

Sub-sector Analysis

Construction, Agriculture and
Tourism (CAT) Sectors

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Employer-led Labour Market Secretariat (ELMS) Project
FNCCI, Teku, Kathmandu, Nepal

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Contents

Acronyms	IV
Acknowledgments	V
Executive summary	VI
Chapter One: Introduction	1
1.1 Research plan and objectives	1
1.2 Research methodology	1
Chapter Two: Identification of Sub-sectors	4
2.1 Desk review	4
2.2 Construction sub-sectors	13
2.3 Agriculture sub-sectors	17
2.4 Tourism sub-sectors	27
Chapter Three: Analysis of Occupations	33
3.1 Analysis of occupations in CAT Sectors	33
3.2 Potential and vibrant occupations in Construction Sub-sectors	34
3.3 Potential and vibrant occupations in Agriculture Sub-sectors	36
3.4 Potential and vibrant occupations in Tourism Sub-sectors	40
Chapter Four: Conclusions and Recommendations	43
Annexes	57
A. List of References	57
B. List of interviewees	60
C. Research tools	62
D. Detailed calculations and assumptions for quantitative estimate (Construction Sector)	65

List of Tables

Table 1: List of provinces, districts and sectors selected for consultation	2
Table 2: Province-wise details of micro, cottage and small industries (as of mid-July 2020)	6
Table 3: Employment by industry	9
Table 4: Comparative analysis of TVET budget in Nepal	11
Table 5: Economic establishments, currently working labour force and enrolment capacity by sector	11
Table 6: Trade-wise and province-wise enrolment capacity	11
Table 7: Monthly earning by occupational sectors	12
Table 8: Construction sub-sectors background information & resource projection	15
Table 9: Competency and skills matrix of occupations in construction sub-sectors	16
Table 10: Status of agriculture crops production	19
Table 11: Contribution of tourism to national GDP over a decade	28
Table 12: Details of tourist arrival and average length of stay	29
Table 13: Tourist industries and guides in Nepal	31
Table 14: Training courses available at CETVT in different sub-sectors	33
Table 15: Prioritized construction sector occupations list (demand side)	34
Table 16: Prioritized agriculture sector occupations (demand side)	36
Table 17: Prioritized tourism sector occupations list (demand side)	40
Table 18: Description of identified 30 occupations in CAT sectors	43

List of Figures

Figure 1: Province-wise GDP* (FY 2019/20)	7
Figure 2: Province-wise GDP* growth rate (in percent)	8
Figure 3: GDP contribution by economic sectors and impact of COVID-19	8
Figure 4: Budget allocation by sub-sectors in construction (2020/21)	14
Figure 5: Do NSTB graduates give expected performance after hiring?	17
Figure 6: Employment status of respondents (NSTB graduates).	17
Figure 7: Composition of agriculture GDP	17
Figure 8: Tea and coffee production in 2005 and 2016	24
Figure 9: Area and production of ginger, turmeric and cardamom in 2005 and 2016	25

Acronyms

ADB	Asian Development Bank
ADS	Agriculture Development Strategy
CAT	Construction, Agriculture and Tourism
CEO	Chief Executive Officer
CNI	Confederation of Nepalese Industries
CBS	Central Bureau of Statistics
CEO	Chief Executive Officer
COVID-19	Corona Virus Disease, 2019
CTEVT	Council for Technical Education and Vocational Training
DDC	Dairy Development Corporation
ED	Executive Director
ELMS	Employer-led Labour Market Secretariat
EU	European Union
FCAN	Federation of Contractors' Associations of Nepal
FDI	Foreign Direct Investment
FGD	Focus Group Discussion
FINGO	Financial Non-Government Organization
FNCCI	Federation of Nepalese Chambers of Commerce and Industries
FNCSI	Federation of Nepal Cottage and Small Industries
GDP	Gross Domestic Product
GoN	Government of Nepal
HAN	Hotel Association Nepal
HVAC	Heating, Ventilation and Air Conditioning
HVC	High Value Crop
IPM	Integrated Pest Management
IRIN	Integrated Regional Information Networks
ISCO	International Standard Classification of Occupations
KII	Key Informant Interview
LMI	Labour Market Information
MD	Managing Director

MOALD	Ministry of Agriculture and Livestock Development
MOCTCA	Ministry of Culture, Tourism and Civil Aviation
MOLMAC	Ministry of Land Management, Agriculture and Cooperatives
MOE	Ministry of Education
MOF	Ministry of Finance
NATA	Nepal Association of Travel Agents
NPC	National Planning Commission
NRB	Nepal Rastra Bank
NSCO	National Standard Classification of Occupations
NTB	Nepal Tourism Board
QA	Quality Assurance
REBAN	Restaurants and Bar Association of Nepal
SAARC	South Asian Association for Regional Cooperation
SACCOs	Saving and Credit Cooperatives
SDC	Swiss Agency for Development and Cooperation
SDGs	Sustainable Development Goals
SEAN	Seed Entrepreneurs Association of Nepal
SRR	Seed Replacement Rate
SSI	Semi Structured Interview
SWC	Sector Working Committee
SWG	Sector Working Group
TAAN	Trekking Agencies' Association of Nepal
TBD	To Be Determined
TBM	Tunnel Boring Machine
TIC	Tourism Information Centre
TSH	Tourist Standard Hotel
TSLC	Technical School Leaving Certificate
TVET	Technical and Vocational Education and Training
WTTC	World Travel and Tourism Council

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Last but not least, the real-life experiences and information shared by the employers, associations and entrepreneurs of CAT sectors have provided a solid foundation for analysis of the sub-sectors and identification/prioritization of potential and vibrant occupations in these sectors/sub-sectors.

Yagya Bikram Shahi
Chief Executive Officer
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12 June 2021

Executive summary

Employer-led Labour Market Secretariat (ELMS) Project commissioned Devsuits to conduct this study to identify potential and vibrant sub-sectors and occupations in construction, agriculture and tourism (CAT) sectors. The sub-sector analysis primarily covers the private sector employers in formal settings. The study directly contributes in achieving the supporting objective of ELMS, “develop a shared understanding of skills, knowledge and behaviours for identified key job roles in three target sectors”. The study developed a shared classification of skills in selected 30 occupations in CAT sectors. The employment in the public and informal sectors are not covered by this study.

A combination of desk review and field studies were adopted to accomplish the task. The study team in consultation with the ELMS team finalized the methodology, tools and time schedule as well as the delivery plan of outputs. Both qualitative and quantitative data were collected from more than 82 persons using Focused Group Discussion (FGD) and Semi Structured Interview (SSI) methods of data collection. Besides the FGD and SSI, secondary data collected from literature review were also taken into consideration while deriving conclusions.

Major key informants consulted during the data collection in agriculture sector were district chapters of Federation of Nepali Cottage and Small Industries (FNCSI), district chapters of Confederation of Nepalese Industries (CNI), district Chambers of Commerce and Industries, local bodies of different districts, agro-tech and research centres, dairy and food industries, animal product-based industries, agro-based industries, etc. Likewise, in tourism sector, Hotel Association Nepal, medium and large hotels, tour and travel entrepreneurs were consulted. Similarly, Contractors Associations, hume pipe and concrete industries, Chambers of Commerce and Industries, available bricks manufacturing industries, Federation of Cottage and Small Industries, construction related industries and factories were some of the key informants consulted for construction sector.

The study covered respondents from Bara, Bhaktapur, Chitwan, Kailali, Kaski, Kathmandu, Makawanpur, Morang, Rupandehi and Surkhet districts. The study team selected the districts in close coordination with the ELMS team and based on the information obtained from the desk review.

Due to the restrictions on travel and face to face meetings to curb the spread of COVID-19, the survey team conducted sector-wise separate online consultative meetings with construction, agriculture and tourism sector stakeholders from ten districts.

The study analyzes the access and relevancy of current TVET programmes in Nepal and identify gaps in demand and supply sides. The analytical approach adopted for this study is mainly qualitative. The study team conducted desk review of various literatures including ELMS project documents and progress reports, journal articles, workshops proceedings, survey, study and research reports etc. of the government and non-governmental entities, etc.

Economic Survey carried out by the MoF in 2017 estimates that around 512,000 labour forces enter annually into the labour market. However, majority of them are not gainfully employed due to lack of appropriate skills. TVET stakeholders have varied interests. For example, employers always attempt to recruit competent and high performing workers from the market. The target groups of the technical training want decent and better paying jobs.

There is a need to promote TVET programmes in construction, agriculture and tourism sectors both in quality and quantity in order to mitigate existing mismatch between demand and supply. The sub-sector analysis mainly covers construction, agriculture and tourism sectors of economy.

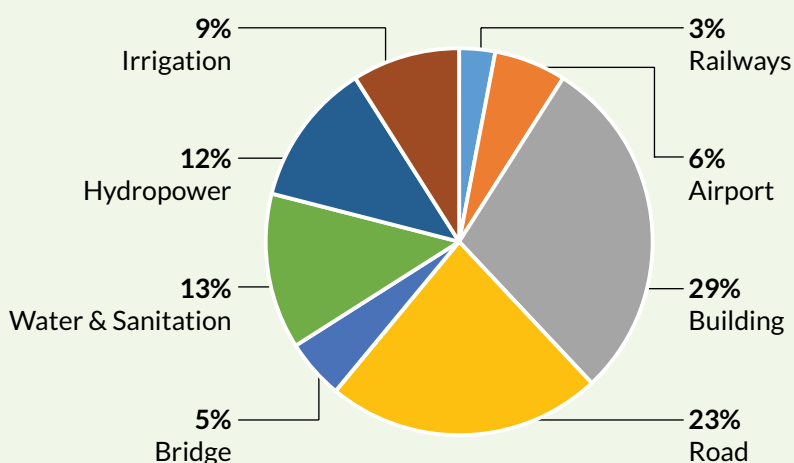
Construction sector

Nepal's construction industry has the potential to offer employment opportunities in infrastructure development including roads and airports, irrigation and hydropower, real state and housing. Nepal's construction industry is fast growing service industry. Demands of skilled workforce, construction equipment and materials market have grown by many-folds after the devastating earthquake of 2015. The volume of the allocated budget appeared to have increased as a result of resources to be arranged for post-earthquake reconstruction works. The demand of public expenditure has continued to grow for expediting the pace of construction works (MoF, 2015-16).

The majority of construction workers are between the ages of 25 and 59 years in Nepal. It has been observed that the majority of youths who drop out of school education before grade 10 are from disadvantaged groups, e.g. underprivileged castes (Dalits), indigenous people (Adivasi Janajati), females, and those from remote areas. Women are almost exclusively unskilled, casual, manual laborers such as head-loaders, carrying bricks, cement, sand, and water as well as other unskilled jobs like digging earth, mixing cement, breaking stones, etc. Women are rarely in male-dominated skilled trades like Supervisor (Junior Engineer, Overseer, Sub-overseer), masonry, plumbing, electrician, scaffolder, welder/fabricator, lab technician, carpenter, power plant operator, etc.

Buildings and roads receive more than 50 percent of total budget in the construction sector as shown in the following chart.

Construction sub-sector & budget allocation (Budget speech 2020/21)



(Source: Budget Speech FY 2020/21).

Based on the 15th periodic plan and budget allocation by Government of Nepal (2020/21), the following key sub-sectors in construction are identified, which is assumed as a reference for future budget allocation.

1. Building
2. Road
3. Bridge
4. Water and Sanitation
5. Hydropower
6. Irrigation
7. Manufacturing or production of construction materials

The study shows that the key occupations that are in high demand in the construction sub-sector include:

1. Mason (brick, stone and retrofitting)
2. Building electrician - Level 2
3. Carpenter - Level 2
4. Welder/Ironworker - Level 2 and 3
5. Supervisor (Civil) – Level 2 and 3
6. Fabricator – Level 2 and 3
7. Scaffolder – Level 2 and 3
8. Lab technician (QA Technician) – Level 2 and 3
9. Heavy equipment operator – Level 2
10. Power Plant operator – Level 2 - 3

Agriculture sector

The economy of Nepal is largely dominated by agriculture. With 60% of its population dependent on agriculture for their livelihood and with agriculture contributing a third of the total national Gross Domestic Product (GDP), agriculture is regarded as one of prioritized sectors for the economic development of the country (ADS, 2012). Agriculture and livestock are key components of the livelihoods for the majority in the country. Farming is largely based on low-value cereals and subsistence production, with mere 13% of outputs traded in markets.¹

Agriculture has been considered as the backbone of the economy and still remains the main sector of employment. The contribution of agriculture and forestry to GDP was estimated to remain at 28.89 % in the fiscal year 2016/17 (MoF, 2017). A labour market study carried out by CTEVT on “Analysis of Emerging Needs of Technical Human Resources in the Country, 2016” mentions that there are 271 agro-based industries and 9,217 agro-based cottage industries operating their production and service activities which provide employment opportunities to 29,153 and 37,203 people respectively. As per the study report, out of the total workforce engaged in the industries, 47.27 % are generally required with technical background. The report states the average growth rate of agriculture sector remains around 3.5 % in the last decade. The lack of agriculture labour, technology and technicians are major hindering factors for the growth of the sector.

¹ https://www.agrilinks.org/sites/default/files/resource/files/innoVATE-Nepal-country-assessment_FINAL_Sep_2013.pdf

Based on the Agriculture Sector Profile conducted by Investment Board Nepal (2015), the following key sub-sectors in agriculture are identified.

1. Vegetables farming
2. Fruits crops production
3. Agronomical crops
4. Floriculture
5. Livestock and poultry farming
6. Dairy products processing and marketing
7. Bee and sericulture
8. Plantation and cash crops
9. Fishery
10. Herbal and medicinal plant
11. Agro-based enterprises

The study shows that the key occupations that are in high demand in the agriculture sub-sector include:

1. Fruits and vegetables processor
2. Dairy plant operator
3. Meat and fish processor
4. Tea and coffee processor
5. Agronomical grain processor
6. Herbal processor
7. Spices processor
8. Agricultural input supplier
9. Junior technical assistant (JTA)
10. Agricultural credit service provider

Tourism sector

Tourism sector creates jobs, drives exports, balances foreign exchanges, and generates prosperity across the nation. Nepal is one of the major tourist destinations in the world. Nepal has geo-social diversity, unrivalled natural beauty, abundant bio-diversity, multi-ethnic, multilingual, multi religious, and multi-cultural identities. Nepal's tourism industry is regarded as a significant contributor to employment generation and foreign exchange earnings. Diversification and expansion of tourism sector have enhanced people's livelihoods and employment opportunities thereby raising their living standard. Economic Survey 2017 conducted by the Ministry of Finance (MoF) estimated that the contribution of hotel and restaurant sector to GDP remained at 1.98 percent at the end of the fiscal year 2016/17.

Nepal's tourism sector generated Rs. 240.7 billion in revenue and supported more than 1.05 million jobs directly and indirectly in 2018, according to the annual World Travel and Tourism Council research report. The London-based organization said that travel and tourism's total contribution to the country's gross domestic product stood at 7.9 percent. As per the report, domestic tourists contributed to 56 percent of the total revenue of Rs. 240.7 billion generated by the tourism industry in 2018. For the year 2019, its contribution to Nepal's GDP stood at 6.7% injecting Rs. 195 billion to national economy and contributing to one million jobs (6.9 % of the total employment). The money generated by the hotels, travel agents, airlines, transportation services and restaurant services are the major contributors in Nepal. The report said that 497,500 jobs were generated directly by the industry last year.

Subsectors have been identified based on contribution to national economy, national labor market and in terms of volume of investment in the sectors. The key sub-sectors in tourism are identified as follow:

1. Hotel industry
2. Aviation industry - international and domestic
3. Travel, trekking and hiking
4. Mountaineering
5. Rafting, kayaking and canoeing
6. Tourist transport service
7. Paragliding
8. Bungee jumping
9. Ultralight aircraft
10. Bird watching
11. Handicraft and curio

The study shows that the key occupations that are in high demand in the tourism sub-sector include:

1. Cook - Level 1 and 2
2. Waiter/waitress - Level 1 and 2
3. Housekeeping - Level 1
4. Inn keeper
5. Homestay operator
6. Tour guide - TSLC
7. Trekking guide - assistant
8. Rafting guide - Level 2
9. Tourist vehicle driver
10. Receptionist - General

Introduction

1.1 Research plan and objectives

Employer-led Labour Market Secretariat (ELMS) project commissioned Devsuits to conduct this study to identify potential and vibrant sub-sectors and occupations in construction, agriculture and tourism (CAT) sectors.

The overall objective of the study was to identify potential and vibrant sub-sectors and occupations in construction, agriculture and tourism (CAT) sectors.

The specific objectives of the study were as follows:

1. Identify potential occupational sub-sectors in the CAT sectors;
2. Explore specific potential and vibrant occupations under each of the sectors;
3. Explore challenges of employers in finding and retaining employees in the identified occupational groups; and
4. Recommend potential and vibrant sub-sectors in the CAT sectors and occupations.

Scope of the study

The sub-sector analysis primarily covered the private sector employers in formal settings. The employment in the public and informal sectors were not covered by the study. Construction, agriculture and tourism sectors were chosen for the purpose of identifying potential occupations as demanded by Nepalese private sector employers. Other sectors were not part of this study. The analysis comprised a mapping of the current situation of sub-sectors and occupations under these sectors and prioritized certain sub-sectors and occupations.

1.2 Research methodology

A combination of desk review and field studies were adopted to accomplish the task. The study team in consultation with the ELMS team finalized the methodology, tools and time schedule as well as the outputs delivery plan. Based on the thorough understanding of the TOR provided, following approaches and methodologies were used to undertake the assignment.

The study team collected and reviewed relevant literature for data/information on potential occupations that are in high demand. Primarily qualitative data were collected from the field using online platforms, focus group discussions (FGD) and Semi Structured Interview (SSI) methods of data collection. Besides the notes from FGDs and Semi Structured Interviews, secondary data collected from different sources were also taken into consideration as sources of quantitative data. Primary data from individual employers was collected using SSIs. The study team thoroughly reviewed the ELMS project document and several other relevant resources. The purpose of consultations was to enable the ELMS team to use the findings of the report for LMI activities. More importantly, the study findings would be crucial for developing classification of occupational standards for 30 occupations in CAT sectors and validating and disseminating amongst construction, agriculture and tourism sector stakeholders to ensure effective implementation of the occupational standards.

A team of four consultants carried out the assignment. Mr. Nava Raj Adhikari, Er. Bimal Tandukar, Dr. Neeranjan Rajbhandari, and Mr. Ajit Ranabhat jointly planned the research activities - desk review, focused groups discussions (FGDs), SSIs and key informant interviews (KIIs). Owing to the travel and meeting restrictions imposed by the authorities to combat the spread of COVID-19, the study team used online platforms to consult key stakeholders, particularly the employers and their associations from across the country.

Tools for FGD and KIIs are presented in annex C.

Major key informants consulted during the data collection were district and provincial chapters of five employer associations (FNCCI, CNI, FNCSI, FCAN and HAN), local bodies of different districts. In agriculture sector, agro-tech and research centres, dairy and food industries, animal product based industries, agro-based industries etc. Likewise, in tourism sector hotel associations, medium and large hotels, tour and trekking entrepreneurs and other tourism experts were consulted. Similarly, in construction sector, contractors' associations, hume pipe and concrete industries, traders of construction materials, bricks manufacturing industries, other construction related industries and factories were some of the key informants consulted. The study team reviewed relevant literature to identify the supply side needs and constraints. The key needs and constraints included low attraction of youths in CAT sectors; poor health and safety records; low wages and inappropriate working conditions; high turnover rates; lack of skills to use modern technology; weak participation of women in the construction and tourism sectors; and so on. It has been argued that pre-training counseling and psychosocial support would be helpful to increase women and marginalized groups' access to labour market.

Detailed list of key informants and people consulted is presented in annex B.

Geographical coverage

This study aimed to explore potential occupations for construction, agriculture and tourism (CAT) sectors. Initially, the plan was to cover only three provinces - Province 2, Bagmati and Gandaki. These provinces were purposively selected considering the concentration of CAT-related enterprises therein and in consultation with the ELMS team. However, the actual consultations were expanded to all seven provinces to compensate the opportunity of observation in initially planned physical interactions. These meetings were conducted through virtual platforms. The list of provinces and districts covered is as follow:

Table 1: List of provinces, districts and sectors selected for consultation

S. N.	Provinces	Districts	Sectors
1	Province 1	Morang	Construction
2	Province 2	Bara	Construction Agriculture
3	Bagmati	Chitwan	Tourism Agriculture
4		Kathmandu	Construction
5		Makawanpur	Construction Agriculture
6		Bhaktapur	Tourism
7	Gandaki	Kaski	Tourism
8	Lumbini	Rupandehi	Agriculture Construction
9	Karnali	Surkhet	Construction
10	Sudur Pashchim	Kailali	Construction

Approaches to data collection

In order to collect data, sector wise key informants were identified with support from the ELMS, LMI Units. Before initiating field work, the research team reviewed secondary data available with the project, based on which, data collection tools were developed. The Study team conducted a series of meetings with ELMS team to develop a list of respondents (FGDs, SSIs participants and KIIs). Data collection was done in close coordination with ELMS team. The data collection was done after identification of gaps and need of additional data required for sector analysis from ELMS team. The ELMS team actively contributed in the data collection process. The FGDs created an opportunity for ELMS team to closely interact with employers to identify various issues relevant to CAT sectors. Based on the data collected, this report has been prepared.

Limitation of the study

Original plan of the study team was to conduct FGDs and KIIs in the selected districts. However, due to COVID-19 restrictions, the survey team conducted sector-wise separate online consultative meetings with construction, agriculture and tourism sector stakeholders. The study team had limited time and resources to complete the study. However, the team has been able to identify the potential occupational sectors and key demanded occupations in each of the construction, agriculture and tourism sectors within the available time. Quantitative information was generated from the secondary information and was further analysed with some assumptions. Mainly reports from government entities, e.g. CTEVT and NPC were used for calculation of demand and supply information.

Collection and review of secondary information

The study team collected and reviewed relevant data/information on potential occupations in construction, agriculture and tourism sectors. The list of documents reviewed is provided in Annex A. The team met with relevant stakeholders using online platforms and gathered information from them on the existing situation of various sub-sectors relevant to construction, agriculture and tourism.

Preparation and finalization of the report

Once the preliminary draft report was prepared, it was shared with the ELMS team and Dakchyata experts for their feedback and suggestions. After incorporating inputs from the ELMS experts, staff and Dakchyata experts, the report was again discussed in ELMS team meetings to solicit additional feedback and suggestions to be later incorporated in this final version of the report.

Identification of Sub-sectors

Given the nature, scope, timeframe and resources available for the study, a combination of desk review and field consultations were conducted to accomplish the task. Based on the thorough understanding of the TOR provided, following approaches and methodologies were used to undertake the assignment.

2.1 Desk review

The study intended to carry out the sub-sector analysis of CAT sectors to identify potential and vibrant lists of occupations of CAT sectors. The analytical approach adopted for this study was mainly qualitative. The study team conducted desk review of various literatures including, project document, government reports, journal articles, workshop proceedings, research reports etc.

The study entailed review of various documents from the CTEVT, government ministries, SWC, NPC, etc. Apart from the project document, periodic plan, SDG progress update, ISCO/NSCO, etc. were also reviewed as reference resources. From the desk review of literature, some facts surfaced as follow:

Lack of labour market studies

There is very little information on labor market assessment categorically in different sub-sectors. It was discovered that there are very few labour market studies conducted in Nepal.

To take an example, ILO Nepal implemented Labour Market Information and Employment Services (LIfE) project (22 December 2014 - 31 August 2018) aimed at improving the quality of employment services through strengthened client orientation and capacity building of employment service centres and their officials; improving the collection and dissemination of labour market information and skill indicators; and knowledge sharing. ILO Nepal assisted the Ministry of Labour and Employment (MoLE), Department of Labour (DoL) to improve overall quality of employment services through public Employment Service Centres (ESCs). The study has drawn some conclusions from the ILO Nepal implemented LIfE project to identify potential occupations in the CAT sectors to respond to the labour market needs of CAT sectors.

Misunderstanding about remittance

World Bank (2017) indicated that Nepal ranked 7th biggest remittance contributor to India with annual \$3.016 billion compared to remittance of \$1.021 billion received from India.² This reveals a higher employment potential in Nepalese job market and exposes the fact that the outgoing labour force to India is greater but brings in very little remittance compared to the amount that goes out to India. More skilled human resources in identified 30 occupations are required to address the demand of skilled human resources.

Skilled human resource is important for socio-economic transformation of the local communities. A large number of youth in rural areas try to get skills for employment outside the agricultural sector. Local service markets (e.g., construction and tourism sector occupations) are gradually developing or are modernizing and offer employment or self-employment opportunities in rural and semi-urban

² https://en.wikipedia.org/wiki/Remittances_to_India

areas. Employment of local people is directly linked with rural income which may also contribute to the rural development.

In addition, unemployment status is caused by the lack of proper skills amongst youth. There is a growing demand of skilled human resources in the Nepali labour market. Similarly, lack of skilled human resource has been attributed to as a major factor for slow process of industrialization (1.6 percent) and for decreasing the contribution of manufacturing sector to GDP, which has declined by 2.8 percent in the last decade (MoF, 2012).

There is an increasing trend of youth migration in search of job in international market because of socio-cultural, economic, political and environmental factors. While the total number of workers going for foreign employment was only 3,605 in 1994, it reached 35,543 in 2000 (DoFE, 2014). Since 2000, the annual average growth of workers going overseas for employment was 22 percent. Primarily, the destination of Nepali migrants includes India, Saudi Arabia, Qatar and UAE, among others (World Bank, 2016a). However, data shows that Nepali migrants are working in more than 70 countries (World Bank, 2016b). The remittances to GDP ratio increased from 10.7 percent in 2001 to 13.8 percent in 2007 and further to 29.1 percent (\$6.6 billion) in 2015, putting Nepal among the top five recipients in terms of size of the economy (Pant & Budha, 2016, p. 6). But there is a lack of skill amongst migrant workers. While a study based on market signaling study (KC and Pradhan, 2010) also shows that 70 percent and the World Bank shows that 75 percent of such migrants are unskilled. It may directly result in low income in international jobs (Employment and Skill Training Plan. ADB Project Number: 49086-001. March 2018).

Gaps beyond figures

According to the Labor Force Survey, 2017, the labor participation rate over 15 years is 38.5 percent. New labor force enters the labor market at the rate of around 500,000 per year in Nepal. On the surface, there is a huge gap between the demand and supply of labor since there is not enough employment opportunity for the new labor force. Beyond these plain figures, the employers report that they are struggling to find skilled human resources for their enterprises.

Nepal may face shortage of 3.6 million workers by 2030 if people continue to take up jobs in foreign labour markets, creating hurdles for nation's transformation into a middle-income economy in the next 13 years as envisaged by the government, a latest report says (Overseas Development Institute (ODI), 2017). The projection was made on the basis of supply and demand of labourers in the coming years, and past economic and labour productivity growth rates, according to the report, 'Pathways to Prosperity and Inclusive Job Creation in Nepal'. Nepal will face labour deficit of 600,000 by 2030 if economic and labour productivity growth rates remain the same. This implies the country must ramp up economic growth and generate more high productivity jobs. This will give a boost to aggregate wages and help the country to attain the goal of becoming a middle-income country by 2030. In fiscal year 2018/19, various programmes were carried out under the Prime Minister Employment Programme at 646 local levels and 188,000 people were employed for an average of 12.43 days. In terms of number of employment, the highest number of employment are provided by the following provinces in order - Sudurpaschim province, Province No. 5, Karnali province, Province No. 2, Province No. 1, Bagmati province and Gandaki province.

Exodus of unskilled labourers

Total employment generated by large, medium and small industries in Nepal is 614,827. Employment generation capacity of an industry is estimated to be 75 persons on average. As of mid-March of fiscal

year 2019/20, the number of labor permit holder for foreign employment was 5.041 million whereas the number of workers that left for foreign employment was 4.792 million. Of the migrant workers, 4.555 million are men and 2.037 million are women. Of those who have gone for foreign employment, 1.5 percent are skilled, 24.0 percent are semi-skilled and 74.5 percent are unskilled (MOF: Economic Survey, 2019/20).

There are severe skills shortages in the CAT sectors and the fact that Indian workers were being brought in to overcome the lack of skilled Nepalese workers. However, very large numbers of Nepalese workers migrate every year to work in Gulf countries. The combined domestic and overseas market for semi-skilled and skilled construction workers is therefore very buoyant.

Self-employment

Micro-enterprise development programmes are in operation for poverty alleviation with the objective of developing micro, cottage and small scale industries using indigenous labor, skills, local raw materials and resources. So far the programmes have developed and upgraded 10,674 and 9,660 micro enterprises, respectively. Entrepreneurship development programmes have helped create entrepreneurship for women, Dalits, people of different ethnicities, Madhesis, youth and other marginalized groups and communities living below the poverty line, as well as they have created self-employment / employment opportunities by upgrading enterprises.

Table 2: Province-wise details of micro, cottage and small industries (as of mid-July 2020)

Province	Number of registered Industries (Micro, Cottage and Small)	Proposed Employment (Number)
Province No.1	55,709	389,405
Province No.2	54,910	382,820
Bagmati	141,568	990,560
Gandaki	38,568	269,590
Province No.5	68,334	477,654
Karnali	17,063	119,270
Sudurpaschim	25,084	178,753
Total	401,236	2,808,052

(Source: Ministry of Industry, Commerce and Supplies, 2020. MOF Economic Survey 2019/20)

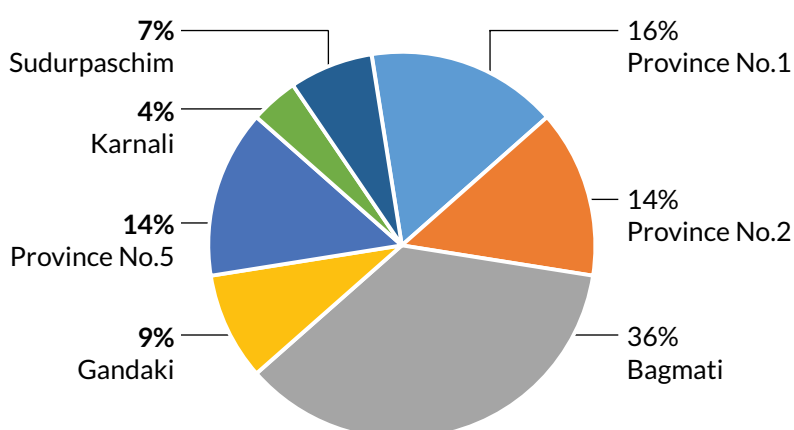
Non-functional industries

By mid-March of fiscal year 2019/20, through the registration of 401,236 micros, cottage and small enterprises 2,808,052 employment is expected to be generated. The proposal of employment generation of one industry is expected to be 7 persons. Of the total registered micro, cottage and small enterprises the highest number, 35.0 percent is registered in Bagmati province, Province 5, 17.0 percent and Province 1 and Province 2 is 14.0 percent each. The lowest number of micro, cottage and small enterprises are registered in Karnali province, which is 4.0 percent.

Federalism boons

Economic activities are increasing at provincial and local levels owing to the structural and institutional setups developed to functionalize federalism. The grants and revenue mobilization provided as financial transfers are based on transparency, laws, procedures and criteria. Remarkable progress is achieved in areas of infrastructure development, drinking water supply and sanitation improvement, effective internal resource mobilization, small and medium scale industries establishment and operation, promotion of governance at province and local levels. Public services delivery is becoming smart, reliable and qualitative. Financial access at local level has increased with the expansion of financial institutions. The roles of provincial and local economies have increased to enable national economy. Of the total GDP (at producer's price) of Rs.3767.04 billion, the share of Bagmati province is estimated to be the highest with 35.8 percent and Karnali province the lowest with 4.3 percent in fiscal year 2019/20. The share in GDP of Province 1, Province 2, Karnali province and Sudurpaschim province has increased in current fiscal year compared to that of the last fiscal year (MOF: Economic Survey, 2019/20).

Figure 1: Province-wise GDP* (FY 2019/20)



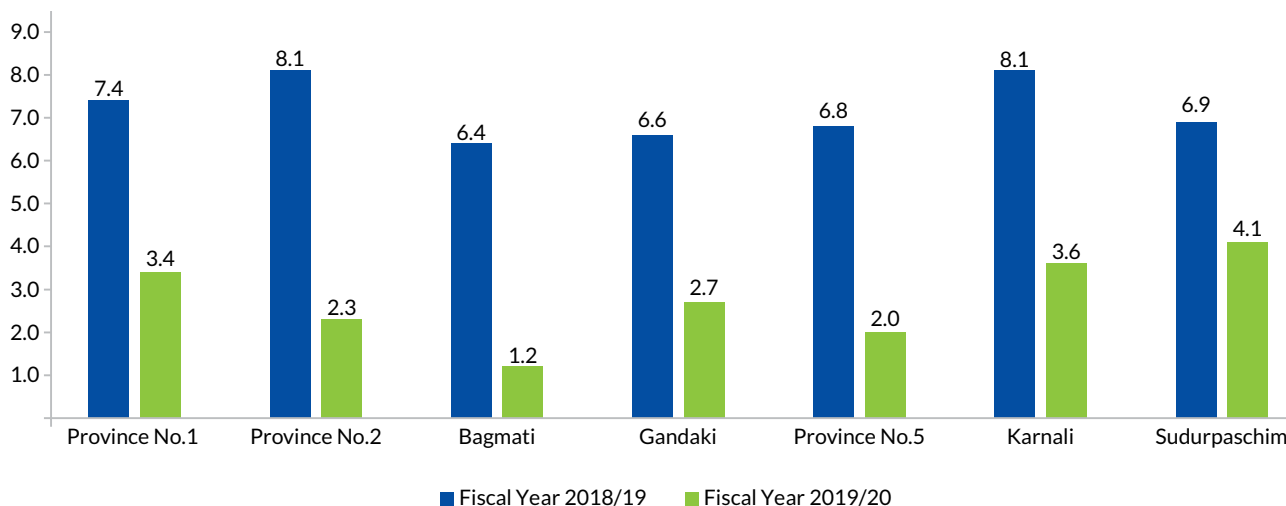
(Source: Central Bureau of Statistics, 2020. MOF Economic Survey 2019/20.) *Estimated

COVID-19 toll on economy

Though the economic activities were expanding till the mid-March 2019/20, the measures adopted to prevent and control the outbreak of coronavirus are expected to affect the economy. Economic growth of the Sudurpaschim province is expected to be the highest 4.1 percent and the lowest 1.2 percent of Bagmati province assuming when GDP growth (at producer's price) stands at 2.28 percent. The Coronavirus outbreak has already led into an economic and labour market shock, impacting both on demand and supply chains. Due to the outbreak of this deadly coronavirus, Nepal has started to suffer the most abrupt and widespread cessation of economic activities. COVID-19 has negatively impacted macro economy of country lowering national GDP, decreasing revenue collection, slowing economic growth rate, decreasing wage rate, fueling inflation and causing loss of employment opportunities. The effects are identified on remittance, labour and employment, tourism, education and agriculture (dairy, vegetables and poultry).

Nepal Labour Force Survey (2017/18) shows that 85 percent of the labour force are informally employed in the country that includes all working in informal sector as well as those in the formal sector who are not receiving minimum basic benefits (CBS, 2017). Thus, people working in informal employment and business communities particularly cottage and small scale industries and tourism are mostly affected. This implication of resource allocation and the cessation of economic activities due to the country's lockdown adversely affected the economic growth and other major macroeconomic variables.

Figure 2: Province-wise GDP* growth rate (in percent)



(Source: Central Bureau of Statistics, 2020. MOF Economic Survey 2019/20.) *Estimated

GDP contribution

In current fiscal year the contribution of agriculture sector to GDP, based on industrial classification of economic activities, is the highest in all provinces whereas the contribution of wholesale and retail sector to GDP is the highest in Bagmati province. Likewise, the contribution of mining and quarrying to GDP is expected to be the lowest in all provinces.

According to the NRB's annual report, the contribution of agriculture, forestry and fishing, industry and the service sector to GDP is 27 percent, 15.2 percent (of which manufacturing is 5.6 percent and construction is 7.8 percent), and 57.8 percent (of which hotel and restaurant is 2.05 percent) respectively for 2018/2019. The share of those sectors' contributions to GDP does not correspond with their shares of employment. Agriculture has the highest share of employment at 21.5 percent, followed by wholesale/retail and repair. Manufacturing and construction follow, at 15.1 percent and 13.8 percent, respectively. Sectors such as accommodation and food services (which have direct connections to tourism) and manufacturing are receiving first attention as the most impacted sectors. However, it is important not to ignore agriculture and construction. (Nepal Rastra Bank and CBS, 2020).

Figure 3: GDP contribution by economic sectors and impact of COVID-19



Source: Economic Survey 2019/20 MoF; Frost & Sullivan

Volume of employment

An analysis of microdata of Labour Force Survey, 2018 shows in the following table that construction, agriculture and tourism (accommodation and food service activities) sectors cover more than 40% of the total employment.

Table 3: Employment by industry

Industry	Male	Female	Total	Male (%)	Female (%)	Total(%)
	Thousands			Percent		
Total	4446	2640	7086	100	100	100
Agriculture, forestry and fishing	652	871	1523	14.7	33	21.5
Mining and quarrying	43	16	59	1	0.6	0.8
Manufacturing	719	353	1072	16.2	13.4	15.1
Electricity, gas, steam and air conditioning supply	27	7	34	0.6	0.3	0.5
Water supply	34	9	42	0.8	0.3	0.6
Construction	867	111	978	19.5	4.2	13.8
Wholesale & retail trade, repair of motor vehicles & motorcycles	695	545	1240	15.6	20.6	17.5
Transportation and storage	315	7	322	7.1	0.3	4.5
Accommodation and food service activities	204	167	371	4.6	6.3	5.2
Information and communication	48	13	60	1.1	0.5	0.9
Financial and insurance activities	63	55	118	1.4	2.1	1.7
Real estate activities	14	3	17	0.3	0.1	0.2
Professional, scientific and technical activities	35	9	44	0.8	0.3	0.6
Administrative and support service activities	57	7	64	1.3	0.2	0.9
Public administration and defence; compulsory social security	105	29	133	2.4	1.1	1.9
Education	304	254	558	6.8	9.6	7.9
Human health and social work activities	78	92	171	1.8	3.5	2.4
Arts, entertainment and recreation	30	4	34	0.7	0.1	0.5
Other service activities	119	37	156	2.7	1.4	2.2
Private households	25	48	73	0.6	1.8	1.0
Activities of extraterritorial organisations and bodies	12	5	18	0.3	0.2	0.2

Source: CBS: Labour Force Survey, 2018

TVET landscape

Council for Technical Education and Vocation Training (CTEVT) is the apex body of TVET sector to develop curricula and for the accreditation of the training. The Government of Nepal developed TVET Policy (2012) with the aim of providing national TVET guidelines for systematizing TVET provisions in Nepal. The objectives of the TVET Policy are summarized as: (i) Expanding access and ensuring inclusion; and (ii) coordination for institutional arrangements and information management. For coordination with TVET –sector actors, the government forms TVET Policy Coordination Committee in May 2015. The Government of Nepal formulated a national education policy including TVET policy with the clear objective to expand the opportunities of TVET to prepare capable, efficient, and competitive human resources for the economic development of the country (Ministry of Education, Science and Technology [MOEST], 2019). The government put a policy in place to ensure access to quality TVET through inclusion, promotion and development of the indigenous skills (Ministry of Education [MOE], 2012).

TVET has an important role in transforming Nepal's human resources into productive assets to meet the government's national development objective for inclusive, employment-oriented growth. TVET cuts across every sector of the economy and relies on effective dialogue and interaction between education and training providers, labour market stakeholders including employers, worker representatives, training providers and other stakeholders (Governance and Power-Sharing in TVET in Nepal: Sharing of Practical Experiences. Erik Winther-Schmidt and Rajendra Bahadur Shrestha. Dakchyata: TVET Practical Partnership Programme, Kathmandu, Nepal). Short-term training covers wide range of basic skills in agriculture, construction and tourism sectors. The CTEVT and public and private providers have established a base of infrastructure and human resources where catalytic investment can help maximize the utilization for better efficiency. These aspects offer ample opportunities to (i) institute incremental reform that will contribute to more coherent sector coordination; and (ii) create an environment for a vibrant mix of public and private providers to apply innovative approaches to address access, quality, and relevance issues (Nepal: Skills Development Project, Asian Development Bank, 2013).

The Constitution of Nepal entails having a strong partnership with private and cooperative sectors to ensure sustained economic growth for the nation (Ministry of Law, Justice and Parliamentary Affairs, 2015). In recent past, a lot of efforts have been made to increase the access of TVET programmes throughout the country and make it affordable to all target groups in terms of gender, caste, ethnicity, and economic deprivation (CTEVT, 2018). For a country like Nepal where each and every sector of economy is facing scarcity of technical human resources, the effective implementation of TVET policies to increase the quality and relevancy of TVET programmes is the primary requirement of the country (Neupane, 2013). TVET programmes and activities have been addressing and implementing cross-cutting themes throughout different sectors of Nepal such as construction, tourism, agriculture, among others.

Nepal spends almost 3.4% of GDP in education (Ministry of Finance, 2019). The allocation of the government budget in TVET sector (see Table 4).

Table 4: Comparative analysis of TVET budget in Nepal

Fiscal Year	Total national Budget (NPR in million)	Total education budget (NPR in million)	TVET Budget of MoEST (NPR in million)	TVET Budget of other Line Ministries (NPR in million)	TVET Budget from DPS (NPR in million)	Annual % change in total national budget	Annual % change in total education budget	Annual % change in TVET budget of MoEST	Annual % change in TVET budget of other line Ministries	Annual % change in TVET budget from DPS annual change
2013/ 14	517,240	80,958	2,923	9,673	1,513					
2014/ 15	594,000	91,714	5,915	12,604	1,985	14.8	13.3	102.4	30.3	31.2
2015/ 16	819,469	98,643	5,647	14,447	2,254	38	7.6	-4.5	14.6	13.6
2016/ 17	1,048,921	116,361	6,333	16,165	1,927	28	18	12.1	11.9	-14.5
2017/ 18	1,278,995	126,642	6,037	14,322	2,255	21.9	8.8	-4.7	-11.4	17
2018/ 19	1,315,162	134,703	9,498	14,322	3,141	2.8	6.4	57.3	0	39.3
2019/ 20	1,532,967	163,766	9,899	14,322	3,288	16.6	21.6	4.2	0	4.7

(Source: Journal of Education and Research, Vol. 10, No. 1, 2020.)

The TVET capacity is categorized under five broader categories of occupational sectors as (a) Agriculture (b) Engineering (c) Tourism and Hospitality sectors.

Table 5: Economic establishments, currently working labour force and enrolment capacity by sector

SN	Occupational sector	Economic establishments ¥		Currently working Labour Force v		Enrolment capacity in TVET programmes #	
		Number	%	Persons	%	Cap.	%
1	Agriculture	24,229	7.0	1,523,000	31.8	34,124	34.8
2	Engineering (including construction)	116,073	33.3	2,567,000	53.6	41,141	42.0
3	Tourism	30,540	37.5	371,000	7.7	690	0.7

(Sources: ¥ CBS, (2019a); v CBS, (2019b); # Analysis of microdata (data set 1). TVET Programs in Nepal: Issue of Access and Relevancy. Manoj Sharma Neupane. Labour Market Analyst, TVET Professional)

Table 6: Trade-wise and province-wise enrolment capacity

SN	Province	Agriculture		Engineering (including construction)		Tourism		Total (including other sectors)
		Cap.	%	Cap.	%	Cap.	%	Cap.
1	Province No 1	4,000	29	5,840	43	40	0.3	13,610
2	Province No 2	2,600	20	7,272	56	40	0.3	13,022
3	Bagmati Province	5,640	24	9,401	40	360	1.5	23,453
4	Gandaki Province	3,680	40	3,632	40	170	1.9	9,112
5	Lumbini Province	5,844	34	7,626	44	40	0.2	17,370
6	Karnali Province	5,680	61	3,216	34		0.0	9,336
7	Sudurpaschim Province	6,680	55	4,154	34	40	0.3	12,084
	Total	34,124	35	41,141	42	690	0.7	97,987

(Source: TVET Programmes in Nepal: Issue of Access and Relevancy (2020), Manoj Sharma Neupane, Labour Market Analyst, TVET Professional.)

Table 6 shows that the dominance of engineering related programmes has been observed in Province No. 1, Province No 2, Bagmati, Gandaki and Lumbini provinces which are comparatively known as industrialized provinces. Similarly, dominance of agriculture related programmes has been observed in less industrialized provinces like Karnali and Sudurpaschim, which are comparatively known as

agriculture-based provinces. The study team considered this analysis as a basis of districts selection for this study.

Table 7: Monthly earning by occupational sectors

SN	Sector	Average income
1	Agriculture	12,185
2	Engineering (including construction)	17,125
3	Tourism	12,288
	Average (including health and other sectors)	17,809

(Source: CBS, (2019b) (Nepal Labour Force Survey, 2017- 18)

The income level of existing worker in three major trade is presented in table 7. Non-agriculture sector is seen as more productive sector than agriculture since comparatively more productive workforces are engaged in these sectors and relatively more advanced technologies are used. Comparatively, among the non-agriculture sectors, more skilled and productive workforces are found in the engineering sector. On the contrary, agriculture and tourism are the sectors in which productivity of workers are found to be relatively lower. There is an urgent need to invest more on improving hospitality skill of employees for quality tourism in Nepal. Tourism is an emerging and important contributor to generating employment in Nepal. Employment in agriculture (% of total employment) (modeled ILO estimate) in Nepal was reported at 64.54 % in 2020, according to the World Bank collection of development indicators, compiled from officially recognized sources. Nepal - Employment in agriculture (% of total employment) - actual values, historical data, forecasts and projections were sourced from the World Bank in June of 2021.

Unemployment and underemployment

There are limited researches and studies on the sub-sector analysis and workforce survey carried out in the Nepali context. Unemployment, underemployment and poverty are the main challenges of Nepalese economy. Out of total population, unemployment rate is 11.4 % (Labour Force Survey 2017/18, CBS).

Lack of skilled human resources is conceived as a main responsible factor for slow process of industrialization (1.6 %) and for decreasing contribution of manufacturing sector to GDP, which has declined by 2.8 % in the last decade (MoF, 2012). Economic Survey carried out by MoF in 2017 estimates that around 512,000 labour forces enter annually into the labour market. However, majority of them are not gainfully employed due to the lack of appropriate skills. TVET stakeholders have varied interests. For example, employers always attempt to recruit competent and high performing workers from the market. The target groups of the technical training want decent and better paying jobs.

Due to the measures adopted to prevent and control the outbreak of COVID-19, the overall economy including construction, agriculture and tourism sectors is expected to be highly affected (MOF: Economic Survey 2019/20).

There is a need to promote TVET programmes in construction, agriculture and tourism sectors both in quality and quantity in order to mitigate existing mismatch between demand and supply. Market trends and potentiality of the employment opportunities in the above mentioned sub/sectors of economy are briefly discussed in this section. The sector analysis mainly covers construction, agriculture and tourism sectors of economy. Findings of the study are presented as follow:

2.2 Construction sub-sectors

Construction is a vital component of the Nepalese economy. GDP from Construction in Nepal³ decreased to 54,499 NPR million in 2019 from 54,669 NPR million in 2018 (Source: Central Bureau of Statistics, Nepal). The reconstruction has gained momentum. Till mid-March 2018/19, the construction of 6,05,000 private houses has been started. Similarly, the reconstruction of 262 government buildings, 4,201 school buildings, 643 health institution buildings, 221 archeological heritage infrastructure and 124 buildings for security bodies have been completed (MOF: Economic Survey, 2018/19). The Annual Growth Rate of GDP by Construction sector in FY 2018/19 is 8.94% and transportation, communication and storage is 5.90% (Central Bureau of Statistics, FY 2019).

Nepal's construction industry has the potential to offer employment opportunities in roads and airports, irrigation and hydropower, real state and housing in infrastructure development. Nepal's construction industry is fast growing service industry. Demands of skilled workforce, construction equipment and materials have grown by many-folds after the devastating earthquake of 2015. The volume of the allocated budget appeared to have increased as a result of resources to be arranged for post-earthquake reconstruction works. The demand of public expenditure has continued to grow for expediting the pace of construction works.⁴

Construction sector is made up of a small number of large companies and a long tail of small companies and self-employed individuals. Nepalese construction industry, which is still regarded as in infant stage, can play a vital role to uplift the economic and social status of local people through infrastructure.⁵ It has been observed that there is no shortage of people, but rather a shortage of skilled people and youths' less attraction towards construction sector due to socio-cultural reasons. Construction sector has relatively high levels of skill shortages which have a negative impact upon performance of construction companies. Hiring skilled technicians is challenging in construction sector. Construction companies hire Indian workers for high-end skilled jobs. Most construction companies do not have problems retaining skilled workers. For unskilled workers, construction companies are unable to offer comparable benefits to them as compared to what they can receive if they emigrate. Several construction companies feel that the minimum wage has risen fast in recent years.

The majority of construction workers are between the ages of 15 and 59 years in Nepal (Labour and Social Trends in Nepal, 2010 - National Planning Commission/ILO). It has been observed that the majority of youths who drop out of school education before grade 10 are from disadvantaged groups, e.g. underprivileged castes (Dalits), indigenous people (Adivasi Janajati), females, and those from remote areas. Women are almost exclusively unskilled, casual, manual laborers such as head-loaders, carrying bricks, cement, sand, and water as well as other unskilled jobs like digging earth, mixing cement, breaking stones, etc. Women are rarely in male-dominated skilled trades like Supervisor (Junior Engineer, Overseer, Sub-overseer), masonry, plumbing, electrician, scaffolder, welder/fabricator, lab technician, carpenter, power plant operator, etc.

Scarcity of workforce has prevailed in the market because of the attraction of foreign employment among youths. In the national context, some infrastructure projects such as hydropower, irrigation, road and bridge construction have suffered from crisis of skilled workforce such as mason (brick, stone, retrofitting), building electrician, Overseer, scaffolder, heavy equipment operator, lab technician (QA

³ <https://tradingeconomics.com/nepal/gdp-from-construction>

⁴ http://www.mof.gov.np/uploads/document/file/Economic%20Survey%202015-16%20-%20English_20160812062624.pdf

⁵ <http://santoshbaral.blogspot.com/2009/12/nepalese-construction-industry.html>

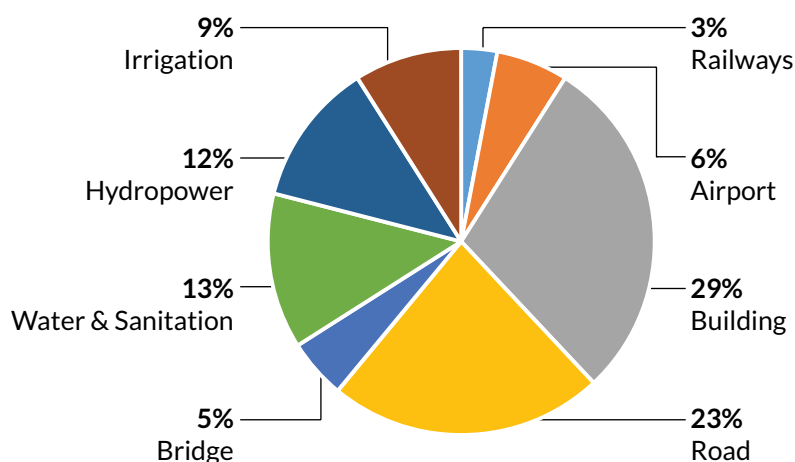
technician), Carpenter, Power Plant operator, Plumber, Fabricator/welder, etc. The need of new and reconstruction in the post disaster phase has further multiplied the need of skilled workforce in the sector.

A study carried out by Swiss Agency for Development and Cooperation (SDC) claims that there is big need of well-trained people in sectors such as construction, tourism, mechanical, electrical, automobile, etc. (Pradhan et al., 2014). The study highlighted that the construction sector is one of the important sectors of economy, where more than one million people are engaged. Another study carried out by the Project Management Office of SAMRIDDHI project on “Corridor Potential Mapping and Assessment Report, 2017” highlights that construction industries are suffering from the lack of skilled workforce. Identifying the gaps in the sector, the report also highlights the lacking of vocational training in the sector. Most of the trained people, after getting some practical experience or even before that, go abroad for foreign employment (Pradhan. et al, 2014). This creates further skill workforce shortage to the Nepali construction industry. Due to the scarcity of the skilled workforce, most of the employees working in construction industries enter as labour and gradually upgrade as semi-skilled and then skilled workers through “learning-by-doing” process. The same study has exposed that the skill workers are in-migrating from India. This reveals the higher employment potential in the construction sector in Nepalese job market. The employment opportunities generally are spread to the city and surrounding areas and in the construction sites of the project implementing districts.

A study carried out by Employment Fund/Helvetas highlighted that difficulties to find the skilled people, difficulties to retain them due to foreign employment, lack of coordination between the training and employment, mismatch of skills required by the sector and training acquired, lack of quality monitoring of the training, difficulties for female to continue the job after delivery, lack of professionalism and management skills of the entrepreneurs are major problems or constraints among others in the sector.

There has been a broad consensus across Nepal about the importance of building effective Technical and Vocational Education and Training (TVET) systems to develop the skills of the workforce and to consequently boost productivity, economic growth and high quality employment. The biggest challenge of the TVET system in the construction sector is heavily supply-driven. Training curricula are rigid and are not regularly updated as per the changing needs of the labor market of the construction sector. Management of construction projects requires management of all aspects of the project, from planning and development to construction. Alongside this, management of skilled workforce is vital to increase productivity and to ensure that projects are completed within contract terms and conditions. Construction sector can play a vital role to uplift the socio-economic status of local people by developing such infrastructures. Infrastructural development is critical to enable a country to achieve long term growth and sustainable poverty reduction. It has been playing an important role in enabling the poor to participate in the growth process.





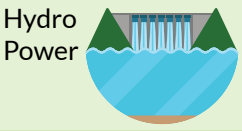
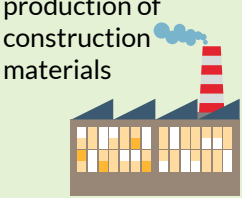
Figure 4: Budget allocation by sub-sectors in construction (2020/21)



(Source: Budget Speech FY 2020/21).

For consistency aligning with the government policy and the thematic area, the construction sub-sectors are selected as mentioned below.

Table 8: Construction sub-sectors background information & resource projection

SN	Construction sub-sector	Scope and potential volume of work (projection of resources)	St 2019/20 Tar 2023/24 15th P Plan	SDG target ⁶ 2030	GDP Cont. ⁷
1	Building 	Residential, commercial, public building under urban development and reconstruction. Stadium 7 (Intl level) 38%:2019, 44%:2022, 50%:2025, 60%: 2030 (92.8 bln including 55bln reconstruction in 2021-22 budget speech)	Pop with Safe housing ¹ 38% / 44%	60%	NA
2	Road 	National highway, feeder road, district road, local roads (include both black top, gravel road & earthen road) Target in 5 yr 2 lane= 20,200 km (7798)* ⁸ 2 lane = 1,174 km (96) Each 10 km road requires 1 Er, 2-3 Jr Er, Sub OS 4-5 ⁹ HR required Er 1,348, JEr: 2,700, Sub OS: 5,400, Skilled 140,000 (Er 1: JEr 2: SubO 4: Skilled Lab 100)	Km/km2 0.55 / 0.74 * ²	1.3	2.3-3.5
3	Bridge 	Concrete, steel structure, suspension, and suspended bridge Under construction 300 (road bridges) Additional 250 and Local trail/bridges 1300	250 (road) ¹⁰ 1300 (Local)	NA	NA
4	Water & sanitation 	The piped water supply system and sanitation system (sewer system and non-sewer systems including collection, conveyance, and treatment or end-use but excludes environmental sanitation – solid waste management) Safe Water 35%: 2019, 50%: 2022 65%: 2025 90%: 2030 Ur sanitation 46%: 2019, 62%: 2022 74%: 2025 90%: 2030	Safe water 35% / 50% Safe San (Ur) 46% 62%	90% 90%	1.0-1.5
5	Hydro Power 	Civil construction, transmission, and line connection. Pop with access to electricity (81% to 86%)	Generated (Installed) ¹ 1250 MW 5820 MW	99%	3.3-4.5
6	Irrigation 	Gravity flow & lift irrigation system (using solar or electrical energy).	Irrigation (Yr round) 33% 50%	NA	1.0-1.5
7	Manufacturing or production of construction materials 	A cross-cutting sector for manufacturing or fabrication of construction materials such as concrete mixtures, cement production, brick industries, steel structure – fabrication, etc.	NA	NA	NA

⁶ SDG/NPC <http://sdg.npc.gov.np/data/?request&secid=19.subsecid=75.indid=282.subindid=1663> (May 10, 2021)

⁷ Dixit, A.M (2017), National study on Infrastructure, Nepal

⁸ 15th PP/NPC infographic 2076/77 to 2080/81 (Magh 2077 BS)

⁹ CTEVT (PP 21): Labour Market Survey (2016)

¹⁰ Budget speech (PP 52) FY 2020/21

For this study, railways and airport sub-sectors are excluded assuming that such contracts are awarded to international construction company and they manage their own skilled labour mostly from their earlier assignment or experienced team. The GDP, share of annual budget and target set by periodic plan indicates a relative size of sub-sector.

The following competency matrix indicates the application of occupation groups across the sub-sectors, which helped to determine the relative weightage or priority of occupations.

Table 9: Competency and skills matrix of occupations in construction sub-sectors

SN	Occupation	Road	Bridges	Hydropower	Water & sanitation	Building	Irrigation	Manufacturing	WT
1	Mason (brick, stone, retrofitting)	1*	1	1	1	1	1	1	7
2	Building electrician	0	0	1	1	1	0	1	4
3	Supervisor Jr Engineer/ OS/ SOS	1	1	1	1	1	1	1	7
4	Scaffolder	0	1	1	1	1	1	1	6
5	Heavy equipment operator	1	1	1	1	1	1	1	7
6	QA Technician	1	1	1	1	0	1	1	6
7	Carpenter	0	0	1	0	1	0	1	3
8	Plant operator	1	0	1	0	0	0	1	3
9	Plumber	0	0	1	1	1	1	1	5
10	Fabricator/ welder	0	1	1	0	1	0	1	4

(Source: study team construct based on the experience, KII, FGD and literature review). *1 symbolizes the occupation is applicable under specific sub-sector.

The KII and FGD with FNCCI & FCAN members revealed the following key findings:

1. It is relatively easy to hire labourers through Indian labour contractors to ensure timely recruitment.
2. Specific skilled occupations are not available or exists very few in the country e.g. scaffolders (overhead water tank, well bridge foundation, basement structure), heavy equipment operators (asphalt mixer, road construction equipment), crusher fabricator etc.
3. Local labourers are not reliable or not preferred due to opportunity in foreign employment, festivals, political agitations/affiliations, and labour law with some social security or financial obligations for longer term employment.
4. Nepalese skilled labourers are relatively new entrant in the major construction sub-sector so they are yet to demonstrate their quality and trust to employers compared to their competitors from India.
5. The employers hire the skilled labourers based on their past performance (finishing and serviceability) and demonstrated skills and not the training certificate. For new skilled labour, it may be difficult to get employed unless teamed up with the other experienced team.

The following chart from a recent CTEVT study report also indicates that developing skills is an essential factor but not sufficient for employment of the skilled human resources. The study collected information from 3,649 graduates of TVET representing all three CAT sectors from 24 districts in 7 provinces (CTEVT 2019).¹¹

Figure 5: Do NSTB graduates give expected performance after hiring?

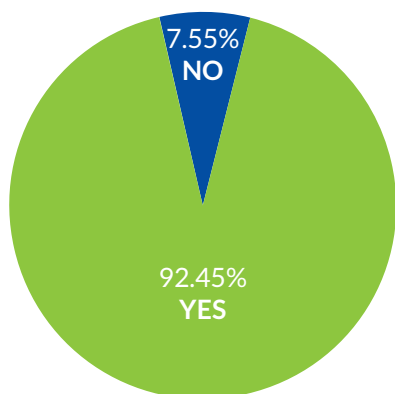
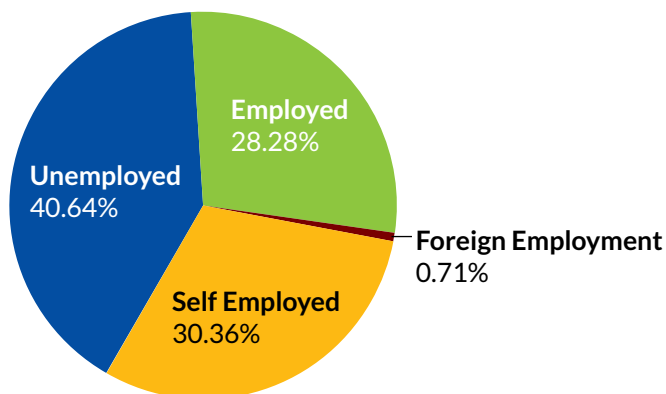


Figure 6: Employment status of respondents (NSTB graduates).



Source: CTEVT 2019.

2.3 Agriculture sub-sectors

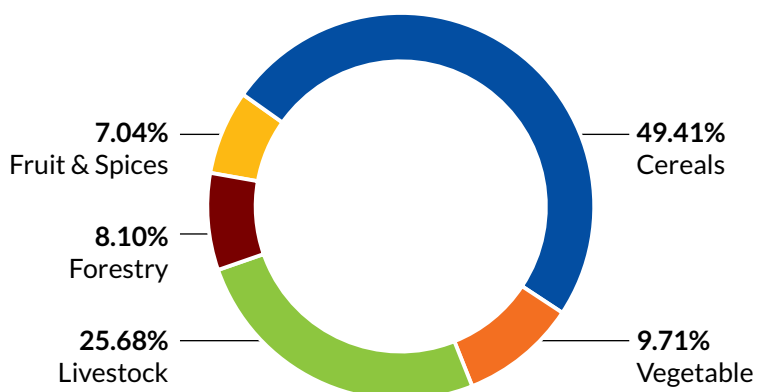
The economy of Nepal is largely dominated by agriculture. With 60% of its population dependent on agriculture for their livelihood and with agriculture contributing a third of the total national Gross Domestic Product (GDP), agriculture is regarded as one of prioritized sectors for the economic development of the country (ADS, 2012). Agriculture and livestock are key components of the livelihoods for the majority in the country. Farming is largely based on low-value cereals and subsistence production, with mere 13% of outputs traded in markets.¹²

The involvement of population in the agricultural sector is gradually declining due to the increasing use of technology and professionalism in agriculture and expansion of service sector. According to the Nepal Labor Force Survey of 2008, 73.9 percent of the population was engaged in agriculture sector, but in 2018 the proportion has decreased to 60.4 percent. The contribution of agricultural sector (agriculture, forest and fisheries) in total Gross Domestic Product is estimated to be 27.7 percent in the current fiscal year 2019/20 which was 37.1 percent in the FY 2010/11 (MOF: Economic Survey 2019/20).

Composition of AGDP

Figure 7: Composition of agriculture GDP

Source: (MoAD, 2014).
Agriculture Sector Profile.
Investment Board Nepal (2015)



¹¹ CTEVT (2019): Tracer study of skill test graduates, Kathmandu, Nepal

¹² https://www.agrilinks.org/sites/default/files/resource/files/innoVATE-Nepal-country-assessment_FINAL_Sep_2013.pdf

The economy of Nepal (GoN) does not have the capacity to create employment for all those entering the labor market. The GoN defines agricultural commercialization as “the transformation from subsistence production (production for own consumption), to production for sale of surplus products and services.” However, the concept of commercialization is not limited to selling surplus products in markets. It must simultaneously consider both the production inputs and outputs as well as the decision-making behavior of farmers in production and marketing. Thus, commercialized farmers need to focus on market demand when making production decisions instead of simply selling some the produce due to a production surplus.

Contribution of agriculture sector to GDP is decreasing whereas non-agriculture sector's is increasing. In fiscal year 2019/20, contribution of agriculture sector to GDP is estimated to be 27.6 percent and non-agriculture sector 72.4 percent (MOF: Economic Survey 2019/20).

Agriculture has been considered the backbone of the economy and still remains the main sector of employment. Around 64 % of the population is engaged in agriculture occupation (CBS, 2011). The contribution of agriculture and forestry to GDP was estimated to remain at 28.89 % in the fiscal year 2016/17 (MoF, 2017). A labour market study carried out by CTEVT on “Analysis of Emerging needs of Technical Human Resources in the Country, 2016” mentions that there are 271 Agro Based Industries and 9,217 Agro Based Cottage Industries operating their production and service activities which provide employment opportunities to 29,153 and 37,203 people respectively. As per the study report, out of the total workforce engaged in the industries, 47.27 % are generally required with technical background. The report states the average growth rate of agriculture sector remains around 3.5 % in the last decade. The lack of agriculture labour, technology and technicians are major hindering factors for the growth of the sector.

The government's 2012 Agriculture Development Strategy Assessment (ADS) Report estimated 200,000 youth migrated abroad (especially in Gulf countries) for employment in 2010, leaving mostly women, children, and the elderly behind. Female-headed agricultural households have increased from 12% in 1995 to 26% in 2010. These facts and figures are indicative of the fact that agriculture is far less appreciated today than in past generations.

The growing unemployment and underemployment of graduates across a wide range is one of the serious issues, and many graduates do not enter or return to agricultural production jobs. Young and enthusiastic agriculture graduates and scientists leaving the country in search of more attractive opportunities abroad is very common; 30% of the total number of agriculture graduates produced each year go abroad to study or work (Pyakuryal, 2013). The result of this is a high average age of agricultural personnel due to the low intake of younger candidates; more than 40% of the scientists are nearing retirement age, while 32% of posts are vacant due to recruitment problems (IRIN, 2013).

Currently, agro-job opportunities have surged on both the national and international fronts, which necessitates a wide range of vocational trainings in different subsectors of agriculture. However, the present capacity of vocational agriculture training in Nepal has been inadequate, justifying for additional efforts for expansion.¹³ Paudel et al. (2013) state that the current TVET program in Nepal fails to prepare effective technical manpower for employment opportunities in agriculture sector. While no concrete data are available on the employment rates of graduates from institutions,

¹³ Agriculture Education and Training (AET) system in Nepal: Present status, challenges and future priorities. Sulav Paudel, Thomas Gill & Edwin Rajotte. The Pennsylvania State University. September 2013.

qualitative information indicates that the placement rate is only around 50-60% (Ghimire, 2011). The current TVET system has several shortcomings like poor access to training, irrelevant training skills, inadequate research and communication in the TVET sector, low quality of training, and a lack of post-training support systems. The availability of skilled labour is a major challenge for commercialization of high value agriculture because of lack of competent skilled labour force in the market (Opportunities and challenge for ongoing commercialization of high value agriculture in Nepal, 2019. Bishnu Raj Upreti and Sushant Acharya).

Production Status of Agriculture Sector: The share of food crops has been higher in total agriculture production. In total agriculture production of the fiscal year 2019/20, the share of food crops is 45.2 percent, vegetables 16.8 percent, industrial crops 14.5 percent, cash crops 13.3 percent and others 10.2 percent. During this period, production of food crops, cash crops, pulses, fruits and spices has increased while production of vegetables, industrial crops and oilseeds crops has decreased. Of all the agricultural crops, productivity of industrial crops is high while that of oilseeds is low (MOF: Economic Survey 2019/20).

Table 10: Status of agriculture crops production

Description	Area (in Thousands Hectare)	Production (in Thousands MT)	Production Change in Percentage)	Productivity (MT Per Hectare)
Food Crops	3418.2	10992.7	2.9	3.22
Cash Crops	430.7	3229.7	3.6	7.50
Industrial Crops	118.6	3519.0	-4.5	29.68
Pulse Crops	340.7	404.2	5.8	1.19
Oilseeds Crops	258.1	278.3	-1.4	1.08
Spice Crops	70.3	550.3	1.3	7.83
Fruits	-	1249.7	6.1	
Vegetables	-	4089.2	-4.3	

(Source: Ministry of Agriculture and Livestock Development, 2020 and (MOF: Economic Survey 2019/20).)

Note: Crops like paddy, wheat, maize, millet, barley and buck wheat are included in food crops. Potato and honey is included in cash crops. Sugarcane, jute, tea, coffee, fishery, and cotton are included in industrial crops. Under pulse variety lentils, gram, pigeon-pea, soya bean, grass pea, horse gram and other pulses are included. Cardamom, ginger, onion, turmeric, chilly are included in spice crops.

The study findings largely depend on the views from the FGD participants and KIIs. Interviews with the 15 FGD participants and key informants revealed the need for comprehensive training on crop planning, improved agricultural practices, integrated pest management, soil health improvements, crop harvesting and marketing, access to microcredits, and the use of crop calendars by producers. Most of the agricultural inputs suppliers were dealing in improved seeds, fertilizer and agricultural equipment without any systematic training and they lacked knowledge of plant protection methods, pesticides classification and their uses. Participants emphasized the need to utilize the potentials of agro tourism through organic production, tea estate recreation and home stay management. Participants also emphasized on the need to focus on climate smart agriculture as well as work in developing resilient agriculture system. There is an urgent need to ensure the supply of major inputs like fertilizer and seeds for increased productivity. Participants also highlighted the need to arrange special package of support for development of commercial farms of agriculture and livestock. Exposure visits to successful farms was also considered to be an important tool for capacity development. Such visits enable farmers to observe successful farms and interact with their owners.

Types of Agriculture Sub-sectors

1. Vegetables farming

Vegetable farming comprises of production and marketing of all types of green vegetables, seasonal and off seasonal vegetables production, organic vegetables and raising their nurseries, seed production and certification including mushroom cultivation. Vegetable sector, one of the important components of horticulture in Nepal has been fleeting over a decade, due to the diversification of producers away from staple crops (rice, maize, wheat, etc) to different type of seasonal and off-seasonal vegetable farming (Acharya and Kafle 2018). Major vegetable crops grown in Nepal are cauliflower, cabbage, broccoli, tomato, radish, broad leaf mustard, carrot, turnip, capsicum, peas, French beans, broad beans, asparagus beans, cowpea, other (legumes), asparagus, tree tomato, chili akabare, chili, okra, brinjal, onion, cucumber, pumpkin, squash, bitter gourd, pointed gourd, sponge gourd, ridge gourd, snake gourd, bottle gourd, ash gourd, balsam gourd, kakari, chayote, watermelon, other (cucurbits), drumsticks, lettuce, fennel leaf, coriander leaf, spinach, cress, amaranths, fenugreek leaf, Swiss chard, others (leafy vegetables), colocasia, yam, elephant foot yam and others (tubers). During the last years, production of vegetable crops has been increased by about 71.22% from 2,190,100 Mt in 2005 to 3,749,802 Mt in 2016 (MOLMAC 2018).

Cultivation of vegetables is substantially more labor-intensive than growing cereal crops but offers more post-harvest opportunities to add value. Vegetables are considered as highly perishable commodities and are available in the some seasons and in the certain parts of the different provinces. It is noticed that large amount of vegetables are wasted due to the absence of facilities of proper post-harvest handling, processing, distribution and marketing. In Nepal, different studies have shown the post-harvest losses of fruits and vegetables are 20-50% (Gautam and Bhattarai, 2012). Perishable nature of most vegetables demands good post-harvest technologies and knowledge. Proper processing and value addition of vegetables grown in Nepal is an additional and complementary method of solving food needs. We can feed more people without bringing an additional land under cultivation.

2. Fruits crops production

Fruits crops production comprises of production and marketing of all types of fruit crops of different climatic regions, their propagation and raising their nurseries. Fruit development sector in Nepal has also been increasing rapidly as a result of different fruit orchard development and improvement programme implemented by government and private sectors. Under fruit crops, there are 3 subgroups in Nepal viz. citrus, winter and summer fruits. Mandarin, sweet orange, lime, lemon and others are majorly sub-grouped as citrus fruits. Similarly, major winter crops are apple, pear, walnut, peach, plum, apricot, persimmon, pomegranate, hog plum and kiwi in Nepal; whereas mango, banana, guava, papaya, jackfruit, pineapple, litchi, areca nut and coconut are major summer fruits. During last years, production of fruits has been increased by about 90.2% from 535,441 Mt in 2005 to 1,018,308 Mt in 2016 (MoLMAC, 2018).

The dried products of fruits, pickles and fermented products, fruits candies and titaura, varieties of sauces, jam, jellies, marmalade and varieties of fruits products, fruits juice and squash, chips and soup powder, tomato products-ketchup and sauce, indigenous products like Lapsi, Bel products and different spices products have high demand in the national and international market. In Nepal many entrepreneurs and investors are investing in these business. However, they are facing many challenges for the promotion of these industries. In the business and industry, agriculture sectors' leaders realized that the skilled workforce is one of the major constraints for the promotion of fruits processing and

creating new opportunities. It has been observed that agro-based SMEs owners and managers lack managerial training and experience and are ill-prepared to face changes in the business environment or to plan appropriate changes in technology.

Dragon fruit, Avocado, Kiwi and Strawberry are not extensively cultivated in Nepal, and their consumption and trade are limited. Fruits which are not commercially cultivated or not adequately utilized but have great potential for commercialization. It is anticipated that the growth in the commercial cultivation of fruit in Nepal lead to new skills needs and new employment opportunities. Commercial cultivation of Dragon Fruit is just in starting phase in Nepal. Present market price of this fruit in Nepal is NRs 800 to 1000 per kg which is 3-4 times price than other horticultural crop. There are availability of thousand of fallow and marginal land in Terai, Bhitri Madhes, valley and lower range of mountain which are suitable for cultivation. Dragon fruit add value of agro-tourism. Dragon fruit has great importance in Nepal as it is beneficial for Small landholder marginal farmers and to improve livelihood of them. It may become the good foreign currency earning ways in future. So, dragon fruit is fruit for future Nepal (Dragon Fruit: Fruit for Future Nepal, 2019. Swodesh Rijal. Faculty of Agriculture, Agriculture and Forestry University, Rampur, Chitwan, Nepal). Avocado is one of the important tropical and subtropical fruit of the world. In Nepal, its cultivation is still in infant phase. The local administration has declared Dhankuta, in the eastern hill district, an avocado capital, due to the rising popularity of the fruit (The Kathmandu Post, May 28, 2021). Kiwi Fruit farming is a new farming concept in Nepal there are some commercial fruit farms recently started in Nepal. Kiwi fruit can grow in mountain region of Nepal, it require 800 to 2900 meters altitude and proper irrigation system in dry season to grow best quality fruit. Kiwi fruit is cash crops increasing demand globally; it helps to improve the economic condition of villagers if they get involve in kiwi fruit farming. Organic farm Nepal growing kiwifruit organically and selling in national and international market (Kiwi fruit farm, Organic farm Nepal). Strawberry farming in Nepal is a new farming concept. First commercial strawberry farming in Nepal started in Kakani, Nuwakot. Now farmers are being aware and attracted by cash crops cultivation and growing all over Nepal where there is suitable climate and possibility of strawberry farming. Strawberry can be used differently like fruit, jam, juice and wine etc. Strawberry is easy growing crop, fruits start to harvest from 3 months after planting. Organic strawberry is a cash crop alternative to traditional crops, help to improve the economic condition of Nepali farmers (Strawberry farm, Organic farm Nepal).

3. Agronomical crops

Agronomical crops comprises of production and marketing of all types of cereal, oilseed and pulse crops.

Cereal Crops: Nepalese agriculture is dominated by cereal crops. Rice, maize and wheat constitute more than 80% of cereal area and production. Rice solely contributes to 20.8% of AGDP and is the major cereal crop. The production of rice largely depends on monsoon and timely availability of fertilizer and improved seeds. As most of the agriculture research is based on rice, yet the productivity of this crop is below 3.5 mt/ha (Inter Provincial Dependency for Agricultural Development, Department of Agriculture. Development Vision Nepal P. Ltd. 2018). Nepalese agriculture is dominated by cereal crops. Rice, maize and wheat constitute more than 80% of cereal area and production. Rice solely contributes to 20.8% of AGDP and is the major cereal crop. The production of cereal crops largely depends on monsoon and timely availability of fertilizer and improved seeds.

Oil seed crops: The productivity of oilseed is similar to pulse crops. However, the remarkable increments in the production of oilseed have been achieved in current fiscal year with the growth accounted 16.1%

compared to last season. The productivity of oilseed is similar to pulse crops. However, the remarkable increments in the production of oilseed have been achieved in current fiscal year the growth accounted 16.1% compared to last season. Although the area under oilseed has decreased by 4% the increased productivity by 21% ensured the production of oilseed to 246,000 metric tonnes (Inter Provincial Dependency for Agricultural Development, Department of Agriculture. Development Vision Nepal P. Ltd. 2018). Still, the import of edible oil is increasing year after year.

Pulses: The production of pulse crops has been at constant rate during last five years without significant growth. However, the total production of pulse crop is expected to grow by 4.4% in 2017/18. The production is expected to reach 369,000 metric tons which is far below than the annual demand. Lentil constitutes more than 50% of total pulse crop production and it is also the sole export item of the country. The low productivity of pulse crop is major issue for agriculture research (Inter Provincial Dependency for Agricultural Development, Department of Agriculture. Development Vision Nepal P. Ltd. 2018). The production of pulse crops has been at constant rate during last five years without significant growth. However, the total production of pulse crop is expected to grow by 4.4% during 2017/18. The production is expected to reach 369,000 metric tons which is far below than the annual demand. Lentil constitute more than 50% of total pulse crop production, which is also the sole export pulse crop item of Nepal. The low productivity of pulse crop is major issue for agriculture research. Low importance of pulse crops in agriculture research and thus unavailability of quality seeds are hindering the sub sector. Unavailability of irrigation in winter, the main growing season of pulse crop has fuelled on low productivity. Despite efforts, the productivity of pulse crop is only around 1 metric ton per hectare in Nepal. Mostly because of poor technology, irrigation facility and quality seeds; the production and productivity of pulse crops in Nepal are below the regional averages in SAARC regions.

4. Floriculture

Floriculture comprises of production and marketing of all types of flowers, ornamentals plants, growing their nurseries and land scaping. Floriculture is an export potential industry. Nepal as a tourist destination has good market opportunities for floriculture products. According to the Floriculture Association Nepal (FAN), up to 2014-15 the volume of flower import was 100,449,610 pieces and export is only 2,540,215 pieces. It shows considerable amount of trade loss of Nepal. Association indicates the volume of floriculture business in Nepal is growing at the rate of 10 -15% per year. The commercial floriculture has now been expanded to more than 34 districts with over 550 private nurseries covering 80 hectares of land and engaging more than 40,000 workers. Nevertheless, the production flowers and landscape issues which hampers growth of this industry are lack of required seeds, germplasm, tissue culture facilities, shortage of capital investment, and poor post-harvest management; in addition, the investors realized that lack of skilled human resource on floriculture nursery and landscaping is the vital issue in this business.

5. Livestock and poultry farming

Livestock and poultry farming comprise of care and management of all types of domesticated animals and birds especially cattle, buffalo, pig farming, goat farming, and poultry birds such as Kalij, Batta, Turkey, Ostrich, etc. including their breeding and marketing. Nepal is abundantly awarded with agro-biodiversity. Instead of agricultural corps, cattle/buffalo farming, swine and poultry farming, sheep/goat farming are common livestock farming system in Nepal. These livestock farm widely engaged skilled and unskilled livestock farm helper, junior technical assistant and junior assistant technician; and even veterinary technician and livestock technician. Meat and eggs are the most important livestock products that not only enhance food security but also are the major source of nutrition requirements. The per capita supply of Meat and eggs are 12.4 kg and 50 against their requirements of 14 kg and 48.

In this aspect, country has gained self-sufficiency in eggs and requires substantial efforts in getting sufficiency in meat. The private sector employers realized a huge gaps of competent human resources in livestock production and health care technician of different level with strong willingness to work in real farm situation. These are basic level and general type of livestock field technician. They work and guide junior workers in implementing better rearing and health care practices of livestock and poultry birds.

6. Dairy products processing and marketing

Dairy products processing and marketing comprise of collection, chilling and processing of milk, preparation of different milk products and their marketing. Nepal is abundantly awarded with agrobiodiversity. Dairy products are the major source of nutrition requirements. The per capita supply of milk is 71.7 liter against its requirements of 91 liters. In this aspect, country requires substantial efforts in getting sufficiency in milk. Almost 80% of milk in market, which have been produced by small holder farmers with a well- developed dairy value chain. Ministry of Livestock Development (MoLD) has given due importance for milk production providing support on feed and forage programmes to the farmers as well as introducing crossbreeding programmes to uplift the genetics of local cattle and buffaloes. The seasonal fluctuation of milk production is hampering the growth of dairy sector. The need of product diversification and powder milk production are of immense important in long run to sustain dairy sub-sector in Nepal (Sharma, B., 2017).

At present, the milk production per year in Nepal is 1,800,000 MT (MOALD, 2016) of which 20% goes to market from formal sector and rest 80% is sold in local markets and used for household consumption. Of the total milk produced, 70% is obtained from buffaloes and 30% comes from cows. The milk production from buffalo is very much seasonal, whereas cow milk is available round the year in similar pace. Currently, the availability of milk is 71 lit / head/year. The MOALD has 40 points commitments to increase the milk production to reach 91 litre per head per year within 3 years' time (MOALD, 2016). There are 1,855 milk marketing cooperatives in Nepal. 45% of dairy marketing has been done by Dairy Development Corporation (DDC). Private dairy has 55% share in the market.¹⁴ The quality milk production and consumers' choice is very much limited due to unavailability of milk in required amount round the year in city and metropolitans. Thus, it is evident to focus on processing of milk and clean milk production for marketing.

7. Bee and sericulture

Bee and sericulture comprise of care and management of commercial insects like honey bee and silk worm, cultivation of mulberry and bee pasture including processing and marketing of their products. Beekeeping has been in practice from an ancient time and cultural heritage in Nepal. Nepal is the most potential country for beekeeping, enriched with diversified flora where more than 37% of the land is covered with natural forest with herbal/medicinal plants. Additionally, Nepal is known for its inherited technology of beekeeping; the honey hunter take risk to pick wild honey up from rock walls and tall trees with traditional tools. Apiculture began 20 years ago but is still not very developed. Several honey producing bees are known in Nepal, only two (Cerana and Melifera) of them are raised commercially. Nepal's topographical, climatic and floral variety is considered heaven for bees. Bee keeping business is increasing in Nepal. Cooperatives have been playing crucial role in the development of the honey industry. The demand of honey has been increasing as well as the volume of production is also rapidly increasing. Substantial amount of financial and human resources engaged by the private sector in this

¹⁴ Milk marketing and dairy value chain development in Nepal in relation with climate resilience effort in the present context (2017). B. Sharma

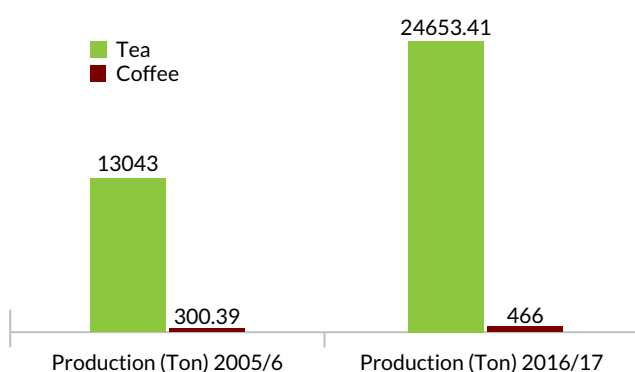
business. However, availability of dedicated and competent workforce is also considered as a severe challenge of the investors.

Nepal abounds in fibrous materials especially, wool, fur, cotton, Allo, jute, and straw. Their only small number can be used for textile products or other industrial purpose. Most textile fibers are slender, flexible, and relatively strong. In Nepal, natural fibers have been used in the textile industry since a long time. Fibers can be extracted from the bark of some plants like jute, ramie, nettle, banana and hemp. People have tried to commercialize the fiber and develop high quality exportable end products. According to Nepal textile and cloth apparel industry directory, textile and garment cloth industries of Nepal have prime role in national economy and growth of tourism sector in Nepal. This sub-sector helps to employment, livelihood income and GDP. Textile weaving mainly handy craft, homemade work and small textile processing house business are major sources of textile production. Nepal as a tourist destination textile goods have high demand. More than 55 types of handicraft, home textile and décor items exported from Nepal to 110 countries. United States and European countries are major market of these products. Textile industries of Nepal faces severe raw material availability problem. Domestic raw materials can not satisfy the national demand. All fabrics mainly imported from China. To overcome this gap this sub-sector should boost up the domestic textile production. Private sector realized that the natural fiber and lump crafting human resources has to be greatly increased.

8. Plantation and cash crops

Plantation and cash crops comprise of cultivation practices, postharvest management, processing and marketing of tea, coffee, cardamom, sugarcane, tobacco, zinger, turmeric, spice and other cash crops. Tea and coffee are the high value low volume cash crops which have comparative advantage for export due their specialty. During last ten years, the production of tea has been increased by about 89% (Figure 8), whereas, within same period, the production (green beans) of coffee has been increased by about only 55.13% (Figure 8) (MOLMAC 2018). There is need of more interventions for further commercialization through the public as well as private sectors to promote their export.

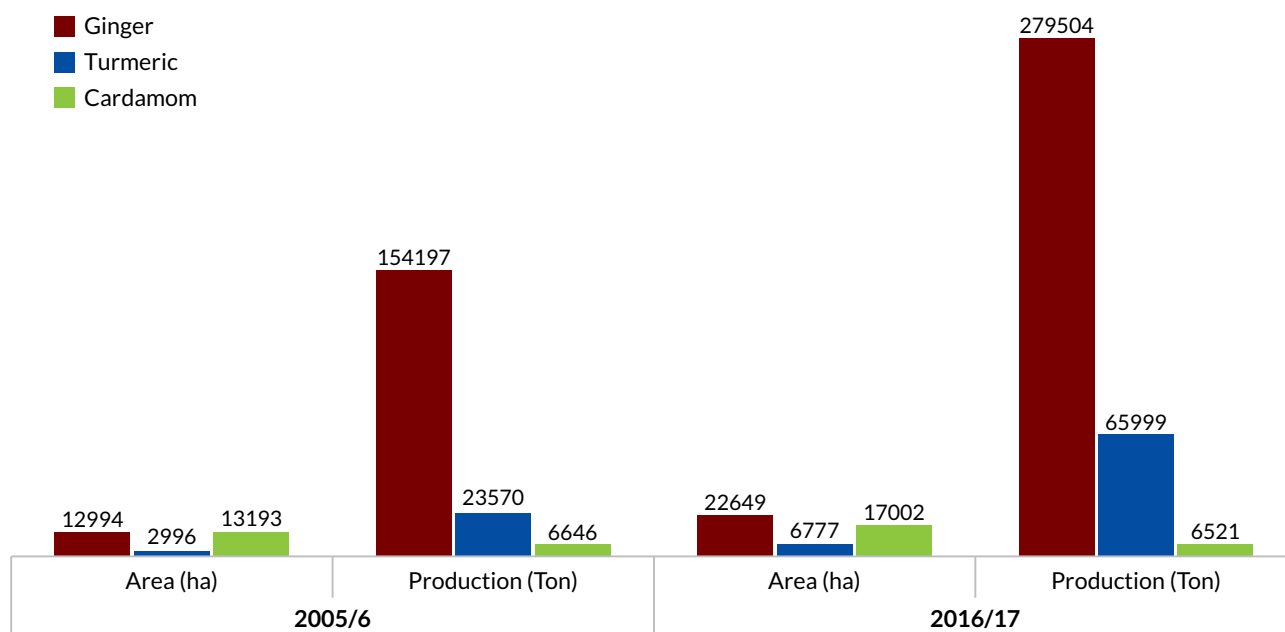
Figure 8: Tea and coffee production in 2005 and 2016



Tea and coffee are some of few commodities that have competitive advantage due to favorable geography and climate. Production of these commodities has been increased during recent years. However, trade dependency mostly to India has restricted the potential of these crops. Tea, cardamom and coffee are some of few commodities that have competitive advantage due to favorable geography and climate. Production of these commodities has been increased during recent years.

Ginger (*Zingiber officinale* Roscoe), turmeric (*Curcuma longa* L.) and cardamom (*Amomum subulatum* Roxb.) are the most export potential high value spice crops. Among them, the highest production was found in ginger during 2005 (154,197 Mt) and 2016 (279,504 Mt) and the production was increased by about 81.3% in 2016, as compared to 2005 (**Figure 9**). Similarly, the cultivation area of ginger was also increased by about 74% in 2016 as compared to 2005 (MOLMAC 2018). Likewise, the area and production of turmeric has been increased by about 126.2% and 180% respectively in 2016 as compared to 2005; whereas in cardamom, decreasing rate of production was found.

Figure 9: Area and production of ginger, turmeric and cardamom in 2005 and 2016



Major spice crops in Nepal are cardamom, ginger, garlic, turmeric and chili. Ginger contributes about 61% in total spice crops production in 2016 (MOLMAC 2018). In Nepal, production of major spice crops has also been increased by about 96.97% from 226,914 Mt in 2005 to 446,972 Mt in 2016. There is a potential fact of species for income generation, employment creation, agro-based industries development, import substitution and export promotion.

9. Fishery

Fishery comprises of raising of hatchery or fish breeding, care and management of commercial fish ponds, rearing of fish in natural water resources (ponds and river) their postharvest management and marketing. Fisheries have been practiced in Nepal for a long time and have a strong tradition in Nepal. Rivers are one of the major source of capture fishery, contributing almost 50% of total captured fish production and a large number of fishermen and their families are involve in capture fishery which provide income and partial employment for them. Out of total 818,500 ha of total water surface area, about 6,000 rivers and rivulets cover 395,000 ha (or 48 percent). There are also some fisheries activities in the lakes especially around Pokhara valley but the main capture fisheries production is from the rivers. Fishing activities in irrigation channels, rice fields, swampy areas and ghols is also a significant source of capture fisheries production. Most of the fisheries and aquaculture production in Nepal is consumed by the domestic market. The per capita consumption of fish has increased significantly from 0.330 kg per person per year in 1982 up to 1.753 kg in 2006. The domestic production of fish is not

sufficient to meet the domestic demand and there is a significant import every year from neighboring countries mainly India. Nepal has a comparative advantage compared to most countries in the region given the colder climate in the mountains and mid-hill regions. Cold water fish species such as Rainbow trout has a high potential in especially the mid-hill region, where other income sources are limited. Both domestic and regionally there is a high demand for this valuable fish and there is plenty of opportunities to tap into this market.

10. Herbal and medicinal plant

Herbal and medicinal plant comprise of collection and postharvest management of herbs and medicinal plants from forest including domestication and cultivation, their processing and marketing. Herbs have numerous health benefits. It may help to prevent and manage many vital health problems like heart disease, cancer and diabetes. It also stimulate the immune system and strengthen human body to resist disease and infections. In Nepal, some herbs domestic and some exotic herbs are cultivated organically and conventionally for the production of essential oils and dry herbs. Cultivation of herbs and herbal application has long history. Gradually, it is emerging as an important economic sector of Nepal. Herbs are major export and means to minimize the trade loss of Nepal. Nepal trade integration strategy 2016 has recognized medicinal herbs as an important product having huge export potential. Because of its multi-millions trade transaction and income generation potentiality, this sub-sector has attracted many stakeholders of commercialization and conservation interest. Nepali herbal products have enormous potential to secure remarkable exports earnings but the inadequate research, absence of proper processing and failing to label, appropriate specifications and lack of herbal processing skilled workers have been hampering its business prospect according to herbal experts. However, a large number of unskilled workers are engaging to cultivate, domesticate wild herbs and collect naturally available herbs directly or indirectly in the herbs production and processing enterprises according to the private sector investors.

11. Agro-based enterprises

Agro-based enterprises comprise of installation, operation of agricultural value added products processing industry and agricultural inputs like animal and birds feeds, seeds, manure, fertilizers, agricultural tools-equipment their production and supply including agricultural credit and micro-finance services.

A vast majority of farmers are smallholders who often use family labor and follow traditional agricultural practices. The lack of access to appropriate direct farm inputs is seen as a significant constraint to enhancing the productivity of rural farmers. There is a need to provide improved access to agriculture inputs and technologies to smallholder households through a market-driven/private sector supply chain. Most input suppliers have limited knowledge of their products and do not stock the proper inputs such as seed varieties, fertilizer, and pest control technologies. Most input providers are selling improved seeds, fertilizer, and equipment without any systematic training and lacked knowledge of plant protection methods and pesticide classification and uses. There is a need for a private sector supply chain (made up of manufacturers, distributors, agri-input dealers, and produce marketers) to produce, distribute, and sell affordable service packages and to profitably sell farm produce. It is important to ensure that farmers gain access to information on market demand, price and production. The GoN should develop livestock markets, well-equipped collection centers, and storage facilities in partnership with the private sector to improve the efficiency of the agricultural market. In order for farmers to take advantage of improved technologies, the GoN should subsidize the technologies for lower-income segments of the population.

There is a need to facilitate backward and forward linkages between smallholder farmers known as MSEs and business development services (BDS) providers. BDS providers are marketing products and services to MSEs. In the rural area agro-vets play an important role in providing MSEs with seeds, fertilizer, pesticide, micronutrients and other agri-inputs. Lead farmers are providing agronomic support and other services to MSEs. BDS market interventions need to be designed for developing small-holder market systems to make it possible for the rural poor to be participants of both input and output markets, and to derive significant net income from their micro-entrepreneurship. Although the focus of the BDS is on non-financial business services, facilitation of credit linkages with financial organizations may promote entrepreneurship. Access to finance will enable the poor potential entrepreneurs to participate in the market.

Microfinance is termed as the financial services rendered to the deprived groups of the people and small entrepreneurs in savings, credit, remittance, micro insurance, etc. to help them in developing self-employment opportunities and various income generating activities. Small sized loan, group based lending, group savings, small-scale entrepreneurs, diversified utilization, quick repayment, close monitoring and simple terms and conditions on credit (without collateral) are the determining characteristics of micro-finance. Nepal has an experience of about four decades in microfinance. Micro-finance institutions are the specialized types of institutions pursuing income generating activities to promote the interest of the poor by providing banking and financial services and thereby contributing in upgrading their economic and social standards. The micro credit activities of financial non-government organizations (FINGOS) and saving and credit cooperatives (SACCOs) come under community-based model and basically they confine their banking services within their members only. There is a wide scope and tremendous opportunity for these institutions to involve in microfinancing right through various rural financing programmes. The challenge of the day is first reaching out to the majority of the poor people with micro and rural finance and secondly making them viable, sustainable, and profitable.

2.4 Tourism sub-sectors

Tourism sector creates jobs, drives exports, balances foreign exchanges, and generates prosperity across the nation. Nepal is one of the major tourist destinations in the world. Nepal has geo-social diversity, unrivalled natural beauty, abundant bio-diversity, multi-ethnic, multilingual, multi religious, and multi-cultural identities. Nepal's tourism industry is regarded as a significant contributor to employment generation and foreign exchange earnings. Diversification and expansion of tourism sector have enhanced people's livelihoods and employment opportunities thereby raising their living standard. Economy survey 2017 conducted by Ministry of Finance (MoF) for the fiscal year 2016/17 estimated that the contribution of hotel and restaurant sector on GDP to remain at 1.98 percent at the end of the fiscal year 2016/17.

Nepal's tourism sector generated Rs. 240.7 billion in revenue and supported more than 1.05 million jobs directly and indirectly in 2018, according to the annual World Travel and Tourism Council research report. The London-based organization organisation said that travel and tourism's total contribution to the country's gross domestic product stood at 7.9 percent. As per the report, domestic tourists contributed to 56 percent of the total revenue of Rs. 240.7 billion generated by the tourism industry in 2018. For the year 2019, its contribution to Nepal GDP stood at 6.7% injecting Rs. 195 billion to national economy and contributing to one million jobs (6.9 % of the total employment). The money generated by the hotels, travel agents, airlines, transportation services and restaurant services are the

major contributors in Nepal. The report said that 497,500 jobs were generated directly out of the total jobs supported by the industry last year.

Table 11: Contribution of tourism to national GDP over a decade

Year	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
GDP Contribution (in %)	2.4	1.8	2.0	2.0	2.4	2.5	1.9	2.2	2.3	2.2

(Source: Economic Survey, 2019/20)

The Nepal Rastra Bank (NRB) 2019/20 estimate indicated that the contribution of the tourism sector to the national GDP for the year 2018/19 was 2.2%. The above table shows contribution of tourism sector to overall GDP throughout a decade. However, these figures are alleged to be under-estimates of the real contribution because the data used to generate the tourism sector's contribution to the GDP only covers hotels and restaurants, which constitute only a small sector of the tourism industry. Large numbers of other direct and indirect sectors, backward linkages have not been included in these estimates. These figures are alleged to be under-estimates of the real contribution because the data used to generate the tourism sector's contribution to the GDP only covers hotels and restaurants, which constitute only a small sector of the tourism industry. Large numbers of other direct and indirect sectors backward linkages have not been included in these estimates.

According to Macro Economic Update-2019 by Asian Development Bank, the average direct contribution of tourism to GDP hovers at 3.9% from 2008-2018. As per the report, the industry earns on an average 25% of the total foreign exchange and provides direct employment to more than 200,000 people.

Looking at the tourist arrival trend, it is found that the tourist arrival (383,926) on 2006 has almost doubled and reached to 753,002 in 2016 (MoF, 2017). Tourist arrival in 2016 has grown by 40 % as compared to previous year 2015. National Tourism Strategic Plan has targeted to make 2,522,000 tourists visit and create 898,000 employment by 2025.

The study conducted by CTEVT on “Analysis of Emerging Needs of Technical Human Resources in the Country” has listed at least 18 highly demanded occupations (p. 57-58) in tourism private formal sector. Key sub-sectors are named as hotel, lodge, restaurants, tea houses, travel/trekking/rafting/mountaineering agencies, homestay services and some adventure activities (bungee jumping, paragliding, etc.) as emerging ones. In terms of occupations, the report identifies Waiter, Cook, Housekeeper, Field Tourist Guide, Thanka Painter, Receptionists as the highly demanded occupations in the tourism sector. Major occupations identified during the study of SAMRIDDHI/Helvetas are Chinese Cook, Indian Cook, Continental Cook, Waiter, Assistant Waiter, Bakery, Small Hotel & Lodge Assistant, Housekeeping/Cleaner, Sweets & Snacks Maker, Barista (Coffee Maker) etc. This indicates ample employment opportunities in the tourism sector.

It is very difficult to measure the contribution of tourism to the employment, some studies estimate every one tourist generates nine direct or indirect jobs (Pradhan et al., 2014) UN WTO, however, the Nepal Tourism Employment Survey 2014 carried out by (MoTCA) has much lower estimates, stating one job was generated from every six tourists based on the ratio of tourists to employment. Similarly, there is variance in tourism contribution between WTTC and MoTCA, a former considers both domestic and international visitors while latter considers only international visitors.

Most of the tourism related activities are concentrated in Kathmandu, Pokhara, Chitwan and Lumbini, however, activities such as trekking, mountaineering and homestays take place in rural and remote areas. This means direct and indirect employment potential is high for a wide range of people, and there is a large range on level of skills (from low to high) required across the sector, from basic housekeeping jobs in hotels to professional trekking and mountaineering guide work. As many activities takes place in rural areas also, ethnic groups are also involved in the tourism sector. In terms of employment, according to the tourism employment survey conducted by MoCTA in 2014, the proportions of Dalit and Terai-Madhesi employees were just 5% and 3%, respectively, however, this study doesn't incorporate many sectors of tourism.

Star Hotels, Tourist Standard Hotels (TSH), Home Stay (private and community), Trekking Agency, Travel Agency, Rafting Agency, International Airlines, Domestic Airlines, Paragliding, Tourist Transportation, and others touristic activities are key formal, private sector employment establishments.

The average length of stay of the tourist hovers in between 12.4 to 13.4 days. Out of total tourist arrivals, five countries occupy almost 53 percent. The proportion of tourists from these countries are; India (21.2%), China (14.2%), USA (7.8%), United Kingdom (5.1%) and Sri Lanka (4.7%) respectively. Of the total, 83 percentage of international travelers travelled by air and 17 percentages by land. The average expense of the tourist per day was US\$ 47.5 in 2019.

Table 12: Details of tourist arrival and average length of stay

Year	Number of Tourist Arrival	Average Length of Stay (Days)
2010	602,867	12.67
2011	736,215	13.12
2012	803,092	12.16
2013	797,216	12.60
2014	790,118	12.44
2015	538,970	13.16
2016	753,002	13.4
2017	940,218	12.6
2018	1,173,072	12.4
2019	1,197,191	12.7

The above table 12 shows that the trend of tourist arrival is increasing in the past few years, however, for the year 2020, only 230,085 tourist visited Nepal due to COVID-19 pandemic. The pandemic has had a major impact in the tourism industry in Nepal. The government initiative of "Visit Nepal 2020" campaign that hoped to attract approximately 2,000,000 visitors, was cancelled and shattered the tourism and hospitality sector. The full impact and of the pandemic is yet to be assessed as the second wave of it is still ongoing. It led most of tourism related businesses to take cost-cutting measures, like instituting forced leave or even laying off staff. It is estimated that there are more than 1,000 trekking guides and porters who are jobless now in Pokhara due to the lockdown. According to some recent media reports, hotel occupancy rates in Kathmandu, Pokhara and Chitawan have fallen by 70-80 percent. This is just a tip of the iceberg and the impact of COVID-19 on tourism is estimated to be devastating.

Identification of Tourism Sub-sectors

The sub sectors in tourism are identified on the basis of contribution of sub sectors in the National GDP, number of employments generated, volume of investment and the number of member organizations in the sub sector. There are difficulties in estimating the number of jobs in tourism sector, both indirectly and directly. The Industrial Enterprise Act of 2016 states that the tourism industry comprises all hotels, restaurants and tour/travel agencies plus activities such as skiing, water rafting, cable cars, pony trekking, hot air ballooning, etc., yet official Tourism Statistics by MoCTCA (2015) do not mention these services.

1. Hotel Industry

Hotels in Nepal is a growing industry. From small cafes, resorts, food chains, five-star hotels, to international franchises, the field is on a growth escalator. Hotel Industry can be sub categorized into star hotels, tourist standard hotels, homestays, resorts, lodges. As per MoCTA, there are 1,289 star and tourist standard hotels registered and operational in Nepal till 2019 with bed capacity of 43,999 beds per day. The number of stars rated hotels and non-star hotels has reached 138 and 1,151 respectively in FY 2019. Apart from star rated hotels, tourist standard hotels followed by homestays is also rapidly growing in Nepal. Nepal Tourism Statistics 2019 shows that there were 389 registered homestays in the country till 2017. Of the total homestays, 218 are run by local community, while 65 are privately run. As per MoF, the contribution of hotel and restaurant sector to GDP is estimated at 2.0 percent in the FY 2016, providing direct employment to 178,000 persons.

2. Airlines- Aviation Industry

Nepal Airlines is the first flag carrier of the airline in Nepal. The then Royal Nepal Airlines Corporation (RNAC), established in 1958, was Nepal's first Airline. At present, there are 49 airports in the country, out of which around 32 are currently operational, including International Airport at Kathmandu. Gautam Buddha International Airport, Pokhara Regional International Airport and Nijgadhi International Airport—are in the pipeline. Seven domestic airports are under construction and 17 are as non-functional. There are about 19 domestic airlines giving service in the country and among them Buddha Airlines and Yeti Airlines are the most prominent among private airlines and they cover more than 72 percent of the market.

The number of international airlines operating in 2019 were 29. Qatar Airways, Indian Airlines, Etihad Airlines, Dragon Air, and Air Arabia are famous international airlines having the significant market share. 30 international airlines carried 4,138,764 passengers out of which 2,245,338 were outbound and 1,893,426 in-bound by 32,425 flights in 2019. The number of countries having civil aviation contract reached to 40.

Airlines, airport operators, airport on-site enterprises (restaurants and retail), aircraft manufacturers, and air navigation service providers employ 14,000 people in Nepal. In addition, by buying goods and services from local suppliers the sector supported another 36,000 jobs. Foreign tourists arriving by air to Nepal, who spend their money in the local economy, are estimated to support an additional 381,000 jobs. In total 455,000 jobs are supported by air transport and tourists arriving by air. Air transport in Nepal is forecast to grow by 165% in the next 20 years. This would result in an additional 6.9 million passenger departures by 2038. If met, this increased demand would support approximately US \$2.9 billion of GDP and around 784,400 jobs. The air transport industry, including airlines and its supply chain, are estimated to support US \$272 million of GDP in Nepal. Spending by foreign tourists supports a further US \$807 million of the country's GDP, totaling US \$1.1 billion. In total, 3.7 percent of the

country's GDP is supported by inputs to the air transport sector and foreign tourists arriving by air (Source: International Air Transport Association: IATA- the trade association for the world airlines).

3. Travel, Trekking and Hiking

Travel agencies are the private organizations that provide travel and tourism related services on behalf of hotels, airlines, car rental companies and tour companies. They act as an agent, selling travel products and services on behalf of a supplier. Travel agencies are officially operating in Nepal, providing employment to 4,200 tour guides including administrative staffs. The most popular trekking destinations in Nepal are Everest Base Camp, Annapurna Base Camp, Annapurna Circuit, Poonhill trek, Langtang trek, Manaslu trek, Gokyo trek, upper Mustang trek, upper Dolpo trek, Kanchenjunga trek, Makalu base camp, Rara Lake, Phoksundo Lake, and Tilicho Lake (Bookmundi, 2015). According to the NTS-2019, a total of 2764, trekking agencies are officially operating in Nepal, providing employment to 17,625 trekking guides. Along with trekking another popular choice of tourism activity in Nepal is hiking. The most popular hiking destinations in Nepal are Nagarkot, Chisapani, Shivapuri, Namo Buddha, Godavari, Amitabha Monastery, Sundarilal, Nuwakot, Ghale Gaun, Phulchowki, Manakamana, Kulekhani, Daman, Dakshinkali, Kakani, Dhulikhel, etc.

4. Mountaineering

Ever since the country opened the doors for people to climb mountains in Nepal, it has become a best place in the world to ascend the mountains and feel proud and accomplished. Out of the total tourist arrival, 197,786 tourists visited for trekking and mountaineering in the year 2019. The government issued permission to 1,921 teams and 8,202 tourists to expedite the mountains in the year 2019. The government earned \$5.07 million or Rs. 608 million in royalties from the issuance of climbing permits. Out of the total revenue, Everest accounted for \$4.05 million or Rs. 486 million. Although the mountaineering is a seasonal activity, it has a good potential of creating jobs and associated employments.

5. Rafting, Kayaking and Canyoning

Nepal has numerous rivers and rivulets, lakes and water sources which offers adventure sports activities such as rafting, kayaking and canyoning. Rafting in Trishuli River, Seti River, Bhoté Koshi River, Kali Gandaki River, Marsyangdi River, Sunkoshi River, Arun River, Karnali River, and Tamur River are popular in Nepal for pure joy and fun. As per NTS 2019, there were 73 registered rafting agencies in fiscal year 2018/19 whereas the number has increased by 8 and reached 81 in fiscal year 2019/20.

6. Tourist Transportation Service

Transportation is one of the most important components of the tourism infrastructure that facilitates mobility of person and goods from one place to another. As per NTS 2019, there were 77 tourist transportation services in fiscal year 2018/19 whereas the number has increased by 5 and reached 82 in fiscal year 2019/20.

Table 13: Tourist industries and guides in Nepal

Year	Travel Agency	Trekking Agency	Rafting Agency	Tourist Transportation Service	Tour Guide	Trekking Guide	River Guide
2015	2,768	2,019	66	67	3,507	11,358	187
2016	3,444	2,367	72	72	3,717	13,049	207
2017	3,824	2,637	73	72	3,876	13,831	230
2018	3,508	2,649	73	77	4,126	16,248	253
2019	3,680	2,764	81	82	4,200	17,625	266

7. Paragliding

Since the arrival of paragliding in Nepal in 1998, it has become one of the most lucrative tourist activities available in Pokhara. Sarangkot in Pokhara is the most famous paragliding destination in Nepal, followed by Godawari, Fulchowki, Kot Danda and Chapakharka. 95 % of paragliding activities take place in Pokhara. There are around 62 companies that run paragliding in Pokhara and each company can keep six pilots, but there are only 180 Nepali and seven to eight foreign pilots. Nepali paragliding companies are forced to employ foreign pilots, and pay higher remuneration and fees. (Source: The Himalayan Times - 2016).

8. Bungee Jumping

Bungee Jumping in Nepal is gaining popularity in the last few years at a fast rate especially amongst the locals. Both locals as well as tourists indulge in the activity to get thrilled from head to toe. There are only three places that offer an opportunity to experience bungee jumping in Nepal. Bungee Jumping at the Last Resort (Bhotekosi Gorge) near Araniko Highway, Kushma of Parvat district and Hemja Pokhara, located just twenty minutes away from Pokhara Lakeside are the existing bungee jumping sites and in view of Nepal's mountainous geography, many more are possible in future.

9. Ultralight Aircraft

Ultralight flight in Nepal is available only in Pokhara. The main reason to choose Pokhara valley for Ultra-light aircraft is that of its proximity to the mountains, and the scenic lakes. Professionally Ultralight flights started in Pokhara from 1997 AD and are claimed to be the first in South Asia.

10. Bird Watching

Bird watching is possible in any corner of Nepal. Koshi Tappu, Chitwan and Bardiya are the main sites in Terai while in the mountainous region, the Everest and Annapurna regions boast well-known species of birds. More than 850 species of birds are found in Nepal, and a good number of these birds can be spotted in and around the Kathmandu Valley alone. The hills around Kathmandu valley especially Nagarjun, Godavari, Phulchowki and Taudaha lake are popular bird watching areas. There are 20 protected areas in Nepal including 10 national parks, three wildlife reserves, six conservation areas and one hunting reserve. Almost all of them have potentials of bird watching but there are limited number of guides capable of providing information to bird watchers.

11. Handicraft and Curio

Nepalese handicrafts have been known all over the world for its rich art and crafts expressing the great tradition and culture of the Himalayan Nation. According to Handicraft Association of Nepal (HAN), Nepalese handicrafts cover 42 groups of products out of which, metal craft (statue and utensil), pashmina products, paubha (thanka), silver and gold jewellery, stone carving, wood craft, bags and accessories, basketry products, filigree products, handmade paper products, handloom products, ceramics, decorative items, leather products, horn and bone products, macramé (knot crafts), religious goods, crazy/fancy hats, ethnic dolls, paintings, giftware, ethnic costumes, hand knitwear, incense, natural buttons made of small tree branch, stone, bone and horn, natural fiber products (apparel and non- apparel products made of hemp and allo), puzzles and toys etc. are the major ones. According to the same source, the industry contributes around Rs. 20 billion to the national economy annually through exports and domestic consumption.

Analysis of Occupations

3.1 Analysis of occupations in CAT Sectors

In line with the selected sub-sectors (presented in Chapter Two), potential and vibrant occupations are identified and presented in this Chapter. On the demand side, the representatives of employers and their associations reported that the number and skill sets of human resources available in the market for the listed occupations are not adequate.

On the supply side, approximately 110,000 (60 thousand long-term and 50 thousand short-term courses) technical human resources is produced annually in Nepal (MOEST 2018). A total of 337 courses (48 diploma courses of 1 to 4 years, 31 pre-diploma courses of 1.5 to 4 years and 258 short term courses of 40 to 1696 hours) are available in 1078 CTEVT affiliated and constituent institutions across the country (CTEVT) (MOEST 2018). The following table shows the number of technical and vocational training courses offered under 18 broad categories.

Table 14: Training courses available at CETVT in different sub-sectors

Sub-sectors	Number of courses available under CTEVT		
	Diploma	Pre-diploma	Short-term
Agriculture Plant/Animal	7	4	36
Engineering	16	9	84
Health/Nursing	18	5	11
Forestry	1	1	2
Management/Humanities	5	3	
Hospitality/Hotel Management/Tourism	1	2	22
Apprenticeship		7	36
Handicraft items			12
Education/Pedagogy			6
Beauty and Cosmetology			4
Law, Human Rights and Labour			4
Humanities and Artistry			8
Business Management and Business Services			6
Mining, Ornament and Jewelry			2
Printing			2
Professional			11
Tailoring, Garment, Textile and Hosiery			11
Leather Goods and Products			1
Total	48	31	258

(Source: www.ctevt.org.np)

The three E's—economy, ecology, and equity—provide a framework for the study to identify potential occupations in construction, agriculture and tourism sectors. The study team prepared a long list of different categories of occupations with different levels of skills and knowledge. The study team also referred to the priority list of occupations, which was prepared by the Sector Working Groups (SWG) at ELMS. The SWG teams prepared the priority list of occupation groups following a series of consultations with the consortium members referring to the CTEVT study reports etc. The study team further prioritized the occupation groups based on the following criteria:

1. Greater opportunity for employment: occupations relevant to maximum sub-sectors;
2. Current market demand (private sector demand);
3. Economy of scale: potential sub-sector (volume of work or budget allocation) as per the government priority to meet the national targets, international commitments, and potential donor investment (Periodic Plan, emerging sector priorities, SDG commitment, potential FDI);
4. Equity: potential job creation or distribution along the geographical area and different segments of consortium members (Class A to D); and
5. Environment: contribute to green environment and climate-resilient infrastructure.

3.2 Potential and vibrant occupations in Construction Sub-sectors

The study team has identified altogether 30 occupations (10 occupations of each CAT sectors). A detail description of identified 30 occupations is stated below.

Table 15: Prioritized construction sector occupations list (demand side)¹⁵

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
1	Supervisor (Overseer, Junior Engineer)	Supervisors help Civil Engineers plan and build highways, buildings, bridges, dams, wastewater treatment systems and other structures. This is a general type of human resource required for every sub-sector such as road, bridge, building, irrigation, hydropower, etc. Employment of Supervisor is expected to increase faster than the average for all occupations through 2021. Spurred by an expanding economy, more Supervisors will be needed to construct higher capacity transportation, water supply, large building and building complexes as well as to repair or replace existing roads, bridges and other public structures. As mentioned earlier in Fig 1, only in the road sector estimated 8,000 Jr Engineer, OS & sub-OSs are required to complete the government target within 2024, if the periodic plan is properly implemented. This is just 23% of total public infrastructure. In addition to that newly untouched area of wastewater treatment or fecal sludge treatment, very little technical manpower are available to achieve the government's target of increasing safely managed sanitation in urban areas from 46% (2019) to 74% in 2025 and 90% in 2030. As per the estimate more than NRs 6 billion is required for a municipality with a population of 100,000 to establish a complete sewer system with a treatment facility. ¹⁶ Out of 283 Municipalities/ Sub-metro and Metropolitan, less than 10 municipalities have wastewater or fecal sludge treatment facilities.
2	Mason	Masons work with concrete, one of the most common and durable materials used in construction jobs. Bricklayers and stonemasons work in closely related trades creating attractive, durable surfaces and structures. Brick masons build walls, floors, partitions, fireplaces, chimneys, and other structures with brick, precast masonry panels, concrete block, and other masonry materials. Stone Masons build stone walls, as well as set stone exteriors and floors. They work two types of stones – natural cut such as marble, granite and limestone, marble chips, and other masonry materials. Stone Masons work on nonresidential structures, such as houses of worship, hotels and office buildings. Most Mason workers worked for construction industry such as highways, bridges, shopping malls, houses, large buildings, factories, schools and hospitals. Mason workers improve their skills either through on-the-job training as helpers, or by attending vocational/technical schools. Workers in these crafts are employed vast majority were bricklayers. Likewise, there is a huge potential to masons to construct treatment plant or sanitation system to meet the national and SDG commitments of safely managed sanitation as mentioned earlier in section. Employment of more skilled Masons is expected to continue to grow in next couple of years, as the growth in job opportunities outpaces the supply of laborers with specific skills in this occupation particularly due to introduction of new masonry blocks.

¹⁵ Findings based on the SWG stakeholder (FCAN, CNI, FNCCI, and FNCSI) consultation.

¹⁶ Kirtipur Municipality: Municipal-Wide Inclusive Sanitation Plan _draft (2021)

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
3	Heavy equipment operator (Grader, Loader, Roller, excavator, backhoe, etc.)	Construction Equipment Operators include grader, bulldozer, and scraper operators, operating engineers, and paving, surfacing, and tamping equipment operators. Heavy Equipment Operators use machinery to move construction materials, earth and other heavy materials and to apply asphalt and concrete to roads and other substructures. They set up and inspect equipment, make adjustments and perform minor repairs. Many construction equipment work outdoors, in nearly every type of climate and weather condition. Some machines, including bulldozers, scrapers, and particularly tampers, are noisy and shake or jolt the operator. Heavy Equipment Operators usually learn skills on the job. They need a good sense of balance, the ability to judge distance and good eye-hand-foot coordination. Employers of Heavy Equipment Operators generally prefer to hire skilled human resources to operate the equipment. About two-thirds of these workers are concentrated in the construction industry, which is projected to grow rapidly over the next 10 years.
4	Electrician	Electrician install, connect, test and maintain electrical systems. Electricians work with blueprints when they install electricity systems in factories, office buildings, homes and other structures. Blueprints indicate the location of circuits, outlets, load centres, panel boards and other equipment. About two-thirds Electrician are employed in the construction industry, which is expected to grow rapidly. As the economy grow, more Electricians will be needed to install and maintain electrical devices and wiring in homes, factories, offices, and other structures. New technologies also are expected to continue to stimulate the demand for Electricians.
5	Scaffolder	Most of the concrete works require scaffolders. Scaffolders for pier foundation and well foundation are often hired from India as there are very few experts in Nepal. Highly skilled scaffolders are in great demand for overhead tank in water supply projects, for underground structure and foundation of high-rise building. According to the government's 15 th periodic plan, construction of more than 250 major bridges are in the pipeline and each bridge requires more than 10 scaffolders. Based on this, for bridge construction more than 2,500 scaffolders are required and they are very crucial human resources.
6	Plumber	Plumbers install, maintain and repair pipe systems in the water, waste disposal, drainage and gas systems in homes and commercial and industrial buildings. Plumbers also install plumbing fixtures; bathtubs, showers, sinks, toilets, and appliances such as dishwashers and water heaters. Plumbers mainly engaged in new constructions, repair or maintenance work. Job opportunities for skilled Plumbers are expected to grow in the upcoming years. The pool of young workers available to enter Plumbing training programmes will also be increasing gradually. Construction activity – residential, industrial and commercial is expected to grow rapidly over the next decade. Demand for Plumbers will stem from building renovation, including increasing installation of sprinkler systems and maintenance activities for places having extensive systems of pipes, such as power plants, water and wastewater treatment plants, pipelines, office buildings and factories.
7	Welder/fabricator	Welding is used to joining iron/steel beams when constructing buildings, bridges, and other structures, and to join pipes in pipelines, power plants, and refineries. Welders and welding machine operators use many types of welding equipment in a variety of positions, such as flat, vertical, horizontal, and overhead. Formal training is available in vocational skills training centers. Welders can advance to more skilled jobs with additional training and experience. Almost all construction projects, at least one welder is needed. Major roles of Welder/fabricator lies in plant maintenance as well as in iron/reinforcement/steelworks.
8	QA technician (Lab technician)	In every megaproject, Quality Assessment and Quality Control Technicians are mandatory to test the quality of construction materials/specimens and admixtures. Based on the report of the QA technician, the quality of the construction materials is approved. Example of QA technicians include asphalt concrete, cement concrete mix, HDPE quality, cement, aggregate, sand, wastewater lab test, water quality test, etc. Municipal may outsource to the contractors for testing wastewater quality for commercial buildings to meet the government's wastewater standard before disposal to open environment to enforce the environmental regulation at the local level.

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
9	Carpenter	Carpenters are involved in many different kinds of construction activity. They cut, fit and assemble wood and other materials in the construction of buildings, highways, bridges, docks, industrial plants, boats, and many other structures. Carpenters are employed throughout the country in almost every community. Carpenters learn their trade through on-the-job training, as well as formal training programmes. Demand for Carpenters is increasing day by day due to increases in personal income, business expenditures, continuing need for repair and renovation of residential and commercial buildings with interior design.
10	Power Plant operator	Power Plant Operators control and monitor boilers, turbines, generators, and auxiliary equipment. Operators distribute power demands among generators, combine the current from several generators, and monitor instruments to maintain voltage and regulate electricity flows from the plant. When power requirements change, these workers start or stop generators and connect or disconnect them from circuits. They use computers to keep records of switching operations and loads on generators, lines, and transformers. Employers increasingly require competent Power Plant Operators. Power Plant Operators should undergo extensive on-the-job and classroom training. Several years of training and experience are required to become a fully qualified Power Plant Operator. Power Plant Operator is a cross-cutting occupation in the manufacturing and construction business. New technology and new standards are always emerging that create further demands to upgrade the skill or develop specifically skilled Power Plant Operators. There is a high demand of Power Plant operator in the market.

3.3 Potential and vibrant occupations in Agriculture Sub-sectors

Table 16: Prioritized agriculture sector occupations (demand side)

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
1	Fruits and vegetables processor	<p>The production of vegetables is the largest and most important economic activity in Nepal. The consumption of vegetables has increased significantly as consumers have become more health-conscious. The health and welfare of people everywhere depend on good agricultural yields and on the reliable storage, successful processing and safe handling of all types of vegetables. Vegetables can be classified by edible parts into root (e.g., potatoes and carrots), stem (asparagus and celery), leaf (lettuce and spinach), immature flower bud (broccoli and brussels sprouts), and fruit (tomatoes and cucumbers). Processing can transform vegetables from perishable produce into stable foods with long shelf lives and thereby aid in the transportation and distribution of many varieties of vegetables. The goal of processing is to deter microbial spoilage and natural physiological deterioration of the plant cells. Perishable when fresh but able to be preserved by a number of processing methods, they are excellent sources of certain minerals and vitamins and are often the main source of dietary fibre.</p> <p>Fruit demand is increasing as a result of rise in middle class population and knowledge on health consciousness and nutritional benefits, increased tourist flow and other behavioural change about fruit consumption. Most of the important fruits of the world have been grown in Nepal with comparative advantages for producing temperate to tropical fruits and value chain development for apple, mango, litchi, banana, avocado, citrus (mandarin, lime, lemon) for import substitution; and mandarin, kiwi, hog-plum and berries, chestnut, pecan-nut and walnut for export promotion; and production of avocado, persimmon, pear, kiwi and different nut fruits for fulfilling the demand of tourism sector.</p> <p>Fruit processing industries are established in Nepal by private investors. Wine industries, pickles, juice, jam and marmalades are produced in Nepal. Brandy and ciders are also produced from fruits in remote areas where fresh fruit marketing is difficult using unsold fruits. Some fruit processing industries are established under joint venture, from domestic level to large industries.</p>

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
		<p>The GoN announced the years 2016/17 (2073/74 B.S.) to 2025/26 (2082/83 B.S.) as the fruit decade. The major elements of the fruit development programme are: appropriate variety identification, quality planting material production and supply, scientific orchard planning and planting, proper and timely orchard management, post-harvest handling and management, quality assurance, fruit processing, and storage and marketing. There is an urgent need to provide trainings for field technicians and fruit growers to transfer modern fruit production and post-harvest technology. There is an increased interest to work in fruits among youth populations, which will help to address fruit self-sufficiency, export promotion and meet industrial demand.</p> <p>Job opportunities for Vegetable Processor is expected to grow rapidly over the next decade.</p>
2	Dairy plant operator	<p>Dairy is one of the growing industries in Nepal. There is a great scope to generate employment opportunity especially for youth and serve consumers supplying different dairy products. However, it is most important to run the dairy industries as a profitable service motive business operating through skilled and trained human resources.</p> <p>Human resource planning depends on: capacity and size of dairy plant, products and product technology, level of automation, equipment requirements, number of shift operation, legal provision in terms of labour welfare, seasonal variations, centralized or decentralized operations, degree of contractual arrangement, etc. In order to have proper quality, some basic criteria for specialized human resources are: Operation of dairy plant and machinery, chemical analysis, microbiological analysis, material management, marketing and distribution, accounting and finance work, supervision and managerial work, etc. Employment opportunity for Dairy Plant Operator will increase in FY 2021 - 2022.</p>
3	Meat and fish processor	<p>Meat, Poultry and Fishery processing refers to a series of actions applied by the farmers and other actors of the value chain to preserve their products from the time product is caught until it reaches to the consumer. It is advisable for the farmers and other beneficiaries to process their products in a proper place with good hygienic condition. Butchers and meat, poultry, and fish cutters are employed at different stages in the process that converts animal carcasses/bodies into manageable pieces of meat suitable for sale to wholesales or consumers. Meat, poultry and fish cutters commonly work in meatpacking or fish and poultry processing plants, while butchers are usually employed at the retail level. A part of their job is to cut and trim the meat by observing standard meat cuts. They then categorize meat into different parts, weight the parts and place them in sealed containers or wrap them in packages. The basic requirements for a career as Meat, Poultry and Fishery Processor are skills and qualifications in Production, Processing, Food Production, or a related field. Meat, Poultry and Fishery Processors acquire their skills on the job through formal and informal training programmes. Nearly 50 percent worked in meatpacking or poultry and fish processing plants, while most others were employed at the retail level in grocery stores, meat and fish markets, restaurants and hotels. Employments of Meat, Poultry and Fishery Processors is expected to increase in FY 2021 - 2022.</p>
4	Tea and coffee processor	<p>Coffee is one of the most preferred beverages in Nepal. Different types of coffee based drinks, both hot and cold, is consumed at homes, restaurants, coffee houses, and other forms of eateries, by people of all age groups. Coffee is grown with almost no use of inorganic fertilizer and pesticide. Coffee cultivation has an enormous potential to income generation opportunities as Nepalese coffee has high demand in international market. In addition, it could be an important means for soil conservation, bio-diversity maintenance and watershed balance in the mid-hills of Nepal. The harvest period occurs once in a year, and that is when the farmers pick only the bright red coffee cherries from the coffee plant. The harvested fruit is then taken to pulping center for processing. Coffee can be processed via dry processing, wet processing or a hybrid method called semi-dry. The choice in processing often depends on the environment and resources of the growing regions; dry processing needs hot, dry temperatures and wet processing requires access to bountiful gallons of clean water. Wet processed coffees are considered to be of higher quality than dry-processed coffees, and they are much more consistent in quality.</p>

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
		<p>Tea comes from a single plant species, <i>Camellia sinensis</i>. It is the small changes within the processing of tea leaves that alter the profile and characteristics, creating a variety of flavors and caffeine levels. Green teas retain similar characteristics to the fresh leaves; they are vibrant and bitter while black and oolong teas become mellow and pleasant. Black teas will undergo full oxidation while oolong teas will go through partial and green teas skip this process altogether. Following withering, the next process all teas undergo is to rolling or pressing of the leaves. The leaves are then heated, ending the enzymatic process and marking the start of the drying process. The drying process is an important preservation step. After the tea is dried, the leaves are sorted and graded by the size of the leaf.</p> <p>Since tea and coffee industries are labor-intensive industries, there is a great scope for employment of rural surplus labor and reducing migration from hills to the plains and towns. Tea and coffee growing also provides opportunity to make fallow lands productive which are used marginally so far. As there is good national and international market potential for Nepalese tea and coffee, the sector could emerge as an important contributor to Nepal's inclusive economic growth and rural employment generation.</p>
5	Agronomical grain processor	<p>Pulses occupy important place in human diet. They serve as major sources of dietary protein and energy. Pulses are generally consumed in the form of Dal. Traditional methods for processing of pulses were labour intensive, time consuming and incurred losses. Modern technologies for processing of pulses have replaced old age methods and thus avoid losses and saves time. Various methods are employed for pulse milling. Pulses undergo some basic unit operations during pulse milling such as cleaning and grading, drying, loosening of husk, dehusking, splitting and polishing.</p> <p>The major role of edible oils and fats in our diet is to supply energy. World's five major annual edible oilseeds are soybean, cottonseed, rapeseed/canola, sunflower seed, and peanut/groundnut. Almost all oilseeds are processed commercially by oil expellers. Oilseeds are made up of tiny particles called cells. Oil glands are embedded in each cell which liberates oil on rupturing. Thus, the primary object of oilseed processing is to rupture the gland and cell wall which gives more yield of oil during processing.</p> <p>Cereals are an important source of carbohydrates, proteins, lipids, vitamins, mainly of B-complex and vitamin E, and inorganic and trace elements. Cereal grains have represented the principal component of the human diet for thousands of years. Their processing comprises an important part of the food production chain, but it is a complex procedure. The most common cereal processes include dry milling (wheat and rye), pearling (rice, oat, and barley), wet milling (corn and wheat), and malting (barley, corn, and wheat). During cereal processing, by-products that differ in their physical state and chemical composition are coproduced. Employment of Pulses, Oil and Non-traditional Cereal Processor is expected to increase in FY 2021 - 2022.</p>
6	Herbal processor	<p>Medicinal plants are a source of biomolecules with therapeutic potential and lead to developing new drugs. Similarly, herbal medicines are considered as safer and better physiological compatibility and cost-effective. Herbal and Medicinal plants have always played an important role as sources for drug lead compounds. Herbal and Medicinal plants play vital roles in disease prevention. There is a huge demand of Herbal and Medicinal plants products in various industries like Pharmaceuticals, Cosmetics, Health, etc. According to Ayurvedic knowledge the most important treasure is our medicinal plants. Herbal and Medicinal plants give higher net returns compared to agricultural or horticultural crops and can be integrated into existing cropping of farming systems. Herbal and Medicinal plants could be stored for a long time, and sold at a time when better prices in the market. These plants require minimum resources, so the cost of cultivation is lower compared to the traditional crops. This is a self-employment giving programme as its need is increasing rapidly. Due to its medicinal value, the medicinal plant cultivation is in highly demand in national and international market. The cultivation of herbal and medicinal plants generate employment through the improvement of ancillary industries and checks migration of rural population to urban areas. There is a need to train about the production, processing, utilization and marketing aspects of the Herbal and Medicinal Plants. Employment of Herbal and Medicinal Plant Processor is expected to increase in FY 2021 - 2022.</p>

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
7	Spices processor	Nepalese spices are used for flavor, color, aroma and preservation of food or beverages. Nepalese food is famous for its nutritional value and exquisite taste. In preparation of food, Nepalese people make extensive use of spices such as ginger, garlic, turmeric, coriander, cilantro – the leaf of the coriander plant, pepper, timmur – a unique Himalayan pepper, cumin, chilies, and mustard. Other spices include ajowan seeds, cloves, cardamom (black and green pods), bay leaves, mustard seeds, and so on. Processing of spices has strong backward linkages to domestic traders and the farmers growing spices. In addition to being an HVC (High Value Crop), Nepalese spices have high employment content, comparative advantage and export earning potential in its production process. Nepalese spices offer an alternative job opportunity to the marginalised farmers. Meeting the increasing demand for Nepalese spices would provide more income for them and for Nepalese farmers and generate more foreign currency for Nepal.
8	Agricultural input supplier	Inputs Suppliers help to cultivate the plants to increase productivity. Inputs Suppliers provide services to grow horticultural plants, select and purchase seed, fertilizers, disease control chemicals and machinery equipment. Inputs Suppliers also assist in marketing activities. They facilitate integrated pest management (IPM) services, which is more effective in the long term than use of pesticide alone. Demand for Inputs Suppliers is projected to increase for a number of reasons. An expanding client base will develop as environmental and health concerns convince more people to open Agrovets services. Employment in Inputs Suppliers is expected to grow in FY 2021 – 2022 in response to increasing demand for Nursery, Gardner, fertilizer, machinery, etc services.
9	Junior technical assistant	Junior Technical Assistant (JTA) programme is designed for basic level human resources in the field of agriculture services equipped with knowledge, skills and attitude necessary for this level of technicians so as to meet the demand of such technician in the country. There is a need to provide knowledge and skills focusing on agriculture and farm management required for Junior Technical Assistant. Agriculture (Plant Science) JTA is an 18 months programme run under CTEVT affiliation. JTA course intends to provide knowledge and skills focusing on agriculture and farm management. JTA course comprises of Agriculture Extension and Community Development; Entrepreneurship Development; Crop and Crop Seed Production; Plant propagation and Ornamental Horticulture; Vegetable and Vegetable Seed Production; Fruit Cultivation, Post-Harvest Horticulture and Plantation Crop; Agriculture Ecology and Sustainable Soil Management; Plant Protection and IPM FFS Mushroom and Lac culture; Farm Machinery, Structure and Irrigation; and Aquaculture.
10	Agricultural credit service provider	Microfinance Services Operators facilitate microfinancing services mostly in the rural areas of the country. They contact potential farmers and other customers to explain their microfinance services and to ascertain farmers and customers' financial needs. In doing so, they discuss services such as savings and credit schemes, deposit accounts, lines of credit, cash management and investment services. Microfinance Services Operators review credit history and obtain the information needed the credit worthiness of loan. They assemble loan documents, process the paperwork associated with the loan, and assure that all information is complete and verified. More importantly, Microfinance Services Operators spend considerable time outside the office meeting with present and prospective farmers and customers, attending civic functions, and participating in trade meetings. They mainly work for Banks, Microfinance institutions, Savings and Credit Cooperatives, and other credit institutions. The number of Microfinance Services Operators will increase faster than average as Microfinance Institutions attempt a "one-stop-shop" for investing. It is projected increase in the number of credit applications in FY 2021 - 2022, which will allow a significant number of Microfinance Services Operators to process, check and authorize credit facilities than in the past.

3.4 Potential and vibrant occupations in Tourism Sub-sectors

The tourism sub-sector analysis shows hotel industry, travel and trekking, mountaineering, rafting are the major service providers for the tourist.

Table 17: Prioritized tourism sector occupations list (demand side)

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
1	Cook – (Level 1 – Level 2)	Cook are the mainstay of the food service industry. They work in different types of kitchen settings where their main task is to plan and cook different types of food. They usually work in places like restaurants, bars, hotels, casinos, cafeterias and other food-serving establishments and thus have a wider scope. Cooks with their dedication and hard work can make their way up to chef from entry-level roles. Overtime they can shift to many other wings according to their choice like Continental, Indian, Chinese, and Nepali. Hotels in Nepal is a growing industry. From small cafes, resorts, food chains, five-star hotels, to international franchises, the field is on a growth escalator. In this line of industry, interaction with the various service providers quote on lack of skilled workers and labour migration of skilled workers to abroad (in particular cooks in hotels and restaurants). Also experienced cooks are welcomed with an attractive salary and tendency to switch job is at large. There is a high scope and demands for cook in Nepal. Job opportunities for Cooks are expected to be plentiful in FY 2021 - 2022.
2	Waiter/ Waitress (Level 1, level 2)	Waiters and waitresses work in restaurants, bars, hotels, casinos, and other food-serving establishments. They interact directly with customers taking orders, serving food and beverages, and take payments from patrons. While no formal education is required, waiters and waitresses are desired with good interpersonal and communication skills. From small cafes, resorts, food chains, five-star hotels, to international franchises, the field is on a growth escalator and can accommodate large number of waiter and waitress in the industry. The labor market survey conducted by CTEVT in 2016, states that there is 80% shortage of skilled waiter and waitress in the tourism sector and has considered it as one of the most demanding occupations in the tourism sector. The report predicts that additional 120,000 workers will be required in the next five years.
3	Housekeeping (Level 1)	Housekeepers are responsible for maintaining a standard of cleanliness throughout a hotel or other hospitality venue. They clean individual hotel rooms as well as the common areas. Housekeepers within the hospitality industry make beds, do laundry, clean bathrooms, stock linens, and more. The labor market survey conducted by CTEVT in 2016 states that there is 66 % of shortage of skilled Housekeeping human resources in the tourism sector and has considered it as one of the most demanding occupations in the tourism sector.
4	Inn-Keeper	Inn-Keepers are responsible for keeping the operation of their establishments efficient and profitable. Their roles vary depending on the size and type of hotels and Inns. Generally, Inn- Keeper, makes sure that a hotel (or inn, lodge, or any other venue with sleeping accommodations) is running smoothly. This involves interacting with guests, managing staff, and much more. Though estimates are available for the number of star and tourist standards hotels in Nepal, there is no record as such that estimates the number of small and medium sized hotels and highway motels in Nepal. However, it is evident that the large number of hotels and motels of different size are operational in Nepal. The study report conducted by the Embassy of Switzerland to Nepal says that there are about 61,000 small and medium-sized hotel professionals are operating in Nepal, which are employing staff ranging between 150,000 and 300,000. In this line of industry, Pradhan et al. (2014), says 95% of workers in small hotels and 60% in large ones, are unskilled, that clearly indicates the large section of unskilled workers at hotel sector (CTEVT Labor Market Survey, 2016). The MoCTCA has picked 200 new locations to be featured in the latest list of touristic destinations across the country, with the aim to develop the physical infrastructure of these destinations for promotion of tourism. The selected projects include parks, picnic spots, temples, monasteries, roads, foot trails, cycle tracks, shopping malls and museums, according to the Ministry. With the expansion of new tourism destinations, the new hotels and motels, restaurants and lodges are bound to proliferate and employment for Innkeepers is expected to grow. Increasing business travel and domestic and foreign tourism will drive employment growth in this line of profession.

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
5	Homestay operator	<p>Nepal is the land of various communities, which have rich culture and tradition of their own. Many international tourists visiting the country want to know more about these communities. The concept of homestays in Nepal has given an opportunity for tourists to stay with the local people and interact with them. Homestays are getting popularity in Terai, hills as well as the mountain region of Nepal. In homestays, visitors get an opportunity to stay with the local ethnic groups. This provides them a good chance to understand the people living there for centuries. Villages like Ghandruk, Sirubari, Ghalegaon, Dhampus, Sikles, Lwang Ghalel, among others, have already become popular homestays among international tourists. Many homestays organize cultural programmes, songs and dances for the guests for their enjoyment and as a way of understanding the roots of culture, tradition, customs, practices and lifestyle of Nepal.</p> <p>Kathmandu has over 10 community-based homestays, two private homestays. Both can accommodate over 300 tourists. Likewise, Kavrepalanchok district has over 26 registered community-based homestays. Chitwan has at least 10, Makawanpur has 11 and Nuwakot has 12 homestays. Places like Gorkha, Ilam, Palpa, Syangja, Kailali and Kalikot are also in the process of registering homestays (The rising Nepal, 2019. Concept Of Homestay Gaining Ground in Nepal). Seeing ongoing popularity of homestays, it is certain that many new villages are expected to join the homestay programme in the future. With lots of homestays taking place in rural areas, there is high employment potential in many communities.</p>
6	Tour guide - TSLC	<p>As per NTS 2019, out of the total tourist arrival of 1,197,191 in 2019, 778,173 tourists visited for the holiday and leisure purpose; i.e 64 % of the tourist arrived for the holiday and leisure purpose. These tourists go on guided tours and experience local tourist attractions. Travel and tour companies organize tour of city and the famous places of Nepal such as temples, monasteries, monuments, and natural areas. Many tour and travel companies provide a short sight-seeing tours on places around the city areas such as Bhaktapur Durbar Square, Kathmandu Durbar Square, Patan Durbar Square, Pashupati, Dakshinkali, Asura Cave, Swayambhu, Bouddha, Chagunarayan. Places throughout Nepal such as Kathmandu, Bhaktapur and Patan Durbar Squares, Chitwan National Park, Fewa Lake, Begnas Lake, Bat Cave, Davis Fall, World Peace Stupa, Lumbini – The birthplace of Lord Buddha, Janaki Temple at Janakpur, Nagarkot, Champadevi, Kulekhani, Shivapuri Conservation Area are popular places that the leisure tourists tend to visit most. Besides many tourists visit for jungle safari, birdwatching, cultural and heritage sites, etc. With the large number of tourist arrival for the leisure purpose, it creates an opportunity for the tour guide. Country still lacks of skilled or trained tour guide in this sector. However, employment of Tour Guide is expected to grow rapidly. According to Labor Market Survey (CTEVT 2016), tour guide is highly demanded occupations in tourism sector and estimates 90% lack of skilled workers in this sector. As per NTS-2019, 4200 tour guides are officially operating in Nepal. The report predicts that additional 1,000 tour guides will be required in next five years in this sector.</p>
7	Trekking guide-assistant	<p>Nepal is one of the best destinations in the world for trekking since it has most of the highest mountains in the world. Trekking to the base camp of those mountains are challenging, adventurous and fun. Each year thousands of tourists come to Nepal with the purpose of trekking to such places where the natural beauty can be seen at its best. The most popular trekking destinations in Nepal are Everest Base Camp, Annapurna Base Camp, Annapurna Circuit, Poonhill Trek, Langtang Trek, Manaslu Trek, Gokyo Trek, Upper Mustang Trek, Upper Dolpo Trek, Kanchenjunga Trek, Makalu Base Camp, Rara Lake, Phoksundo Lake, and Tilicho Lake (Bookmundi, 2015). As per NTS-2019, 2,764 trekking agencies are officially operating in Nepal, providing employment to 17,265 trekking guides. However, trekking agencies also find challenges in finding skilled workers.</p>

Priority	Occupation	Specific Justifications (also took reference from SWG findings)
		Most Trekking agencies provide on-the-job training to staff. For example, junior trekking guides are sent with senior guides on expeditions for training, and several firms keep workers in probationary periods when they hire low-skilled workers to see how they perform, before offering them a permanent role. Trekking agencies often states that the challenge of finding skilled and experienced workers has led to significant investment (usually time) in training workers. As per NTS-2019, 17,265 trekking guides are officially operating in Nepal. As per, NTS 2019, Out of 1,197,191 tourist 195,621 tourist trekked at different parts of Nepal. Trekking is a major source for the employment generation and revenue for the government.
8	Rafting guide – Level 2	Rafting refers to recreational activity which use an inflatable raft to navigate a river or other body of water. This is often done on whitewater or different degrees of rough water; however, Nepal is popular for white water rafting. Rafting in Trishuli River, Seti River, Bhote Koshi River, Kali Gandaki River, Marsyangdi River, Sun Koshi River, Arun River, Karnali River, and Tamur River are popular in Nepal for pure joy and fun. Rafting is not popular amongst the international tourist but also large number domestic people are involved in rafting as their recreational activity. With the proliferation of rafting activities in Nepal, the demand for the rafters are also at large. As per NTS 2019, there are 73 registered Rafting Agencies with 266 number of guides. Most Rafting Agencies provide on-the-job training to staff. Junior trekking guides are sent with senior guides to learn the techniques. Rafting Agencies often state about the challenge of finding skilled and experienced workers in this sector. As per NTS 2019, 266 river guides are officially operating in Nepal. Job opportunities for Rafting Guide are expected to be plentiful in FY 2021 - 2022.
9	Tourist vehicle driver	Transportation is one of the most important components of the tourism infrastructure that facilitates mobility of person and goods from one place to another. Without transportation there won't be the tourism industry possible, people won't have means to reach another places that they desire to see. From picking tourists from the airport to carry them in different destinations, tourist vehicle drivers, have a greater role. As per NTS 2019, there were 77 tourist transportation services in FY 2018 - 2019 whereas the number has increased by 5 and reached 82 in FY 2019 - 2020. With the proliferation of tourist transportation service in Nepal, the demand for the tourist vehicle driver is also increasing and this industry can accommodate many tourist drivers. Similarly as per NTS-2019, 3,680 travel agencies are officially operating in Nepal that contacts tourist transportation services and tourist vehicle drivers operating in a country. Person seeking jobs for Tourist Vehicle Driver encounter good opportunities. Thousands of job opportunities will occur each year. Tourist Vehicle Driver opportunities is expected to grow in FY 2021 - 2022.
10	Receptionist – General	Receptionists are found in every office, gathering data and providing information to the clients. Receptionists welcome guest, manage room bookings and deal with requests that guests make during their stay. Receptionists usually receive on-the-job training which may include procedures for greeting visitors, operating telephone and computer systems, and sending email, distributing mail, fax, and parcel deliveries. The role of the receptionist may vary depending upon the nature of the organization. However, hotel receptionist are desired to be always friendly and professional, be able to look after several things at once and always stay calm. Generally female workers are valued in the post of receptionist in the hotels, airlines and travel and trekking agencies for office-based roles. The labor market survey conducted by CTEVT (2016) also reflects on the demand side of receptionist in the tourism sector. According to job portals, receptionist vacancies are quite often seen in various sub-sectors of the tourism industry. This position is fit in the various sector of tourism business like hotel, resorts and inns, travel and trekking agencies, rafting agencies, and many more. Economic growth and general business expansion are expected to stimulate faster. Receptionists are expected to grow faster who may benefit from the rapid growth in the tourism sector.

CHAPTER FOUR

Conclusions and Recommendations

The following conclusions and recommendations are derived from the analysis of secondary information, KII and FGD with the key informants in the CAT sector. The quantitative supply and demand figures are estimated referring CTEVT labour market survey report (2016), the government plan & resource allocation covered in earlier chapter (e.g. Table 8 for construction sector). An example of the detailed calculation for construction sector is provided in the Annex D.

Table 18: Description of identified 30 occupations in CAT sectors

Sector: Construction

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
1. Mason	Mason (stone, block, or brick) involves constructing walls, interior structures, patios, decorative trim work, block laying, septic tanks, etc. Specific duties in masonry include breaking or cutting stone and bricks into specified sizes, mix, apply grout and mortar, and finish the construction. Those skilled in all forms of construction material including block, brick, stone, and other major building components (concrete slabs, column, beams) and recently retrofitting of building structures are generally regarded as expert masons.	All seven construction sub-sectors: building, road, bridge, hydropower, water & sanitation, irrigation, production & manufacture	Both Indian & Nepalese. Masons from India & Terai do not have skills in stonework. There is a shortage of local masons with the following skills: retrofitting, construction of septic tanks, grouting, laying new masonry blocks & installation of glazed tiles. Estimated cumulative supply by 2021 <109,300	Reconstruction activities after the earthquake created huge demand both in terms of quantity and quality with specific skills: retrofitting, grouting, septic tank construction, overhead tank construction, glazed tile, etc. Projected cumulative demand by 2021 >132,000	Most of the demands are fulfilled by Indian labor contractors. The gap between supply and demand is very high. Huge shortage of local laborers particularly for good quality finishing works and newly introduced technologies. Gap (deficit) >22,700	1. Help create a database & attract brain gain in collaboration with the private sector & NGO. 2. Tie up with ongoing construction projects to develop practical skills, trust and confidence 3. Application of appropriate regulation and enforcement e.g. building permits, national employment policy, environmental standards, etc. 5. Collaboration with private sector connecting demand & supply and enhance quality. 6. Create competition in training & capacity building between, Private institutions, TVET & NGOs.	1. Assist government & NGOs to collect & update a national database 2. Engage trainees from TEVT in projects for practical skills – as an apprentice. 3. Support to create a virtual job board for the construction sector in collaboration with CTEVT – Help establish a matchmaking service between supply and demand with quality assurance of skilled human resources. 4. Policy influence to generate trained HR and retain qualified skilled labor.

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
2. Building Electrician	Have skills for installing electric connections or systems, electrical appliances in a residential and commercial building. Not necessary to have skills in the installation of special electrical equipment for industries. S/he should have a good knowledge and skills on the safety about protection from electric systems, working at heights, working in confined spaces, using scaffolding, etc.	Potential employment in building, hydropower, water & sanitation, irrigation, production & manufacturing sub-sectors.	Majority from India. For installation of specific equipment, dealers provide orientation training or arrange their trained electricians. Estimated supply cumulative: <60,000	Building electricians are highly demanded with the rapid urbanization and increase in hydropower generation and connections. Projected demand by >70,000	From the KII and FGD, it is evident that most of the gaps are filled up by the in-migration of skilled labor from India. Gap (deficit) >10,000	As mentioned above plus: 1. Increase access to finance to potential trainees. 2. Increase access to finance and tax rebate to private sector training institutes to invest in training.	As mentioned above.
3. Plumber	In general, plumbers are responsible for the installation of hot and cold water systems, households plumbing related to water & sanitation, central heating systems, rainwater harvesters, and sheet lead systems. Installation of fuel-burning appliances such as those for oil or gas may also be handled by plumbers. They also install specific equipment related to pipes and fittings.	Potential employment opportunities in building, hydropower, water & sanitation, irrigation, production & manufacture	There is also a short supply of plumbers compared to rapid urbanization, construction of water supply & sanitation projects. Estimated supply cumulative: <45,300	With potential local government investment on water & sanitation, demand will increase further across the geographical region. Projected demand >51,500	This is also a priority occupation to invest in and fill up the gap. However, even the existing skilled plumber may require short-term training to construct newly introduced water treatment and sanitation technologies Gap (deficit) >6,200	As mentioned above plus: 1.	As mentioned above.
4. Carpenter	Carpenter to make wooden window/door frames, panels, basic wooden furniture, interior for office, commercial and residential purposes.	Building, hydropower, production & manufacture	This occupation is dominated by Indian labor. The supply of skilled carpenter for the interior is not adequate to the desired level. Estimated supply cumulative: <106,600	This is highly demanded, particularly for those who are skilled in furnishing and interior decoration. Projected demand >130,000	Even the existing conventional skilled labor may require further refreshers training to deal with the current development and customer demand. Gap (deficit) >23,400	In addition to the above points: 1. Invest in the promotion of traditional local architecture to encourage local craft persons to meet emerging demand of interior decoration. 2. Introduce & enforce building code to preserve local architect in new or rehab of the building.	In addition to the above points: 1. Identify, support, and engage local craft-person.

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
5. Welder/fabricator	Welders or ironworkers are primarily responsible for installing iron frames (beam, columns), gates, and other safety measures in residential buildings. In other civil structures, they erect steel frameworks for bridges and other structural constructions. Ironworkers often read blueprints to determine where a structural piece of iron would fit in an edifice under construction. They use bolts and wires to attach iron to the structures and direct equipment operators for the purpose. They should be physically fit, possess a good sense of balance, and be aware of the strict safety precautions associated with the job. Fabricators make components and parts of machines, engines, or electrical equipment in a factory or manufacturing unit. They may create a whole set of components or work on individual pieces, e.g. crusher, concrete mixer, etc.	Building, road, bridge, hydropower, production & manufacture	There is an increasing trend of use of metal replacing wood and concrete. The existing labor supply is getting tremendous pressure to meet the demand. Estimated supply cumulative: <13,300	There is a recent increase in demand for steel frameworks and security mechanisms to reduce the chances of theft and other dangers. Projected demand >23,500	This occupation was predominantly local HR but due to the increase in demand, Indian laborers have been contributing to fill the gap. Gap (deficit) >10,200	As mentioned above.	As mentioned above.
6. Scaffolder	Scaffolders erect and dismantle temporary metal or wooden scaffolding on structures and building sites so that other people can work at height and carry out their jobs safely. Scaffolders may set up scaffolding around infrastructure under construction,	Building, bridge, hydropower, water & sanitation, irrigation, production & manufacture	Scaffolders need to be very skilled as they are key for construction and required to follow safety standards. Almost all bridge (concrete foundation) and overhead water tank scaffolders are supplied from Indian labor contractors.	If the current scenario continued, there may not be demand for scaffolders as a significant number of bridges and overhead tanks are already under construction,	There is a gap in supply and demand particularly for retaining structures, pier/well foundation of bridges, overhead water tanks, etc.	Collaborate with the private sector to generate local employment opportunities. Offer support to provide internship offers to TVET trainees at the existing construction sites to give exposure and training teaming up with the skilled laborers.	Collaborate with the government and concerned agencies to reduce reliance on external (foreign laborers) through 1) enhancing quality and reliability, 2) balancing social security and efficiency, 3) managing cost-effectiveness, &

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
	or inside a building undergoing construction, renovation, or demolition		Quantitative estimate NA	unless we aim to encourage employment opportunities to local people.		Enforce safety measures during construction.	4) reducing political interferences. Follow safety measures as per the standard norms.
7. Heavy equipment operator	Construction equipment operators are responsible to operate construction equipment and machinery at construction sites such as bulldozers, trench excavators, road graders, rollers shotcrete, tunnel boring machine (TBM), etc.	Building, road, bridge, hydropower, water & sanitation, irrigation, production & manufacture	This occupation is also key as it is a cross-cutting occupation in all construction works. Estimated supply cumulative: <6,300	Demand is significantly increased due to the construction of national highways, Hukli road and district road connecting small towns. Projected demand >8200	Gap has been further increased due to the out-migration of heavy equipment operators in the middle east, an attractive destination to Nepalese laborers. Gap (deficit) >1,900	As mentioned above.	As mentioned above.
8. Supervisor (Fresh Civil Engineer, Overseer)	For the study, it denotes contracting engineers associated with physical construction and translation of the proposed design into physical structure. S/he investigate the site location as well as the surrounding area. If required, any changes will be adjusted based on the client's requirements with the designer's consent. During the construction phase commences, s/he monitors the on-site staff works with architects, and others and resolves any issues as they arise. Scheduling tasks, hiring skilled workers, and ensuring the availability of other resources like raw materials are other main duties of a site supervisor, Junior Engineer, Overseer & Sub-overseer depending upon the size of the project.	All proposed sub-sectors: Building, road, bridge, hydropower, water & sanitation, irrigation, production & manufacture	This occupation group is crosscutting in all construction sub-sector. Supply of Overseers has been stopped due to abolition of the curriculum in Engineering Campus. However, due to the increased supply of fresh civil engineering graduates, they are replacing overseers as trainee engineers. For them, it is a good opportunity to gain practical experience. Estimated supply cumulative: <24,700	Due to the relatively low purchasing power of the local contractors, demand for Jr Engineers is increased, as they are willing to work at a low pay scale. This is further contributed due to reconstruction activities after the earthquake in Nepal (2015). Projected demand >32,000	Just for road construction and meet the government target for the current periodic plan, an estimated 8,000 Jr. Engineers or Overseers and Sub-Overseers are required. Thus, considering the current rate of supply, still there is a big gap (shortage of HR). In addition to that, the current HR may require additional training on newly introduced hardware and software related to the civil construction and effective monitoring/supervision.	As mentioned above.	As mentioned above.

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
	For the study purpose, it will consider the Junior Civil Engineer (fresh or having experience less than a yr) and product of technical education/vocational schools for specific skills and knowledge to develop.				Gap (deficit) >7,300		
9. QA Technician (Lab Technician)	Quality assessment & quality control (QA) technicians ensure company and customer quality standards are being met. They conduct quality tests, perform inspection checks, calibrate equipment, and communicate the test results for decision making process.	Road, bridge, hydropower, water & sanitation, irrigation, production & manufacture	Upcoming potential occupation as there is an increased concern of quality assurance. Estimated supply cumulative: <6,900	Due to increased competition and increased quality concern demand is ever increasing. Projected demand >8,950	This occupation requires a constant updating of the knowledge on the equipment (tools) and its application to ensure quality, and enhance efficiency. Gap (deficit) >2,050	Enforce QA regulation and mandatory reports from QA technicians for major construction work, surveillance on water & sanitation quality standards.	Strictly follow the standard operation procedures (SOP) & quality aspects.
10. Plant operator	The power Plant Operator is in charge of running the equipment needed to generate electricity, including boilers, turbines, gauges and controls, pumps, fans, crushers, and more. This person is also responsible for cleaning, lubricating, and maintaining equipment to prevent failures or excessive wear and tear.	Bridges, Road, hydropower, production & manufacture	Increased investment in the construction and production sector requires an additional supply of plant operators. Estimated supply cumulative: <28,000	Mainly increased number of cement factories, road construction, hydropower construction, etc. resulted in increased demand for this occupation. Projected demand >33,500	It is argued that though demand for this occupation is increased, international contractors bring their HR so local people may have little employment opportunities though there is a gap between demand and supply. Gap (deficit) >5,500	Provision of proper training infrastructure, equipment, and convenient process to get a license to operate the equipment.	Support TVET not only to provide quality training and produce HR but also play a role in matchmaking between supply & demand.

Sector: Agriculture

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
1. Fruits and Vegetables Processor	<ol style="list-style-type: none"> 1) Oversee the fruits and vegetables grown in greenhouses/farmhouses; 2) Lead canning, dehydration, pickling, provisional preservation, and bottling in fruit and vegetable processing; 3) Produce goods for retail and catering; 4) Manage the machines input and output for efficient production; 5) Operate the machinery, set it up for production, do routine maintenance and cleaning; 6) Monitor levels of stock and liaise with buyers; 7) Observe and maintain safety levels with particular attention to machinery and electrical equipment; and 8) Maintain a strict level of personal and workplace hygiene. 	<ol style="list-style-type: none"> 1) Wholesalers and traders; 2) Processors and exporters; 3) Supermarkets, retailers and emerging online companies; 4) Small and medium size enterprises; 4) Marketing cooperatives; and 5) Fruits and vegetables processing industries. 	<ol style="list-style-type: none"> 1) Commercial processing of fruits and vegetables is extremely low 2) Most of Nepal's vegetables and fruits come from India and China 3) Domestic processing activities are dominated by female workers; and 4) Lack of skilled Fruits and Vegetables Processors <p>Estimated supply: NA</p>	<ol style="list-style-type: none"> 1) Fruits and vegetables processing present significant commercially viable opportunities for larger-scale investments. 2) The emerging middle class is demanding fresher, healthier and processed foods. 3) Job opportunities for Fruits and Vegetable Processor is expected to grow rapidly over the next decade. 	<ol style="list-style-type: none"> 1) The demand for processed fruits and vegetables is expected to rise significantly due to the growing penetration of organized retail in the country 2) The limited number of skilled Fruits and Vegetables Processors available in the market. 3) Labour migration of skilled workforce 	<ol style="list-style-type: none"> 1) Government should increase investment in in equipment, working capital, skills and knowledge for fruits and vegetable processing enterprises. 2) CTEVT should facilitate Fruits and Vegetables Processor skills development trainings with start-up support 3) Create incentives for firms to provide more in-house training to workers 	<ol style="list-style-type: none"> 1) Processors and exporters grow, from increased investment and trade, high quality fruits and vegetables for both domestic and niche overseas markets. 2) Technical training institutes should facilitate Fruits and Vegetables Processor skills development trainings to respond labour market demand
2. Dairy Plant Operator	<ol style="list-style-type: none"> 1) Oversee the operation of equipment used to produce a wide range of dairy products such as cheese, butter, yoghurt and milk powder. 2) Set up and operate equipment to process milk, cream or other dairy products following specified methods 3) Receive and process milk/products coming onto the site. 4) Package dairy products. 	<ol style="list-style-type: none"> 1) Dairy industries 2) Dairy cooperatives 3) Animal farm houses 4) Milk chilling centres 5) Contractor (Middleperson) 	<p>Estimated supply cumulative: <8,000</p>	<ol style="list-style-type: none"> 1) Opportunities for Dairy Plant Operator are good because the dairy industry is large and growing, with dairy products 2) Employment opportunity for Dairy Plant Operator will increase in FY 2021 - 2022. <p>Projected demand by >14,000</p>	<ol style="list-style-type: none"> 1) Shortage of skilled machine technicians 2) Indian workers readily available for small number of jobs needed. 3) Most workers factory operators with low levels of skills. <p>Gap (deficit) >6,000</p>	<p>Improve transport infrastructure connecting areas of milk production to end domestic markets (e.g. in the hills region)</p>	<p>Strengthen on-the-job training systems</p>

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
3. Meat and fish processor	1) Receive products for butchering, removing bones, sinews and fatty tissues and preparing various cuts of meat in preparation for packaging 2) Categorize meat into different parts, weight the parts and place them in sealed containers or wrap them in packages 3) Utilize both industrial-grade cutters and slicers as well as knives and other manual devices in preparing meats of different cuts and textures, all while observing safety requirements 4) Clean the processing area and packing line with hot water or sanitising chemicals 5) Carry out hygiene and quality control checks	1) Meat, poultry and fish meatpacking plants 2) Grocery stores 3) Restaurants 4) Retailers	1) Nearly 50 percent worked in meatpacking or poultry and fish processing plants, while most others are employed at the retail level in grocery stores, meat and fish markets, restaurants and hotels 2) There is an increasing demand of animal origin food like meat and egg Estimated supply cumulative: <32,150	1) Employments of Meat and Fish Processors is expected to increase in FY 2021 - 2022. Projected demand by >32,150	1) Hiring workers is going to become more difficult and expensive (reflecting the rising trend in the minimum wage) and difficulties with labour and trade unions Gap (deficit) >0	1) Government should create conducive policy environment to promote meat, poultry and fish enterprises, which have created employment opportunity, improved food security and enhanced supply of quality protein to people's meals, contributing country's economic growth and reducing poverty level in Nepal	1) Private sector should initiate farming business and meatpacking, poultry and fish processing plants
4. Tea and coffee processor	1) Wash coffee cherries thoroughly in clean water and remove any undesirable excess material, such as dirt and stones. 2) Operate pulping machine to separate coffee beans from the fruit 3) Store coffee beans to allow fermented in a fermentation box 4) Facilitate drying the beans, milling the beans, exporting the beans, tasting the Coffee and roasting the Coffee. 5) Facilitate plucking of tea leaves and flushes, withering of tea leaves to remove excess water from the leaves, disruption and oxidation of tea leaves, fixation/kill-green by moderately heating tea leaves, sweltering / yellowing after kill-green, rolling/shaping, drying to finish the tea for sale, aging/curing, and sorting to remove physical impurities. 6) Pack and distribute	1) Coffee industries 2) Coffee estate 3) Tea industries 4) Tea estate 5) Tea/coffee Cooperative societies/unions 6) Tea/Coffee Agro-enterprises/smallholders' farmers 7) Tea and coffee training schools and institutes in Nepal	1) Tea and coffee are prioritized as export potential products of Nepal 2) The tea and coffee sectors possess the potential as an important contributor to Nepal's inclusive economic growth and rural employment. Estimated supply: NA	1) Nepalese tea has a strong potential to penetrate the U.S. and European markets if the number of organic certified producers increases to meet the growing demand for organic tea. 2) Coffee plantations have now spread to over 40 districts in the Nepal's hill country, and more than 30,000 households are now involved, either individually or through cooperatives.	1) Tea and coffee producers in Nepal face mainly international competition from Indian exporters. 2) Key constraints facing the sector – namely, access to power, roads and – for those firms that rely heavily on imports and exports – trade disputes that disrupt shipments.	1) Tea and coffee are products with a lot of potential for the international market therefore investment, both public and private could further improve the quality of the product and enhance its market growth. 2) Support the creation of an enabling environment for inclusive business growth and commercialization	Create a systemic on-the-job training system

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
5. Agronomic Grain Processor	1) Prepare harvested grain for storage and remove the inedible fractions from the grains. 2) Conduct primary processing of grains including cleaning, grading, hulling, milling, pounding, grinding, tempering, parboiling, soaking, drying, sieving. 3) Conduct secondary processing of grains including fermentation, baking, puffing, flaking, frying and extrusion. 4) Handle harvesting and processing	1) Mills 2) Agro-enterprises 3) Food processing industries	1) Grain milling is the largest employer, and small firms of between zero and 19 employees account for over half of employment, with firms of between 20 and 49 employees employing another third and very large firms employing only a small portion. ¹ Estimated supply cumulative: <32,750	1) Workforce is becoming increasingly feminised as more women entered the workforce and because male labourers are scarcer 2) The growing middle class's demand for processed foods that meet safety standards will likely create more jobs in food safety Projected demand by >36,000	1) Processing of grain has strong backward linkages to domestic traders and the farmers growing these crops. 2) Department of Food Technology and Quality Control (DFTQC) should provide training courses on several occupations Gap (deficit) >3,250	1) As long as the investment environment is conducive to growth, firms will likely demand more skilled workers as they expand 2) Improved water mills (IWMs) need to be promoted through public-private partnerships in Nepal.	1) As the average age of workers is rising and older workers are more likely to stay with firms for longer, it would be worthwhile exploring the opportunities to upgrade skills among older workers
6. Herbal processor	1) Facilitate herbal processing techniques and procedures for the preparation of herbal materials from herbs/medicinal plant 2) Provide technical guidance to grow and cultivate medicinal herbs 3) Provide technical information on herbal processing techniques & procedures, medicinal properties of herbs, flowers and plants. 4) Contribute to the quality assurance and control of herbal materials, herbal preparations and herbal dosage forms, and to promote safety, efficacy and sustainability of herbal medicines.	1) Herbs Production & Processing enterprises 2) Herbs Production & Processing industries 3) Cooperatives 4) Medicinal plant processing enterprises	1) A total of 325 medicinal plant enterprises undertaking secondary processing of non-exotic Nepalese medicinal plants were found for the year 2015, of which 233 were verified to exist and operate. ² Estimated supply: NA	1) Hiring skilled technicians is challenging. Firms hire Indian workers for high-end skilled jobs.	1) Unskilled labour becoming increasingly expensive. 2) Hiring workers is going to become more difficult and expensive (reflecting the rising trend in the minimum wage) and difficulties with labour and trade unions.	1) For firms that are unable to afford the expenses associated with training programmes, it would be worth exploring the possibility of subsidizing training costs, or providing sector-specific training that employees in smaller firms can benefit from. 2) Support Cooperatives for herbal processing.	1) Most firms consider on-the-job training the most important way for workers to acquire the skills they need in their jobs.

¹⁷ Pathways to Prosperity and Inclusive Job Creation in Nepal. Background Paper: Agro-processing sector. Giles Henley, Overseas Development Institute. October 2017

¹⁸ A population list of medicinal plant processing enterprises in Nepal (November 2019). Report number: No. 2019/3/Affiliation: University of Copenhagen. Project: Transiting to green growth: natural resources in Nepal

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
7. Spices processor	1) Set up and operate equipment that mixes or blends ingredients used in the manufacturing of food products 2) Receive, check and store raw materials. 3) Measure out ingredient components and properly mix ingredients to create the right formula. 4) Produce spices products that have a very specific texture, color, flavor and clarity 5) Pack and blend various spice and ingredient mixtures	1) Spices industries 2) Cooperatives 3) Small and medium-sized enterprises (SMEs)	1) Spices are important ingredients in restaurant, hotel, household, and street foods. When people are using spices in every food they cook, it can be assumed that there is a good scope for spice manufacturers. Nepalese spices are grown organically. There is a good demand for Nepalese spices in the domestic market and international market. Estimated supply: NA		1) There is an urgent need to improve training on spices processing to reduce barriers to firms becoming demonstrably compliant with processing standards.	1) Supporting existing efforts to provide industry-wide and industry-led training in local training institutes may provide opportunities for staff in smaller firms to benefit from training. 2) Support Cooperatives in for spices processing.	1) There are many e-commerce websites that sell varieties of products from different brands. People are willing to buy the products from an online store. When people are attracted to online shopping, it is the best decision to increase the online visibility of the products.
8. Agricultural Input Supplier	1) Provide technical support to farmers to improve inputs supply 2) Facilitate service delivery of agriculture inputs (fertilizers, pesticides/fungicides, agricultural credit and improved planting material) to smallholder farmers 3) Develop strategies to increase smallholder farmers' knowledge and use of appropriate agricultural inputs 4) Coordinate agricultural input related activities to improve farmer access to high quality and appropriate agricultural inputs and improved advisory services on best use practices	1) Agro-vets (input retailers) 2) Input importers 3) Wholesalers 4) Agro Mart 5) Cooperatives 6) SMEs	1) Agricultural inputs - seeds, fertilisers, pesticides, basic agricultural equipment - are imported by national level enterprises and distributed through their regional resellers then retailed to producers through the agro-vet network. Issues around misuse of inputs are directly linked to the limited capacity of retailers and agro-vets on disease diagnosis and product recommendations. Estimated supply cumulative: <7,600	1) Firms hire small numbers of technical staff to maintain machinery or for quality control and testing of food products (i.e. food safety). Projected demand by >7,600	1) Hill and mountain districts are still lacking access to agricultural inputs. 2) Technical workers in firms still tend to be men, and without training specifically targeted at women it is unlikely women will be able to take on more technical and better-paid positions. Gap (deficit) >0	1) Ensure training courses target women and minimising barriers to women's participation in courses to raise qualifications and expertise. 2) Encourage private-sector participation in the formal fertilizer trade in Nepal 3) Support Cooperatives and SMEs for agriculture inputs supply.	1) Possible partnerships in the future with private- and public-sector enterprises to build capacity for seed production and multiplication, especially in the Hill and Mountain regions 2) Private sector should make efforts to boost their production and distribution

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
9. Junior Technical Assistant	1) Manage agricultural inputs (seed, irrigation materials, plastic sheets, poultry, goat etc) and 2) Provide technical assistance to the community in crops management and improvement. 3) Identify/form/reform farmers groups, 4) Assist livelihood officer in conducting training to the local groups, forming saving and credit groups and supporting those groups in mobilizing saving and credit fund. 5) Involve in selection of Local Resource Persons and forming different groups using participatory learning approach (PLA). 6) Facilitate training, input support and other nutrition promoting activities. 7) Conduct Farmers Field School on integrated farming.	1) Small and medium size enterprises; 2) Fruits and vegetables processing industries. 3) Dairy industries 4) Animal farm houses 5) Tea and Coffee industries 6) Food processing industries 7) Herbs Production & Processing industries 8) Spices industries 9) Agro-vets (input retailers)	1) The CTEVT affiliated technical institutes have been offering courses in Junior Technical Assistant. Estimated supply cumulative: <21,500	1) CTEVT at present has a very limited infrastructure and resources to educate and train a huge number of youths who want JTA training. Projected demand by >25,000	1) Firms require diplomas in their areas of expertise for Junior Technical Assistant Gap (deficit) >4,500	1) Explore options for providing technical and vocational training for Junior Technical Assistant in Nepal and sponsoring positions for training in India 2) Provision post-training start-up support JTA training graduates to enhance employment and earning opportunities	1) Employ Junior Technical Assistant on a permanent basis 2) Technical training institutes should facilitate vocational skills training on Junior Technical Assistant
10. Agricultural Credit Service Provider	1) Work at financial institutions and assist farmers groups and the target beneficiary group with loan applications. 2) Screen loan requests, evaluate clients' financial information, assess risk ratios, and present approved or rejected loans to management. 3) Develop credit strategy, policies and procedures 4) Set up payment plans for clients explaining monthly installment amounts, interest rates, maintain records of loan applications, and monitor the progress of the loan repayment	1) Savings and Credit Cooperative Societies 2) Microfinance Institutions 3) Commercial Banks 4) Other financial intermediaries	1) The most pressing human resources challenges of microfinance institutions (MFIs) are recruiting qualified staff, preventing turnover, and offering relevant training and capacity building Initiatives 2) Non-banking financial institutions (NBFIs) or regulated MFIs are experiencing the fastest growth Estimated supply: NA	1) Incentives are one means to reduce high turnover rates at MFIs. 2) Ongoing training for employees can be an important way to keep them engaged and build their skills. 3) MFIs have been promoted as a tool to empower the women clients who are involved, the presence of women in staff and management positions is crucial of the client base.	1) The large share of smallholders' farmers and a general lack of investment, compounded by a lack of access to affordable credit and other socioeconomic constraints. 2) Formal credit channels' reach is limited 3) Mushrooming of financial institutions in private NGO/cooperative sector whose reliability, effectiveness, and cost have yet to be established	1) Explore organising trainings specifically for women Agricultural Credit Service Providers 2) Support Savings and Credit Cooperative Societies to facilitate credit services to smallholders farmers	1) Facilitate smallholder access to commercial markets and finance 2) Provide credit facility to women and young people for entrepreneurship development and employment generation

Sector: Tourism

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
1. Cook	Planning meals and preparing and cooking foodstuffs; Planning, supervising and coordinating the work of kitchen helpers; Checking the quality of food; Weighing, measuring and mixing ingredients according to recipes and personal judgement; Regulating the temperature of ovens, grills, roasters and other cooking equipment; Inspecting and cleaning the kitchen, kitchen equipment and serving areas to ensure safe and sanitary food handling practices; Operating large-volume cooking equipment such as grills, deep-fat fryers or griddles.	Restaurants, bars, hotels, casinos, resorts and inns, homestays, highway motels and other food-serving establishments	TBD	6,000 ¹⁹	Employers reported that there are no adequate number of cooks who can prepare food as per the demands of guests.	Design curricula in consultation with or involvement of the private sector like training institutes, hotels, restaurants, resorts, for matching skills	Support in development of curricula, for desired set of skills, collaborate with training providers to place demand, carry out researches on why they tend to quit jobs.
2. Waiter/ waitress	Setting tables with clean linen, cutlery, crockery and glassware; Greeting customers and presenting them with menus and beverage lists; Advising on food and beverage choices; Taking orders for food and drinks and passing orders to kitchen or bar staff; Serving food and beverages to clients at tables; Clearing tables and returning dishes and cutlery to the kitchen; Presenting bills, accepting payment and operating point-of-sales machines and cash registers.	Restaurants, bars, hotels, casinos, resorts and inns and other food-serving establishments.	TBD	8,500 ²⁰ One of the most demanded occupations as per Labor market survey, CTEVT, 2016 and predicts probable annual requirement of 300 waiters	The employers stated that they faced challenges in finding and retaining trained waiters and waitresses. In most cases, untrained staff		
3. Housekeeping	Engaging, training, discharging, organizing and supervising helpers, cleaners and other housekeeping staff; Purchasing or controlling the purchase of supplies; Controlling storage and issue of supplies; Supervising general welfare and conduct of individuals in institutions; Sweeping, vacuum-cleaning, washing and polishing floors, furniture and other fixtures; Making beds, cleaning bathrooms and supplying towels, soap and related items; Cleaning kitchens and generally helping with kitchen work, including dishwashing; Restocking mini-bars and replenishing items such as drinking glasses, and writing equipment	Star hotels, non-star hotels, resorts and inns	TBD	5,000 ²¹ One of the most demanded occupations as per Labor market survey, CTEVT, 2016 and predicts probable annual requirement of 125 housekeepers	Mostly, housekeeping tasks are performed by local residents but the employers have expressed the need of trained professionals.		

¹⁹ CTEVT, 2016: Labour Market Survey - Analysis of Emerging Needs of Technical Human Resources in the Country

²⁰ CTEVT, 2016: Labour Market Survey - Analysis of Emerging Needs of Technical Human Resources in the Country

²¹ CTEVT, 2016: Labour Market Survey - Analysis of Emerging Needs of Technical Human Resources in the Country

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
4. Small hotel manager	Directing and overseeing reservation, reception, room service and housekeeping activities; Supervising security arrangements and garden and property maintenance; Planning and supervising bar, restaurant, function and conference activities; Observing liquor, gaming and other laws and regulations; Assessing and reviewing customer satisfaction; Overseeing accounting and purchasing activities; Undertaking budgeting for the establishment; Controlling selection, training and supervision of staff; Ensuring compliance with occupational health and safety regulations; Providing guests with local tourism information, and arranging tours and transportation	Small hotels, lodges, Inns, Highway motels	TBD	60,000 ²²	The figures given in the Labour Market Survey include all hotel managers. But employers mentioned that small hotel managers with required skills are not available as required.		
5. Homestay operator²³	Welcoming guests in accordance with the local culture; Maintaining the cleanliness of rooms, premises, toilets and bathrooms; Supervising or ensuring health and hygiene of food, drinking water and other consumables; Ensuring safe and secure sleeping space for the guests; Providing guests with information on local culture, touristic attractions and precautions to be taken, if any	Homestay	NA	It is estimated that there are nearly 400 homestays ²⁴	Homestay is a new and growing business with high potential of sustainability. However, the operators have limited knowledge and skills.		
6. Tour guide	Escorting and guiding tourists on cruises and sightseeing tours; Escorting visitors through places of interest; Describing and providing information on points of interest and exhibits and responding to questions; Conducting educational activities for school-children; Monitoring visitors' activities to ensure compliance with establishment or tour regulations and safety practices; Greeting and registering visitors and tour participants, and issuing any required identification badges or safety devices; Distribution brochures, showing audiovisual presentations, and explaining procedures and operations at tour sites; Providing for physical safety of groups, and performing activities such as providing first aid and directing emergency evacuations; Resolving any problems with tour itineraries, service or accommodation.	Travel and Tour agencies	4,200 ²⁵	One of the most demanded occupations as per Labor market survey, CTEVT, 2016 and predicts probable annual requirement of 200 tour guide	The employers have suggested to train local tour guides so that it strengthens local economy.	Design curricula in consultation with or involvement of the private firms like successful tour operators.	Support in development of curricula, for desired set of skills to avoid skill mismatch

²² CTEVT, 2016: Labour Market Survey - Analysis of Emerging Needs of Technical Human Resources in the Country

²³ Not from the ISCO-08

²⁴ The figure is calculated with an average 10% annual growth from the figures of 2017 reported in <https://myrepublica.nagariknetwork.com/news/homestay-registration-on-the-rise/>

²⁵ Ministry of Culture, Tourism and Civil Aviation, 2020: Tourism Statistics 2019

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
7. Trekking guide - Assistant²⁶	Advising the trekker(s) on essential outfits, trekking gears; Collecting information from authorities on any legal requirements to trek in specific places; Ensuring the legal requirements are fulfilled in advance; Guiding the trekkers through prescribed routes; Taking precautions for and addressing natural hazards, climate-related sicknesses; Providing information on the interesting places on the way; Arranging meals and accommodations for the trekkers;	Trekking Agencies	17,625 ²⁷	Challenges in finding skilled and experienced workers in this sector.	The employers expressed that this has enormous potential as there are many unexplored destinations.		
8. Rafting guide²⁸	Orienting the rafters on dos' and don'ts' during the ride; Providing safety gears. e.g. life jackets, helmets, etc. to the rafters; Checking the condition of rafting boat and other gears; Informing the rafters on the possible hazards or risks on the waterway; Surfing through the water.	Rafting Agencies	NA	2,200 Challenges in finding skilled and experienced workers in this sector.	This is an emerging occupation as the attraction towards adventure tourism is increasing and many of Nepal's rivers can be used for rafting.		
9. Tourist vehicle driver	Driving and tending the vehicles to transport tourists; Opening and closing doors before or after passengers board or alight; Assisting passengers with luggage; Controlling lighting, heating and ventilation on vehicles; Observing traffic to ensure safe progress; Collecting fares of verifying that passengers have the necessary tickets	Tourist Bus, Tourist Cabs, Tourist Micro bus, Jeep and others	NA	NA			

²⁶ Not from the ISCO-08

²⁷ Ministry of Culture, Tourism and Civil Aviation, 2020: *Tourism Statistics 2019*

²⁸ Not from the ISCO-08

Occupations	Functions and duties	(Potential employment sector)	Existing supply status	Existing demand status	Mismatch between demand and supply	Recommendations for government	Recommendations for Private sector
10. Receptionist	<p>Maintaining an inventory of rooms available for occupancy, reservations and room assignments;</p> <p>Registering arriving guests, assigning rooms, verifying customers' credit and issuing room keys;</p> <p>Providing information regarding hotel services and services available in the community;</p> <p>Providing information about availability of accommodation and making room reservations;</p> <p>Responding to guests' requests for housekeeping and maintenance services as well as complaints;</p> <p>Contacting housekeeping or maintenance services when guests report problems;</p> <p>Compiling and checking guest accounts for charges using computerized or manual systems;</p> <p>Receiving and forwarding messages in person or using telephones of telephone switchboards;</p> <p>Reviewing statements of charges to departing guests and receiving payment.</p>	Hotels and resorts, Restaurants, Travel and Tour agencies, Trekking and Rafting agencies	TBD	<p>3,100²⁹</p> <p>One of the most demanded occupations as per Labor market survey, CTEVT, 2016 and predicts probable annual requirement of 100 receptionists.</p>	Female workers are valued in receptionist roles, guest relation, etc.		

²⁹ CTEVT, 2016: Labour Market Survey - Analysis of Emerging Needs of Technical Human Resources in the Country

Annexes

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B. List of interviewees

ELMS staff/experts/consultants

1. Ajit Gupta, LMI Unit Coordinator, FNCCI, ELMS
2. Gunjan Khanal, LMI Unit Coordinator, CNI, ELMS
3. Jagannath Paudel, LMI Unit Coordinator, FNCSI, ELMS
4. Subheksya Singh, LMI Unit Coordinator, FCAN, ELMS
5. Ptatistha Maharjan, LMI Unit Coordinator, HAN, ELMS
6. Rejina Shrestha, Sudur Paschim Provincial Consultant, ELMS
7. Pratibha Subedi, Karnali Provincial Consultant, ELMS
8. Anup Paudel, Gandaki Provincial Consultant, ELMS
9. Prachur Shrestha, Bagmati Provincial Consultant, ELMS
10. Narayan B. K. Province 1 Provincial Consultant, ELMS
11. Mahendra Prasai, Program Officer, LMI Unit, FNCCI, ELMS
12. Sanchita Chapagain, Program Officer, LMI Unit, CNI, ELMS
13. Rupak Sapkota, Program Officer, LMI Unit, FNCSI, ELMS
14. Ramesh Man Shakya, Construction Expert, ELMS
15. Khem Raj Kafle, Agriculture Expert, ELMS
16. Prabesh Aryal, Tourism Expert, ELMS

Construction sector

1. Nicholas Pandey, Senior Vice President, FCAN
2. Er. Ang Dorji Lama, Vice President, FCAN
3. Ratna Kumar Khadka, Vice President, FCAN
4. Rajendra Pahari, Vice President, FCAN
5. Mohan Prasad Adhikari, Representative, FCAN, Province 1
6. Birendra Pandey, Advisor, FCAN
7. Mohan Prakash Acharya, President, FCAN, Karnali Province
8. Om Prasad Gauchan, President, FCAN, Gandaki Province
9. Surendra Kumar Goyel, Chairman, Shivam Cement
10. Dharendra Jaisawal, Secretary, Contractors' Association, Bara
11. Sharachandra Bhattarai, Owner, Nepal Hume Pipe, Hetauda
12. Asmin Kumar Raut, M. D. Super Wire and Steel Industries, Hetauda
13. Umanand Kandel, President, Contractors' Association, Chitwan
14. Dinesh Singh, General Secretary, Contractors' Association, Kailali
15. Roshan Dahal, General Secretary, FCAN
16. Rohit Kumar Khadga, Bana Shakti Nirman Sewa, Province 2
17. Abhisek Khatiwada, Contech Pvt Ltd, Bagmati Province
18. Yub Raj Chettri, Kalika Construction, Bagmati Province
19. Yub Raj Bhattarai, Sunkoshi Construction, Bagmati Province
20. Shalik Ram Paudel, Project Director, Small town water supply and sanitation project, Department of Water Supply & Sewerage, Bagmati Province
21. Babu Ram Shrestha, Susu Engineering Construction, Gandaki Province
22. Manoj Thapa, Bhimeswor Drilling Tatha Nirman Sewa, Lumbini Province
23. Lok B Thapa, Sikta Irrigation Project Manager, Karnali Province
24. Madan Bahadur Kunwar, Ganesh Laxmi Construction, Sudur Pashchim Province
25. Sanchita Chapagain, LMI Unit Prog. Officer, CNI

26. Surya Prasad Neupane, Vice-President, Chitwan Association of Industries, Chitwan
27. Yadav Prasad Bhandari, CEO, Rupandehi Chamber of Industries
28. Niranjana Shah, Deputy General Secretary, Far-western Contractors' Association
29. Binaya Gyawali, President, Lumbini Contractors' Association
30. Tara Prasad Poudel, Senior Vice-President, Bagmati Province, FNCSI
31. Suresh Prasad Kurmi, General Secretary, Contractors' Association, Bara

Agriculture Sector

1. Meghnath Neupane, Senior Advisor, CNI, Kathmandu
2. Kanhaiyalal Kasodhan, Immediate Past President, FNCSI, Rupandehi
3. Dhruva Kumar Dhital, President, FNCSI, Rupandehi
4. Bharat Kumar Thapa, Assistant Manager, Khadya Udyog Limited, Makawanpur
5. Ganesh Prasad Chilwal, ED, Chitwan Udyog Sangh
6. Ram P Khanal, Chair, Suddodhan Rural Municipality, Rupandehi
7. Kamal Begani, CNI, Bara
8. Sagar Rana, Dabar Nepal, Kathmandu
9. Sanjiv Giri, Dabar Nepal, Kavre
10. Uttam Aryal, Makawanpur Maida Mill, Makawanpur
11. Gobardhan, CNI Kathmandu
12. Basanta Pandey, Member Chitwan Association of Industries
13. Indira Aryal, CNI, Rupandehi
14. Madan Pokharel, Member, Chitwan Association of Industries
15. Tej Thapa, Agriculture Value Chain Expert

Tourism Sector

1. Mahesh Khanal, MD, Park Safari Resort, Sauraha, Chitwan
2. Pampha Dhamala, Member, Nepal Tourism Board, Member, CNI
3. Bikash Bhattarai, General Secretary, REBAN, Kaski
4. Bikal Tulachan, Kaski, Chair, Pashchimanchal Hotel Sangh
5. Dipak Raj Adhikari, Former Chair, TAAN Chhetriya Sangh, Kaski
6. Siva Kumar Khatri, Chair, Thaha Hotel Association, Member, FNCSI
7. Prakash Chandra Bhattarai, Member, Chhetriya Hotel Sangh, Sauraha, Chitwan
8. Deepak Bhattarai, Regional President, HAN, Chitwan
9. Dharma Raj Panthi, Member, Pashchimanchal Hotel Sangh
10. Guna Raj Thapaliya, General Secretary, Chhetriya Hotel Sangh, Sauraha, Chitwan
11. Prabin Singh, MD, Khwopa Chhi Boutique Hotel, Bhaktapur
12. Ram Sundar Bhele, Bhaktapur Paryatan Bikas Samiti
13. Ramchandra Sharma, Member, FNCSI, TAAN, HAN, Kaski
14. Sanjay Kanta Sigdel, Chair, NATA Gandaki
15. Gyanendra Kumar Bista, Former Chair, HAN, Chitwan
16. Deepesh Sharma, General Secretary, Bhaktapur Paryatan Bikas Samiti
17. Sarita Lama, Tourism Sector Working Group Member, FNCCI
18. Yubaraj Shrestha, Executive Committee member, HAN, SWG Member, ELMS
19. Roshani Upadhyaya, Vice President, FNCSI/CWEC
20. Khemraj Bajgain, CNI Kathmandu

C. Research tools

A Quick Guide for KII with Employers

Target group: Employment unit (CEO/Chairperson/Human Resource Officials)

Name:

Designation:

Institute:

Date:

1. Briefly introduce yourself and your business.
2. Tell us about how your business is operating?
3. What are your key working areas?
4. How many staff members do you have?
 - a. Percentage or number of permanent employees:
 - b. Percentage or number of temporary employees:
 - c. Percentage or number of seasonal workers:
 - d. Percentage of female staff:
 - e. Any changes in % or staff number compared to pre-CoVID-19?
5. What are their working days and working hours?
6. Which type of employees are hard to find & which are easily available (help x verification)? Why?
 - a. Technical staff (require to get specific information – Engineer, Overseer, Sub-overseer, supervisor etc.)
 - b. Skilled labourer/technician (should avoid confusion with (a) so better to give example of technician such as quality/material test expert, scaffolding, bar bending etc.)
 - c. Semi-skilled labourer
 - d. Heavy equipment operators/drivers
7. In which category of workers is the highest number of turn over? What are the reasons?
 - a. Technical staff
 - b. Skilled labourer/technician
 - c. Semi-skilled labourer
8. What type of human resources would you need in next five years? In what numbers?
 - a. Technical staff:
 - b. Skilled labourer/technician:
 - c. Semi-skilled labourer:
 - d. Other (if new specific skill/level, please mention):
9. What are key challenges in getting, retaining and managing competent performing workers?
10. What types of Government policies are supporting or hindering to run your business? What can be done to resolve them?
11. What types of organizational policies do you have?
 - a. Business and human rights
 - b. Occupational health and safety (OHS)
 - c. Occupational standard
 - d. Gender policy
 - e. Child protection policy
 - f. Environment policy
12. What can be done to improve the availability of competent performing workers in future?
13. Anything you want to add?

A Quick Guide for KII with Employees

Target group: Employees (occupations in high and low demand)

Name:

Designation:

Institute:

Date:

1. Briefly introduce yourself and your job.
2. How long have you been working with this organization? How long in this profession?
3. What training did you receive for this work? When? From where?
 - a. Type of training
 - b. Date:
 - c. Place:
4. What is your educational background & level of education?
5. What do you think are your best skills in this job?
6. What shortcomings do you find in your skills to perform your job?
7. Are you satisfied with your work? Why? Why not?
8. If you were to restart your career, which profession would you choose? Why?
9. If you were choose the same profession, how would you do it differently? Why?
10. What do you think you need to do to excel in the job market?
11. What policies would you need to work better?
12. Are you familiar with the following policies?
 - a. Business and human rights
 - b. Occupational health and safety (OHS)
 - c. Occupational standard
 - d. Gender policy
 - e. Child protection policy
 - f. Environment policy
13. What are your future plans?

A Quick Guide for KII with Associations

Target group: Employer Association (Chair/President/General Secretary)

Name:

Designation:

Institute:

Date:

1. Briefly introduce yourself and your association.
2. How well are your member organizations doing business in your areas of operations?
3. Are you having any problems on finding appropriately skilled workforce for their enterprises?
4. Presently, how do you recruit workforce? From where they were trained?
5. In your sub-sector, what is the current status of the business? Is it booming or shrinking? Are more/less jobs being created?
6. What types of business are booming/have potentials to growth? And what types of business are shrinking?
7. What is your speculation/assumption regarding the status of business in your sub-sector in next five years? Justify your speculation/assumption?
8. What are key challenges of your member organizations in relation to human resources?
9. What are the occupations that are in high demand in your member organizations? Why?
10. What are emerging occupations or skill sets required by your member organizations?
11. Any other suggestions?

D. Detailed calculations and assumptions for quantitative estimate (Construction Sector)

Quantitative analysis of the construction labourers for 5 years (Base year 2016)

- A. Annual capacity of CTEVT in Construction Sector is 41,141 (Table 4) . An estimated 80% of trainees complete the courses = 33000 (Estimated)
 B. If 60% of the trainees interested/available for employment then (60%x33000)= 20,000 per year. So in 5 years, total estimated supply = 400400

S. N.	Occupations	Year-wise demand *					Demand in 5 yrs	SS_Occu % base*	Supply side		
		Base 2016	Projection						% of B	Round fig S in 5 yrs	Deficit D-S
			2017	2018	2019	2020	2021				
1	Mason	82000	10000	10000	10000	10000	132000	27%	109296.9	109300	22700
2	Carpenter	80000	10000	10000	10000	10000	130000	27%	106631.2	106600	23400
3	Electrician	45000	5000	5000	5000	5000	70000	15%	59980.03	60000	10000
4	Plumber	34000	3500	3500	3500	3500	51500	11%	45318.24	45300	6200
5	Welder/fabricator	10000	2700	2700	2700	2700	23500	3%	13328.89	13300	10200
6	Scaffolder	0	0	0	0	0	0	0%	0	NA	NA
7	Heavy equipment op	4700	700	700	700	700	8200	2%	6264.581	6300	1900
8	Supervisor	18500	2700	2700	2700	2700	32000	6%	24658.46	24700	7300
9	QA Technician	5200	750	750	750	750	8950	2%	6931.025	6900	2050
10	Plant operator	21000	2500	2500	2500	2500	33500	7%	27990.68	28000	5500
		300400	37850	37850	37850	37850	489650			400400	89250

* (Source: LABOUR MARKET SURVEY, Analysis of Emerging Needs of Technical Human Resources in the Country (CTEVT 2016))

CTEVT Annual Report 2076/77 => Training Participants 51,733 & completed 37,924. If 40% constitute construction => 15,000
 Considering additional at least 33% margin with informal training (15000 +5000) =>20,000

