107	113	99
27	Cook	38	49	80
28	Crane operator	67	41	34
29	Barber	21	26	18
30	House boy/maid servant/office boy/waiter	71	89	129
31	Steno/clerk/computer operator	56	18	11
32	Glass cutter	1	6	
33	Lineman	10	12	
34	Nurse	13	2	
35	Surveyor	19	10	4
36	Goldsmith	2	3	6
37	Other skilled	23601	29785	39967
	Total(Skilled)	**58236**	**48305**	**58801**
B	**Unskilled**			
1	Cleaner		22	27
2	Helper	115	81	170
3	Labour	552	1333	851
4	Gardener/agriculture worker/farm worker	27	29	23
5	Bar tender	5		4
7	others	368	292	498
	Total (Unskilled)	1067	1757	1573
C	**Professional**			
1	Engineer/professional		61	138
2	Chemist	2		8
3	Salesman	119	39	69
4	Store keeper	44	25	12
5	accountant/cashier	31	15	12
6	manager/secretary	1	4	4
7	Safety officer	12	5	6
	Total (Professional)	209	149	249
	Total Out Migrants	59512	50211	60623
	% of Skilled to total out migrants	97.85	96.20	96.99
	% of Unskilled to total out migrants	1.79	3.50	2.60
	% of Professional to total out migrants	0.35	0.30	0.41

Chapter VII

Identification of Skill Sets for Vocational Training in Bihar

7.1 Introduction

Beside this section the chapter has four more sections. Second section gives the methodology for identification of skill-sets (trades). Third section is about the sectors which will demand concentration of skill-sets (trades) in future. This Section has discussed (a) important trades in demand in India based on a study by FICCI (b) industry-wise increase in demand of skilled persons in Bihar, and (c) concentration of some selected trades in different industries in the State. Fourth section is about the views of experts regarding the future demand of vocational skills in India, in select sectors. Last section is about the existing trades being taught and new trades which may be introduced in the state.

Chapter VI has detailed the sector-wise demand of skilled persons. In the present chapter the main focus would be on identification of skill-sets (trades), in which training should be imparted, through especially developed training modules which are to be delivered and/or supported by the Departments dealing with skill formation.

Bihar, due to peculiar socio-economic and governance reasons, ranked at the bottom in literacy ladder in India though in the last decade it has shown a good improvement from 47.0 percent in 2001 to 63.8 per cent in 2011 with some reduction in gender disparity. Low enrolment rates and high dropouts and absence of adequate number of schools and teachers in Bihar are all cited in literature. Similar trend also exists in vocational education and training. The dropout students' entry in labour market without formal skill development creates mismatch between demand

and supply in the skilled labour market. In the absence of a proper certificate, skilled and semi-skilled workers of the state are also subject to exploitation and their mobility is very restricted.

A basic problem with skill development system is that the system is non-responsive to labour market, due to a demand-supply mismatch on several counts viz. numbers, quality and skill types.

It is also observed that the inflexibilities in the course/curriculum set-up, lead to oversupply in some trades and shortages in others. To come out of these problems it is necessary to create a pool of skilled personnel in appropriate numbers with adequate skills in the line with the requirements of the ultimate users such as the industry and service sectors. Such an effort is necessary to support the employment expansion envisaged as a part of inclusive growth, including in particular the shift of surplus labour from agriculture to non-agriculture in the state of Bihar. In order to create a pool of skilled personnel in the adequate numbers with appropriate skills in the line with the employment requirements across entire economy with particular emphasis on the high growth and high employment sectors, the state government must look into the appropriate structures aimed at enhancing training opportunities of new entrants to the labour force. The state can capitalize on its demographic dividend only by up-gradation of existing trades and introduction of trades which have demand in the economy. Hence, one of the important tasks is to make concrete plans in a mission mode towards improving the educational attainment of the labour force in terms of skills.

7.2 Methodology for Identification of Skill-sets (Trades)

Planning Commission, Government of India has identified twenty high growth sectors where employment can be generated for vocational skills. These sectors are also relevant for Bihar state, where employment can be generated in future and pass-outs of vocational institutes can be absorbed. The list comprising of twenty growth sectors for vocational skills is given at the end of this chapter in Appendix VII.I.

Chapter IV of this report has discussed in detail about the resources available in Bihar state. It gives an idea about the area where employment could be generated in future. In turn it also gives an idea of the trades specific to growth sectors, which will be demanded. While doing this exercise we have discussed the matter with officers of various departments of States and Centre. Officials of industries and other offices located at Delhi viz. FICCI, Planning Commission and DGE&T firmed up our idea about the high growth sectors where employment could be generated and new trades could be introduced. Reports, papers and articles published by different organizations viz. DGE&T, IAMR, Department of Industries, Government of Bihar, and IGNOU were also consulted.

It was also important to collect information and study about the long duration trades (one year and more duration) and short duration trades (less than one year duration) which are currently taught in ITIs/ITCs and other Institutions in Bihar. These trades were distributed among different growth sectors identified by Planning Commission (in consultation with FICCI) as an exercise to know about the growth sectors which are not being covered by training institutions in Bihar.

We also consulted the reports of labour departments of two developed states, viz. Maharashtra and Gujarat, for identifying the trades which are being taught in these developed states but not being taught in the state of Bihar though they have

employment potential in the state. List of such trades is given at the end of this chapter in Appendix VII.2.

A long list of courses under Modular Employment Scheme (MES) approved by National Council of Vocational Trust (NCVT) is also available. As per the latest data as on August, 2010, there are 1164 courses under 64 different sectors. It also gives the minimum educational qualification required for admission in these courses, duration of the courses (in hours), and test fee of the course. These details of the courses under MES were also taken into consideration while identifying the new trades for Bihar. Sector-wise number of courses, approved by NCVT are given in Appendix VII.3.

Finally, this methodology of identification of trades was also discussed in the workshop organized by the Department of Labour Resources, Government of Bihar. The workshop was attended by various administrative personnel and representatives of industries of the state as also various experts of Bihar and other states. List of participants who attended the workshop is given at the end of the report (Annexure I.1). The Study Team of IIPA also took suggestions from the participants of the workshop regarding the new trades in which training should be imparted.

7.3 Sectors having Concentration of Skill-sets (trades) in Future

7.3.1 All INDIA

As per the FICCI estimates on an average per year till 2022 about 12 million persons are expected to join the workforce every year, and with an existing skill development capacity of about 3.4 million in the country. Thus, there exists a huge gap of about 8.6 million. It is thus required to enhance the skilling and technical education capacity to about ***15*** million (considering that even sections of the existing workforce would have to be trained).

Table 7.1: Skill sets in Demand in Select Sectors (illustrative)

Sector	Skills sets in Demand
Textiles and Clothing	Power loom operators, Apparel Manufacturing, Fashion Design, Quality Assurance (QA), Knitwear Manufacturing, Sewing Machine Operators
Building and Construction Industry	Crane Operators, Electricians, Welders, Masons, Plumbers, Carpenters, Painters, etc.
Auto and Auto Components	Auto OEMs (Original Engine Management), Auto Component Manufacturers, Drivers, Sales, Servicing, Repair, Financial Services sales, Insurers/Valuers
Organised Retail	Shop floor executives, back-store operations, merchandising
Banking, Financial Services, and Insurance	Financial Intermediaries (including Direct Selling Agents), Banking and Insurance (including agents), Non-Banking Financial Services (NBFC), Mutual Funds
Gems and Jewellery	Jewellery Fabrication, Grading, Faceting, Polishing, Cutting
IT and ITES	IT – Software Engineering, Maintenance and Application Development, End-to-End Solutions, Infrastructure Management, Testing, etc. ITeS – BPO, KPO – Legal, Medical, Scanning Tunneling Microscope (STM), Analytics and Research
Leather and Leather Goods	Tanning, Cutting, Clicking, Stitching, Long Lasting, Finishing
Furniture and Furnishings	Carpenters, Operators engaged in Stitching, Sewing, Stuffing
Electronics and IT Hardware	Computers, Telecom, and Consumer Electronics Manufacturing, Sales, Servicing/ After Sales Support of electronics goods, High-Tech
Tourism and Hospitality Services	Front office staff, Food and Beverage Services (F&B Services) and Kitchen and Housekeeping staff, Ticketing and Sales, Tour Guides

It is estimated that this 15 million would be the required skill development capacity in vocational training in itself as a large portion of the employment (as well as workforce input) would occur in the lower portions of the skill pyramid. The key skill sets which would be on demand, suggested by FICCI, are given in Table 7.1.

7.3.2 BIHAR STATE

7.3.2.1 Industry-wise Increase in Demand for Vocationally Skilled Manpower

Industry-wise future demand for vocationally trained persons along with the detailed methodology for Bihar state has been given by two methods in Chapter VI. It was also discussed in that chapter that Indirect Method gave more stable estimates as compared to the Direct Method. In this method, first industry-wise demand of employment was estimated for the State of Bihar. Share of technical persons to total employment was about one percent in the year 2005. It was assumed that this share of technical persons would increase to four percent in the year 2025. These technical persons include (i) graduates in engineering, medical, and agriculture etc. (ii) certificate and diploma holders (equivalent to graduate) and (iii) certificate and diploma holders (below graduate). Vocationally trained persons are the persons in the (iii) category, having certificate and diploma (below graduate level). As per NSSO the share of persons having certificate/diploma (below graduate level) to all technical persons was about 50 per cent in the year 2005. Same ratio has been assumed to be true for the future years. Industry-wise total demand for vocationally trained persons from 2005 to 2025 is given below (Table 7.2). It is estimated that in the coming years there would be huge demand of vocationally trained persons in the state. Total demand would increase from about 1.4 lacs in the year 2005 to about 9.2 lacs in the year 2025.

Table 7.2: Demand for Vocationally Trained persons (in 000s) from 2005 to 2025 in Different Industries in the State

Industry	2005	2010	2015	2020	2025
Agriculture & allied activities	104.3	157.6	234.0	319.1	425.5
Mining & quarrying	0.1	0.3	0.5	0.7	1.1
Manufacturing	7.9	15.6	27.7	42.0	61.4
Construction	4.1	18.4	52.0	109.1	197.0
Electricity, gas and water supply	0.4	0.6	0.9	1.2	1.6
Trade, hotels and restaurants	12.1	26.0	52.5	90.5	146.0
Transport, storage & communications	3.3	9.4	20.4	35.2	58.9
Banking, insurance & real estate	0.8	1.7	3.4	5.4	8.2
Public administration and other services	5.9	8.1	10.8	13.5	16.5
Total	138.6	237.7	402.2	616.8	916.2

Source: Table 6.12

Notes: 1. No. of persons with technical skills have been obtained from emp. by assuming that it would increase from one per cent in 2005 to four per cent in 2025

2. No. of persons who would be vocationally trained have been obtained from persons with technical skills by multiplying 0.5

From the industry-wise total demand industry-wise increase in demand was obtained for the periods 2005-10, 2010-15, 2015-20 and 2020-25 (Table 7.3). It is estimated that this increase in demand for vocationally trained persons during the period 2005-10 would be about 99 thousand. It would increase to about 1.6 lakh during 2010-15 to 2.1 lakh during 2015-20 and 3.0 lakh during 2020-25. Total increase during the period 2010 to 2025 would be about 6.8 lakh. If we look at the industry-wise increase during the period 2010-25, highest increase would be in agriculture and allied activities (2.7 lakh), followed by construction sector (1.8 lakh) and trade hotels and restaurants (1.2 lakh).

Table 7.3: Increase in Demand for Vocationally Trained persons (in 000s) from 2005 to 2025 in Different Industries in the State

Industry	2005-10	2010-15	2015-20	2020-25	2005-25	2010-2025
Agriculture & allied activities	53.3	76.4	85.1	106.4	321.2	267.9
Mining & quarrying	0.1	0.2	0.3	0.3	0.9	0.8
Manufacturing	7.7	12.1	14.2	19.5	53.6	45.8
Construction	14.4	33.6	57.1	87.9	192.9	178.6
Electricity, gas and water supply	0.2	0.3	0.3	0.4	1.2	1.0
Trade, hotels and restaurants	13.9	26.5	38.0	55.5	133.9	120.0
Transport, storage & communications	6.0	11.0	14.8	23.7	55.5	49.5
Banking, insurance & real estate	0.9	1.6	2.0	2.8	7.4	6.5
Public administration and other services	2.2	2.8	2.7	3.0	10.6	8.4
Total	99.1	164.6	214.5	299.4	777.6	678.5

Source: Table 7.2

7.3.2.2 Industry- wise Distribution of Persons with Vocational Trades in 2005

Industry-wise (as per NIC 1987, one digit level) percentage distribution of employment in the selected occupations at three digit level (as per 1968 NCO) was obtained for Bihar from NSSO survey for the year 2005 and is given in Table 7.4. These occupations were selected in such a way that either they are exactly the same or are very much similar to the trades being covered in the State. Vocational trades covered by each selected occupation are shown within the parenthesis. So we can say that this distribution of employment in the selected occupations at three digit level also gives an idea of industry-wise distribution of persons with vocational trades in that year.

As per this distribution, it is observed that 62 per cent of "mechanic-agriculture machinery persons" were employed in agriculture & allied industry in the year 2005. Similarly, 96 per cent of "persons with foundry trade", 100 per cent with "fashion technology", 92 per cent with "computer aided embroidery and needle work" and 58 per cent with "bakery and confectionary trade" were employed in manufacturing industry. Construction industry has employed 64 per cent of the persons with "building maintenance", 95 per cent of "painters" and 91 per cent of "masons" as their skills. Trade, hotels and restaurant industry has employed a very high share of persons with "hotel and restaurant keepers" (100 per cent) and "leather foot wear" (71 per cent). Banking, insurance and real estate industry employs "agents and salesman" (100 per cent), "agents, brokers in shares and real estate" (100 per cent). Similarly, public administration and other services industry employed 100 per cent of "photography/digital photographer", 81 per cent of "steward" and "hospital house keeping", 100 per cent of "Ayahas & maids", 100 per cent of "home care maid servant", and 99 per cent of "beauticians and related work". See Table 7.4.

Table 7.4 Industry- wise Percentage Distribution of Persons with Vocational Trades in Bihar in 2005

	Occupations as per 1968 NOC	**NIC Codes**								
	(Trades covered)	**0**	**1**	**2 & 3**	**4**	**5**	**6**	**7**	**8**	**9**
1	**Farm Machinery Operators**									
	(Mechanic: Agriculture Machinery)	61.7	0	0	0	0	0	38.3	0	0
2	**Blacksmiths, Hammersmiths and Forging Press Operators**									
	(Foundry)	0	0	95.7	0	0	4.3	0	0	0
3	**Electronicians, Electrical Fitters & Related Workers**									
	(Mechanic: Med. Electronics), (Mechanic: Indus. Electronics)	0	0	0	21.8	8.9	67	0	0	
4	**Nurses**									
	Nurse	0	0	0	0	0	0	0	0	100
5	**Photographers, other**									
	Photography/Digital photographer	0	0	0	0	0	0	0	100	0
6	**Book-Keepers & Accounts Clerks**									
	Book keepers and Accounts Clerks	0	0	34.7	0	0	8	57.3	0	0

7	**Agents & salesman, Insurance**									
	Agents and Salesman	0	0	0	0	0	0	0	100	0
8	**Agents, Brokers, Securities and Shares**									
	Agents, Brokers Shares, Real Estate	0	0	0	0	0	0	0	100	0
9	**Hotel and Restaurant Keepers**									
	Hotel and Restaurant keepers	0	0	0	0	0	100	0	0	0
10	**House Keepers, Matrons and Software**									
	Steward, Hospital House keeping	0	0	0	0	0	0	0	18.6	81.4
11	**Cook & Cook-bearers**									
	Craftsman Food Production	0	0	29.4	0	0	9.2	0	0	61.5
12	**Ayaha, Nurse, maids**									
	Ayaha, Maids	0	0	0	0	0	0	0	0	100
13	**Domestic Servants**									
	Home care for maid servant	0	0	0	0	0	0	0	0	100
14	**Building Caretakers**									
	Building Maintenance	0	0	0	0	63.8	0	0.8	0	35.4
15	**Hair dressers, Barbers, Beauticians & Related Workers**									
	Beauticians and related work	0.2	0	0	0	0	0	0	0	99.8
16	**Bakers, Confectioners Candy & Sweet Meat Makers & Other Food Processors**									
	Bakery and Confectionary	0	0	57.6	0	0	42.4	0	0	0
17	**Tailors and Dress Makers**									
	Fashion Technology	0	0	100	0	0	0	0	0	0
18	**Sewers & Embroiders**									
	Computer aided Embroidery and Needle work	0	0	91.7	0	0	8.3	0	0	0
19	**Shoemakers & Shoe Repairers**									
	Leather Foot Wear	0	0	29.2	0	0	70.8	0	0	0
20	**Painters, Construction / Painters, Spray & Sign Writing**									
	Painter General	0	0	0	0	95.1	0	0	0	4.9
21	**Bricklayers, Stone Masons & Title Setters**									
	Mason-Building Construction, Skill and Semi-skilled building construction -Mason, Grinder, Building painter etc.	0.3	0	8.7	0	91	0	0	0	0

* **NIC CODES:** 0—Agriculture & Allied Activities; 1—Mining & Quarrying; 2&3—Manufacturing; 4—Electricity, Gas and Water Supply; 5—Construction; 6—Trade, Hotels and Restaurants; 7—Transport, Storage and Communication; 8—Banking, Insurance and Real Estate; 9—Public Administration and other Services. **Data Source:** NSSO, 61st round, 2004-05

7.4 Experts' Views on Future Demand of Vocational Skills in Select Sectors

Vocationally trained persons in Bihar will have their demand within the state as well as outside the state. Keeping this fact in mind, views of the experts in this field for India as a whole as well as for Bihar state are given in three different boxes (Box I, Box II and Box III).

First box has discussed about the training activities of construction sector. In this box views of Ahona Ghosh, correspondent, Economic Times; S. Natarajan, who is overseeing the activities of construction training institutes of L&T construction company; and Percy Chowdhary, Director, Rustomjee Group have been discussed. All these persons have expressed that there would be huge demand of vocationally trained persons in construction industry. They have also discussed about the important trades in which training should be imparted.

Second box has discussed about the training activities of manufacturing. In this box views of Arun Maira, member, in-charge of industry, Planning Commission, Government of India; Dinesh Navadia, President, Diamond Association; Chandrakant Sanghavi, head, Sanghavi Exports; and Sanjay Chandrakant, Ernst & Young have been discussed. They have expressed the huge scope of vocationally trained persons in this sector. They have also discussed about the important trades relating to manufacturing sector in which training should be imparted.

Third box has discussed the training activities of service sector. In this box views expressed in a study conducted for NSDC; and views of Rita Rani, CEO, Nasscom Foundation; and Vikas Kumar, correspondent, Economic Times have been discussed. They have expressed that there would enough demand of vocationally trained persons in five areas: (i) IT& ITEs, (ii) rural marketing, (iii) microfinance,

(iv) BPOs, and (v) organised retail trade. The discussion hovers around important trades relating to these areas in which training should be imparted.

Box I: Construction Sector

Ahona Ghosh has written in his article on "Built to Scale" about L&T construction company (E.T., November 25, 2010). It is a $9.8 billion diversified conglomerate, a rare construction company in India. Its infrastructure offices in seven states have Construction Training Institutes (CSTIs) attached to them, with the capacity to train 7,000-8,500 a year.

With about 33 million, the construction industry is India's second-largest employer, after agriculture. Yet, it has a huge deficit of qualified workers, says S Natarajan, who oversees all CSTIs. "By 2022, this deficit will be 170-180 million", he says.

Globalization has enabled the industry to adopt the latest technologies, resulting in a growing demand for world-class workmanship. With this in mind, L&T's programme incorporates the latest technology with regular ground work. The Programme sets high standards for each candidate, though the eligibility bar is low - starting from class V fail (diploma and degree holders are barred). Everyone who clears the training course is employed on contract at the company's work sites through sub-contractors.

All the courses are designed for short-term vocational training. The period varies from 200 hours spread over a month to 600 hours over three months, depending on the trade. After a classroom session, the trainees work on a mock construction site in the institute.

As one of the biggest players in construction, the company is in need of skills like carpenters, bar benders, mason, welders, plumbers and electricians for its frontline work. Moreover, it is bringing respectability to a trade that has been looked down upon as a profession requiring no formal skills.

In an another article on "Rustomjee Group - The Slab Test" Percy Chowdhry, director of Rustomjee Group says, "We have 4.5 million sq ft of construction work going on and we need a huge quantum of manpower to be developed" (E.T., November 25, 2010).

Asian Development Bank is ready to channel a fresh $300 million loan to Bihar for developing state roads. State's road construction department secretary Pratyaya Amrit has said, "Our mission is to develop state highways so that one can travel to Patna from any part of Bihar within six hours" (The Economic Times, December 7, 2010).

Box II : Manufacturing Sector

Arun Maira, an industry veteran and the member, in-charge of Industry, Planning Commission, spoke to Malini Goyal, Correspondant Economic Times about the layout of the broad contours of the 12th Five-Year Plan (E.T., November 26, 2010). He said, the Plan, still in preparation, will have a clear and sharp manufacturing agenda. He expressed his concern by saying that Imports from China of IT and telecom equipment have surged on the back of the telecom boom. In the next five years, we expect ICT hardware imports to cross the amount we spend on petroleum imports. This should be of concern. Today, China's machine tools industry is 55 times that of India – 25 years ago they were at the same level. Biggest challenges to achieve this goal are infrastructure and indigenous technology. Our machine tool segment, which is of strategic importance, is weak. It is critical and needs to be strengthened.

He further mentioned that we need to create enabling environment and build mother industry that will generate jobs in labour intensive sectors. Assembling anything is the low-skill, low-wage activity and it can freely cross borders when wage costs moves up. Singapore chose to encourage only high-end knowledge-intensive economic activity. As we look globally, it is clear countries will need to build depth in specific sectors to build a robust manufacturing. China is doing it very well. While it began with low-value products like toys etc, it has ended in high categories.

Institutes for competitiveness, Gurgaon dedicated to conducting research in the core fields of strategy, economic development and productivity, has mentioned that states can harness their population to grow by making policies that make productive use of available resources. States with healthy GDP and population growth rates, such as Haryana and Bihar must focus on sectors where they are inherently competitive because of the presence of natural resources or traditional skills and knowledge (E.T. November 27, 2010). Because of large agricultural resources in Bihar, it has good scope of industries relating to Food Processing (fruit, vegetables and other food), Food Preservation, Preparation of Juice and drinks, Power generation and fisheries sector.

Surat's diamond industry is facing server manpower crunch at a time when demand for cut and polished diamonds from the US, China and other markets is regaining momentum lost during the global recessions of 2008-09. Dinesh Navadia, President, Surat Diamond Association says that they are facing a shortage of around 25 per cent of skilled workers (H.T., December 6, 2010). Chandrakant Sanghavi, head, Sanghavi exports, one of the largest firms in Surat says that these shortages of skilled workers will worsen if the supply of rough diamond goes up.

India's solar sector is gearing up for huge capacity additions – plants that will eventually generate about 20,000 MW of solar power, a whopping Rs 4,337 crore in allocating. Ministry of New and Renewable Energy had indicated that about one lakh trained and skilled personnel would be required by 2020, the last year of National Solar Mission. Sanjay Chandrakant from Ernst & Young says that for manufacturing, system installation, R&D work and operations & maintenance technicians will be needed (E.T., December 10, 2010).

Box III: Service Sector

(i) Information Technology & Information Technology enabled services (IT & ITES)

According to the study done by ICRA Management Consulting Services for the National Skill Development Corporation, the IT and ITES sector is expected to employ about 7.5 million persons directly by 2022. This means there would be an incremental requirement of about 5.3 million persons in the sector till 2022. Nasscom estimates say that IT industry spends about Rs 3000 crore every year for entry level training due to acute talent shortage. If suitably trained persons are available, industry can save a large amount of money by employing them directly (E.T., December 12, 2010).

Rita Soni, the newly appointed CEO of Nasscom Foundation says we are in talks with the National Skill Development Committee (NSDC) to partner NSDC to provide training in the IT space. "The IT sector is a $60 billion industry and will certainly need a lot of people. We are going to help take this forward", says Soni.

Keeping in view the importance of IT and ITeS sector, Kerala Government is developing a Techno park at the outskirts of Thiruvanthapuram. Developed over 450 acres as an integrated township, encompassing IT/ITeS infrastructure, residential apartments shopping malls, hospitals, hotels, educational institutions, and other support facilities, the project is expected to generate one lakh direct IT/ITeS jobs and another four lakh indirect jobs (E.T., January 6, 2011).

(ii) Rural Marketing

Vikas Kumar writes about the rural jobs rush in India (E.T. November 18, 2010). He says that host of services-driven companies in emerging sectors - MFI, retail, telecom, ITES, healthcare, infrastructure and logistics - are scouting for local talent in small towns or from boarding villages. Further he illustrates about the future plans of employment by some employing agencies in rural areas:

- Telecom-tower maintenance firms: These firms could employ 200,000 people in the near future, is a good example. There are about 140,000 towers in semi-urban locations. "About 80% of 25,000 new towers to be added this year will be in rural and remote areas"; says Amarjit Gupta, executive VP-sales & marketing, Acme Telepower, a company that provides energy-management solutions to tower companies.

  Their operations and maintenance are managed by specialist firms like Chandigarh-based synergy telecom, which runs 5000 sites in rural areas. Maninder Nanda, CEO for this business says that one technician can manage 5-6 rural sites. These technicians are I.T.I certificate holders who join at a monthly salary of Rs. 8000-10000.Team lease: About half the 60,000 people this staffing firm places every year are in upcountry jobs, especially in fast moving consumer goods (FMCG), financial services, customer durables and telecom. "Rural sales force hiring by companies is growing at 40%

annually against 5% in the past", says Manish Salharwal, Chairman, Team lease.

- V-Shesh: The Chennai- based 'Livelihood Exchange' places rural youth as customer service agents or transaction processing officers in rural BPOs, as loan officers in MFIs and as rural market developers in FMCG and consumer durable companies. It has trained and placed 850 people in the last two years. It is targeting 2,000 placements in 2010-11.
- FMCG Companies: As they renew their rural drive, FMCG companies are hiring field staff in large number. Dabur plans to hire 200 'feet on street' and indirect employees through stockiests in villages and small towns. Marico has just finished hiring 220 people. ITC, Nesle, Glaxo Smith Kline Consumer and Emami speak of doubling their direct employee strength in rural locations.

Archana Rai & Peerzada Abrar have mentioned in their article on, "India set to emerge as social innovation hub" about the innovative business models that combine profit with social good could well be the country's best known export in coming years as India emerges as the social innovation hub of the world (E.T. November 11, 2010).

They have also talked about AISECT, a company which provides information and technology education in rural areas, is now hawking products of computer firms, banks and undertaking government projects through its network of 8000 rural education centers in over 30 states that run on franchise model. "By 2013, we aim to have 15,000 centres" says Santosh Kumar Choubey, founder of this organisation.

(iii) Microfinance Institutions (MFIs)

Microfinance Institutions have great scope in India. Recently some promoters of these institutions have exploited the poor beneficiaries, but overall these institutions have done a great job in rural areas. Public sector and rural banks have not achieved the goal of financial inclusion because of their high human resources costs. Only MFIs provide a low-cost platform to achieve it. The average cost per head of MFIs is about Rs 1 lakh per annum compared with Rs. 5.6 lakh for PSU banks, Rs.5.3 lakh for private sector banks, and Rs. 3.8 lakhs for regional rural banks (Saurabh Tripathi, E.T. February, 4 2011). Alok Prashad has talked about the rural jobs in Microfinance Institutions (The Hindu, Business Line, January 5, 2011). The major MFIs have over 10,000 branches, which have a field staff of 60,000-75,000. If other MFIs are also included, the number would go beyond one lakh. Candidates join as relationship officers, disbursing loans to self help groups and collecting repayments.

(iv) Business Processing Organizations (BPOs)

About Rural BPOs it is said that so far, there have largely been experiments- now they are going mainstream (E.T. November 18, 2010). For instance, Genpact, India's largest BPO has outsourced its internal finance and accounts work to Rural Shores. Infosys BPO, Wipro BPO and Aditya Minacs are looking to outsource some of their work to rural BPOs. Five years from now, according to industry estimates about 1,000 rural BPOs could employ 1,50,000 people.

(v) Organised Retail Sector:

Muralidhar Rao, chief executive of Future Group says that frontline workforce for retail industry has a growing requirement of skilled people. He further says that we need to increase focus on courses and training programmes that are aimed at creating employability at the bottom-of-the pyramid. Future group hires at least 2000 people every month in retail (E.T., October 20 2010).

7.5 Existing and New Trades for the state

7.5.1 Existing Trades Taught in the state

Number of existing trades in which training is being imparted in the state are 132. Out of 132 trades 50 trades are in ITIs/ITCs and the remaining 82 trades are in other institutes/ departments of the State. In ITIs/ITCs, training was being imparted in 21 courses of two year duration and 29 courses of one year duration (Table 7.5). In other institutions, it was observed that 37 courses were of more than six months duration, 22 courses were of six months duration and 23 courses were of less than 6 months duration. Some of the courses of other institutions/departments were of very short duration (less than one month) but their number too was very low (7).

Secondly if we look at the distribution of these trades in different growth sectors suggested by the Planning Commission, Govt. of India, the trades are concentrated in a few growth sectors. Out of 20 growth sectors suggested by the Planning Commission ITI/ITC trades cover only 10 growth sectors and trades of

other institutions cover 12 growth sectors. Out of 50 trades of ITI/ITC, 39 trades are in the growth sectors suggested by Planning Commission and 11 trades are in other sectors. Similarly, out of 82 trades of other institutes/departments, 68 trades are in the growth sectors identified by Planning Commission and 14 trades are in other growth sectors. See Tables 7.5 and 7.6.

Highest numbers of trades of ITI/ITC are in 'Building and Construction Sector' and 'ITES or BPO Sector'—7 trades each. Similarly highest number of trades of other institutions are in 'Textile, Apparel and Garments Sector—23 trades' followed by 'Health Care Services Sector—13 trades' and 'Chemicals and Pharmaceuticals Sector – 9 trades' (Tables 7.5 and 7.6).

Further it is observed that out of 20 growth sectors identified by the Planning Commission, Government of India, only 14 growth sectors had some trade either in ITI/ITC or other departments. In other words, 6 sectors were covered neither by ITI/ITC nor by other departments. These six growth sectors are: (i) Construction materials/building hardware etc. (ii) Gem and jewellary (iii) Media, entertainment, broadcasting, content creation and animation (iv) Organized retail (v) Real estate services and (vi) Transportation logistics, warehousing and packaging etc. At the time of identification of new trades, study team of IIPA has kept in view these growth sectors that are not currently covered in the vocational institutions in Bihar.

Table 7.5: Growth Sector-wise Distribution of Existing Trades in ITIs/ITCs by Duration

Growth Sector	Two year	One year
Automobile and Auto-component	(i) Fitter	(i) Mech. (Diesel)
	(ii) Turner	(ii) Mech. (Tractor)
	(iii) Automobile Sector	(iii) Automobile Sector
	(iv) Wireman	
	(v) Mech. (Motor Vehicle)	
Building and Construction Industry	(i) Draftsman (civil)	(i) Plumber
	(ii) Surveyor	(ii) Welder
	(iii) Electrician	(iii) Construction Sector
		(iv) Fabrication, fitting and welding
Education and Skill Development Services		(i) Stenography (English)
		(ii) Stenography (Hindi)
		(iii) Profit analysis (COPA)
Food Processing/Cold Chain/Refrigeration		(i)Food Processing
		(ii) Preservation of Food
Furniture and Furnishing		(i) Recanning of Chair
		(ii) Carpenter
Health Care Services		Hair and Skin Care
ITES or BPO	(i) Mech. (Radio & TV)	(i) Electrical Sector
	(ii) Mech. (Refrigerator & AC)	(ii) Desk top publishing operator (DTPO)
	(iii) IT & ITeS	
	(iv) Mech. (electronics)	
	(v) Desk top publishing operator (DTPO)	
ITS or Software Services/Products	(i) Wireman operator	IT Sector
	(ii) Electronics	
Textile, Apparel and Garments	Cutting and Tailoring	(i) Cutting and Tailoring
		(ii) Embroidery with needle work
		(iii) Knitting with machine
		(iv) Cutting and Sewing
Tourism, hospitality and Travel Trade		Hospitality
Others	(i) Draftsman (Mech.)	(i) Production & Manufacturing
	(ii) Mech. Grinder	(ii) Sheet Metal
	(iii) Machinist	(iii) Moulder
	(iv) Electroplater	(iv) Agriculture & Machinery
	(v) Mech. (Instrument)	(v) Plastic Processing Operator
		(vi) Printing & M/C Operator

Table7.6: Growth Sector-wise Existing Trades in Other Departments by Duration of the Course

Growth Sector	More than 6 months	6 months	less than 6 months
Automobile & Auto Component	Automobile & Engineering		
Banking/Insurance and Finance Service	(i)Accountancy & Auditing		
	(ii) Banking		
Building and Construction Industry	Household Contract & Wiring	Welding	
Chemicals and Pharmaceuticals	Medical Lab Technician		(i) Detergent Manufacturing
			(ii) Dhoopbati
			(iii) Lac Bangle Making
			(iv) Entrepreneur Course in Laundry Soap Making
			(v) Agarbati Artisan Course
			(vi) Candle Making
			(vii) White Phenyl Making
			(viii) Cleaning Powder
Education and Skill Development Service	(i)Stenography (Hindi/English)		
	(ii)Library Science		
Electronics Hardware	(i)Electronics Technology		
	(ii)Computer Science		
Food Processing/Cold Chain/Refrigeration	(i)Fruit Preservation & Technology		(i)Papad making
	(ii)Food Preservation & Technology		(ii)Tar-gur udyog
	(iii)Bakery Confection		
Furniture and Furnishing		(i) Wood Carving	Bamboo & reed udyog
		(ii) Bamboo & Reed	
		(iii) Wooden Toy Making	
Health Care Services	(i)Health Care and Beauty Culture		
	(ii)Nursing & Midwifery		
	(iii)Multipurpose Health Worker		
	(iv)Dental Hygienist		
	(v)Dental Mechanic		
	(vi)Medical Laboratory Technician		
	(vii)Medical Dressing		

	(viii) Ophthalmic Assistant		
	(ix)Orthotic & Prosthetic Assistant		
	(x)Operation Theater Assistant		
	(xi)Physiotherapy Assistant		
	(xii)Sanitary Inspector		
	(xiii)X-Ray Technician		
ITS or Software Services/Products	Radio & TV Technician		(i) Computer application
			(ii) Mobile repairing and software
Leather and Leather Goods		Leather goods	Leather udyog
Textile, Apparel and Garments	(i) Khadi Kariyakarta	(i) Tikuli Painting	(i) Fiber supervisory
	(ii) Weaving	(ii) Watik Printing	(ii)Tailoring referesher
	(iii) Silk Technology	(iii) Weaving	(iii)Embroidary
	(iv)Garment Making	(iv) Block Printing	(iv)Resha udyog
	(v) Textile Designing	(v) Applique & Kashida	(v)Fiber artisan course
		(vi) Tasar Silk reeling & Spinning	
		(vii) Polyster Karyakarta Course	
		(viii) Tailoring Training Course	
		(ix) Tailoring & Embroidery course	
		(x) Khadi Udyog (Cotton)	
		(xi) Khadi Udyog (Silk)	
		(xii) Khadi Udyog (Weaving)	
		(xii) Khadi Udyog (Rope Making/Kalin)	
Others	(i)Office Management	(i) Pottery	(i) Pottery
	(ii)Mining Geology	(ii) Paper Mechanic	(ii) Operators course in Plastic Processing
	(iii)Agriculture Farm Machinery	(iii) Machinist	(iii) Bee Keeping
	(iv)Inland Fisheries	(iv) Pre & Post Cotton Technology	(iv) Agriculture Supervisory Course
	(v)Dairy		
	(vi)Poultry Production		

Table Table 7.7: Growth Sector-wise Trades which may be Introduced in Bihar (Two and One year)

Growth Sector	Two years duration	One year duration
Automobile and Auto-component		Armature Rewinding
Banking/Insurance and Finance Services		(i) Visual Merchandising
		(ii) Book Keepers & Accounts Clerks
Building and Construction Industry		(i) Mason (Building Construction)
		(ii) Architecture Assistant
		(iii) Interior Decoration & Designing
Chemicals and Pharmaceuticals	Laboratory Assistant (Chemical plant)	
Construction Materials/Building Hardware etc.	Shuttering carpenter & scaffolder	Earth work excavator
Electronics Hardware	(i) Electronics (Computer Hardware)	Mobile phone Repair
	(ii) Mechanic (Industrial Electronics)	
Food Processing/Cold Chain/Refrigeration		(i) Bakery and confectionary
		(ii) Craftsman food production
Gems and gewellary		Foundation course for jewellary
Health Care Services	Laboratory Technician	(i) Physiotherapy Technician
	(ii) Mechanic (Medical Electronics)	(ii) X-ray Technologist
		(iii) Health Sanitary Inspector
		(iv) Opthemetrists and Occupational Therapists
		(v) Nurse
		(vi) Beauticians and Related Work
IT or Software Services/Products	Mech. cum operator (Electronics Communication System)	(i) E-commerce
		(ii) Web Designing
Leather and Leather Goods		Leather Foot wear
Media, Entertainment, Broadcasting, Content Creation and Animation		Photography/Digital Photographer
Organized Retail		Supply Chain Management
Textile, Apparel and Garments		Fashion Technology
Tourism, hospitality and Travel Trade		(i) Steward
		(ii) Hospital House Keeping
Others	(i) Instrument Mechanic	(i) Foundary
	(ii) Bio-Technology	(ii) Pump operator cum mechanic
	(iii) Tool and Die Maker (Jigs and Fixture)	(iii) Book Binder
	(iv) Tool and Die Maker (Mould and Dies)	(iv)Agricultural Marketing Operations
	(v) Mechanic (Machine Tool)	(v)Marketing Development Procedures
	(vi) Marine Fitter	(vi)Commodity Exports and Legality
	(vii) Maintenance Mechanic (Chemical Plant)	(vii)Entrepreneurship Development
	(viii) Attendant Operator	(viii)New Agricultural Technology &Machinery Use
	(ix) Mech. (Agriculture Machinery)	(ix)Agriculture Extension Service
	(x) Painter (General)	
	(xi) Rubber Technology	
	(xii) Lift Mechanic	
	(xiii)Solar Technology	

7.5.2 New Trades Suggested for Introduction in the state

After analyzing the above information the study team has suggested some new trades of different durations which may be introduced in Bihar. These trades are in addition to the existing trades in the state. Distribution of these new trades according to growth sectors suggested is given in Tables 7.7 and 7.8. In all 98 new trades have been recommended for the state. Out of 98 trades, 34 trades are of six months duration, 34 trades are of one year duration, 20 trades are of two year duration and remaining 10 trades are of 3 months duration.

Out of 98 new trades suggested, 64 trades belonged to the growth sectors suggested by Planning Commission. Among these 64 trades highest number of trades are in 'Health Care Services Sector—9 trades' followed by 'Tourism, Hospitality and Travel Sector – 7 trades' 'Building and Construction Sector—6 trades' and 'Textile, Apparel and Garments Sector—6 trades'.

Training in these skills will considerably improve the prospects of employment of trained persons and their earning capacity. The workers who return to Bihar, after serving many years in other states can be trained and encouraged to use their skills and knowledge in establishing small enterprises either individually or in groups. State government should consider convergence of the various existing development programmes in a manner that enhances skill acquisition by the workers skill formation in the workers/economy.

Table 7.8: Growth Sector-wise which may be Introduced in Bihar (6 months/3 months)

Growth Sector	6 months duration	3 months duration
Automobile and Auto-component	(i) Driver cum Mechanic (Light Motor)	
	(ii) Mechanic Auto electrical and electronics	
Banking/Insurance and Finance Services	Agents, Salesman and share brokers	Financial Accounting
Building and Construction Industry	(i) Sanitary hardware Fitter	
	(ii) Building Maintenance	
	(iii) Mason, Marble grinder & Building painter etc	
Construction Materials/Building Hardware etc.	Communication system mechanic	Bar bender
Education and Skill Development Services	(i) English language speaking	Soft Skills
	(ii) Communication skills	
Electronics Hardware	Network Technicians	
Gem and Jewellerry	Manual jewellay design	Diamond grading and international system of grading
Health Care Services	Medical Transcription	
ITES or BPO	Data entry operator/Computer Typing	Data entry operator/Computer Typing
Media, Entertainment, Broadcasting, Content Creation and Animation	Photographers	
Real Estate Services	Agents, Real Estate	
Textile, Apparel and Garments	(i) Computer aided embroidery and needle work	(i) Sewing Machine operator
	(ii) Jute diversifide work	(ii) Garment finishing
		(iii) Pattern making and cutting
Tourism, hospitality and Travel Trade	(i) Intuitional house keeping	
	(ii) Front Office Assistant	
	(iii) Catering and Restaurant Management	
	(iv) Hotel & Restaurant keepers	
	(v) Travel & Tourism	
Transportation Logistics, Warehousing and Packaging etc.	Driver cum mover	Mover cum packer
Others	(i) Home care for maid servant	(i) Desktop Printing
	(ii) Floriculture	
	(iii) Bee keeping and Honey preservation	
	(iv) Toy making	
	(v) Security	
	(vi) Sericulture	
	(vii) Clock and watch repairing	
	(viii) Rain water harvesting	
	(ix) Fire & safety engineering	
	(x) Ayaha, Maids	
	(xi)Fisheries	

Appendix VII.I

List of High Growth Sectors

Sl. No.	Sectors
1	Automobile and Auto-component
2	Banking/Insurance and Finance Services
3	Building and Construction Industry
4	Chemicals and Pharmaceuticals
5	Construction Materials/Building Hardware etc.
6	Education and Skill Development Services
7	Electronics Hardware
8	Food Processing/Cold Chain/Refrigeration
9	Furniture and Furnishing
10	Gem and Jewellerry
11	Health Care Services
12	ITES or BPO
13	ITS or Software Services/Products
14	Leather and Leather Goods
15	Media, Entertainment, Broadcasting, Content Creation and Animation
16	Organized Retail
17	Real Estate Services
18	Textile, Apparel and Garments
19	Tourism, hospitality and Travel Trade
20	Transportation Logistics, Warehousing and Packaging etc.

Data Source: Govt. of India, Planning Commission, Eleventh Five Year Plan, New Delhi.

Appendix VII.2

Ongoing skills by duration and entry level qualification in Maharashtra and Gujarat which are not imparted in Bihar but have higher employment potential

Sl. No.	Trades	Entry Level
	2 years course	
1	**Mechanic Agriculture Machinery**	8th std. pass
2	**Marine Fitter**	SSC pass (with 50% Mark in science and Math Subject)
3	**Painter (General)**	8th std. pass
4	**Instrument Mechanic**	SSC pass (with science and Math subject)
5	**Mechanic Consumer Electronics**	SSC pass (with science and Math subject)
6	**Mechanics Medical Electronics**	SSC pass
7	**Mechanic cum operator (Electronics communication system)**	SSC pass
8	**Rubber Technology**	SSC pass
9	**Lift Mechanic**	SSC pass (with Science subject)
10	**Mechanic computer Hardware**	HSC pass (with Physics, Chemistry and Math subject)
11	**Mechanic Industrial Electronics**	HSC pass (with Physics, Chemistry and Math subjects)
12	**Attendant Operator (Chemical Plant)**	SSC pass
13	**Maintenance Mechanic (Chemical Plant)**	SSC pass
14	**Laboratory assistant (Chemical Plant)**	SSC pass
15	**Tool and Die Maker**	SSC pass (with Science and Math. subjects)
16	**Tool and Die Maker (Jigs and Fixture)**	SSC pass
17	**Tool and Die Maker (Morlud and Dics)**	SSC pass (with Science subject)
18	**Mech. (Machine Tool maintenance)**	SSC pass (with Science and Math. subjects)
19	**Dental Laboratory Technician**	SSC pass
	1 years course	
1	**Foundary**	8th std. pass
2	**Mason (Building Construction)**	8th std. pass
3	**Pump Operator cum Mechanic**	SSC pass (with science subject)
4	**Architecture Assistant**	SSC pass (with 40% marks in science & Math Subject)
5	**Leather Foot Wear**	8th std. pass
6	**Bakery and Confectionary**	SSC pass
7	**Dress Making**	SSC pass
8	**Steward**	SSC pass
9	**Craftsman Food Production**	SSC pass

10	**Photography/Digital Photography**	SSC pass (with Physics and Chemistry subject)
11	**Fashion Technology**	HSC pass
12	**Physiotherapy Technician**	HSC pass (with Physics, Chemistry and Pridology subject)
13	**Health Sanitary Inspector**	HSC pass (with Physics, Chemistry and Pridology subject)
14	**Hospital House Keeping**	HSC pass
	6 months course	
1	**Data entry operator**	SSSC pass (with typing in English 20 speed)
2	**Institutional House keeping**	SSC pass
3	**Computer Aided Embroidery and Needle Work**	SSC pass
4	**Front office Assistance**	SSC pass (Essential English subject)
5	**Tourist Guide**	HSC pass
6	**Network Technician**	HSC pass
7	**Medical Transcription**	HSC pass (with Biology/Physiology subject, knowledge of English
8	**Sanitary Hardwar Fitter**	8th std. pass
9	**Driver cum Mechanic (Light Motor Vehicle)**	SSC pass
10	**Building Maintenance and Electrical**	SSC pass
11	**Mechanic Auto Electrical & Electronics**	SSC pass (with science & Math subjects)

Appendix VII.3

Sector-wise Number of MES Courses Approved by NCVT (As on 17.08.2010)

Sl. No.	Sector	No. of Courses
1	AUTOMOTIVE REPAIR	18
2	BANKING & ACCOUNTING	1
3	BEAUTY CULTURE & HAIR DRESSING	9
3	CARPET	22
4	CHEMICAL	14
5	ELECTRICAL	10
6	ELECTRONICS	18
7	FABRICATION	11
8	GARMENT MAKING	98
9	FASHION DESIGN	21
10	GEM AND JEWELLERY	21
11	HOSPITALITY	81
12	INFORMATION AND COMMUNICATION TECHNOLOGY	39
13	KHADI	8
14	MEDICAL AND NURSING	29
15	PLASTIC PROCESSING	10
16	PRINTING	10
17	PROCESS INSTRUMENTATION	7
18	PRODUCTION AND MANUFACTURING	13
19	REFRIGERATION & AIR CONDITIONING	6
20	RETAIL	3
21	TOY MAKING	7
22	INDIAN SWEETS, SNACKS AND FOOD	36
23	PAINT	6
24	CONSTRUCTION	42
25	SECURITY	10
26	WOOD WORK	2
27	MEDIA	3
28	FOOD PROCESSING & PRESERVATION	1
29	LEATHER & SPORTS GOODS	12
30	AGRICULTURE	40
31	TRAVEL & TOURISM	9

32	**SOFT SKILLS**	4
33	**COURIER & LOGISTICS**	6
34	**INSURANCE**	3
35	**JUTE SECTOR**	20
36	**JUTE DIVERSIFIED PRODUCTS SECTOR**	6
37	**FISHERIES AND ALLIED SECTOR**	16
38	**FIRE AND SAFETY ENGINEERING**	2
39	**BUSINESS & COMMERCE**	7
40	**MATERIAL MANAGEMENT**	5
41	**PAPER PRODUCTS**	3
42	**INDUSTRIAL ELECTRICAL**	3
43	**TEXTILE –COTTON GINNING**	5
44	**TEXTILE –COTTON SPINNING**	56
45	**TEXTILES - DOUBLING**	5
46	**TEXTILES – WINDING**	12
47	**TEXTILES – REELING**	7
48	**TEXTILES – WEAVING PREPARATION**	11
49	**TEXTILES – WEAVING**	37
50	**TEXTILES – CHEMICAL PROCESSING**	86
51	**TEXTILES – QUALITY CONTROL**	13
52	**TEXTILES – KNITTING**	10
53	**TEXTILES – NON - WOVEN**	16
54	**TEXTILES – WOOL**	57
55	**TEXTILES – SILK**	57
56	**TEXTILES – HDPE/PP**	22
57	**SERICULTURE**	26
58	**POULTRY**	
	(Broiler Farming)	9
	(Layer Farming)	9
	(Poultry)	5
	(Hatchery)	3
	(Breeding)	5
59	**BRASSWARE**	1
60	**ANIMAL HUSBANDRY**	5
61	**GLASSWARE**	2
62	**APICULTURE**	6
63	**CLOCK AND WATCH REPAIR**	3
64	**RAIN WATER HARVESTING**	2
	Total	1164

Data Source: DG&ET

Chapter VIII

Summary and Conclusions

8.1 Skill Development and Training in India

In the next two to three decades India will have an advantage of demographic dividend as compared to other developed countries. Its dependency ratio is expected to decrease in during this period. Total dependency ratio in the country was 73.4 per cent in the year 2001. This is expected to reduce to 65.6 per cent in 2006, 59.6 per cent in 2011, 56.6 per cent in 2016, 55.9 per cent in 2021 and 55.6 per cent in 2026. At the same time median age of the country was 22.5 years in 2001 and it is expected to gradually increase to 31.4 years in 2026 well below the number population could be said to be aging.

According to UN projections the working-age population in India will increase by a stunning 240 m (equivalent to four times the total population of the UK) over the next two decades, compared with 20 m in Brazil. The working-age population in Russia, by contrast, will decline sharply by almost 20 m. China's working-age population will peak in 2015 and then gradually decline. By 2030 China's working-age population will be merely 10 m larger than it is today – a negligible change given a total population of 1.35-1.45 bn. By 2030, India will also have overtaken China as the world's most populous country but will be youthful.

While India's population structure would have advantage over developed world and China, Bihar will still be better than its country India as it will have still better age structure. Its dependency ratio will keep declining till 2026 and median will be 29 years as compared to country's over 31 years.

The quantitative aspect of skill shortage is one of the areas of concern because there is always mismatch between the availability of number of jobs and the number of people available for particular jobs. The huge number of people is added to the workforce each year but their low preparedness to avail of the emerging employment opportunities make the issue of skill development self evident. About 12 million people are entering workforce every year but training facilities for vocational education and training are only for 1.5 million. The rest either are fresh hands – they come into the workforce untrained or are trained by the employer on the job. Some others get trained at an unorganized local shop, but mostly they remain untrained or under-trained. In this backdrop we may note that Bihar's contribution to yearly addition to workforce in India is about 1.0 lakh and only yearly pass-outs with vocational educational and training are at liberal estimation about 40000—with training intake of 60000 and pass percentage of 67 percent.

For quite some time now concern has been expressed about the mismatch between the job market's requirements on the one hand and the inputs provided by our education system in general on the other hand. The quality of technical education which is given in our country, and in Bihar, is not up to mark and it is not fulfilling the market requirement.

There has to be a drastic shift in the national policy on skill development with the private sector playing a lead role instead of the government, as they are the job providers and would be in better position to judge the market demand for specific vocations and skills and training need thereof in terms of specific tasks and duration. The government's role would have to change from being a vocational training provider to a partner and facilitator.

The Eleventh Five Year Plan had laid emphasis on creating a pool of skilled personnel in appropriate numbers and skills in line with the requirements of ultimate users such as industry, trade and services sector. "Skill Development Mission" with an outlay of Rs. 22800 crores was launched to achieve this goal. The mission is expected to create in due course of time a surplus of skilled persons over domestic requirement to meet the requirement of other aging economies in the world.

The mission is to ensure that our supply side responses are moving in the same way as our demand. These responses should move in the same way as demand not only in the present but the future also. For this the mission will involve both public and private sectors in such a way that it is beneficial to both.

Since 1976 vocational training has become a concurrent subject in the Constitution and both the Union Government and the State Governments have legislative powers and share responsibilities. At the national level, Director General of Employment & Training (DGE&T), Ministry of Labour is the nodal department for formulating policies, laying down standards, conducting trade testing and certification, etc. in the field of vocational training. At the State level, the State government departments are responsible for vocational training programmes.

8.2 The Study

It is in this context that the Department of Labour Resources, Government of Bihar decided to commission the Indian Institute of Public Administration to carry out a study on "Assessing the Demand for Skill Sets in Domestic/National and Overseas Markets by the Year 2025 in Bihar State". The objectives and methodology of the study have been outlined in the following paragraphs.

8.3 Objectives

1. To estimate the industry-wise economy demand for manpower with Vocational Education and Training in Bihar by the years 2009-10, 2014-15, 2019-20 and 2024-25.
2. To allocate the demand for manpower with vocational training from ITI/ITCs of Bihar and to estimate the demand-supply gap for ITI/ITCs by the years 2009-10, 2014-15, 2019-20 and 2024-25.
3. To estimate the shortage of ITI/ITCs in the State by the years 2009-10, 2014-15, 2019-20 and 2024-25.
4. Identification of new trades (skill-sets) having employment potential in which training should be imparted/arranged by the different agencies– government or otherwise.

8.4 Methodology

This study is based on the secondary data analysis. In this study our concern has been in vocational training, not in high level skills provided in professional colleges (viz. engineering colleges, medical colleges, agriculture colleges, polytechnics and other professional colleges) which should be estimated on the basis of demand by the economy or individuals (potential trainees). Our concern of vocational training here is to provide the skills to make them employable for the opportunity exists in the state or outside the state and earn the income which can meet the basic needs of their families. A large number of the unskilled labourers who are going every year from Bihar to other developed states should go as skilled workers so that they can have a better bargaining power. Likewise, Bihari labourer should go better prepared to take up skilled jobs in places outside India—generally speaking in the Middle East and countries like Malaysia in the South East.

Keeping in view the unskilled surplus labour in the state, "the demand of persons to be trained" who could be trained in "vocational skills" have also been estimated, and for this purpose exercises given below have been attempted.

1. Estimating the industry-wise demand for manpower with vocational education and training in the state in the years 2010, 2015, 2020 and 2025.
2. Distributing the demand and requirement of persons with vocational education and training that should be trained in ITIs and ITCs run or supported by the Department of Labour Resources and that should be trained in institutions run, supported, controlled and regulated by other departments of the state or the Union in the years 2010, 2015, 2020 and 2025.
3. Identification of new trades having employment potential in the state with the hope that the same would be good for those who opt to migrate from Bihar for better fortune in economic terms.

Methodology adopted in carrying out the above exercises is given below in the following four sub-sections.

8.4.1 Industry-wise Demand for Vocational Educational and Training

8.4.1.1 Demand for Manpower with Vocational Training within the State (WIS)

Demand of vocationally trained persons within the state was projected by two methods:

Direct Method

In this method industry-wise employment elasticity of technical manpower with respect to GSDP was obtained for the period 1993-94 to 2004-05. Employment of technical manpower for the years 1993-94 and 2004-05 was obtained from NSSO surveys and GSDP was obtained from the Directorate of Statistics and Planning, Government of Bihar. Industry-wise CAGRs of GSDP for

the periods 2010-15, 2015-20 and 2020-25 were projected on the basis of past achievements during the period 2000 to 2010, targets of Eleventh Five Year Plan (2007-12) of the state and future economic agenda of the present government of Bihar. Industry-wise employment elasticity of technical manpower (EET) with respect to GSDP was stipulated to change from quinquennium to quinquennium, keeping in view the prospects of demand for trained manpower in place of untrained labour, general rise in response to growth, and government policy. Then industry-wise employment of technical manpower was estimated for this period by using the projected EETs and projected GSDP.

Projected employment of vocationally trained persons was obtained from the projected employment of technical manpower by applying the ratio obtained from the latest survey on Employment and Unemployment conducted in the year 2004-05. This projected employment of vocationally trained persons gave the demand of vocationally trained persons within the state.

Indirect Method

In this method first Industry-wise total employment was projected in the same way as industry-wise employment of technical manpower has been projected in the first method. Then projected employment of technical persons was obtained from the projected total employment by assuming that the existing share of employment of technical persons to total employment would gradually increase from one per cent in the year 2004-05 to four per cent in the year 2024-25. Further projected employment of vocationally trained persons was obtained from the projected employment of technical persons by applying the same ratio as obtained from the latest survey on Employment and Unemployment conducted in the year

2004-05. Again this projected employment of vocationally trained persons gave the estimate of demand of vocationally trained persons within the state.

8.4.1.2 Demand for Manpower with Vocational Training from Outside

Demand for vocational trained personnel from outside the state includes: (a) demand from other states of India (ROI) and (b) demand from other countries of the world (ROW). For ROI there are two major sources which give estimates of the incidence of migrations from Bihar. The first is the Population Census conducted after every ten years and the other is the surveys conducted by NSSO. Extent of migration from Bihar to other states, along with the background (age, qualification and sex etc.) of migrants and reasons of migrations was obtained from these two sources. Besides these two official sources, there are a number of studies on "Migration from Bihar state". For ROW demand, Ministry of External Affairs and the newly constituted Ministry of Overseas Indian Affairs provide data on International Migration from India to different countries. Demand for persons with vocational training outside the state was projected on the basis of the past trend of migration, reasons of migration, and the decreasing trend of dependency ratio in the state.

8.4.2 Allocation of Demand for Manpower for Training in ITIs and ITCs

Above section (Section 8.5) gives the demand estimates of students who should be trained in the institutions operating in the State irrespective of the departments of the state/the union running, supporting, controlling, regulating or facilitating. It is assumed that there are sufficient persons available and willing to undergo vocational training.

Keeping in view the main factor of past trend of the share of students who were admitted in ITIs/ITCs to the total students admitted in all institutions, persons

who ought to be trained in ITIs/ITCs were obtained for the different years. Recent past trend indicates that about 53 percent of total admissions were in ITI/ITCs. We allocated 50 percent demand to them after reviewing pros and cons of moving ratio up or down.

8.4.3 Identification of Trades with Employment Potential in the State

Eleventh Five Year Plan of India has identified 20 growth sectors having high employment potential in the country. These growth sectors have employment potential in the state also. The trades, in which vocational training is being provided in the state and have employment potential, were classified under these growth sectors. It was observed that some of the growth sectors were not covered by the existing trades in State. An attempt was made to identify some trades under those left out growth sectors.

The trades in which vocational training is being provided in two developed states (viz. Gujarat, and Maharashtra) and the courses under Modular Employable Scheme (MES) approved by National Council of Vocational Training (NCVT) but not covered in the vocational institutions of Bihar state were also taken into consideration. However before including these trades in the list of skill-sets it was ensured that these trades should also have employment potential in the state. Scope of employment potential of trades suggested by different agencies was also analysed, keeping in view the market demand, infrastructure facilities and resources of the State. Duration and minimum qualification required for each trade have also been suggested. It has been emphasized that trades of shorter durations could also be taken up for training so as to quickly enhance the supply of trained manpower and the same power could be retrained or their skills be upgraded when the economy demands so.

Before finalizing the trades, opinion of the experts published in news papers and reports were kept in view. Team members have also met some experts in the field of vocational training and obtained their views.

8.5 Discussion on the Draft Report in Patna Workshop

Finally the draft report of the study was discussed in a workshop organized by the Department of Labour Resource, Government of Bihar, in AN Sinha Institute of Social Sciences. The workshop was attended by various administrative personnel and representatives of industries of the state, and experts of Bihar as well as other states. The Study Team also took suggestions from the participants of the workshop regarding the structure of the report and the new trades in which training should be imparted in the State.

8.6 Status of Vocational Education and Training in Bihar

The NSSO has carried out a household survey in 2004-05, which inter alia, collected data on the status of vocational training about the persons of age group 15-29 across the country. Some of this data was complied according to States. Some other data was complied by the team from unit level data.

8.6.1 Vocational Training Received/being Received in Bihar in 2004--05

In Bihar state, of the persons of age 15-29 years, during the year 2004-05 (i) only 0.3 per cent of this group was receiving formal vocational training, (ii) 0.2 per cent reported to have received formal vocational training and (iii) another 1.3 percent reported to have received non-formal vocational training. If we assume that another one per cent of these persons were receiving the non-formal vocational training than we can say at best that only 3 per cent of the persons in this age group were either receiving any vocational training or they have received any

vocational training (formal or non-formal), which is very low percentage. The proportion of the persons who received/currently receiving vocational training was lower in the case of females than in the case of males in both the rural and urban areas. Moreover, as expected, the proportion was higher in the urban areas than that of rural areas.

8.6.2 Trades of Formal Vocational Training in Bihar

Field of training signifies the specific area of the training that a person has obtained in the past and tallies broadly with the specific trade. In the 2004-05 NSSO survey, data in respect of 21 specific areas of trade were collected. But in case of Bihar state a large proportion (44 per cent) of persons were non-respondent as compared to all India rate of 1.5 per cent.

Traditionally, vocational training has been oriented towards a number of engineering and technical trades. Though they continue to form the core of vocational training, its scope was considerably widened to include many non-engineering trades also. In Bihar state, there was a limited choice for different trades. In case of males, the most demanded field of training was found to be 'Mechanical engineering trades' (32 per cent) followed by 'Electrical and electronic engineering trades' (12 per cent) in the rural areas; and 'Computer trades' (31 per cent) followed by 'Electrical and electronic engineering trades' (21 per cent) in the urban areas. Among rural female youths, the demand was a little different. About 21 per cent of them, in the rural areas, the highest proportion among all fields had formal vocational training in the field of 'Computer trades'. Among the urban female youths, the most important choices in terms of proportions were: 'Textile related trades' and 'Artisan/Craftsman/Handicraft and

cottage based production trades'. Each of these two trades had a share of about 31 per cent of total urban females in this age-group.

8.6.3 Institutions of Formal Vocational Training

Some of the major sources from where vocational training could be received by students were collected by the NSSO in their survey (2004-05). These sources were classified into 24 different types of institutions. In Bihar state Industrial training institutes (ITIs)/ Industrial training centers (ITCs) played the major role in providing training to male youths. The institutes of 'Tailoring, embroidery and stitch craft' and 'Handloom/handicraft design training centers/KVIC' together played the major role in providing training to female youths. As pointed out earlier, there was a big limitation in the survey results: in case of Bihar the proportion of non-respondents (44 per cent) was very large. Besides this, there was another limitation: about 20 per cent of the respondents in the state reported their institute of training in the category of 'Other institutes'.

At all India level, Industrial training institutes (ITIs)/ Industrial training centers (ITCs), recognized Motor driving schools, Schools offering vocational courses, Polytechnics, Institutes run by Companies/Corporations, and Colleges recongnised by the UGC together played the major role in providing training to male youths. The Craft institutes, Industrial training institutes (ITIs)/ Industrial training centers (ITCs), Schools offering vocational courses, Nursing institutes, Hospital and medical training institutes, Institutes run by Companies/Corporations and Nursery teacher's training institutes together played the major role in providing training to female youths in the country.

8.6.4 Status of Vocational Education and Training in 2010

There are many training institutes/centres in Bihar, though not adequate yet, for imparting the vocational training programmes to make supply of skilled personnel to the industrial sectors. The purpose of these institutes is to generate skilled manpower to fulfill the demand of industries. The skills imparted by ITIs/ITCs are to keep pace with the technological demands of economy and the expanding universe of knowledge. There were 45 Govt. ITIs and 207 private Industrial Training Centers (ITCs) in the state in the year 2010.

Actual intake in different trades of ITIs during the year 2009 was 12,143 out of which 5,769 took admissions in one year courses and the remaining students 6,374 took admissions in two year courses. Similarly in ITCs actual intake in different trades during that year was 18,859 out of which 2,625 took admissions in one year courses and the remaining 16,234 students took admissions in two year courses.

Beside ITI/ITCs there are other departments of the state which provide vocational and educational training. Actual intake of these other departments during the year 2009 was about 27 thousands, out of which about 7000 students have taken admission in schools for vocational courses under the Department of Education. Here is a big difference between data obtained at the State level and those available in publications at the country level. Students in vocational schools/sections are reported to be 37500. However, this figure is reported year after year, we have ignored and relied on the one provided at the State level.

8.7 Demand for Manpower with Vocational Training in Bihar

There are three distinct sources from which demand for vocational manpower emanates for supply from Bihar. One is domestic demand or call it

within State demand (WIS), another is the demand from other States of the country or call it demand from the rest of India (ROI) and still another from the rest of the World (ROW).

8.7.1 Within State Demand for Manpower with Vocational Training

Demand for persons in the economy is considered as the persons who are (to be) employed by various industries in the economy. Projected demand for manpower with vocational skills would be the number of vocationally trained persons who would be getting employment in these industries. It was obtained by two different methods. In the direct method, we projected the demand for manpower technical skills, using employment elasticity of technical manpower with respect to GSDP which were based on past experience, future likelihood of sectoral changes and technological advancement, and government policy. In the indirect method, first we projected the demand of total persons, using the past employment elasticity of total employment with respect to GSDP and then separated the share of technical manpower from the total employment. 'Total employment' includes 'employment with technical skills' and 'employment with no technical skills'. In both the methods share of vocationally trained persons was obtained from the estimated values of technical persons.

It has been observed that in the year 2005, 1.4 lakhs of persons with vocational training were employed in the state. Under direct method, it is found to be increasing by 2025 to about 9.5 lakhs and under indirect method, to 9.2 lakh. in the year 2025. We have assumed that the total demand was met and there were no surpluses or shortages in any of these years.

There is not much difference in these two estimates. However out of the two methods indirect method was preferred over the direct method because estimates

for in-between years (i.e. 2010, 2015 and 2020) made by the indirect method were more consistent as compared to the direct method. In the indirect method we have to assume that the share of personnel employed with technical skills to total employment would be increasing from abysmally low of one per cent in the year 2005 to 4 per cent in the year 2025.

Converted to annual additions we find that the industry would demand manpower with vocational skills in 2010-11 numbering 26500 and the demand would gradually rise to 40000, 53000 and 70000 respectively by 2015-16, 2019-20 and 2024-25.

8.7.2 ROI Demand for Manpower from Bihar with Vocational Skills

As per 2001 Population Census, Bihari migrants in different states of India whose place of last residence was Bihar were about 22 lakhs. Duration of these migrants from Bihar to other states may vary from 0 to 9 years. In other words, average numbers of out-migrants per year from Bihar to other states are about 2.2 lakhs. As per NSSO estimates it is observed that 56.5 per cent of these migrants (males and females combined) are migrating for employment related activities. If we apply this percentage, out of 2.20 lakhs of out-migrants, 1.25 lakhs are migrating per year to other states of India (ROI) for employment related activities.

Even if we go by conservative estimates, out of 1.25 lakhs economic labour migrants in the year 2010 from Bihar about 12,500 (10 per cent of out-migrants) may be imparted vocational training in the state. In other words there was an additional demand of 12,500 in that year in the state from other states of India (ROI) for vocationally trained persons.

Future demand of vocationally trained persons within the state, as discussed in Chapter VI, would increase at the rate of about 10 per cent per annum. If we assume that additional demand from other states would also increase at the same

rate than the additional demand of vocationally trained persons from other states of India (ROI) would increase from 12,500 in the year 2010 to 16000 in the year 2015 to 20000 in the year 2020 to 25000 in the year 2025.

Past trend of out-migration from India to different countries shows that in the year 2004, there were 4.7 lakhs out-migrants from India but their number increased to 6.1 lakhs by the year 2009 in five years time – at the rate of 5 per cent per annum. Similarly year-wise number of out-migrants to various countries from Bihar shows that in the year 2004, there were only 21812 out-migrants to different countries, which increased to 62633 in the year 2010. In other words there was a growth of about 19 per cent per annum during the last six years. This also shows that growth of international migration from Bihar is much higher (19 per cent per year during 2004 to 2010) in comparison to India as a whole (only 5 per cent per year during 2004 to 2009).

As per the Annual Report (2009-10) of the Ministry, the demand for unskilled workers is declining in the overseas employment market and the future belongs to the skilled workers, preferably with multiple skills. It is, therefore important for India to upgrade the skills of its young work force to meet the challenges of future needs in the overseas employment market which is having flux of emigrant laborers from neighboring countries.

Out-migrants data from Bihar to other countries (ROW) by type of skills during the last three years (i.e. 2008-2010) shows that more than 90 per cent of migrants were in those occupations which require some diploma or certificate in vocational skills. Remaining 10 per cent of the migrants were those who were either professionals (i.e. engineers, doctors, agriculturists) or were simply unskilled workers. Another important point worth mentioning about these out-migrants is

that out of these out-migrants, share of persons who migrate permanently is not very large.

If we assume, taking a safer side, that in the year 2010, out of 50,000 out-migrants, 40,000 (80 per cent) were the persons having certificate or diploma in vocational skills. Further out of 40,000 out-migrants only 20 per cent were the new migrants and the remaining 80 per cent were the old migrants who got extension in their work permits in different countries. Than we can say that there was an additional demand of 8000 persons from the different departments imparting vocational training in Bihar state during the year 2010.

As mentioned above future demand of vocationally trained persons within the state, would increase at the rate of about 10 per cent per annum. If we assume that additional demand from other countries would also increase at the same rate than the additional demand of vocationally trained persons from other countries would increase from 8000 in the year 2010-11 to 10000 in the year 2015-16 to 13000 in the year 2020-21 to 16600 in the year 2025.

8.7.3 Allocation of Demand for Manpower from ITIs/ITCs

In the above section we have estimated the demand of persons with vocational skills. It includes the demand of ITIs as well as from other departments. From this we have allocated the demand for manpower passing out from ITIs/ITCs.

As per the intake data received from ITIs/ITCs under the department of labour resources, government of Bihar, and other institutes under different departments of the state government for the year 2009, share of intake from ITIs/ITCs to total vocationally trained persons having diploma or certificate (below graduate) in the state was about 53 per cent. It is assumed that this ratio would

continue in the future years also. We allocate 50 percent demand for manpower which should met by the ITI/ITCs, considering pros and cons of increasing and decreasing this ratio.

Industrial Technical Institutes and Industrial Technical Centres together should turn out about 47300 trainees for jobs in industries in 2010-11 and should prepare to pass-out over 63300 trainees by 2014-15, over 82600 by 2019-20 and over 100000 by 2024-25. Inter se division will depend upon preparedness of the private sector, which it has shown in recent years in the liberalized atmosphere.

8.7.4 Supply of ITI/ITC Trainees

Actual intake of ITIs/ITCs in Bihar during the year was about 31 thousands. Out turn data of these ITIs/ITCs was required to get an idea of pass out rate of these students. This type of data was not available for Bihar state. But this type of data was available for Kerala State. During the last three years (viz. 2005, 2006 and 2007) total intake of ITIs/ITC students was 71,115. Out of 71,115 students appeared in different trades, 43,355 had passed. This gives a pass out rate of 59 per cent in Kerala state.

If we apply the same pass out rate to 31,000 students who appear in different trades in ITIs/ITCs of Bihar state than about 18000 students are passing out every year. This number gives annual supply of ITIs/ITCs per year.

8.7.5 Shortages of ITIs/ITCs Pass-outs in Bihar

Estimates of shortages of "ITI/ITC passed" (under the Labour Department, Government of Bihar) as well as of the persons who would pass these skills from institutions supported by the "Other Departments" of the state/the Union can be projected. But because of the non-availability of data of pass out students from

these "Other Departments" we could do shortage exercise for "ITI/ITC" only. By subtracting 18000 from 50 percent of the total annual increment to total demand for vocationally trained manpower, we get the estimates of the shortage of manpower which should be turned out by ITI/ITCs.

8.7.6 Shortages of ITIs/ITCs in Bihar

It is observed that there was a shortage of about 86 Industrial Institutes/Centers in the year 2010-11 but this would increase to 218 in the year 2014-15, 340 in the year 2019-20 and 550 in the year 2024-25.

8.8 Identification of Trades in Bihar

8.8.1 Methodology for Identification of Trades

Resources of Bihar state gave an idea about the areas of employment that should be targeted in future in Bihar. In turn it also gave an idea of the trades which will be demanded in future. Planning Commission, Government of India has identified 20 Growth Sectors which have employment potential in the country. While doing this exercise we have kept in view the Growth Sectors identified by Planning Commission, and discussed the matter with officers of various departments of States and Centre. Officials of industries and other offices located at Delhi viz. FICCI, Planning Commission and DGE&T were also consulted to firm up our idea about the high growth sectors where employment could be generated and new trades could be introduced or vice versa. Reports, papers and articles published by different organizations viz. DGE&T, IAMR, Department of Industries, Government of Bihar, IGNOU were also consulted.

It was found expedient to know the details about the long duration trades (one year and more duration) and short duration trades (less than one year duration) which are taught in ITIs/ITCs and other Education/Training Institutions in Bihar. We also, consulted the reports of labour departments of two developed

states viz. Maharashtra and Gujarat for knowing the trades which are at this moment covered by these states but are not available in the institutions in Bihar though they have employment potential in the state.

8.8.2 Sectors of Trade Concentration in Future

Vocationally trained persons in Bihar will have their demand within the state as well as outside the state. Keeping this fact in mind, sectors and trades in demand at all India level as well as Bihar has been discussed.

As per the FICCI estimates in India about 12 million persons are expected to join the workforce every year, and with an existing skill development capacity of about 3.4 million in the country, it is required to enhance the skilling and technical education capacity to about ***15*** million (considering that even sections of the existing workforce would have to be trained). Bihar will have a substantial share as it is third largest state of the country. It is half the size of UP but only marginally behind Manharashtra.

It is expected that we ought to prepare as soon as possible to cater to the training needs for turning out 15 million personnel with vocational skills. We have to develop training capacity for about 20 million aspirants so as to meet the industrial demand. The key trades which would be on demand in future have been identified by FICCI. These are presented below:

Key Trades in Demand in select sectors (illustrative)

Sector	Key Trades in Demand
Textiles and Clothing	Power loom operators, Apparel Manufacturing, Fashion Design, Quality Assurance (QA), Knitwear Manufacturing, Sewing Machine Operators
Building and Construction Industry	Crane Operators, Electricians, Welders, Masons, Plumbers, Carpenters, Painters, etc.
Auto and Auto Components	Auto OEMs, Auto Component Manufacturers, Drivers, Sales, Servicing, Repair, Financial Services sales, Insurers/Valuers
Organised Retail	Shop floor executives, back-store operations, merchandising
Banking, Financial Services, and Insurance	Financial Intermediaries (including Direct Selling Agents), Banking and Insurance (including agents), NBFC, Mutual Funds
Gems and Jewellery	Jewellery Fabrication, Grading, Faceting, Polishing, Cutting
IT and ITES	IT – Software Engineering, Maintenance and Application Development, End-to-End Solutions, Infrastructure Management, Testing, etc. ITES – BPO, KPO – Legal, Medical, Scanning Tunneling Microscope (STM), Analytics and Research
Leather and Leather Goods	Tanning, Cutting, Clicking, Stitching, Lasting, Finishing
Furniture and Furnishings	Carpenters, Operators engaged in Stitching, Sewing, Stuffing
Electronics and IT Hardware	Computers, Telecom, and Consumer Electronics Manufacturing, Sales, Servicing/ After Sales Support of electronics goods, High-Tech
Tourism and Hospitality Services	Front office staff, F&B Services and Kitchen and Housekeeping staff, Ticketing and Sales, Tour Guides

8.8.3 Industry-wise Increase in Demand for Vocationally Trained persons

Industry-wise future demand for vocationally trained persons along with the detailed methodology for Bihar state has been given in chapter VI.

It is estimated that in the coming years, there would be huge demand of vocationally trained persons in the state. It would increase from about 2.4 lakhs in the year 2010 to about 9.2 lakhs in the year 2025. Thus there would be an increase of 6.8 lakhs during this period. Highest increase would be in agriculture and allied activities (2.7 lakhs), followed by construction sector (1.8 lakhs), and trade hotels and restaurants (1.2 lakhs).

8.8.4 Identification of Skill-Sets having Future Demand in the State

After analyzing the above information the study team has suggested some new trades of different durations which may be introduced in Bihar. These trades are in addition to the existing trades in the state. Growth sector -wise distribution of these new trades suggested are given in Chapter VIII. In all 98 new trades have been suggested for the state. Out of 98 trades, 34 trades are of six months duration, 34 trades are of one year duration, 20 trades are of two year duration and remaining 10 trades are of 3 months duration.

Out of 98 new trades suggested, 64 trades belonged to the growth sectors suggested by Planning Commission. Among these 64 trades highest number of trades suggested were in 'Health Care Services Sector—9 trades' followed by 'Tourism, Hospitality and Travel Sector – 7 trades' 'Building and Construction Sector—6 trades' and 'Textile, Apparel and Garments Sector—6 trades'.

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Annexure I

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Annexure II

Estimating the Societal requirement of Vocational Education and Training in Bihar

1 Introduction

We have discussed in Chapter I (i.e. Introduction) that it is very important to estimate the requirement of Vocational Education and Training in Bihar. The word 'requirement 'has different meaning than 'actual demand'. 'Actual demand' is the 'Industry demand'. Other two terms which can be used here for requirement are 'Social Demand' and 'Need'. In Bihar a large section of people are very poor and illiterate, who do not have the money to bear the cost of training. Some of them do not know the benefit of the training so there would be no demand of vocational skills from their side. In spite of this the fact is that a large number of such people are going to other states for (daily) wage work. If such persons are imparted some training they would have a better bargaining power in those states. Late Prof. Arjun Sengupta has mentioned in the International workshop on skill development: Policy learning and exchange (Hosted by IAMR in May, 2010) that in informal sector there may not be demand for training. We will have to adopt a deliberate approach to increase their productivity.

Requirement of persons with vocational education and training will depend on how ambitious the planners are. If they are more ambitious, number of persons required to be technically trained would be more and if they are less ambitious requirement would be less. If they want that by particular year all the unemployed persons should be trained, requirement would be more and if they want that unemployed persons in the age group of

15-19 only should be trained then the requirement would be less. Similarly if they plan that by particular year, 10 per cent of persons in the age group 15-29 years should have training then the requirement would be more but if they plan that only 5 per cent of persons in this age group should have training then the requirement would be less.

There are various methods to estimate the requirement of Vocational Education and Training but all these methods depend upon the targets we want to achieve. Some of the methods may not give the total requirement of the society rather they give the requirement of a particular segment.

2 Societal Requirement of Vocational Education and Training

It has been discussed in detail in Chapter V on "Status of Vocational Education and Training in Bihar" that level of vocational education and training in Bihar is in very poor state as compared to other states of India. Keeping this fact in view, in this method we have fixed up some target years by which Bihar state should achieve the present level of vocational training of some other state. However the targeted states should have

(i) some similarities to Bihar state and

(ii) a high level of vocational education and training.

Various steps involved for estimating the requirement of Vocational Education and Training in this method are discussed below:

Step I: Selecting the States with Some Similarities to Bihar and having High Level of Vocational Education and Training.

Bihar is a state where agricultural activities are dominating. About three-fourth of total employment in the state is in agricultural and allied activities (Table 1). So first of all, state-wise share of employment in

agriculture and allied sector was obtained for the major states of India for the year 2005. It was obtained from the quinquinnial survey conducted by NSSO in the year 2004-05.

Table 1: State-wise Percentage of Employment in Agriculture and Allied sector and Percentage of Persons in the age-group 15-29 years who Received/Receiving Vocational Training in the year 2005

Sl. No.	State	% of Emp. In Agricultural & allied sector	% of persons of age group 15-29 who received or receiving any vocational training
1	Andhra Pradesh	58.49	18.1
2	Assam	65.70	3.6
3	Bihar	72.65	1.8
4	Chhattisgarh	75.10	10.4
5	Gujarat	54.79	17.8
6	Haryana	50.36	8.7
7	Jharkhand	59.96	2.1
8	Karnataka	60.77	6.7
9	Madhya Pradesh	67.32	20.7
10	Maharashtra	53.09	14.5
11	Orissa	62.38	10.1
12	Punjab	47.50	9
13	Tamil Nadu	41.31	15
14	Uttar Pradesh	60.99	8.3
15	West Bengal	45.67	11.9

Data Source: NSSO, 2006.

Note: J&K, Kerala, Rajasthan and Himachal Pradesh these four states are excluded from the above table. The reasons are given below:

i) J&K and Himachal Pradesh are hilly states.
ii) Kerala has different characteristic than Bihar.
iii) Rajasthan is a desert state.

A Major state was considered, the state having a population of more than 10 million (one crore). As per this definition there were 19 major states in India but we excluded four states (viz. J&K, Kerala, Rajasthan and Himachal Pradesh) which are not similar to Bihar state. J&K and Himachal

Pradesh are hilly states. Rajasthan is a desert state and Kerala has altogether different characteristic than those of Bihar.

For remaining fifteen states, along with the share of employment in agriculture and allied sector to total employment, state-wise percentage of persons of age-group 15-29 who received or was receiving any vocational training was also obtained. Among the fifteen states, percentage of employment in agriculture and allied sector varied from 41 per cent (Tamil Nadu) to 75 per cent (Chhattisgarh).

If we take the share of employment in agriculture and allied activities as a similarity among the states than out of these fifteen states, there are four other states viz. Assam (66 per cent), Chhattisgarh (75 per cent), Madhya Pradesh (67 per cent) and Orissa (63 per cent) which have percentage employment in "Agriculture and allied activities" in the range of ±10 per cent to that of Bihar state (73 per cent).

Step II: Fixing the Targets of Vocational Education and Training

Among the four states having employment in agriculture and allied activities close to that of Bihar, Chhattisgarh (10.4 per cent), Madhya Pradesh (20.7 per cent) and Orissa (10.1 per cent) have much higher percentage of persons in the age-group of 15-29 years who have received or were receiving any vocational training as compared to Bihar state (1.8 per cent) in the year 2005. Though there are many factors which determine the level of vocational education and training in a state but share of employment in agriculture and allied activities in the state plays a vital role in determining the level of vocational education and training. One can argue that if these three states which are much similar and in proximity to Bihar

state in agriculture activities, can achieve a high level of vocational education and training than why not Bihar in the near future.

Keeping this fact in view we have assumed that following two targets for Bihar which can be achieved with some efforts by the state government.

(i) Bihar can achieve the target of 10 per cent persons in the age-group of 15-29 years who would have received or would be receiving the vocational education and training by the year 2020. This is the present level of Chhattisgarh and Orissa states.

(ii) Bihar can achieve the target of 20 per cent persons in the age-group of 15-29 years who would have received or would be receiving the vocational education and training by the year 2030. This is the present level of Madhya Pradesh state.

Keeping these targets in view, percentage of persons (in the age-group 15-29 years) who require vocational training from all the departments of the state in the years 2010, 2015, 2020 and 2030 are given (Table 2).

Table 2: Percentage of Persons (in the age group 15-29 years) who Require Vocational Training from All Departments

Year	% of persons who require VT (in the age group 15-29 years)
2005	1.8
2010	3.5
2015	7.0
2020	10.0
2025	15.0
2030	20.0

Note: i) Assumed that Bihar will be achieving the present (10%) target of Chhattisgarh & Orissa in the year 2020.

ii) Assumed that Bihar will be achieving the present (20%) target of M.P. in the year 2030.

Step III: Projecting the Persons in the Age-group 15-29 years Who Would Require Training

Total persons who require vocational education and training have been obtained by applying the percentage of persons (given in previous Step-II) who require vocational training to the total projected population in different years. It has been estimated that if the state achieves the proposed targets then the number of persons who require vocational education and training would increase about ten times in the year 2025 (46.6 lakhs) as compared to the number of persons who were getting training in the year 2005 (4.2 lakhs) (Table 3).

Table.3: Distribution of Persons who would Require Training (in age-group 15-29 years) by Sectors

Year	Projected population (in 000s)	% of persons who should be imparted vocational training	persons who require vocational training (in 000s)		
	(15-29 years)		Total	Formal	Informal
(1)	(2)	(3)	(4)=(2)*(3)/100	(5)=(4)*0.3	(6)=(4)*0.7
2005	23114	1.8	416.1	124.8	291.2
2010	27535.7	3.5	963.7	289.1	674.6
2015	31421	7	2199.5	659.8	1539.6
2020	32296.7	10	3229.7	968.9	2260.8
2025	31041.9	15	4656.3	1396.9	3259.4

Step IV: Distribution of Persons Who Require Vocational Training by Broad Sectors in Different Years

Some of the above persons who require vocational education and training would be from the formal system of training and the rest would require the training from the informal system of training in the state.

It was observed that about 30 per cent of the persons were getting the training from formal system of training in the state, in the year 2005. Remaining 70 per cent of the persons were getting their training from the informal system of training (NSSO, 2007). If the existing ratios of formal and informal system are applied to the total persons required to be trained in different years than the distribution of the total persons by formal and informal system was achieved (Table 3). However, this existing ratio may change with the change in policies.

It is estimated that in formal system their number would increase from 1.2 lakhs to 14.0 lakhs and in informal system their number would increase from 2.9 lakhs to 32.6 lakhs during the period 2005 to 2025 (Table 3).

Step V: Distribution of Persons Who Would Require Vocational Training from ITIs/ITCs and other institutions/departments

In Bihar state a large share of persons who have received or are receiving vocational training are from the Department of Labour Resource through ITIs/ITCs. In the year 2009, about 53 percent of the total intake was from the ITIs/ITCs. During the last five years (i.e. 2005 to 2010) there has been huge expansion of ITIs/ITCs in the state.

The share of ITIs/ITCs in the year 2010 was quite large and it may be assumed that the existing percentage of ITIs/ITCs would be stabilized and would remain same in the future years also. Applying this percentage to the total number of persons who would get the training from formal system, we would get required number of persons to be trained in ITIs/ITCs in the years 2005, 2010, 2015, 2020 and 2025. It is estimated that their number would increase from about 0.7 lakh in the year 2005 to 7.4 lakhs in the year 2025 (Table 4). Similarly, number of persons who would require vocational

training from institutions/departments other than ITIs/ITCs would increase from 0.6 lakh in the year 2005 to 6.6 lakhs in the year 2025.

Table 4: Distribution of persons who would require training (in age-group 15-29 years) by type of Institution (in 000s)

Year	persons who require vocational training in Formal sector	persons who require ITI/ITC training	persons who require training from other institutions
(1)	(2)	(3)=(2)*0.53	(4)=(2)*0.47
2005	124.8	66.2	58.7
2010	289.1	153.2	135.9
2015	659.8	349.7	310.1
2020	968.9	513.5	455.4
2025	1396.9	740.3	656.5

3 Estimates of the Persons with Non-formal Training

Table 3 gives an estimate of the persons who would require non-formal vocational training from the informal sector. As per the estimates about 33 lakh persons would be having non-formal training in the year 2025. One of the objectives of Skill Development Mission set up by Government of India is to increase the mobility and employability of the persons with non-formal vocational training by certification. These future estimates of the persons with non-formal vocational training can be used as the number of persons who would require certification.

7.4 Comparison of Demand and Requirement of Vocationally Trained Persons

In the Chapter VI on "Estimating the Demand of Persons with Vocational Education and Training", we have estimated the total demand of persons with vocational skills from within the state (WIS) for ITI/ITC

passed as well as the persons who have passed from other institutions of the state by two methods (i.e. Direct Method and Indirect Method). Indirect Method was considered as better than the Direct Method. Demand estimates of ITIs/ITCs and other institutions gives total demand of persons in formal sector in the state. Comparison of demand estimates (by Indirect Method) with the requirement estimates is given below (Table 5).

Obviously requirement estimates are higher than demand estimates. In case of ITIs/ITCs pass outs, requirement was higher than demand by about 27,000 in the year 2010 but this difference would increase to 2.5 lakhs in the year 2025. In case of pass outs from "Other Institutes" the difference was 25,000 in the year 2010 but this difference is likely to increase to 2.3 lakhs in the year 2025.

Table 5: Comparison of Future Demand and Requirement of Persons with Vocational Training (in 000s)

Year	ITI/ITC pass outs			Pass outs from other Institutions		
	Demand	Requirement	Difference	Demand	Requirement	Difference
1	2	3	4	5	6	7
2010	126	153	27	111	136	25
2015	213	350	137	189	310	121
2020	326	514	188	290	455	165
2025	486	740	254	430	657	227

Data Source: For Demand: Table 6.24 of Chapter VI
For Requirement: Table 4 of this annexure