Skills Macroeconomic Survey; Prioritisation of Sectors

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Acronyms

CTEVT	Council for Technical Education and Vocational Training
DAG	Disadvantaged Groups
DFID	Department for International Development
FMCG	Fast Moving Consumer Goods
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GHP	Good Hygiene Practices
GMP	Good Manufacturing Practices
GoN	Government of Nepal
HACCP	Hazard Analysis and Critical Control Point
HAN	Hotel Association Nepal
IBN	Investment Board, Nepal
ICT	Information and Communication Technology
IFGMA	International Federation of Mountain Guides Associations
IPP	Independent Power Producer
ITeS	Information Technology-enabled Services
IWDR	Industry Workforce Development Roadmaps
NATHM	Nepal Academy of Tourism and Hotel Management
NEA	Nepal Electricity Authority
NMA	Nepal Mountaineering Association
NNMGA	Nepal National Mountain Guide Association
NPR	Nepalese Rupee
ODI	Overseas Development Institute
PPA	Power Purchase Agreements
PwD	Persons with Disability
QC	Quality Control
सीप	Skills for Employment Program
STGA	Scottish Tourist Guides Association
TQM	Total Quality Management
WTTC	World Travel and Tourism Council

Executive Summary

This macro-economic research report covers the macroeconomic survey that entails a literature review of available data on macroeconomic parameters, labour parameters, and industrial parameters. The literature review is also augmented with interactive discussions with over 75 key stakeholders across Nepal representing business associations and chambers, NGOs, and prominent industry leaders for further data collection on sectoral growth scenarios and employment potential. The goal of this report is to understand the key skill related challenges in each of the sectors in Nepal using macroeconomic data and qualitative discussions and to help develop the hypotheses that will be tested in subsequent phases of the study (for next steps, please refer to **Chapter 9** of this report).

The five sectors that are covered in this report include **Commercial Agriculture, Light Manufacturing, Hydropower, Tourism and Information & Communication Technology**. Based on study of literature and discussions with the stakeholders, these sectors were identified as the ones with the most potential for economic and social transformation of Nepal.

Through the research, the following **skill gaps** in **Table 1** were identified across these five sectors. An individual chapter for each of the sectors is covered in this report.

Commercial Agriculture	Light Manufacturing	Hydropower	Tourism	ICT
Digital Literacy	Plant/ Machine Operators	Specialised Construction Skills (e.g. tunnelling, special electronics work, and bridge-building expertise)	Hospitality-related Skills (such as front office, housekeeping, landscaping, masseurs, hotel managers)	Software Development (such as software testing & quality assurance, Data Analytics, Cloud-services, Database Management)
Technical Assistance	Machinery Maintenance & Repair			
Packaging & Labelling/ Branding & Marketing	Packaging & Labelling	General Construction Skills	Lodge-Management (such as small business management and digital skills)	ITeS (IT-enabled Services) related skills (such as data processing, customer care professionals, call centre operators)
Quality Control & Testing	Quality Control & Testing			
Heavy Machinery Operators (and Repair)	Logistics/ Warehousing	Project Management Skills	Food & Beverage (such as cooks, waiters, baristas)	Project Management/ Engagement Management
Warehouse Operations	Industrial Relations			
Feed formulation	Leadership Skills and Human Resources		Tour & Trek Activities (such as tour guides, hiking guides, trekking and mountaineering guides)	Telecommunication (such as fibre/optical cable installation, GSM Installation, air-conditioning and generator maintenance, IT technicians, Repair and maintenance technician)
Farm Management	Extended Value Chain related Skills			
Digital Literacy	Plant/ Machine Operators			

Table-1: Summary of Skill Gaps across the sectors

Source: Research by सीप team

The research also identified the following possible eight (8) categories of **market failures** for skill development. These are captured in detail in **Chapter 8**. In summary, these include:

- **Risk of Attrition: Risk of workers leaving the company once they have been trained**
  This could be in the form of migration overseas (highlighted by Tourism sector), poaching by competitors (highlighted by agro-processing/ light manufacturing sectors), and starting their venture and becoming a competitor of the company they were trained in (highlighted by ICT sector).

- **Imperfect Information: Information asymmetry between the private sector and the workers**
  The stakeholders interviewed that while they all faced challenges related to skills, there was limited information on the benefit of skill development. This is evident in both the companies and for the workers. The companies indicated that there is limited dialogue between the demand-side (businesses) and supply-side (educational institutes). The ***information asymmetry*** also leads to underinvestment in training and human resource development.

- **Incentive mismatch for Skill Development: Lack of incentives for skill development across stakeholders**
  Companies, in general, are not willing to pay higher wages for the skilled employees as compared to unskilled employees, especially for semi-skilled workers. The companies also mentioned that they prefer workers with experience (who have gone through on-the-job training) as compared to skilled employees with degrees/ certification. For the companies, training of workers means ***downtime***.

- **Short-termism and Budgetary Constraints: Underinvestment in Human Resources department**
  The industry indicated that both the workers and the companies have a short-term mentality. For companies, the focus is on profits, and less on employee engagement. Typically, there is underinvestment in Human Resources. For workers, the industry mentioned that the focus is on salary growth, with a ***goal towards migrating*** to a better life.

- **Inequitable access: Issues related to access to skill development for different groups of workers**
  There are several forms of inequitable access for skill development in Nepal. One of the key challenges was the location of the educational institutions. Typically, most of the institutes of higher learning (such as CTEVT institutions) are located ***close to economic centres*** (which tend to be urban). Another challenge was that women, DAGs and PwDs face ***difficulties in access*** because of the additional cost, opportunity cost, distance, prerequisites, and male-oriented training setup. Finally, the lack of a ***financial ecosystem*** for education was highlighted as one factor for lack of skill development in Nepal.

- **Ecosystem Imperfections: Lack of coordination among stakeholders**
  There is a lack of coordination between the private sector and training providers. This leads to issues in terms of the development of a ***market-driven curriculum*** in Nepal. In several cases, it was highlighted that educational institutions in Nepal focus on theoretical knowledge and not on practical training. Another factor highlighted was the ***quality of trainers*** in these institutions. In certain cases, there is ***lack of industry-ready certifications or degree*** programmes.

- **Low Skills Trap: Focus on low value adding activities leading to demand for lower skilled workers**
  The companies in Nepal are, typically, focused on *low value-adding* activities across the sectoral value chain. For these low value-adding activities, the skill requirement is also generally lower skilled. This leads to a trap for companies which want to move up the value chain, as there is a shortage of higher skilled employees since there is low demand for such employees. This low-skill trap also provides a disincentive for the labour force to upgrade skills and provides an incentive for them to migrate overseas where there is more appreciation (and value) for their skills.

- **Externalities to the Skills Market: Issues related to policy environment and competitiveness of labour**
  The stakeholders mentioned that the new minimum wage would mean a retrenchment for blue-collar workers. This also has led companies to evaluate hiring more contract-workers or converting the workers to partners (e.g. some agri- estate workers might now effectively become self-employed operators of the estates) in order to maintain the cost of operations. Since companies have fewer incentives to develop skills of contractual workers, this change indicates that the potential impact of skill development will be lower. Industry stakeholders also mentioned that the cost of labour from border areas in India is now 2 to 3 times lower than labour costs in Nepal.

As the next step to this report, the team is validating the findings through a **firm-level survey**. The survey intends to cover companies across Nepal, focusing on companies based in Province 1, 2, 3, 5, and 6 of Nepal.

This report also covers the list of preferred training providers as indicated by the stakeholders and the list of initial potential partnership models with DFID-**सीप** represented in the annexures.

Using the findings from this report and the firm-level survey, ideation labs (one for each sector) will be conducted to identify the solutions. The end goal is to develop an Industry Workforce Development Roadmap (IWDR) for each of the five sectors under focus during the Inception Phase of the programme.

1. Background of the study

A poor educational system, a history of conflict and political instability, and other symptoms of poverty leave many Nepalese with limited employable knowledge and skills. Nepal's tertiary education system is also poorly regarded by employers who say there is a "gap between academia and industry" and "graduates do not meet the requirements needed". At the same time, slower job and wage growth (labour demand) in more skilled industries are not in-step with skilled graduates (labour supply), impelling many skilled people to migrate to developed countries for better job prospects, stability, and wages while leaving behind many semi- or unskilled workers. A market gap is created as workers fail to meet the skill demand and/or wages are comparatively too low to make working worth their while.

Nepal's TVET system was created to help bridge the skills gap and comprises formal, informal, and non-formal education, but despite numerous providers, an estimated 62% of youth cannot access TVET[1]. There is a gap between employers' demands and training providers (TPs) offerings. Employers themselves are hesitant to invest significantly in training as trainees are likely to work for a short period before taking learnt skills and leaving for better opportunities. In addition, small domestic markets limit firms' ability to increase wages (and retain staff) and, in some cases, firms opt to employ cheaper, abundant foreign labour or automate. The World Bank has estimated that if the investment-to-GDP ratio, growth of human capital, and growth of productivity stay at recent historical averages, Nepal's potential or trend rate of growth would slow to an average of just 3 percent per year from 2017 to 2030 (World Bank, 2017). This indicates that there is a need to improve the productivity of the workforce across the country.

In response, DFID has designed the Nepal Skills for Employment Programme (सीप) and has competitively selected Louis Berger, Inc., a global consulting firm, to deliver the £17 million technical assistance project to better train and place Nepalese in both domestic and international jobs. By primarily using a Challenge Fund mechanism, सीप will partner with the private sector to bring in innovative training models to address market failures and key skill gaps while also leveraging private sector resources. Models will focus on solutions for training and job placement in the ICT, tourism, commercial agriculture, light manufacturing, and hydropower sectors, all of which are key economic drivers for Nepal.

The project will also look at partnering with relevant government entities to evaluate and recommend public training models, as well as develop skilling capacity at the provincial level. Along the way, सीप will provide targeted support to build capacity in key skilling areas with other Development Partners. Literature indicates that the employer-provided training creates significant gains for both workers and firms. It helps increase the productivity of the employers and wages of the workers (Lynch, 1994) (Glick, Huang, & Mejia, 2015).

The migration piece of सीप will focus on harnessing the benefits of migration for Nepal's workforce and economic development. सीप will demonstrate a number of cost-effective models to increase migrants' skills and incomes; lower financing and other costs of travelling abroad; and, increase savings and investment of remittances. Cross-cutting will be financial literacy. सीप will

[1] Source: https://www.adb.org/sites/default/files/publication/176564/tvet-hrd-south-asia-nepal.pdf.

work in tandem with efforts by the International Labour Organization (ILO) and other key counterparts in Nepal and Asia, which depends heavily on Nepali migrants.

As a result, the project will help reduce the skills mismatch, reaching over 90,000 (45,000 from the Skills Strengthening Component and 45,000 from the Migration Component) Nepalese with an increase in income attributed to the project. . Of these beneficiaries, for skills component, at least 70% will be in key sectors for structural transformation, at least 50% will be women; and at least 40% will be from disadvantaged groups (including a 10% of total component target for those living with disability to access employment). Similarly for migration component, at least 33% of the beneficiaries will be women; and at least 40% will be from disadvantaged groups.

As DFID's implementing partner on this initiative, Louis Berger will coordinate its strategies and activities with the major public, the private sector, donor community, including donor agencies, and other stakeholders who are involved in providing support to the GoN in skills development and employment generation. Louis Berger's team partners for this project include British Council (BC), the International Organization for Migration (IOM), Frost & Sullivan (F&S), Institute for Integrated Development Studies (IIDS), and Clear Horizon (CH).

1.1 Scope of this report

This report covers the macroeconomic survey that entails a literature review of available data on macroeconomic parameters, labour parameters, and industrial parameters. The literature review is also augmented with interactive discussions with 79 key stakeholders (please refer to the list of stakeholders in **Annex 1**) across Nepal representing business associations and chambers, NGOs, and prominent industry leaders for further data collection on sectoral growth scenarios and employment potential. The goal of this report is to understand the key skill related challenges in each of the sectors in Nepal using macroeconomic data and qualitative discussions and to help develop the hypotheses that will be tested in subsequent phases of the study (for next steps, please refer to **Chapter 9** of this report).

Key Activities in this stage

- Review documentation and knowledge products such as the recent reports/studies from DFID, ODI, World Bank, ILO, among others.
- Document and integrate key takeaways shared by business leaders at the project inception workshop.
- Map list of key stakeholders across the five sectors – agriculture, tourism, ICT, hydropower, and light manufacture to schedule roundtable discussions and one-on-one interview – with industries located in or of interest in key provinces across Nepal.
- Identify key invitees for the roundtables and one-on-one key informant interviews. Conduct outreach to priority stakeholders across the five sectors.
- Prepare and finalise the discussion and interview guide(s) for the roundtables and interviews in consultation with **सीप** partners on Skills, Migration, and MEL components.
- Plan and prepare (including logistics) for the roundtable discussions, in coordination with **सीप** partners on Skills and Migration components.
- Organize in-depth discussions and roundtable discussions with the key business actors from each sector, including macro-level cross-sector associations.

2. Selection of Priority Sectors

This section discusses the justification for the selection of five sectors for this study. To select the sectors under study, we considered the sectors using the following criteria:

- Sectors that have a potential for exports
- Sectors that have the capacity for structural transformation of Nepalese economy into higher-value industry and services
- Sectors that have demand for skills and ability to create decent employment for young and poor Nepalese
- Sectors that have the potential for social transformation in Nepal through the inclusion and creation of decent employment for women, DAGs and PwDs

Based on discussions with industry stakeholders and review of the literature, the following sectors were identified with potential in Nepal:

- **Commercial Agriculture**: Agriculture activities including agro-processing, but excluding subsistence agriculture
- **Light Manufacturing**: All manufacturing that is more labour intensive and less capital intensive – excludes chemicals, oil & gas, steel manufacturing, among others.
- **Hydropower**: Focusing on medium and large-scale hydropower projects – exclude micro-hydro
- **Tourism**: Travel and tourism activities such as hospitality, travel agencies, tour/ hike/ mountain guides – excludes retail, food & beverage, aviation services
- **ICT**: All ICT activities including Information Technology and Telecommunication
- **Logistics**: All logistics activities supporting agriculture and manufacturing
- **Construction**: All construction activities including public infrastructure, private buildings, among others.
- **Professional Services**: Activities such as accounting services, legal services, consulting services, among others.
- **Personal Services**: Activities which are delivered locally, such as beautician, plumbing, electrician, among others.

Using the parameters selected above, the following selection matrix was developed.

Sector	Export Potential	Economic Potential	Job Potential	Inclusivity Potential
Commercial Agriculture	High	Medium	High	High
Light Manufacturing	Medium	Medium	High	High
Hydropower	High	High	Medium	Medium
Tourism	High	Medium	High	High
ICT	Medium	High	Medium	Medium
Logistics	High	High	Medium	Medium
Construction	Low	Medium	High	Low
Professional Services	Low	Medium	Low	Low
Personal Services	Low	Low	High	Medium

Figure-1: Sector Selection Matrix

Source: Qualitative justification based on discussions with stakeholders and analysis of the consultants

As can be seen in the table, the top five sectors that were selected include Commercial Agriculture, Light Manufacturing, Hydropower, Tourism and Information & Communication Technology. This report covers the detailed analysis of these sectors.

It should be noted that Logistics and certain Business Services are covered in the report in the context of the extended value chain of the Commercial Agriculture and Light Manufacturing. Construction is included in the context of Hydropower and Hospitality (under Tourism).

Other studies (such as those by (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017), (Accountability Initiative, 2016)), (Treichel, Narain, & Sharma, 2018) have concluded that these sectors are of prime importance for future economic and social development of Nepal.

Commercial Agriculture transformed the socio-economic outlook for Ghana. In the 1970s, the agricultural growth in Ghana was negative. Since 1983, when the country underwent economic reforms to commercialise agriculture, Ghana's agriculture grew at more than 5% per annum for the next three decades. Ghana became one of the fastest growing agriculture markets in the world. Due to the reforms and the resulting growth, the poverty and unemployment in Ghana fell in the 1990s and 2000s, especially in rural areas. The prevalence of underweight children under five years of age has been falling. Today, Ghana is one of the top cocoa grower and exporter in the world. This shows the potential of the combination of investment by private firms and the involvement of small-scale farmers in the mechanisation of agriculture. Similarly, in Nepal, with more than 70 percent of the population working in agriculture, creating markets in high potential agriculture value chains, such as tea and spices, could have a substantial impact on living standards in rural areas (Treichel, Narain, & Sharma, 2018).

Similarly, **Light Manufacturing** transformed Vietnam post the *Doi Moi* policy reforms of 1986. The manufacturing sector in Vietnam contributes to approximately 30% of GDP (Dinh, 2013). This comprises light manufacturing including food products, fabricated metal products, apparel, and pharmaceutical industries. This transformation led to an increase in business creation in Vietnam – the share of micro-enterprises (less than ten employees) doubled in the decade from 2002 to 2012 (Nguyen, The Evolution of Vietnamese Industry, 2018). This led to a five-fold increase in exports from

Vietnam, and labour productivity (i.e. industrial output per worker) increased on average 5% per annum between 2000 and 2010 (Nguyen, 2016).

Hydropower, similarly, has the potential for both exports and economic transformation of Nepal. Currently, Nepal is dependent on India for import of electricity. The high cost and the shortage of electricity in Nepal impacts the industrial and services sector. Consumers in Nepal pay on average £ 0.07 per kilowatt-hour (kWh) – 115% higher than tariffs in India and Bangladesh, 43% higher than those in Pakistan, and 18% higher than those in Sri Lanka (Thapa & Basnett, 2015). This is one of the factors for the higher cost of production in Nepal, as compared to other competing destinations such as India, Bangladesh and Vietnam. In leveraging Nepal's unique endowments, hydropower could attract massive new investments and an increased inflow of resources into the country, potentially stimulating construction and urbanization (Treichel, Narain, & Sharma, 2018).

Tourism activities have also transformed countries such as Iceland. In 2017, around 1.7 million tourists came to visit Iceland (i.e. approximately five times the population of the country). This boom, which started around 2008, has created job opportunities for local retail, food & beverage and other vendors across the country. Globally, tourism employs one in every 11 workers on the earth, with approximately 60% of them being women. The youth involvement in employment in tourism is also higher as compared to the rest of economies in most countries (WTTC, 2013). New alternatives to traditional tourism, such as home stays, have also helped boost social inclusivity in local communities. Globally, women who engage in homestays have generated more than £7.5 billion in revenue, potentially creating downstream impact for nearly 50,000 women. In Nepal, about 80 percent of tourism jobs are in the poorest and most remote regions of the country. With every six tourist arrivals to Nepal, one new job is created (almost double the global average of 1:11) (Treichel, Narain, & Sharma, 2018).

Similarly, in the Philippines, ICT has created a huge economic impact. Between 2011 and 2022, the ICT sector is expected to create 1 million additional jobs (direct) in the country. Almost, half of these are expected to be outside the capital region; thereby, increasing the geographic diversification of the sector (Frost & Sullivan, 2016). A significant share of these jobs is currently held by women, especially in the ITeS sectors such as Business Process Outsourcing (BPO). The ICT services sector in Nepal can help unleash Nepal's entrepreneurial spirit, and enable productivity growth in other sectors. In the short run, it can increase exports of low- to mid-range business process outsourcing and data analytics, while in the longer run, the sector could develop niche expertise and raise the productivity of other sectors, such as tourism and agribusiness (through tailored software such as apps for mountain hiking), retail (e-commerce) and transport (logistical software) (Treichel, Narain, & Sharma, 2018).

Given the socio-economic transformation potential of these sectors, this report undertakes a detailed evaluation of the challenges and skill gaps in each of the five sectors.

3. Profile of Commercial Agriculture Sector in Nepal

The agriculture sector is an employment provider for a large number of people traditionally employed in this sector. It provides jobs for a number of uneducated and unskilled labour. Agriculture also provides employment opportunities through allied industries. According to the International Labour Organization, in 2010 agriculture contributed to 19.8% of the total employment. One interesting point to be noted is that while in developing countries a major proportion of labour is involved in agriculture, in developed economies only a small proportion is involved in agriculture. Agriculture accounts for approximately 3.9% of the global gross domestic product (GDP) (World Bank, 2014).

The agriculture sector in Nepal remains its premier GDP contributor with agriculture having accounted for 28.8% of the nation's GDP in FY 2016 / 2017, and is estimated to have contributed 27.6% to the national GDP in 2017 / 18 (MoF, 2018). This also directly translates to the employment sphere where the agriculture sector engages two-thirds of the population (IBN, 2017). Agriculture is still subsistent by nature, and contribution of the agriculture sector to GDP has seen a steady decline since FY 2010 / 11. However, the sector has reported being undergoing a gradual shift from subsistence to commercial agriculture (IBN, 2017).

3.1 Profile of the Sector in Nepal

The IBN agriculture sector profile recorded more than 214 commercial agriculture firms in Nepal with a total fixed capital investment of more than USD 3 million. The following types of companies are active in Nepal's commercial agriculture sector:

i. Crop production and related service activities
ii. Animal production (poultry, goat, etc.), hunting and related service activities
iii. Forestry and logging
iv. Fishing and aquaculture
v. Agro-processing

Export of Nepalese agricultural products was noted to be limited, as commercial agriculture firms currently prioritised meeting the demands of the domestic market or due to Nepalese commercial products' poor competitive position in the international market due to high costs of production (ODI, 2017). In relations to import vs export of agricultural products, Nepal imported agricultural products worth USD 1.298 billion vs. USD 268.91 million in FY 2013 / 14. Major export products in the commercial agriculture sector comprise of tea, coffee, honey, ginger, cardamom, vegetables, floriculture, and non-timber forest products (IBN, 2017).

FDI in the commercial agriculture sector is negligible as compared to the industries and service sectors, as revealed by the share of FDI in the agriculture sector reported as 0.3% in FY 2015/16. FDI in agriculture is mainly concentrated on coffee herbs-processing firms (NRB, A Survey Report on FDI in Nepal, 2018).

The agriculture sector remains a priority for GoN, with the Agriculture Development Strategy (ADS) 2015 emphasising processing, trade and related sectors in addition to production for the agricultural transformation and acceleration of the sector towards commercial agriculture. The National Trade Integration Strategy (NTIS), implemented since 2016, has sought to address the competitiveness challenges in the export sector and has identified priority export goods and services based on export performance and inclusive/sustainable development. Out of 12 products identified by NTIS, commercial agriculture products were cardamom, ginger, tea, and medicinal and aromatic plants.

In lieu of provincial agricultural data, the study has considered agriculture distribution by Nepal's ecological landscape. It has been well established that the Terai region / southern belt of Nepal is the most suitable for agriculture, mainly due to its high soil fertility and flat lands. More than 40% of the total land area in Terai region is utilized for agriculture, and Terai region is also considered the 'granary' of Nepal. The Terai region in Nepal is adept at producing an assortment of rice, wheat, maize, sugarcane, jute, vegetables and livestock. Potential for greater production of agricultural produce has also been noted in the Terai region, subject to better irrigation facilities and adoption of newer agri-technologies. In regard to the hilly ecological region of Nepal, only 20% of the total land area is utilized for agriculture, with maize, wheat and livestock being the primary agricultural products. The mountain region of Nepal is the harshest ecological zone for agriculture, with only 5% of the total land are suitable for agriculture. As such, livestock was found to be the primary agricultural produce of this region (IBN, 2017).

3.2 Labour Profile

The ODI 2017 report noted that operative / unskilled workers who did not require technical skills made up the majority of the workforce in the commercial agriculture sector. It was also cited that temporary workers were in the majority over permanent employees. Other important takeaways from the report related to commercial agriculture sector labour profile were as such (ODI, 2017):

- Technical staffs that firms required were comprised of technicians, machine operators and food quality control and testing staff.
- More female participation in the commercial agriculture workforce was also noted by the study, which was attributed to male workers due to migration. On a positive note, firms preferred hiring female workers over male workers as they were seen as more efficient and were less likely to participate in trade unions and industrial action.
- Ageing workforce in commercial agriculture was noted, the difficulty of hiring young staff due to their preference to seek work overseas, or in the domestic manufacturing and service sectors was also recorded.
- Firms found it challenging to hire domestic technical expertise for installing/setting up machinery. As such, firms are forced to hire such skilled workers from India.

3.3 Key challenges faced

One of the major challenges highlighted by companies during the round of our interviews was high import taxes on inputs for commercial agriculture firms mainly on the agro-processing side, as there is not sufficient local production of raw materials for the agro-processing industries. In some cases, companies stated that this has led to it being cheaper for consumers to buy finished Indian / Chinese products than the same Nepalese products, seriously hampering their competitiveness even in the domestic market, making trading business more lucrative than production. This challenge has also been flagged in the ODI 2017 report (ODI, 2017).

Companies also highlighted the GoN food testing laboratories which were deemed sub-standard by them (ODI, 2017). This was an issue for commercial agriculture companies especially while exporting/looking to export. It was noted that foreign buyers did not trust GoN quality certificates and insisted on carrying out quality tests in their countries, the costs of which were passed on to Nepalese firms. Further, Nepalese firms had to settle on the quality of their products that the foreign buyers said it is; this directly impacts the selling price for the Nepalese firms.

Another challenge divulged by the commercial agriculture firms related to lack of standardisation for commercial agriculture products in Nepal. For example, feed industries require maize of a certain size for production. However, it was difficult to source the needed quantity of maize seeds, in the first

place, and even of the required quantity was gathered, the maize seeds were found to be of varying sizes, forcing feed companies to spend time and resources sorting maize seeds by size. However, it was also found that the required quantity and standard size of maize seeds could be sourced easily from India, almost overnight. This challenge was also related to the grey area of contract farming and land holding laws, which makes it difficult for commercial agriculture firms to either the source or produce in large quantities sufficient for commercial agriculture. This issue was also flagged up in firms who were either export-oriented or were looking to export. It was gathered that the volume of Nepalese commercial agriculture firms to export was limited. In reality, firms were struggling to source even the minimum standardised sample to be provided to Indian companies (usually 40 tonnes).

Lack of infrastructure and technology were also highlighted as key challenges in the commercial agriculture sector. For example, lack of cold storage made it impossible to save perishable products which led to the huge post-harvest loss, lack of access and availability of technology (mechanisation) made it impossible for farmers, from which the commercial agriculture firms sourced produce, to enhance their yields. It was cited that these farmers were hesitant to adopt new technology to improve production without proof of success, and there were limited numbers of demonstration farms towards this purpose.

Interviewed commercial agriculture firms also cited that the New Labour Act 2074 made hiring Nepalese workers expensive and firms preferred to source cheap labour from India on contract. Firms also cited that there were insufficient Nepalese workers in the agriculture sector as Nepalese workers were not interested in working in the agriculture sector, which they perceived as 'dirty/poor work,' and preferred manufacturing or service-oriented jobs.

Firms also noted the absence of quality research and development institutions which were capable of demonstrating innovations in the Nepalese context to increase productivity.

3.4 Skill gaps and future needs

Through the literature review and interviews, the team identified the following key job roles and skill gaps.

> *"You don't get tractor operators in Nepal. Most don't have license nor know how to plough properly. Repair and maintenance skills are usually out of question. There is no culture of machine maintenance."*

These are not in order of prevalence of gaps. The quantification of prevalence is being conducted through the firm-level surveys.

- Digital Literacy
  With commercial agriculture across the world becoming more digitised and intelligent, lack of digital skills will reduce the competitiveness of Nepalese produce. Farms are moving towards technologies that would enable an improved utilisation of limited resources to attain increased yields from the farmland. It was highlighted that across the rural areas smartphones are ubiquitous, and the rural population understands the usage of social media apps such as Facebook. Several entrepreneurs highlighted that they had developed digital solutions (including apps) to support the farmers/ cultivators. However, due to limited digital literacy, the target audience is unable to maximise the benefit of technology. This hampers the drive to improve yield or to provide better market

information to the farmers/ cultivators. Integration of technologies that enable the creation of connected and intelligent farms are increasingly identified as a crucial element in making agriculture more efficient. Such a move will need a workforce that has *basic digital literacy* to use the tools made available.

For agro-processing, it was highlighted by the companies interviewed that they face challenges in finding *machine operators* who understand operating the new machines that come with Programmable Logic Controllers.

- Technical Assistance

  The industry highlighted that there is a shortage of *junior technical assistance* (JTA) specialists for veterinary and plant sciences in the country. These JTA provide communication and training of farmers, help to diagnosis any production related challenges, offer advice to the farmers, and also support them in getting the necessary support. There are courses available with CTEVT affiliations in Nepal; however, it was highlighted that the cohort size is small. Reports have indicated that Junior Technical Assistant (Agriculture), Junior Technical Assistant (Veterinary), Seed Technician are most demanded skills (Accountability Initiative, 2016). One possible solution that was recommended was to train local women in the village with the necessary technical knowledge to provide support at the local level. Reports have indicated that assisting farmers in Hills and Mountains can accelerate Nepal's economic prosperity (Cosic, Dahal, & Kitzmuller, 2017).

- Packaging & Labelling/ Branding & Marketing

  Packaging has three stages - primary, secondary, or tertiary stages of packaging. Growing consumer concern for food wastage reduction, changing lifestyle, affordability, and increasing consumer demand are the key drivers for functional packaging. Labelling helps to differentiate the product and helps to build trust among the consumers.

  The industry stakeholders in Nepal mentioned that the industry lacks entrepreneurs and workers who understand the importance of *packaging & labelling*. Even from customers of agricultural products (e.g. agro-processing, traders, and hotels) who were interviewed, this fact was highlighted. Some stakeholders mentioned that they had to resort to importing products from India or Bhutan as they had better packaging as compared to the local products. Similar to packaging & labelling, *branding/ marketing* was highlighted as a key skill gap in terms of understanding its importance and the knowledge of how to do branding/ marketing.

  Lack of these skills was also cited as one of the key inhibitors of export of Nepalese produce to overseas markets in the region and beyond. (McKenna, 2018) (GoN, 2015).

- Quality Control & Testing

  Food safety has gained momentum in recent years mainly due to rising consumer awareness of the type of food and beverage products consumed. Incidents of food recall mainly due to contamination by microorganisms and other toxins/ chemicals that can cause foodborne illnesses have also raised the need for proper food safety measures from "farm to fork". The need for food safety, therefore, drives new growth opportunities in different segments of the food industry value chain, including production, processing, packing, distribution/transportation, storage, and preparation.

Countries restrict entry of food products (raw or processed) through their borders if they are not tested in line with their standards. The interviews highlighted that Nepal lacks even ***basic Quality Control & Testing*** facilities (QC). One of the hindrances to QC is the lack of relevant talent for Quality Control & Testing. For food manufacturing firms, there is an urgent need to improve training on food safety to reduce barriers to firms becoming demonstrably compliant with food standards (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017). Currently, Nepalese exporters send their products overseas and rely on the importer in other countries to conduct QC – this hinders the bargaining power for Nepalese exporters as they are paid according to the results of the QC report. This limits the export potential of Nepal in a global market estimated to be US$ 4.7 trillion in 2017 by Frost & Sullivan. There is lack of specialists who can understand and advice plants on technical standards such as international ISO standards, Hazard Analysis and Critical Control Point (HACCP), Good Hygiene Practices (GHP), Good Manufacturing Practices (GMP).

- Heavy Machinery Operators (and Repair)

  The global farm equipment market (such as tractors, tillage, harvesting/ planting equipment) value is estimated to grow from US$ 53.6 billion in 2015 to US$ 75.3 billion by 2022 as reported by Frost & Sullivan. Trends such as higher mechanisation needs and increasing demand from the emerging markets of Asia and Africa are forecast to drive the demand for farm equipment. The same trend towards higher mechanisation of farms is visible in Nepal.

  However, certain issues are hampering this trend. Besides small land-holding, lack of ***operators and repair engineers*** for such machines has been cited as a key roadblock. Currently, such machines are repaired by engineers brought from India (Henley, et al., 2017) or even Germany – the companies mentioned that they had to bear the cost of stay of such engineers. There are not enough skilled operators to operate such machines as well.

- Warehouse Operations

  One of the leading causes of food wastage is improper storage during the post-harvest. Given the geographic challenges in Nepal and the underdeveloped logistics connectivity, the warehouse operations are critical to reducing the wastage. Some industry stakeholders, during the interviews, estimated that improper supply chain management account for 50 to 60% of the cost differential between agriculture products from India and Nepal (Nepal being 20 to 50% higher than India for most produce). Nepal's export to third country via land /ocean route is 41 days, which is 141% more than that of India and 64% more than that of Bangladesh (Rajkarnikar, 2010).

  The industry cited that there is a ***lack of warehouse operators*** who understand aspects such as cold chain management (critical for most of chilled/ frozen food products and dairy), food safety, inventory management, storage area management, among others.

- Feed formulation

  For animal husbandry (e.g. poultry, pig farming), the feed is one of the largest components of the cost. For poultry, the feed can contribute up to 60% of the cost of operations of the farm. The quality of feed is critical to ensure the health and weight of

the animal. As of now, the feed is formulated by specialists in India (e.g. one of the institutes mentioned was Tamil Nadu Veterinary and Animal Sciences University, which also provides training courses on the topic) for the poultry companies in Nepal.

The industry was of the opinion that it would be better if ***feed formulation*** is localised. This will help to improve the quality of the feed as the formulation will consider local soil, weather and environmental conditions. The number of specialists needed will be small, but the impact could be much larger across the entire supply chain of poultry.

- Farm Management

  With the use of integrated approaches to farming which is economical, environmentally and socially sound growing, it is important for Nepalese farmers to know about Farm Management. The approach would involve the use of various activities such as technical knowledge in livestock and agriculture management, book-keeping, integrated pest management, vaccination/ immunisation, crop rotation, crop diversity and natural/ sustainable fertilizers.

  The stakeholders interviewed in Nepal mentioned that, currently, the farmers do not follow ***Good Agriculture Practices*** (GAP). It was cited that several donor programmes have tried to inculcate such practices among the farmer community, but these have *not been sustainable* after the donor programmes have ended. Farm management was cited as a critical skill to ensure that the farmers (esp. women in the household) become more independent and can increase the yield of their produce. Since there is a lack of clarity on the legality of contract farming, better-managed farms are seen as a way to improve the entire supply chain of the agriculture in Nepal.

3.1 Potential Stakeholders Identified for the sector

The following stakeholders were identified for understanding the current state of the industry in Nepal. This list is non-exhaustive. The actual list of stakeholders interviewed is presented in **Annexure 2**.

SN	TYPE OF PLAYER	ORGANIZATION
Commercial Agriculture	Association	Seed Entrepreneurs Association of Nepal (SEAN)
	Refinery	Chanchan Group
	Feed Business	Nimbus
	Production	Nepal Krishi Company
	Production / Supply	Shreenagar Agro Farm
	Supermarket	Bhatbhatini
	Input Supplier	Agricare Pvt. Ltd.
	Fertilizer and Seed Supplier	Agriculture Inputs Company Ltd
	Association	Agro Enterprise Centre, FNCCI
	Seeds and Input Supplier	Inter Nepal Agrovet Co. Ltd.
	Herbs/Oil/Trading	Fleur Himalaya
	Herbs/Oil/Trading	Ficus Biotech
	Milling and processing	Hulas Food
	Processed food products	Sujal Foods Pvt Ltd
	Poultry, Feed, Cereal	Roongta Group
	Manufacturing, Packaging, Wholesale and Retail	Shiva Shakti Ghiu
	Equipment and Processing	Chanchan Group
	Multinational Company	Dabur Nepal
	Coffee Production and Export	Alpine Coffee
Cross-Industry	Business Conglomerate	Shankher Group
	Business Conglomerate	Vishal Group
	Business Conglomerate	VOITH Group
	Business Conglomerate	ICTC Group
	Business Conglomerate	Lotus Holding
	Business Conglomerate	Riddhi Siddhi
	Business Conglomerate	Kedia Group
	Business Conglomerate	Kyal Group
	Association	Federation of Nepalese Chamber of Commerce and Industries
	Association	Confederation of Nepali Industries
	Association	Federation of Nepal Cottage and Small Industries
	Association	Nepalese Young Entrepreneurs Association
	Association	Federation of Women Entrepreneurs Association in Nepal
	Association	Entrepreneurs Association
	Association	Non-Residential Nepali Association

SN	TYPE OF PLAYER	ORGANIZATION
Ecosystem Players	Investment/Incubation	One to Watch
	Investment/Incubation	True North Associates
	Incubation/Mentoring	Idea Studio
	Incubation/Mentoring	Nepal Communitere
	Incubation/Finance	Brihat Investments/Anterprerana
	Remittance	IME Pay
	Remittance	Prabhu Money
Civil Society	NGO	Paurakhi
	NGO	Shakti Samuha
	Company	BIA
	NGO	Women for Human Rights
	NGO	Creative Hands of Deaf Women Nepal
	Association	National Federation of Disabled Nepal (NFDN)

Table-2: Non-exhaustive list of potential stakeholders in the Sector

Source: Research by सीप team

4. Profile of Light Manufacturing Sector in Nepal

In the absence of a GoN definition of light manufacturing, the ILO defines "Enterprises whose production uses partially processed materials to produce items of relatively high value for end-users or intermediates for use by other industries; mainly small consumer goods (clothes, shoes, consumer electronics and home appliances)" – (ILO, 2017). A major portion of industry in Nepal is comprised of manufacturing sector firms, and the development of this sector is important to the government in terms of generating employment opportunities, promoting trade, enhancing national income growth, and poverty alleviation (IBN, Sector Profile: Manufacturing, 2018).

The contribution of this sector to GDP, which stood at 5.5% in FY 2016/2017, is estimated to marginally shrink to 5.4% in FY 2017/2018 (MoF, 2018). However, production of manufacturing sector has been estimated to grow by 8.0% in 2018, more than double the annual average growth of this sector (3.0%) during the last decade. This has been attributed to regular supply of fuel, electricity, and raw materials, decline in general strikes leading to creation of favourable industrial environment (MoF, 2018).

4.1 Profile of the Sector in Nepal

Although dated, the CBS estimates number of companies in the manufacturing sector at 4,067 during FY 2011/12 (CBS, 2014), and the sector is presently dominated by low-tech, labour-intensive products such as fabricated metal products, grain mill products, vegetable oils and fats, food products, non-metallic mineral products, plastic, beverages, tobacco, and textiles. These products account for more than 80% of manufacturing value added (Pandey, 2014)

The manufacturing sector in Nepal is broadly classified into 3 broad sub-sectors (IBN, Sector Profile: Manufacturing, 2018):

i. Fast moving consumer goods (FMCGs)
   Goods are those which are sold quickly and at relatively low costs, and include food and beverage products, tobacco, soap, toothpaste, among others.

ii. Industrial Goods
Goods under this category include fabricated metal products, non-metallic mineral products, basic metal products, plastics and rubber products, and textiles

iii. Consumer goods
Electronic goods, furniture, footwear, textiles/ apparels, and leather and allied products constitute this category.

In relation to geographical hubs for the manufacturing sector in Nepal, Kathmandu (Province no. 3) is the region where a majority of the commercial activity is focused-where most manufacturing companies have their headquarters.

Responsible for contributing to more than one-third of Nepal's GDP, the size of the market for manufacturing businesses has led to Kathmandu being the hub for manufacturing businesses, with the capital being considered the largest domestic market for manufacturing goods consumption. Big MNCs like Coca-Cola and Pepsi are manufactured in Kathmandu, and export goods including pashminas, garments, handicrafts, and artwork are also manufactured in Kathmandu. Further, GoN has also supported the manufacturing industry in Kathmandu by setting up the industrial estates in Balaju, Patan, and Bhaktapur.

Biratnagar--the industrial capital of Nepal--is also a major manufacturing industrial hub in Nepal, with Biratnagar Sugar Mill and Biratnagar Jute Mill the biggest companies. Located near the Indian border, manufacturing companies here also export goods such as instant noodles, garments and biscuits across the border, in addition to the domestic market. Garment products manufactured in Biratnagar are also exported to the US and European markets (IBN, Sector Profile: Manufacturing, 2018).

Other major manufacturing hubs include (IBN, Sector Profile: Manufacturing, 2018):

- Birgunj (Province no. 2) also located near the Nepal-India border, largely due to the dry port located here, essential for the import and export of goods from/to India.
- Bhairahawa (Province no. 5) is also another border town essential for the flow of goods to and from India. GoN has also recently set up the Bhairahawa Special Economic Zone to support the manufacturing industry, which is currently being set up.
- Several manufacturing units are also set up in Chitwan (Province no. 3), one of the fasted growing districts in Nepal.
- Hetauda (Province no. 3) is also a major manufacturing hub and is supported by the Hetauda Industrial District where several manufacturing units, including MNCs, operate.
- Nepalgunj (Province no. 5) also borders India and is another major manufacturing industrial hub.

One area of concern is that since the late 1990s, the export-to-GDP ratio has fallen from 25 to 10 percent, largely due to a collapse in Nepal's goods exports to just 3 percent of GDP (Treichel, Narain, & Sharma, 2018). These problems with export growth are mostly due to constraints in the domestic business climate. Nepalese exporters have been unable to benefit from trade agreements and preferential access largely because of supply-side constraints. Most remain small, and struggle with increasing their shipments once they enter a new market, indicating high variable costs due to factors such as costly and unreliable electricity, and limited transportation services. This limits the growth potential of the sector.

GoN policies and frameworks (including SEZs), easing of licensing rules and FDI process also strongly highlighted GoN's commitment toward growth in the light manufacturing sector. Substantial presence of FDI and multinational companies in the light manufacturing sector was also noted, as evidenced by the operation of Unilever, Carlsberg, Coca-Cola, PepsiCo, ITC and Dabur, among others in Nepal (IBN, Sector Profile: Manufacturing, 2018).

4.2 Labour Profile

In 2012, 82% (159,176) of employees in the manufacturing sector of Nepal were male as compared to 18% (35,813) female employees (CBS, 2014). The ODI 2017 report reported female employment rate at 24% and attributed this figure to limited mobility and availability of female staff for longer shifts. The study portrayed a typical light manufacturing sector employee in Nepal as a 38-year old male with education level up to high school. The study also reported a split of 85% to 15% of line workers to technical staff, and technical staff possessed a minimum technical qualification to graduate degree. Youth representation (under the age of 30) in the light manufacturing sector was 30%. In terms of composition of foreign staff, 4% of total employees were foreign, majority of who were Indian technicians, owing to limited supply of technical capable Nepalese workers. Foreign labour was found to be especially employed in operating special machinery, R&D and management roles. The average salaries for junior-level employees, intermediate-level employees and senior-level employees were NPR 13,750 per month, NPR 25,000 per month, and s NPR 40,500 per month, respectively (ODI, 2017). During the round of interviews, light manufacturing firms were in agreement that manufacturing jobs are considered ideal for workers transitioning out of agriculture, as service jobs require a higher level of education and professionalism (IBN, Sector Profile: Manufacturing, 2018).

4.3 Key challenges faced

Fresh graduates not being industry-ready and the subsequent need for firms to train fresh intakes at considerable cost and time were highlighted as one of the key challenges light manufacturing firms are facing. The interviewees were in agreement that the cause of this owed to technical and engineering institutes were very theory-heavy in their curriculums, with little or no focus on practical modules. The firms were of the view that hands-on experience on machinery/equipment incorporated in the curriculums would greatly support graduates being industry-ready. Further, interviewees also disclosed that courses in technical and engineering institutes in Nepal need updating with the current trends and technologies in manufacturing.

The interviewed firms also agreed that the recent rise in minimum wages and the New Labour Act 2074 made Nepalese workers more expensive, directly impacting on the companies' bottom lines. Companies also divulged that owing to these changes; they were now sourcing cheap labour from India on contract. Companies were in agreement that the enforcement of the new Labour Act and rising the cost of land was hampering operations and expansion plans.

Nepal's limited transport infrastructure and connectivity were also found to be a key challenge for light manufacturing firms. One of the interviewed firms revealed that the Thankot entry point to Kathmandu is extremely congested and as such goods trucks are always delayed. As such, for time-sensitive delays, the firm has to utilise an alternative route which is almost twice as long, leading directly to greater operational costs. The same has also been cited by the ODI 2017 report (Henley, et al., 2017).

Migration was also cited as a key challenge during the round of interviews, and available literature also reaffirmed this challenge that manufacturing companies continue to face. Manufacturing firms are always faced with the challenge of turnover of, especially lower-level line-staff to overseas

employment. As such, manufacturing firms in Nepal are faced with the constant need to hire new workers, train them, and face losing the employees within one year, and start the cycle again (Henley, et al., 2017).

4.4 Skill gaps and future needs

Through the literature review and interviews, the team identified the following key job roles and skill gaps. Lack of availability of skilled workforce in manufacturing in Nepal has been cited by several reports (McKenna, June 2018) (FMAN, 2017) (GIZ, 2017) (Lemma, 2017).

> *"There are hardly (any) ready-made skills available in the market. All skill sets need to be developed from the baseline, as the graduates do not have practical experience."*

The skill gaps mentioned below are not in order of prevalence of gaps. The quantification of prevalence is being conducted through the firm-level surveys.

- Plant/ Machine Operators

  Digitization is changing the game for manufacturers. Smart, connected products and automated operations have the potential for improving productivity, quality, cost efficiency, and revenue. Manufacturing in Nepal is still very labour-intensive, with the limited prevalence of advanced machines. However, based on the stakeholder discussions, there is a trend towards upgrading the existing factories, and the new factories are using more advanced machines (such as machines using Programmable Logic Controller).

  Machine operators are expected to operate speciality machinery, and being able to maintain and monitor machine to make sure it functions properly. They also need to be able to adjust machine as needed for changeovers, different functions, or other varying needs of production. Therefore, it is important that they understand how these machines work (e.g. LED assembling machine). The industry highlighted that there is a shortage of such machine operators (also cited in the literature, such as (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017)). The companies have tried to train people to become machine operators, but they mentioned that even after training these operators do not understand how the machine works. The companies need to call a specialist repair-person from overseas for even minor repairs. One of the reasons highlighted for lack of understanding (even after training) was lack of practical training at the Council for Technical Education & Vocational Training (CTEVT) institutions. The industry mentioned that CTEVT institutions do not have sufficient equipment or infrastructure for such practical training.

  Similarly, it was highlighted that the ***plant operators*** are not available in sufficient numbers. Currently, the industry is importing plant operators from India and other neighbouring countries (e.g. Bangladesh, Sri Lanka, and Vietnam). For light manufacturing, the role of plant operators is relatively less complex as compared to those in heavy manufacturing (such as utilities, power plants, chemical plants, etc.). Such operators are responsible for overseeing that the plant operations are being conducted safely and efficiently. It was highlighted that even existing plant operators and floor supervisors lack basic digital skills such as MS-Office skills that are needed for reporting purposes.

- Machinery Maintenance & Repair

  Besides machine operators, the industry highlighted a shortage of ***local maintenance & repair workers*** (also cited in the literature, such as (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017). Currently, when a machine breaks down, the company has to send for engineers from overseas, and they need to bear the cost of travel and stay of such engineers.

  This leads to a slowdown in production due to downtime, bringing down the productivity of the entire factory. For example, it has been estimated that six footwear producers have a production capacity of over 10,000 pairs per day, but much of this capacity is underutilised or idle for long periods (McKenna, June 2018). At the same time, the line workers might lose their wages if they are not able to work due to machine downtime.

  Similarly, for the automotive sector, the demand for repair workers is high. The manufacturer-linked service centre can provide standardised training to their service staff (e.g. Hyundai provides training through Laxmi Group at state-of-the-art model workshops). However, the multi-company ***workshop workers*** learn by doing at the workshop.

- Packaging & Labelling

  Packaging is a coordinated system of preparing goods for safe, secure, efficient and effective handling, transport, distribution, storage, retailing, consumption and recovery, reuse or disposal combined with maximising consumer value, sales and hence profit. Packaging has a significant impact on the efficiency and effectiveness of retail supply chains, not only by improving the look & feel of the end product but also by reducing transportation costs and wastage

  Similar to agro-processing, the stakeholders in the light manufacturing sector also indicated that there is a shortage of ***packaging & labelling workers*** in Nepal. Especially for sub-sector, such as Fast Moving Consumer Goods (FMCG), such skills are urgently needed.

  Lack of these skills was also cited as one of the key inhibitors of export of Nepalese produce to overseas markets in the region and beyond.

- Quality Control & Testing

  Certain sub-sectors of light manufacturing, viz. FMCG, electrical appliances, building material, need to undergo ***Quality Control & Testing*** before they are allowed to be in the market. Industry stakeholders mentioned that, currently, there is a lack of such skill in Nepal. The companies are importing talent from overseas markets to conduct QC in line with local standards (and international standards in the case of exports). At the factory level, it was highlighted that there is a lack of specialists with understanding and certification in ***process management skills*** such as Good Manufacturing Practices (GMP), ISO certifications, Total Quality Management (TQM), Kaizen, Six-Sigma, among others.

Even among line workers, there is a lack of understanding of the need for maintaining quality. Companies are conducting training to explain the need for basic safety, quality and hygiene. However, the companies mentioned that they find it difficult to find trainers for such workshops.

- Logistics/ Warehousing

This sector requires specialised skills for each of the sub-sector. It was indicated by the industry that there is a shortage of ***local loading and unloading supervisors, warehouse managers and supervisors***. All of these people are required to possess knowledge of the goods they handle. The warehouse in-charge needs to have specific training and experience about warehouse operations and knowledge on modern equipment and IT systems used in the warehouse.

- Industrial Relations

The companies mentioned that they lack workers with formal qualifications and experience of ***Industrial relations***. Given the history of Industrial Relations in Nepal, this was considered as an important skill – both at a company-level and at factory-level. Some companies mentioned that they have set-up a formal Industrial Relations group with workers hired from India. They are considering hiring students from Xavier Labour Research Institute (XLRI), Jamshedpur, India.

- Leadership Skills and Human Resources

The companies in the industry mentioned that they are unable to find good managers with leadership skills in Nepal. This applies to both ***middle management and senior management*** levels. It was highlighted that a significant number of senior management roles across companies are held by Indians. Some companies mentioned that they had conducted leadership training for their managers, but these do not seem to have a sustainable impact. Other studies, such as (McKenna, June 2018), (Fox & Kaul, 2017) (Treichel, Narain, & Sharma, 2018) have highlighted that management skills are scarce in Nepal. There is evidence that investing in managerial skills can improve productivity - a lack of skilled managers was found to be a critical constraint to firm productivity in India (Roberts, McKenzie, Bloom, & Mahajan, 2010).

Similarly, it was highlighted by the stakeholders that the Human Resources department of companies lacks talent ***management and talent retention skills***. The industry cited this as one of the factor in high attrition rate across the industry (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017). Lack of skilled human resources is conceived as a main responsible factor for the slow process of industrialisation and the decreasing contribution of the manufacturing sector in GDP (Accountability Initiative, 2016). It was observed that a significant share of the companies had recently started focusing on human resource management, and the impact of this has not been felt.

- **Extended Value Chain related Skills**

  Given the limitation to exports overall, the companies mentioned that they need skilled workers in Nepal in order to sell their products to businesses/ consumers in Nepal. For example:

  - Electrical Appliance Manufacturers mentioned that there is a shortage of skilled electricians, repair/ maintenance/ installation workers (e.g. for Televisions, Air-conditioners)
  - Building Material Manufacturers mentioned that there is a shortage of skilled electricians, plumbers, masons
  - Electrical Appliance Manufacturers mentioned that there is a shortage of skilled electricians
  - Pharmaceutical Manufacturers mentioned that there is a shortage of skilled pharmacists

  Currently, such workers are semi-skilled or are sourced from India/ Bangladesh to serve the domestic market.

4.5 Potential Stakeholders Identified for the sector

The following stakeholders were identified for understanding the current state of the industry in Nepal. This list is non-exhaustive. The actual list of stakeholders interviewed is presented in **Annexure 2**.

SN	TYPE OF PLAYER	ORGANIZATION
Light Manufacturing	Steel, Hydro, Automobile	Jyoti Group
	Apparel exporters	Sherpa Gears
	Apparel exporters	Republic of Fashion
	Apparel exporters	Himalayan Accessories
	Beverage	Himalayan Distillery
	Beverage	Gorkha Brewery
	Beverage	Coca-Cola
	Shoe manufacturer	Goldstar
	Association	Garment Association of Nepal
	Association	Footwear Association
	Footwear	Rara Chhapal Udhyog
	Multinational Company	Unilever
	Multinational Company	Surya Nepal
Cross-Industry	Business Conglomerate	Shankher Group
	Business Conglomerate	Vishal Group
	Business Conglomerate	VOITH Group
	Business Conglomerate	ICTC Group
	Business Conglomerate	Lotus Holding
	Business Conglomerate	Riddhi Siddhi
	Business Conglomerate	Kedia Group
	Business Conglomerate	Kyal Group
	Association	FNCCI
	Association	Confederation of Nepali Industries
	Association	Federation of Nepal Cottage and Small Industries

SN	TYPE OF PLAYER	ORGANIZATION
	Association	Nepalese Young Entrepreneurs Association
	Association	Federation of Women Entrepreneurs Association in Nepal
	Association	Entrepreneurs Association
	Association	Non-Residential Nepali Association
Ecosystem Players	Investment/Incubation	One to Watch
	Investment/Incubation	True North Associates
	Incubation/Mentoring	Idea Studio
	Incubation/Mentoring	Nepal Communitere
	Incubation/Finance	Brihat Investments/Anterprerana
	Remittance	IME Pay
	Remittance	Prabhu Money
Civil Society	NGO	Paurakhi
	NGO	Shakti Samuha
	Company	BIA
	NGO	Women for Human Rights
	NGO	Creative Hands of Deaf Women Nepal
	Association	National Federation of Disabled Nepal (NFDN)

Table-3: Non-exhaustive list of potential stakeholders in the Sector

Source: Research by सीप team

5. Profile of Hydropower Sector in Nepal

Nepal has significant hydropower potential. Across the three large river systems in Nepal - Koshi River system, Gandaki (Narayani) River system, and Karnali (Goghra/Mahakali) River system - 43,000 MW has been identified as economically viable (IHA, 2018). As of September 2018, just above 1,006 MW (73 above 1 MW) of this was installed (DoED, 2018). Even though Nepal is expected to be a net importer of power over long-term, as of now, there is significant energy shortage in Nepal. For example, the shortfall in electricity supply to meet domestic load requirements was about 410 MW in late 2013, when peak demand reached 1,202 MW. This led to blackouts of up to 14 hours a day (IHA, 2018). In February 2016, Nepal's government declared 2016–2026 the "national energy crisis reduction and electricity development decade", with ambitious targets to end the current power shortages. Even though Nepal's electricity generation is dominated by hydropower, only about 1% of the energy need is fulfilled by electricity (IPPAN, 2018)

5.1 Profile of the Sector in Nepal

Hydropower plants in Nepal, typically, use water running off rivers to generate electricity. The run-off from the country's rivers is 222 billion cubic meters per second, and the annual mean streamflow from snow-fed major river systems alone is 4,930 m^3/second (Sharma & Awal, 2013). There is over-dependence on the run-of-river hydropower projects, while there is only a handful of storage project in Nepal.

At present, out of total hydropower generated, Nepal Electricity Authority (NEA) generates close to 60%, while Independent Power Producers (IPPs) generate remaining 40% from hydro sources (Alama, et al., 2016). Out of the 75 active projects, the largest IPP project currently in operation is 60 MW in Khimti Khola (NEA, 2018).

Recently, several new hydropower projects are being considered by the private sector after signing of power purchase agreements with Nepal Electricity Authority. Out of the 107 projects under construction, the largest one is Upper Tamakoshi with an installed capacity of 456 MW (NEA, 2018). Another 74 projects are under various stages of development. All of these projects are spread across Nepal.

Province 4 accounts for approximately 36% of the total installed capacity – the highest in the country. The share across other provinces is as shown in the table below.

RANK	PROVINCE	SHARE
1.	Province 4	35.80%
2.	Province 3	30.80%
3.	Province 1	23.30%
4.	Province 6	6.90%
5.	Province 7	2.60%
6.	Province 5	0.40%
7.	Province 2	0.20%

Table-4: Share of Installed Capacity across Provinces (2017)

Source: Nepal Electricity Authority

Also, the hydropower projects in operation are unable to produce energy as it is mentioned in agreement due to different operational issues during their operations (NEA, 2018). This has put pressure on electricity supply in Nepal, and there is dependence on imports from India.

While, Nepal and India signed the Power Trade Agreement (PTA) on October 21, 2014 to promote cross-border connectivity and power trading between the two countries, in reality the imports of electricity from India have increased by more than three-fold in a period of just 8 years (from 638.68 GWh in 2009 to 2175.04 GWh in 2017) (NEA, 2018). Only a nominal volume of electricity is being exported to India and the trend is decreasing.

While most of the hydropower developers are companies registered in Nepal, several of them indicated that they are receiving financing from overseas through Joint Ventures or Foreign Aid. This is due to a limitation in raising funds in Nepal (through debt or equity instruments). Most foreign companies prefer to work in co-operation with domestic partners as they are less familiar with national laws, rules and regulation (Dhungel & Rijal, 2012).

5.2 Labour Profile

There is limited literature regarding labour profile of the hydropower workers in Nepal. However, based on discussions with the industry stakeholders, a ballpark was established. For a project of 50 MW, a total of 500 construction workers will be needed, and approximately 100 full-time staff will be required during operations. This ratio of 12 workers per MW is within the range seen globally of 3 workers per MW (in the US) and 20 workers per MW (in Uganda). Using this ratio, it can be estimated that currently, around 2,000 workers are engaged in the operations of the hydropower industry in Nepal. At the same time, approximately 23,000 worker-equivalents[2] are used/ needed for the

[2] Since all of the construction will not happen at the same time, there is a possibility that the number will be much lower.

development of the hydropower projects under construction, and another 4,700 workers will be needed for the operations.

Out of the total construction workers, approximately 30% possess specialised skills, such as tunnelling specialists, power distribution and power electronics engineers, software and firmware engineers, systems engineers. Currently, significant proportions of these are hired from overseas or are provided by the foreign partner. The remaining 70% are general construction related workers and specialists, such as masons, electricians, civil engineers, and so forth.

The industry mentioned that there is a low prevalence of women and PwDs in their businesses due to the need for high-skilled workers. However, since the companies are involved in local development, they undertake several socio-economic projects to support youth, women, PwDs and DAGs in the impact area.

5.3 Key challenges faced

One of the biggest challenges mentioned by the stakeholders was the lack of capital. Hydropower projects are more capital intensive, and most of the existing hydropower plants owned and operated by NEA have mainly come up through bilateral donor financing in combination with soft loan financing from multilateral development financing institutions (Adhikari, 2010). Given that, as of now, the hydropower developers need to raise 30% equity; it puts pressure on them to raise financing from overseas companies as the local equity market is not well-developed. Domestic investment in hydropower is difficult to come by as the government lacks the capacity as well as capability to invest in the hydropower sector. Banks and Financial Institutions (BFI) in Nepal are also underdeveloped and lack the managerial capacity to implement and conduct due diligence on such huge projects (NEF, 2014). Even though NEA allows Foreign Direct Investment (FDI) in the hydropower sector, FDI is limited due to several issues such as the failure to arrive at a common denomination of currency for Power Purchase Agreements (PPAs). Some PPAs have been signed between NEA and developers with the condition of payment in US Dollar. However, these could lead to Foreign Currency Exchange Risk for Nepal (NEA, 2018). At the same time, the concept of Public Private Partnerships (PPP) does not exist in hydropower financing in Nepal.

Another challenge for the sector is lack of energy banking with India. Since almost all of the hydropower projects in Nepal are run-of-river (ROR) projects, there is an excess of power generated in the wet season, while there is a shortfall during the dry season. Without energy banking with India (i.e. India buys excess energy during wet months and sells it back to Nepal during dry months), NEA is expected to suffer losses. Since NEA is the only buyer of any electricity generated in Nepal, it will need to ensure stable tariffs for financial sustainability, as it has already committed the tariffs to hydropower developers in the PPA (NEA, 2018). Certain studies have also indicated that the provision of transmission lines to connect people and regions to electricity has lagged in Nepal (Thapa & Basnett, 2015). This includes transmission lines for power trade between India and Nepal.

Another challenge highlighted was lack of support from government agencies in the development of the projects. This includes issues regarding land allocation (Thapa & Basnett, 2015) or buy-in from local stakeholders (Bhandari, 2015). The local stakeholders have concerns including involuntary displacement, loss of fertile land, impact on the microclimate of the region, and about their jobs. Therefore, local people have made high demands such as the construction of road, bridges, schools and hospitals before the hydropower developers, which many developers found unreasonable for the project to meet (Dhungel & Rijal, 2012). There have been cases on vandalism as well, for example in 2011 a group of locals vandalised and torched all three office buildings of the UKHP (Upper Karnali Hydro Project) asserting that the project was against the welfare of the local people and national

interest. Similar local level obstacles were created during maintenance and operation of Khimti and Indrawati (Dhungel & Rijal, 2012). In another instance, local leaders vandalised a tanker supplying petroleum products to Mid Bhotekoshi Hydropower project, for the contractor's failure to award fuel supply contract to local firms (Bhandari, 2015).

The industry also highlighted the problem in maintenance and operation of existing plants due to forced outages, ageing of plants and natural risks. There are no standards for asset management in the hydropower industry. On the other hand, Scottish hydropower developers follow the PAS 55 (currently ISO: 55000) standard for asset management (NEA, 2018).

Finally, the lack of coordination regarding policies and plans was also highlighted by stakeholders. Since the launch of Water Resources Strategy of 2002 to the Electricity Development Decade of 2016, even the targets for hydropower generation have not been consistent. This creates a feeling of instability and lack of clarity on the part of government among the developers.

5.4 Skill gaps and future needs

Through the literature review and interviews, the team identified the following key job roles and skill gaps. According to some estimates, if all the planned activities start in the planned period, the absorption capacity of skilled human resources of the hydroelectric sector may be double of the present capacity (Accountability Initiative, 2016).

> *"As compared to workers in India, China and Ethiopia, the skill gaps in Nepal are high."*
> *"Workers usually train with construction companies, but look to migrate after receiving specialized training skills"*

These are not in order of prevalence of gaps. The quantification of prevalence is being conducted through the firm-level surveys.

- Specialised Construction Skills

  The hydropower industry stakeholders mentioned that during the construction phase of the dams, approximately 30% of the job roles need specialist technical qualifications. These include skills such as ***tunnelling, special electronics work, and bridge-building expertise***.

  Currently, the general practice of tunnelling is to drill manually. This creates issues such as safety concerns while being slower than machine drilling. The industry agreed that there is a shortage of tunnelling supervisors in Nepal, as of now. Companies bring such specialists from China or even Germany. These specialists can potentially train workers. It was estimated by stakeholders that specialist tunnelling skills can increase the speed of construction (i.e. efficiency) by 100% or even higher.

- General Construction Skills

  For the remaining 70% of the job roles which are general, the challenges are different. To ensure socio-economic goals and to garner buy-in from the local community, the hydropower industry generally employs locals in the impact area (the Environmental Impact Assessment determines impact area during the feasibility assessment stage) for low-skilled work. However, this pool of labour is seasonal and not trained in construction.

Thus, there is a skill gap for basic skills such as electrician, plumbing, masonry, metallurgy, and tiling. Even in cases where these workers are brought from other parts of Nepal, there is a gap regarding skills needed. The companies provide a platform for these workers to train with construction companies. However, once the workers receive specialised training skills, they search for opportunities overseas.

For the higher-skilled general construction skills (e.g. ***Engineers from Civil, Mechanical, Electrical, Environmental, and Structural*** backgrounds) the industry mentioned that the fresh graduates do not have practical training. Skills such as contract drafting/ management, contractor management, and even technical aspects are lacking, as per the industry. It was indicated that the role of Nepal Engineering Council (NEC) also needs to be strengthened. Currently, the NEC certifies engineers based on their qualifications, unlike in the United States or in the United Kingdom where the engineers need to pass an independent exam to be certified.

- Project Management Skills

During the entire lifecycle of the project (construction and operations), the industry quoted that there is a shortage of ***project management professionals***. Even in cases where the project can find local project management professional, the industry believes that there is a gap regarding their skills. It was illustrated that Chinese project managers could deliver the project more efficiently than Nepalese project managers, given the same inputs and the same labour pool of Nepalese workers. Also, it was indicated that health and safety trainings are non-existent in the industry. These could potentially be incorporated into the curriculum for the project managers.

5.5 Potential Stakeholders Identified for the sector

The following stakeholders were identified for understanding the current state of the industry in Nepal. This list is non-exhaustive. The actual list of stakeholders interviewed is presented in **Annexure 2.**

SN	TYPE OF PLAYER	ORGANIZATION
Hydropower	Association	Nepal Engineers Association
	Investment/Construction	Himalayan Infrastructure Fund
	Construction	CE Construction
	Construction	Kalika Construction
	Investment/Construction	Sanima
	Construction	Kesha Hydropower
	Steel and Wire	Jyoti Group
	Steel Manufacturing	Jagdamba Steel
	Construction	Hydro Solutions
	Cement	Ghorahi Cement
	Cement	Shivam Cement
	Steel / Premix / Watertanks	Panchakanya Group
	Steel	Ashok Steel
	Steel	Sakha Group

SN	TYPE OF PLAYER	ORGANIZATION
	Steel, Cement	Shalimar Group
	CGI roofing and wire and prefab	Golcha Group
Cross-Industry	Association	Federation of Nepalese Chamber of Commerce and Industries
	Association	Confederation of Nepali Industries
	Association	Federation of Nepal Cottage and Small Industries
	Association	Nepalese Young Entrepreneurs Association
	Association	Federation of Women Entrepreneurs Association in Nepal
	Association	Entrepreneurs Association
	Association	Non-Residential Nepali Association
Ecosystem Players	Investment/Incubation	One to Watch
	Investment/Incubation	True North Associates
	Incubation/Mentoring	Idea Studio
	Incubation/Mentoring	Nepal Communitere
	Incubation/Finance	Brihat Investments/Anterprerana
	Remittance	IME Pay
	Remittance	Prabhu Money
Civil Society	NGO	Paurakhi
	NGO	Shakti Samuha
	Company	BIA
	NGO	Women for Human Rights
	NGO	Creative Hands of Deaf Women Nepal
	Association	National Federation of Disabled Nepal (NFDN)

Table-5: Non-exhaustive list of potential stakeholders in the Sector

Source: Research by सीप team

6. Profile of Tourism Sector in Nepal

The tourism sector in Nepal is a priority sector of the Nepalese government, with tourism being highlighted as one of the key sectors in Nepal Economic Vision 2030, which is envisioned to support Nepal's target of graduating to lower-middle-income-country by 2030. Especially in light of NPR 58.52 billion in foreign exchange earnings from the tourism industry 2017, a significant jump of 40% from 2016 (NRB, 2018).

As per the Nepal Tourism Statistics 2017, number of international tourists visiting Nepal grew by 25% to 940,218 from 753,002 in 2016 (MoCTCA, 2018). The Department of Tourism has attributed this to stabilisation of the tourism sector following the 2015 earthquakes, and tourism promotional initiatives taken in recent years.

6.1 Profile of the Sector in Nepal

The importance of tourism sector to Nepal's economy can be gathered from the fact that the direct contribution of tourism to GDP stood at NPR 99.8 billion in 2017, 4.0% of total GDP in 2017. (WTTC, 2018). This is further forecast to rise to 4.9% in 2018. In terms of total contribution (direct and indirect), the tourism sector accounted for 7.8% of Nepal's GDP in 2017 - which equated to NPR 195.0 billion.

In 2017, the tourism sector was served by 7,583 registered firms. As per the Nepal Tourism Statistics 2017, the breakdown of tourism-related enterprises was as follows (MoCTCA, 2018):

SN	SECTOR	NUMBERS
8.	Hotel (Star)	125
9.	Hotel (Non-star)	977
10.	Travel Agencies	3,824
11.	Trekking Agencies	2,637
12.	Airlines	20
	TOTAL	7,583

Table-6: Number of Tourism-related enterprises

Source: Nepal Tourism Statistics 2017

Discounting the aviation sector, the tourism sector is seen as heavily fragmented, with most hotels, travel agencies and trekking agencies being stand-alone (IBN, Tourism Sector Profile, 2018). Based on the interviews undertaken for the macroeconomic survey, tourism sector firms agreed that a majority of the sector was made up of small and medium firms, with a limited presence of large and foreign firms.

The tourism sector firms interviewed for the macroeconomic survey were in agreement that the nature of the sector is such that it is predominantly export-oriented, catering to international visitors, which is where the majority of the tourism sector is geared to.

Although investment in 2017 accounted for 2.3% of total investment (NPR 17.3 billion), investment in the tourism sector is expected to increase more than 3-fold (7.6%) in 2018 (WTTC, 2018), largely owing to significant construction expected to commence, with 10 five-star hotels currently approved for construction (Post, 2018). Prominent initiatives include the re-entry of Indian hotel chain, Taj Hotels Resorts and Palaces, into Nepal to operate a new lodge in Chitwan; ongoing construction by InterContinental Hotels and the Sheraton Group in various regions in Nepal; and expansion of several local hotel companies including Nepal Hospitality Group, Muktishree Group, and Glacier Hotel. (Sullivan, 2018)

Further, the GoN is expected to complete the expansion of the Tribhuvan International Airport, construction of Gautam Buddha Airport in Bhairahawa and reconstruction of major heritage sites are expected to be completed in line with Tourism Vision 2020, for which the GoN has set a target of attracting 2 million tourists each year by 2020. Further, the Tourism Vision 2020 envisions achieving its target of serving 2 million international tourists a year by adding 1 million jobs to the sector, making the tourism sector the premier employment generating sector by 2020. The Ministry of Tourism has developed a plan to develop more digital approaches as well as use ICT to collect more data on tourists from entry to departure to better understand the spending. They also have a target of reaching 10,000 with training and employment.

In terms of geographical distribution of tourism in Nepal, Kathmandu (Province no. 3) remains the main entry point for the majority of tourists owing to the nation's sole international airport being located in Nepal. In relation to adventure sports, trekking and mountaineering, Pokhara and the Annapurna region (Province no. 4) the Everest region (Province no. 1) are known to be the premier destinations for adventure tourists. Religious tourism is also widespread in Nepal, with Kathmandu (Province no. 3), Janakpur (Province no. 2), Lumbini (Province no. 5), and Muktinath (Province no. 4) known as religious tourism hubs (DoT, 2018).

6.2 Labour Profile

The tourism sector in Nepal directly employed 497,500 people in 2017, which was 3.2% of total employment. In 2018, the tourism sector is expected to contribute directly to 3.9% of total employment. In terms of total contribution to employment, more than double the people were supported by the tourism sector (1,027,000), 6.6% of total employment in Nepal (WTTC, 2018). In terms of employment by gender, employment in the tourism sector is geared heavily towards the male population at 80% (WTTC, 2018). Further break-down of the sub-sectors show the following by way of gender disaggregation, with employment disparity across the sub-sectors:

SN	SECTOR	Male Employees (%)	Female Employees (%)
1.	Hotel (Star)	78.2	21.8
2.	Hotel (Non-star)	74.1	25.9
3.	Travel Agencies	81.6	18.4
4.	Trekking Agencies	89.9	10.1
5.	Airlines	80.0	20.0/

Table-7: Non-Share of Employment by gender in Tourism

Source: Tourism Employment Study

It has been estimated that out of the total population employed in hotel and restaurant sub-sector, 96.6% are informally employed, whereas only 3.4% have got formal employment in this sub-sector (CBS, 2011).

Some of the other key takeaways from the Tourism Employment Study 2014 were as follows:

- In terms of age, 68% of workers employed in the tourism sector belonged to the age group 20 – 39.
- More than half (58%) of all employees were *Janjatis*, 5% were *Dalits,* and 3% were *Terai/Madhesi* ethnic groups.
- Majority of the workforce (62%) were comprised of employees in the Technical (26%) and Assistant (42%) levels.
- More than half of the workforce (58%) of the employees in the tourism sector possessed either Secondary (31%) level of education of Intermediate (27.1) level of education.
- 19% of employees were classified as 'high-skilled,' 28% as 'skilled,' 41% as 'semi-skilled,' and 12% classified as 'unskilled.'
- 37% of the employees earned more than NPR 20,000 per months, another 37% earned between NPR 10,000 – 20,000 per month, while the remaining earned less than NPR 10,000 per month.

6.3 Key challenges faced

The interviews conducted over the course of the macroeconomic survey reaffirmed the literature review that was undertaken for the report. As with the ODI Report (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017), lack of quality infrastructure was highlighted as one of the key challenges that the tourism sector faces in Nepal. The poor infrastructure at Nepal's only international airport (Tribhuvan International Airport), capacity and service were frequently emphasised by the interviewees. In relation to domestic airlines, the frequent cancellation of flights to tourism destinations (e.g. Lukla Airport) was understood by the sector to be unavoidable. However, the handling of logistics arising out of cancellation by airline authorities was seen as serious

challenges. Further, the delayed Gautam Buddha International Airport at Bhairahawa and the Pokhara International Airport are also seen as challenges to expansion in the tourism sector.

The macroeconomic survey interviewees also pointed to the need to rebrand Nepal as a tourism package to international clients as the majority of clients only associate Nepal with limited destinations like Mount Everest. This was further elaborated that the same destinations have been marketed to international clients for decades, and the sector is feeling the need for new / alternate destinations in Nepal. Further, challenges of international tourists not being able to make online payment directly to hotels/tourism firms in Nepal due to the absence of a local payment system capable of handling international payments was also seen as a challenge to growth, as clients still have to book via third-party websites, losing out on revenue.

Tourism firms in mountain destinations like Mount Everest also pointed to the challenge of the unwillingness and lack of expertise on the part of the private construction sector to work in such environments, and having to undertake the entire project themselves, at huge personal costs and significant time consumed to construction logistics, and sourcing and training workers.

6.4 Skill gaps and future needs

Through the literature review and interviews, the team identified the following key job roles and skill gaps. Even though the Hotel Association of Nepal (HAN) mentioned that there is a lack of oversupply of trained hospitality talent in the market (during the interview and noted in the literature (Accountability Initiative, 2016)), the industry stakeholders highlighted the lack of talent due to migration and mismatch in the type of skills needed.

> *"There are skill gaps across the entire value chain of tourism. We are unable to retain workers in hospitality, while the skills for guides need upgrading."*

These are not in order of prevalence of gaps. The quantification of prevalence is being conducted through the firm-level surveys.

- Hospitality-related Skills

  Tourism revenue in Nepal is expected to grow by 11% per annum, according to Frost & Sullivan. However, the industry mentioned that there is a shortage of both luxury and mid-tier accommodation (hotels/ lodges) in Nepal. The industry is planning to invest in this area, but lack of skills hinder the aspirations.

  For the hotels, it was indicated that there is a shortage of talent across the ***front office*** (i.e. reception and guest relations) and for ***house-keeping*** (i.e. cleaning and maintenance). The hotels have been training workers; however, they complain that these workers migrate to Middle-East or India after spending a few years in their role. There is a revolving door for talent – the hotels continuously have to train people on these skills. Regarding soft skills, ***communication*** in English, Hindi and Mandarin were highlighted as gaps. Even though institutions such as Nepal Academy of Tourism and Hotel Management (NATHM) and Silver Mountain School of Hotel Management (SMSH) at Lainchour (affiliated with Queen Margaret University, UK) were highlighted as key source of talent, the industry mentioned that there are still quality issues due to lack of practical training opportunities. Graduates with a Bachelor's degree in Hospitality-related degrees were that students have very few practical skills and they always need training. For example, the fresh graduates are typically found to lack good communication skills,

hygiene, sales skills, among others. (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017).

Other skills lacking in Nepal include areas such as ***landscaping, masseurs*** (for spas/ wellness centres), and ***hotel managers***.

The hotels indicated that there is potential for more women to be trained for all these roles.

- Lodge-Management

  The industry mentioned that lodges in rural areas and on the higher altitudes lack proper management. These lodges still use physical ledgers and registries (manual) and lack book-keeping skills. It was highlighted that skills such as ***small business management*** and ***digital skills*** are important for the growth of this sub-sector of the hospitality industry. Given that most of these lodges are family-run and managed by women (as the men of the household have migrated), the impact of such skill development could be significant. Another area of the gap was in designing the menu; the industry highlighted that sometimes the menu is too long and the cook at the lodge might not know how to cook these items. This leads to wastage (due to a high level of inventory to be maintained) and customer dissatisfaction.

  Another area that was highlighted for lodges was related to the ***construction*** of such lodges in the higher reaches of Himalayas. The industry mentioned that there is a shortage of contractors with specialised skills to construct in mountainous areas.

- Food & Beverage

  One of the key areas of the gap that was highlighted was in the Food & Beverage area. It was evident even through our visits to such hotels/ lodges that there are skill gaps regarding preparation and servicing. The industry mentioned that they have to rely on ***cooks*** from India as there is a lack of such cooks in Nepal. The same issue was highlighted for ***waiters, baristas, and bar managers***. Reports have indicated that Waiters and Cooks are the most demanded skills in the tourism sector (Accountability Initiative, 2016).

- Tour & Trek Activities

  Given the tourism potential of Nepal, the industry indicated that there is a need for ***tour guides, hiking guides, trekking and mountaineering guides***. Currently, there is a shortage of all of such guides in Nepal.

  NATHM provides training in these skills; however, the industry feels that these courses are short-term and need upgrading. For example, the Tourist Guide training at NATHM is ten weeks long, while the one for Trekking Guide is five weeks long (NATHM, 2018). It was highlighted to bring them guides to international standards like Blue Badge Tourist Guides offered by Scottish Tourist Guides Association (STGA). The skill gaps indicated were communication (Hindi and Mandarin), high-altitude medication/ emergency response, preparation for casualty, and so forth.

  For Mountain Guides, Nepal Mountaineering Association (NMA) provides a 40 days training each for Basic Mountaineering Course and the Advanced Mountaineering

Course (NMA, 2018). The industry mentioned that just these levels of training are just the first step to be an International Mountain Guide, and several guides need to go overseas for further studies. Therefore, the mountain guides typically travel to Europe for training to become a licensed guide. An example cited was that the French National Ski & Mountaineering School (ENSA, in French) that provides training at five levels lasting for at least three years, which includes periodic evaluations and a final exam (ENSA, 2018). It was highlighted that there are less than 60 guides licensed by International Federated Mountain Guides Associations (IFMGA) in Nepal (NNMGA, 2018)– the highest certification for mountaineering guides[3].

6.5 Potential Stakeholders Identified for the sector

The following stakeholders were identified for understanding the current state of the industry in Nepal. This list is non-exhaustive. The actual list of stakeholders interviewed is presented in Annexure 2 (Chapter 10)

SN	TYPE OF PLAYER	ORGANIZATION
Tourism	Association	Trekking and Tourism Association
	Association	Hotel Association Nepal
	Trekking/Hotel/Restaurant/Airline	Thamserku/Yeti
	Trekking/Tourism	Asian Trekking and Tours
	Airline	Buddha Airlines
	Hotel	Marriot Hotel
	Hotel	KGH Group
	Hotel	Dwarika Hotel
	Hotel	Taj Vivanta
Cross-Industry	Business Conglomerate	Shankher Group
	Business Conglomerate	Vishal Group
	Business Conglomerate	VOITH Group
	Business Conglomerate	ICTC Group
	Business Conglomerate	Lotus Holding
	Business Conglomerate	Riddhi Siddhi
	Business Conglomerate	Kedia Group
	Business Conglomerate	Kyal Group
	Association	FNCCI
	Association	Confederation of Nepali Industries
	Association	Federation of Nepal Cottage and Small Industries
	Association	Nepalese Young Entrepreneurs Association
	Association	Federation of Women Entrepreneurs Association in Nepal
	Association	Entrepreneurs Association
	Association	Non-Residential Nepali Association
Ecosystem Players	Investment/Incubation	One to Watch
	Investment/Incubation	True North Associates

[3] IFMGA Mountain Guide status is awarded to guides certified as Rock, Alpine, and Ski Mountaineering Guides. IFMGA licensed Guides can guide on any climbing or skiing terrain without limitation.

SN	TYPE OF PLAYER	ORGANIZATION
	Incubation/Mentoring	Idea Studio
	Incubation/Mentoring	Nepal Communitere
	Incubation/Finance	Brihat Investments/Anterprerana
	Remittance	IME Pay
	Remittance	Prabhu Money
Civil Society	NGO	Paurakhi
	NGO	Shakti Samuha
	Company	BIA
	NGO	Women for Human Rights
	NGO	Creative Hands of Deaf Women Nepal
	Association	National Federation of Disabled Nepal (NFDN)

Table-8: Non-exhaustive list of potential stakeholders in the Sector

Source: Research by सीप team

7. Profile of Info-communication & Telecommunication Sector in Nepal

All secondary literature pertaining to the ICT sector in Nepal agree that although the sector is currently small. It is undoubtedly growing, and with the increased role and significance of ICT industry and services (including telecom services) and value addition in ICT, the contribution of the sector is expected at 7.5% of gross domestic product (GDP) by 2020, as per the 'National ICT Policy 2015'. However, the government currently has no official record of how much ICT sector has been historically contributing to the GDP (Times, 2015).

7.1 Profile of the Sector in Nepal

The ICT sector in Nepal is comprised of more than 6,000 firms of which only 256 were officially registered (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017). Most of these are MSMEs firms operating informally, with only ten large firms (hiring more than 100 employees in operation), both of which are supported significantly by freelancers. (Bank, 2018). Further, a significant number of ICT firms function as subsidiaries of overseas parent companies, and much of their income is accrued overseas, besides revenue to cover operational costs in Nepal (Bank, 2018). In FY 2016/17, the total revenues of registered IT application services firms, ITeS-BPO service providers, and e-commerce firms were estimated to be US$100-US$200 million, US$50-US$100 million, and US$50-US$100 million, respectively (Treichel, Narain, & Sharma, 2018). However, the growth of the sector is unparalleled in Nepal - according to the Computer Association of Nepal (CAN), employment in IT services is increasing by 15 to 20 percent annually.

Three types of companies operate in the ICT sphere in Nepal (IBN, Tourism Sector Profile, 2018):

i. Local solutions providers / domestic market-oriented companies
ii. Export-oriented / outsourcing companies
iii. Hybrids

Software development services offered by Nepalese ICT firms included (but not limited to) animation services, data analytics, document digitisation services, data entry, data extraction, web application development, mobile application development, web development and customisation, data storage, back office BPO functions. ICT firms also offered product-based solutions including financial technology development, payment gateway solutions, lead-generating & email marketing software, e-Commerce data exchange software and data security software (Bank, 2018).

With regards to the growth of the ICT sector, its potential remains enormous, highlighted by the GoNs commitment to the sector. ICT sector was included in GoN's Nepal Trade Integration Strategy 2010 and highlighted as one of the key sectors with the greatest export potential owing to improving telephone and internet infrastructure and subsequent penetration, and highly skilled low wage workforce (IBN, Tourism Sector Profile, 2018). As per the World Integrated Trade Solution, ICT service exports accounted for 37% of Nepal's total service exports in 2015, which equated to approximately USD 529 million (WTIS, 2015). GoN's policies about foreign direct investment (FDI) in the ICT sector further strengthen its vision on the potential of the sector. Currently, GoN permits up to 100% FDI for IT and IT-enabled services (IBN, Tourism Sector Profile, 2018).

In terms of distribution of ICT firms in Nepal, Kathmandu remains the hub for IT firms and IT institutions, as reaffirmed in the round of interviews for the purpose of the macroeconomic survey.

7.2 Labour Profile

On average, 80% of the ICT workforce is male, while 78% of the workforce is under 30 years of age. A 26-year-old male represents a typical ICT employee in the ICT sector with a tertiary-level ICT degree, usually a B.Sc. in ICT Engineering. Underrepresentation of females in the ICT sector was attributed to the limited number of women ICT graduates, and hesitancy of women to work at night due to cultural norms and safety reasons, a requirement for a majority of ICT firms catering to the US market. Regarding the composition of foreign staff, 1.4% of total employees were foreign, who usually held senior positions in ICT firms, or are used to fill particular skill niches. On average, a junior-level ICT employee earned NPR 21,700 per months, while an intermediate-level employee earned on average NPR 50,140 per month, and a senior-level employee earned an average monthly income of NPR 135,000 per month.

Although 7,500 students graduate from ICT-related courses each year, it is estimated that only 20% remain in Nepal, with the overwhelming majority choosing to pursue further education or careers abroad, especially the USA and Australia, as per the firm interviews. Still, further, only a small percentage of those that remain continue to work in ICT-related fields (Bank, 2018). In comparison, 2.6 million Indian students graduated from STEM courses in 2016.

7.3 Key challenges faced

The World Bank 2018 report highlights the extensive bureaucracy resulting in 4 to 10 years usually taken to update ICT and computer science courses in Nepal's state-owned universities in line with the global trends and requirements as one of the key challenges in the ICT sector, meaning 'updated' courses are already outdated. This has resulted in graduating students not possessing the necessary competencies to make a positive contribution to Nepal's ICT firms upon graduation (Bank, 2018). This challenge was also highlighted during the round of interviews with the ICT firms who stated that they spent significant resources and time (up to 6 months) in re-training fresh intakes, even from private institutions, before they were industry-ready.

The inability of ICT firms to retain employees was also cited during the round of interviews, and available literature also reaffirmed this challenge that ICT firms in Nepal continue to face. ICT firms, having already spent resources and time training fresh intakes for up to 6 months, are then faced with the challenge of turnover of those staff in 2 years, on average, usually for further education or work in Australia / USA. This has left ICT firms in Nepal of a perpetual cycle of recruitment-training-turnover-recruitment, seriously impacting on the growth of the firms (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017).

Further, strict foreign exchange controls also constrict the growth of the ICT sector in Nepal, in particular, the lack of access to an international payment gateway solution remains a significant barrier to competitiveness in many strategic segments, with firms having to rely on payment gateways like PayPal via intermediaries abroad, and having to bear related and remittance costs on revenue (Bank, 2018). Conversely, the inability to pay in foreign currency meant that ICT firms were unable to import critical hardware for their business directly (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017).

While it has been established that Nepal has made strong strides in infrastructure development in recent years and continues to invest, the potential benefits that could be derived from this is hampered by a lack of infrastructure sharing amongst mobile operators and ISPs and limited availability of licensed bandwidth (Bank, 2018). This key challenge was highlighted by one of the larger outsourcing ICT firms in Nepal who agreed that they require huge, dedicated and reliable

bandwidth for lucrative content-sharing and video-platform projects, but due to the incapability of Nepalese ISPs they either are forced to pass on such projects, or it seriously hampered the project quality/delivery.

The round of interviews with ICT firms for the macroeconomic survey alluded to the fact that Nepalese people are not recognised globally as IT-skilled people. As such, foreign companies overlook Nepalese ICT firms for large outsourced ICT projects. It was further elaborated that the outsourced projects that Nepalese ICT firms undertake are, in general, relatively small, and owe the award of the project to either their parent companies abroad or via the Nepalese diaspora channels abroad. Further, the small domestic ICT market meant that firms were unable to build a sustainable level of operations based on the national demand, and were forced to compete for international projects to survive (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017).

7.4 Skill gaps and future needs

Through the literature review and interviews, the team identified the following key job roles and skill gaps. According to World Economic Forum's The Global Information Technology Report 2016, Nepal was ranked 118 out of 139 countries studied, with a global rank of 115 in terms of Skill Readiness. (Baller, Dutta, & Lanvin, 2016). This indicates the challenges for Nepal in terms of becoming a globally competitive ICT destination.

> *"Nepalese students have ICT degrees, but not the skills to compete with the global workforce. There are gaps in terms of soft skills such as problem solving and analytical skills."*

The skill gaps identified here are not in order of prevalence of gaps. The quantification of prevalence is being conducted through the firm-level surveys.

- Software Development

  Software Development in Nepal is a growth area. The prevalent skills in the industry are web designers; animators; programmers in PHP, Net Framework, Android OS, iOS, WordPress, Drupal, Ruby on Rails and Python. (Onugha, 2017)

  The industry mentioned that various aspects of software development faced skill gaps in Nepal. Skills in the area of ***software testing and quality assurance*** were cited to be lacking in Nepal. While, in general, the technical aspects (such as coding in general programming languages like Java, .NET) were highlighted to be satisfactory, other skill gaps were indicated to be missing. In terms of technical skills, knowledge of new areas such as ***Artificial Intelligence*** (e.g. Machine Learning, Natural Language Processing), ***Data Analytics***, ***Cloud-services*** (e.g. certifications from Amazon Web Services), and ***Database Management*** were also cited to be lacking among the existing workforce. These skills have also been cited in other literature (Onugha, 2017, p. 13).

  The industry mentioned that soft skills related to software development, such as ***analytical skills, problem-solving skills, creativity, logical-thinking skills, and design-thinking skills*** are not available in the current workforce. It was highlighted that fresh graduates lack practical training, and are using template-based learning pedagogy. This has been highlighted in other reports as well (Henley, et al., Pathways to Prosperity and Inclusive Job Creation in Nepal, 2017). This hampered the development of such soft-skills. A potentially big problem is the fact that there is very little opportunity to grow at

senior levels, simply because the resources that can teach these skilled engineers are not present in the country (BIID, 2018). This means that along with skill development for workers/ students, there is a need to skill development of facilitators as well. (Onugha, 2017, p. 14)

The lack of ***domain knowledge*** of the sector for which the developers were developing is also prevalent, e.g. software developers for agriculture-related solutions did not understand the basics of agriculture. There is demand for domain-specific business analysts in this sector as well.

- ITeS (IT-enabled Services) related skills

For the core jobs under ITeS, lack of ***customer care professional*** and ***call centre operators*** was highlighted as an issue. Given the growth of sectors which are dependent on these workers, such as Travel & Transport, Banking & Financial Services, and Telecommunication in Nepal, there is significant growth potential for this sector. The basic skill gaps highlighted were lack of digital skills (e.g. MS-Office) and communication skills (e.g. English communication).

Another area of growth of demand in Nepal was the ***data processing*** industry. The data processing industry is helping the growth of Artificial Intelligence firms overseas by codifying the datasets for the training of systems. Companies, such as *CloudFactory*, have seen significant growth in this area. The skill gaps regarding hiring remote workers (and freelancers) in this area are regarding basic digital skills (e.g. Internet usage, web searches) and communication skills (e.g. English comprehension).

- Project Management/ Engagement Management

The industry highlighted that they are currently facing a crunch of ***project managers/ engagement managers***. This is due to the lack of sophisticated training and high skill training that leads to a shortage of key skills such as project management. After spending 3-4 years in the local industry, the IT professionals seek for sophisticated training overseas, and the number of professionals who come back from abroad is insignificant, and this process does not contribute to the uplifting of local industries (BIID, 2018). In the field of ICT, such managers are expected to handle client relations, manage vendor relations, manage the operations of the project, and conduct overall project management. Typically, these managers have professional certifications such as Project Management Professional (PMP)®, Certified Associate in Project Management (CAPM)®, or PMI Agile Certified Practitioner (PMI-ACP)®, among others.

- Telecommunication

In terms of telecommunication, the industry highlighted the difficulty in hiring telecommunication tower operators and fibre technicians, especially in the rural areas. According to other research as well, Industry stakeholders mentioned that there is a gap in terms of ***fibre/optical cable installation, GSM Installation, air-conditioning and generator maintenance, IT technicians, Repair and maintenance technician*** (Accountability Initiative, 2016). This is hampering the growth of rural telecommunications and slowing down digitisation of Nepal.

7.5 Potential Stakeholders Identified for the sector

The following stakeholders were identified for understanding the current state of the industry in Nepal. This list is non-exhaustive. The actual list of stakeholders interviewed is presented in **Annexure 2.**

SN	TYPE OF PLAYER	ORGANIZATION
ICT	ITeS /Software	Cloud Factory
	ITeS	Tootle
	Software/Outsourcing	Deer Walk
	Food Provider	Foodmandu
	Telecom	Ncell
	Software/Outsourcing	Young Innovations
	ISP	World Link
	ISP	Subisu
	Training, Certification	Cisco and Networking Academies (Netacad)
	ISP	Mercantile Group
	Outsourcing	Leap Frog
	Outsourcing	Verscend
	Software/Data	Pathways Technologies
	Commercial Data Centre	Silver Lining/Om Data Centre
	Trading/System Integrator/Software	CAS Trading Group
	Testing/Certification	Pearson's (India)
	AI, Machine Learning	Fuse Machine
Cross-Industry	Business Conglomerate	Shankher Group
	Business Conglomerate	Vishal Group
	Business Conglomerate	VOITH Group
	Business Conglomerate	ICTC Group
	Business Conglomerate	Lotus Holding
	Business Conglomerate	Riddhi Siddhi
	Business Conglomerate	Kedia Group
	Business Conglomerate	Kyal Group
	Association	Federation of Nepalese Chamber of Commerce and Industries
	Association	Confederation of Nepali Industries
	Association	Federation of Nepal Cottage and Small Industries
	Association	Nepalese Young Entrepreneurs Association
	Association	Federation of Women Entrepreneurs Association in Nepal
	Association	Entrepreneurs Association
	Association	Non-Residential Nepali Association
Ecosystem Players	Investment/Incubation	One to Watch
	Investment/Incubation	True North Associates
	Incubation/Mentoring	Idea Studio
	Incubation/Mentoring	Nepal Communitere
	Incubation/Finance	Brihat Investments/Anterprerana

SN	TYPE OF PLAYER	ORGANIZATION
	Remittance	IME Pay
	Remittance	Prabhu Money

SN	TYPE OF PLAYER	ORGANIZATION
Civil Society	NGO	Paurakhi
	NGO	Shakti Samuha
	Company	BIA
	NGO	Women for Human Rights
	NGO	Creative Hands of Deaf Women Nepal
	Association	National Federation of Disabled Nepal (NFDN)

Table-9: Non-exhaustive list of potential stakeholders in the Sector

Source: Research by सीप team

8. Possible Market Failures in Skill Development across Sectors

It is estimated that close to 400,000 Nepali youths enter the workforce every year. However, the annual intake capacity in short-term and long-term TEVT programmes in the country is only close to 25% of this. This indicates that most of the working age youth will enter either the domestic or the foreign labour market with limited education and skills.

Based on the discussions and literature review, the following possible eight (8) categories of market failures for skill development and employment have been identified. As the next step, these are being validated through a firm-level survey across Nepal.

- Risk of Attrition

  One of the major challenges highlighted for skill development was the risk of workers ***leaving the company once they have been trained***. This could be in the form of migration overseas (highlighted by Tourism sector), poaching by competitors (highlighted by agro-processing/ light manufacturing sectors), and starting their venture and becoming a competitor of the company they were trained in (highlighted by ICT sector).

  The stakeholders mentioned that the trained workers might move to other companies, so the company which trained they do not fully capture the benefits of training. This risk of their competitor ***'free-riding'*** on their investment inhibits companies from spending on skill development. It was also quoted that after the skill development is conducted workers migrate for better opportunities overseas – there seems to be a preference to migrate overseas over upskilling in Nepal to earn higher wages. In sectors such as ICT, companies reported attrition rates of up to 25% or higher per annum.

  Economic theory suggests that employers will be more willing to invest in training that is specific to their firm and therefore less transferable, and more averse to investment in more transferable general training (Keep, 2015). Given that the skill gaps identified earlier are generally more transferable, the risk of attrition/ poaching is hindering the skill development in Nepal

  Some chosen verbatim include:
  - *"Employees leave for smaller Nepalese companies that run at a better margin than us, and can offer more money."*
  - *"Workers usually train with us, but look to migrate after receiving specialised training skills."*
  - *"50% of leaving staff start their own ICT companies, while the rest leave for bigger ICT companies in Nepal."*

- Imperfect Information

  The stakeholders interviewed that while they all faced challenges related to skills, there was ***limited information*** on the benefit of skill development. This is evident in both the companies and for the workers. The companies indicated that workers are unaware of the market demand for skills, as there is ***limited dialogue*** between the demand-side (businesses) and supply-side (educational institutes). Some estimates say that nearly 36% of the unemployed youth force in Nepal is not connected with economic production and skills (GoN, 2015). This is due to the lack of information about the right skills among

potential workers. There is also an ***expectation gap*** among the fresh graduates, as they can see the success of their peers overseas. In some cases, the perception of some types of work (e.g. tractor drivers) is associated with lower castes, and thus not considered as attractive and aspirational by all workers. There is a lack of dignity of labour for jobs considered lowly, but could be semi-skilled (e.g. tractor drivers).

The ***information asymmetry*** also leads to underinvestment in training and human resource development. Research indicates that in 2004 the average investment in human resource development per employee per year in Pokhara was as low as NPR 120 (i.e. £0.8 per year) (Baniya, 2004). Other research indicated that larger firms (more than 200 employees) spend more on labour training as a percentage of total wages and salaries (5.2%) than smaller firms (3.2%). Also, the share of the training cost for companies with employee size 10-19 and 20-49 decreased over time between 1996 and 2011 to reach about 50% of the national average (CBS, 2014).

Another impact of the lack of communication that has been highlighted has been the ***employability of fresh graduates***. Only 5% of people who have received a formal education have received a skill-oriented education (GoN, 2015).

The stakeholders also indicated that the workers ***do not invest in continuous development***. For example, for construction/ light manufacturing it was noted that continuous professional development of engineering not the norm in Nepal. This leads to a situation where the engineers are not up-to-date with the latest trends and technologies.

Some chosen verbatim include:

- *"There is no proper way to know what skills are available and how to mobilise them in the Construction Industry."*
- *"Universities/colleges are not connected to businesses. There's no culture of academia connecting with businesses."*
- *"There is a negative bias towards the hands-on work. For example, in Eastern Nepal tractor owners hire operators from lower castes such as Musahars to operate tractors."*

- Incentive mismatch for Skill Development

The industry mentioned that when it comes to skill development, there is a lack of incentives for various stakeholders.

The industry mentioned that Nepalese workers are, generally, ***more expensive*** as compared to their counterparts from the neighbouring states in India. It was quoted that labour in Nepal costs the companies 2 to 3 times higher than in India, especially when the lower efficiency of Nepalese workers is accounted for. It was also indicated by the stakeholders that there is ***little impact on the wages*** of the workers who undergo upskilling training. Companies are also not willing to pay higher wages for the skilled employees as compared to unskilled employees, especially for semi-skilled workers. The workers, thus, see little benefit in upskilling in terms of wages or career progression. The companies also mentioned that they ***prefer workers with experience*** (who have gone through on-the-job training) as compared to skilled employees with degrees/

certification. Other research also indicates that employers do not give importance to educational level in manual and production-related work (GoN, 2014). There are no certifications which recognise workers for prior learning (e.g. certifying a mason who has learned the skill on the job). The companies also indicated that, in certain sectors (such as agriculture, ICT), there is a ***lack of competition for talent*** from foreign countries. All these, along with the preference for migration, indicate that there is a small incentive for the workers to undertake skill development. This hypothesis is being tested as part of the firm-level survey.

For the companies, training of workers means ***downtime***. The companies indicate that they would not prefer the workers to stop work for training, as this impacts the output. In certain cases, especially at the low-skill level, workers could be ***seasonal***. For example, the industry mentioned that most construction workers are farm workers who are seasonal and on daily wages. This gives companies little incentive in investing in skill development of these workers. Another challenge highlighted by some industry associations was the ***lack of local managers*** in the management of the companies. This, they believe, creates a preference for foreign workers as these managers have experience of working with the workers from their companies.

Finally, the technical experts (e.g. those hired from India) have little i***ncentive to transfer their skills*** as they prefer to secure their income. Companies mentioned that for these experts, there was also no guarantee of continuity.

Some chosen verbatim include:

- *"We would prefer employees with relevant experience over a fresh graduate with no experience. However, it is difficult to find people with experience, and we have to train fresh graduates."*
- *"At the low-skill level, most construction workers are farm workers who work for us on daily wages; they are not on the payroll."*
- *"Technical experts hired from India would not transfer skills, and there was no guarantee of longevity at work; they would take leave during festivals and sometimes not come back for 2-3 months without informing us."*

- Short-termism and Budgetary Constraints

The industry indicated that both the workers and the companies have a short-term mentality. For companies, the focus is on profits, and less on employee engagement. Typically, there is ***underinvestment in Human Resources***. Some HR professionals have even estimated that there are less than 50 seasoned HR professionals in Nepal (NBA, 2018). While the actual number might be much higher, this indicates the level of underinvestment and lack of maturity in terms of HR across companies. Most of the HR professionals are focused on administration, and not on talent engagement.

For workers, the industry mentioned that the focus is on salary growth, with a ***goal towards migrating*** to a better life. This means there is limited incentive for the workers to develop skills. In fact, the literature indicates that a huge proportion of workers migrating are unskilled or semi-skilled (GoN, 2014). Literature also indicates that both firms and individuals may be risk-averse, and the returns on investment in skill are often uncertain, fluctuating with general economic and labour market conditions (Keep, 2015).

Some chosen verbatim include:

- *"HR typically is the last and least prioritised unit/sector, treated as administration department."*
- *"We lack proper HR in the country. There must be just 30-40 of proper HR professionals in the country, and even those are not locals."*
- *"We have just started focus on human resources. Our HR traditionally focuses on administrative tasks, but we are sending our managers to international colleges to learn the best practices."*

- Inequitable access

There are several types of inequitable access for skill development in Nepal. One of the key challenges was the location of the educational institutions. Typically, most of the institutes of higher learning (such as CTEVT institutions) are located close to economic centres (which tend to be urban). The labour might not come from the same areas, and therefore there is a geographic access issue. For example, the labour for manufacturing companies in Province 2 includes workers from Province 6, where there is a lack of training opportunities.

Another challenge was the women, DAGs and PwDs face ***difficulties in access*** because of the additional cost, opportunity cost, distance, prerequisites, and male-oriented training setup. ***Gender tracking***, i.e., a pattern that reinforces male-female distinctions in occupational and income disparities, is evident in CTVET institutions as female enrolment is much higher in traditionally female skills like housekeeping and caregiving (ADB, 2013).

Finally, the lack of a ***financial ecosystem*** for education was highlighted as one factor for lack of skill development in Nepal. Currently, there are educational loans available for students for graduate/ post-graduate courses. There is no provision of external financial access to students for vocational training and for current workers to upgrade their skills. The lack of financing is prevalent especially for the women, DAGs and PwDs. This has led to a disincentive for upskilling, as workers are not keen to take a break from job and to fund the course themselves.

Some chosen verbatim include:

- *"Rural population does not have easy access to training as the courses are costly for them and not very close."*
- *"It is difficult for workers to pay for upskilling, especially if they do not see any benefit."*

- Ecosystem Imperfections

As mentioned earlier, there is a ***lack of coordination*** between the private sector and training providers. This leads to issues in terms of the development of a market-driven curriculum in Nepal. It was highlighted that the programmes offered by CTEVT institutions are not industry-specific and provide generic training. In several cases, it was highlighted that educational institutions in Nepal ***focus on theoretical knowledge and not on practical training***. This makes it difficult for the industry to hire even the best of fresh graduates due to lack of industry-ready skills. According to several studies,

including (Accountability Initiative, 2016), it has been highlighted that more than 450,000 labour force enters annually into the labour; however, the majority of them are not gainfully employed due to lack of appropriate skills. ***Lack of proper infrastructure and equipment*** in the educational institutions was cited as another reason for lack of practical training; for example, it was cited that most of the cooking courses do not train people using new/ updated kitchen equipment.

Another factor highlighted was the ***quality of trainers*** in these institutions. There is the limited presence of industry practitioners in academia. The stakeholders mentioned that even the engineering professors in construction-related courses have no first-hand experience of construction work and have no practical experience in operating machinery/equipment. This leads to skill gaps among students. Most of the trainers still use traditional pedagogies, and it was highlighted that there is a need to upgrade the skills of trainers in technical schools to modern methods. The attrition among such trainers was highlighted as one of the issues to ensure consistency in teaching methods.

In certain cases, there is ***lack of industry-ready certifications or degree*** programmes. For example, the hydropower stakeholders mentioned that there is no tunnelling-related qualifications (such as those offered by Tunnelling and Underground Construction Academy (TUCA) in the UK) are available in Nepal. Similarly, for mountain guides, there is a need to go overseas (to Europe) to get international IFMGA license. It was also highlighted that fresh graduates lack even ***basic skills***, such as grooming, creating resumes, interviewing, among others, as there is a lack of such training.

Some chosen verbatim include:

- *"There is a lack of coordination between the private sector and training providers. Even CTEVT does not have industry-specific programmes."*
- *"There is a Need to upgrade the skills of trainers in technical schools to modern methods, as they (trainers) change frequently."*
- *"Even Engineering professors themselves have no first-hand experience of construction work. They only teach theories, as they no practical experience in machinery/equipment."*
- *"I wanted to help the institution by teaching as a guest lecturer, but the institution was not keen."*

- Low Skills Trap

The companies in Nepal are, typically, focused on low value-adding activities across the sectoral value chain. For example, the value added per worker for manufacturing in Nepal was NPR 223,000 (i.e. £ 1,380 per annum) in 2011/12 (CBS, 2014). This compares to a global average of £17,200 per annum. The same number for other countries is indicated in the table below.

Country	Value Added per Worker (GBP per annum) 2011/12
India	3,123
Bangladesh	1,963
Kenya	2,363
Vietnam	2,436

Country	Value Added per Worker (GBP per annum) 2011/12
Mozambique	3,722
Global Average	17,200
Nepal	1,380

Figure-10: Comparison of Value Added Per Worker

Source: World Bank

In recent decades, growth in total factor productivity (TFP) has accounted for a miniscule fraction of GDP growth. Given diminishing returns to capital, such accumulation-led growth is not sustainable in the long term. New jobs are being created mainly in low-value services and construction. More worryingly, with its share in GDP falling from 9% to 6% since 2001 to present, Nepal's manufacturing base lacks dynamism and is a drag on growth (Treichel, Narain, & Sharma, 2018).

Even for high value adding sectors, such as Tourism and ICT, there are constraints regarding the types of activities conducted. There is a limited focus on higher value-adding activities (such as software development, product management for ICT) as compared to lower value-adding activities (such as data processing for ICT).

For these low value-adding activities, the skill requirement is also generally lower skilled. This leads to a trap for companies which want to move up the value chain, as there is a shortage of higher skilled employees since there is low demand for such employees. For example, this is seen in the hospitality sector where the HAN mentions that there is an oversupply of skilled graduates, but the industry is reporting shortages in lower skilled employees. Even though only around 9% of the Nepalese firms identify an inadequately educated workforce as a major constraint (lower than the South Asian average of 20%) (World Bank, 2013), in-depth interviews conducted by सीप team and other projects found that the shortage of skilled technical and managerial workers was making it difficult for firms to scale up. This suggests that skills are a constraint for upwardly mobile firms (Treichel, Narain, & Sharma, 2018), while most of the firms are stuck in a low-skill trap.

Such a low-skill trap creates a disincentive for the labour force to upgrade skills and provides an incentive for them to migrate overseas where there is more appreciation (and value) for their skills.

Some chosen verbatim include:

- *"Current farming in Nepal is low-inputs and low-yield. Even if farmers produce better quality products, they still have to sell at the usual price due to pricing competition from India."*
- *"Nepal gets the raw material and labour from India for processing and then exports the finished product back to India. There is little value added in Nepal."*

- Externalities to the Skills Market

Besides the market-related factors in Nepal, other external factors impact the skill development.

The industry highlighted that the new official minimum wage (NPR 13,450, i.e. £ 90 per month) has created issues for the companies regarding hiring workers and developing skills. The minimum wage, which has been effective since July 2018, is a 38% increase over the previous limit. The stakeholders mentioned that this would mean a retrenchment for blue-collar workers even to the order of 20%. This also has led companies to evaluate hiring more contract-workers or converting the workers to partners (e.g. some agri- estate workers might now effectively become self-employed operators of the estates) in order to maintain the cost of operations. Since companies have fewer incentives to develop skills of contractual workers, this change indicates that the potential impact of skill development will be lower.

At the same time, there are concerns regarding the new Nepal Labour Act 2074 (2017) which mandates that no person may be engaged in work without providing an employment agreement to the employee. There is a perception among industry stakeholders that this implies that even if a worker is hired on a short-term basis, the company has to give them all benefits[4]. This, the companies believe, will impact their hiring practices and could impact skill development in Nepal.

Finally, industry stakeholders also mentioned that the cost of labour from border areas in India is 2 to 3 times lower than labour costs in Nepal. Especially for processing companies in province 2 and five which border India, this creates a disincentive to hire local workers as compared to workers from India.

Some chosen verbatim include:

- *"New Labour Act has made labour more expensive. Retrenchment of 20-25% blue collar jobs is expected in our company."*
- *"There has been a huge rise in minimum wage, which will increase my cost of operation goes up. This wage mismatch impacts a company's growth trajectory."*

[4] Please note that this is not a legal opinion and just indicates the perception of the industry stakeholders

9. Conclusions and Next Steps

This report is based on literature review that is also augmented with interactive discussions with 79 key stakeholders. The report indicates that the challenges for each sector could be unique. These include challenges with regards to regulations/ political (e.g. new Labour Act, Minimum Wage), economic (e.g. competition for goods/ labour from overseas, inability to command prices in the market), social (preference for migration), and technological (e.g. low technology adoption).

In terms of skill development, the following market failures have been identified through research:

- Risk of Attrition (due to poaching, migration or entrepreneurship) – Leads companies to under-investment in trainings
- Imperfect Information (mismatch in skills due to disconnect between the demand and supply side) – Leads to low employability of fresh graduates
- Incentive mismatch for skill development (unwillingness of companies to pay higher wages to skilled employees, lack of competition for unskilled employees) – Leads to under-investment in training by both workers and companies
- Short-termism and Budgetary Constraints (lack of importance of HR among companies) – Leads to issues with retention and job security among workers
- Inequitable access (lack of geographical assess, gender-tracking, and lack of funding) – Leads to difficulty in access to skill development
- Ecosystem Imperfections (lack of infrastructure at educational institutes, financial loans availability) – Leads to low employability of fresh graduates
- Low Skill Trap (due to companies focusing on low value adding activities which rely on low skilled workers) – Leads to reduced incentive for skill development
- Externalities (due to Regulatory environment, competition from overseas) – Leads to reduced incentive for skill development

As the next step to this report, the team is validating the findings through a firm-level survey. The survey intends to cover companies across Nepal, focusing on companies based in Province 1, 2, 3, 5, and 6 of Nepal. Using the findings from this report and the firm-level survey, ideation labs (one for each sector) will be conducted to identify the solutions. The end goal is to develop an Industry Workforce Development Roadmap (IWDR) for each of the five sectors under focus during the Inception Phase of the programme to identify market failures that can be addressed through the challenge fund and further worked through the roadmaps that can continue beyond the life of the programme.

10. Annexure I: List of Stakeholders Interviewed for this Report

SN	SECTOR	ORGANIZATION	GEOGRAPHY
1.	Commercial Agriculture	Agro Enterprise Center (AEC) - Federation of Nepalese Chambers of Commerce and Industry	Kathmandu, Province 3
2.		Nimbus	Kathmandu, Province 3; Birgunj, Province 2
3.		Shreenagar Agro Farm	Kathmandu, Province 3; Birgunj, Province 2
4.		R & D Innovative Solutions	Bhaktapur & Kathmandu, Province 3; Jumla, Province 6; Jhapa, Province 1
5.		Nepal Krishi Company	Biratnager, Province 1
6.		Vaidya Organization of Industries & Trading Houses	Chitwan, Province 5
7.		The Beekeeping Shop	Kathmandu, Province 3
8.		Rasruit Dairy Industries	Kathmandu, Province 3
9.		Rudyn Agriflora Nepal	Jhapa, Province 1
10.		Nepal Diary Association	Kathmandu, Province 3
11.		Roongta Group	Birgunj, Province 2
12.		Pancharatna Feed	Bharatpur, Province 3
13.		Samriddhi Food	Kapilvastu, Province 5
14.	Light Manufacturing	Reliance Mill	Biratnagar, Province 1
15.		Biratnager Jute Mill	Bhairawa, Province 2
16.		Jagadamba Synthetic, Jagadamba Spinning Mills	Kathmandu, Province 3; Kapilvastu, Province 5
17.		Surya Nepal	Kathmandu, Province 3; Bara, Province 2; Tanahun, Province 4
18.		Anu Handicraft	Kathmandu, Province 3
19.		Federation of Nepal Cottage and Small Industries (FNCSI)	Across Nepal
20.		Himalayan Bamboo	Kathmandu, Province 3
21.		Innotech Sakwo	Kathmandu, Province 3
22.		Rajesh Metal Crafts	Birgunj, Province 2
23.		Garment Association Nepal	Kathmandu, Province 3
24.		Himalayan Accessories	Kathmandu, Province 3
25.		Sherpa Gears	Kathmandu, Province 3
26.		Republic of Fashion	Kathmandu, Province 3
27.		Sabah Nepal	Kathmandu, Province 3
28.	ICT	CloudFactory	Kathmandu, Province 3
29.		Deerwalk	Kathmandu, Province 3
30.		Tootle	Kathmandu, Province 3
31.		Pathway Technology	Kathmandu, Province 3
32.		Fuse Machine	Kathmandu, Province 3
33.		Smart Krishi	Kathmandu, Province 3
34.		ICT4Agri	Kathmandu, Province 3
35.		Ekta Golchha	Biratnagar, Province 1

SN	SECTOR	ORGANIZATION	GEOGRAPHY
36.	Hydropower	Hydro Solutions	Kathmandu, Province 3
37.		Investment Board Nepal	Kathmandu, Province 3
38.		Youth Community of Nepali Contractors	Across Nepal
39.		Cosmic Electrical	Kathmandu, Province 3
40.		Rairang Hydropower	Kathmandu, Province 3; Dhading, Province 3
41.		Roshan Construction	Janakpur, Province 2
42.		Jagdamba Cement	Kathmandu, Province 3; Bhairahawa, Province 5
43.	Tourism	A.N.T. Holidays	Kathmandu, Province 3
44.		Act360	Kathmandu, Province 3
45.		Earthbound Expeditions	Kathmandu, Province 3
46.		Mount Princess Hotel	Dhulikhel, Province 3
47.		Asian Trekking	Kathmandu, Province 3; Province 1; Province 4; Province 6
48.		Thamserku Trekking	Kathmandu, Province 3; Province 4; Province 6
49.		Hotel Association Nepal	Kathmandu, Province 3
50.		Hotel Welcome	Janakpur, Province 2
51.	Cross-cutting	Chaudhary Group	Across Nepal
52.		Vishal Group	Kathmandu, Province 3; Biratnager, Province 1
53.		Laxmi Group	Kathmandu, Province 3; Pokhara, Province 4
54.		Confederation of Nepalese Industries (CNI)	Across Nepal
55.		Nepalese Young Enterpreneurs Forum (NYEF), Nepal	Across Nepal
56.		NYEF Janakpur	Janakpur, Province 2
57.		FWEAN	Across Nepal
58.		Janakpur Chamber of Commerce	Janakpur, Province 2
59.		Golcha Group	Kathmandu Province 3; Biratnagar Province 1; Province 2
60.		Shanker Group	Province 2
61.		Nepal Republic Media	Kathmandu, Province 3
62.		New Business Age Publication	Kathmandu, Province 3

SN	SECTOR	ORGANIZATION	GEOGRAPHY
63.	Equity / Finance	Biruwa Ventures	Kathmandu, Province 3
64.		Nepal Communitere	Kathmandu, Province 3
65.		Idea Studio, Kathmandu University School of Management	Kathmandu, Province 3
66.		True North Associates/One to Watch	Kathmandu, Province 3
67.		iCapital	Kathmandu, Province 3
68.		Safal Nepal	Kathmandu, Province 3
69.		IME Group	Kathmandu, Province 3 Across Nepal
70.	Training Institutions	MakerKT	Kathmandu, Province 3
71.		Kathmandu University School of Management	Kathmandu, Province 3
72.		Sukalpa	Kathmandu, Province 3; Janakpur, Province 2; Biratnager, Province 1
73.		Global Institute Of Hotel Management & Tourism, Technical Center Pvt. Ltd.	Kathmandu, Province 3
74.	Other Stakeholders	Mayor, Dhanusha, Janakpur	Janakpur, Province 2;
75.		Chief Minister	Janakpur, Province 2;
76.		State Attorney	Janakpur, Province 2;
77.		Planning Commission	Janakpur, Province 2;
78.		Minister and Secretary of Industry	Janakpur, Province 2;
79.		National Federation of Disabled Nepal (NFDN)	Kathmandu, Province 3

Table-11: Stakeholders interviewed for this Report

Source: Research by सीप team

11. Annexure II: Discussion Guide for Macroeconomic Research

DFID सीप Private Sector Roundtable Discussion Guide

1. Association name, representative, email, phone, location, sector
2. Partner profile/activities
3. Principle constraints/challenges
4. Business objectives and strategies
5. Collaboration assessment and potential areas of collaboration

Association/Company Overview	
Company/Association:	
Representative(s):	NAME, COMPANY,TITLE NAME, COMPANY,TITLE
Location:	
Industry Type:	(e.g. large, medium, small)
Sector and sub-sector Focus:	(e.g. Agriculture, Milling and Processing)
Discussion Overview	
Date:	
Assessment Team:	• Who from the DFID **सीप** team were present?
Partner Details	
Context/Challenges	• What are the three major trends or challenges impacting business growth for your sector/industry? • Which sectors have the greatest growth potential if skilled labour were available? • Would improvements in skills help increase business income or profit (in which sectors)? • What are the main challenges with the education/training system meeting businesses' skills needs? • What are the primary business enabling environment bottlenecks (policy, legal, regulatory etc.) currently holding you back from 1) advancing your expansion goals 2) expanding skilling opportunities to build a talent pipeline that meets current and expected future business needs and 3) contributing to building a stronger skills and job creation ecosystem at the industry level?
Skill Needs	• What are the key skills needed for you and your sector looking forward?

	• What are the key skills required for women, disadvantaged groups and people with disabilities to make them more employable / productive in the sector?
Perspectives on Collaboration	• Who do you look to inside and/or outside Nepal as having innovative skilling programs? Are there concrete examples? • Are there specific examples or models that you would like to replicate jointly or individually? • What can the industry do to expand and improve women/girls' and people with disabilities' access to skills training and jobs? • Are there areas where you see collaboration with DFID सीप (individually or with others) as helpful to achieving your business objectives and/or addressing sector-wide challenges related to skills and manpower?
Other Discussion Highlights	• Insert other relevant items from the discussion not covered above.
Collaboration Potential (to fill out after the discussion) Point of Contact	
Name:	
Position:	
Phone:	
Address:	
Email:	
Website:	

Other potential cross-cutting questions:

- Gender: Are the training currently available in the market relevant to women/girls? What are holding back women and girls from accessing the training?
- Gender and Youth: How can private sector investments contribute to improving skills technical and vocational and entrepreneurship outcomes among youth? How can private sector engagement help normalize gender norms and reduce drop out/early and forced marriage?
- Finance and ICT: Can DFID सीप employ innovative financing and/or ICT mechanisms to expand access to skills training and jobs placements (e.g. low-interest structured loans that enable greater access to ICT in middle schools or web-based platforms that address information gaps to increase access to skills training and job placements)?

- Federalism: How will federalism affect the firm/industry/sector, especially in light of its labor and skill needs?

DFID सीप Private Sector One-one-One Interviews

1. Business name, representative, email, phone, location, sector
2. Partner profile/activities
3. Principle constraints/challenges
4. Business objectives and strategies
5. Collaboration assessment and potential areas of collaboration

Company Overview	
Company:	
Representative(s):	NAME, COMPANY,TITLE NAME, COMPANY,TITLE
Location:	
Company Type	(e.g. large, medium, small)
Sector and sub-sector Focus:	(e.g. Agriculture, Milling and Processing)
Discussion Overview	
Date:	
Assessment Team:	• Who from the DFID सीप team were present?
Company Profile:	• What are the main products and services? Which value chain activities does the company engage in? • Who are the major customers? • How has the company changed over the last four years? What are the changes expected in the next four years? • Does the company have any business investment and staffing expansion plans?
Context/General business environment:	• What are the three most important challenges/trends impacting industry/company growth? • Which sectors have the greatest growth potential if skilled labour were available? • Would improvements in skills help increase business income or profit? • What are the main challenges with the education/training system meeting businesses' skills needs? • What stops the business from providing more training opportunities for their employees?
Skills Needs	• How does recruitment and training of staff take place currently?

	• What institutes do companies typically hire from? • What are skills/job roles key for the company looking forward? • What are the key skills required for women, disadvantaged groups and people with disabilities to make them more employable / productive in the company?
Engagement in Skills Development	• What is the private sector doing to build a talent pipeline that meets current and expected future business needs? • What are the main training models applied and what can be done to make them more effective? • Who do you look to inside and/or outside Nepal as having innovative skill development programs? Are there concrete examples? • Are there specific skill development examples or models that you would like to replicate? • What can businesses do to expand women/girls' and people with disabilities' access to skills training and jobs? Is there an area of interest for your company?
Perspectives on Collaboration	• Are there areas where the company sees collaboration with DFID **सीप** (individually or with others) as helpful to achieving its business objectives and/or addressing sector-wide challenges related to skills development? • Are there specific areas or activities where the company may be interested in co-investing with DFID **सीप** to pursue shared interests?
Other Interview Highlights	• Insert other relevant items from the discussion not covered above.
Collaboration Potential (to fill out after the meeting)	
Partnership Potential:	• High, medium, or low • Would this partner be a driver of a partnership or a participant?
Aligned Interests with DFID **सीप**	• Where do the partner's core activities and strategies, objectives and interests align with DFID **सीप**'s objectives and priorities?
Partner Assets/ contributions	• What financial or non-finance resources could the firm contribute to an initiative? • How might it envision leveraging DFID **सीप**'s resources, roles, and capabilities to help it achieve its own interests?
Areas for Collaboration	• What specific areas/activities may be worth considering/ exploring for DFID **सीप** collaboration and/or co-investment?

Initial Due Diligence	• What risk, issues or concerns exist that DFID सीप should consider before exploring collaboration?
Point of Contact	
Name:	
Position:	
Phone:	
Address:	
Email:	
Website:	

Other potential cross-cutting questions

- Gender: Are the training currently available in the market relevant to women/girls? What are holding back women and girls from accessing the training?
- Gender and Youth: How can private sector investments contribute to improving skills technical and vocational and entrepreneurship outcomes among youth? How can private sector engagement help normalize gender norms and reduce drop out/early and forced marriage?
- Finance and ICT: Can DFID सीप employ innovative financing and/or ICT mechanisms to expand access to skills training and jobs placements (e.g. low-interest structured loans that enable greater access to ICT in middle schools or web-based platforms that address information gaps to increase access to skills training and job placements)?
- Federalism: How will federalism affect the firm/industry/sector, especially in light of its labour and skill needs?

12. Annexure III: Potential Partnership Models Proposed by the companies

The DFID-funded Skills for Employment (सीप) programme will draw on national and international resources to provide co-investment and technical advisory support for transformative employment-focused skill-building initiatives led by the private sector. This document captures some of the potential early-stage market-led solutions based on DFID सीप's initial assessment and scoping engagements with key businesses across the priority five sectors. Most of the private sector's stakeholders identified and engaged by सीप were eager and willing to explore opportunities to collaborate with DFID सीप on partnerships that could create a mutually-beneficial skill-building ecosystem for themselves, and more holistically for the broader industry.

The ideas below are chosen on the basis of the following investment principles, which will guide DFID सीप's selection of the Challenge Fund applicants once the implementation phase is underway in 2019. The principles listed below are preliminary and have not been finalised. While the exact solutions will emerge directly from the potential applicants of the Challenge Fund, the ideation labs and industry workforce development roadmap design by DFID सीप in November-December 2018 is expected to shed more light on the shared interest alignment and help flesh out the engagement and Challenge Fund models further.

- Market Failures: Does the potential partner's proposal address key market failures in skill-building and job creation?
- Quantity: Numbers of beneficiaries and quantified benefits?
- Impact: What is the possible impact on poor people and other target groups - are there likely improvements in livelihoods?
- Innovation: Level of innovation in skills development approach?
- Additionality: What is the likely increase in employment and income?
- Inclusion: How does the intervention consider gender or disadvantaged groups?
- Scalability: To what extent is there potential for the interventions to be scaled up?
- Leverage: Extent of private sector leverage/investment in the programme?
- Sustainability: How are the interventions systemic and the benefits likely to endure?

Information and Communications Technology

Fusemachine

Training Model: TM1.2 In-house training, External Certificate, External School

1. Fusemachine invests in AI talent around the world and integrates them with organizations to build AI solutions. Through a new scholarship program, Fusemachine could reach and groom 10,000 Nepalese in big data and AI applications. The scholarship program will be launched in 2018/2019 and aims to equip undergraduate students with high-quality skills required for the emerging AI field in fast-growing Nepali and international companies.

2. Fusemachine could scale-up its AI Fellowship Program (micro master's degree) to benefit additional Nepali students with high-quality skills and job placements at companies in Nepal and globally. The Fusemachine AI Fellowship is a year-long blended training program, in partnership with the Columbia University that educates, trains, and creates a global pool of AI specialists.
3. Fusemachine could partner with a network of local and international businesses to establish a system to provide customized technical advisory to start-ups and SME businesses in the ICT sector on AI, big data, and other relevant topics. *(Potential linkage with Cloud Factory point 5)*
4. Fusemachine could foster private sector-university collaboration through strategic alliances with selected Nepali universities and colleges. The goal is to establish a mechanism for hands-on, project-based faculty development in order to improve AI skills and knowledge in academia and strengthen curriculum design and instructional approaches and pedagogy. *(Potential linkage with Cloud Factory point 4)*

Cloud Factory

Training Model: In-house Training and External Mentorships

1. Could Factory could expand operation outside Kathmandu and set up an office in Narayanghat, Province 5.
2. Cloud Factory provides flexible, part-time online work for 2,500 people in Nepal; this is a fast-growing job role with an estimated 100 per cent growth projection. The company could explore models to extend and expand training and job placements for women and people with disabilities to benefit from such technology-enabled jobs.
3. Cloud Factory could explore institutionalization of its employer-student meetup program, a weekly informal orientation and networking session, by enabling university/colleges to drive structured, regular meetups and career fairs. The goal is to help college students become more job-ready right from the onset.
4. In addition, Cloud Factory's could develop a flexible, hands-on learning immersion program for engineering and ICT college faculty/management to understand skill needs of employers better and enable adapting of curricula and teaching methodology. Scalability and sustainability are critical to this and Cloud Factory, with other like-minded organizations in the ICT sector, could collectively drive collaborations for knowledge exchange with academia/ training institutes.
5. Through the Nepal Entrepreneurs Hub (NEHUB), a formal network of entrepreneurs and professionals that work towards accelerating the growth of entrepreneurs, Cloud Factory and other like-minded businesses could extend customized design thinking and managerial skill training for start-ups and SMEs in the ICT sector.

Deerwalk

Training Model: TM 1.3 Apprenticeships in collaboration with Training Provider

Potential linkage and collaboration with Cloud Factory on points 3, 4, and 5.

Tootle

1. Enable greater participation by women and DAGs as Tootle partners/drivers with the right training and incentive structures.

2. Facilitate short-term learning exposure for Tootle management staff at Uber and/or other successful similar businesses in India on business expansion fundamentals, including marketing and communications.

Cross-Sector Business Conglomerate-driven Initiatives

Vishal Group

1. Vishal Group could augment and expand **Sukalpa, its training wing**, to expand training access, improve curriculum design and appropriate certification, and enable job placements in fast-growing industry trades/jobs related to the International Trading (Retail), ICT, Light Manufacturing, and Hospitality sectors. In the process, Vishal Group could demonstrate replicable models for public-private partnerships with Government at target Province and Municipalities on skilling Nepalese and expanding job opportunities.
2. Vishal Group could mobilize its network of national and international businesses (e.g. via CNI) and training institutes (e.g. NPTC Group of Colleges in Wales, **Silver Mountain College of Hotel Management, and Fishtail Hotel Management**) to establish a state-of-the-art world-class Training Centre/Polytech for the Manufacturing, Construction, and/or Hospitality sectors at a target location--such as Janakpur, Province 2, in partnership with the Government (Chief Minister/Mayors).
3. Vishal Group could extend scholarships and/or subsidize costs for Disadvantaged Groups, especially women and people with disabilities, to attend its schools, colleges, and training institutes in order to improve their employability.

Chaudhary Group

1. CG could strengthen and expand the Polytech at its Industrial Park (CGIP) in Nawalparasi district, Province 5, by improving course design and access for women and DAGs and enabling job placements within CG's firms as well as catering to other industries in the district/province. To do so, CG could rope in international expertise and resources through India-based firms like Tata STRIVE. CG could replicate a similar Polytech model in its Industrial Park currently under construction in Simara, Province 2; also potentially in Bardiya, Province 5, adjacent to its FMCG factory.
2. CG could drive the creation of a high-quality state-of-the-art model Training Institute in Kathmandu to address in-demand skills in the hospitality, light manufacturing, and ICT sectors. The training centre in Kathmandu could serve as a resource and training hub to upskill/upgrade training capacity of CG and non-CG owned training centres outside of Kathmandu (e.g. via a hub and spoke model). Scalability and sustainability are critical, and CG could drive collaborations in the area of knowledge exchange, technology, domain expertise, delivery models, certification, and funding with a range of compatible national and international businesses, training institutes, and the Government.
3. CG could open doors to decent jobs in Asia and the Middle East for Nepali migrant workers by leveraging its network and influence with some of the large businesses/employers abroad, e.g. Dubai. *(Linked to 1 & 2)*
4. CG's Unnati program can strengthen the skill-building system for MSMEs in suburban and rural Nepal to support the expansion goals of social businesses owned or managed by women and

disadvantaged groups. Building on the Unnati initiative, the CG Foundation – employing a collective multi-actor partnership model – could leverage its relationships to improve collaborations with and between like-minded national and international businesses (e.g. Ramalaya Design Establishment and Bottletop), academia and training institutes (e.g. Kathmandu University School of Arts and School of Management, Nepal Communitere), and finance providers (e.g. Nabil Bank, Nepal Social Business Initiative, and One to Watch). The intent is to establish a sustainable mechanism for MSMEs to access tailored need-based training on management and product design skills and other essential wrap-around support services like market linkages and patient/flexible capital.

5. CG could explore the potential of telecom-enabled ICT tools to impart youth with skills, training, and employment opportunities. For instance, mobile-powered ICT can help connect youth to information on training availability and livelihood opportunities and train young people on technical, cognitive and non-cognitive skills required for in-demand jobs. CG's Telecom, a strategic alliance with Turk Cell, is expected to begin in 2019. In addition, CG could set up training courses in key skill-gaps related to the Telecom industry. *(Linked to Point 1/2)*
6. CG runs 15 schools/colleges In Nepal and could extend scholarships and/or subsidize costs to enable enrolment of women, people with disabilities, and other disadvantaged groups from the most vulnerable and marginalized communities.

Agro-Processing Sector

Shreenagar Agro Farm and Nimbus

National Poultry and Feed companies like the Shreenagar Agro Farm and Nimbus are interested in investing, potentially together, in a state-of-art Polytech/training institute that caters to in-demand skills needs in the Livestock and Agriculture Development sector. Both companies could drive collaborations with other like-minded national and international businesses and training institutes (e.g. Venkies Institute of Poultry Management and Technologies or Suguna Institute of Poultry Management from India, and Aeres Training Center from Barneveld Netherlands) and the Province/Municipal level Government. The institute will be geared at building technical and managerial skills of farmers and entrepreneurs on poultry farming, animal husbandry, high-value agriculture farming, and fishery as well as support skills such as agro-entrepreneurship, marketing and business planning management, value-added processing and cooking classes, and agro-tourism.

Hydropower/Construction Sector

Multi-actor Alliance: Jagadamba Cement, Siddhartha Cement and/or Others

The likes of Jagadamba Cement, Siddhartha Cement and other top cement and steel companies could come together -- collective training, apprenticeship, and job placement model -- to co-fund and coordinate action for establishing a market-aligned Polytech in Province 2 (based in Janakpur/Birgunj/Narayanghat). To create a sustainable, high-quality curricula design, delivery mechanism, and appropriate certifications, these companies could pursue partnerships with the Provincial/Municipal Government and international training and certification institute(s). Courses could focus on in-demand skills in the root-companies related to hydropower development, and the Construction industry more broadly, like plumbing, electrician, mason, and welding.

Investment Board Nepal (IBN) and Hydro Solutions

IBN and the hydropower construction companies it supports, including GMR, and other leading Nepali Hydropower developers like the Hydro Solution could come together to collectively fund and co-design skill-building and apprenticeships in key skills required including tunnel excavation and special engineering and electrical works. IBN-supported companies could also forge a partnership with the U.K. based Tunnelling and Underground Construction Academy, a purpose-built facility providing training in the identified skill areas.

Youth Community of Nepali Contractors (YCNC)

YCNC has developed a two-week practical orientation course for engineering graduates interested in joining its member-Construction companies. Developed in partnership with a private training institute/consultants, YCNC, which consists of some of the most influential and progressive construction companies in Nepal, could drive and help strengthen private sector-academia linkages by working with 2-3 preferred engineering colleges/university to embed and institutionalize the two-week curricula in the academia itself. YCNC could also develop a flexible, hands-on program that provides a project-based learning experience for faculty development.

Light Manufacturing Sector

Arihant Multi Fibres, Arihant Spinning, and Arihant Polipacks

Part of the Golcha Group, these companies employ close to 6,000 people in Biratnagar, Province 1. Hiring takes place through word-of-mouth, which is followed by 3-6 months of on-the-job training. About 400-600 staff, mostly men, leave the companies each month primarily for out-migration; women leave largely due to family issues (marriage, childbirth, etc.). This creates a productivity drag as the employers are constantly in "seek and train" mode. The companies have to a pay minimum wage even while the staffs is undergoing on-the-job training with low productivity, and therefore choose to keep their new-hire trainee numbers at a bare minimum, often at the cost of overall productivity. With co-investment from DFID सीप, these companies would be interested in ensuring there is regular bench strength of 700-800 people so that someone who has already undergone the 3-6 month training can fill the vacant positions immediately. The three companies currently have a men-women ratio of around 60-40 and 70-30. The Arihant Polipacks, in particular, is interested in hiring an almost-all female workforce (95%) given their higher efficiency and regularity at work.

Surya Nepal, Multinational Company (MNC)

1. To draw down the gap between skills and jobs, Surya Nepal could facilitate and institutionalize stronger linkages with its preferred training institutes in the market like the Korean Training Academy and Butwal Training Institute. The MNC could develop a flexible, hands-on learning program for the faculty/management of the training institutes to help cultivate a better understanding of the employers' skill needs in the light manufacturing and FMCG sectors and enable adapting of curricula and teaching methodology.
2. Surya Nepal can enable meaningful inclusion of women and DAGs in their new business units/factoring coming up over the next four years through expanded access for internships, apprenticeships, and on-the-job training as well as the adoption of a more inclusive HR recruitment policy.

Reliance Spinning Mills Ltd.

The largest spinning mill in Nepal located in Biratnagar, Province 1, the company manufactures Polyester, Viscose, Acrylic yarn including sewing threads. The Mill employs nearly 4,000 people of which almost 1,600 are women. The Mill's in-house training centre currently reaches about 300 people per month with a three-month training package geared at unskilled workers interested in joining the factory. With the right incentives, the Mill could scale-up their training to benefit at least 500 people/month, especially women and DAG, as their employee attrition rate is high and appropriate training and bench strength can enable smooth operation.

Tourism Sector

Asian Trekking

1. Asian Trekking could invest in an upskilling program for lodges, hotels, and teahouses to learn how to operate oxygen cylinders along the popular trekking routes in the Everest and Annapurna regions. Availability of oxygen cylinders and skilled staff at the tea houses/resorts can significantly reduce altitude sickness and save lives (also reduce insurance costs). Asian trekking manufactures oxygen cylinders and could supplement the training with access to the needed equipment for the lodges.
2. Asian Trekking is building new eight new lodges in the Everest region alone. Each lodge requires about 30 workers. The company is interested in driving collaboration with like-minded national and international companies in the trekking and hospitality industry to help upgrade existing training institutes and/or establish new training centres/models in Nepal that caters to both technical construction and support service skill requirements (house-keeping, reception, cooks, waiter etc.)

Thamserku Trekking

Thamserku is looking into setting up a training college in Nepal to meet the various skill needs across its companies (restaurants, hotels, airlines, trekking and tour) as well as to contribute holistically to the larger industry's requirements. Strategic alliances with other compatible national and international businesses and training institutions, including potentially Asian Trekking, could ensure high-quality curricula design, execution plan, and appropriate certification as well as the meaningful inclusion of women and DAGs.

Vishal Group and Chaudhary Group

Please refer to Cross-Sector Business Conglomerate-driven Initiatives.

Multi-Actor Alliance: Hospitality Training School in Chitwan

Cross-Sector Association/Network-driven Initiatives

Laxmi Group and the Entrepreneurs Organization (EO)

1. Laxmi Group could augment/facilitate the creation of a training model or centre in Kathmandu that caters to the mid-level management skill needs of various industries. To do so, it can forge an alliance with an international training institution like Excelsior and IIM Ahmedabad, and convene

and creatively leverage its network of like-minded businesses in Nepal (e.g. via Entrepreneurship Organization) to create a collective upskilling training model for market-aligned mid-level management and leadership positions.

2. Laxmi Group could enable meaningful inclusion of women and DAGs in its newly established Polytech/Training Academy for food manufacturing in Pokhara, Province 4. The Group could invite national/international experts to strengthen the curricula design and implementation plan of the Academy.

Confederation of Nepalese Industries (CNI)

1. CNI could convene and lead a high-level strategic Business Alliance, by building on its network, to elevate the conversation around the private sector's role in skilling Nepalese for transformative economic growth into action, and create a brand value to be part of the skilling for employment and business growth movement, thereby sparking systemic change and altering the way businesses think about and respond to skilling and job creation, especially for women and DAGs. The CNI-led Business Alliance's efforts can include advocacy with influencers in the Government to:
    - Support Provincial and Municipal-level governments in prioritizing their skill-building agenda.
    - Facilitate the creation of a multi-sector dialogue platform to encourage constructive, result-oriented conversations and collaborations with and between the Government and the private sector.
    - Explore and help establish Public-Private Partnership models that bring Government and businesses together, with the explicit commitment of resources from all key stakeholders.
2. CNI could spearhead the building of strategy for its members/alliance to pool their government-mandated CSR contributions into a pooled fund to amplify resources for skills training and job creation, especially for DAGs and MSMEs in rural Nepal. As of 2016, companies are required to contribute 1% of their net profit to CSR. Because this is a relatively new law, companies are still trying to understand and navigate it, as well as set up CSR programs. Similar efforts to navigate and improve implementation of CSR law are happening in neighbouring India. While both Nepali and Indian CSR programs tend to be ad hoc and not necessarily aligned with business interests, there is a significant opportunity to increase impact by helping them be more strategically aligned. Pooling of resources into a fund is an avenue to explore.

Collective Partnership Model: Nepal Communitere, King's College, Safal Nepal, One to Watch, and Nabil Bank

A range of different like-minded organizations can be brought together to support, complement, and optimize efforts to strengthen the skills development and entrepreneurship system for early-stage entrepreneurs. This is particularly timely given existing and new initiatives -- both ad hoc and more deliberate -- led by various private organizations operating in the entrepreneurship-support ecosystem. Coordination with and between the organizations to build scalable models and ensure synergy is critical to enabling stronger skill-building and entrepreneurship ecosystem, such as by the

creation of a holistic platform, particularly to address the needs of women and DAGs. *(Potential linkage to Chaudhary Group point 4 on Unnati program)*

Nepalese Youth Entrepreneurs Forum (NYEF)

1. NYEF is a membership-based non-profit organization, established with the aim of creating outstanding entrepreneurs through idea exchange, fellowships, education, training and advocacy among the Nepali youth. NYEF has chapters in Kathmandu, Dhangadi, Biratnagar, Butwal, Birgunj, Chitwan, Janakpur, and Pokhara. This network of young business leaders could be mobilized to empower rural SMEs via a 'rural SME adoption' apprenticeship and on-the-job training model whereby owners/staff from a rural SME spend 1-3 months with a successful urban SME on learning some of the fundamental skills and knowledge related to management, communications and marketing, product design, financial planning, and digital literacy. During this hands-on, on-the-job learning immersion with a well-managed growing urban business, the rural SME could also learn how to navigate and establish new market linkages and strategies to unlock capital.
2. NYEF could align with leading academic institutions by harnessing the mentorship of its members to hone the work-readiness skills of university students. Institutes such as King's College, Kathmandu University School of Management, and Ace Institute for Management have fairly strong reputations for high-quality content and education delivery. They run business management and entrepreneurship courses and want to transform education and entrepreneurship in Nepal, especially in partnership with local and multinational businesses. These institutes are lobbying for and working to introduce innovative, multi-disciplinary, and locally relevant courses that link to Nepal's potential in select sectors. In collaboration with such academia partners, NYEF can drive a flexible, well-structured mentorship program (using a combination of on-the-job, instruction, and mentoring/shadowing model) to develop time management, communication, teamwork and job search skills of university students. Upon completion of the training, NYEF could facilitate job placements for the graduates. Interested graduates could also be paired with a rural SME *(link to point 1)* for 1-3 months to extend further support for the latter in setting up better management systems and training of staff.
3. NYEF members could mobilize a portion of their government-mandated CSR contributions into a pooled fund that can be deployed to support skills training for university graduates and rural SME expansion goals. *(Linked to points 1 & 2)*
4. NYEF could serve as a 'megaphone' for promoting entrepreneurship for women by deliberately and strategically attracting, encouraging, and disseminating positive messages and stories on young female entrepreneurs through their networks.

13. Annex IV: Preferred training and education institutions in the market

SECTOR	TRAINING / EDUCATION INSTITUTION
Commercial Agriculture	• *Purwanchal Campus: Institute of Engineering, Dharan (Agricultural Engineering)* • *Dr B.V. Rao Institute of Poultry Management and Technology, Pune. India* • *Suguna Institute of Poultry Management, Tamil Nadu, India* • *Aeres Training Centre International, Netherlands*
Light Manufacturing	• *Sukalpa International, Kathmandu* • *Butwal Technical Institute, Butwal* • *Korea Nepal Institute of Technology, Butwal* • *Hyundai Training Academy, Lalitpur* • *Tata Strive, India* • *ITC Training Centres, India*
ICT	• *Kathmandu University: Department of Computer Science and Engineering, Dhulikhel* • *Prime College, Nayabazar, Kathmandu* • *Kathmandu Engineering College, Kalimati, Kathmandu* • *National College of Computer Studies (NCCS), Paknajol, Kathmandu* • *Khwopa Engineering College, Bhaktapur* • *Deerwalk Institute of Technology, Sifal, Kathmandu* • *Columbia University, USA MicroMasters in Artificial Intelligence*
Hydropower	• *Institute of Engineering: Pulchowk Engineering Campus, Lalitpur* • *Kathmandu Engineering College, Kalimati, Kathmandu* • *Khwopa Engineering College, Bhaktapur* • *Nepal Engineering College, Bhaktapur* • *Neet Port Talbert College, Wales*
Tourism	• *Nepal Academy of Tourism and Hotel Management (NATHM), Kalimati, Kathmandu* • *Silver Mountain School of Hotel Management, Lainchour, Kathmandu* • *Fishtail Hotel Management Training Institute, Pokhara* • *Taylor's University and University of Toulouse- Jean Jaures, Malaysia*
Cross-cutting	• *Kathmandu University School of Management, Kathmandu* • *Ace Institute of Management, Kathmandu* • *Asian Institute of Technology and Management, Lalitpur* • *Indian Institute of Management (IIM) Ahmedabad, India* • *Xavier School of Management (XLRI) Jamshedpur, India*

Table-12: List of preferred training providers

Source: Research by सीप team

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