N·S·D·C
**National
Skill Development
Corporation**

Transforming the skill landscape

Skills Gap Study of the
North-East

About National Skill Development Corporation

National Skill Development Corporation (NSDC) is a pioneering Public Private Partnership (PPP), set up under the aegis of the Ministry of Finance, in July 2008, with a mandate to skill 150 million by 2022.

NSDC's mission is as follows:

- Upgrade skills to international standards through significant industry involvement and develop necessary frameworks for standards, curriculum and quality assurance.
- Enhance, support and coordinate private sector initiatives for skill development through appropriate PPP models; strive for significant operational and financial involvement from the private sector.
- Focus on underprivileged sections of society and backward regions of the country thereby enabling a move out of poverty; similarly, focus significantly on the unorganised or informal sector workforce.
- Play the role of a 'market-maker' by bringing financing or viability gap funding, particularly in sectors where market mechanisms are ineffective or missing.
- Prioritise initiatives that can have multiplier or catalytic effect as opposed to one-off impact.

Globally, NSDC is a unique PPP in the area of skill development. NSDC's key differentiators are as follows:

- Funds as well as provides strategic support to the skill development activities of stakeholders and potential partners.
- Monitors implementation over entire life of the project.
- Enables skill development in high growth and unorganised sectors.
- Facilitates creation of 'Train the Trainer', centres
- Accountable for raising skills to international standards through sector specific industry involvement and setting systems and frameworks for standards, curriculum and quality assurance.
- Set up Sector Skill Councils
- Commissions periodic reports including skill gap surveys
- Support of industry associations, hence access to the best industry data enabling creation of industry specific curriculum, employability, etc.
- Facilitates creation of Labour Market Information Systems (LMIS)

Foreword

The North Eastern States comprise Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura.
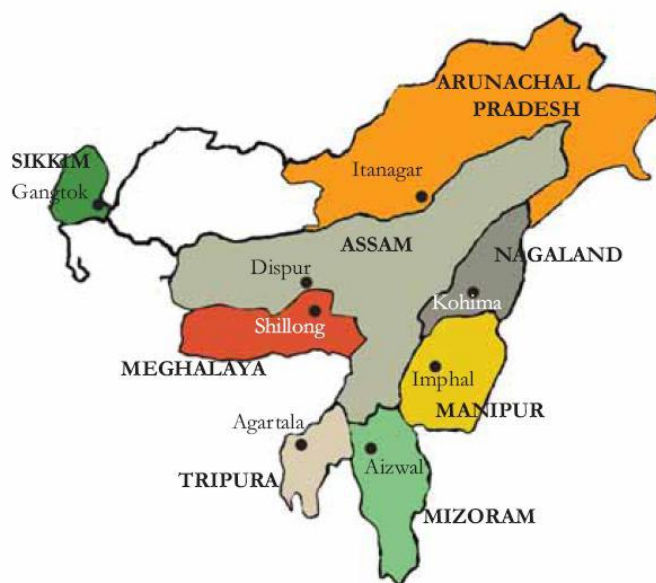
The eight States located in India's North-East cover an area of 2,62,179 sq. km. constituting 7.9 per cent of the country's total geographical area, and 46million people or about 4 per cent of the total population of the country (Census 2011).

Most North Eastern States have remained one of the under developed and untapped regions of the country. Some of the reasons are as follows:

- Remoteness and isolation because of being mostly landlocked
- Lack of access to markets
- Limited connectivity to the rest of India
- Limited infrastructure
- Challenges in land acquisition
- Widespread use of traditional cultivation methods that are inefficient
- Lack of facilities such as cold storage for warehousing fruits and transporting to market
- Inadequate infrastructure that could help transport goods from the region
- Difficulty in accessing bank credit for enterprises
- Lack of confidence in seeking credit by small and tiny sector enterprises

- Poor awareness of markets, changing demand patterns, raw material sourcing, technology, branding and quality standards
- High and widespread dependence on Governments' programmes for market access, subsidy and training
- Educated seeking, mostly, Government jobs or relocating out of the region
- Stigma against labour oriented jobs
- Dependence on, mainly, local market for selling products from small and tiny sector
- Inadequate telecommunications connectivity

Despite these disadvantages, there are success stories of entrepreneurs who have started on small scale, overcome the difficulties and have grown in the last 15-20 years to make a name for themselves in the region. Though small now, their number is likely to grow as more people travel outside the region, attain education, training and skills, investing is made attractive by the States, markets linkages are developed, substantial buyers are attracted to the products from the region and, trained and skilled persons can be gainfully employed within the region.

It is in this context that the North Eastern Council (NEC) and the Ministry of Development of North Eastern Region (DoNER) have prepared Vision 2020 for the North Eastern Region.

The Vision 2020 envisages the following targets by 2020:
- Overall GSDP growth at a CAGR of 11.64 per cent between 2007-09 and 2019-20.
- Overall per capita income growth of 12.95 per cent between 2007-09 and 2019-20.

To support this vision, the Ministry of Development of North Eastern Region has formulated a Strategic Plan 2010-16 focusing on three broad dimensions:

(A) Rapid socio-economic development:
- Facilitating preparation of Strategic Plans for key sectors such as Agriculture, Road, Civil Aviation, Railways, Inland Water Transport, Power, Tele-Communication & IT, HRD, Health and Handloom & Handicrafts and implementation of the Plans so prepared by the line-Ministries and North Eastern States.
- Facilitating formulation of Projects, Schemes and Programmes by major Central Ministries in consonance with the requirement of the North-Eastern Region.

- Increasing the effectiveness of developmental expenditure in the North-East Region through higher levels of transparency, systemic improvements and independent monitoring mechanism.
- Creating an in-house database on important socio-economic indicators in the Region and its periodic assessment.
- Facilitating preparation of Regional Plan by the NEC.
- Providing critical support to the NEC for identification of appropriate regional projects and their implementation.
- Facilitating funding by External Agencies in critical Sectors in the North Eastern States.
- Undertaking pilot or demonstration projects in the North-East Region in certain sectors to provide fillip to these sectors.

(B) Building capacities and competencies in critical sectors in the North Eastern States

- Preparation of a Plan of Action for building capacities and competencies in critical sectors in the North Eastern States.
- Identifying institutes and organizations for imparting training and building capacities in the North Eastern Region.
- Setting up of Training Institutes in the Region in important fields through line Ministries, NEC or States.
- Augmenting the capacity of the existing training institutes in the North Eastern States.
- Use of IT as a tool to upgrade skills.

(C)Promote the strengths of the Region

- Preparation of a 'Plan of Action' for projecting and promoting key strengths of the Region.
- Promoting student and cultural exchanges among the States of the Region on one hand and between the Region and the rest of the country.
- Organizing business summits, exhibitions and cultural festivals to promote the Region.
- Undertaking well-conceived promotional campaigns in the print and electronic media for projecting a positive image of the Region.
- Arranging festivals and cultural exchanges between the Region and the neighbouring countries.
- Highlighting the achievements and success stories from the Region in mainstream media.
- Instituting an Award Scheme to honour and showcase the achievements of talented people of the Region.

While this requires substantial investment, implementation of Action Agenda outlined in the Vision and Strategic Plan, it also requires imparting of skills at all levels.

The North Eastern States, clubbed together, have some common attributes. But they also have significant variations related to culture, language, values, work preferences and ethics, and overall environment related to Government, infrastructure, terrain, proximity to or availability of markets and services. Hence, the skilling interventions may vary across states and districts despite, similarities of activities.

Given the above background, ICRA Management Consulting Services Limited (IMaCS) has been mandated by the NSDC to assist in identifying development and employment potential of districts of North Eastern States.

Arunachal Pradesh, 'the land of the dawn lit mountains', is one of the most pristine states in India. It became a full-fledged State on February 20, 1987.Arunachal Pradesh has an area of 83,743 sq km and shares a long international border with Bhutan to its west (160 km), China to the north and northeast (1,080 km) and Myanmar to the east (440 km). The topography varies from snow-capped mountains in the north to the plains of Brahmaputra valley in the south. In the North Eastern region, Arunachal is the largest state. Administratively, the state is divided into 16 districts. Itanagar in Papum Pare district is the State capital.

It is a land of lush green forests, deep river valleys and plateaus. The land is mostly mountainous with Himalayan ranges along the northern borders criss-crossed with mountain ranges running north-south. These divide the State into five river valleys: the Kameng, the Subansiri, the Siang, the Lohit and the

Tirap. All rivers, except Tirap are fed by snow from the Himalayas and countless rivers and rivulets. Tirap is fed by the Patkai Range rivers. High mountains and dense forests have make intercommunication difficult for tribes living in different river valleys. Tribes have lived with the consequent isolation flourished with their distinct identities and dialects.

Arunachal Pradesh is predominantly an agrarian economy. There is limited industrial activity in the state along the border of Assam. However, the state accounts for a large part of India's untapped hydroelectric power potential, which is estimated at about 50,000 MW. Several projects have been planned or are being started to harness this potential in the coming years.

Given the above background, ICRA Management Consulting Services Limited (IMaCS) has been mandated by the NSDC to assist in identifying development and employment potential of districts of North Eastern States.

This report has been structured in three parts:

Part I includes Foreword, Acknowledgements, Approach and Methodology, and Study Limitations.

Part II concentrates on the diagnostic analysis of Arunachal Pradesh, human resources requirement, skill gaps assessed for Arunachal Pradesh.

Part III presents a detailed set of recommendation for Arunachal Pradesh.

Acknowledgements

Carrying out a large scale survey is always a challenge. However, this task was made easy for the team by the support that they received from various stakeholders. The team acknowledges, with grateful thanks, useful information, references and support provided by NSDC and Ministry of Development of North Eastern Region.

IMaCS team has travelled extensively through the districts of Arunachal Pradesh to conduct the surveys for this study. The team has interacted with cross-section of stakeholders. This survey exercise would not have been possible without the support of key stakeholders some of whom we have listed below.

- Mr. Yeshi Tsring, Principal Secretary
- Mr. Mokbul Pertin, Commissioner, Department of industries, Trade & Commerce
- Mr. Subu Tabin, Joint Director, Department of industries, Arunachal Pradesh
- Mr. Goli Angu, Assistant Director, Department of Industries

In addition, there are many persons or organisations who have contributed greatly towards the successful completion of this study. The team conveys sincere thanks to all of them for their generous support and contribution.

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PART – I: Introduction

1. Report Objectives

National Skill Development Corporation (NSDC) has mandated ICRA Management Consulting Services Limited (IMaCS) to assess the development and employment generation potential of eight North Eastern states of India.As per the Terms of Reference, the report objectives are as follows:

  i.   Review the socio-economic profile of the North Eastern Region
  ii.   Identify developmental opportunities keeping in mind factor endowments and stakeholder perspectives
  iii. Identify specific developmental initiatives/projects which also have impact on employment generation
  iv.   Assess skills required to aid in such employment generation
  v.   Suggest suitable interventions/recommendations to achieve the same at a regional level

2. Approach and Methodology

The study has been conducted in three phases:

Phase – 1: Diagnostic Phase

The objective of this phase was to understand the socio-economic profile of the North Eastern Region. The focus was on analysing the economic and social position of the Region based on evolution of the level and type of economic activity and social development in each State. The factor advantages, constraints facing the Region either due to Regional factors or common among the states, and the challenges going forward have been analysed. We have thus identified the factor endowments of the State and the potential it holds. At the end of this stage, we have presented a snapshot of the State on economic and social aspects and a SWOT analysis of the State.

Phase – 2: Synthesis Phase

This was carried-out in two modules:

Module 1: Assessment of Development Potential

Module 2: Assessment of Employment Potential and Gaps

Module 1: Assessment of Development Potential:

The objective of this phase was to identify development opportunities across formal and informal sectors which provide livelihood opportunities for employment. We have also kept in mind the opportunities for

employment/livelihood generation identified as per the Vision 2020. This leads to the framework for identification of formal and informal sector employment/skilling opportunities

For this exercise, we have interacted with a cross-section of stakeholders of the Government/Industry to understand the following:

- What are the key developmental areas to focus?
- What needs to be done to leverage key strengths and factor endowments?
- How can bottlenecks to development be cleared?
- What various stakeholders need to do for development?

Based on the factor endowments and primary surveys conducted, we have identified potential and high growth opportunities for North Eastern States.

Module 2: Assessment of Employment Potential

For the developmental opportunities identified, we have assessed the following:

- Employment potential in the Region and on account of these identified developmental opportunities
- Skills required to be developed among the North Eastern Region workforce to tap into the same.

This phase has been executed by: Profiling skills required sustaining traditional skills and tapping into factor endowments, especially in the informal sector (wherever scalable) and Interacting with industry (small, medium and large) and groups engaged in formal and informal sectors.

Phase – 3: Recommendations

Our interventionsfocus on various measures/potential ideas/projects required to be pursued for Development and Employment Generation. These interventions focus on the following:

- What is the enabling environment to be created to further development and employment generation?
- What are the interventions to enhance employment generation/job creation?
- What are the potential opportunities that can be tapped thereof and structured for private sector investment and NSDC interventions?

The report derives content for analyses from both, primary survey and secondary sources.

- The surveys were undertaken by visiting several districts of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura and meeting key stakeholders identified with the help of State/District Government Departments of Labour, Planning or Industries and using internal research and databases.

- Significant secondary research was also carried out in order to validate the findings of primary survey.

3. Study Limitations

While care has been taken to ensure correctness of information, the report outcomes for entire North East are affected by the following circumstances:

- While the field survey has been conducted keeping in mind maximum coverage, the survey has been constrained by factors such as - weather: a major part of the survey was conducted in the rainy season with landslides and flooding; availability of transportation; proper road connectivity; availability of persons to interview at select locations and offices; lack of documented and latest information; and inaccessible distances from within the State.

- While some districts had updated statistics, for others approximations have been made because of dated or non-existent data, particularly, for industries and institutions that have come up in recent years.

- Approximations include use of past growth rates for projections, regional average, national average, productivity growth, benchmarks with other States and others.

PART – II (a): Diagnostic Analysis of Arunachal Pradesh

4.1 Macro-Economic Overview

Arunachal Pradesh's GSDP was Rs 5,279 crore in 2009-2010. It increased at a CAGR of 8.7 per cent in between 2004-05 and 2009-2010.

FIGURE 1: GSDP GROWTH OF ARUNACHAL PRADESH
(RS CRORE, AT CONSTANT PRICES)
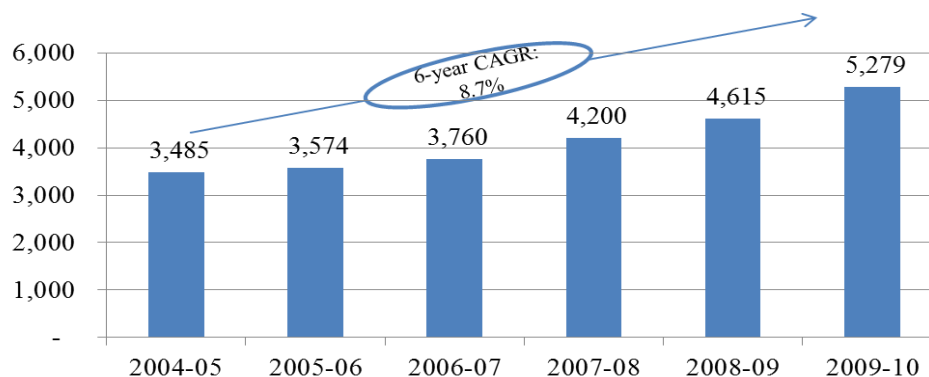
Source: Central Statistical Organisation; IMaCS Analysis

Arunachal Pradesh has registered faster growth rates than the regional as well as national growth rates. However, this is majorly due to low base effect. Arunachal Pradesh GSDP is about 0.1 per cent of India's GDP. Also, at the regional level, its share is just over 4 per cent indicating limited economic activity in the state.

TABLE 1: COMPARISON OF ARUNACHAL'S GSDP WITH REGIONAL AND NATIONAL LEVEL AGGREGATES

Country / Region/ State	GSDP, Rs Crore 2009-10	GSDP growth rate,2004-10
India	4,493,743	8.6%
North East Region	120,211	6.5%
Arunachal Pradesh	5,279	8.7%

Source: CSO; IMaCS Analysis

At 42 per cent, tertiary sector had the biggest share in GSDP, while the share of primary and secondary sectors was about 29 per cent each, in 2009-10. The tertiary sector has grown consistently over the years.

However, the share of primary sector has declined from 37 per cent in 2004-05 to 29 per cent in 2009-10. The share of secondary sector has remained almost stagnant over the last six years.

During 2004-2010, tertiary sector has grown rapidly at CAGR of 14 per cent, indicating increasing services sector related activities in the state. Secondary sector registered 8.3 per cent growth, while the primary sector growth was just about 3.2 per cent.

FIGURE 2: GSDP DISTRIBUTION - PRIMARY, SECONDARY & TERTIARY SECTORS

(Rs Crore)
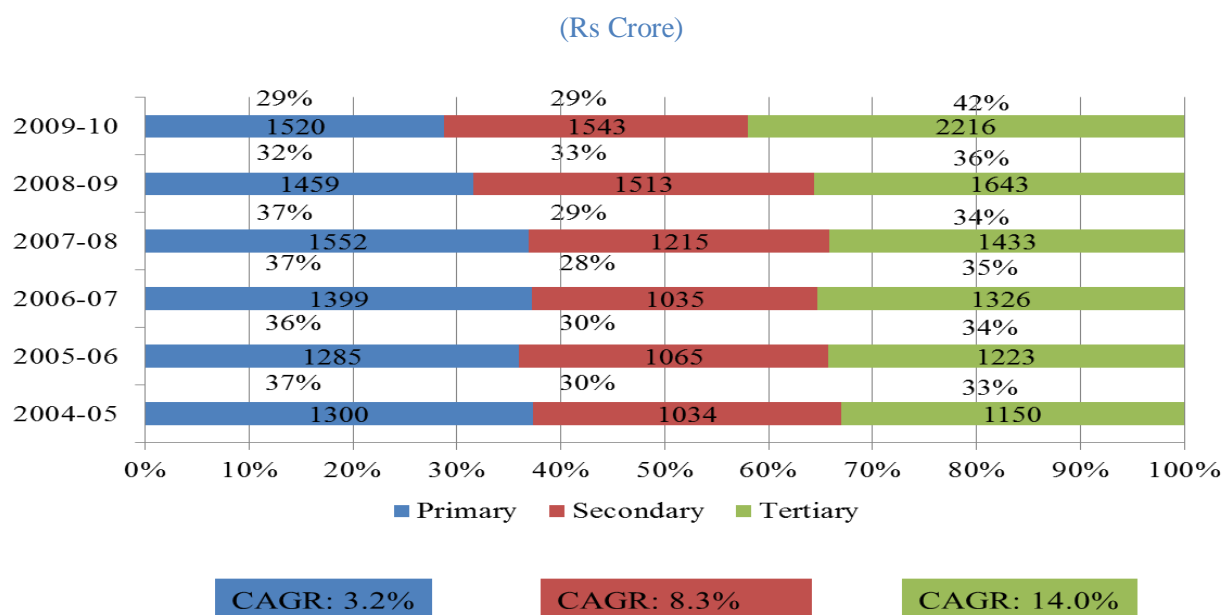
Source: CSO; IMaCS Analysis

Agriculture, construction and public administration are the key contributors to the primary, secondary and tertiary sectors, respectively. In 2009-2010, construction was the biggest contributor to GSDP, at 18.3 per cent. Share of agriculture and allied activities has fallen by nearly 8.8 percentage points between 2004-05 and 2009-2010. Construction share has fallen by about two percentage points in the same period. Within services, public administration has the biggest share, at 14.9 per cent. Its share has increased by over 3 per cent between 2004-05 and 2009-2010.

FIGURE 3: CHANGE IN GSDP SHARES ACROSS ECONOMIC ACTIVITIES
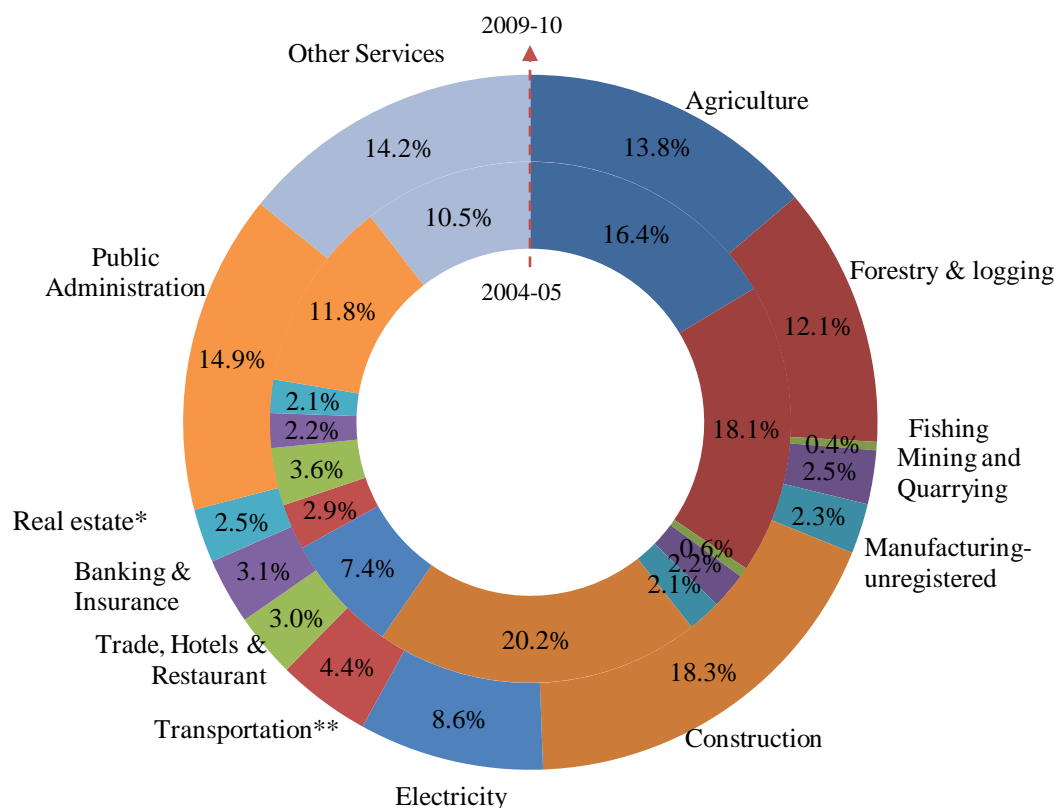
*Real estate, ownership of dwellings and business services
**Transportation, Storage & Communication
Source: Central Statistical Organisation; IMaCS Analysis*

Top five districts: Lohit, Changlang, Papum Pare, Tirap and West Siang contribute over 50 per cent of the state's GSDP. Lohit, Changlang and Papum Pare contribute about 12 per cent each to the state's GSDP. Upper Siang, Tawang and East Kameng made the lowest contribution of state's GSDP in 2007-08. These districts are self-sufficient with the local produce consumed locally.

FIGURE 4: GROSS DISTRICT DOMESTIC PRODUCT, 2007-08

(Rs Lakh)

District	Value
Lohit	46,635
Changlang	44,758
Papum Pare	43,776
Tirap	35,403
West Siang	34,290
West Kameng	31,207
Lower Subansiri	28,305
East Siang	26,917
Dibang Valley	21,024
Upper Subansiri	18,506
East Kameng	18,237
Tawang	13,578
Upper Siang	11,326
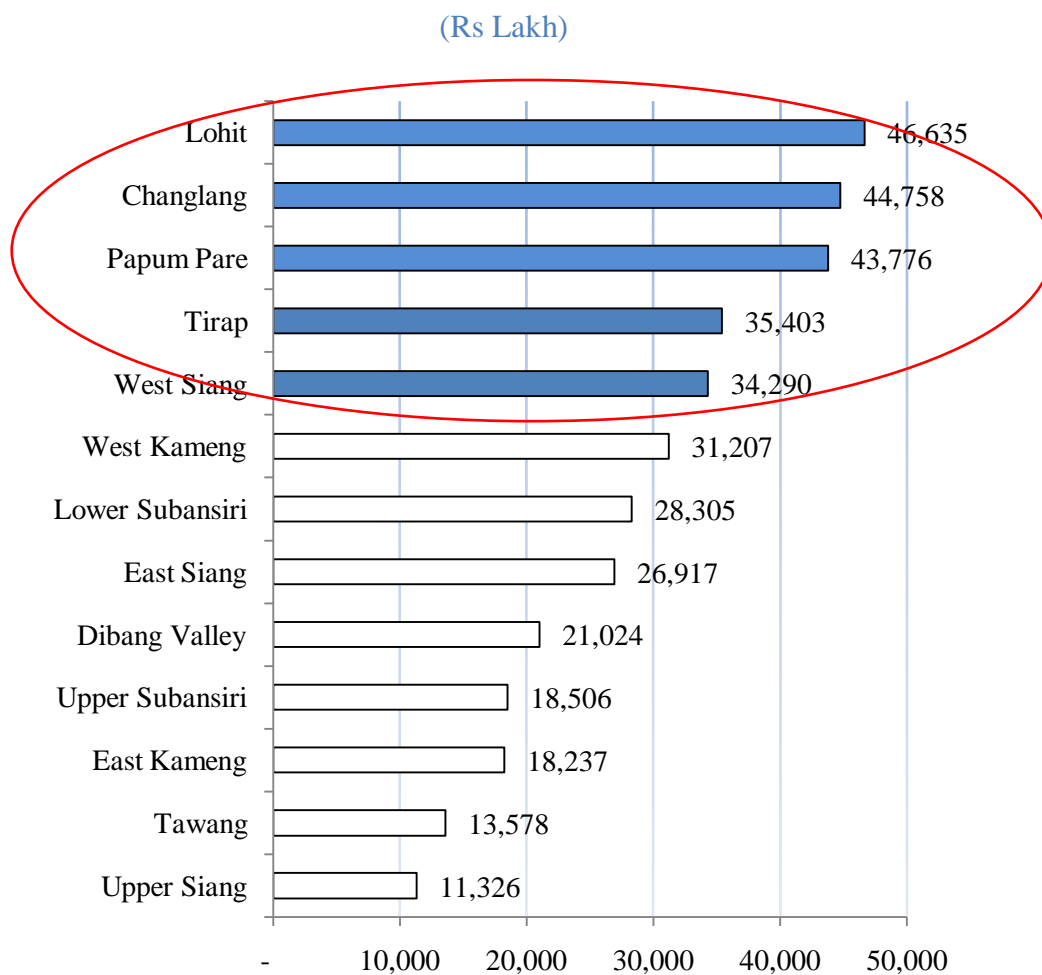
Source: Estimates of District Domestic Product of Arunachal Pradesh, Directorate of Economics and Statistics;

In 2009-2010, Arunachal's per capita income stood at Rs 51,405, which is more than the regional as well as national per capita income.

TABLE 2: COMPARISON OF ARUNACHAL PRADESH WITH REGIONAL & NATIONAL PER CAPITA INCOME

Country / Region/ State	Per capita income, in Rs (2009-10)
India	46,492
North East Region	43,970
Arunachal Pradesh	51,405

Source: Central Statistical Organization, at current prices

In 2007-08, West Kameng district had the highest per capita income in the state, at Rs 38,537. It was followed by Dibang Valley, at Rs 33,319. Lower Subansiri had the lowest per capita income, at Rs 26,906.

FIGURE 5: PER CAPITA INCOME

(2007-08)
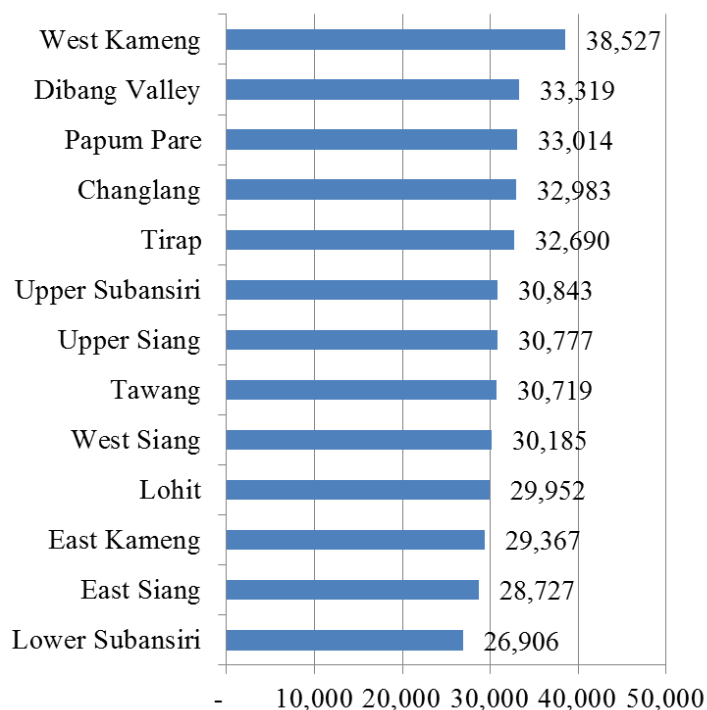
Source: Directorate of Economics and Statistics, Arunachal Pradesh

4.2 Industrial Activity Overview

As of March 2007, Arunachal Pradesh has 665 Small Scale Industry (SSI) units registered with Small Industries Development Organization (SIDO). Over 50 per cent are concentrated in Papum Pare, Lohit, Changlang and Lower Dibang Valley districts. Most of these SSI units are rice and flour mills, stone crushers, forest based units, transportation and motor vehicle repair units.

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FIGURE 6: REGISTERED SSI UNITS

(2007-08)

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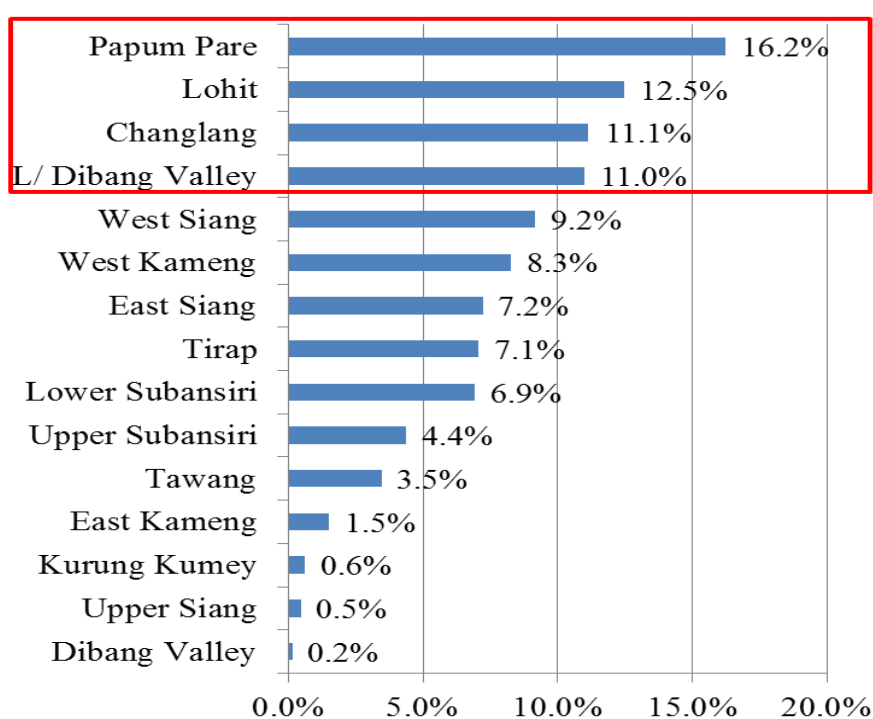
Source: Department of Industries, Government of Arunachal Pradesh; IMaCS Analysis

Estimated number of Establishments and OAE's in Arunachal Pradesh is about 28,734.This sector in the state provides employment to about 1.1 lakh people as compared to 100.9 lakh people in India. Most of employment in the sector is generated by public administration and retail trade.

FIGURE 7: SNAPSHOT OF ESTABLISHMENTS AND OAE'S IN ARUNACHAL PRADESH
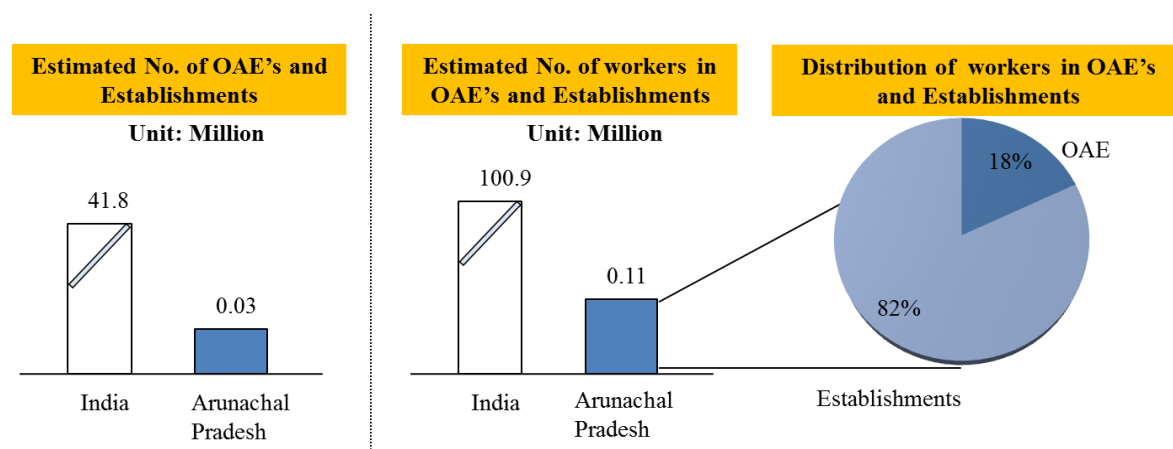
Source: Fifth Economic Census 2005

Over 98 per cent enterprises are in non-agricultural sectors, while only 1.4 per cent is in agricultural sectors. Maximum enterprises at 19 per cent are located in Papum Pare followed by 12 per cent in Lohit and 10 per cent in West Siang district and 2 per cent in Upper Siang. Retail trade alone accounts for about 52 per cent of the enterprises in the informal sector in the state. Public administration accounts for highest employment at about 25 per cent.

TABLE 3: DISTRIBUTION OF EMPLOYMENT IN ARUNACHAL PRADESH

Major activity group	Enterprises			Employment		
	OAE	Estt.	Total	OAE	Estt.	Total
Farming of animals	151	124	275	284	546	830
Agricultural services	4	96	100	4	1,192	1,196
Fishing	11	10	21	18	63	81
Mining & quarrying	8	23	31	19	390	409
Manufacturing	1,237	1,063	2,300	1,635	6,325	7,960
Electricity, gas & water supply	6	248	254	6	6,538	6,544
Construction	8	169	177	9	4,070	4,079
Sale, Maintenance & Repair of MV and MC	184	467	651	259	2,478	2,737
Wholesale trade	32	73	105	46	288	334
Retail trade	10,162	4,751	14,913	13,762	11,584	25,346
Restaurants & hotels	705	1,065	1,770	1,233	3,742	4,975
Transport & storage	208	235	443	223	957	1,180
Posts & telecommunication	508	413	921	599	1,286	1,885
Financial intermediation	5	100	105	5	1,044	1,049
Real estate, renting & buss. Serv.	146	105	251	205	377	582
Pub adm, defense, social security	7	1,431	1,438	52	27,842	27,894
Education	36	2,225	2,261	52	14,458	14,510

Major activity group	Enterprises			Employment		
	OAE	Estt.	Total	OAE	Estt.	Total
Health & Social work	29	643	672	49	4,907	4,956
Community, social & personal serv,	955	1,090	2,045	1,469	2,363	3,832
Other activities	-	1	1	-	6	6
Total Enterprises	14,402	14,332				
Total	**14,402**	**14,332**	**28,734**	**19,929**	**90,456**	**110,385**

Estt.: establishments; Source: Fifth Economic Census 2005

The State Industrial Policy, 2008, aims to facilitate and promote the growth of: industry, employment and investment in Arunachal Pradesh. Some of the initiatives under the policy are as follows:

- To create an investment-friendly environment in the state for industrial growth in the private, joint and cooperative sectors for sustainable economic development of Arunachal Pradesh.
- To generate employment opportunities in the state.
- To make Arunachal Pradesh a preferred destination for outside investors.
- To encourage local entrepreneurs to set up enterprises based on locally available raw-materials.
- To promote export-oriented industrial units.
- To take steps to promote the handloom and handicrafts industry.
- To promote local investors through joint ventures with outside investors.
- To encourage industrial units producing high value products.
- To ensure fast-track clearance of industrial proposals.

FIGURE 8: THRUST AREAS UNDER STATE INDUSTRIAL POLICY, 2008

Agricultural, horticultural and plantation based industries	Bamboo and cane	Medicinal plants / herbs, aromatic grass	Tea & coffee
Handloom, handicraft and sericulture	Electronics & IT	Mineral based industries	Food processing
	Engineering and allied	Tourism & hospitality	
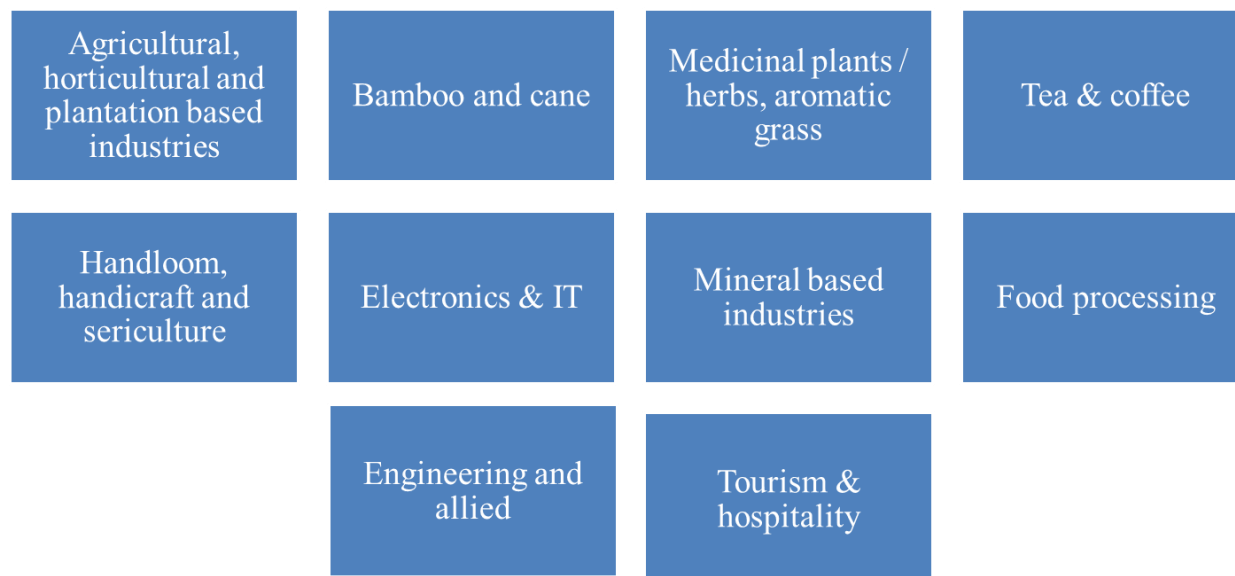
Source: Department of Industries, Government of Arunachal Pradesh

However, limited progress has been made in above sectors because of inadequate infrastructure and market linkages, low level of awareness, dated skills, use of old tools and techniques predominantly, low level of mechanisation, inadequate post-harvest management facilities, lack of credit facilities and shortage of skilled workforce.

4.3 Demography and Employment Overview

The population of Arunachal Pradesh is predominantly tribal; the main tribes include the Adi, Nyishi Apatani, Bugun, Galo, Hrusso, Koro, Meyor, Monpa and Tagin. Broadly the people may be divided into three cultural groups on the basis of their socio-religious affinities. The first group consists of the Monpas and Sherdukpens of Tawangand West Kameng districts following the lama tradition of Mahayana Buddhism. The second group includes the Adis, Akas, Apatanis, Bangnis, Nishis, Mishmis, Mijis, Thongsas etc., who worship Sun and Moon Gods. Their religious rituals largely coincide with phases of agricultural cycles. The third group comprises Noctes and Wanchos adjoining Nagaland in the Tirap

District. These are hardy people known for their strictly structured village society in which hereditary system of village chief still has a vital role. The Noctes also practise elementary form of Vaishnavism.About64 per cent of the population is tribal.

Arunachal Pradesh has the lowest average population density in India, at 17 per sq. km. Papum Pare has highest population density, at 51 per sq. km. Dibang Valley has lowest density at, 1 per sq. km. Majority of the population lives in the rural areas.

TABLE 4: ARUNACHAL'S DISTRICT DEMOGRAPHIC PROFILE

District	Area share	Population density*	Rural to urban population	Population*	Male to female ratio*	Percentage of tribal population*	Inhabited villages	No. of towns*	Literacy Rate*
Changlang	6%	32	90%	147,951	1.1	36%	336	3	52%
Dibang Valley	16%	1	82%	7,948	1.2	46%	213	1	54%
East Kameng	5%	19	74%	78,413	1.0	87%	310	1	68%
East Siang	4%	27	75%	99,019	1.0	69%	144	2	62%
Lohit	14%	28	81%	145,538	1.1	38%	493	2	64%
L. Subansiri	11%	24	87%	82,839	1.0	90%	652	1	70%
Papum Pare	4%	51	49%	176,385	1.1	57%	267	3	77%
Tawang	3%	23	78%	49,950	1.4	75%	180	1	49%
Tirap	3%	47	85%	111,997	1.1	84%	167	3	42%
Upper Siang	8%	5	100%	35,289	1.1	78%	92	1	55%
U. Subansiri	8%	12	72%	83,205	1.0	90%	398	1	61%
West Kameng	9%	12	91%	87,013	1.3	50%	213	2	61%
West Siang	10%	13	80%	112,272	1.1	82%	398	2	61%
State total	**100%**	**17**	**79%**	**1,382,611**	**1.1**	**64%**	**3,863**	**26**	**60%**

*Sources: *Census 2011; Census 2001; IMaCS Analysis*

About 55 per cent of Arunachal Pradesh's population fall in the working age group. Another 40 per cent fall in the 0-14 year age group and is expected to join the workforce in the coming 10 years. About 36 per cent of Arunachal Pradesh's working population is concentrated in Lohit, Papum Pare and Changlang districts. Upper Siang has 3 per cent population in the working age group.

TABLE 5: AGE-WISE DISTRIBUTION OF POPULATION

District / Age-group	0-14	15-59	60+	Others*	0-14	15-59	60+	Others*
Changlang	51,539	67,584	6,164	135	41.1%	53.9%	4.9%	0.1%
Dibang Valley	23,187	32,157	2,329	47	40.2%	55.7%	4.0%	0.1%
East Kameng	24,636	30,280	2,207	56	43.1%	53.0%	3.9%	0.1%
East Siang	34,791	47,818	4,721	67	39.8%	54.7%	5.4%	0.1%
Lohit	59,030	78,127	6,256	114	41.1%	54.4%	4.4%	0.1%
Lower Subansiri	40,375	53,748	4,014	107	41.1%	54.7%	4.1%	0.1%
Papum Pare	48,254	70,794	2,754	201	39.6%	58.0%	2.3%	0.2%
Tawang	13,522	22,814	2,533	55	34.7%	58.6%	6.5%	0.1%
Tirap	41,475	53,063	5,697	91	41.3%	52.9%	5.7%	0.1%
Upper Siang	12,731	18,019	2,598	15	38.2%	54.0%	7.8%	0.0%
Upper Subansiri	23,577	29,443	2,277	49	42.6%	53.2%	4.1%	0.1%
West Kameng	27,325	44,149	3,031	94	36.6%	59.2%	4.1%	0.1%
West Siang	42,383	56,121	5,335	79	40.8%	54.0%	5.1%	0.1%
Arunachal Pradesh	**442,825**	**604,117**	**49,916**	**1,110**	**40.3%**	**55.0%**	**4.5%**	**0.1%**

Sources: Census 2001

In 2001, Arunachal Pradesh had a total of 482,902 workers, of which 57.8 per cent are cultivators as compared to national level aggregate of 31.7 per cent. There were 37 per cent other workers in Arunachal Pradesh. The category of 'other workers' included government employees, teachers, factory and plantation workers, those engaged in trade, commerce, business, transport, banking, mining, construction, political or social work, priests, entertainment artists, etc.

FIGURE 9: MAIN AND MARGINAL WORKERS

(2001)
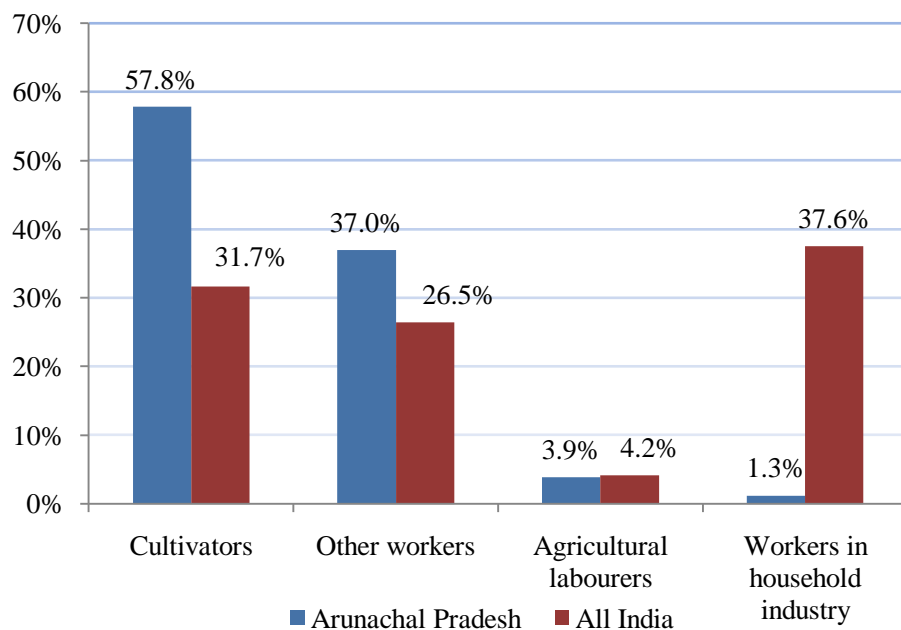
Source: Census 2001; IMaCS Analysis

Nearly 35 per cent of the main workers are concentrated in Changlang, Tirap and Lohit. Tawang and Upper Siang districts have over 50 per cent of total population as the working population. About 44 per cent of the total population in Arunachal is working population.

TABLE 6: DISTRICT WISE WORKER PROFILE

District	Main workers, in '000	Marginal workers, in '000	Non-workers, in '000	Working population as % of total population
Changlang	49	11	65	48%
Dibang Valley	22	4	32	45%
East Kameng	24	2	31	45%
East Siang	29	4	54	38%
Lohit	51	9	83	42%
Lower Subansiri	37	8	53	46%
Papum Pare	38	6	78	36%

District	Main workers, in '000	Marginal workers, in '000	Non-workers, in '000	Working population as % of total population
Tawang	18	4	17	56%
Tirap	44	5	51	49%
Upper Siang	15	2	16	51%
Upper Subansiri	21	1	33	40%
West Kameng	29	6	40	46%
West Siang	37	6	61	41%
Arunachal Pradesh	**415**	**68**	**615**	**44%**

4.4 Infrastructure Overview

Road transport in the state is the key form of transportation that connects the state with the rest of the country. Arunachal Pradesh has a total road length of 10,259 km and road density of 17.4 km per 100 km. The State has six National Highways running through it. These connect the State with the rest of India as well as the international borders with China (Tibet), Myanmar and Bhutan. In 2008-09, under Arunachal Pradesh Package for Roads & Highways, the Central Government approved projects for improving 1,472 km of National Highways and 847 km of State roads. The State doesn't have an airport or any railway line. The nearest railway station is located at Harmoti in Assam, 23 km from Naharlagun and 33 km from Itanagar. A greenfield airport has been proposed near Itanagar.

TABLE 7: ROAD LENGTH IN ARUNACHAL PRADESH

Road infrastructure	Road length (km)
National Highways (km)	1,992.0
Road density (km per 100 km)	12.3
Surfaced roads (percentage of total)*	49.6
Villages connected by roads (percentage of total)*	38.5%

Sources: Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics; Ministry of Road, Transport & Highways
*As of 2000-01

TABLE 8: ROAD LENGTH BY TYPE IN ARUNACHAL PRADESH

Type	2010
PWD	3,286
BRTF	3,672
RWD	2,346
Forest	956
Total	**10,259**

PWD: Public Works Department; BRTF: Border Roads Task Force; RWD: Rural Works Department
Sources: Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics; Ministry of Road, Transport & Highways

Arunachal Pradesh has vast hydroelectric power potential, estimated at about 50,000 MW. The installed capacity within the State is 213.36 MW. Of this, 44 per cent is State-owned and the remaining belongs to Central Sector Units. The state has been focusing on developing its significant hydro power potential and has set up the Department of Hydro Power Development to oversee, coordinate and monitor its development. The Government of Arunachal Pradesh has signed a memorandum of understanding (MoU) with Central Sector power generators and integrated power developers (IPD) for developing of 147 hydroelectric power plants, with an aggregate capacity of 43,218 MW.

TABLE 9: POWER SECTOR INDICATORS, ARUNACHAL PRADESH

Power sector indicators (As of 2011)	
Total installed capacity, MW	213
Central sector capacity, %	56%
State sector capacity, %	44%
Village electrification*, %	59%

Sources: Central Electricity Authority; Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics; IMaCS Analysis
* As of 2010

FIGURE 10: FUEL WISE TOTAL INSTALLED CAPACITY
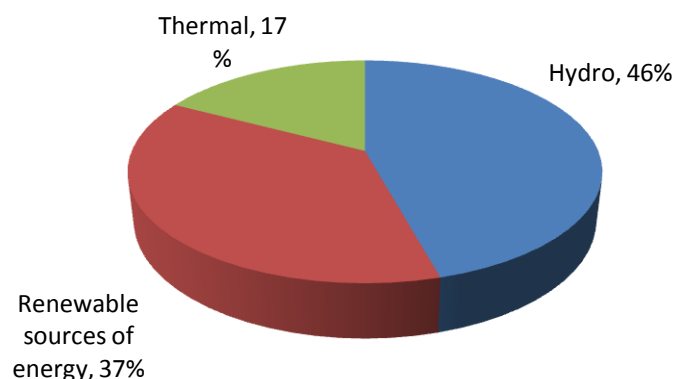
Sources: Central Electricity Authority; Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics; IMaCS Analysis

Arunachal Pradesh has a tele-density of 24.3 per cent. As of 2010, Arunachal Pradesh had 48,312 telephone connections and 287,877 mobile connections. The state also had 4,033 broadband connections. BSNL is the biggest telecom player in the State. All wire-line telephone connections and broadband connections are provided by BSNL. Bharti Airtel, Vodafone, Reliance Communications, Aircel and Tata Teleservices are other telecom operators in Arunachal Pradesh.

TABLE 10: TELECOM NETWORK IN ARUNACHAL PRADESH

Telecommunication network in Arunachal Pradesh (2010)	
No. of telephone exchanges	107
PCO (with STD)	1,359
No. of telephone connections	48,312
No. of mobile connections	287,877
No. of broadband connections	4,033

Sources: Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics; IMaCS Analysis

Health Infrastructure

Arunachal Pradesh has a three-tier public healthcare infrastructure, comprising primary health centres, health units, community health centres and sub-centres. There is one doctor per 2,624 persons and one nursing staff per 2,400 population. There are 1.6 hospital beds per thousand population.

TABLE 11: MEDICAL INSTITUTIONS IN ARUNACHAL PRADESH (2008-09)

Health institutions in Arunachal Pradesh	Number
General Hospitals	3
District Hospitals	14
Community Health Centres	44
Primary Health Centres, sub-centres	660
Health Units and Dispensaries	4
Other health institutes	43
Homeopathic & Ayurvedic	41
Total Doctors	527
Nursing Staff	576
Hospital beds	2,218

Sources: Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics

The birth rate of Arunachal Pradesh stands at 21.1per 1,000 persons which is better than the national average of 22.5. Infant Mortality Rate of stands at 32, which is better than the national average of 50.

TABLE 12: KEY HEALTH INDICATORS

Key health indicators (As of 2009)		
Particulars	**Arunachal Pradesh**	**India**
Birth Rate (per 1,000 persons)	21.1	22.5
Death Rate (per 1,000 persons)	6.1	7.5
Infant Mortality Rate (per 1,000 live births)	32	50

Source: Ministry of Health and Family Welfare

Education Infrastructure

Arunachal Pradesh has 3,019 schools. Of these, 61 per cent are primary schools, 29 per cent are middle schools, 6 per cent are secondary schools and the remaining 4 per cent are higher secondary schools. Student-teacher ratio in the State is at 25.For higher and technical education there are two polytechnics and six Industrial Training Institutes (ITI).

TABLE 13: EDUCATIONAL INFRASTRUCTURE IN ARUNACHAL PRADESH

Institutes in 2010	Number
University	1
Engineering Institute (NERIST)	1
Colleges	20
Polytechnic	2
Higher secondary schools	117
Secondary schools	190
Middle schools	871
Primary schools	1841
Total teaching staff (school, college, university)	16,431
Total students (school, college, university)	413,000

NERIST: North Eastern Regional Institute of Science & Technology
Sources: Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics; IMaCS Analysis

TABLE 14: COURSES OFFERED BY POLYTECHNICS IN ARUNACHAL PRADESH

Course	Seats
Arunachal Pradesh Polytechnic, Papum Pare	
Electrical & Electronics Engineering	30
Automobile Engineering	20
Information Technology	30
Costume Design & Garment Tech.	20
Herbal Remedies & Cosmetology	20
North Eastern Regional Institute of Science & Technology, Papum Pare	
Construction Technology	30
Electrical Engineering	30
Electronics & Communications Engineering	30
Computer Science & Engineering	30
Mechanical Engineering	30
Agricultural Engineering	30

Source: IMaCS Primary Survey

TABLE 15: COURSES OFFERED BY ITI IN ARUNACHAL PRADESH

ITI Roing	
Course	*Intake capacity*
Plumber	20
Carpenter	20
Welder	20
Wireman	40
Mechanic	40
Fitter	40
Electrician	40
D/Man (Civil)	40
Surveyor	40
IT&ESM	40
Total	340

ITI Dirang	
Course	*Intake capacity*
COPA	20
Preservation of fruits & vegetables	20
Welder	20
Secretarial Practice	20
Electronic Mechanic	20
Total	100

ITI Yupia (Women)	
Course	*Intake capacity*
Secretarial Practice	20
Hair & Skin Care	20
Baker & Confectioner	20
Fashion Technology	20
Total	80

ITI Tabarijo	
Course	*Intake capacity*
D/Man (Civil)	40
IT&ESM	40
Electrician	20
Secretarial Practice	20
Total	120

ITI Balinong (Miao)	
Course	*Intake capacity*
D/Man (Civil)	20
COPA	20
Mechanic Diesel	20
Mechanic RAC	20
Total	80

Private ITI, East Siang	
Course	*Intake capacity*
Electrician	40
Mech. Diesel	40
Welder	40
Total	120

Source: IMaCS Primary Survey

Industrial Infrastructure

Arunachal Pradesh has 12 industrial estates located in different districts and spread over total area of 55.6 hectare. These industrial estates have been developed in land-areas ranging from 4,540 to 202,325 sq m, with the primary objective of growth and development of SSI units. In addition, the State Government has notified integrated infrastructure development centres, industrial growth centres and industrial areas.

TABLE 16: NOTIFIED INDUSTRIAL ESTATES

Location	District
Deomali	Tirap
Khonsa	Tirap
Pasighat	East Siang
Tawang	Tawang
Tippi	West Kameng
Wanghoo	West Kameng

Location	District
Naharlagun	Papumpare
Chandranagar	Papumpare
Namsai	Lohit
Changlang	Changlang
Khachang	Changlang
Bam	West Siang

TABLE 17: NOTIFIED INTEGRATED INFRASTRUCTURE DEVELOPMENT CENTRE

Location	District
Deomali	Tirap
Tippi	West Kameng
Dirang	West Kameng
Iduli	Dibang Valley
Balinong	Changlang

TABLE 18: NOTIFIED INDUSTRIAL AREAS

Location	District
Bhalukpong	Wesk Kameng
Roing	Dibang Valley
Tezu	Lohit
Banderdewn	Papumpare

Sources: Department of Industries, Government of Arunachal Pradesh; IMaCS Analysis

4.5 Key Findings from the Diagnostic Analysis

Macro-economic:

Arunachal Pradesh's GSDP was Rs 5,279 crore in 2009-2010. It increased at a CAGR of 8.7 per cent in between 2004-05 and 2009-2010, outpacing regional growth. Tertiary sector has the biggest share in GSDP, at 42 per cent. Within tertiary sector, Public Administration is the largest contributor, at 14.9 per cent. Other services are also key contributors. There is limited manufacturing activity in the state with a share at 2.3per cent of GSDP. Five districts: Lohit, Changlang, Papum Pare, Tirap and West Siang

contribute about 55 per cent to state's GSDP. The per capita income of Arunachal Pradesh was Rs 51,405 as compared to all-India average of Rs 46,492. Growing construction activity and significantly lower population density are the key reason for high per capita income of the State.

Industrial Activity:

The State's industrial scenario is dominated by micro and SSI units. As of March 2007, Arunachal Pradesh has 665 SSI units registered with SIDO. Over 50 per cent were concentrated in Papum Pare, Lohit, Changlang and Lower Dibang Valley districts. Establishment and OAEs play a key role in the economy, providing employment to over 1 lakh persons. Though retail trade accounts for 52 per cent of enterprises, public administration accounts for highest employment at 25 per cent.

Demography:

Arunachal Pradesh has the lowest average population density in India at 17 per sq. km. About 80 per cent of the population is rural and close to 64 per cent is tribal population. About 55 per cent of the population is in the working age group indicating availability of huge pool of workforce availability. The State could reap significant demographic dividend due to high share of working age population (55 per cent) and young population (0 to 14 years, 40 per cent), which will be joining the working age population in next few years.

Government Policy:

Thrust areas in the State Industrial Policy,2008, included sectors such as Horticulture, Mineral based industries, Electronics & IT, Medicinal plants and herbs, Aromatic plants, Tea, coffee, Food processing and Tourism. However, progress has been limited because of inadequate infrastructure and market linkages, low awareness levels, poor skill up-gradation, use of dated tools and techniques, low level of mechanisation, inadequate post-harvest management facilities, poor credit facilities and shortage of skilled workforce.

Infrastructure:

The varied but predominantly hilly terrain of Arunachal Pradesh with numerous rivers and rivulets makes roads and bridges the most important infrastructure requirements across the State. However, remote population and low population density requires good planning. Presently, the road infrastructure within the State is poor with many district headquarters yet to be connected by all-weather roads. With the

development of power plants, it is expected that more infrastructure will be added in those locations where the hydroelectric projects come up. In terms of educational infrastructure, Arunachal Pradesh had 3,019 schools accounting for literacy rate of about 67 per cent. The higher education and vocational training infrastructure requires upgrading to support economic sector growth as well as skilling the local and migrant workforce. Employability of students passing out is a concern because of the skill gap observed between their skill sets and desired industry standards. Poor linkages between educational institutes and employment exchanges coupled with low level of awareness and limited industrial activity in the State makes it difficult for them to be absorbed in jobs, gainfully.

4.6 SWOT Analysis of Arunachal Pradesh

Strengths

- Abundant natural resources, though unexploited
- Scenic beauty presenting opportunity for tourism
- One of the 12 mega diversity (hot spots) in the world
- Even male to female ratio in working population

Opportunities

Investment & Employment opportunities:
- Hydro power
- Tourism and hospitality
- Horticulture , Floriculture
- Food Processing
- Bamboo based industries
- Medicinal Plants
- Minerals
- Construction

Weaknesses

- Low literacy level
- Poor infrastructure : roads, power, telecom, education, health
- Low availability of skilled workforce
- Inability to attract private investments
- Low competitiveness of the goods produced locally

Threats

- Landslides prone area due to heavy rainfalls
- Persistent internal '*bandhs*'
- Low level of awareness
- Porous borders

Source: IMaCS Analysis

PART – II (b): Identification of growth sectors

5.1 Criteria for selecting growth sectors

- Resident skills that will continue to be a source of employment generation in next 10 years – skill development required for enhancing competitiveness.

- Sectors with policy support from Central and State Government for expansion, training and marketing.

- Product is unique to the region or occurs abundantly because of factor advantages, but has just started to be exploited as an economic activity.

- Infrastructure investment required to support industrial and economic growth; investment which has started or is planned.

- Common service trades such as electricians, plumbers and repair mechanics – those which require service quality enhancement.

5.2 Framework for identifying growth engines
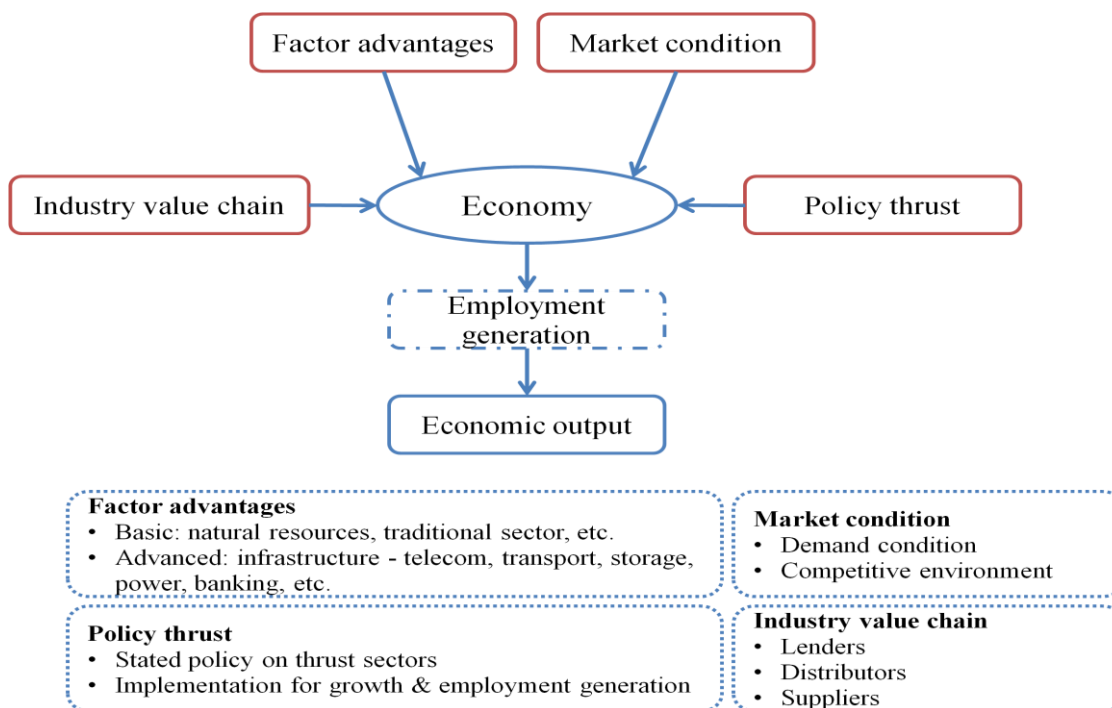
Source: IMaCS Analysis

The framework depicted above has been used to identify potential sectors where economic activities will create employment between 2011 and 2021.The growth engines for a state's economy are driven by the factor advantages within the state, market conditions, industry value chain available and Government policy support. These factors lead to growth in economic output which in turn determines the annual incremental employment opportunities per within the state.

5.3 Identified sectors for livelihood opportunities

Based on the framework mentioned above, sectors have been identified for skilling and upgrading skills. These sectors are expected to provide employment opportunities in the coming 10 years. Sectors for domestic demand have been identified based on factor endowments, policy thrust, market potential, historical presence, availability of trained manpower, availability and quality of training centre, time taken to train and employment opportunities.

TABLE 19: SECTORS FOR LIVELIHOOD OPPORTUNITIES AND DOMESTIC DEMAND

Sector	Factor endowments	Policy Thrust	Market Potential	Historical Presence	Availability and quality of training Centre	Time taken to train*	Employment opportunities**
Livelihood Opportunities							
Agriculture	√	√	√	√	×	Low	-
Animal Husbandry	√	×	√	√	×	Low	-
Apiculture	√	√	√	√	×	Low	-
Sectors for domestic demand							
Handloom	√	√	√	√	√	Medium	High
Handicrafts	√	√	√	√	√	Medium	Medium
Horticulture	√	√	√	√	×	High	High
Food Processing	√	√	√	×	×	Low	High
Hospitality	√	√	√	√	×	Medium	Low
IT/ITES	×	√	√	×	×	High	Medium
Forest based	√	√	√	√	×	Low	High
Hydro Power	√	√	√	×	×	High	High
Tea	√	√	√	×	×	Medium	Medium
Mining	√	√	√	×	×	Medium	High
Construction	√	√	√	√	×	Low to Medium	High
Healthcare	√	√	√	×	×	Medium to High	Low

Sector	Factor endowments	Policy Thrust	Market Potential	Historical Presence	Availability and quality of training Centre	Time taken to train*	Employment opportunities**
Other services: Motor Repair, Beauty Culture	√	×	√	×	×	Low	Low to High

* Low: Up to one year; Medium: One to two years; High: More than two years. ** Low: Incremental employment potential of 0 to 1,500 persons; Medium: 1500 to 3,000 persons; High: More than 3,000 persons
Source: IMaCS Analysis

5.4 Identified sectors for migration

Sectors for migration have been identified based on natural aptitude, youth aspiration, market potential, availability of trained manpower, availability and quality of training centre and time taken to train.

TABLE 20: SECTORS FOR MIGRATION

Sector	Natural aptitude	Youth aspiration	Market Potential	Availability and quality of training centre	Time taken to train*
Sectors for Migration					
Beauty and Wellness	√	√	√	√	Low to Medium
Hospitality	√	√	√	×	Medium to High
IT / ITES	×	√	√	×	Medium to High
Retail Services	√	×	√	×	Low
Flight attendants	×	×	√	×	Medium to High
Healthcare	×	√	√	×	Medium to High
Trainers	×	√	√	×	Medium to High

* Low: Up to one year; Medium: One to two years; High: More than two years.
Source: IMaCS Analysis

5.5 Type of skilling required in identified sectors

Skilling requirements have been classified into speciality skills, new skills and skill up-gradation.

TABLE 21: TYPE OF SKILLING REQUIRED IN IDENTIFIED SECTORS

Sectors	Specialty skills	New skills	Skill up-gradation
Livelihood opportunities			
Agriculture			✓
Fishery		✓	✓
Animal Husbandry		✓	✓
Sectors for domestic demand			
Handloom and Handicraft	✓	✓	✓
Horticulture		✓	✓
Food Processing		✓	✓
Hospitality		✓	
IT/ITES	✓		✓
Forest based products	✓	✓	
Hydro Power	✓	✓	✓
Mining	✓		✓
Tea	✓		✓
Construction	✓		
Healthcare	✓	✓	✓
Others including motor repair and beauty culture	✓	✓	✓

Specialty skills: technical or specific knowledge base essential
New skills: training centres largely non-existent
Skill-up-gradation: outdated techniques and knowledge base
Source: IMaCS Analysis

5.6 Type of skilling required in sectors identified for migration

The skilling classifications of speciality skills, new skills and skill up-gradation have also been used for short listing sectors where vocational training can be provided for migration from the State for employment purpose.

TABLE 22: TYPE OF SKILLING REQUIRED IN SECTORS IDENTIFIED FOR MIGRATION

Sectors	Specialty skills	New skills	Skill up-gradation
Sectors for migration			
Beauty culture	✓	✓	✓
Hospitality and wellness		✓	✓
IT / ITES		✓	✓
Retail Services		✓	✓
Flight attendants	✓	✓	
Ground staff at the airports	✓	✓	
Healthcare	✓	✓	
Trainers		✓	✓

Specialty skills: technical or specific knowledge base essential
New skills: training centres largely non-existent
Skill-up-gradation: outdated techniques and knowledge base
Source: IMaCS Analysis

PART – II (c): District level analysis of Arunachal Pradesh

6.1.Changlang

Changlang district lies in the south-eastern end of Arunachal Pradesh. Prior to 14th November 1987, it was a part of Tirap district. It is bounded by Tinsukia district of Assam and Lohit district of Arunachal Pradesh in the north, by Tirap district in the west and by Myanmar in the south-east. The climatic conditions in this district vary from place to place due to mountainous nature of terrain. The major rivers are Noa-Dehing, Namchik and Tirap. The district headquarters are at Changlang town.

6.1.1 Economy

The GDDP of the Changlang district was Rs 44,758 lakh, as of 2007-08. The per capita DDP of the district was Rs 32,983. The economy of Changlang district is basically agrarian and rural. About 11 per cent of the SSIs in Arunachal Pradesh are located in Changlang.

6.1.2Demography

The district occupies an area of 4,662 sq km. The district accounts for 6 per cent of total area of Arunachal Pradesh. According to the Census 2011, Changlang has a population of 125,422and literacy of 51.32 per cent. The aboriginal inhabitants of Changlang District are the Tangsas, Singphos and Tutsas. The Tangsa tribe comprises a number of sub-tribes, namely, Muklom, Havi, Longchang and Mossang. Almost 36 per cent of the population is tribal.

6.1.3 Infrastructure

The district headquarters, Changlang town, is well connected thorough good motorable roads. It is 96 km from the nearest railway station located at Tinsukia in Assam. The nearest airport is at Dibrugarh, which is about 136 km from the district headquarters.

TABLE 23: AMENITIES AND INFRASTRUCTURAL FACILITIES - CHANGLANG

Facilities	Number of villages
Drinking water facilities	336
Safe drinking water	307
Electricity supply	277
Electricity - domestic	258
Electricity - agriculture	1

Source: Census 2001

Every inhibited village in Changlang has drinking water facilities. However, power supply is available in only 277 villages.

Education Infrastructure:

Of 336 villages, 179 of them have primary schools, 47 have middle schools and 25 have secondary and senior secondary schools.

TABLE 24: EDUCATIONAL INFRASTRUCTURE - CHANGLANG

Education Infrastructure in Changlang	
Primary school	179
Middle schools	47
Secondary/Sr Secondary schools	25
College	1

Source: Census 2001

6.1.4 Employment Pattern

About 48 per cent of the population in the district is working population.. There are 60,045 workers in the district. About 82 per cent of them are main workers. The number of non-workers stands at 65,377.

FIGURE 11 : EMPLOYMENT PATTERN IN CHANGLANG
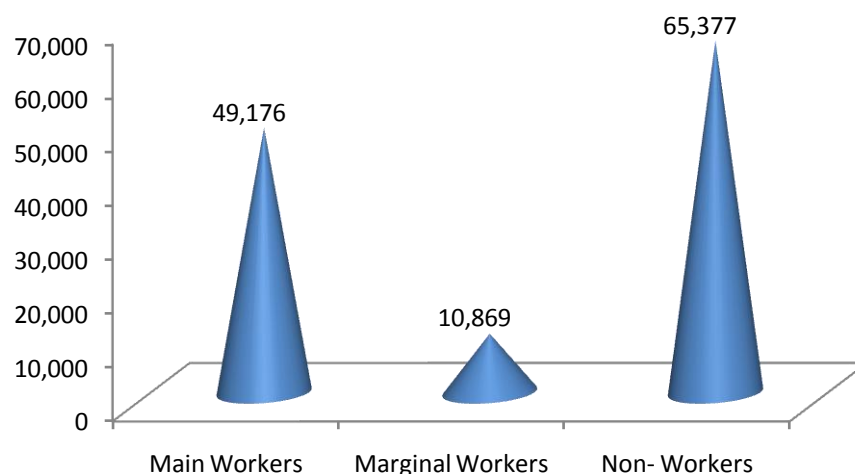
Source: Census 2001

6.1.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling or skill upgrading:

Handicrafts:

- Rich tradition of Bamboo and Cane Handicrafts in the district. The products command premium on design, quality, and local technology and focus on cultural identity.
- Unique beads ornaments and grass necklace products mainly found in Changlang and Tirap.
- High quality carpets of national and international repute.
- With establishment of cooperative societies and SHG's in the district, commercial production can take place.

Horticulture:

- Conducive climate, topography and increasing Government focus have provided impetus to horticulture sector.
- Fruits such as oranges and pineapples are grown in abundance in the district.
- Locals avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Medicinal Plants:

- Conducive climate and soil conditions for medicinal and aromatic plants.
- Significant potential but still untapped due low level of awareness of the local population.

Food Processing:

- Significant fruit production in the district to support fruit processing industries.
- Significant market available for processed products with organic label.
- Government policy support to horticulture and fruit processing industries.

6.2.Dibang Valley

Dibang Valley district came into existence on June 01, 1980 with headquarter at Anini. Dibang Valley is bounded by Lohit in the south-east, Lower Dibang Valley in the South, East Siang in the West and by China in the North and North-East. Dibang Valley consists of undulated-rugged mountains with breath-taking green valleys, deep-down gorges, and enchanting waterfalls, natural lakes and meandering rivers and streams. The Lower Dibang Valley district was carved out of the un-divided Dibang Valley district with headquarters at Roing on December 16, 2001.

6.2.1 Economy

The GDDP of the Dibang Valley district was Rs 21,024 lakh, as of 2007-08. The per capita DDP of Dibang Valley district was Rs 33,319.The industrial activity is minimal in the district with about 0.2 per cent of the registered SSIs in the state located in the district.

6.2.2Demography

The district occupies an area of 9,129 sq km. It is the largest district in Arunachal Pradesh with lowest population density. According to the Census 2011, Dibang Valley has a population of 57,720 and literacy rate of 58.89 per cent. Nearly 46 per cent of the population is tribal. The ratio of rural to urban population in the district stands at about 82 per cent.

6.2.3 Infrastructure

The infrastructure in the district is inadequate which presents a major concern for the growth of economic sectors. The nearest railway head is situated at Tinsukia in Assam, which is nearly 303 km from the district headquarters. The nearest airport is located at Mohanbari, about 330 km from Anini. It is connected by road as well as regular Pawan Hans Helicopter service from Dibrugarh.

TABLE 25: AMENITIES AND INFRASTRUCTURAL FACILITIES – DIBANG VALLEY

Facilities	Number of villages
Drinking water facilities	213
Safe drinking water	177
Electricity supply	70
Electricity - domestic	68
Electricity - agriculture	-

Source: Census 2001

About 213 villages in Dibang Valley district have drinking water facilities. However, power supply is available in only 70 villages.

Education Infrastructure:

About 55 villages have primary schools and 24 villages have middle schools. There are no colleges in the district indicating that for higher education, youth has to migrate out of the state

TABLE 26: EDUCATIONAL INFRASTRUCTURE- DIBANG VALLEY

Education Infrastructure in Dibang Valley	
Primary school	55
Middle schools	24
Secondary/Sr Secondary schools	12
College	-

Source: Census 2001

6.2.4 Employment Pattern

About 45 per cent of the total population is working. There are 25,700 workers in the district. About 86 per cent of them are main workers. The number of non-workers stands at 32,020.

FIGURE 12 : EMPLOYMENT PATTERN IN DIBANG VALLEY
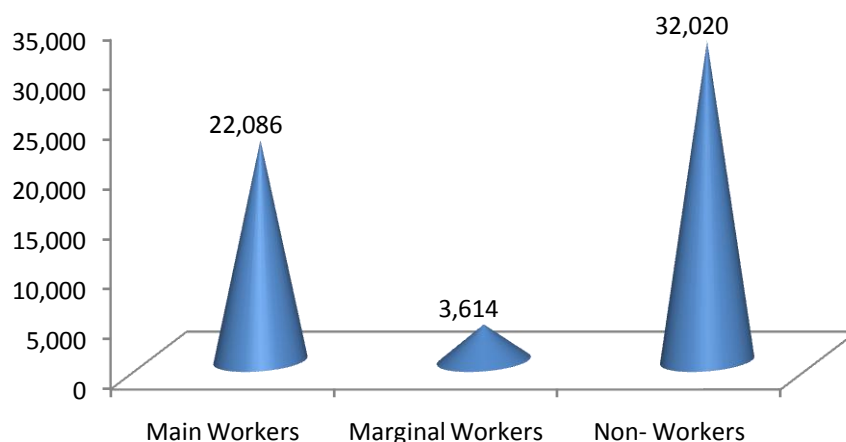
Source: Census 2001

6.2.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Hotels:

- The district is endowed with natural beauty with number of tourist spots present in and around it.

Horticulture:

- Conducive climate and increasing Government focus is providing impetus to horticulture sector.
- Locals avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

6.3.East Kameng

The name Kameng has been derived from the Kameng river originating from the glacier lake below Gorichan mountain and is one of the tributaries of the River Brahmaputra. The entire district, except a small area on the southernmost tip bordering Assam, is mountainous. East Kameng district is situated in the Western part of Arunachal Pradesh surrounded by West Kameng in the west, Papumpare in the East, Part of Lower Subansiri and Macmohan (International Boundary) line in the North and Sonitpur District of Assam in the South. The district headquarters is located at Seppa.

6.3.1 Economy

The GDDP of the East Kameng district was Rs 18,237 lakh, as of 2007-08. The per capita DDP was Rs 29,367. Agriculture is the main occupation of the people of East Kameng District. Jhum cultivation is prevalent in the district, although it is being slowly replaced by permanent cultivation. The main crops of the district are Paddy, Maize, Millet, Sweet-Potato, Chilly and Vegetables. About 1.5 per cent of the total registered SSIs in Arunachal Pradesh are located in the district.

6.3.2 Demography

The district occupies an area of 4,134 sq km. According to the Census 2011, East Kameng has a population of 57,179 and literacy rate of 40.64 per cent. Population is mostly tribal, at about 87 per cent. The Major tribes inhabiting this district are Bangnis (Nyishi), Akas, Mijis and Puroiks (Sulung). Each tribe has its own dialects, customs, and religion.

6.3.3 Infrastructure

Only Seppa, Chayang-Tajo, Bameng and Seijosa circles headquarters are connected by road, whereas the remaining six circle headquarters have not yet connected by road and one has to walk up to two days to reach the remotest circle headquarter, i.e., Lada. Most of the villages are connected only by porter tracks.

TABLE 27: AMENITIES AND INFRASTRUCTURAL FACILITIES – EAST KAMENG

Facilities	Number of villages
Drinking water facilities	309
Safe drinking water	284
Electricity supply	44
Electricity - domestic	43
Electricity - agriculture	-

Source: Census 2001

Total inhibited villages in the district are 310, of which about 309 villages have drinking water facilities.

Education Infrastructure:

About 128 villages have primary schools in the district. There are no colleges and six villages have secondary/ senior secondary schools.

TABLE 28: EDUCATIONAL INFRASTRUCTURE- EAST KAMENG

Education Infrastructure in East Kameng	
Primary school	128
Middle schools	34
Secondary/Sr Secondary schools	6
College	-

Source: Census 2001

6.3.4Employment Pattern

About 45 per cent of population in the district is working. There are 25,949 workers in the district with nearly 90 per cent of them main workers. The number of non-workers stands at 31,230.

FIGURE 13 : EMPLOYMENT PATTERN IN EAST KAMENG
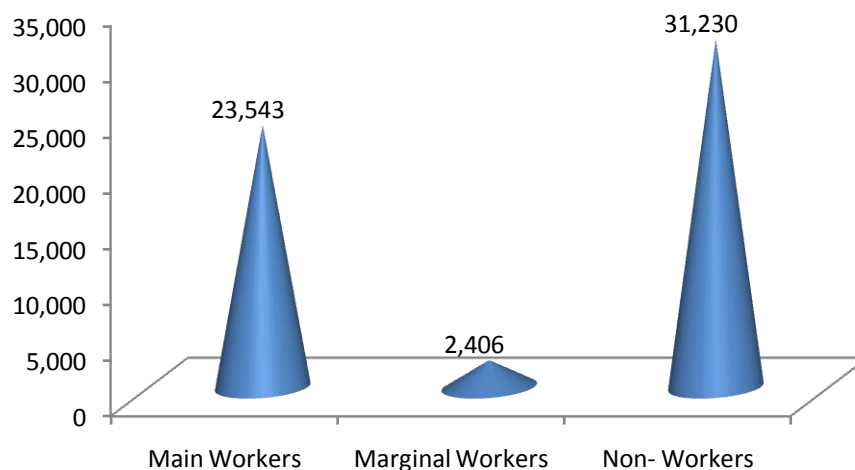
Source: Census 2001

6.3.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Handicrafts:

- Rich tradition of Bamboo and Cane Handicrafts. The products command premium on design, quality, and local technology and focus cultural identity.
- Cluster approach can be undertaken to for large scale production and commercialisation.

Horticulture:

- Diversity of land, topography and agro-climatic conditions are suitable for both temperate and sub-tropical horticultural crops.
- The main horticultural crops of the district are Orange, Pineapple, Banana and Guava.

- Locals avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic which commands a premium in both national and international markets.

- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Hydro power

- The River Kameng and its tributaries Para, Pachi, Pachok, Pakoti, Keya Bichom, Pacha, Pakke, Papu, Passa, Narmorah and Dikalmukh represent immense hydroelectric power potential.

- Major hydro power projects are in pipeline.

6.4. East Siang

The name of the district is derived from the mighty River Siang, originating from Tibet, where it is called Tsangpo. The district headquarters is located at Pasighat. In 1999, the district was bifurcated to make Upper Siang district. Languages spoken include adi, a Sino-Tibetan tongue, and Galo.

6.4.1 Economy

The GDDP of the East Siang district was Rs 26,917 lakh, as of 2007-08. The per capita DDP of East Siang district was Rs 28,727, which is the lowest in the state after Lower Subansiri. About 7.2 per cent of the state's registered SSIs are located in the district. Agriculture is the mainstay of the district's economy.

6.4.2 Demography

The district has an area of 4,005 sq km. According to the Census 2011, East Siang has a population of 87,397 and literacy rate of 60.73 per cent. About 69 per cent of the population in the district is tribal. The ratio of rural to urban population stands at 75 per cent.

The East Siang district is mostly populated by the Adi tribe which comprise a large number of sub-groups such as the Minyongs, Padams, Shimongs, Milangs, Pasis, Karkos, Ashings, Pangis, Tangmas and Boris.

6.4.3 Infrastructure

East Siang District is well connected by road, rail, air and waterways. The nearest airports are at Dibrugarh and Guwahati. Helicopter services are also available from Guwahati and Itanagar.

TABLE 29: AMENITIES AND INFRASTRUCTURAL FACILITIES – EAST SIANG

Facilities	Number of villages
Drinking water facilities	144
Safe drinking water	141
Electricity supply	120
Electricity - domestic	119
Electricity - agriculture	1

Source: Census 2001

All inhibited villages in East Siang have drinking water facilities. Power supply is available in 120 villages.

Education Infrastructure:

Out of 144 inhibited villages, about 116 have primary schools. None of the villages has any college indicting poor state of higher education infrastructure in the district.

TABLE 30: EDUCATIONAL INFRASTRUCTURE- EAST SIANG

Education Infrastructure in East Siang	
Primary school	116
Middle schools	31
Secondary/Sr Secondary schools	18
College	-

Source: Census 2001

6.4.4 Employment Pattern

About 38 per cent of the total population in the district is working. The district has 33,552 workers. Almost 87 per cent of them are main workers. The number of non-workers stands at 53,845.

FIGURE 14: EMPLOYMENT PATTERN IN EAST SIANG
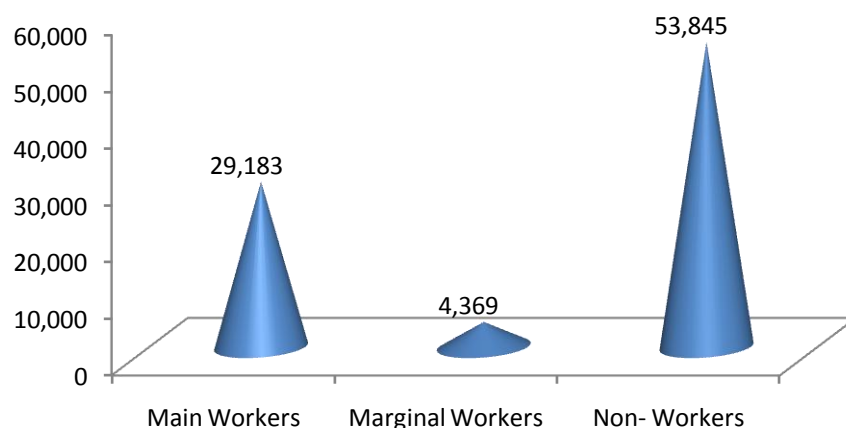
Source: Census 2001

6.4.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography and agro-climatic conditions are suitable for horticultural crops.
- The main horticultural crops of the district are Orange, Pine-apple, Banana and Litchi.
- Increasing government focus is providing impetus to the sector.
- Locals avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Food Processing:

- Significant fruit and spices production exists in the district to support food processing industries.
- Significant external market available for processed products with organic label.
- Well connected with Guwahati, which is the major economic hub in the North-east region.

Hotels:

- A numbers of tourist spots are present in and around the district. Places to visit in the district include Daying Ering Wild Life sanctuary, Kekar Monying and Pangin.

Handicrafts:

- Traditional practice of wood carving.
- With establishment of cooperative societies, SHG's and clusters in the district, commercial production can take place.

Medicinal Plants:

- Conducive climate and soil conditions for medicinal and aromatic plants.
- Significant potential, but still untapped due low level of awareness of the local population.

Hydro Power:

- The Siang River provides sites for development of hydro power plants.
- Major hydro power projects are in pipeline.

6.5. Lohit

The Lohit district is the present name derived from one of its principal rivers, the Lohit which rises from the eastern Tibet and enters India in Kibithoo area of the district. The district capital is Tezu. The Lohit district is situated on the north-eastern extremity of Arunachal Pradesh. Anjaw district have been carved out of Lohit in February 2004.

6.5.1 Economy

The GDDP of the Lohit district was Rs 46,635 lakh, as of 2007-08, the highest contribution by any district in Arunachal Pradesh's GSDP. The per capita DDP of Lohit district was Rs 29,952. About 12.5 per cent of the SSIs registered with SIDO are located in the Lohit district.

6.5.2 Demography

The district has an area of 2,402 sq km. According to the Census 2011, Lohit has a population of 143,527 and literacy rate of 56.07 per cent. About 38 per cent of the population in Lohit is tribal. Rural to urban population ratio stands at 81 per cent. The district has a population density of 28 per sq km. It is home to the Adi, Zekhring, Khampti, Deori, Ahom, Singpho, Chakma and Mishmi tribes.

6.5.3 Infrastructure

Tezu is connected to the adjacent state of Assam by road and air. The nearest airports are at Dibrugarh and Guwahati in Assam**.** Helicopter (Pawan Hans) flights are available from Dibrugarh and Naharlagun. There is no railway line in the district.

TABLE 31: AMENITIES AND INFRASTRUCTURAL FACILITIES - LOHIT

Facilities	Number of villages
Drinking water facilities	493
Safe drinking water	475
Electricity supply	184
Electricity - domestic	184
Electricity - agriculture	-

Source: Census 2001

All inhibited villages in Lohit district have drinking water facilities. However, power supply is available in only 184 villages.

Education Infrastructure:

About 160 villages in the district have primary schools. There are 15 secondary and senior secondary schools. None of the villages have any colleges.

TABLE 32: EDUCATIONAL INFRASTRUCTURE- LOHIT

Education Infrastructure in Lohit	
Primary school	160
Middle schools	36
Secondary/Sr Secondary schools	15
College	-

Source: Census 2001

6.5.4 Employment Pattern

About 42 per cent of the total population of the district is working. There are 60,351 workers in the district. Almost 55 per cent of them are main workers. There are 83,176 non-workers in the district.

FIGURE 15: EMPLOYMENT PATTERN IN LOHIT
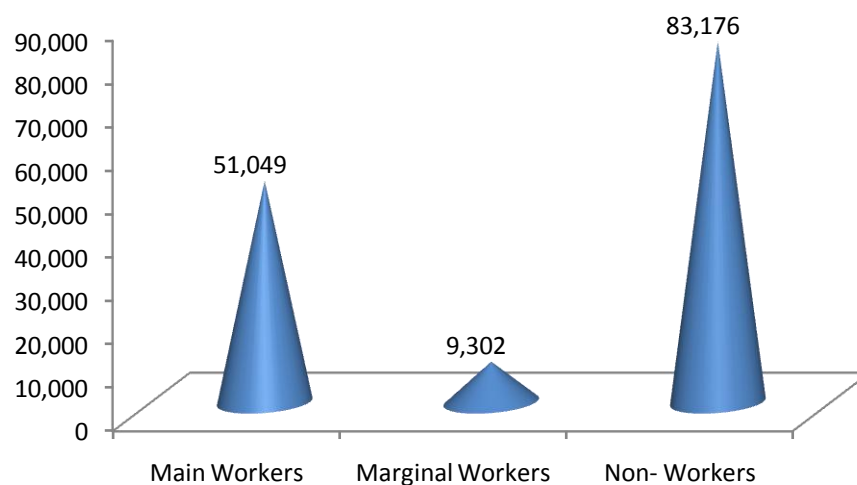
Source: Census 2001

6.5.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography and agro-climatic conditions are suitable for horticultural crops.
- The "Wakro oranges" brand name can be leveraged to provide impetus the sector.
- Ginger is produced in large quantities in the district.
- Locals avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Food Processing:

- There is significant potential for fruit and spices production in the district to support food processing industries.
- Substantial external market available for processed products with organic label.
- It is well connected with Guwahati, which is the major economic hub in the North-east region.

Cement:

- There are proven limestone deposits yet to be mined.
- Since significant construction activities are proposed to be undertaken in the state, it will provide readily available market for the cement companies.

Handicrafts:

- The district has rich tradition of Bamboo and Cane Handicrafts. The products command premium on design, quality, and local technology and focus on cultural identity.
- With establishment of cooperative societies and SHG's in the district, commercial production can take place.

Hydro Power:

- The Lohit River presents immense potential for development of hydro power plant.
- Major hydro power projects are in pipeline.

6.6. Lower Subansiri

The name of the District is derived from the Subansiri River, a tributary of Mighty Brahmaputra that flows through Raga Circle of this district. The topography of the district is mostly mountainous, where the hill ranges varies approximately from 1,000 to 1,600 metres above sea level. A greater part of it falls within the higher mountain zone consisting of tangled peaks and valleys. The forest of the district are rich in valuable species of trees and different varieties of shrubs, cane and bamboo grow plenty, and the exquisite floral treasures of wilder species may often be found in the shadowy recesses of the forest. The district headquarters is located at Ziro.

6.6.1 Economy

The GDDP of the Lower Subansiri district was Rs 28,305 lakh, as of 2007-08. The per capita DDP of Lower Subansiri district was Rs 26,906, lowest in the state. The district economy is predominantly agrarian. About 6.9 per cent of the SSIs registered with SIDO are located in the district.

6.6.2Demography

The district has an area of 3,460 sq km. According to the Census 2011, Lower Subansiri district has a population of 98,244 and literacy rate of 44.79 per cent. About 90 per cent of the population is tribal.

6.6.3 Infrastructure

The nearest railway station is located at North Lakhimpur in Assam. The nearest airport is located at Tezpur, Assam.

TABLE 33: AMENITIES AND INFRASTRUCTURAL FACILITIES – LOWER SUBANSIRI

Facilities	Number of villages
Drinking water facilities	652
Safe drinking water	383
Electricity supply	175
Electricity - domestic	169
Electricity - agriculture	-

Source: Census 2001

Almost all inhibited villages in Lower Subansiri district have drinking water facilities. However, power supply is available in about only 175villages.

Education Infrastructure:

There are 147 villages in the district with primary schooling facilities. None of the villages have any colleges.

TABLE 34: EDUCATIONAL INFRASTRUCTURE- LOWER SUBANSIRI

Education Infrastructure in Lower Subansiri	
Primary school	147
Middle schools	75
Secondary/Sr Secondary schools	22
College	-

Source: Census 2001

6.6.4Employment Pattern

About 46 per cent of the total population in the district is working. There are 45,405workers in the district. About 82 per cent of them are main workers. There are 52,839 non-workers in the district.

FIGURE 16: EMPLOYMENT PATTERN IN LOWER SUBANSIRI
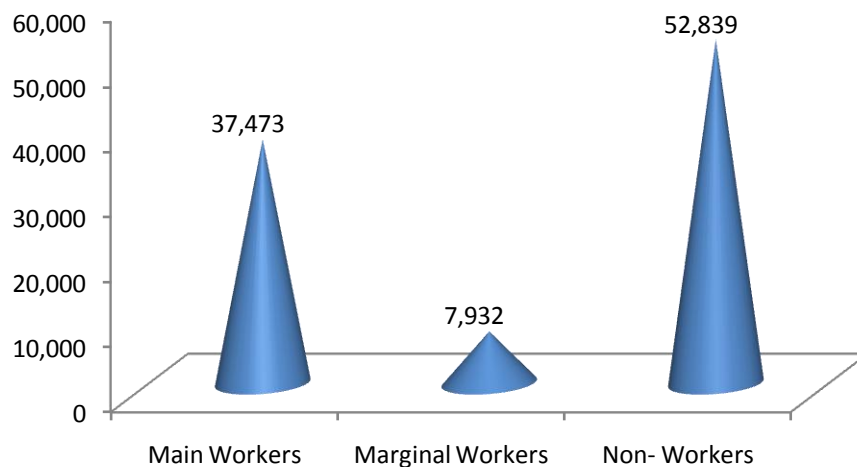
Source: Census 2001

6.6.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography and agro-climatic conditions are suitable for horticultural crops.
- The main horticultural crops of the district are Apple, Pears, Plum, Peach, Orange, Guava, Pine Apple and Banana.
- Increasing Government focus is providing impetus to horticulture sector.
- Locals avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.
- Mushroom cultivation has significant potential.

Food Processing:

- There is significant potential for fruit and spices production in the district to support food processing industries.
- Significant external market available for processed products with organic label.
- A food processing industry has been set-up in the district.

Hotels:

- The district is endowed with natural beauty. A number of tourist spots are present in Ziro.

Handicrafts:

- There is traditional practice of making cane and bamboo products.
- Arun Kutir Udyog, Ziro have been operating successfully with significant number of members associated with it.

Medicinal Plants:

- Conducive climate and soil conditions exist for medicinal and aromatic plants.

- Significant potential, but still untapped because of low level of awareness of the locals.

Hydro Power:

- The Subansiri River and its tributaries represent immense hydro power potential.
- Major hydro power projects are in pipeline.

6.7.Papum Pare

The Papum Pare district is home to the State capital, Itanagar. The district headquarter is located at Yupia, which is situated about 20 km from Itanagar. The land is mostly mountainous with Himalayan ranges. Kurung Kumey district bounds Papum Pare district in the north, Lower Subansiri district in the East, East Kameng district in the west and Assam in the south.

6.7.1 Economy

The GDDP of the Papum Pare district was Rs 43,776 lakh, as of 2007-08. The per capita DDP of the district was Rs 33,104. About 16.2 per cent of the SSIs registers with SIDO are located in the district, which is the highest for any district of the State.

6.7.2Demography

The district has an area of 2,875 sq km. According to the Census 2011, Papum Pare district has a population of 122,003 and literacy rate of 69.32 per cent. Papum Pare is inhabited by members of the Nishi and the Mikir, who are traditionally followers of Donyi-Polo. The percentage of tribal population in the district stands at 57 per cent. The ratio of rural to urban population in the district is 49 per cent.

6.7.3 Infrastructure

Itanagar, the state capital is well connected by road to Assam. The nearest airport is at Lilabari in Assam, which is about 71 km from Itanagar. The nearest railway station is at Harmuti, Assam which is about 32 km from Itanagar.

TABLE 35: AMENITIES AND INFRASTRUCTURAL FACILITIES – PAPUM PARE

Facilities	Number of villages
Drinking water facilities	267
Safe drinking water	215
Electricity supply	60
Electricity - domestic	48
Electricity - agriculture	12

Source: Census 2001

Almost all inhibited villages in Papum Pare district have drinking water facilities. However, power supply is available in nearly 22 per cent of the villages indicating the poor state of power supply in the district.

Education Infrastructure:

About 69 villages in the district have primary schooling facilities. One of the villages has a college.

TABLE 36: EDUCATIONAL INFRASTRUCTURE- PAPUM PARE

Education Infrastructure in Papum Pare	
Primary school	69
Middle schools	25
Secondary/Sr Secondary schools	8
College	1

Source: Census 2001

6.7.4 Employment Pattern

There are 44,132 workers in the district. About 87 per cent of them are main workers. There are 77,871 non-workers in the district. About 36 per cent of the population in the district is working, which is the lowest in the district.

FIGURE 17: EMPLOYMENT PATTERN IN PAPUM PARE
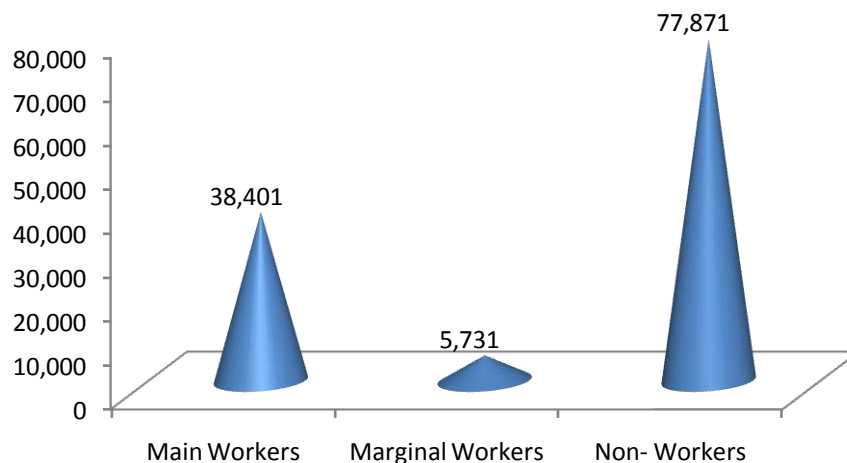
Source: Census 2001

6.7.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography and agro-climatic conditions are suitable for horticultural crops.
- Increasing Government focus is providing impetus to horticulture sector.
- Cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Food Processing:

- Potential for significant fruit and spices production exists in the district to support food processing industries.
- Significant external market is available for processed products with organic label.

- The district is well connected to Assam, thus has logistics advantage as compared to some of other districts in Arunachal Pradesh.

Hotels:

- A numbers of tourist spots are present in and around Itanagar.
- Also, since the State Capital is located in the district, there is large inflow of business tourists and Government officials which offers significant opportunities.
- It is a key station for travelling to other districts.

6.8. Tawang

Tawang is the westernmost district of Arunachal Pradesh. It is located at the soaring height of near about 10,000fts above mean sea level, sharing boundaries with Tibet in the north, Bhutan in the south west and Sela range of West Kameng in the east. Tawang is believed to have derived its name from the grandiose Tawang Monastery perched on the edge of the ridge running along the western part of Tawang township. The district headquarters is located at the Tawang town.

6.8.1 Economy

The GDDP of the Tawang district was Rs 13,578 lakh, as of 2007-08, the lowest in the state after Upper Siang, indicating that the economic activity is minimal in the district. The per capita DDP of the district was Rs 30,719. About 3.5 per cent of the SSIs registers with SIDO are located in the district.

6.8.2 Demography

The district occupies an area of 2,085 sq km. According to the Census 2011, Tawang district has a population of 38,924 and literacy rate of 47.32 per cent. It is home to the Monpa tribe. About 75 per cent of the population is tribal. The ratio of rural to urban population stands at 78 per cent.

6.8.3 Infrastructure

Tawang is well connected to Assam via roads. The nearest airport is situated at Tezpur in Assam.

TABLE 37: AMENITIES AND INFRASTRUCTURAL FACILITIES – TAWANG

Facilities	Number of villages
Drinking water facilities	180
Safe drinking water	159
Electricity supply	173
Electricity - domestic	172
Electricity - agriculture	1

Source: Census 2001

Almost all inhibited villages in Tawang district have drinking water facilities.

Education Infrastructure:

About 63 villages in the district have primary schools. There are no colleges in the district.

TABLE 38: EDUCATIONAL INFRASTRUCTURE- TAWANG

Education Infrastructure in Tawang	
Primary school	63
Middle schools	13
Secondary/Sr Secondary schools	2
College	-

Source: Census 2001

6.8.4 Employment Pattern

About 56 per cent of the population in the district is working. There are 21,727 workers in the district. About 83 per cent of them are main workers. There are 17,197 non-workers in the district.

FIGURE 18: EMPLOYMENT PATTERN IN TAWANG
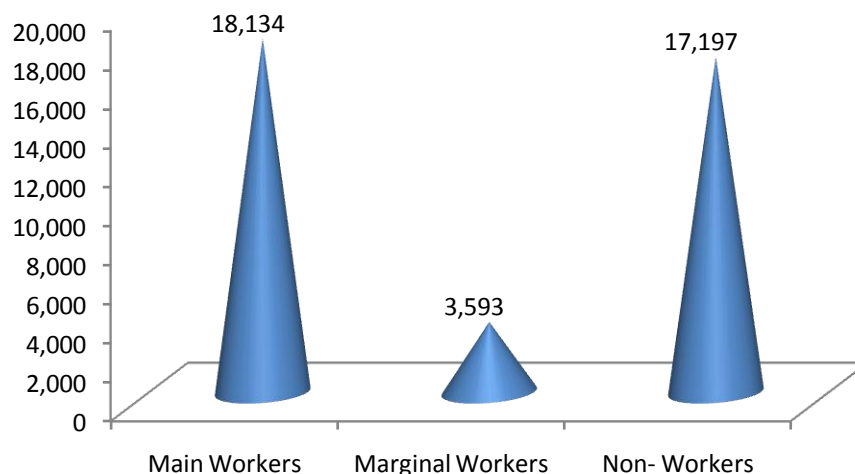
Source: Census 2001

6.8.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography and agro-climatic conditions are suitable for horticultural crops.
- Major horticulture crops include kiwi, apple and orange.
- Increasing Government focus is providing impetus to horticulture sector.
- Cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Food Processing:

- Significant fruit and spices production potential exists in the district to support food processing industries.

- Significant external market exists for processed products with organic label.
- The district is well connected to Guwahati.

Hotels:

- A numbers of tourist spots are present in and around Tawang. Some of the places to visit include Tawang monastery, Shonga-tser Lake, Gorichen Peak, etc.

Hydro Power:

- The Tawang River and its tributaries represent immense hydro power potential.
- Major hydro power projects are in pipeline.

6.9.Tirap

The district derives its name from the River Tirap, which originates in the district and flows through Changlang district of Arunachal Pradesh. The Tirap district is located in the south-eastern part of the state of Arunachal Pradesh in India. It shares a state border with Nagaland and Assam, an international border with Myanmar and a district border with Changlang. The district headquarter are located at Khonsa.

6.9.1 Economy

The GDDP of the Tirap district was Rs 35,403 lakh, as of 2007-08.The per capita DDP of the district is Rs 32,690. About 7.1 per cent of the SSIs registers with SIDO are located in the district.

6.9.2Demography

The district occupies an area of 2,362 sq km. According to the Census 2011, Tirap district has a population of 100,326 and literacy rate of 41.73 per cent. About 84 per cent of the population is tribal. The ratio of rural to urban population stands at 85 per cent.Major portions of the people inhabiting the district are the indigenous tribal group, constituting over 70 per cent of the total district population. The major tribes inhabiting in the district are the Nocte, Wancho and the Tutsa. Amongst the tribal groups, Noctes constitute about 45 per cent, Tutsas about 5 per cent and Wanchos about 50 per cent of the total tribal population.

6.9.3 Infrastructure

There is no railway line in the district. The nearest railway stations are at Dibrugarh (120 km), Tinsukia (110 km) or Naharkatia (70 km) in Assam. The district is well connected to Assam by roads. Nearest airport is at Dibrugarh, Assam.

TABLE 39: AMENITIES AND INFRASTRUCTURAL FACILITIES – TIRAP

Facilities	Number of villages
Drinking water facilities	167
Safe drinking water	151
Electricity supply	147
Electricity - domestic	145
Electricity - agriculture	-

Source: Census 2001

Almost all inhibited villages in Tirap district have drinking water facilities. Electricity supply is available to 147 villages.

Education Infrastructure:

About 32 of the villages have middle schools. Out of 167 inhibited villages in the district, only 8 have secondary or senior secondary schools.

TABLE 40: EDUCATIONAL INFRASTRUCTURE- TIRAP

Education Infrastructure in Tirap	
Primary school	137
Middle schools	32
Secondary/Sr Secondary schools	8
College	-

Source: Census 2001

6.9.4 Employment Pattern

About 49 per cent of the population in the district is working population. There are 49,074 workers in the district. About 89 per cent of them are main workers. There are 51,252 non-workers in the district.

FIGURE 19: EMPLOYMENT PATTERN IN TIRAP
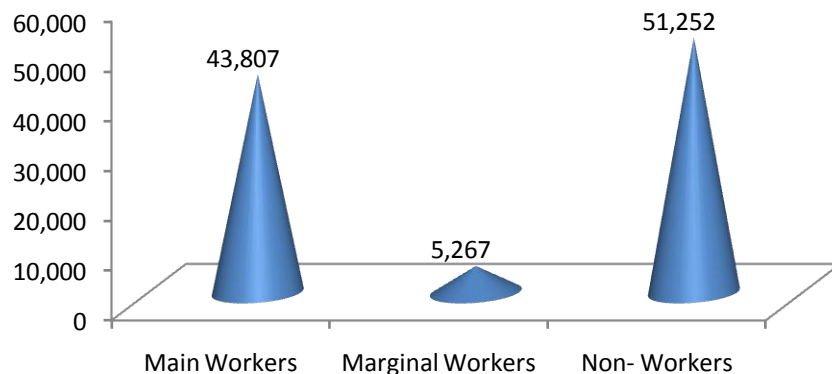
Source: Census 2001

6.9.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography and agro-climatic conditions are suitable for horticultural crops.
- Major horticulture crops include banana and pineapple.
- Increasing Government focus is providing impetus to horticulture sector.
- Cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Food Processing:

- Significant fruit and spices production in the district to support food processing industries.
- Both national and international markets are available for processed products.
- The district is well connected to Assam, providing logistics feasibility.

Medicinal Plants:

- Conducive climate and soil conditions exist for medicinal and aromatic plants.
- There is significant, but untapped potential for growing medicinal plants and products.

Handloom:

- Handloom products are of national and international repute.
- In absence of significant economic activity and with establishment of cooperative societies and SHG's in the district, large scale production can be undertaken for commercialisation.

Handicrafts:

- Rich tradition of Bamboo and Cane Handicrafts. The products command premium on design, quality, and local technology and focus on cultural identity.
- Unique beads ornaments and grass necklace products mainly found in Changlang and Tirap.
- Traditional art of making artistic wood carving articles.

6.10. Upper Siang

Upper Siang is a mountainous region endowed with rich natural resources and biodiversity, deep gorges and fast flowing streams and rivulets, which form the tributaries of the Siang River. The district headquarters are located at Yingkiong. It shares its border with Tibet in the north, East Siang district in the south, Dibang Valley in the east and West Siang district in the west.

6.10.1 Economy

The GDDP of the Upper Siang district was Rs 11,326 lakh, as of 2007-08, the lowest in the State. The per capita DDP of the district was Rs 30,777. Only 0.5 per cent of the SSIs registered with SIDO are located in the district. Agriculture is the mainstay of the economy. The massive Upper Siang Hydro power project with capacity in the range of 10,000 to 12,000 MW is being constructed. Upon completion, it will be the largest hydroelectric dam in South Asia.

6.10.2 Demography

The district occupies an area of 6,188 sq km. According to the Census 2011, Upper Siang district has a population of 33, 363 and literacy rate of 49.78 per cent. It is the fourth-least populous district in the country. About 78 per cent of the population is tribal. The district has 100 per cent rural population. Various tribal groups of the Adi and the Memba tribes live there.

6.10.3 Infrastructure

There is no railway line in the district. The nearest railhead is at Murkongselek, which is 221 km from Yingkiong. Nearest airport is at Lilabari, Assam.

TABLE 41: AMENITIES AND INFRASTRUCTURAL FACILITIES – UPPER SIANG

Facilities	Number of villages
Drinking water facilities	92
Safe drinking water	82
Electricity supply	82
Electricity - domestic	42
Electricity - agriculture	-

Source: Census 2001

All inhibited villages in Upper Siang district have drinking water facilities. Electricity supply is available in 82 villages.

Education Infrastructure:

There are 62villages with primary schooling facilities in Upper Siang district. Absence of higher education infrastructure in the district indicates that youth has to migrate outside the district for higher education.

TABLE 42: EDUCATIONAL INFRASTRUCTURE- UPPER SIANG

Education Infrastructure in Upper Siang	
Primary school	62
Middle schools	15
Secondary/Sr Secondary schools	9
College	-

Source: Census 2001

6.10.4 Employment Pattern

About 51 per cent of the population in the district is working. There are 17,105 workers, of which about 90 per cent are main workers. There are 16,258 non-workers in the district.

FIGURE 20: EMPLOYMENT PATTERN IN UPPER SIANG
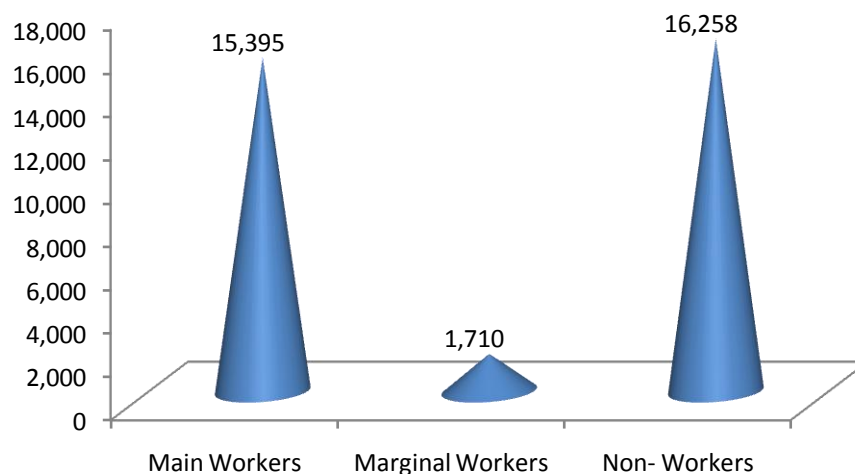
Source: Census 2001

6.10.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling or upgrading skills:

Horticulture:

- Conducive topography, agro-climatic conditions and increasing Government support will provide impetustohorticultural sector.
- Major horticulture crops include Orange, Pineapple, Guava and Banana.
- Cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Medicinal Plants:

- Conducive climate and soil conditions exist for medicinal and aromatic plants.
- Significant potential exists for medicinal plants and related products.

Handicrafts:

- Rich tradition of Bamboo and Cane Handicrafts exists. The products command premium on design, quality, and local technology and focus on cultural identity.
- Carpet weaving is an important occupation of the people in the district. The Arunachal Pradesh's carpet has been acclaimed National & International repute by considering the quality of carpet weaving in different motive and design.
- Traditional art of making artistic wood carving articles.
- Tangkha painting in one of the most artistic craft associated with the district.
- By employing cluster approach in the district, commercialisation of the handicraft items of the district can be achieved.

6.11.Upper Subansiri

Upper Subansiri district accounts for about 8 per cent of the state's geographical area. The district was formed when Subansiri district was bifurcated into Upper and Lower Subansiri districts in 1987. The district headquarters are located at Daporijo.

6.11.1 Economy

The GDDP of the Upper Subansiri district was Rs 18,506 lakh, as of 2007-08. The per capita DDP of the district was Rs 30,843. Only 4.4 per cent of the SSIs registers with SIDO are located in the district. Agriculture is the mainstay of the economy in the district. In 2006, the Indian Government named Upper Subansiri one of the country's 250 most backward districts.

6.11.2Demography

The district occupies an area of 7,032 sq km. According to the Census 2011, Upper Subansiri district has a population of 55,346 and literacy rate of 50.35 per cent. About 90 per cent of the population is tribal. The district has 72 per cent rural population. Languages spoken include Tagin, the dominant language,

Hills Miri (now Nyishi) and Galo, also in the Sino-Tibetan language family and spoken in the western part of the district

6.11.3 Infrastructure

There 398 inhibited villages in Upper Subansiri district with all of them having drinking water facilities. Electricity supply is available in 77 villages.

TABLE 43: AMENITIES AND INFRASTRUCTURAL FACILITIES – UPPER SUBANSIRI

Facilities	Number of villages
Drinking water facilities	398
Safe drinking water	252
Electricity supply	77
Electricity - domestic	77
Electricity - agriculture	-

Source: Census 2001

Education Infrastructure:

About 141 villages in the district have primary schools. There were 10 villages with secondary or senior secondary schools.

TABLE 44: EDUCATIONAL INFRASTRUCTURE- UPPER SUBANSIRI

| Education Infrastructure in Upper Subansiri	
Primary school	141
Middle schools	33
Secondary/Sr Secondary schools	10
College	-

Source: Census 2001

6.11.4 Employment Pattern

About 40 per cent of the population in the district is working. There are 22,415 workers in the district. About 94 per cent of them are main workers. There are 32,931 non-workers in the district.

FIGURE 21: EMPLOYMENT PATTERN IN UPPER SUBANSIRI
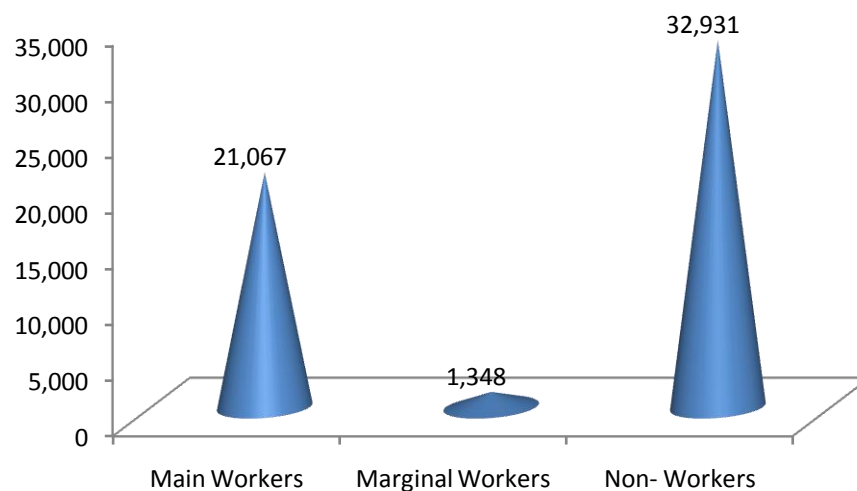
Source: Census 2001

6.11.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography, agro-climatic conditions and increasing Government support will provide impetus for horticultural crops.
- Major horticulture crops include Orange, Pineapple, Guava and Banana. Ginger is also grown in abundance.
- Cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.
- Productivity can be increased manifold by imparting latest farming techniques and providing them with latest tools.

Handicrafts:

- Rich tradition of Bamboo and Cane Handicrafts exists. The products command premium on design, quality and local technology.

- By employing cluster approach in the district, commercialisation of the handicraft items of the district can be achieved.

Food Processing:

- Significant fruit and spices production potential is there to support food processing industries.
- Both national and international market available for processed products with organic label.

6.12. West Kameng

West Kameng derives its name from the Kameng river, a tributary of the Brahmaputra, that flows through the district. It is surrounded by Tibet region in the North, Bhutan in the West, Tawang District and East Kameng district of Arunachal Pradesh are in the North West and East, respectively. The southern boundary adjoins Sonitpur district and Darrang district of Assam. The Eaglenest Wildlife Sanctuary is located in the district. The district headquarters is located at Bomdila.

6.12.1 Economy

The GDDP of the West Kameng district was Rs 31,207 lakh, as of 2007-08. The per capita DDP of the district is Rs 38,527, which is highest in the state. About 8.3 per cent of the SSIs registered with SIDO are located in the district. They are mostly engaged in carpentry, weaving and handicrafts. The district economy is predominantly agrarian.

6.12.2 Demography

The district has an area of 7,422 sq km. According to the Census 2011, West Kameng district has a population of 74,559 and literacy rate of 60.76 per cent. About 50 per cent of the population is tribal. The district has 91 per cent rural population. West Kameng comprises five major tribes: Monpa, Miji (Sajolang), Sherdukpen, Aka (Hrusso), and Khowa (Bugun). Minority tribes include Takpa, Lishipa,

Chugpa and Butpa. Most of the inhabitants are Buddhist, though the Aka, Khowa, and Miji have indigenous religions and those tribe members follow a mix of Buddhism, Hinduism, and Donyi-Polo.

6.12.3 Infrastructure

The nearest railhead is located at Bhalukpong which is about 100 km from Bomdila. The nearest airport is located at Tezpur, Assam, which is about 160 km from the district headquarters. There 213 inhibited villages in West Kameng district with all of them having drinking water facilities. Electricity supply is available in 168 villages.

TABLE 45: AMENITIES AND INFRASTRUCTURAL FACILITIES – WEST KAMENG

Facilities	Number of villages
Drinking water facilities	213
Safe drinking water	211
Electricity supply	168
Electricity - domestic	168
Electricity - agriculture	-

Source: Census 2001

Education Infrastructure:

As per Census 2001, there were 97villages with primary and 11 villages with secondary/ senior secondary schools in West Kameng district.

TABLE 46: EDUCATIONAL INFRASTRUCTURE- WEST KAMENG

Education Infrastructure in West Kameng	
Primary school	97
Middle schools	22
Secondary/Sr Secondary schools	11
College	-

Source: Census 2001

6.12.4Employment Pattern

About 46 per cent of the population in the district is working population. There are 34,362 workers in the district. About 84 per cent of them are main workers. There are 40,237 non-workers in the district.

FIGURE 22: EMPLOYMENT PATTERN IN WEST KAMENG
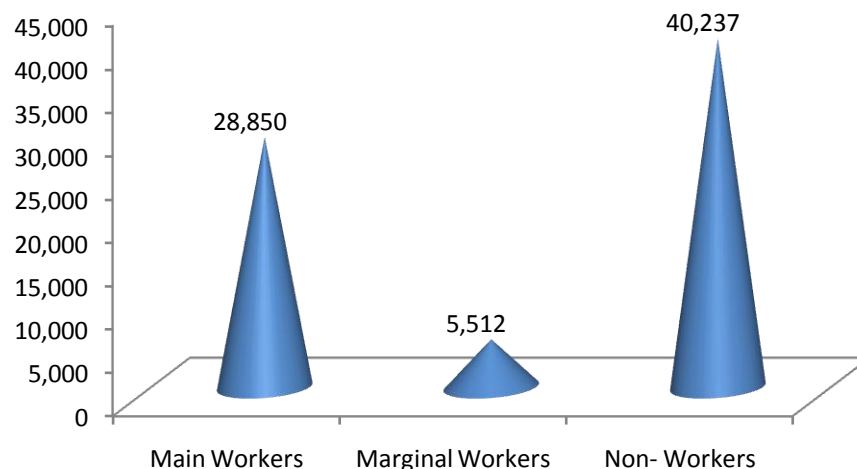
Source: Census 2001

6.12.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography, agro-climatic conditions and increasing Government support will provide impetus for horticultural crops.
- Major horticulture crops include Apples, Oranges, Pomegranates, Pineapples, Walnuts, Kiwis, Plums and Pears.
- Floriculture: Begonia, Dahlia, Roses, Gladiolus, Marigold, Orchids and other exotic flowers are grown or found in wild. Orchid Research Centre, Tipi is engaged in promotion of Orchid plantation in the district.
- Local cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.

- Productivity can be increased manifold, by imparting latest farming techniques and providing them with latest tools.

Food Processing:

- Significant fruit and spices production potential exists in the district to support food processing industries.
- Both national and international market available for processed products with organic label.

Hotels:

- A numbers of tourist spots are present in and around Bomdila. Some of the places to visit include Tippi Orchid Centre, GRL Monestry, Lhagyala Gompa at Morshing, Rupa Caves and Hot spring at Dirang.
- It is well connected to Tezpur and Guwahati.

Hydro Power:

- Kameng, Tenga and other rivers in the district offer conducive sites for development of hydro power plants.
- Major hydro power projects are in pipeline.

6.13. West Siang

West Siang district is bounded on the north by China, on the East by Upper Siang and East Siang districts, on the South by Assam and on the West by Upper Subansiri and Lower Subansiri districts of Arunachal Pradesh. The district has a wide range of climatic and geographical variations. The district headquarters is located at Aalo.

6.13.1 Economy

The GDDP of the West Siang district was Rs 34,290 lakh, as of 2007-08. The per capita DDP of the district is Rs 30,185.About 9.2 per cent of the SSIs registered with SIDO are located in the district. They are mostly engaged in carpentry, weaving and handicrafts. The economy is predominantly agrarian.

6.13.2 Demography

The district occupies an area of 8,325 sq km, which is about 10 per cent of the geographical area of the state. According to the Census 2011, West Siang district has a population of 103,918 and literacy rate of 59.47 per cent. About 82 per cent of the population is tribal. Various groups of the Adi, Memba and Khamba tribes live in the district. The Adi follow generally follow Donyi-Polo, although some have embraced Baptist Christianity in recent years. The Memba and Khamba are followers of Tibetan Buddhism.

6.13.3 Infrastructure

There are 398 inhibited villages in West Siang district with all of them having drinking water facilities. Electricity supply is available in 115 villages.

TABLE 47: AMENITIES AND INFRASTRUCTURAL FACILITIES – WEST SIANG

Facilities	Number of villages
Drinking water facilities	398
Safe drinking water	348
Electricity supply	115
Electricity - domestic	108
Electricity - agriculture	-

Source: Census 2001

Education Infrastructure:

As per Census 2001, about 221 villages had primary schools.

TABLE 48: EDUCATIONAL INFRASTRUCTURE- WEST SIANG

Education Infrastructure in West Siang	
Primary school	221
Middle schools	66
Secondary/Sr Secondary schools	19
College	1

Source: Census 2001

6.13.4 Employment Pattern

About 41 per cent of the population in the district is working. There are 43,085 workers in the district. About 86 per cent of them are main workers. There are 60,833 non-workers in the district.

FIGURE 23: EMPLOYMENT PATTERN IN WEST SIANG
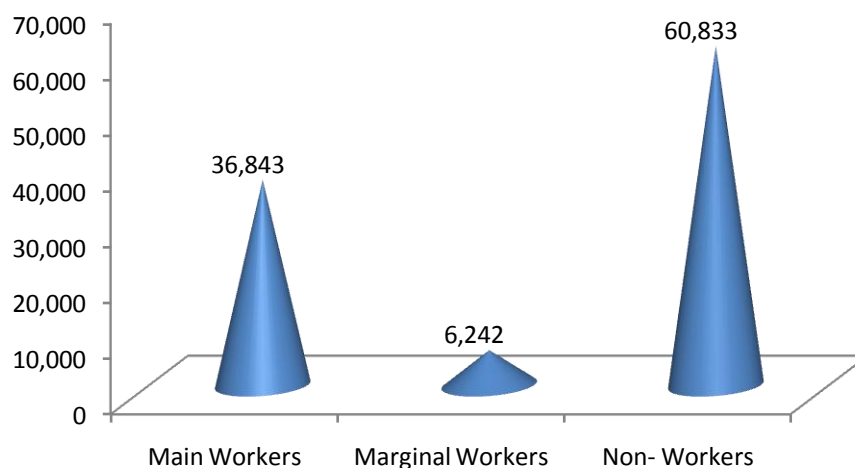
Source: Census 2001

6.13.5 Potential sectors in district

Based on the factor advantages, following sectors have been identified in the district for skilling and upgrading skills:

Horticulture:

- Conducive topography, agro-climatic conditions and increasing Government support will provide impetus to horticultural sector.
- Major horticulture crops include Oranges, Pineapples, Pears, Banana, Plum and Walnut.
- Cultivators avoid using chemical fertilizers and pesticides. This provides an opportunity to brand the produce as organic, which commands a premium in both national and international markets.
- By imparting latest farming techniques and providing them with latest tools, productivity can be increased manifold.

Food Processing:

- Significant fruit and spices production potential exists in the district to support food processing industries.
- Both national and international markets are available for processed products with organic label.

Hotels:

- Gompa at Mechuka, Akashi Ganga and Malinithan at Likabali are important tourist spots.

Hydro Power:

- Yomgo, Sirit and other rivers in the district offer sites conducive to development of hydro power plants.
- Major hydro power projects are in pipeline.

Handicrafts:

- Rich tradition of Bamboo and Cane Handicrafts exists. The products command premium on design, quality and local technique.

- The unique and artistic indigenous wood carving articles and other handicraft products are being promoted through Government craft centres.

Medicinal Plants:

- Conducive climate and soil conditions exist for medicinal and aromatic plants.
- Huge potential exists, but is untapped due low level of awareness of the locals.

PART – II (d): Skill Gap Analysis

6.1 Hydro Power

There are five major river basins in the State, namely Kameng, Subansiri, Siang, Dibang and Lohit River basins. There are smaller rivers also offering sites conducive to development of hydropower plants. The State is estimated to have a hydro power potential of 49,126 MW. The Government of Arunachal Pradesh has signed memorandums of understanding (MoU) with central sector power generators and integrated power developers (IPD) for the development of 147 hydroelectric power plants, with an aggregate capacity of 43,218 MW. All of these are in various stages of development

TABLE 49: KEY UPCOMING HYDRO POWER PROJECTS WITH CAPACITY MORE THAN 1000 MW

Name of the company	Up-coming hydro project*	Installed capacity, MW	District
Jindal Power Ltd.	Etalin	4,000	Dibang Valley
Athena Energy Ventures Pvt. Ltd.	Demwe	3,000	Lohit
NHPC Ltd.	Dibang Multipurpose	3,000	Lower Dibang Valley
Jaiprakash Associates	Siang Lower	2,700	West Siang
KSK Energy Ventures Ltd.	Subansiri Upper	2,000	Upper Subansiri
NHPC Ltd.	Subansiri Lower	2,000	Lower Subansiri
Jindal Power Ltd.	Subansiri Middle	1,600	Lower Subansiri
Moutain Fall India Pvt. Ltd.	Kalai I	1,450	Anjaw
Moutain Fall India Pvt. Ltd.	Hutong II	1,250	Anjaw
Reliance Energy Ltd.	Kalai II	1,200	Anjaw
Abir Constructions Pvt. Ltd.	Naba	1,000	Upper Subansiri
DS Construction Ltd.	Naying	1,000	West Siang
Navayuga Engineering Company Ltd.	Oju II	1,000	Upper Subansiri
Reliance Energy Ltd.	Siyom	1,000	West Siang

Source: IMaCS Primary Survey

TABLE 50: UPCOMING HYDRO POWER PROJECTS WITH INSTALLED CAPACITY

(500-1,000 MW)

Name of the company	Name of project	Installed capacity, MW	District
Coastal Infrastructure Pvt. Ltd.	Niare	800	Upper Subansiri
NHPC Ltd.	Tawang II	800	Tawang
Bhilwara Energy Ltd.	Nyamjungchhu	780	Tawang
Navayuga Engineering Company Ltd.	Oju I	700	Upper Subansiri
Reliance Energy Ltd.	Tato II	700	West Siang
KSK Energy Ventures Ltd.	Kameng Dam	600	West Kameng
Moutain Fall India Pvt. Ltd.	Kameng II	600	East Kameng
NEEPCO	Kameng	600	West Kameng
NHPC Ltd.	Tawang I	600	Tawang
Coastal Infrastructure Pvt. Ltd.	Dengser	552	Upper Subansiri
Jaiprakash Associates	Hirong	500	West Siang
Jindal Power Ltd.	Attunli	500	Dibang Valley
Reliance Energy Ltd.	Emini	500	Dibang Valley

Source: IMaCS Primary Survey

6.1(a) Skill mapping and gap analysis: Hydro Power

Entity	Role	Expected competencies	Skill gaps
Helpers & Operators	• Loading & unloading, digging & filling, concreting & pavement, operating heavy machines	• Ability to read and write • Ability to execute as per directions • Understanding of basic equipment and tools • Sound comprehension and concentration • Punctuality • Ability to handle different machines • Operating knowledge of heavy earth moving equipment like drillers, dumper, blasters, excavators, mechanised loaders, cranes • Designing and developing of basic civil structures and knowledge about shuttering, bar-bending, concrete mixing processes • Adherence to standard operating manuals for safety	• Lack of handling of basic tools and equipment • Inability to operate different machines • Lack of operating knowledge of heavy earth moving equipment • No knowledge about designing and developing of civil structures
Supervisors & Plant In-charge	• Supervising, mentoring, designing, operations, and maintenance	• Knowledge about latest technology advancement and equipment usage • Knowledge about Batching Plant, Chilling Plant and Turbine Operations • Understanding of civil designs and structures of reservoirs, dams and other associated infrastructure • Cross discipline knowledge in excavation, civil structures and plant operations • Ensuring adherence to environmental and safety norms • Leadership and people management skills	• Locals lack most of these skills • Skilled workforce imported from outside the State

Sources: IMaCS Survey and Analysis

6.2 Tourism

Arunachal Pradesh is considered to be the "nature's treasure trove". It has over 500 species of exotic orchids and has an orchid sanctuary as well. It is also home to a diverse flora and fauna, with over 5,000 plants, about 85 terrestrial mammals, over 500 birds and a large number of butterflies, insects and reptiles. The state provides ample scope for angling, boating, rafting, trekking and hiking.

In 2010-11, the State attracted 231,252 tourists. Over 98 per cent were domestic.

FIGURE 24: DOMESTIC TOURIST ARRIVALS IN ARUNACHAL PRADESH
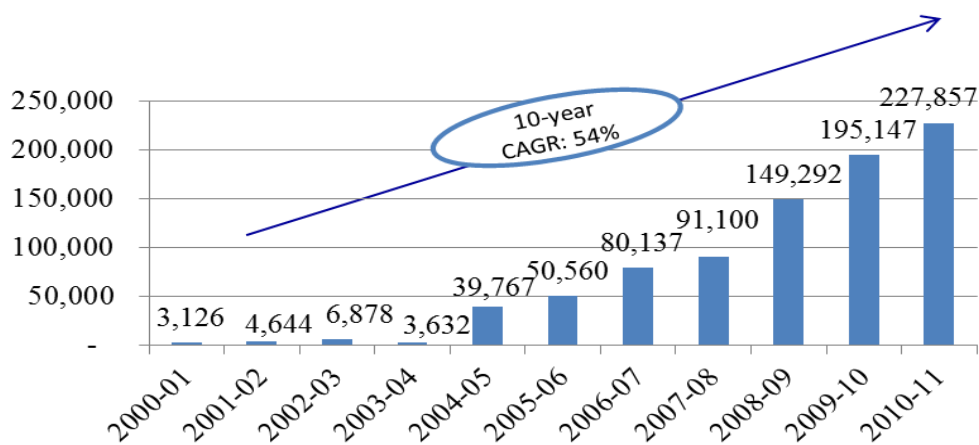
Sources: Department of Tourism; IMaCS Analysis

FIGURE 25: FOREIGN TOURIST ARRIVALS IN ARUNACHAL PRADESH
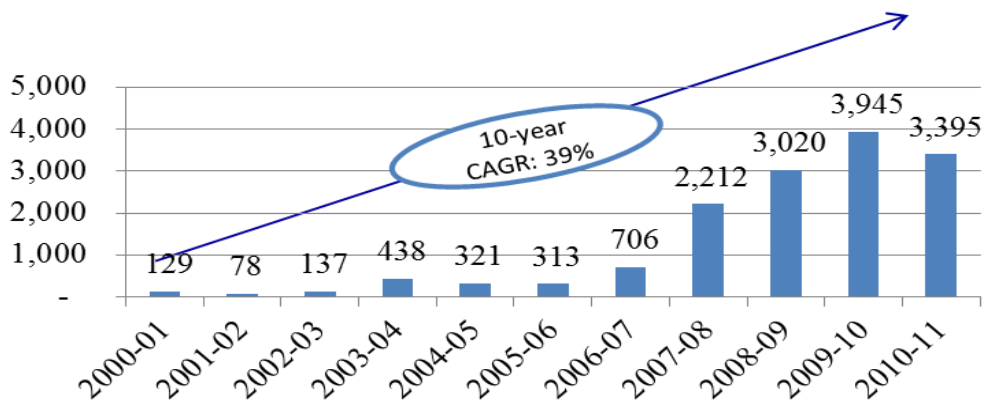
Sources: Department of Tourism; IMaCS Analysis

FIGURE 26: DIVERSE ATTRACTIONS FOR TOURISTS IN ARUNACHAL PRADESH

Tawang	Parashuram Kund	Mountains, rivers and waterfalls	Ziro
Anjaw	Mechuka	Monasteries and nunneries	Tribal ethnicity and cultural festivals
Local sports / adventure sports	Monuments and archaeological sites	Wildlife sanctuaries	Exotic orchids
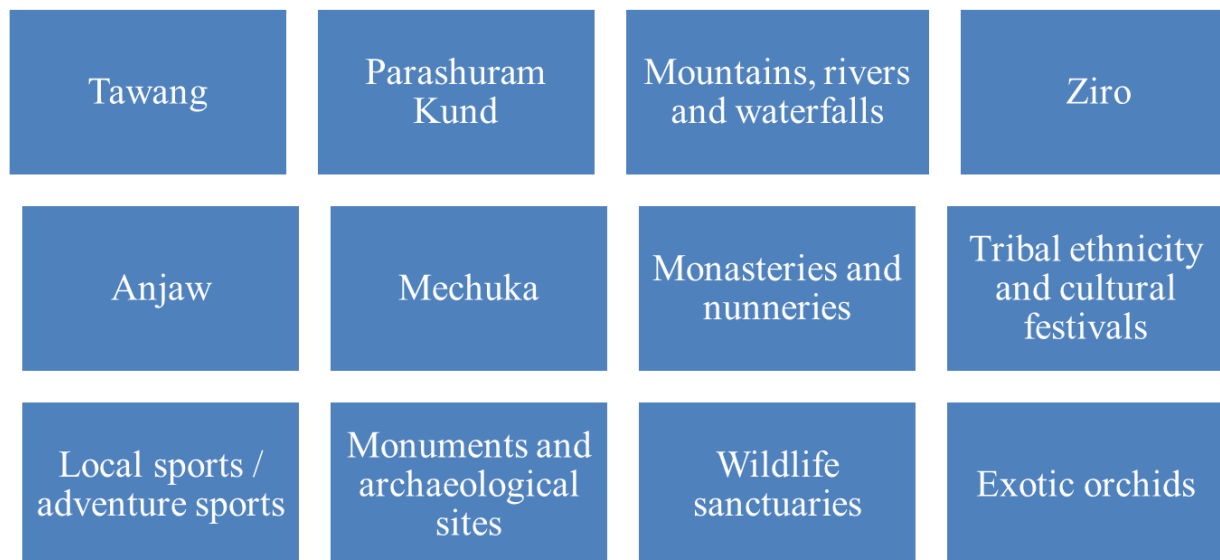
Source: IMaCS Analysis

6.2(a) Skill mapping and gap analysis: Tourism

Entity	Role	Expected competencies	Skill gaps
Tour operators / travel guides and logistic providers	• Ability to create attractive local tourist package • Ability to provide uninterrupted logistics support	• Market understanding • Ability to brand • Event management • Route planning and optimisation • Excellent sales and marketing • Ability to develop attractive pricing strategy • Ability to liaison with airline, hotels and local community • Ability to manage tourist expectations • Customer Relationship Management • Computer skills; soft skills	• Lack most of these skills as tourism has not picked up in a big way in the State yet

Entity	Role	Expected competencies	Skill gaps
		• Understanding of local and English speaking skills	
Hotels	• Ability to provide customer service • Ability to perform multi-functions	• Understanding of local language and English speaking skills • Customer relationship management • Excellent trouble shooting skills • Understanding of cultural differences • Understanding of hotel functions, including procurement of raw material, cooking etc. • Computer skills • Ability to maintain financial records • Ability to maintain business etiquette	• Lack most of these skills as tourism has not picked up in a big way in the state yet

Sources: IMaCS Survey and Analysis

6.3 Horticulture including Floriculture, Medicinal and Aromatic plants

Arunachal Pradesh has suitable climate for cultivation of wide variety of horticulture crops such as fruits, vegetables, spices, aromatic and ornamental plants, medicinal plants and plantation crops. There is lot of potential for spices like ginger, chillies, and turmeric. As of 2009-2010, Arunachal Pradesh had a total area of 105,655 hectares under horticultural crops. Only some of the products are sold in local markets, in addition to Guwahati in Assam. Due to abundance of fruits and vegetables in the State, it also has potential for setting up of food processing units.

TABLE 51: PRODUCTION OF MAJOR HORTICULTURAL CROPS

(2009-2010)

Crop	Production, in MT
Apple	13,388
Citrus	42,000
Pine apple	52,302
Banana	21,543

Crop	Production, in MT
Walnut	400
Kiwi	500
Others	19,000
Total fruits	*149,133*
Large cardamom	830
Black pepper	300
Ginger	3,000
Total Spices	*4,130*

Sources: Arunachal Pradesh at a Glance 2010, Directorate of Economics and Statistics

Arunachal Pradesh has over 500 species of medicinal plants. Some of the most important plants are Acorus, Andrographis, Aquilaria, Dioscorea, Oroxylum, Rauvolfia, Tinospora, Withania, etc., in low altitudes. High altitude plants include Aconitum Coptis, Gymnadaenia, Illicium, Panax, Picrorrhiza, Rubia, Taxus, etc. Presently, only informal transactions are taking place, wherein traders from state like West Bengal, Rajasthan and Delhi come to Arunachal Pradesh to procure medicinal and aromatic plants.

Arunachal Pradesh is especially known for its orchids with more than 600 species of these. Of this, about 150 species are ornamental and commercially important. The State also harbours about 52 species of Rhododendrons, 18 species of Hedychium, 16 species of Qaks, 33 species of Conifers and a large number of ferns and lichens. The State Government is particularly focusing on its orchid potential. Following are some of the steps taken in this direction: Department of Environment and Forest, Government of Arunachal Pradesh has established an Orchid Research and Development Station at Tipi in West Kameng district for propagation and conservation of these species. This Centre has established a laboratory for orchid seed and tissue culture for this purpose. In addition, Orchidorium at Tipi, two orchid conservation sanctuaries have been established at Sessa and Dirang in West Kameng district. The Orchid Society of Arunachal Pradesh has also been formed to spread the message of conservation and promotion of orchids throughout the State. Various ornamental orchid plants are sold in market either bare-root or as potted plants. Other commercially produced flowers include gerbera, anthurium, rose and carnations. These are sent to Guwahati by road, from where they are transported to different parts of India for sale.

6.3(a) Skill mapping and gap analysis: Horticulture and Floriculture

Entity	Role	Expected competencies	Skill gaps
Grower	To grow the crop with best possible productivity and quality	• Knowledge about the growing pattern of crops • Knowledge of different seasons in which different crops should be harvested and planted • Knowledge about high quality seeds • Knowledge about pest control, which includes management of weeds, insects / mites, and diseases • Good understanding of cultural practices which include crop rotation, culling, cover crops, intercropping, double cropping, composting etc. • Understanding of international standards to ensure best quality and higher production	• Lack of knowledge of modern seeds and techniques • Lack of understanding of cultural practices • Lack of understanding of international standards • Lack pricing & negotiation skills
Marketing agents	Marketing of crops	• Capability to establish market linkages • Understanding of market demand • Understanding of pricing methodology • Capability to strike good bargains with the potential buyers both in domestic and international markets • Ability to ensure timely transportation to prevent it from getting perished and wasted • Soft skills to deal with clients • Grading and packaging skills	• Inability to establish market linkages. • Lack of grading and packaging skills • Lack of soft skills

Sources: IMaCS Survey and Analysis

6.4 Tea

Arunachal Pradesh's tea industry is at a nascent stage. Most of the tea produced in the State is sent to tea auction centres in Guwahati. The State's locals are not well trained in tea plantation, thus for tea plantation, the State is heavily dependent on the tea tribes of Assam. Between 2000 and 2007, the area under tea plantation increased at a CAGR of 2.4 per cent, while tea production increased at 28.8 per cent.

FIGURE 27: AREA AND PRODUCTION OF TEA IN ARUNACHAL PRADESH
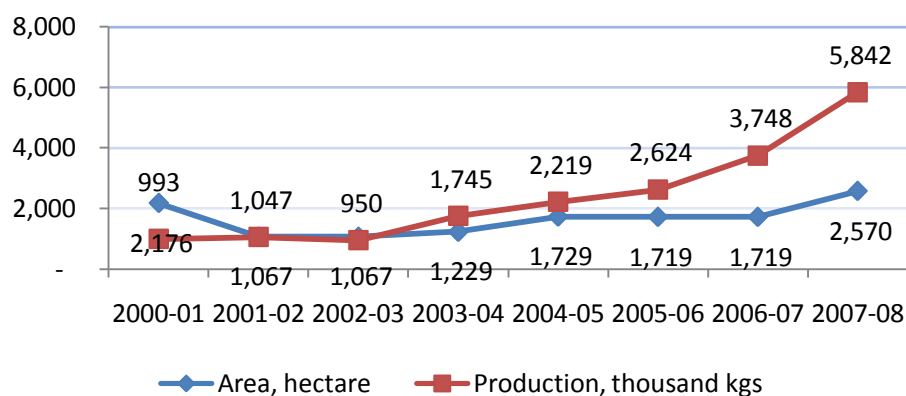
Source: Tea Board of India

FIGURE 28: AVERAGE DAILY NO. OF LABOUR EMPLOYED IN TEA PLANTATIONS
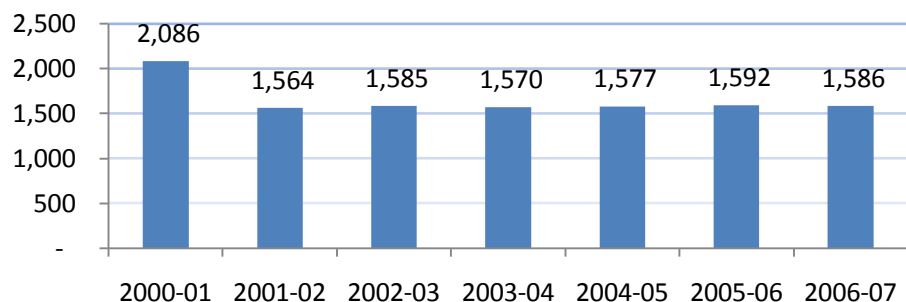
Sources: Tea Board of India

6.4(a) Skill mapping and gap analysis: Tea

Entity	Role	Expected competencies	Skill gaps
Tea growers	Plantation, plucking and leaf handling	• Understanding of the process of taking cuttings from the mother bush, growing them in plastic bags for about 18 months, treating them properly, before the leaves go for plantation • Understanding of planting in blocks and slicing of plants to bush size • Knowledge of different systems of plucking like *Janam* plucking, fish-leaf plucking and single leaf or step up plucking	• Lack these skills completely • Dependent on tea tribes of Assam for these jobs
Tea manufacturing units	Tea manufacturing	• Understanding of the withering process, including chemical and physical wither • Understanding of rolling, where rollers are used to rupture the cell walls of the withered leaves • Understanding of fermentation • Understanding of drying and sorting of tea leaves • Ability to do quality check by tea tasting • Ability to do attractive packaging • Ability to do marketing and selling • Ability to do fitting and maintenance works	• Lack of ability to do quality check through tea tasting • Lack of modern packaging skills • Shortage of tea machinery fitters and maintenance staff

Source: IMaCS Survey and Analysis

6.5 Bamboo based industry

Arunachal Pradesh accounts for 12 per cent of India's growing stock of bamboo. About 6 bamboo species are found in Arunachal Pradesh. Namsai area in Lohit district has been declared as Bamboo Industrial Cluster to support the growth of bamboo based industries in the district. Bamboo forests is spread over 4,590 sq. km., about 5.5 per cent of State's geographical area. Arunachal has third highest area under bamboo in North East after Mizoram and Assam. Arunachal Pradesh Bamboo Development Agency is the entity engaged in promotion of bamboo in State. Diverse application of bamboo include: house construction, bamboo bridges in rural areas, handicrafts, baskets, household, agricultural equipment, Bamboo boards, pre-fabricated houses and bamboo mat boards.

6.5(a) Skill mapping and gap analysis: Bamboo based industry

Entity	Role	Expected competencies	Skill gaps
Bamboo based industry	Creating Bamboo boards and roofing structures	• Raw bamboo is cut by a machine in required sections. • A machine removes outer knot of bamboo. • The bamboo after removing the outer knot is split by a machine. • The split bamboo is cooked in boiling vat for 4 hours to soften the same. • The inner knot after cooking is removed in a machine. • The bamboo splints are flattened in a press. • Planning by Planner machine to effect uniform thickness in bamboo splints. • The bamboo splint is dried in a hot press. • Dried bamboo splint is dipped in a resin tank. • The glued bamboo splint is assembled in layers depending on required thickness of board. • The assembled bamboo boards are pressed in a press. • After pressing bamboo boards are side cut.	• Lack of knowledge of modern tools and techniques • Lack of mat-making artisans • Lack of marketing skills

6.6 Other potential sectors

Minerals

Arunachal Pradesh is one of the least explored States and most of the mineral resources are still hidden underground. It is estimated to have mineral reserves such as coal, dolomite, limestone, graphite, marble, lead and zinc. Presently, mineral based industry is present in the Lohit district. It is based on the Tidding limestone deposits. However, most of the raw material (limestone) is brought from Meghalaya in clinker form.

Handloom and Handicraft

Arunachal Pradesh has 27 craft centres, 61 weaving units and 385 spinning charkhas. The State is known for its tribal diversity. Each tribe has unique techniques and artefacts. The Monpa tribe is known for carpet weaving and pained wooden vessels. The Apatanis, Nyshis and Adis are known for cane and bamboo articles. Wanchos and Nocte tribe are known for wooden carved figures and intricate necklaces of colourful beads. Other handicraft items include pottery, painting, smithy work, basket weaving etc. The work is undertaken on a small scale and some of the finished products are sold through emporiums in Itanagar, Ziro, Delhi and Kolkata.

Construction

There are a diverse range of on-going and up-coming construction projects in the State. Most of these include the upcoming hydro power plants, where most of the work is yet to begin. The State also has multiples projects in road, water supply, power, and bridges over rivers and even stone crushing.

Information Technology (IT / ITES)

Currently, the State's IT sector is under developed. This is primarily due to the lack of IT infrastructure. Implementation of SWAN (State Wide Area Network) is underway in the state. Even the Government Departments in the State are not technology ready. There is also lack of IT awareness and lack of skilled manpower. However, the State Government is planning to develop IT incubation centres, for providing some space to the IT players.

6.6(a) Skill mapping and gap analysis: Other potential sectors

Sector	Role	Expected competencies	Skill gaps
Handloom and handicraft	Weaving and creating handicraft products	• Knowledge of pre-loom processing, spinning, weaving and post loom processing • Ability to create new designs, create product differentiation, manufacture quality products and reduce lead-time • Anility to package and market products	• Inability to create fine designs. • Lack of Innovativeness • Lack of packaging and marketing skills
Construction	Construction worker	• Masonry and civil works • Carpentry • Machine operation • Electric works • Welding • Knowledge of road erosion, sediment control, drainage, jointing, sloping, materials and optimum mixes, excavation, rock management, grading, compacting, road maintenance, pavements, joint sealing, barriers and safety, etc.	• Locals are not inclined to do labour jobs. • Lack most of the basic skills • Skilled workforce imported from outside the State

Source: IMaCS Survey and Analysis

PART – II (e): Forecasting of Human Resource Requirement

7.1 Human resource forecasting model

IMaCS has developed a model for estimating human resources requirement for the state based on growth of potential industries at district level. The model is depicted diagrammatically as follows:

FIGURE 29: HUMAN RESOURCES FORECASTING MODEL
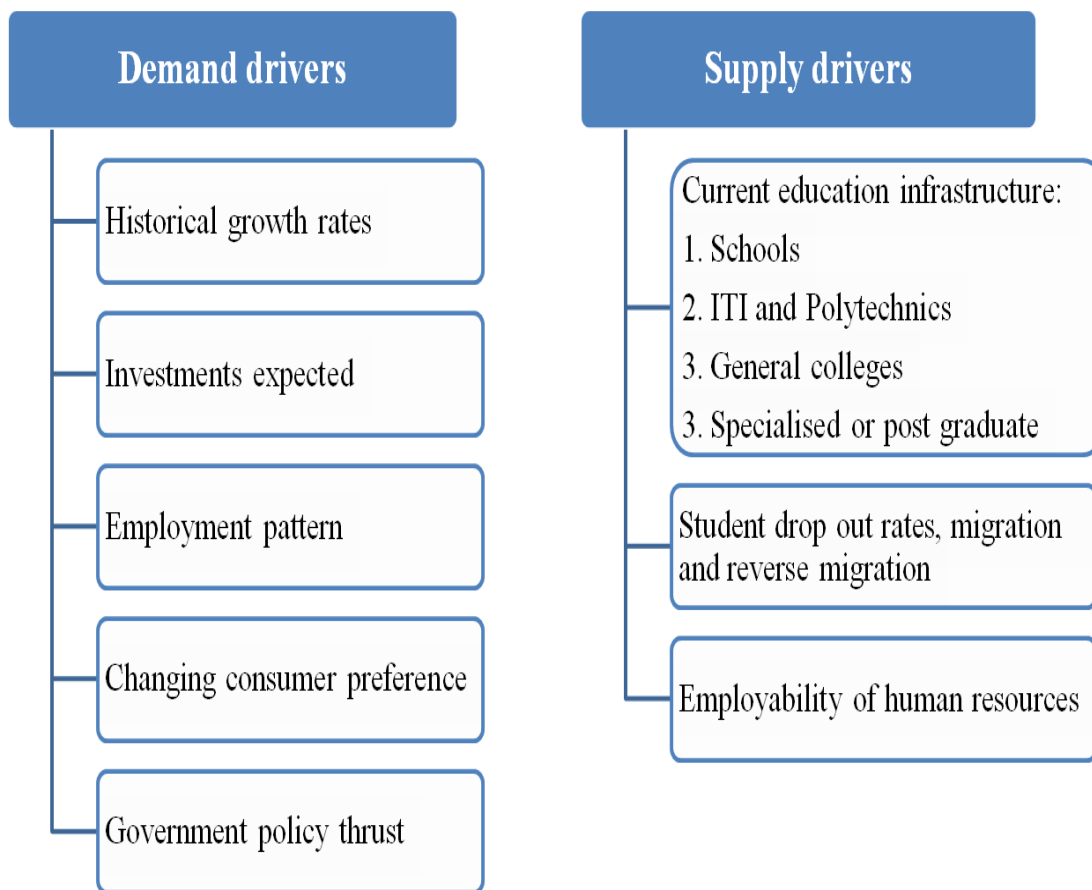
Source: IMaCS Analysis

7.2 Incremental demand in Arunachal Pradesh

Based on the above forecasting model, incremental human resource requirement in Arunachal Pradesh is estimated to be around 1.47 lakh persons between 2011 and 2021. Another 10 per cent demand may come from persons employed at the age of 50-0 years who would retire during this phase. Major demand drivers industries for human resources will be horticulture, construction and hydro power.

FIGURE 30: HUMAN RESOURCE REQUIREMENT IN ARUNACHAL PRADESH

Human Resource Requirement in Arunachal Pradesh, Nos.

Incremental demand, 2011-21, Nos.

Sector	2021	2011	Incremental demand
Horticulture	241,327	156,680	84,647
Construction	73,116	43,532	29,584
Hydro power	8,016	353	7,633
Handicrafts	22,434	16,693	5,741
Hospitality	7,121	1,760	5,361
Education	22,837	18,133	4,704
Motor Repair	8,039	3,724	4,315
Handloom	35,755	33,479	2,276
Healthcare	2,178	1,122	1,056
Medicinal plants	2,596	1,688	908
Food processing	1,022	562	460
Cement	372	42	330
			1.47 lakh

Source: IMaCS Analysis

Total incremental supply of human resources in Arunachal Pradesh during 2011-21 is estimated to be 7.5 lakh. Domestic demand is estimated to be 1.47 lakh which indicates that domestic growth in the state will not be able to absorb the supply of human resources. This translates into excess supply of 6.03 lakh in the state. This excess supply of human resources has to be skilled for migration so that they can look for job opportunities outside the state.

According to the IMaCS Skill Pyramid, the various skill levels in and the corresponding skill profiles are defined as follows:

- ➢ **Specialised skills** – Highly qualified and specialized personnel
- ➢ **Skill Category Level 2** – Engineers, Arts and Science and other professionals with some experience
- ➢ **Skill Category Level 1** – Vocationally trained
- ➢ **Basic Skills** – Minimal qualification or 5th-8th class pass

The total demand at the basic skills level is 1.15 lakh which constitutes bulk of the demand in the next 10 years. As compared to it, the total supply at this level is estimated to be 5.36 lakh translating into an excess supply of 4.21 lakh resources. At skill category level 1, the total demand is estimated to be 20,092 as compared to total supply of about 19,553 resources indicating shortfall of about 539 resources which warrants capacity creation activities in the state to bridge this gap. Similarly, at skill category level 2 there is excess supply of 1.65 lakh resources which needs to be skilled for migration. At the top of the pyramid, for the specialised skill level, the excess supply I estimated to 17,521. Human resources at this level include master weavers, food technologist, PhDs, Designers, etc.

FIGURE 31: HUMAN RESOURCES SUPPLY-DEMAND SCENARIO IN ARUNACHAL PRADESH, 2011-2021

Demand for Human Resources, 2011-21	Supply of Human Resources, 2011-21	Excess Supply of Human Resources, 2011-21
1,470	Specialised skills	18,991	17,521
10,362	Skill Category Level 2	1.76L	1.65L
20,092	Skill Category Level 1	19,553	(539)
1.15L	Basic Skills	5.36L	4.21L
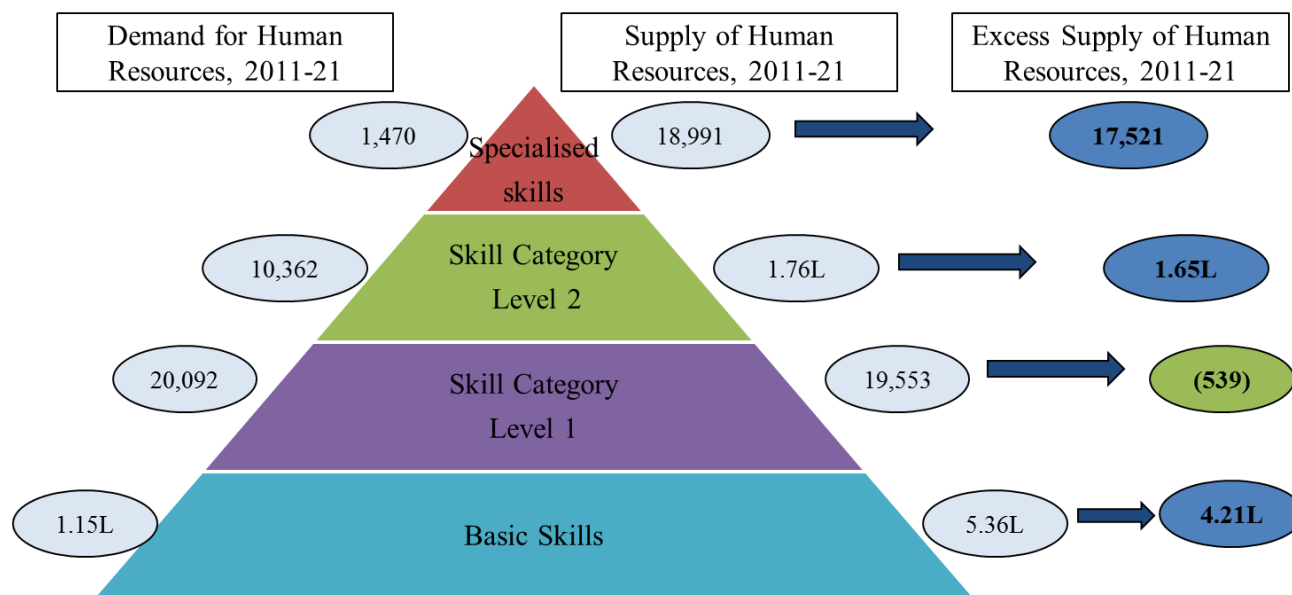
Source: IMaCS Analysis

7.3 District-wise human resource requirement in Arunachal Pradesh – 2011-21

Changlang and Tirap will be the source of major demand in terms of human resource requirement in the next 10 years. Most of the demand will be emanating from the horticulture sector followed by construction.

FIGURE 32: DISTRICT WISE INCREMENTAL HUMAN RESOURCES REQUIREMENT IN ARUNACHAL PRADESH

Districts / sectors	Human Resource Requirement between 2011 and 2021												
	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants	Total
Anjaw	-	-	-	-	-	9	67	-	2,594	66	-	-	2,736
Changlang	163	412	12,798	-	143	66	288	-	1,582	462	-	16	15,931
Dibang Valley	24	61	4,411	-	143	4	33	-	122	25	-	-	4,823
East Kameng	206	519	5,385	8	95	35	223	-	2,406	245	187	-	9,309
East Siang	139	351	5,476	129	477	152	409	85	736	309	3,750	664	12,678
Kurung Kumey	73	183	-	1	-	40	200	-	2,134	280	-	-	2,911
Lohit	73	183	10,941	84	191	65	328	245	1,627	454	450	16	14,658
Lower Dibang Valley	182	458	-	14	-	24	577	-	281	169	-	-	1,704
Lower Subansiri	79	198	9,553	84	334	37	351	-	805	259	2,363	-	14,062
Papum Pare	54	137	3,389	11	1,654	303	655	-	528	551	(48)	-	7,235
Tawang	97	244	2,874	-	700	22	168	-	5,562	156	225	-	10,047
Tirap	363	916	10,587	-	95	50	323	-	2,367	350	-	16	15,068
Upper Siang	97	244	3,237	5	95	16	155	-	943	110	-	78	4,981
Upper Subansiri	291	733	4,414	-	143	37	237	-	1,957	260	-	-	8,071
West Kameng	67	168	3,847	40	859	39	231	-	2,397	272	99	-	8,017
West Siang	369	931	7,734	83	430	158	459	-	3,544	350	638	117	14,814
Arunachal Pradesh	**2,276**	**5,741**	**84,647**	**460**	**5,361**	**1,056**	**4,704**	**330**	**29,584**	**4,315**	**7,663**	**908**	**147,046**

Source: IMaCS Analysis

7.4 Stakeholder feedback

IMaCS has interacted with different stakeholders in the State, to gauge their views on skill requirements in Arunachal Pradesh. The Stakeholder feedback is given in the table below.

TABLE 52: STAKEHOLDER FEEDBACK

Stakeholder	Key findings
Industry specific feedback	
Handloom and Handicrafts	• Younger generation not interested in working in traditional sectors. • Training provided locally using primitive tools. • Lack of knowledge of new technology, market developments, designs and customer preferences
Horticulture and fruit processing	• Floriculture, especially orchids has huge potential. • Minimal usage of fertilizers. Usage of compost for better plant growth. • Lack of post-harvest management facilities. • Abundance of raw-material (fruits, ginger etc.) but no technical know-how of converting them into value-added products.
Hotels	• Poor customer experience. • Non-availability of desired manpower locally. Difficult to attract skilled manpower like chef even in the state capital, Itanagar.
IT / ITES	• Lack of human resources with computer efficiency for IT / ITES • Lack of IT infrastructure
Forestry / Bamboo based industry	• Training provided by small entrepreneurs to the village artisans. • Skilling required for value addition to the products.
Construction	• Construction activity undergoing in areas like hydro power, roads, bridges, building construction • Locals not interested in working in construction jobs as they consider it inferior. • Larger projects execution by construction companies located outside of state.
Tea	• Attempts made to train local people in plantation; plucking and leaf handling in tea-gardens have not been successful. • Lack of marketing & branding skills. • Shortage of manpower for maintenance.
Medicinal Plants	• Huge potential for medicinal plants. However due to lack of knowledge and difficult terrain, it is currently exploited by traders from outside of state.
Others	• There is shortage of good quality personnel in area like healthcare, education and motor mechanics.
Industry feedback (overall)	• Need to create infrastructure (like roads, electricity). • Locals are not inclined to work in blue collared jobs. • Not enough skilled people available locally therefore skilled manpower has to be imported from outside the state.

Stakeholder	Key findings
	• Majority of the workforce passing out of educational/vocational institutes not employable. • Absenteeism in the workforce
Government feedback	• Focus on factor endowments and resident skills. • Strengthening of existing infrastructure facilities. • Focus on realising the hydro-power potential of the state.
Educational Institutions feedback	• Absence of linkages between educational institutes, employment exchanges and industry. • Focus on providing good quality training. • Need for better infrastructure
Students / Unemployed youths feedback	• Open to explore opportunities outside the State, as locally opportunities are scarce. • After getting exposure outside, willingness to come back if opportunities are presented. • Preference for Government jobs. • Lack of industrial exposure.

Source: IMaCS Analysis

PART – III: Recommendations

8.1 Interventions for human resource Demand-Supply gap management

The total domestic supply of human resources for the next 10 years in Arunachal Pradesh is estimated to be 7.5 lakh as against the total demand of 1.47 lakh which translates into an excess supply of 6.03 lakh resources. These excess human resources need to be skilled so that they can benefit from the job opportunities arising outside the state.

FIGURE 33: DEMAND-SUPPLY SCENARIO FOR HUMAN RESOURCES IN ARUNACHAL PRADESH

(2011 TO 2021)
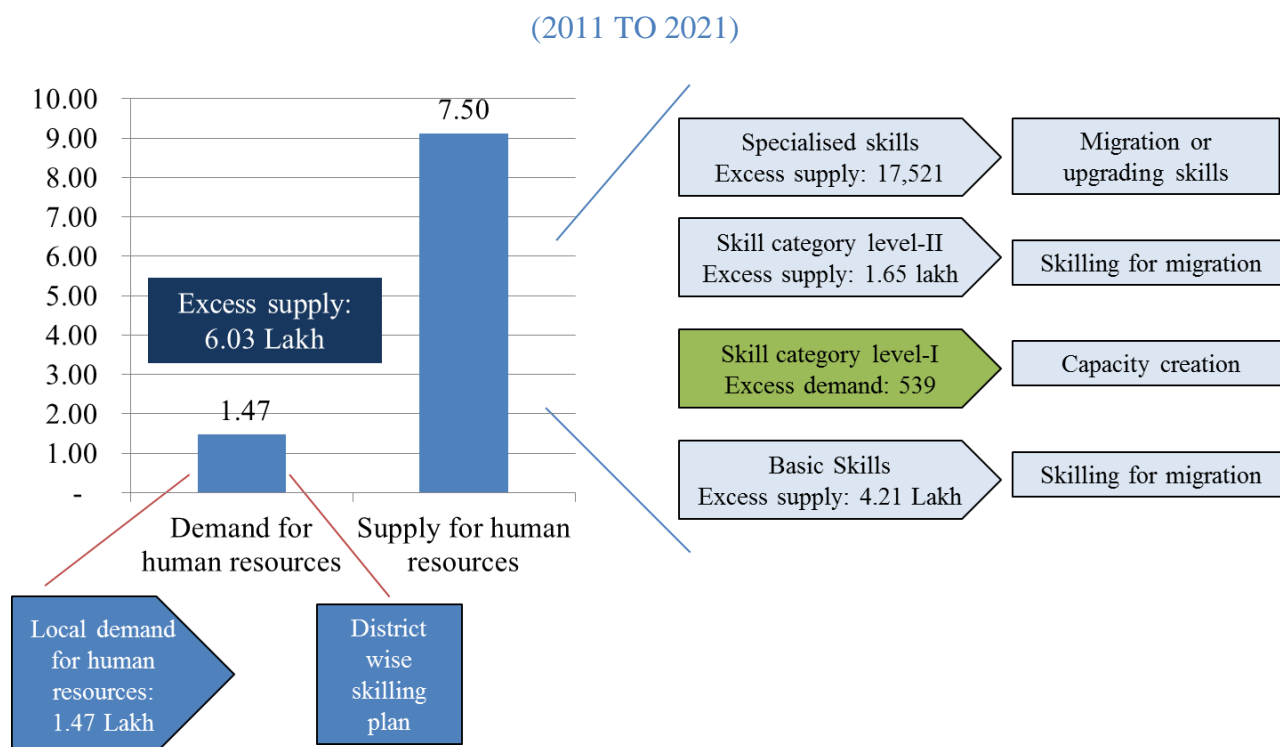
Source: IMaCS Analysis

The demand at the skill category level 1 outstrips the supply which indicates a need for capacity creation at that level of skill pyramid. This implies that vocational training infrastructure in the state needs to be ramped up and additional capacity should be created for training the resources to meet the industry demand. For the other levels of skill pyramid i.e. Skills category level II, basic skills and specialised skills, the total supply exceeds the total domestic demand which indicates a need to imparting skills to people enabling them to migrate and hunt for better job opportunities outside the state.

8.2 Areas for skilling within state – 2011-21

This section covers the sectors which will generate domestic demand and skilling of people at various levels to cater to the industry demand. Most of the industry demand is concentrated at the bottom of the pyramid, i.e., manpower with basic skills.
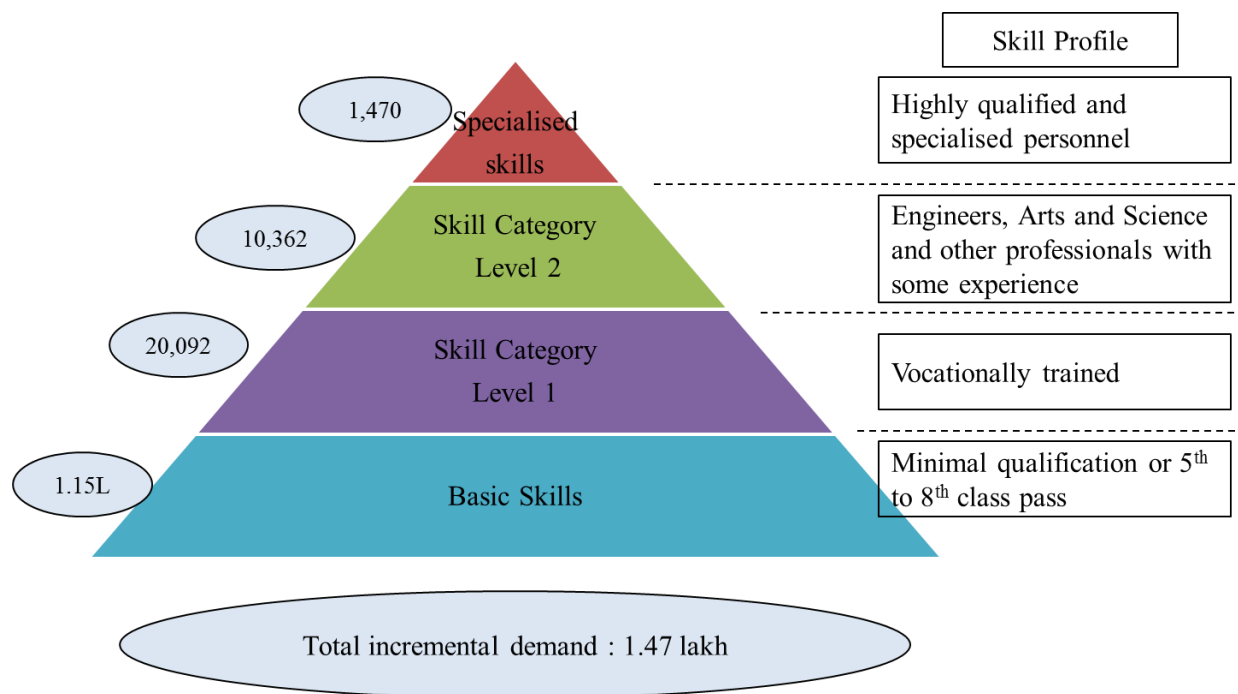
Specialised skills include: master weavers, food technologist, PhDs, Designers, etc.

Source: IMaCS Analysis

TABLE 53: AREAS FOR SKILLING WITHIN STATE BETWEEN 2011 AND 2021

Human resource pool required for demand sectors identified within Arunachal Pradesh	1.47 lakh

Sector	Basic Skills: 1.15L	Skill Category Level-II: 20,092	Skill Category Level-I: 10,362	Specialised Skill: 1,470
Handloom	Basic weaving working with looms	Weaving with some experience deciding patterns, colours and designs	Entrepreneurship , managing working capital, overseeing the weaving process, and establishing market linkages	Master weaver, Designing
Handicraft	Basket making, furniture making, making different crafts using bamboo, cane and wood	Craftsman with some experience in intricate and complex designs	Entrepreneurship, managing working capital, overseeing the crafting process, and establishing market linkages	Master craftsperson
Horticulture	Fruit, flower and spices growing	Farm extension services providing, Packaging	Co-operative management	Managing marketing
Fruit Processing	Drying and processing of food and fruits into jams, jelly, juice, pickles etc.	Distributing, Packaging	SHG operations management	Food technologist, Management
Hospitality	Housekeeping, cleaning rooms and furnishings	Chefs, Attendants, Computer Operators	Hotel Management, Entrepreneurship	Tourism package development planning
IT / ITES	-	Data entry in hotels, hospitals and offices (govt. and private), Call centre: customer service and helpline	IT Entrepreneurship, hardware maintenance	IT system specialisation
Healthcare	Housekeeping staff in hospitals and clinics	Paramedics	Nursing, Doctors	Specialisation
Education	-	-	Teaching, Principals	Research, Trainer

Sector	Basic Skills: 1.15L	Skill Category Level-II: 20,092	Skill Category Level-I: 10,362	Specialised Skill: 1,470
Motor Repair	Attending basic issues	Attending complex repair issues	Entrepreneurship , running the repair shop	
Tea	Plantation, plucking and leaf handling	Welding, Fitting, Operating Machines, data entry	Tea-garden ownership/management	Tea Tasting
Hydro Power	Blasting, drilling, operating machines	Turbine operations, Transmission and Grid operations, Industrial wiring	Quality control, Contracting	Civil structure design, Geological surveying
Construction	Basic construction activities	Masonry, Welding, Machine operating, Electric Works	Agent, Contracting	Project Management
Forest based / Bamboo	Growing, cutting, collecting	Craftsman, bamboo mat and roof making, packaging	Entrepreneurs, Agent	Master Craftsman

Source: IMaCS Analysis

In addition to the areas identified above, there will also be continued demand in livelihood activities such as agriculture, fishery and animal husbandry. Apiculture represents significant opportunity as livelihood activity in Arunachal Pradesh.

TABLE 54: LIVELIHOOD ACTIVITIES IN ARUNACHAL PRADESH WHICH NEED SKILL UP-GRADATION

Activity	Description	Skill level	Employment
Agriculture (Cultivation)	Arunachal Pradesh economy is primarily agrarian. '*Jhum*' cultivation and terrace farming are the major cultivation patterns. Rice and maize are the top most crops that are grow in the State.	Traditional farming methods are used.	279,300
Fishery	Fishery is a subsidiary occupation of many farmers. Domestic fish production is far below the demand. However, the State has potential for both cold and warm water fisheries.	Outdated fish farming techniques used. Modern techniques slowly becoming popular.	8,100

Activity	Description	Skill level	Employment
Animal Husbandry	Amongst livestock, majority of the production in Arunachal Pradesh comes from cattle, followed by pigs and goats.	Household activity with primitive rearing, feeding and processing skills.	830
Apiculture	Small scale activity. Government has started placing thrust on bee-keeping and honey making.	Traditional skills.	250

Source: IMaCS Analysis

8.3 Skilling for migration

Domestic demand in the State will be inadequate to generate sufficient employment opportunities for the people passing out of educational and vocational training infrastructure. This excess supply is estimated to be about 60,364 people per year for the next 10 years. In the absence of local opportunities, this excess supply needs to be trained across various trades keeping mind the kind of demand arising for outside the State, in other states or overseas. Sectors for migration have been identified based on natural aptitude, youth aspiration, market potential, availability of trained manpower, availability and quality of training centre and time taken to train.

TABLE 55: AREAS FOR SKILLING FOR MIGRATION TO OTHER STATES OR OVERSEAS

Excess human resource pool available for employment outside state | 60,364 per year

Sectors	Areas for skilling
Beauty culture	Attendants in beauty salons, hair cutting and styling, dress styling, spa services, salon / spa management, hair and skin specialisation
Hospitality and wellness	Housekeeping - cleaning rooms and furnishings, Chefs, Attendants, Hotel Management, Entrepreneurship, Tourism package development planning
IT / ITES	Data entry in hotels, hospitals and offices (govt. and private), Call centre: customer service and helpline, IT Entrepreneurship, hardware maintenance, IT system specialisation

Sectors	Areas for skilling
Retail services	Sales activities, customer relationship management, front desk management, Entrepreneurship
Fashion Designing	Fashion designing, fashion critic, column writing on fashion, models
Flight attendants	Air hostesses , stewardship
Healthcare	Housekeeping in hospitals and clinics, Paramedics, Nursing and Doctors
Trainers	Dance, Music and sports trainers

Source: IMaCS Analysis

8.4 Capacity creation within State

The human resource needs to be skilled across the sectors which present employment opportunities and the capacity needs to be created to achieve the same.

FIGURE 34: INTERVENTION FOR CAPACITY CREATION WITHIN THE STATE

Capacity needs to be created for skilling the Skill category level-1 and migrant workforce

Capacity creation required for vocational training in the following:
Beauty and Wellness, Hospitality, IT/ITES, Retail services , Fashion Designing , Flight attendants, Healthcare and Trainers.
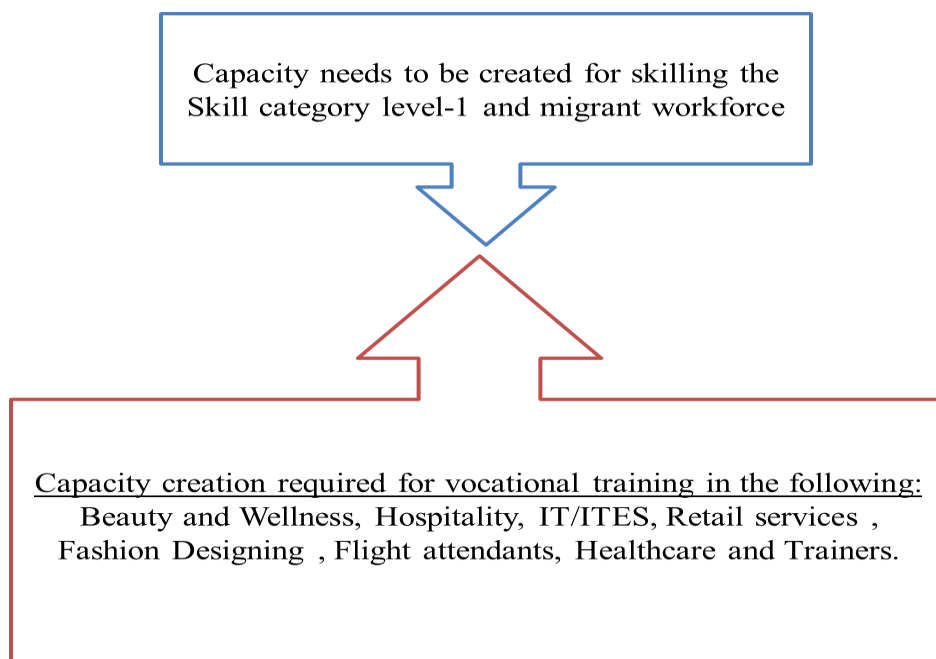
Source: IMaCS Analysis

8.5 Private sector skilling opportunities at district level

8.5.1 Anjaw

TABLE 56: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – ANJAW

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	-	-	-	-	-	4	0	-	2118	48	-	-
Skill Category Level 2	-	-	-	-	-	3	0	-	372	14	-	-
Skill Category Level 1	-	-	-	-	-	2	66	-	77	3	-	-
Specialised skills	-	-	-	-	-	0	1	-	26	1	-	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	-	-	-	-	-	2	0	-	923	19	-	-
Skill Category Level 2	-	-	-	-	-	2	0	-	162	6	-	-
Skill Category Level 1	-	-	-	-	-	1	33	-	34	1	-	-
Specialised skills	-	-	-	-	-	0	0	-	11	0	-	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	-	-	-	-	-	2	0	-	1196	28	-	-
Skill Category Level 2	-	-	-	-	-	2	0	-	210	8	-	-
Skill Category Level 1	-	-	-	-	-	1	33	-	44	2	-	-
Specialised skills	-	-	-	-	-	0	0	-	15	0	-	-

Source: IMaCS Analysis

8.5.2 Changlang

TABLE 57: SKILLING INTERVENTIONS IN CHANGLANG

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs to provide impetus to the traditional cane and bamboo products. • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products. • Branding of beads ornaments, grass necklace and other products.
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages, Agri-entrepreneurial skills. • Post- Harvest Management. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Medicinal Plants	• Awareness creation enabling locals to identify and understand value of medicinal and aromatic plants. • Cultivation techniques for different types of medicinal and aromatic plants. • Knowledge of uses of different types of medicinal and aromatic plants. • Developing market linkages with pharmaceutical companies. • Negotiation skills
Food Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units • Negotiation and marketing skills. Development of brand Arunachal.

Source: IMaCS Analysis

TABLE 58: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – CHANGLANG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	140	354	10350	-	118	29	0	-	1292	336	-	13
Skill Category Level 2	17	43	1756	-	20	24	0	-	227	99	-	2
Skill Category Level 1	5	12	564	-	4	12	285	-	47	23	-	1
Specialised skills	2	4	128	-	1	1	3	-	16	5	-	0

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	69	164	4618	-	39	15	0	-	563	136	-	6
Skill Category Level 2	8	20	783	-	7	12	0	-	99	40	-	1
Skill Category Level 1	2	6	252	-	1	6	143	-	20	9	-	0
Specialised skills	1	2	57	-	0	0	1	-	7	2	-	0

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	71	190	5732	-	79	15	0	-	730	200	-	7
Skill Category Level 2	9	23	972	-	14	12	0	-	128	59	-	1
Skill Category Level 1	2	6	312	-	3	6	143	-	27	14	-	0
Specialised skills	1	2	71	-	1	0	1	-	9	3	-	0

Source: IMaCS Analysis

8.5.3 Dibang Valley

TABLE 59: SKILLING INTERVENTIONS IN DIBANG VALLEY

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages. Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.

Sectors	Areas for skilling
Hotels	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences

Source: IMaCS Analysis

TABLE 60: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – DIBANG VALLEY

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	21	52	3568	-	118	2	0	-	100	18	-	-
Skill Category Level 2	2	6	605	-	20	1	0	-	18	5	-	-
Skill Category Level 1	1	2	194	-	4	1	32	-	4	1	-	-
Specialised skills	0	1	44	-	1	0	0	-	1	0	-	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	10	24	1592	-	39	1	0	-	43	7	-	-
Skill Category Level 2	1	3	270	-	7	1	0	-	8	2	-	-
Skill Category Level 1	0	1	87	-	1	0	16	-	2	0	-	-
Specialised skills	0	0	20	-	0	0	0	-	1	0	-	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	11	28	1976	-	79	1	0	-	56	11	-	-
Skill Category Level 2	1	3	335	-	14	1	0	-	10	3	-	-
Skill Category Level 1	0	1	108	-	3	0	16	-	2	1	-	-
Specialised skills	0	0	24	-	1	0	0	-	1	0	-	-

Source: IMaCS Analysis

8.5.4 East Kameng

TABLE 61: SKILLING INTERVENTIONS IN EAST KAMENG

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Hydro Power	• Geological studies • Blasters, drillers, dumpers, loaders • Knowledge of designing civil structures • Industrial wiring • Quality control • Turbine operations • Transmission and grid operations

Source: IMaCS Analysis

TABLE 62: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – EAST KAMENG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	177	445	4355	6	78	16	0	-	1965	178	153	-
Skill Category Level 2	21	54	739	1	13	13	0	-	345	52	27	-
Skill Category Level 1	6	15	237	0	3	6	220	-	72	12	6	-
Specialised skills	2	5	54	0	1	0	2	-	24	2	2	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	87	206	1943	3	26	8	0	-	856	72	77	-
Skill Category Level 2	10	25	330	0	4	6	0	-	150	21	13	-
Skill Category Level 1	3	7	106	0	1	3	110	-	31	5	3	-
Specialised skills	1	2	24	0	0	0	1	-	10	1	1	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	90	239	2412	3	52	8	0	-	1109	106	77	-
Skill Category Level 2	11	29	409	0	9	6	0	-	195	31	13	-
Skill Category Level 1	3	8	131	0	2	3	110	-	40	7	3	-
Specialised skills	1	3	30	0	1	0	1	-	14	1	1	-

Source: IMaCS Analysis

8.5.5 East Siang

TABLE 63: SKILLING INTERVENTIONS IN EAST SIANG

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with organic produce.

Sectors	Areas for skilling
Food Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging. • Ginger and turmeric processing. • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.
Hotels	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Medicinal Plants	• Awareness creation enabling locals to identify and understand value of medicinal and aromatic plants. • Cultivation techniques for different types of medicinal and aromatic plants. • Knowledge of uses of different types of medicinal and aromatic plants. • Developing market linkages with pharmaceutical companies. • Negotiation skills
Hydro Power	• Geological studies. • Blasters, drillers, dumpers, loaders. • Knowledge of designing civil structures. • Industrial wiring

Sectors	Areas for skilling
	• Quality control • Turbine operations, Transmission and grid operations

Source: IMaCS Analysis

TABLE 64: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – EAST SIANG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	119	301	4428	111	392	68	0	57	601	225	3063	537
Skill Category Level 2	14	36	751	13	67	55	0	20	106	66	538	91
Skill Category Level 1	4	10	241	4	13	28	404	8	22	15	111	29
Specialised skills	1	4	55	1	5	2	4	1	7	3	38	7

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	59	140	1976	55	130	34	0	28	262	91	1531	240
Skill Category Level 2	7	17	335	7	22	27	0	10	46	27	269	41
Skill Category Level 1	2	5	108	2	4	14	202	4	10	6	56	13
Specialised skills	1	2	24	1	2	1	2	0	3	1	19	3

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	61	162	2452	55	262	34	0	28	339	134	1531	297
Skill Category Level 2	7	19	416	7	45	27	0	10	60	39	269	50
Skill Category Level 1	2	5	134	2	9	14	202	4	12	9	56	16
Specialised skills	1	2	30	1	3	1	2	0	4	2	19	4

Source: IMaCS Analysis

8.5.6Kurung Kumey

TABLE 65: SKILLING INTERVENTIONS IN KURUNG KUMEY

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Handloom	• Basic skills like Pre loom processing, spinning, weaving, dyeing and post loom processing. • Knowledge of new technology. • Developing market linkage. • Specialised skills like designing for contemporary designs either taught or with support from agencies such as NIFT. • Tracking of market developments, and customer preferences. • Branding of products.

Source: IMaCS Analysis

TABLE 66: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – KURUNG KUMEY

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	62	157	-	1	-	18	0	-	1743	204	-	-
Skill Category Level 2	7	19	-	0	-	14	0	-	306	60	-	-
Skill Category Level 1	2	5	-	0	-	7	198	-	63	14	-	-
Specialised skills	1	2	-	0	-	0	2	-	21	3	-	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	31	73	-	-	-	9	0	-	759	82	-	-
Skill Category Level 2	4	9	-	-	-	7	0	-	133	24	-	-
Skill Category Level 1	1	2	-	-	-	3	99	-	28	6	-	-
Specialised skills		1	-	-	-	0	1	-	9	1	-	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	31	84	-	1	-	9	0	-	984	121	-	-
Skill Category Level 2	3	10	-	-	-	7	0	-	173	36	-	-
Skill Category Level 1	1	3	-	-	-	4	99	-	36	8	-	-
Specialised skills	1	1	-	-	-	0	1	-	12	2	-	-

Source: IMaCS Analysis

8.5.7 Lohit

TABLE 67: SKILLING INTERVENTIONS IN LOHIT

Sectors	Areas for skilling
Horticulture	- Awareness of latest farming techniques - Drying, Grading, Sorting and Packaging. - Developing market linkages - Post- Harvest Management. - Agri-entrepreneurial skills. - Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.

Sectors	Areas for skilling
Food Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging. • Ginger and turmeric processing. • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. • Development of brand Arunachal and its association with *organic* products.
Cement	• Knowledge of latest limestone mining techniques. • Mining machines operators like dumpers, loaders and excavators. • Drilling & Blasting skills. • Quality Control • Clinkerisation • Developing market linkages • Maintenance: Fitters, welders
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Hydro Power	• Geological studies. • Blasters, drillers, dumpers, loaders, Industrial wiring • Knowledge of designing civil structures. • Quality control • Turbine operations • Transmission and grid operations

Source: IMaCS Analysis

TABLE 68: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – LOHIT

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	62	157	8849	72	157	29	0	164	1329	330	368	13
Skill Category Level 2	7	19	1501	9	27	23	0	56	234	97	65	2
Skill Category Level 1	2	5	482	2	5	12	325	22	48	22	13	1
Specialised skills	1	2	109	1	2	1	3	2	16	5	5	0

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	31	73	3948	36	52	14	0	82	579	134	184	6
Skill Category Level 2	4	9	670	4	9	12	0	28	102	39	32	1
Skill Category Level 1	1	2	215	1	2	6	163	11	21	9	7	0
Specialised skills	0	1	49	0	1	0	2	1	7	2	2	0

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	32	84	4900	36	105	14	0	82	750	197	184	7
Skill Category Level 2	4	10	831	4	18	12	0	28	132	58	32	1
Skill Category Level 1	1	3	267	1	3	6	163	11	27	13	7	0
Specialised skills	0	1	61	0	1	0	2	1	9	3	2	0

Source: IMaCS Analysis

8.5.8 Lower Dibang Valley

TABLE 69: SKILLING INTERVENTIONS IN LOWER DIBANG VALLEY

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Handloom	• Basic skills like Pre loom processing, spinning, weaving, dyeing and post loom processing.

Sectors	Areas for skilling
	• Knowledge of new technology • Developing market linkage • Specialised skills like designing for contemporary designs either taught or with support from agencies such as NIFT • Tracking of market developments, and customer preferences

Source: IMaCS Analysis

TABLE 70: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – DIBANG VALLEY (L)

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	156	393	-	12	-	11	0	-	229	123	-	-
Skill Category Level 2	19	47	-	1	-	9	0	-	40	36	-	-
Skill Category Level 1	5	13	-	0	-	4	572	-	8	8	-	-
Specialised skills	2	5	-	0	-	0	6	-	3	2	-	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	77	182	-	6	-	5	0	-	100	50	-	-
Skill Category Level 2	9	22	-	1	-	4	0	-	18	15	-	-
Skill Category Level 1	3	6	-	0	-	2	286	-	4	3	-	-
Specialised skills	1	2	-	0	-	0	3	-	1	1	-	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	79	211	-	6	-	5	0	-	129	73	-	-
Skill Category Level 2	10	25	-	1	-	4	0	-	23	21	-	-
Skill Category Level 1	3	7	-	0	-	2	286	-	5	5	-	-
Specialised skills	1	2	-	0	-	0	3	-	2	1	-	-

Source: IMaCS Analysis

8.5.9 Lower Subansiri

TABLE 71: SKILLING INTERVENTIONS IN LOWER SUBANSIRI

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Mushroom cultivation. • Drying, Grading, Sorting and Packaging. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Fruit Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.
Hotels	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences. • Promoting Ziro as a tourist destination.
Hydro Power	• Geological studies. • Blasters, drillers, dumpers, loaders. • Knowledge of designing civil structures.

Sectors	Areas for skilling
	• Industrial wiring • Quality control • Turbine operations • Transmission and grid operations

Source: IMaCS Analysis

TABLE 72: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – LOWER SUBANSIRI

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	68	170	7726	72	275	16	0	-	657	188	1930	-
Skill Category Level 2	8	20	1311	9	47	13	0	-	115	55	339	-
Skill Category Level 1	2	6	421	2	9	7	347	-	24	13	70	-
Specialised skills	1	2	96	1	3	0	4	-	8	3	24	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	33	79	3448	36	91	8	0	-	286	76	965	-
Skill Category Level 2	4	9	585	4	16	7	0	-	50	22	170	-
Skill Category Level 1	1	3	188	1	3	3	174	-	10	5	35	-
Specialised skills	0	1	43	0	1	0	2	-	4	1	12	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	34	91	4279	36	183	8	0	-	371	112	965	-
Skill Category Level 2	4	11	726	4	32	7	0	-	65	33	170	-
Skill Category Level 1	1	3	233	1	6	3	174	-	14	8	35	-
Specialised skills	0	1	53	0	2	0	2	-	5	2	12	-

Source: IMaCS Analysis

8.5.10 Papum Pare

TABLE 73: SKILLING INTERVENTIONS IN PAPUM PARE

Sectors	Areas for skilling
Hotels	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Fruit Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.

Source: IMaCS Analysis

TABLE 74: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – PAPUM PARE

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	47	118	2741	9	1359	135	0	-	431	400	-39	-
Skill Category Level 2	6	14	465	1	234	109	0	-	76	118	-7	-
Skill Category Level 1	2	4	149	0	45	56	649	-	16	27	-1	-
Specialised skills	1	1	34	0	17	3	7	-	5	6	0	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	23	55	1223	5	451	68	0	-	188	162	-20	-
Skill Category Level 2	3	7	207	1	78	55	0	-	33	48	-3	-
Skill Category Level 1	1	2	67	0	15	28	324	-	7	11	-1	-
Specialised skills	0	1	15	0	5	2	3	-	2	2	0	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	24	63	1518	5	908	68	0	-	243	238	-20	-
Skill Category Level 2	3	8	257	1	156	55	0	-	43	70	-3	-
Skill Category Level 1	1	2	83	0	30	28	324	-	9	16	-1	-
Specialised skills	0	1	19	0	11	2	3	-	3	3	0	-

Source: IMaCS Analysis

8.5.11Tawang

TABLE 75: SKILLING INTERVENTIONS IN TAWANG

Sectors	Areas for skilling
Hotels	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences. • Promotion of Tawang as a tourist destination.

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Fruit Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.
Hydro Power	• Geological studies. • Blasters, drillers, dumpers, loaders. • Knowledge of designing civil structures. • Industrial wiring • Quality control • Turbine operations • Transmission and grid operations

Source: IMaCS Analysis

TABLE 76: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – TAWANG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	83	210	2324	-	575	10	0	-	4542	113	184	-
Skill Category Level 2	10	25	394	-	99	8	0	-	798	33	32	-
Skill Category Level 1	3	7	127	-	19	4	166	-	165	8	7	-
Specialised skills	1	2	29	-	7	0	2	-	56	2	2	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	41	97	1037	-	191	5	0	-	1978	46	92	-
Skill Category Level 2	5	12	176	-	33	4	0	-	348	13	16	-
Skill Category Level 1	1	3	56	-	6	2	83	-	72	3	3	-
Specialised skills	0	1	13	-	2	0	1	-	24	1	1	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	42	113	1287	-	384	5	0	-	2564	67	92	-
Skill Category Level 2	5	14	218	-	66	4	0	-	451	20	16	-
Skill Category Level 1	1	4	70	-	13	2	83	-	93	5	3	-
Specialised skills	0	1	16	-	5	0	1	-	31	1	1	-

Source: IMaCS Analysis

8.5.12 Tirap

TABLE 77: SKILLING INTERVENTIONS IN TIRAP

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs to provide impetus to the traditional cane and bamboo products. • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products. • Branding of beads ornaments, grass necklace and other products.

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Handloom	• Basic skills like Pre loom processing, spinning, weaving, dyeing and post loom processing. • Knowledge of new technology • Developing market linkage • Specialised skills like designing for contemporary designs either taught or with support from agencies such as NIFT • Tracking of market developments, and customer preferences
Food Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging. Ginger and turmeric processing. • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.
Medicinal Plants	• Awareness creation enabling locals to identify and understand value of medicinal and aromatic plants. • Cultivation techniques for different types of medicinal and aromatic plants. • Knowledge of uses of different types of medicinal and aromatic plants. • Developing market linkages with pharmaceutical companies. • Negotiation skills

Source: IMaCS Analysis

TABLE 78: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – TIRAP

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	312	786	8563	-	78	22	0	-	1933	254	-	13
Skill Category Level 2	37	94	1453	-	13	18	0	-	340	75	-	2
Skill Category Level 1	11	27	466	-	3	9	320	-	70	17	-	1
Specialised skills	4	9	106	-	1	0	3	-	24	3	-	0

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	153	364	3821	-	26	11	0	-	842	103	-	6
Skill Category Level 2	18	44	648	-	4	9	0	-	148	30	-	1
Skill Category Level 1	5	12	208	-	1	5	160	-	31	7	-	0
Specialised skills	2	4	47	-	0	0	2	-	10	1	-	0

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	158	422	4742	-	52	11	0	-	1091	151	-	7
Skill Category Level 2	19	51	804	-	9	9	0	-	192	44	-	1
Skill Category Level 1	5	14	258	-	2	5	160	-	40	10	-	0
Specialised skills	2	5	59	-	1	0	2	-	13	2	-	0

Source: IMaCS Analysis

8.5.13 Upper Siang

TABLE 79: SKILLING INTERVENTIONS IN UPPER SIANG

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging of produce e.g. Ginger • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products. • Promotion & branding of *Tangkha* paintings and carpets.
Medicinal Plants	• Awareness creation enabling locals to identify and understand value of medicinal and aromatic plants. • Cultivation techniques for different types of medicinal and aromatic plants. • Knowledge of uses of different types of medicinal and aromatic plants. • Developing market linkages with pharmaceutical companies. • Negotiation skills.

Source: IMaCS Analysis

TABLE 80: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – UPPER SIANG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	83	210	2618	4	78	7	0	-	770	80	-	63
Skill Category Level 2	10	25	444	1	13	6	0	-	135	24	-	11
Skill Category Level 1	3	7	143	0	3	3	154	-	28	5	-	3
Specialised skills	1	2	32	0	1	0	2	-	9	1	-	1

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	41	97	1168	2	26	3	0	-	335	32	-	28
Skill Category Level 2	5	12	198	0	4	3	0	-	59	10	-	5
Skill Category Level 1	1	3	64	0	1	1	77	-	12	2	-	2
Specialised skills	0	1	14	0	0	0	1	-	4	0	-	0

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	42	113	1450	2	52	3	0	-	435	48	-	35
Skill Category Level 2	5	14	246	0	9	3	0	-	76	14	-	6
Skill Category Level 1	1	4	79	0	2	1	77	-	16	3	-	2
Specialised skills	0	1	18	0	1	0	1	-	5	1	-	0

8.5.14 Upper Subansiri

TABLE 81: SKILLING INTERVENTIONS IN UPPER SUBANSIRI

Sectors	Areas for skilling
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging of produce e.g. Ginger • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Food Processing	• Making jams, jelly, pickles, juices etc. • Drying, Grading, Sorting and Packaging of produce e.g. Ginger, Turmeric • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.

Source: IMaCS Analysis

TABLE 82: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – UPPER SUBANSIRI

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	249	629	3570	-	118	16	0	-	1598	189	-	-
Skill Category Level 2	30	76	606	-	20	13	0	-	281	55	-	-
Skill Category Level 1	8	21	194	-	4	7	235	-	58	13	-	-
Specialised skills	3	7	44	-	1	0	2	-	20	3	-	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	123	291	1593	-	39	8	0	-	696	76	-	-
Skill Category Level 2	15	35	270	-	7	7	0	-	122	22	-	-
Skill Category Level 1	4	10	87	-	1	3	117	-	25	5	-	-
Specialised skills	1	3	20	-	0	0	1	-	9	1	-	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	127	338	1977	-	79	8	0	-	902	112	-	-
Skill Category Level 2	15	41	335	-	14	7	0	-	159	33	-	-
Skill Category Level 1	4	11	108	-	3	3	117	-	33	8	-	-
Specialised skills	1	4	24	-	1	0	1	-	11	2	-	-

Source: IMaCS Analysis

8.5.15 West Kameng

TABLE 83: SKILLING INTERVENTIONS IN WEST KAMENG

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging of produce. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.

Sectors	Areas for skilling
Fruit Processing	• Making jams, jelly, pickles, juices etc. • Drying, grading, sorting and packaging • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.
Hotel	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences • Organizing adventure sports in the district.
Hydro Power	• Geological studies. • Blasters, drillers, dumpers, loaders. • Knowledge of designing civil structures. • Industrial wiring • Quality control • Turbine operations • Transmission and grid operations

Source: IMaCS Analysis

TABLE 84: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – WEST KAMENG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	57	144	3111	34	706	17	0	-	1957	197	81	-
Skill Category Level 2	7	17	528	4	121	14	0	-	344	58	14	-
Skill Category Level 1	2	5	169	1	23	7	228	-	71	13	3	-
Specialised skills	1	2	38	0	9	0	2	-	24	3	1	-

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	28	67	1388	17	234	9	0	-	853	80	40	-
Skill Category Level 2	3	8	236	2	40	7	0	-	150	23	7	-
Skill Category Level 1	1	2	76	1	8	4	114	-	31	5	1	-
Specialised skills	0	1	17	0	3	0	1	-	10	1	0	-

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	29	77	1723	17	471	9	0	-	1105	118	40	-
Skill Category Level 2	3	9	292	2	81	7	0	-	194	35	7	-
Skill Category Level 1	1	3	94	1	16	4	114	-	40	8	1	-
Specialised skills	0	1	21	0	6	0	1	-	14	2	0	-

Source: IMaCS Analysis

8.5.16 West Siang

TABLE 85: SKILLING INTERVENTIONS IN WEST SIANG

Sectors	Areas for skilling
Hotels	• Technical skills like housekeeping, front office management • Soft skills like communication skills, client relationship, time management etc. • Culinary Skills • Customer Relationship Management • Understanding of cultural differences

Sectors	Areas for skilling
Horticulture	• Awareness of latest farming techniques • Drying, Grading, Sorting and Packaging of produce e.g. Ginger, Turmeric. • Developing market linkages • Post- Harvest Management. • Agri-entrepreneurial skills. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* produce.
Handicrafts	• Design and development of new tools and designs • Developing market linkages • Introduction to new technology • Knowledge of intricate work and providing finishing to the products
Food Processing	• Making jams, jelly, pickles, juices etc. • Drying, Grading, Sorting and Packaging of produce e.g. Ginger, Turmeric • Developing market linkage • Creating facilities for juice and jam making co-operatives societies and units. • Negotiation and marketing skills. Development of brand Arunachal and its association with *organic* products.
Medicinal Plants	• Awareness creation enabling locals to identify and understand value of medicinal and aromatic plants. • Cultivation techniques for different types of medicinal and aromatic plants. • Knowledge of uses of different types of medicinal and aromatic plants. • Developing market linkages with pharmaceutical companies. • Negotiation skills
Hydro Power	• Geological studies. • Blasters, drillers, dumpers, loaders. • Knowledge of designing civil structures. • Industrial wiring

Sectors	Areas for skilling
	• Quality control • Turbine operations • Transmission and grid operations

Source: IMaCS Analysis

TABLE 86: DISTRICT WISE, SKILL-LEVEL WISE HUMAN RESOURCE REQUIREMENT – WEST SIANG

Incremental 2011-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	317	799	6255	71	353	71	0	-	2894	255	521	95
Skill Category Level 2	38	96	1061	9	61	57	0	-	509	75	91	16
Skill Category Level 1	11	27	341	2	12	29	454	-	105	17	19	5
Specialised skills	4	9	77	1	4	2	5	-	35	4	6	1

Incremental Phase-I: 2011-2016

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	156	370	2791	36	117	35	0	-	1261	103	260	42
Skill Category Level 2	19	44	473	4	20	28	0	-	222	30	46	7
Skill Category Level 1	5	13	152	1	4	15	227	-	46	7	9	2
Specialised skills	2	4	35	0	1	1	2	-	15	1	3	1

Incremental Phase-II: 2017-2021

Sectors	Handloom	Handicrafts	Horticulture	Food processing	Hospitality	Healthcare	Education	Cement	Construction	Motor Repair	Hydro power	Medicinal plants
Minimal education	161	429	3464	36	236	35	0	-	1634	152	260	52
Skill Category Level 2	19	52	588	4	41	28	0	-	287	45	46	9
Skill Category Level 1	5	15	189	1	8	15	227	-	59	10	9	3
Specialised skills	2	5	43	0	3	1	2	-	20	2	3	1

Source: IMaCS Analysis

8.5.17 Arunachal Pradesh- Skilling interventions in sectors across all districts

Sectors	Areas for skilling
Construction	• Plumbers, Fitters, Turners, Welders, Electricians • Foreman • Quality and Process Executives • Supervisors • Masonry • Machine Experts
Health and Education	• Para-medics, Nurses & Assistants • Teachers • Trainers for vocational education
Motor Repair	• Knowledge of various electrical and mechanical components of a car. • Diagnostic abilities. • Awareness of new technology in motor repair like computerised wheel balancing and alignment. • Soft Skills

Source: IMaCS Analysis

8.6 Key interventions for Arunachal Pradesh

- Existing vocational institution set-up needs to be ramped up in order to have employable manpower. Close interaction with industry is essential for its success.

- Between 2011 and 2021 each year, around 70,000 persons will be available for skilling for migration. Areas for capacity creation for skilling of migrant workforce include Hospitality, beauty and wellness, IT/ITES, Retail services, Fashion Designing, Flight attendants, Healthcare and Trainers.

- Establishing specialized training institutes in to provide training on Hydro Power generation, Operation and Maintenance (O&M).

- Setting up of district centres for dissemination of information on Medicinal plants and Ayurveda in collaboration with state forest department and Ayurveda Regional Research Institute, Itanagar.

- Promoting adventure tourism in the state.

Advanced factor conditions required

- Roads connecting to the interiors of the districts and villages

- Increased telecom penetration.

- Post-harvest management infrastructure for success of horticulture and food processing

- Realising the hydro-potential of the state.

- Last mile banking connectivity in across state.

- Educating local population for orientation towards income from economic activities such as construction.

Annexure

1. Methodology used for Demand projections

The following methodology has been adopted for making demand side projections of human resources:

- Identification of key economic activities in each district.
- Estimation of current employment numbers in each district, based on information available from Government publications and IMaCS primary survey.
- Forecasting of future employment requirements, using different assumptions (explained in the slide on assumptions) for each industry.
- Different assumptions have been used because of differences in nature, demand and growth potential, factor endowments, commercialisation status, policy thrust, past growth trends, past and expected investments, employment pattern and opportunities for migration of all economic activities.
- Forecasts have been done for all existing and potential industries identified by us. District wise distribution of employment in 2021 is assumed to remain same as it was in 2011.

2. List of Abbreviations

List of Abbreviations

BRO	Border Roads Organisation
BSNL	Bharat Sanchar Nigam Limited
CAGR	Compound Annual Growth Rate
DDP	District Domestic Product
DoNER	Ministry of Development of North Eastern Region
GDP	Gross Domestic Product
GI	Geographical Indication
GSDP	Gross State Domestic Product
HEP	Hydro-electric Power
HRD	Human Resource Development
IID	Integrated Infrastructure Development
IIT	Indian Institute of Technology
IT	Information Technology
ITI	Industrial Training Institute
LMIS	Labour Market Information Systems
mn	Million
MU	Million Units
NABARD	National Bank of Agriculture and Rural Development
NEC	North Eastern Council
NEDFi	North Eastern Development Finance Corporation Limited
NER	North Eastern Region

List of Abbreviations

NES	North Eastern States
NGO	Non-Governmental Organisation
NIT	National Institute of Technology
No.	Number
NSDC	National Skill Development Corporation
O&M	Operation and Maintenance
PPP	Public Private Partnership
PWD	Public Works Department
SHG	Self Help Group
SIDO	Small Industries Development Organisation
NEEPCO	North Eastern Electric Power Corporation
NH	National Highways
IPD	Integrated Power Developers
NIFD	National Institute of Fashion Design
NERIST	North Eastern Regional Institute of Science & Technology
PWD	Public Works Department
BRTF	Border Roads Task Force
RWD	Rural Works Department

3. List of Stakeholders met

Name	Designation	Organization
Shri Yeshi Tsring IAS	Principal Secretary to CM	Secretariat
Shri Mokbul Pertin.IAS.	Commissioner	Department of Industries, Trade & Commerce
Shri Anong Perme	Chief Engineer	Department of Power
Mr. Subu Tabin	Joint Director	Department of Industries
Mr. Goli Angu	Assistant Director	Department of Industries
Mr. S. De. Sarkar	Director cum Member Secretary	Department of IT, Science & Technology
Mr. Labsang Yashi	SW-I	PWD
Dr. Rama Shankar	Astt. Director	Ayurveda Regional Research Institute
Mr. T. Mibang	EE Monitoring	Department of Power

Name	Designation	Organization
Mr. G. Bagla	SSW	Department of Power
	Officer	Department of Economics and Statistics
Mr. Pranab Laskar	Senior Manager, Accounts	M/S Shree Salasar Industries
Mr. S.K. Dutta	Joint Director	DIC, Yupia
Mr. Shantanu Deka	Astt. Faculty Member & Head	IIE Branch Office, AP
Mr. A. Dutta	Manager	M/S NEFA Udyog
Mr. Manish Chomal	Accounts Officer	M/s Satyam Group of Industries
Mr. Dilip Kumar Gupta	Manager	Arunachal Valley Cold Storage
Mr. Vipul	Owner	Sahara Tours & Travels
	Receptionist	Hotel Donyi Polo Ashok
Mr. Hage Tado	Joint Director	Department of Textiles and Handicrafts
Smti. Haj Yakang	Chairman	Arun Kutir Udyog Cooperative Society Ltd.
Smti. Radhe Ampi	Craft Superintendent	Textiles & Handicrafts Training Center, Ziro
Mr. Dilip Sharma	Staff Member	M/S Hill Tribe Mushroom Pvt. Limited
Mr. Michi Ome	Instructor	Textiles & Handicrafts Training Center, Ziro
Mr. Tage Tabyu	Owner	Pine Valley Fruit Canning Pvt. Ltd., M/S Hill Tribe Mushroom Pvt. Limited
Mr. T. Jamoh	Assistant Director	Department of Industries
Mr. Oter Gao	Horticulture Development Officer	Department of Horticulture
Mr. Omi Tamut	Grower/Trainer	Farmer
Dr. Barun Singh	Assistant Professor	College of Horiculture & Forestry
Mr. Tadeng Taloh	Development Officer	Department of Textiles and Handicrafts
Mr. Ashok K. Sharma	Joint Director	Department of Industries
Mr. Ozimso Tayang	Owner	Saw Mill, Furniture Unit, Stone Crusher, Hotel
Smti. Bagilu Kri	Owner	Handloom, Osin Hotel, KK Metals,Osin Atta Chakki
Mr. T. Tara	DHO	Department of Textiles and Handicrafts
Mr. Dugbin Ette	Development Officer	Department of Textiles and Handicrafts
Mr Kailash Kejriwal	Manager	Arunanchal Plywood Industries Limited
Mr. S.N. Mishra	Manager	Kungfra Tea Industries

Name	Designation	Organization
Mr. Nabendu Bishwas	Executive Officer	Patkai Bamboo Pvt. Limited
Mr. Rohit Sharma	Factory In-charge	M/S Lohit Industries
Mr. Patam Rangmang	Owner	Orange Orchard
Smti P.C. Lama	Joint Director	Department of Industries
	Gardner	Orchid Research Centre, Tippi
Mr. Passang Tsering	Craft Superintendent	Department of Textiles and Handicrafts
Mr. Hibu Dante	Horticulture Development Officer	Department of Horticulture
Mr. K.N. Tiwari	Horticulture Marketing Officer	Department of Horticulture
Mr. Rigio Tabam	District Tourism Officer	Department of Tourism
Mr. Namge Khandu	Receptionist	Hotel Tsepal Yangjom

4. Training Capacity of Vocational Education

Type of institution	No. of institutions	Seating capacity	District
ITI	1	80	Changlang
ITI	1	340	Lower Dibang Valley
ITI	1	120	East Siang
ITI	1	80	Papum Pare
ITI	1	120	Upper Subansiri
ITI	1	100	West Kameng
Polytechnic	3	675	Papum Pare
Polytechnic	1	375	West Siang
Engineering Colleges	3	380	Papum Pare
Medical Colleges	1	150	Papum Pare
Nursing Training Institutes	2	60	Papum Pare
Computer Education	2	80	Papum Pare

5. Arunachal Pradesh – List of Handicrafts Clusters

Location	District	Product	Details
Miao	Changlang	Carpets	Durries, Asans, small bed size carpet
	Lohit	Blacksmithy	Traditional dao, spear, axe, dagger
Bomdila	West Kameng	Carpets	Durries, Asans, small bed size carpet

Bomdila	West Kameng	Woodwork	Human wooden statue, wooden , ashtray, mask making
	Changlang	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven baskets of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows, he
	Changlang	Woodwork	Human wooden statue, wooden , ashtray, mask making
	Dibang	Carpets	Durries, Asans, small bed size carpet
Pasighat	East Siang	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven items of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows, he
	Lohit	Silversmithy	Ladies decorative hair clips coins and neck lace
Ziro	Lower Subansiri	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven items of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows, he
Ziro	Lower Subansiri	Pottery & Clay	
	Lower Subansiri	Bell Metal	Traditional bells rice plate, bowl, school bell and nameplate
	Lower Subansiri,	Blacksmithy	Traditional dao, spear, axe, dagger
	Lower West Siang	Blacksmithy	Traditional dao, spear, axe, dagger
Doimukh, Itanagar,Sagalee	Papum Pare	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven items of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows, he
Doimukh, Itanagar	Papum Pare	Woodwork	Human wooden statue, wooden , ashtray, mask making
	Tawang	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven items of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows, he
	Tawang	Carpets	Durries, Asans, small bed size carpet
	Tawang	Woodwork	Human wooden statue, wooden , ashtray, mask making
	Tirap	Blacksmithy	Traditional dao, spear, axe, dagger

Khonsa	Tirap	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven items of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows, he
Khonsa, Longding	Tirap	Woodwork	Human wooden statue, wooden , ashtray, mask making
	Upper Siang	Blacksmithy	Traditional dao, spear, axe, dagger
Tuting	Upper Siang	Carpets	Durries, Asans, small bed size carpet
Tuting	Upper Siang	Woodwork	Human wooden statue, wooden , ashtray, mask making
	West Kameng	Blacksmithy	Traditional dao, spear, axe, dagger
Wechuka		Woodwork	Human wooden statue, wooden , ashtray, mask making
Along	West Siang	Cane and Bamboo Craft	Baskets, bags, containers, cane belts, woven items of cane and fibre, baskets for storing and carrying paddy, fuel and water, vessels for preparing local liquor, rice plates, bows and arrows

About ICRA Management Consulting Services Limited

IMaCS - An introduction

ICRA Management Consulting Services Limited (IMaCS) is a multi-line management consulting firm headquartered in India. It has an established track record of 17 years in management and development consulting across various sectors and countries. IMaCS has completed more than 1,200consulting assignments with about 600 clients and has worked in over 40countries across the globe. IMaCS is a wholly-owned subsidiary of ICRA Limited (ICRA), one of India's leading credit rating agencies. IMaCS operated as an independent division of ICRA till March 2005[1], when it was de-merged from ICRA and became a standalone company in its present form.

Through the process of carrying out several assignments over the past 17 years, IMaCS has accumulated considerable analytical and consulting expertise, backed by the following organisational capabilities:

- An extensive and organised database on several sectors.
- Knowledge of key factors of success in different projects and program.
- An ability to research emerging global trends, both in specific countries as well as in different sectors, based on primary and secondary data.
- Performance benchmarking
- Quantitative and financial modelling
- Ability to identify the various types of risks and suggest appropriate strategies to mitigate the same
- Ability to work in different geographies on its own and through affiliate partners

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[1] Under the name "ICRA Advisory Services"

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