

Skill Gap Analysis For Relevant Skills of

UTTARAKHAND



NATIONAL APEX CHAMBER



A REPORT **SKILL GAP ANALYSIS** OF THE RELEVANT SKILLS OF UTTARAKHAND GOVT. OF UTTARAKHAND

An initiative by



Uttarakhand Skill Development Mission

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Background

Research Based Study for the Survey on Skill-Gap Analysis of the Traditional Skills/Non SSC listed Job Roles which are Unique to Uttarakhand, proposed by PHD Chamber of Commerce and Industry was initiated by Uttarakhand Skill Development Mission directorate. The broad objective of the study was to address the state challenges in relation to its unique demographics to complimenting skill development.

For identifying need of State specific job roles not in SSC list, the state SSDMs is mandated to work closely with SSCs for development of QPs, curriculum and model contents. MES courses not mapped to SSC QP-NoS, can be taken up under these provisions by the respective states. It's the responsibility of MSDE to ensure development of the QPs for such innovative job roles identified by respective state governments in a time bound manner. The initiative was supported by Economics and Statistics directorate, Department of Planning & Directorate of Industry of the Govt. of Uttarakhand.

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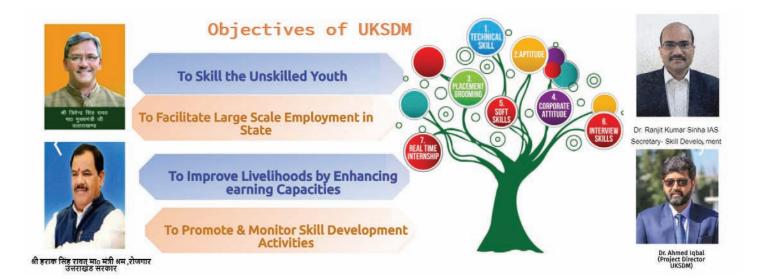


ABOUT UKSDM

Uttarakhand Skill Development Mission is a Society providing skill development to unskilled youth and up-skill the Skilled Workers. It promotes skill development activities through its trained and qualified professionals from Engineering, Management, Handicrafts and similar other sectors. The Initiative taken by the Government of Uttarakhand aims to build the appropriate Skill Training Infrastructure to help the youth of the state in gaining meaningful Employment.

The Mission has been providing free skill development training to youth over all 13 districts urban and rural sectors of state, addressing the challenges of unemployment and ensuring gainful and sustainable employment to the youth of the state, Hon'ble Chief Minister created Uttarakhand Skill Development Mission UKSDM in February 2013. The state plan to train 6.5 lacs youth and provide employment.

Uttarakhand Skill Dev Mission



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PHD Chamber of Commerce And Industry

PHD Chamber of Commerce and Industry, established in 1905, is a proactive and dynamic multi-State apex organization working at the grass-root level and with strong national and international linkages. PHD Chamber is more than an organization of the business community, as it lives by the chosen motto 'In Community's Life & Part of It' and contributes significantly to socio-economic development and capacity building in several fields. PHD Chamber of Commerce & Industry, a leading Industry Chamber of India, ever since its inception in 1905, has been an active participant in the India Growth Story through its Advocacy Role with Government of India and State Governments. It is one of the Premier Chambers in India to have been accredited with "Diamond Grade" by NABET(QCI), at national and international level. A National Apex Chamber having its international office at Bahrain for 6 GCC countries, with 1,30,000 companies as its members base, has total focus on the development of small and medium businesses. PHDCCI has co-opted National and International Industry Associations and Organizations through over 100 MoUs signed between the parties.

PHD Chamber of Commerce And Industry Leadership



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Dr. Ranjeet Mehta Principal Director PHDCCI

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Acknowledgement

The Report on the Skill Gap Analysis of Uttarakhand has been the outcome of the cooperation of various Departments of Government of Uttarakhand, Civil Society and the People of the State.

We are deeply appreciative of the efforts taken by the Officials of the Uttarakhand Skill Development Mission (UKSDM) in sharing their perspective on the objectives of the Study. The Members of the various Sector Skill Councils have taken time out of their busy schedule to help us understand the nuances of the National Skill Qualification Framework and the structure of identifying Job Roles. We are grateful to the Department of Industries, Govt. Of Uttarakhand for helping us identify and assess the relevant Industrial and Traditional Skills of the State. The Officers at the District Industrial centers (DIC) have been forthcoming in sharing their outlook on the Skill Scape of the District. Uttarakhand Gramya Vikas Samiti (UGVS) have given critical support at State and District level.

A special mention has to be made of the support received from the District Magistrates and the Administrative Staff at all levels who have acknowledged the importance of this initiative and whole heartedly assisted our team in every District of the State.

The distinguished members of the Civil Society, Non-Government Organizations and dedicated individuals who have taken us under their wings and help us gain a comprehensive understanding of the current status of Skilling in the State. We would like to express our gratitude to the Members of the Private Sector who have helped us in mapping the growth trajectory of Skill Development, Trade Enhancement and Investment Opportunities.

Most importantly, we would like to thank the people of the state for being so receptive, and generously participating the study.

Finally we are thankful to our esteemed Members of PHD Chamber of Commerce and Industry, Wishlife Research & Evaluation, Affiliate bodies and individuals who have collaborated and worked together to achieve the objectives of the Study.

Disclaimer

With Reference to the WORK ORDER No. 444/UKSDM/Assignment/SGA/2017-18 Dt 27 Sept. 2017 This report is for information purposes only. While due care has been taken during the compilation of this report to ensure correctness, and Validity to the best of our First-hand Knowledge and Reference, the content is not to be construed in any manner whatsoever as a substitute for professional advice. PHD Chamber of Commerce and Industry's neither recommend nor endorse any specific products or services that may have been mentioned in this report, nor do they assume any liability or responsibility for the outcome of decisions taken as a result of any reliance placed in this report, hence not be liable for any direct or indirect damages that may arise due to any act or omission on the part of the user due to any reliance placed or guidance taken from any portion of this report.

TRIVENDRA SINGH RAWAT





UTTARAKHAND SECRETARIAT DEHRADUN - 248001 Ph. : 0135-2755177 (O) 0135-2650433 Fax : 0135-2712827 03 June, 2020.

<u>MESSAGE</u>

I am extremely pleased with the initiative of undertaking the Skill Gap Analysis of Relevant Skills of Uttarakhand by the Uttarakhand Skill Mission in collaboration with PHD Chamber of Commerce and Industry.

The focus on traditional skills of the state is of utmost importance for Uttarakhand. Our State is a breakout example of human ingenuity and triumph on overwhelming odds. Our achievements in simple utility tools and utensils to extremely complex textiles, Architecture and Ayurveda are testimony to the spirit of the state.

The Skill Mission of the State merits to be congratulated in identifying the needs of the state and initiate the building of a response framework based on outcomes. The Study has earmarked the relevant areas which need urgent attention.

I take this opportunity to give a call to all the departments of the government, the civil society and the public at large, join their efforts to encourage our traditional skills and support our artisans. We have to build a Brand of the state which radiates authenticity, ingenuity, consistency and an ingrained consciousness of the Environment.

The aforesaid study has reinforced my belief in the abilities of the people to carve out a prosperous and unique future for the country and the world.

With best wishes,

(Trivendra Singh Rawat)

Dr. Harak Singh Rawat Minister Forest and Wildlife, Environmental and Solid Waste Management, Labour, Employment, Skill Development, Ayush, Ayush Education



Vidhan Bhawan, Uttarakhand Room No. 07 Ph. : 0135-2665155 Fax : 0135-2665399 Mob.: 9411114793

Date 14:05,20

MASSAGE

Government of Uttarakhand has been working towards the Social and Economic wellbeing of the people. The key to the challenge lies in the Skill Development of the people and providing livelihood opportunities to harness it. The Government has established Uttarakhand State

Skill Mission with the objective of achieving the aforesaid.

In an effort towards scaling the efforts, the Mission has engaged with PHD Chamber of Commerce and Industry to Identify the Relevant Skills of Uttarakhand and calibrate the Scalability requirements. The task undertaken has given a clear line of sight on the Traditional and Industrial skills of the state. The Report will enable the department assess the current skilling opportunities and prepare the necessary framework to respond to gaps discovered. This is a first step towards establishing a robust system of progressive skilling in Uttarakhand. This will also prepare the ground for partnership between the Government, Civil Society and Public At Large for a holistic approach.

This study has captured the essence of the initiatives on the Traditional & Industrial skilling, Demand and Supply Forecast of Workforce for the coming years. The efforts will further enable the alignment with the Emerging Trends and the Sustainable Development Goals (SDGs) of the State.

I take his Opportunity to Congratulate the Uttarakhand Skill Mission and PHD Chamber of Commerce & Industry on Developing and Presenting this Report. I also would like to thank all the people involved in supporting the efforts.

(Dr. Harak Singh Rawat)

Ref. No. M.

Message from the Secretary – Skill Development

The Skill Development Mission of the state embarked on this mammoth task of identifying the scalable skills of Uttarakhand. The study was commissioned to recognize the unique Job Roles of the State which had until now eluded the National Skill Qualification Framework (NSQF). The task was at the very heart of the skill mission objective as our skilling program aims to provide sustainable livelihoods to the people and preserve the unique identity of our state.



Dr. Ranjit Kumar Sinha Secretary – Skill Development

The journey has been an adventure in itself, which has given us a glimpse of the lives of the people of Uttarakhand. The people have been forthcoming in opening their hearts and sharing the wisdom of ages with our team. The exercise is opening endless opportunities in many aspects for affirmative action by the government, civil societies and the public at large.

The State of Uttarakhand has many achievements to its credit. Our Industrial growth has been one of the pioneering achievements of the Country. The State has within a short span of time pulled a major proportion of the population out of poverty by providing gainful employment. The Skilling initiatives of the state had a major role to play.

We hope to achieve greater milestone with our efforts to promote the traditional skills and artisans of the state. We have started this journey taking long strides with earnestness and hope to achieve a future more beautiful than the one conceived as yet.

Jai Hind!!

Message from Project Director – Skill Development Mission

The Skill Development Mission of Uttarakhand has been one of the flagship initiatives of the State. The Mission is committed to achieve sustainable livelihood for the youth of the state and provide an employment ready workforce to Industrial sector. To augment these efforts, the National



Dr. Ahmed Iqbal Project Director – Skill Development Mission

Skill Qualification Framework (NSQF) was established wherein various Sector Skill Councils (SSCs) are cataloguing the range and depths of skills for their relevant work areas.

The State Of Uttarakhand is blessed with indigenous communities who have evolved various life skills based on the resources available. There are deep rooted traditions of Textiles, Copperware, Bamboo & Ringal, Aipan, Gems & Jewelry, Yoga & Ayurveda, etc. These traditions have a huge potential to scale up and provide a greater quality of life to the world. There is a sublime consciousness of the land that manifests in the culture of service of the people at large.

The Skill Mission embarked on this study to Identify the Traditional Skills not listed in the current SSC Job roles. The Scalability aspect was evaluated based on their Potential for Growth, Trade Enhancement and Investment Attraction. We are extremely appreciative of the support provided by PHD Chamber of Commerce and Industry, Uttarakhand Chapter, for partnering with us on this project.

Our efforts have helped us earmark various opportunities that can be pursued by the mission. Further, I would like to take this opportunity to thank the various departments of the Government, the civil society and the public at large for their support in all forms. We are confident that the Skill Mission will lead the way for achieving the objectives enshrined in the Vision 2030 document of Uttarakhand.

Jai Hind!!



Dr. Manoj Kumar Pant



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Message

Sustainable Livelihood and Decent Work opportunities are among the primary objectives of the Sustainable Development Goals adopted by the world. The essence of Responsible Production and Consumption is being debated universally to chart out the future trajectory of human civilization. The Human Settlements deep in the goals long before the world crystalized them. A phenomenal opportunity has presented itself wherein the Himalayan People of Uttarakhand would assume the leadership on these efforts by sharing their knowledge and life skills developed ingeniously without hurting the environment.

In addition to the above, Uttarakhand is also a powerhouse of manufacturing in the country. Over the years, the State has consistently outperformed the National Economic Growth rates. The State has also been at the forefront of pulling people out of poverty by developing descent and well-paying employment opportunities.

Despite the strong performance the State has a lot of ground to cover on economic and social indicators. Skilling is one of the most important drivers of social and economic growth. It prepares the ground for rapid economic development by making quality manpower available to industry. Further the Traditional Skills and Products of the state have the potential of becoming worldwide Brands like Aipen, Copperware, Koti-Banal Architectures, Garhwali & Kumaoni Jewelry, Animal & Plant Fiber Textiles, etc.

The Study of the Relevant Skills of Uttarakhand has established a comprehensive baseline for future initiatives.

I take this opportunity to Congratulate the Skill Development Mission and PHD Chamber of Commerce and Industry on the publication of this very important report.

I hope that this report will prove to be a significant contributor to the efforts of the State to achieve the Vision 2030 for Uttarakhand.

(Dr. Manoj Kumar Pant) Additional Chief Executive Officer

Message from the PHDCCI President

PHD Chamber of Commerce and Industry is extremely delighted by this collaboration with the Uttarakhand Skill Mission and takes pride in having delivered this comprehensive Skill Gap Analysis report. This collaboration between the government and the industry will go a long way in forging a strong partnership to achieve the goal of building sustainable livelihood opportunities in the state.



Dr. DK Agarwal President, PHDCCI

The State of Uttarakhand is facing huge challenge of migration of working population. The

recent trends show alarming rise in Inter-State, Intra-State and Moving Abroad Migration of the youth. This will have a very detrimental effect on the economic growth of the state. It is important that we focus our efforts on building a relevant infrastructure to provide both Traditional and Industrial skill trainings. Further, to the above, a forward linking effort has to be devised to achieve the SDG Goals of the State.

At PHDCCI we have strived to deliver a report that goes beyond the generic Skill gap analysis, to include SSC wise information, traditional skill information and district level understanding of the skill gaps. The report also delivers actionable solutions to the issues highlighted.

We thank the Uttarakhand skill mission for providing us with an opportunity to work on this study and also for their support throughout the project.

I would like to also congratulate the Uttarakhand government and the Skill mission for being pioneering such skill gap understanding and wish them luck on their journey towards optimizing skilling within the state.

Jai Hind!!

Message from the PHDCCI Principal Director

Uttarakhand is known for its natural beauty, yet the state is suffering from outbound migrations, resulting in extinction of unique skills. I hail the Uttarakhand government and skill department for undertaking such an initiative to identify the Relevant skills and plan interventions.



Dr. Ranjeet Mehta Principal Director PHDCCI

I am very excited on having become a part of this journey

and strongly feel, with the relevant interventions, we will be able to boost the skilling initiative. To harness the opportunities the skilling initiatives have to be linked to the markets. The objective of building Sustainable Livelihoods for the youth and checking their migration, we need to undertake innovative initiatives of making the market for their produce both in the country and across the world.

PHD Chamber of Commerce and Industry over the century of its existence has been the torchbearer of the entrepreneurial spirit of the people of India. We are committed to the cause of Market Making for Uttarakhand's Traditional and Industrial products. With our extensive membership across all weight categories of the Industry, the findings of the study will open opportunities of partnership and growth.

We are humbled by the faith placed in us by Uttarakhand Skill Development Mission for undertaking this mammoth study. On behalf of the PHD Chamber of commerce and Industry, I would like to assure the government of our commitment to the Skill Mission and would buttress all initiatives taken towards the objectives.

I congratulate our team for achieving this milestone. I find this to be a perfect time for us to understand our strengths and plan our actions towards helping the natives and youth of the state through skill development.

Jai Hind!!

PREFACE

his study titled 'Skill Gap Analysis of Uttarakhand' was undertaken with the objective to understand the status of skilling Vis-à-vis Industrial and Traditional. Further the study also embarked to analyze the demand and supply across various sectors identified under Skill India Mission, evaluate the same against sustainability and scalability parameters, identifying the skill gaps for long term sustainability and discussing the way forward. The study was undertaken on behalf of the Uttarakhand Skill Development Mission, Dehradun.

This study is based on the primary research collected in the form of in-depth interviews and group discussions conducted with

- Corporate employees
- Associations
- Training Institutions
- Self employed professionals
- Practitioners of the Skill
- Industry influencer
- Non-Government Organizations (NGOs)
- Key Opinion Leaders and Government Developmental Agencies.

The precincts for the study was created using Secondary Sources like skill Specific Books and Journals, National Census and State Census and Economic Survey Data, Other Department Specific Census Related Documents.

We would like to express our gratitude to the eminent members of the local administration for their guidance and support at their district during the course of this survey. We would also like to thank Wishlife Research & Evaluations for their valuable contribution and all the participants in the course of this research, for their enthusiastic and active partaking in the proceedings. Hope you find the reading as enjoyable as the journey of finding them was!!

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Abbreviations

AYUSH	Ayurveda Yoga Naturopathy Unani Siddha and Homeopathy
BPL	Below Poverty Line
DM	District Magistrate
DIC	Districts Industries Commissioner
CAGR	Compounded Annual Growth Rate
MSME	Micro Small and Medium Enterprise
NA	Not Applicable
OBC	Other Backward Class
ST	Schedule Tribe
SC	Schedule Caste
GSDP	Gross State Domestic Product
FSI	Forest Survey of India
NIESBUD	National Institute for Entrepreneurship and Small Business Development
NABARD	National Bank for Agriculture and Rural Development
NOS	National Occupational Standards
NSQF	National Skill Qualification Framework
PHDCCI	PHD Chamber of Commerce and Industry
RPL	Recognition of Prior Learning
QP	Qualification Pack
PIA	Project Implementing Agencies
SSC	Sectoral Skill Council
MSDE	Ministry of Skill Development and Entrepreneurship
NAQF	National Quality Assurance Framework
NSDC	National Skill Development Corporation
SSQF	State Skill Qualification Framework
SQAF	State Quality Assurance Framework
SIIDCUL	State Infrastructure and Industrial Development Corporation of
	Uttarakhand Ltd

Executive Summary

The Economic growth of the state has been phenomenal given the fact that the state came into being in year 2000. In this short period of time the state has become a manufacturing hub of choice for various heavy industries like Automobile, Capital Goods, Pharmaceuticals, etc. The State has also been growing steadily in tourism and hospitality. Despite these achievements, the growth story has been limited to the three districts in the plains namely, Dehradun, Haridwar and Udham Singh Nagar. The rest of the hill districts have remained far behind. Due to this development the pace of migration has become higher than ever and is further accelerating. The pace of out-migration is so huge that many of the villages are left with a population in single digit. One of the biggest casualties of this phenomenon are the traditional skills of the state.



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Uttarakhand has a rich tradition owing to its distinctive and unique geography as well as its rich history. The co-existence of multiple communities and tribes in the region has given birth to such a wide variety of indigenous skills. These skills spread from agriculture and architecture to music and entertainment and several forms of handicrafts.

Migration and lack of opportunities have created a strong barrier to development and adoption of these skills in the present and for the future.

Therefore, in order to preserve and grow these skills further the state needs to look at proper skilling and providing suitable platforms for development and growth of these skills.

The Findings of this study highlights the status of prevailing skills and human resource gaps under Sectoral Skill Councils relevant for the state. The gaps have beens shared from the district as well as the state level.

SECTION 1 Background and Terms of Reference

Background and Terms of Reference

1.1 Background and Terms of Reference

Before independence, the hills were part of the Northern Provinces. It became part of Uttar Pradesh after independence. Within a few years, the people realized that the Government at Lucknow was not in-sync with the issues and aspirations of the people in the hills was not receiving the due focus it deserved. Later, with the Chepko movement and similar agitations on other social issues, the foundation for the state of Uttarakhand were laid. In 2000, the people realized there dream and the state was born. However, one of the primary challenges of the people has been the migration of the people to the plains. The Migration of people has risen to such epidemic proportions that according Census 2011, of the 16793 villages in Uttarakhand and alarming 9% of the



villages have a population of 10 or less. Most of these are uninhabited and have become deserted villages. Some of the villages are inhabited by women taking care of either the very young or the very old. Some agencies have declared that the migration of the population is irreversible. This therefore needs to be addressed immediately so that these communities do not get destroyed.

"The density of Uttarakhand is almost half of the national density with 10 out of its 13 districts having substantially lower density. Some of the districts in remote areas have alarmingly low population density and need to be looked into at the earliest" The State has on its part floated many programs to provide livelihood to the indigenous people in the hills. These initiatives though successful have been few and far between; there is a pressing need to build a livelihood infrastructure that sustains these communities pervasively.

Nationally, India is at the cusp of history where it has the largest population of young men and women in the world that are about to join the workforce. In the coming years, the average age of the populations in developed economies and China will become mid-aged. This creates a golden opportunity for us to provide skilled manpower for running the global economy thereby pulling our people out of centuries of poverty. To harness this opportunity to the fullest is the adopted mission of Skill India Mission.

As a part of the measures to arrest this widespread migration, the NSDC and its state chapter in Uttarakhand is looking at identifying the various skilling avenues to provide gainful employment to the people of the state to curb migration and achieve the broader mission making India the "Skilling capital of the world".

With these Objectives Uttarakhand Skill Development Mission initiated the Skill Gap Analysis Project for Traditional Skills.

1.2 Key Objectives

- 1. Identify Traditional Skill Sets not listed in the SSC job roles.
- 2. Identify the skill development needs & preparing a catalogue of these type of skills, range and depth of skills.
- 3. To cover all the promising traditional sectors specific to the state and assess their potential in terms of growth, employment generation, trade enhancement and investment attraction.
- 4. To analyze the current scenario of skilling and facilities available for traditional artisan's/craftsmen based on the survey analysis.
- 5. To document about the sectors wise deficiency and demand in various skills in the next 5 years.
- 6. Define the status of current skill available in the state under different job areas and current Industries demand. It will also focus on how to fill the gap between demand and supply of the Skill under different job roles.
- Outline outcome-based approach towards quality skilling that results in increased employability and translates into improved productivity
- 8. To draw conclusion of study and point wise recommendations for filling the skill gap found in the state.



1.3.1 Our Approach-Skill Gap Analysis The task of achieving the study objectives will be undertaken through standard research methodologies. A pictorial understanding of the steps involved in the study is mentioned below:

Figure No. 1 A pictorial understanding of the steps involved in the study is mentioned below:



Activities Undertaken

This report has been prepared basis the following activities undertaken:

- Literature and Data Gathering A wide variety of literature has been referred to pin down the precincts of the study. Various economic surveys of the Central and State government have been analyzed to identify the demand and supply of skilled labour. A special mention of the following literature is warranted:
 - 6th Economic Survey of the State of Uttarakhand, 2013
 - Economic Survey and State Budget Notes, 2017-18
 - Uttarakhand ke Shilpkaar by Shri Chaman Lal Pradyot, Shri. Pravin Kumar Bhatt and Arun Kuksaal.
 - World Skills Report, World Bank
 - Human Resource Requirements Sectorial Studies, NSDC.
 - District-wise Skill Gap Study for the State of Uttarakhand (2017-2022), NSDC
- Baseline Round Table Conference A Baseline Round Table Conference, The Conference was organised on 8th December 2017 at Dehradun by PHDCCI. The Objective of the conference was to introduce the study and engage the various stakeholders to invite their views and inputs towards formation of focus groups and validating ideas for execution.
 - ➔ The Attendees included representative from the planning commission, Skill Development, PHDCCI, Shri Chaman Lal Pradyot ji, Manjusha ji, and

other notable NGOs from the state of Uttarakhand.

- Data Dimensions Data relating to the Skills of the state is multi-dimensional and dynamic. It is therefore important that the dimensions are anchored to certain precincts to help build a macro level understanding of the scheme and flow of trends. The preceding steps of the study provided the following coordinates for data universe spread across the Uttarakhand.
- Traditional & Industrial Dimension: The Various Sectorial Skill Councils have enlisted both Traditional and Industrial Skills in the various job categories and job roles. SSCs have not made any distinction between traditional and industrial jobs. In line with the objectives of the study a distinction was required to understand the Traditional Skills not listed in Sectorial Skill Council (SSC) Job Roles. Further, the objective was also to identify the skill development needs & preparing a catalogue of these types of skills, range and depth of skills. It is important to note here that the distinction of these skills was one of the primary steps of the study architecture. Hence, we proceeded by first establishing the ensuing premise for the study.

Human needs are limited but the alternatives to satisfy them are unlimited. Hence, the traditional and industrial initiatives compete with each other for fulfilling the same set of requirements. The Traditional means use elementary tools and a very high degree of human skills to manufacture goods and provide services to the community. The Industrial means use the best of technologies and logistics developed across the world to manufacture goods and provide services. Every Settlement in the state has a mix of both livelihoods. We have for the purposes of our study used the following filters to differentiate between traditional and industrial skills:

- → Human Skill: The Traditional Skills use a lot of ingenuity in the production process. The Industrial Skills are about running and maintaining powerful tools which deliver precision and standardized output.
- → Tools Employed: The Traditional artisans use elementary tools to complete tasks. They essentially use items that are available locally to operate. The Industrial Units use machines that have been developed in any part of the world to deliver the intended goods and services.
- → Outputs: The Industrial Outputs are generally standardized and in bulk. The traditional products on the other hand have a very high degree personalization and produced one at a time.

It is based on these that the skills practiced in Uttarakhand have been categorized between Traditional and Industrial.

• **The Geographical Dimension:** The State has two very distinct Geographical terrains, namely, Mountainous and Plains. The distribution of the population is almost equally distributed between the two terrains. For the purposes of this study the districts have been aligned in the following manner:

Mountainous	Plains
Tehri – Garhwal	Dehradun
Pauri – Garhwal	Haridwar
Rudraprayag	Udham Singh Nagar
Chamoli	
Uttarkashi	
Nainital	
Almora	
Bageshwar	
Champawat	
Pithoragarh	

• The Cultural Dimension: The State of Uttarakhand had two very distinct cultural traditions namely, Kumaon and Garhwal. For the purposes of this study we have used the following:

Garhwal	Kumaon
Dehradun	Nainital
Haridwar	Almora
Tehri - Garhwal	Bageshwar
Pauri - Garhwal	Champawat
Rudraprayag	Pithoragarh
Chamoli	Udham Singh Nagar
Uttarkashi	

- **Methodology** Basis the survey objectives and the available secondary data a primarily qualitative research design, backed by the quantitative data was utilized for the study. The discussion guidelines were prepared basis the available industry knowledge to focus and deep dive on the skill requirements and map the current and projected numbers and requirements. This has been done in keeping with the practices of other skill gap studies and further fine tuned to incorporate quantitative understanding wherever relevant
- **Hybrid assessment:** Qualitative assessment is focused on understanding how people make meaning of and experience their environment or world. Different from quantitative research, qualitative research employs the researcher as the primary means of data collection (e.g., interviews, focus groups, and observations. Also unlike quantitative research, the qualitative approach is inductive in nature, leading to the development or creation of a theory rather than the testing of a preconceived theory of hypothesis. The application of the methods themselves can yield very rich findings for outcomes-based assessment however it is important to note then that when applying qualitative methodology to outcomes-based assessment, you are not fully using an inductive approach because you are using the methodology to determine whether an intended outcome has been identified. Therefore in order to correct the inductive bias a numbers backed discussion guideline was created and used for the study

- **Sampling Methodologies:** A purposeful sampling methodology was used for the survey and the following techniques were used:
 - → Expert Sampling : It is the most common sampling strategy. In this type of sampling, participants are sought based on pre-selected criteria. In our Case we have identified respondents basis
 - Number of years of engagement with the skill
 - Whether earning a livelihood through the skill

The Intention was to identify experts who engage and practice the skill in the normal course of business.

- → Snowball Technique: It is also known as chain referral sampling. In this method, the participants refer the researcher to others who may be able to potentially contribute or participate in the study. This method often helps researchers find and recruit participants that may otherwise be hard to reach. For the purposes of our studies we have used the following reference points to qualify our respondents:
 - Uttarakhand Shilp-Ratna Awardee
 - PHD Chamber of Commerce and Industry Member
 - PHD Chamber of Commerce and Industry Member Reference
 - Directorate of Industries reference
 - Members of other Recognized Associations, SIIDCUL, Pharma City, etc.
- → Influencers Sampling: To gain holistic understanding influencers from government and industry were also interacted with, who helped focus on the broader trends, numbers and skilling requirements. These included
 - Gov. representative
 - NGOs
 - HR and operations managers
 - University professors
 - Industry associations
- → Quota Based Sampling: Further in order to collect in depth information and at the same time optimizing the number of interviews, a quota based sampling technique was arrived at. The quotas were defined basis the size of the industry, complexity (types within) as well as the availability of organized and trustworthy data. At an overall level a minimum of 5 samples per SSC was aimed at , however in case of SSCs where traditional skills are involved a minimum of 10 samples were achieved in order to make up for the lack of organized data
- **Data Collection -** In-depth Interview with District Magistrates, members of the DIC, Corporate employees, Industry Associations, NGOs working in defined area and also with people who have familiarity with the focus regions and skill practitioners. The interviews were done using a wider format wherein the data points from the baseline study were shared in a one-to-one format. The interviews were conducted in person and collected with the help of a discussion guide. In a few cases where a group of practitioner were found together focus

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group discussions were also conducted with 4-6 respondents

- 217 interviews were conducted
- Analysis For the analysis a triangulation approach has been adopted, wherein the baseline numbers from the state and NSDM secondary sources have served as the first step for calculation, which was mapped against the practitioners' claims and also calibrated against the national figures available with NSDM. The current training capacity details have been obtained from UKSDM which when mapped against the demand has given the skill gap quantitatively. The qualitative aspects of the skill gap have been arrived at basis the primary survey and the corresponding QPs and NOS codes have been identified / suggested accordingly. Respondents were asked to explain the nature of work, challenges faced, current state of affairs and skill interventions that could positively impact the different skills.

Our Approach-Skill Gap Analysis

1.3.2 Skill Gap Analysis-Industrial skills

The study of Prevailing Skills requires a structured approach to appreciate the various aspects of the objectives envisaged. The current study has adopted the following approach:

- The Demand for Primary Secondary and Tertiary Sectors basis the current employment numbers of DIC, SIIDCUL and the industry practitioners met during the course of the study;
- Further the projections have been made basis:
 - » The understanding of the replacement behaviour for separating workforce;
 - » Expansion plans of the existing units;
 - » New set ups coming up in the state;
 - » The State of the Art of the Traditional Skill and its market;
 - » The Possible alignments to the successful craft clusters and Industries inside and our side the state; It will also include the potential growth in income because of the new alignments

1.3.3 Skill Gap Analysis-Traditional Skills

The identification and evaluation of Traditional Skills requires a three-dimensional understanding.

• The Gap between the current State-of-the-Art of the skill being practiced in the conventional market and the possible new alignments to harness the opportunities in the potential markets;

Analysis basis the above framework was mapped against the existing NSQF levels, NOS codes and QPs to arrive at the skill gaps for each of the scalable traditional skills

Limitations

1.4 Limitations of the study

PHD Chambers would like to draw attention to the following limitations in respect this engagement:

- The census data available is for 2011. Hence most of the projections have taken that as the base year. Post the 2013 calamity the migration is likely to have increased, therefore the actual population numbers could be lower than anticipated.
- While collating the information from various industry practitioners, opinions on key points differed both in approach and estimates. The Research Team has evaluated the various submissions and considered & adopted the course of the study best aligned to the adopted objectives.
- The Employment demand and supply numbers have overlaps from various sectors, owing to the following reasons:
 - » A substantial proportion of the agricultural workers (Cultivators & Agricultural Workers alike) pursue other jobs during lean seasons during the year.
 - » A large proportion of the population is mobile and travels to the plains and other bigger cities for short duration employment and then return during the sowing and harvesting seasons.
 - » A lot of farmers have taken to Horticulture especially growing of Apples in the higher altitudes in the past few years that are unaccounted for currently.
 - » A large number of uninhabited villages still show population numbers as the pace of migration has increased in the last couple of years.
- There is no reliable information source for census regarding traditional skill practitioners.
- In the absence of universally or state defined traditional skills, the survey highlights only those traditional skills that have been mentioned by different stakeholders during the course of the research and may not covers some skills.
- In the absence of employability of most of these skills in the organized sector the skill gap is analyzed qualitatively by mapping the gap that exists between the present level and what could be achieved as well as basis the inputs received from the practitioners and the channel.
- The Traditional Skills are practiced mostly in the unorganized sector. The Data with respect to scalability have been arrived at using surrogate indices of similar crafts and craft clusters which are geographically and culturally congruent.

STATE OVERVIEW

2.1 Socio-Economic Profile: The State of Uttarakhand



Figure 2: State Map

Uttarakhand, better known as 'Dev bhoomi' is one of the youngest states in India, with an atypical and beautiful landscape and rich cultural heritage. The State is surrounded by Himachal Pradesh and Uttar Pradesh on one side and Nepal and China on the sides. The state forms 1.63% of India's geographical spread and has less than 1 % of the country's population.

The state in ancient times was divided into two princely states – Garhwal and Kumaon. Both these states had evolved over time into distinct cultures. Despite the apparent similarities between the two, their cultural centres were different. The state is blessed with natural resources and has several unique forms of vegetation as well as water bodies. However, the topography and harsh weather conditions make the lives of its residents difficult.

While agriculture has been the key employer in this state, heavy industrialization has happened in the recent past, which has triggered heavy migration towards the plains.

As per the census 2011 Uttarakhand comprises of less than 1% (.83%) of the national population with more than 50% of its population concentrated around the three plain districts. The rest of the ten districts have very low population density. The composition of the population is generally a mix of various communities. The population of Scheduled Tribes who are the main custodians of traditional art and craft forms have shrunk in Uttarakhand and currently stand at 3% as opposed to the 8% of the national population. This is also a reflection of the decline of the traditional skills .This gets also substantiated in the concentration of STs in the plain districts, which highlights the movement. The preference of most the people are towards better paying government and industrial employment.

The literacy rate in the State is significantly higher than national average, and the population is fairly split between the two genders. At least 6 of the districts also have a positive sex ratio.

Both these indicators reflect the progressive nature of the state. While the population density is also substantially lower than the national figure, the population is skewed towards the plains, where the density is substantially higher than the national numbers.

Indicators	India	Uttarakhand
Total Population (in Cr)	121.08	1.01
Population Density	382	189
Male Population (%)	51%	51%
Female Population (%)	49%	49%
Scheduled Caste population percentage of Total population	17%	19%
Schedule Tribe population percentage of total population	9%	3%
Literacy Rate	63%	68%
Decadal Growth	17.64%	19.17%
		Source: Conque 2011

Table 1: State demographic profile

Source: Census 2011

Table 2: District Demographic profile

Name of the District	Popula- tion %	Population density	Decadal Growth	Sex Ratio	Literacy Rate
Almora	6%	198	-2%	1142	81%
Bageshwar	3%	116	5%	1093	81%
Chamoli	4%	49	6%	1021	84%
Champawat	3%	147	15%	981	81%
Dehradun	17%	550	32%	902	85%
Garhwal	7%	129	-2%	1103	82%
Haridwar	19%	817	33%	879	75%
Nainital	9%	225	25%	933	85%
Pithoragarh	5%	69	5%	1021	89%
Rudraprayag	2%	119	4%	1120	82%
Tehri Garhwal	6%	169	2%	169	75%
Udham Singh Nagar	16%	648	33%	919	74%
Uttarkashi	3%	41	12%	959	76%

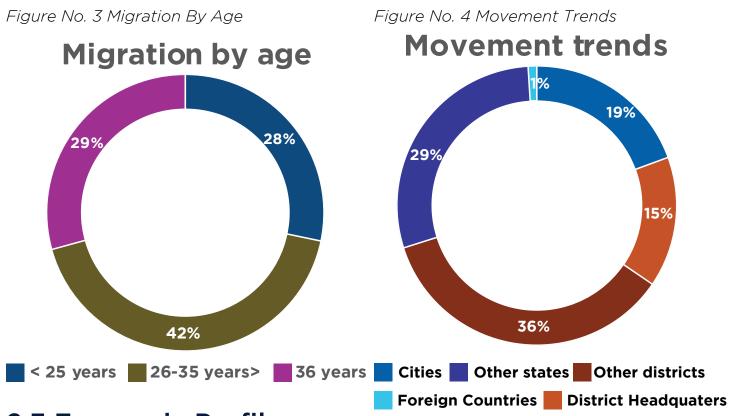
Source: Census 2011

2.2 The Problem of Migration

The state government has greatly improved connectivity to villages in the hills. Of the 5,852 km of roads that have been built between 2010-11 and 2014-15, almost 4,000 km have been built in rural areas. Similar efforts can also be seen in the field of education and the state boasts of a substantially higher literacy level and high-quality education.

Despite these achievements, As per Census 2011, of Uttarakhand's 16,826 villages, 1,034 villages had no inhabitants which at present is estimated to be around 1768. This is an alarming rise of 71% and has resulted in the migration of 5.02 lakh people in the past decade. As per the estimates, an average of 138 people has migrated from villages every day. The increase in the rate of migration in Uttarakhand can, in part, be attributed to the developmental achievements of the state. As people attain education, they seldom find suitable employment in the hills and have little or no skills, or interest, in persisting with agriculture. Even for those who stay behind, it is a matter of compulsion rather than choice.

As can be seen from the migration trends in given above, employment continues to be the major reason for migration across India, including Uttarakhand. Therefore, providing suitable livelihood locally is potentially one of the solutions for the challenge. This can be done by either providing employment or industrial opportunities locally or by modernizing and upgrading the traditional skills and getting the youth excited about these skills and employ them in these skills. District level strategies either focusing on either of the two or both options together can help tackle with the issue of migration successfully



2.3 Economic Profile

The GSDP of the state has been consistently growing and has risen by 50% in the past 7 years. While the state has seen a year on year growth of 7% to 8% in the period 2012-2014, it has now come down to less than 7% in the past two years. The major reason cited for the slowing of the growth rates are as follows:

- Stagnation of consumer demand; •
- Investments in the manufacturing sector have plateaued;
- Base effect;

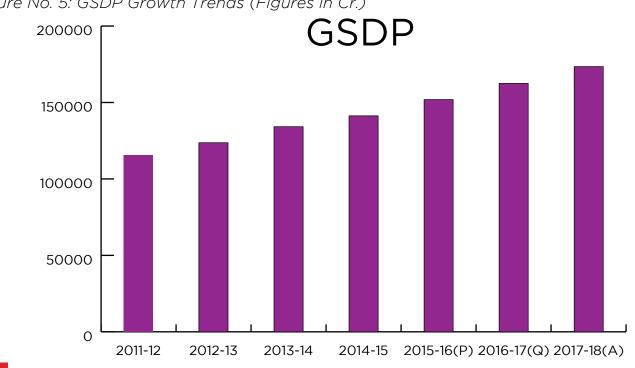


Figure No. 5: GSDP Growth Trends (Figures in Cr.)

The decline in contribution in primary sector which employs approximately 51% of the working population displays a lopsided and high instance of hidden unemployment in the state. This is also contributing to the decline in the growth rate and retrenchment of these agricultural workers preferably in their current locations.

The secondary sector grew significantly in the year 2011-12 and has since then been contributing consistently in the range of 50% to the state GSDP. While the contribution has softened a bit to around 30%, it still holds the key to the growth story of the state . In the tertiary sector, tourism contributes 30% to the sectorial numbers of GSDP. This is followed by Transport, storage, communication & services which together contribute around 19% to the sector.

2.3.1 Primary Sector

The diverse agro-climatic nature of Uttarakhand makes cultivation quite difficult in the hilly districts of the state where only 13% of the land is irrigated. Despite this approximately, 51% of the Working population is dependent on agriculture for their livelihood. The limited cultivable area with small holding patterns makes it imperative to come up with innovative agricultural skills and practices in this state.

Agriculture continues to contribute to 44% of the total primary, however in the past few years The contribution of agriculture has dropped and is being gradually replaced by the contribution from other activities like animal husbandry, poultry, agro-forestry and fisheries. The Government's schemes and initiatives encouraging dairy farming, poultry, agro-forestry and fisheries have started to bear fruits in the form of rising contribution to the sectorial GSDP.

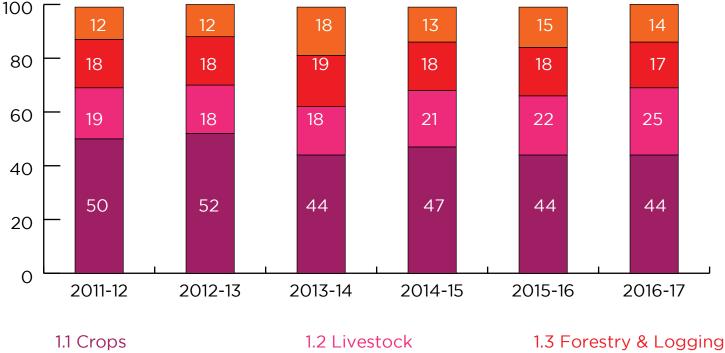


Figure No. : 6-Primary Sector Contribution to GSDP

1.4 Fishing & Aquaculture 1.

1.4 Mining & Quarrying Skill gap analysis for relevant skills of uttarakhand

2.3.2 Secondary Sector

Manufacturing forms the backbone of the secondary sector in this state , which contributes to more than 75% of the secondary GSDP. The state has seen very rapid industrialization which has been triggered by special government initiatives and incentives. The State of Uttarakhand has been pursuing manufacturing goals with determination and the same is visible in the schemes rolled out by them for the development of newer industrial, textile and food parks.





Contribution to Secondary Sector

Electricity, Gas, Water Supply & Other Utility Services

Manufacturing

However the concentration of the manufacturing industry is centered around 3 districts which host a majority of the large, small and medium scale industries, the state has been encouraging food processing and other compatible industries in the hills. Food Processing is one segment that has been earmarked for expansion in the hill districts.

2.3.2.1 Heavy Industries

As of 2017-18, a total of 272 heavy industries exist in Uttarakhand, employing 103681 skilled, semi-skilled and unskilled workers across different sectors. The table below shows a district wise spread of the heavy industries, which clearly highlights that the heavy industry is concentrated in Udham Singh Nagar and Haridwar, which has over 92% of these companies.

Table 3: Heavy Industries

Heavy Industries

District	Companies	Employment
Dehradun	16	4065
Haridwar	103	51948
Nainital	3	3469
Pauri Garhwal	2	763
Udham Singh Nagar	148	43436
Grand Total	272	103681

2.3.2.2 MSME

MSME are the backbone of industrial growth and employment in the state. The state has various support programs for skilling and credit support for the sector .

As per the current estimates a total of 51453 MSMEs operate in the state. Of the total, around 42% of these industries located in the districts in the plains. However there is representation of other districts with Pauri having a 10% + contribution to the list of MSMEs.

Table 4: Total MSMEs spread Across the Districts

TOTAL MSME			
District	Companies	Employees	
Almora	3623	11712	
Bageshwar	1633	94003	
Chamoli	3017	6649	
Champawat	1400	4209	
Dehradun	7806	51441	
Haridwar	6705	88331	
Nainital	3754	14751	
Pauri	5795	13596	
Pithoragarh	1729	4525.1	
Rudraprayag	1662	4373	
Tehri	4142	12069	
U.S Nagar	7070	99828	
Uttarkashi	3117	7663	
Total	51453	413151	

2.3.3 Teritiary Sector

With the implementation of GST, the importance of Tertiary sector has increased. The Tax revenue for the state has fallen due to the Uttarakhand being an exporting state; this has led to actual SGST revenues fall much below the VAT collection during the pre-GST era. As per the Economic Survey 2017-18, the fall in tax revenues in the comparative periods is to the tune of -34% in percentage terms over the pre-GST periods.

The Teritiary sector comprises of services and allied activities. The sector reached its peak

in the year 2010-11 and has since slipped to the second position in terms of contribution to the GSDP. In 2017-18, its contribution is expected to be at approximately 40%. Tourism is the mainstay of the tertiary sector and is also of prime importance to the state. It has recently been accorded the industry status, which is likely to give this sector an impetus in the near future. While Haridwar draws a majority of the tourists attracting 65% of the total tourist base, most other districts contribute to the overall tourism numbers. The chart below displays the number national and international tourists who have visited the state





Public Administration

Real Estate, Ownership of Dwelling & Professional Services

Financial Sevices

Transport, Storage, Communicatons & Services Related to Broadcasting

Trade, Repair, Hotels & Restaurants

Table 5: Tourist Footfalls - Domestic and Foreign

	DOMESTIC	INTERNATIONAL	TOTAL
2014	22520097	109948	22630045
2015	29295152	111094	29406246
2016	31663782	112799	31776581

Apart from Tourism, transport, IT & ITIs and BFSI are the other key sectors within the tertiary space

Conclusion

2.4 Conclusion

The state of Uttarakhand offers a diversity in terms of its social, economic and demographic profile. The state therefore depends both on its natural beauty and variety, as well as on its rapid industrialization. The state has introduced several financial incentives to develop its industrial base . The same has yielded strong results and the economy grew by 7% on an average in the recent past.

Despite the state's rapid industrialization, the growth has been limited to only three districts of the state. This dichotomy has led to the phenomenon of migration reaching a new level, creating a serious concern for the state

While the contribution of the primary sector has been declining consistently, the contribution from the other two sectors have remained similar in the past few years. However the tertiary sector has shown growth in the recent past, owing to efforts in the tourism sector

The sections below maps the demand, supply and gaps both at the state level and from the relevant SSCs perspective

SECTION 3: SUPPLY ANALYSIS

Supply Analysis

3.1 Labour Market

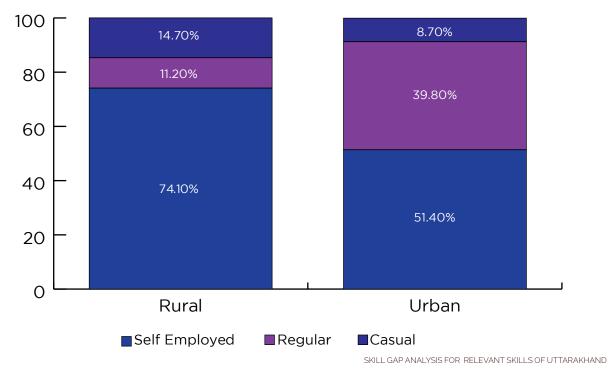
In 2011, the workforce participation in Uttarakhand was approximately 38%, which was slightly less than the national workforce participation at 40% .

Table No. 6 Ullarakhand Vis-a-Vis	s Indian Perspective	
ITEM	UTTARAKHAND	INDIA
I. Year	2011	2011
II. Population (in cr)	1.01	121.08
Male)	0.51 (0.82%)	62.33
Female	0.49 (0.83%)	58.76
Rural	0.70	83.37
Urban	0.30	37.71
III. Work Participation (in cr)	0.38	48.19
Male	0.25	33.19
Female	0.13	15.00
Rural	0.28	34.87
Urban	0.10	13.32

Table No. 6 Uttarakhand vis-à-vis Indian Perspective

As can be seen from the table below, the labour force is informal with dominant self-employment trends ,with regular wage labour forming a minority proportion

Figure No. 9: Labour Force Distribution - Regular, Casual, Self-Employed



The participation of women in the workforce has been low especially in the hilly districts. The state as per the UN guidelines, is working towards achieving the SDGs 1,5, 8 and 10 by 2030 and therefore needs to plan for a holistic development of skills and having a stronger participation of women in the workforce.

With high number of youth, India is well poised to take advantage of the demographic dividend in the coming decades. To fully harness the opportunity, the quality of skilling has to improve. As per the latest world bank report on skilling only 2.3 percent of India's workforce has received some formal skills training. To address the issue, skill development has emerged as a priority sector, and the recently-launched National Skill Development Mission aims to train approximately 400 million people across the country by 2022.

In view of the above, Uttarakhand also has to work towards the achievement of these larger objectives. Projected labour supply in Uttarakhand in the next five years is given in the table below:

Table No. 7 : Projected labour supply in Uttarakhand in the Next Five Years

	2011	2017	2022
Total Population	10086292	11,126,693	12,167,094
Labour Force available	3832791	5,007,012	6326889

Haridwar, Dehradun and Udham Singh Nagar, together provide for 52% of the working population. The Hill districts account for the rest of the 48% of the labour force. A tabular representation of the same is appended below:

Table No. 8 :District-wise Demographic Projections for Next Five Years

DISTRICT	2011	2017	2022
Almora	229,967	300,421	379,613
Bageshwar	114,984	150,210	189,807
Chamoli	153,312	200,280	253,076
Champawat	114,984	150,210	189,807
Dehradun	651,574	851,192	1,075,571
Garhwal	268,295	350,491	442,882
Haridwar	728,230	951,332	1,202,109
Nainital	344,951	450,631	569,420
Pithoragarh	191,640	250,351	316,344
Rudraprayag	76,656	100,140	126,538
Tehri Garhwal	229,967	300,421	379,613
Udham Singh Nagar	613,247	801,122	1,012,302
Uttarkashi	114,984	150,210	189,807
Total	3,832,791	5,007,012	6,326,889

3.2 Skilling

Like the entire nation, Uttarakhand too faces a challenge because of the paucity of highly trained workforce, despite high literacy rate. Therefore the development of the skills and sectors training in terms of access, quality and relevance of prime importance for the state. As per Census 2011, the literacy rate of Uttarakhand is 79.6%, this is higher than the national literacy rate. The state has been quite popular for its boarding schools and also provides for several popular technical institutions.

The table below summarizes the educational infrastructure in the state.

	NUMBER OF	NUMBER OF ENROLLMENTS
Primary Schools	19648	1678673
Secondary Schools	3663	696348
Polytechnics + Pharmacy	144	9913
Colleges	118	124134
Universities	12	127614
Industrial training institutes	151	10505

Table No. 9 :Educational Infrastructure of Uttarakhand

3.2.1 School education

Uttarakhand spends Rs. 33,000 per student per year on the primary education, which is the highest among the states of India. The state also boasts of high school completion rate especially at the primary level. This is reflective of the high priority education has in the lives of people.

3.2.2 Higher education

A total of 251748 students were enrolled in colleges and universities across the state at the end of 2017. The State has a large number of Government and Private Colleges. The State is an education destination for students from across the country.

3.2.3 Skill education

While the number of ITIs and polytechnics have grown rapidly, the capacity utilization within these institutions is still low. The same should be addressed quickly to gain more out of the existing infrastructure and support.

Table No. 10 :Capacity Utilizations of Institutions

INSTITUTION	CAPACITY UTILIZATION
ITIs	36%
Polytechnics and pharma	53%

Dehradun , Haridwar and Pauri lead in the number of institutions providing skill based training . Surprisingly Uddham Singh Nagar, a primary source of labour supply and demand, has a substantially lower number of institutions as compared to other industrial districts.

Table No. 11 : Polytechnics, ITIs and pharmacy

DISTRICT	ITIs	POLY+ PHARMA
Almora	2	8
Bageshwar	2	3
Chamoli	6	6
Champawat	3	5
Dehradun	29	28
Garhwal	11	22
Haridwar	48	8
Nainital	17	7
Pithoragarh	4	8
Rudraprayag	2	3
Tehri Garhwal	8	9
Udham Singh Nagar	15	11
Uttarkashi	4	6
Private		21
	151	144

Within the ITIs , the focus skill is around fitter and electrician on which 46% of the participants were trained.

In addition to this skill training is also provided by the following bodies across different districts in Uttarakhand:

Table No. 12: Skilling initiatives

	STUDENTS (ANNUAL)
PMKVY	12768
DIC	Numbers not available
DDU GKVY	
Hotel Management	449
Nursing	326
In house industrial training	Numbers not available

SECTION 4: DEMAND ANALYSIS

Demand Analysis

4.1 Sectorial Skill Council Approach

It would be important to note here that in keeping with the objectives of the study which has Skill Gap Analysis as the mainstay objective, we have adopted the relevant sectorial skills as per the NSQF framework for demand projections. It has helped us in keeping a sharp focus on the areas where the Skill Development Mission can earmark for interventions.

Further, during our interactions with industry experts, we had shared the Job Roles under relevant sector skill and asked for their views on the most pertinent ones. The demand data presented henceforth is a result of the adopted approach for the study.

4.2 Demand for Skilled Labour

The state of Uttarakhand has seen a sharp increase in industrialization in the recent past, which has led to a high demand of various job roles. As per our analysis the state, 17 SSCs are of higher relevance and will lead job creation for the state. An incremental human resource requirement of 3, 68,943 skilled manpower is expected within the next 5 years with respect to these key SSCs

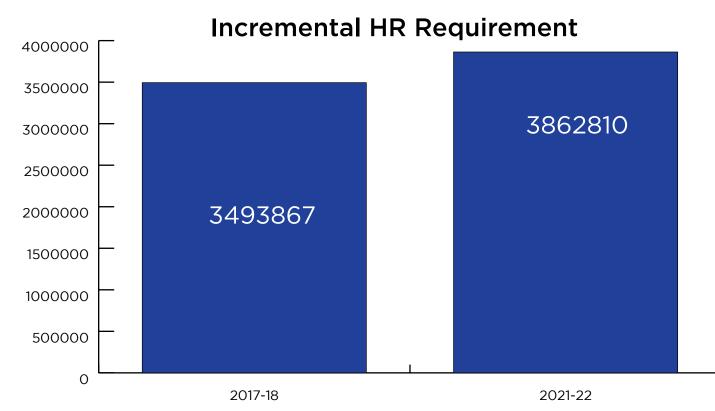


Figure No. 10 : Incremental HR Requirement (In Aggregates)

The SSCs currently require human resource to the tune of 3.49 million. These skills are spread across all the three sectors, namely, Primary, Secondary and Tertiary sectors. In the next five years the requirement is estimated to be 3.86 million.

Human Resources Estimation by the Sectoral Skill Councils

SSC	2017	2022
Agriculture Skill Council of India (ASCI)	2239460	2365438
Apparel made ups and home furnishing sector skills council	15991	16735
Automotive Skills Development Council (ASDC)	302393	389365
Beauty and wellness sector skills council	8598	9842
BFSI sectoral skill council	37512	49516
Capital Goods Sector Skill Council	101786	140077
Electronics Sector Skill Council of India	45985	63090
Food Industry Capacity and Skill Initiative	47195	69703
Furniture and fittings skills council	15416	16252
Handicraft & Carpets Sectoral skill council	88896	101416
Healthcare Sector skill Council	3994	5081
IT-ITeS Sector Skill Council	9670	13849
Life sciences sectoral skill development council	15816	25336
Retail Sector Skill Council	217749	227364
Rubber Skill Development Council	6346	12052
Textile Sector Skill Council	29317	39518
Tourism and hospitality Skill Council	307743	318175
TOTAL	3493867	3862810

In addition to these, three other SSC also have high requirements. However,

- i. On January 14, 2018, The government has disbanded the Security Sector Skill Development Council
 - a. Therefore despite significant requirement, the same could not be discussed in this report
- ii. The construction industry in Uttarakhand has been growing in an unorganized manner, wherein most of the labour is sourced from U.P, Bihar and Nepal with little or no supply within the state. Therefore the SSC is not included in this report
- iii. Similarly the Gems and Jewelery sector of the state also have a majority of workers from outside the state with little or no supply from within the state

SECTION 5: Current Skills SSC Perspective

5.1 Agriculture Sector Skills

Agriculture is the largest source of livelihood for the people of the State. At the time of Establishment of the State the Total Area under Cultivation was 7.70 Lac Hectare. This has reduced to 6.98 Lac Hectare as per the Economic Survey 2017-18. The Average Cultivation Unit for the state is 0.89 Hectare. However, despite the Shrinkage of the cultivated area the State is self-reliant in terms of Food Grain Production. The Agricultural Fields in the hills are mostly irrigated using natural streams and rains. Currently, 13 % of all cultivated area in the hills avail irrigation facilities. In the plains, 94% of all cultivated lands come under irrigation.

The Employment trends in the Agricultural Sector of the state are very diverse. The Total number of people directly employed by agriculture is around 22.39 Lacs. This is approximately 22% of the Total population of the State and 63% of the Total working population. One of the interesting features of the state is that the number of Women Farmers is more than men farmers. This phenomenon is largely attributed to the large scale migration of the men for better employment opportunities.

5.1.1 Need for Diversification

Due to Climatic Changes and frequent natural disasters the Income form Agriculture has become highly volatile. Hence, it would be prudent to encourage diversification in the field. The areas for diversification may include the following:

- Horticulture: The Farmers in the higher altitudes have been converting their fields into Fruits and Flower Orchids. However, the Agriculture Sector Skill Council does not have a Qualification Pack for any of the following:
 - Making Steps in the Hills for Farming
 - Apple Growing
 - * Floriculture Orchids
 - * Stream Irrigation technician for the hills
- **Dairy:** Dairy has huge potential for the state. The Certification of Badri Cow is a great achievement for the State. Dairy based products from the state owing to the growing consciousness of the benefits of the milk and gau mutra produced by indigenous varieties of our cows
- Bee Keeping;
- Sericulture
- Fisheries

Table No. 14 : Classification of Cultivators (2011)

	(Figs. in Lacs		
Agricultural Sector	Uttarakhand	India	
Cultivators (Main and Marginal)	15.8	1188.09	
Rural	15.58	1150.85	
Urban	0.22	37.24	
Agricultural Labour (Main and Marginal)	4.03	1443.33	
Rural	3.72	1369.98	
Urban	0.3	73.35	
Mate Cultivators (Main and Marginal)	7.35	827.62	
Rural	7.21	798.95	
Urban	0.14	28.67	
Female Cultivators (Man and Marginal)	8.45	360.45	
Rural	8.38	351.89	
Urban	0.07	8.56	

Table No. 15: Area, Population and Work Participation Rate in Uttarakhand and India 2011

		(K IN Crs)
Item	Uttarakhand	India
I. Area	2011	2011
11. Total Area ('OOO Sq. Km)	53	3287
	-1.61%	(100%)
III. Population	1.01	121.08
Male)	0.51(0.82%)	62.33
Female	0.49 (0.83%)	58.76
Rural	0.70	83.37
Urban	0.30	37.71
IV. Work Participation	0.38	48.19
Male	0.25	33.19
Female	0.13	15.00
Rural	0.28	34.87
Urban	0.10	13.32

Employment spread in the sector is almost consistent, despite migration and low income of the farming communities, the expected employment growth will remain at (5.63%). Most of the Farmers working on various other jobs do return to their villages for the sowing and harvesting seasons. Further the status of women as farmers is fairly established which has kept the agricultural practices secure in the hills. The districts in the plains have more than 95% coverage of irrigation and high level of mechanization. Hence, robust growth of agricultural sector is evident.

Table 16 : Agriculture SSC: 5 years perspective

Agriculture			Trained Reso	urces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	225588	223769	45	
Bageshwar	97647	99561		
Chamoli	130321	133376		
Champawat	71605	75658		
Dehradun	142503	158674	2	
Haridwar	261061	291503	20	
Nainital	210126	229228	0	
Pauri	164513	163186		
Pithoragarh	152836	155833		
Rudraprayag	88819	90217		
Tehri	197937	199508		
Udham Singh Nagar	362686	404978		
Uttarkashi	133818	139947		
Total	2239460	2365438	67	149
5.63%	Expected Growth	125978		216

5.1.2 Skill Gap & Recommendations

The Sector has the highest number of unskilled resources, which is a known fact, yet alarming, thus poses a huge area of skilling in innovative ways and techniques of farming and irrigation, to improve yield and save time. Despite having so much focus on agriculture, there are negligible training and Courses for Agriculture.

As per the 2016-17 data, 216 students have been trained on various agriculture skills by the ITIs and PMKVY. As per our projections, 23.65 lakh people will draw their livelihood from agricultural and allied activities by 2022. Further, we expect an incremental demand of 1.26 lakh persons for the period spanning from 2017-18 till 2021-22.

The major growth can be expected to come from agricultural and allied activities like, Dairy, fishery, Horticulture, Floriculture, etc. At this juncture, it is important to highlight the potential of promoting the growing and farming of medicinal plants especially in the higher regions of the Himalayas. The market demand for these products have been swelling and has the potential for high growth.

Similarly, Bamboo and ringal cultivation have huge potential in the state. However, more of non-forest area has to be brought under bamboo and ringal cultivation to commercially exploit the opportunity. The current bouquet of products made from bamboo and ringal may not be support the transition until better products with utilities are not innovated.

Two major areas of concern are irrigation and mechanization of agriculture in the hills. We propose the following two job roles unique to the state of Uttarakhand:

Job Category	Job Roles
Field Preparation	Making Step - Farms in Hilly Terrain
Irrigation Technician	Making Irrigation Canals in Hills

5.2 Apparels Made-up & Home Furnishing Sector Skills

Apparels Made-ups & Home Furnishing Sector holds a lot of promise for the state. The Manufacturing sector of the state is dominated largely by small tailor and boutique owners. However, manufacturing has also made its presence felt in the state. The manufacturing can be typically divided into three categories in the state, namely,

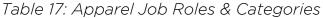
- Readymade Garments
- Hosiery Garments
- Woolen Clothing

Readymade and Hosiery Garments are typically manufactured in small, medium and large manufacturing formats. Most of these companies have made their bases in the plains like the industrial districts of Dehradun, Haridwar and Udham Singh Nagar. The prominent names of this industry which have made Uttarakhand their base for manufacturing are:

- Liliput Kidswear
- Numero Uno Clothing
- Shri Ram Garments & Accessory
- Body Care International

5.2.1 Apparels Industry Current Status

As per our estimates nearly 16000 people are employed by this sector currently. The employment in the sector is available across all districts. However, since the plains have a higher concentration of the population and presence of manufacturing units the number of skilled workforce is higher. The available job roles in the sector are as follows:



Job Categories	Job Roles
Small Format, Boutique, Tailors, Embroiderer	Hand Embroiderer
Small Format, Boutique, Tailors, Embroiderer	Hand Embroiderer (Addawala)
Small Format, Boutique, Tailors, Embroiderer	Self Employed Woman-Tailoring
Small Format, Boutique, Tailors, Embroiderer	Sewing Machine Operator
Small Format, Boutique, Tailors, Embroiderer	Sewing Machine Operator-Knits
Small Format, Boutique, Tailors, Embroiderer	Specialized Sewing Machine Operator
Small Format, Boutique, Tailors, Embroiderer	Fashion Designer

The demand for Indian Apparel & Furnishing is growing in domestic and International circuits, and all industrial sectors acknowledge the fact, yet with the advent of technology the employment of human resource is not high, and the neighboring states have captured the market quite well. We expect the employment in the sector to grow by 4.65% till 2022. While the skilling training level is higher than the incremental demand, training needs to be provided across the districts and not limited to few

Apparel & Furnishing		Trained Resou	rces (2016-17)	
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	459	473	0	
Bageshwar	280	288		
Chamoli	709	730	2	
Champawat	394	406	0	
Dehradun	5075	5229	38	
Haridwar	2093	2268	17	
Nainital	463	477	0	
Pauri	1148	1183	28	
Pithoragarh	648	785	6	
Rudraprayag	642	661	0	
Tehri	2799	2884	24	
Udham Singh Nagar		11	34	
Uttarkashi	1281	1339	19	
Total	15991	16735	168	1050
4.65	Expected Growth	744	12	.18

Table 18: Apparel & Furnishing: Projected Employment and Training Apparatus

5.2.2 Skill Gap & Recommendations

Training penetration in Nainital, Rudraprayag, champawat, bageshwar and Almora is negligible in this sector, thus need for centers and focus in these, while the expected growth locally is marginal the sector has significant demand and growth in the national market, therefore the growth prospects are multi-fold.

Integration of local art froms in Apparel and made ups will be beneficial to both the handicrafts as well as the Apparel sector. Therefore courses on local art form in terms of training could be looked at.

• We recommend that the State Institute a Scholarship for Students of Uttarakhand who are selected in premier Fashion and Design Institutes of India. They should be asked to take up some art form of the state and experiment to make it relevant as per the currents trends and markets. This would thereby encourage innovation and development of the Arts.

5.3 Automotive Sector Skills

The Automotive Sector Skills broadly come under manufacturing and service domains.

Manufacturing domain

Most of the large automotive companies have chosen Uttarakhand as their manufacturing base, owing to the following factors:

- Availability of Land for expansion
- Perennial Water Supply available throughout the year
- Uninterrupted Electricity 24X7
- Very Conducive Automotive Promotion of the State

The Manufacturing domain has a very strong presence in the state. Some of the major companies in the state are:

- Tata Motors
- Mahindra and Mahindra
- Ashok Leyland
- Hero Motocorp
- Bajaj Auto

Service Domain

However, the most important livelihood option created by the Automotive sector skills is Drivers for vehicles. There are many categories of commercial vehicles which ply on the roads and almost all categories are witnessing moderate to robust growth in the last decade. These trends have led to a very strong demand for Commercial Drivers.

5.3.1 Automotive Sector Skills Current Status

Manufacturing Domain

The sector currently employs around 51753 people primarily in the districts of Haridwar and Udham Singh Nagar. During our interactions with industry experts, they informed that a lot of skilling initiatives have been taken up by the entities themselves to provide for the manpower requirements. These students are provided with a stipend for the training period. Further on completion the factory manager and existing employees select the students that can be put on the apprenticeship program. The students who are not placed are given a certificate clearly stating the skills that they have been trained on and recommendation letters are provided to help them get employment in similar industries in their area.

Service Domain

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The Drivers are essentially trained by Driving Schools dotting the State. They also help them get commercial licenses to pursue their livelihoods. The Skills assumes higher importance for the state of Uttarakhand owing to the extreme terrain of the himalayas and the remote human settlements that have to be connected. The drivers are the lifelines of the state as no other means of access are available. The Transport Commissioner's Report on vehicles for

the period ending 2015-16, suggests that approximately 2.15 lakh commercial vehicles are plying on the streets of Uttarakhand. Commercial drivers are estimated to be around 2.50 lakh, which is expected to increase to 3.35 Lakh by 2021-22

Job Categories	Job Roles
Manufacturing	CNC Operator/ Machining Technician
Manufacturing	Plastic Moulding Operator/Technician
Manufacturing	WeldIng Technician
Manufacturing	Automotive Painting Technician
Manufacturing	Auto Body Technician
Manufacturing	Automotive Electrician
Automotive - Driving/Services	Taxi Driver
Sales and Services	Service Advisor
Sales and Services	Service Technician 2 Wheeler
Automotive - Driving/Service	Commercial Vehicle Driver Level 4
Automotive - Driving/Service	Light Motor Vehicle Driver Level 3
Automotive - Driving/Service	Taxi Driver
Automotive - Driving/Service	Chauffeur / Taxi Driver
Automotive - Driving/Service	Auto / E-Rickshaw Driver & Service Technician
Automotive - Driving/Service	Ambulance Driver
Automotive - Driving/Service	Auto Rickshaw Driver
Automotive - Driving/Service	Fortklift/Construction Equipment Operators

Table 19: Automotive Job Categories & Job Roles

Automotive sector is one of the most automated field, yet with the growing domestic and international demand, the employment growth in the sector is quite promising (22.3%), the ancillaries and motor parts segment contributes highly in this sector and thus created a huge demand for manpower. A large amount of demand in this sector have been met in house by the companies. With Additional trained personnel from National Training Institutes, the potential gap between demand and supply will be halved

Automotive		Trained Resour	rces (2016-17)	
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	2419	3181	20	
Bageshwar	1988	2605		
Chamoli	2294	3035	19	
Champawat	2176	2822	19	
Dehradun	21487	27994	61	
Haridwar	66914	86116	58	
Nainital	3604	4736	16	
Pauri	3280	4284	60	
Pithoragarh	1560	2058	41	

Table 20: Automotive Employment & Training

2632	3466		
4154	5535	19	
187330	240165	43	
2555	3367	0	
302393	389365	356	240
Expected	86972		596
	4154 187330 2555 302393	4154 5535 187330 240165 2555 3367 302393 389365 Expected 86972	415455351918733024016543255533670302393389365356Expected86972

5.3.2 Skill Gap & Recommendations

Manufacturing Domain

Automobiles is one of the promising sectors of the country. It requires specialized knowledge because of high precision and risks involved. To achieve the aforesaid most of the automobile companies use highly automated assembly lines and trained staff. These Automated Machines are very expensive and work in conjunction to other such machines. Hence, the cost of setting up these machines for training of manpower is not feasible and highly expensive. To address the manpower needs of operate these machines, most companies conducts in-house trainings for filling up vacancies.

Owing to the specialized nature of the industry, variety of skills and the internal training mechanisms, the training institutions should work closely with the industry with annual requirement targets in order to avoid overlaps in any form .

Automotive Sector Skill Council is closely related to Electronics Sector Skill Council and Rubber Skill Development Council. A similar approach should also be looked at with respect to these related SSCs, in order to optimize the training output.

The wages for operating these machines are healthy and provide long term employment and career progression for the skilled manpower engaged. This presents a great opportunity for the PMKVY to flourish and create value for the youth of Uttarakhand.

Service Domain

The Driving Schools are the primary source of organised training for commercial drivers in the state. They also train on towing & break-down drills for vehicles. As discussed, the roads are the primary means of connectivity in the state hence drivers are very important for the state. The Training Curriculum for the state should involve the following NOSs as well:

- Mountain Driving including driving through forests without disturbing the wildlife;
- Navigating through Snow tracks and water streams;
- Rescue drills in case of fall of vehicles into Mountain Slopes, Gorges, etc;
- Survival Techniques for both climate and medical emergencies;

5.4 Banking and Financial Sector Skills

The Banking and Financial Services are the backbone for all financial and social security initiative. These are being regarded at par with other essential services like health and education. Most of the Government Schemes like LPG Subsidy, MNREGA, Student Scholarships, etc., Today operate on Direct Benefit Transfer (DBT) of Subsidies to the beneficiaries through the Banking System.

Financial Credit Coverage can be easily expanded to include businesses, Farmers, Students, etc. The Banking Records are today being used to provide Crop Insurance also to the Farmers. Hence the importance of the sector cannot be over emphasized in view of the aforesaid utilities.

5.4.1 Banking and Financial Sector Current Status

Uttarakhand has the presence of all the major banking companies and a large number of Cooperative Banks.

Type of Banks	Type of Branches	No. Of Branches
Lead Banks	Rural	473
	Semi- Rural	150
	Urban	184
Non-lead Banks	Rural	205
	Semi- Rural	271
	Urban	225
Cooperative Banks	Rural	156
	Semi- Rural	67
	Urban	53
RRB Banks	Rural	230
	Semi- Rural	43
Private Banks	Urban	14
	Rural	49
	Semi- Rural	80
	Urban	90

Table 21: The Current Status of Bank Branches

Banking, Finance and Insurance is one of the most fastest growing sector and contributes highly in the economy of the country, and have witnessed positive employment in the sector, employing over 37512 resources in the state, with a significant growth prospects (32%)

BFSI		Trained Resou	urces (2016-17)	
Districts	2017 (Current)	2022(Future)	ITI	ΡΜΚΥΥ
Almora	2904	3833	42	
Bageshwar	973	1284	0	
Chamoli	1616	2133	26	
Champawat	1052	1389		
Dehradun	8282	10932	118	
Haridwar	4237	5593	93	
Nainital	4099	5411	36	
Pauri	3107	4101	70	
Pithoragarh	1866	2464	23	
Rudraprayag	872	1151	0	
Tehri	2247	2966	52	
Udham Singh Nagar	5273	6960	104	
Uttarkashi	983	1298	0	
Total	37512	49516	564	425
32	Expected Growth	12004	989	

5.4.2 Skill Gap & Recommendation

The Sectors requires skilled resources, ready to be deployed in office and fields. The available training data indicate week preparedness to meet the growing demand. The data for districts of Bageshwar, Champawat, Rudraprayag and Uttarkashi; show very low availability of skilled manpower. As per our projections, there is a need of more than 12004 resources in the upcoming 5 years. The skill council will play a vital role as a medium to meet the requirement. However at the current pace of training a skill gap of 7000 practitioners will emerge by 2022.

5.5 Beauty & Wellness Sector Skills

The requirement for personal hygiene and grooming has been a universal requirement since the time immemorial. However, the interest in personal grooming has increased among both for men and women after the expansion of social media. This trend has led to rapid growth in the beauty and wellness industry. The potential to generate employment for both male and female workers is also very high. Since the requirement of these services is directly proportional to the population, the skilled people have requirements across the state. However, the concentration of manpower would appear to be higher in the cities.

The recent employment trends in the sector have been changing with the advent of branded salons and gyms. The Large format retail stores have also taken to beauty and wellness products in a big way. Some of the big brands that have made their presence felt in Uttarakhand are:

- VLCC
- Jawed Habib
- Gitanjali
- Lakme
- Naturals

5.5.1 Beauty & Wellness Current Status

As per the Sectorial Growth Study estimates done by KPMG, the sector has been seeing a CAGR growth of 18.6%. The Spa Association of India estimates that the spa industry is currently valued at around Rs. 11,000 crores and will continue to grow at a fast pace. It is estimated that the salon and spa business together account for 31 per cent of the total size of the beauty and wellness market. Similarly, According to media reports, the estimated value of yoga industry globally is at around \$80 billion.

It is interesting to note here that the services have been expanding both in depth and spread wise. The job roles have also been changing with the rising aspirations of the Millennial. Some commonly found job roles in the sector are:

Job Categories	Job Roles
Beauty and Salons	Barber
Beauty and Salons	Hair Stylist Final
Beauty and Salons	Beauty Therapist
Beauty and Salons	Pedicure and Manicure
Beauty and Salons	Tattoo Artist
Beauty and Salons	Mehendi Specialist
Beauty and Salons	Beauty and Salons Bridal Fashion And Photographic
Beauty and Salons	Colorist
Rejuvanation	Spa Therapist

Table 22: Beauty & Wellness Sector Job Catagories and Job Roles

Wellness	Wellness Neurotherapist
Fitness & Slimming	Nail Technician
Fitness & Slimming	Fitness Services Trainer
Fitness & Slimming	Gym Assistant
Fitness & Slimming	Personal Trainer
Alternate Therapy	Aromatherapist
Alternate Therapy	Senior Yoga Teacher
Alternate Therapy	Yoga Instructor
Alternate Therapy	Yoga Teacher

Uttarakhand is popularly branded as Dev Bhoomi by the Tourism Sector. Wellness tourism which includes Yoga and Ayurveda Sojourns are the fastest growing segments. Currently, Ananda and Patanjali are driving the Yoga and Ayurveda sector in the state. Their are many job roles that are emerging to support the growing demand for these services.

As per our estimates, around 8500 people are earning a livelihood by providing services to the sector based on published data. We expect that by 2022, around 10000 will be employed by the sector. We would like to bring to the attention of the reader that various claims have been made by media reports about the current count of Yoga Practitioners in the state. For the purposes of this report we have relied upon the YOGA ALLIANCE INTERNATIONAL and other established bodies estimate.

Beauty & Wellness		Trained Resources (2016-17)		
Districts	2017 (Current)	2022(Future)	ITI	ΡΜΚΥΥ
Almora	452	447		
Bageshwar	197	202		
Chamoli	301	310		
Champawat	210	224		
Dehradun	1503	1711	20	
Haridwar	1884	2572		
Nainital	815	906		
Pauri	501	496		
Pithoragarh	372	381		
Rudraprayag	178	181		
Tehri	461	466		
Udham Singh Nagar	264	1667		
Uttarkashi	1460	279		
Total	8598	9842	20	1248
14.47	Expected Growth	1244	1268	

Table 23 : Beauty & Wellness Employed Resources

5.5.2 Skill Gap & Recommendations

Most of the companies in the sector are offering on the job training, however this offers a great opportunity for PMKVY and DDU GKVY schemes to train resources for this sector. The Beauty & wellness Sectors are human intensive and will continue to required skilled individuals. A good numbers of non government organizations are also training individuals for various job roles in the sector.

Yoga and Ayurveda are two fields which are perceptually dominated by the state. However, the practitioners for the same have come from India and Abroad, with marginal participation from the state. This is a concern area that needs to be addressed urgently.

5.6 Capital Goods Sector Skills

Capital Goods sector has been one of the drivers of industrial growth in Uttarakhand. For the Purposes of our study we have include the following industries under capital goods.

- Machine Tools
- Metal Fabrication
- Packaging
- Chemicals
- Large FMCG companies manufacturing using heavy Machinery

If we look for broader trends, The Manufacturing activities have been limited to the three districts of Deharadun, Haridwar and Udham Singh Nagar. In the rest of the hill districts we witnessed a lot of metal sheet fabrication work happening at micro level.

5.6.1 The Current Status of Capital Goods

Job Roles

The Capital Goods sector is dependent upon machine manufacturing. We have extensively discussed with industry experts about the job roles it creates. Mostly the Experts have agreed on the following distribution for Manufacturing :-

SR. NO	JOB ROLE	COMPOSITION (IN% OF TOTAL WORKFORCE
1	Welders (Including SMAW, FCAW, MIG, GTAW)	15-20%
2	Fitters	15-20%
3	Machine operator (Including CNC Machine Operator and Programmer)	10%
4	Painters (Metal Spray, Machine & Manual)	5%
5	Semi-Skilled/Unskilled Workers	55%

In the Small and Micro Organization we found the following Distribution:

Table No 25: Capital Goods Job Catagories & Job Roles (Micro & Small)

SR. NO	JOB ROLE	COMPOSITION (IN% OF TOTAL WORKFORCE
1	Sheet Metal Worker - Hand Tools and manually operated machines	25%
2	Service Engineer – Installation & Break Down	25%
3	Tool and Die Maker	5%
4	Grinder Hand tools Hand-held Power Tools	10%
5	Semi-Skilled/Unskilled	35%

The capital goods sector acts as the lifeline to multiple industries and sectors and thus one of the highly growing sectors, and is expected to need 38000 plus resources in the next 5 years (37.62% employment growth opportunity), to be able to grow from 1 lac to 1.4 lacs plus resources by 2022.

	Capital Goods		Trained Reso	urces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	425	443	45	
Bageshwar	222	270		
Chamoli	225	234		
Champawat	404	422		
Dehradun	8227	12467	2	
Haridwar	41003	52007	20	
Nainital	4761	6722	0	
Pauri	2063	4572		
Pithoragarh	535	629		
Rudraprayag	412	424		
Tehri	997	1811		
Udham Singh Nagar	42175	59728		
Uttarkashi	337	347		
Total	101786	140077	67	99
37.62	Expected Growth	38291	166	

Table 26: Capital Goods Employed and Trained Manpower Status

5.6.2 Skill Gap & Recommendations

The Industry respondents have recommended the following: The big four skills that have robust demand are

- Welders
- Fitters
- Machine Operators
- Painters

The Industry is moving very swiftly towards Automation and Computer Integrated Manufacturing (CIM). In future, Programming of integrated manufacturing processes will have much larger demand as automation and robotics will clearly take over the structured jobs.

The Cost of Setting up Training centers will go up many times owing to the cost of machines like CNC, DNC, VMC, etc. Hence it would be prudent to partner with existing manufacturing units in the state and train them under apprenticeship programs.

The Cost of Training the youth has to be shared with the government. Further, allow the training cost to be included as a valid CSR expenditure for the participating organisations.

5.7 Electronics Sector Skills

Electronics has been a flagship sector for Manufacturing in Uttarakhand. Major players from wiring & cables and Consumer Electronics have set up manufacturing facilities in the state. An Indicative list of companies present in Uttarakhand is given below:

- Finolex Wires and Cables
- Finolex
- Havells Consumer Electronics
- Phoenix Lights
- Birla Yamaha
- Anchor Electronics
- Surya Roshni

The companies produce a variety of electronics products from their manufacturing facilities in the state. There is a considerable traction in the industry owing to the buoyant consumer demand for these products. Their strong presence of Auto Ancillary companies as well that focus on production of wires and wire mesh for automobiles.

5.7.1 Electronics Industry Current Status

Currently, the sector provides direct employment to around 46000 people. The manufacturing base for most of these set ups are in the districts of Haridwar, Dehradun and Udham Singh Nagar. There is a considerable number of Consumer Electronics repair professionals spread cross in the state in the hilly sector. One area of special interest is the manufacturing and Installation of Solar & LEDs & CCTV circuits that are being manufactured by small and medium sized enterprises as well. The most common Job Roles in the sector are:

JOB CATAGORIES	JOB ROLES
Consumer Electronics & IT Hardware	Field Technician – Networking and Storage
Consumer Electronics & IT Hardware	Field Technician - Computing and Peripherals
Consumer Electronics & IT Hardware	Field Technician – Other Home Appliances
Consumer Electronics & IT Hardware	Mobile Phone Hardware Repair Technician
Consumer Electronics & IT Hardware	DTH Set Top Box Installation & Service Technician
Consumer Electronics & IT Hardware	Data Networking and Cable Technician
Consumer Electronics & IT Hardware	Field Engineer -RACW
Consumer Electronics & IT Hardware	Domestic Electrician
Industrial Automation	Electrical Technician
Industrial Automation	Mechanical Fitter
Industrial Automation	Field Technician – UPS and Inverter
Industrial Automation	Wireman – Control Panel

Table No- 27 Electronics Sector Job Catagories and Job Roles

The training institutes have been training resources consistently through the state, however that contributes not even 1 % of the current employed count

Electronics			Trained Reso	urces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	5350	5519	74	
Bageshwar	234	241	15	
Chamoli	220	227	55	
Champawat	196	202	61	
Dehradun	5360	5576	531	
Haridwar	18732	31575	111	
Nainital	816	2329	1283	
Pauri	2438	2512	265	
Pithoragarh	327	337	68	
Rudraprayag	285	294	39	
Tehri	638	666	97	
Udham Singh Nagar	10994	13206	176	
Uttarkashi	395	407	41	
Total	45985	63090	2816	568
37.20	Expected Growth	17105	3384	

Table 28 : Electronics Sector Employed and Trained Manpower Status

5.7.2 Skill Gap & Recommendations

There is a huge demand in the sector, with more than 17000 resources needed in the next 5 years, and requires exponential supply from the training institutes. Extensive discussion with industry practitioners has yielded the following recommendations for the sector:

- The Major demand for skilled manpower is going to be driven by Installation and Service Technicians. The Electrical Infrastructure is growing rapidly across the country at 24.4% annual CAGR. This expansion is happening because of the growth in Infrastructure and Energy sector.
- The Manufacturing of Electrical Equipment is moving very swiftly towards Automation and Computer Integrated Manufacturing (CIM). In future, Programming of integrated manufacturing processes will have much larger demand as automation and robotics will clearly take over the structured jobs.
- The Cost of Setting up Training centers will go up many times owing to the cost of machines like CNC, DNC, VMC, etc. Hence it would be prudent to partner with existing manufacturing units in the state and train them under apprenticeship programs.
- The Cost of Training the youth has to be shared with the government. Further, allow the training cost to be included as a valid CSR expenditure for the participating organisations.

5.8 Food Processing Sector Skills

The Food Industry holds the best promises for a bright future in Uttarakhand. The State has a great edge in the field of food processing, namely,

- Presence of a wide variety of fruits & Vegetables that are grown at low and high altitudes.
- Availability of perennial streams that makes water available for food processing.
- Proximity to large and high consumption markets of the Gangetic plans like Delhi, Chandigarh, Kanpur, up till Kolkata.
- Packaging and Cold Chain Technologies available in the State to support Food Processing
- Government through various schemes have been encouraging Food Processing industry.

5.8.1 Food Processing Sector Current Status

- Approximately, 8500 units are operating in the food processing industry in Uttarakhand.
- They employ close to 47,000 people across the various districts. However, the major centres for the industry are Naintal, Almora, Haridwar and Udham Singh Nagar
- The Industry is expected to grow at around 6% annually.
- Currently, the major activites undertaken by the Industry are as follows:

Activities	Regions	Job Roles
Bakery Products and Biscuits	Majority in Dehradun; Across Uttarakhand as well	Mixing TechnicianPlant Biscuit Production Specialist
Dairy Products- Ghee, Curd and Paneer Manufacturing	Across Uttarakhand	 Dairy Products Processor Dairy Processing Equipment operator Butter and Ghee Processing operator Ice Cream Processing Technician Cottage cheese Maker
Frozen Fruits & Vegetables	Nainital, U.S.Nagar, Haridhwar	 Fruits Ripening Technician Fruits and Vegetables Drying/Dehydration Technician Fruits and Vegetables Canning Technician Fruits and Vegetables Selection IN-Change
Milling and Grinding-Grain and Masala	Across Uttarakhand	 Milling Technician Grain Mill Operator - including Pulses processing Traditional Snack and Savoury Maker
Namkeen	Across Uttarakhand	Convenience Food Maker
Aachar Making	Across Uttarakhand	Pickle Making Technician

Table No-29 : Food Processing Sector Job Catagories & Job Roles

Juices and Squash Making	Across Uttarakhand	•	Squash and Juice Processing Technician Jam,Jelly and Ketchup Processing Technician
e quaerri laning		•	Food Products Packaging Technician Modified Atmosphere Storage Technician

The strongest growth sector for the state with expected employment growth of 47.69%, requires more than 22500 more resources in the next 5 years.

Fc	ood Processing		Trained Reso	urces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	1224	1375		
Bageshwar	763	797		
Chamoli	1114	1149		
Champawat	1427	1739		
Dehradun	3711	4171	82	
Haridwar	10954	12840		
Nainital	2546	4314		
Pauri	2165	2838		
Pithoragarh	987	1200		
Rudraprayag	921	951		
Tehri	2047	5824		
Udham Singh Nagar	18395	31178		
Uttarkashi	941	1326		
Total	47195	69703	82	358
47.69	Expected Growth	22508	440	

Table No. 30.Food Processing Employed and Trained Manpower Status

5.8.2 Skill Gap & Recommendations

- The Industry Practitioners want the government to take initiatives in promote the fruits and fruit based products which grow naturally in the State like Kilmore, Hisalu, Bedu, etc. Currently, the initiatives have been to promote fruits like pomegranate, kiwi, apple, etc., which require more cost of production and they compete with other farmers in the plains.
- There has to be thrust on Fragrances & Flavors market which is unique to the Himalayas. Their is an urgent need to set - up Research and Development initiatives to develop products. These products will then become the growth drivers of the Food Processing sector of the state.
- There is an urgent need to establish Cold Chains to keep the produce fresh till it reaches the table of the customer.
- The Medicinal Supplements is a rapidly expanding market and Uttarakhand can be a major player if it is able to create non-prescriptive wellness products.

5.9 Furniture and Fittings Skills

Furniture and Fittings is an important sector for Uttarakhand. One of the major trades for the state has been timber. This is a major component in construction industry as most of the window and door panels are made up of wood. Further, the furniture is also a perennial sector where the demand may vary seasonally but accords an opportunity for decent livelihood. During our research we found a large number of Badhai Workers operating out of most of the small towns and cities spread across the State. It would be of interest to note that traditionally houses in Uttarakhand were made up of wood. A detailed discussion has been done in the traditional skill segment under Koti-Banal architecture, under traditional skills.

However, with the popularization of plywood, the nature of skills has changed greatly. Our interviews with building contractors informed that most of the wooden panels are being installed by carpenters from the plains. There is a potential demand for skilling owing to the growth in the construction sector.

Further the furniture segment has also been changing a lot owing to the change into cushion sofas. Nowadays, sofa frames are coming to the state from manufacturing hubs of Saharanpur and other adjoining areas and only the cushions are being fixed in the state. The large branded furniture stores have also started entering the market in the state. Some of the popular stores in the state are:

- EVOK
- Zuari
- Style Spa
- Lifestyle Stores
- Godrej Interio

Apart from the above, online furniture stores like pepperfry and Urban Ladder are also delivering furniture at the doorsteps.

5.9.1 Furniture and Fittings Current Status

As per The Sector Skill Council report the Sector is growing at 12% CAGR. Further, with the coming of branded stores and online stores the wages are bound to increase for the workers who were living at subsistence levels. The common job roles in the sector are:

JOB CATEGORY	JOB ROLES
Carpentry	Carpenter Wooden Furniture
Carpentry	Sofa maker
Cane and Bamboo Furniture	Cane Seat Weaver
Cane and Bamboo Furniture	Lead Furniture Maker (Bamboo)
Modular Furniture	Assembler-Modular Furniture
Modular Furniture	Fitter- Modular Furniture
Modular Furniture	Cabinet Maker-Modular Furniture-Kitchen
Interior Designer	Lead Interior Designer

Table No-31 : Furniture and Fittings Job Catagories and Job Roles

With the growing economy and demand, carpenter and modular furniture and furnishing is growing rapidly, the sectors sees a modest employment growth of over 5.4% in the next 5 years

Fu	Irniture & Fitting		Trained Re	esources (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	496	511		
Bageshwar	223	230		
Chamoli	601	619		
Champawat	224	259		
Dehradun	2763	2847	16	
Haridwar	3381	3483		
Nainital	1313	1380	О	
Pauri	996	1109	О	
Pithoragarh	308	526		
Rudraprayag	741	763		
Tehri	1532	1578		
Udham Singh Nagar	1088	1143		
Uttarkashi	1750	1803		
Total	15416	16252	16	90
5.4	Expected Growth	836	106	

Table 32: Furniture and Fittings Employed and Trained Manpower Status

5.9.2 Skill Gap & Recommendations

The Furniture and Fittings Sector Skills are required by the state, however, the nature of skills have changed over the years. The current trends of the furniture industry are towards functionality and compactness in the urban settings. Further, with particle boards, ply-woods, etc. coming into the vogue, the traditional knowledge has been rendered redundant. A complete re-skilling program is required to engage the existing workforce to adopt the new styles and materials. Further, Modular Furniture concepts have to be introduced in the existing craftsmen.

5.10 Handicrafts and Carpets Skills

Handicrafts and carpets are traditionally among the strongest sectors of the state. The Handicrafts segments would include the following line of productions manufacture in the state:

- Agarbatti
- Bamboo artefact and Bamboo Furniture
- Glassware
- Ceramics
- Carpets Tuffted
- Carpets Handloom
- Paper Mache
- Crochet
- Metal Works
- Stone ware

A wide variety of skills fall under this sector. Most of the discussion regarding the traditional skills has been undertaken under the previous segment. Carpets is one particular area where apart from the handloom skills the tufted carpets are also manufactured. Some of the Manufacturers present in Uttarakhand are

- Sharda Exports
- Unity industries
- Obeetee Textiles

5.10.1 Handicrafts and Carpets Current Status

We have extensively discussed the current status of the Handicrafts and Carpets in the previous segments hence we intend to limit the current discussion to avoid repetition. However, the most common job roles for tufted carpets would be:

· · · · · · · · · · · · · · · · · · ·			
JOB CATEGORY	JOB ROLE		
Carpet - Tuffted	Color cut & Carpet repairer (Rang Katawaala)		
Carpet - Tuffted	Merchandiser		
Carpet - Tuffted	Tufting Gun Master		
Carpet - Tuffted	Finisher		
Carpet - Tuffted	Designer & Sketcher		

Table No-33: Handicrafts & Carpets Job Catagories and Job Roles

Biggest traditional segment and window to exhibit states cultural heritage, expected to provide employment to 12000 plus resources in the next 5 years

Handicrafts			Trained Resource	ces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	ΡΜΚΥΥ
Almora	3010	3564		
Bageshwar	7095	8248		
Chamoli	2879	3113		
Champawat	2504	2876		
Dehradun	17385	19881		
Haridwar	1915	2083		
Nainital	16477	18810		
Pauri	9391	10594		
Pithoragarh	5885	7113		
Rudraprayag	1946	2193		
Tehri	2219	2525		
Udham Singh	14670	16505		
Nagar				
Uttarkashi	3520	3911		
Total	88896	101416	0	0
11.58	Expected Growth	12520	0	

Table No 34: Handicrafts & Carpets Employed and Trained Manpower Status

5.10.2 Skill Gap & Recommendation:

- The Handicrafts of the State need Branding support from the government. Currently, all the Himalayan traditions are competing against each other rather then expanding the market.
- Credit Support for artisans is required urgently to help them with working capital requirements to pursue their markets.
- The Training Cost of Students has to be borne by the government including raw material costs.
- Lastly, a State Scholarship Program should be initiated by the government in NIFTs, NIDs, etc., for students willing to learn and experiment with the Handicrafts of Uttarakhand.

5.11 Heath Sector Skill Council

Health and wellbeing is among the primary Sectors in the Country. Currently the Sectorial Spending of The State is primarily responsible for providing universal access, affordable and reliable health care facilities to the people. The existing infrastructure of the Government Health Services is provided below:

	Hospital	РНС	Beds
Allopathic	555	227	10368
Ayurvedic	634		2207
Unani	6		8
Homeopathic	135		12
Total	1330	227	12595

Table No -35: Heathcare Facilities of Uttarakhand

Table No-36 : Spread of Healthcare Facilities across the Districts of Uttarakhand

	Allopathic	Ayurvedic	Unani	Homeopath- ic
Almora	58	84		12
Bageshwar	17	18		6
Chamoli	28	62		9
Champawat	19	24		5
Dehradun	63	54	2	19
Haridwar	28	25	4	14
Nainital	83	36		14
Pauri	72	59		9
Pithoragarh	59	59		11
Rudraprayag	27	33		4
Tehri	37	110		16
U.S. Nagar	44	18		7
Uttarkashi	20	52		9
Total	555	634	6	135

While the state also has several private hospitals in addition to the public network, in the absence of any reliable data source, calculations for the private sector was not possible.

5.11.1 Health Employment Status

Healthcare is one of the most promising sector, with a shift of focus towards Ayurvedic and Homeopathy, with the advent of science and technology, the sector is expected to generate over 1000 resources in the next 5 years.

	Health	Trained Resou	rces (2016-17)	
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	411	527		
Bageshwar	159	205		
Chamoli	278	344		
Champawat	118	150		
Dehradun	434	561	391	
Haridwar	477	592		
Nainital	754	986	1167	
Pauri	330	418	0	
Pithoragarh	364	463		
Rudraprayag	116	144		
Tehri	158	195		
Udham Singh Nagar	180	233	62	
Uttarkashi	215	261		
Total	3994	5081	1620	323
27	Expected Growth	1087	1 943	

Table No-37 : Current Status of Paramedical Staff in Government Hospitals

5.11.2 Skill Gap & Recommendations

The Healthcare Sector is going through a bullish phase across the country. It is one of the primary growth drivers of our Economy. There is substantial growth projection for expansion of Allopathic, Homeopathic and Ayurvedic systems of medicines. We have focus on Training of Nursing staff to fill the job roles arising. Further, Therapists of AYUSH also have a very strong and growing demand which has to be fulfilled.

The various Limited Education Ayurvedic Job Roles that could be included for further growth of the sector in the state are as below:

Job Categories	Job Roles
Ayurvedic therapist	Limited Ayurvedic Education in Panchakarma Therapy
Ayurvedic therapist	Limited Ayurvedic Education in Ayurvedic Dietetics
Ayurvedic therapist	Limited Ayurvedic Education in Ayurvedic Medicine Pharmacists/ dispensers

Further details on the same are provided in the traditional skills sector

5.12 Information Technology and Enables Services (IT/ITES) Sector Skills

IT/ITES sector has become one of the most important sectors from the point of view of employment, innovation and industrial competitiveness. The Application of Information Technology in manufacturing operations is increasing rapidly. Most of the Motion Control Devises and Machines are now using computers. Similarly, Critical services like Banking and Telecom, have become entirely driven by Information technology.

Newer Technologies like Artificial Intelligence and Block-chain are completely based on seamless IT/ITES. In view of the aforesaid it becomes increasing important that IT/ITES sector in the state has to provide the base for these innovations.

The State has been able to attract come IT/ITES segment essentially in Outsourcing functions. The major companies operating out of Uttarakhand are:

- H.C.L Info System
- Astra Business Service Pvt.Ltd.
- R.M.S.I. Pvt.Ltd.
- Ram Tech Software Solutions Pvt.Ltd.
- Evon Technologies Pvt.Ltd.

5.12.1 IT/ITES Sector Employment Status

The IT sector employment in the state is essentially has very distinct trends. The organised IT / ITES employment is concentrated in the Dehradun. Here most of the jobs are for voice functions with some amount of data mining jobs. Some interesting ventures like B2R Technologies have been operating out of the hill regions where they have employed the rural population for outsourcing works. The remaining IT/ITES jobs in the hill districts have been limited to Cyber Cafés, Web Development and Desktop Publishing. In Most common Job Roles available in the IT/ITES sector are

Job Categories	Job Roles			
Business Processing Management	CRM Domestic Voice			
Business Processing Management	CRM Domestic Non-Voice			
Business Processing Management	Desktop Publisher			
Engineering Research and Development	Hardware Engineer			
Engineering Research and Development	Software Engineer			
	Software Engineer			
IT Services	Web Developer			

Table NO-38: IT/ITES Job Catagories and Job Role

The leading sector and the vehicle to strengthen national economy and boost digitalization in the country, expected to generate employment to additional 4177 resources.

	IT / ITES		Trained Reso	urces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	146	209		
Bageshwar	157	225	5	
Chamoli	233	334		
Champawat	171	245		
Dehradun	5256	7527	79	
Haridwar	659	944	О	
Nainital	287	411	7	
Pauri	521	746	159	
Pithoragarh	142	203		
Rudraprayag	161	231		
Tehri	419	600	32	
Udham Singh Nagar	1241	1777	72	
Uttarkashi	277	397	0	
Total	9670	13847	354	343
43.2	Expected Growth	4177	697	

Table 39: IT/ITES Employed and Trained Manpower Status

5.12.2 Skill Gap & Recommendations

IT/ITES are changing the manufacturing activities very rapidly. The New Trends on Artificial Intelligence, Manufacturing 4.0, Internet of Things, etc., will alter the current mix of skill sets required to engage with the sector. It is very important to move towards skills that will have a better paying capacity over the longer term horizon. Based on our discussion with professionals the following recommendations have been compiled:

- The Growth of the IT/ITES sector is towards Natural Language Processing, Data Mining, Deep Learning, etc. The Current Training Infrastructure is currently not addressing these requirements.
- Computer Integrated Manufacturing (CIM) and Robotics is taking over manufacturing in a big way. IT/ITES training programs have to be designed accordingly.

The Current proficiencies are enough to provide entry level jobs in the sector, however, in the projected 5 years we might have to completely overhaul the curriculum.

5.13 Life Sciences Sector Skills

Uttarakhand is one the largest manufacturer of Chemicals & Pharmaceutical products in the country. The State has developed Industrial clusters focused for this sector. Dedicated supply chain for both backward and forward integration has been developed. These clusters gain from the economies of scale arising from pooling of resources. The State has some very large and celebrated Majors like

- Divya Pharmacy
- India Glycols
- IPCA Laboratories
- Akums Pharmaceuticals
- Emami

The major product of the clusters are allopathic formulation in various dosage forms such as tablets, capsules, liquid orals, ointments and injectable. Majority of the products manufactured fall under the generic categories. A large number of units in the cluster are engaged in the export of their products as well.

5.13.1 Life Sciences Current Employment Status

Since the state is a manufacturing hub of pharmaceutical products most of the employment opportunities arise in the field are for persons who have a science background and understand chemicals.

The Production Processes employed is known as Granulation. The tablets are produced by dry mixing, granulation, screening, drying, mixing, direct compression and packing . Some of the common Job roles available in the sector are

JOB CATEGORIES	JOB ROLES		
Production - Pharmaceuticals	Production/ Manufacturing Chemist - Life Sciences		
Production - Pharmaceuticals	Production_Manufacturing Biologist		
Production - Pharmaceuticals	Production/Machine Operator – Life Sciences		
Production - Pharmaceuticals	Fitter Mechanical – Life Sciences		
Pharmaceuticals - Sales & Marketing	Medical Sales Representative - Life Sciences		
Pharmaceuticals - Sales & Marketing	Medical Store Sales Entrepreneur – Life Sciences		

Table No-40: Life Sciences Job Catagories and Job Roles

With the availability of herbs and apt environment, the land has huge potential of growth in the sector, posing an opportunity of 60.2% employment growth in the next 5 years and beyond.

	Life sciences			urces (2016-17)
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora				
Bageshwar				
Chamoli				
Champawat				
Dehradun	3274	3827		
Haridwar	8520	15920		
Nainital		170		
Pauri	357	1120		
Pithoragarh				
Rudraprayag				
Tehri		13		
Udham Singh Nagar	3665	4287		
Uttarkashi				
Total	15816	25336		55
60.20	Expected Growth	9520	55	

5.13.2 Skill Gap & Recommendations

Pharma has the key focus and need to be pushed to bridge the gap, the training institutions are not been able to provide enough skilled pharmacist and machine operators in the state, creating a huge gap in the sector.

5.14 Retail Sector Skills

Retail sector is among the largest employer in the state after agriculture. Due to the very nature of the trade the sector is all pervasive and is present in every place of settlement of the state. Predominantly, the entire sector is dominated by "Sasta Galla" Shops which sell items sourced from FMCG companies and local producers.

However, organized retail has also started to make their presence felt, especially with the advent of modern shopping complexes and malls. Some of the popular Brands that have come up with large formats are namely,

- Big Bazaar
- Shoppers Stop
- Reliance Retail
- Lifestyle
- Pantaloon

These are changing the face of retail sector in the state. With the rise in consumerism, these stores offer a very large variety of products under one roof. The Jobs of sales personnel have been refined to a large extent wherein they are required to be agents of the customer rather than brands and have to demonstrate the products to the satisfaction of the customer.

Finally, e-retail is also one of the biggest game changers in this segment. It is selling a product or a service using digital communication technologies over the internet. It is a paradigm shift in the way all retail sales has taken place till day. The seller has the potential to address a very large audience using multimedia technologies.

Hence, the nature of training required for retail sector has also evolved keeping in mind the aforesaid changes.

5.14.1 Retail Sector Current Status

In view of the above trends the most common job roles that are present in the sector are as below:

Table No-42 Retail Job Catagories and Job Roles

JOB CATEGORY	JOB ROLES
Small Format/Self-Employed Retailer/	Individual Sales Professional
Medium Format/Employer of At least one Retail Assistants	Pusiness Puilder/Detailer
Medium Format/Employer of At least one Retail Assistants	Busilless Builder/Retailer
Large format/Organised Retail	Retail Sales Associate
Large format/Organised Retail	Retail Team Leader
Large format/Organised Retail	Cashier
e-Retail	Self-employed e-tailer

The above mentioned job roles will need to be focused upon by the skilling bodies, with special focus on two job roles which has application outside the retail sectoral skill council. Job roles 'Individual sales professional' and 'Self-employed Retailer' are two job roles which will be relevant to self-employed individuals in other sectors like Handicrafts, Tourism etc.

We have estimated that the current strenght of people working in the retail sector will grow from 2.17 Lakh in 2017 to 2.27 Lakh individuals in 20122. While the industry is likely to have a human resource requirement of 9615, at the current pace of skilling in this sector a gap of 7035 human resources is likely to emerge in the next 5 years.

	Retail		Trained Reso	ources (2016-17)
Districts	2017	2022(Future)	ITI	PMKVY
Almora	9057	9021		
Bageshwar	3747	3784		
Chamoli	6644	6723		
Champawat	5171	5319		
Dehradun	53887	57034		
Haridwar	50057	53063		
Nainital	20438	21389		
Pauri	10462	10420		
Pithoragarh	8622	8707		
Rudraprayag	3233	3259		
Tehri	7457	7487		
Udham Singh Nagar	34789	36878		
Uttarkashi	4183	4280		
Total	217749	227364		516
4.5%	Expected Growth	9615	516	

Table No-43 : Retail Employed and Trained Manpower Status

5.14.2 Recommendations for training under the SSC

- One of the primary requirements of the retail business is to manage inventory and in some cases of different categories. Therefore a module on inventory management needs to be developed exclusively for the retail sector. The same needs to be developed basis for different categories and sizes
- Self-employed retailers form approximately 70% of the retail human resource requirement, therefore suitable courses based on entrepreneurship and business growth are strongly recommended
- In the context of the potential skill gap , inclusion of relevant retail job roles are recommended in the DDUGKVY and Polytechnics

5.15 Rubber Sector Skills

Rubber has utilities in the Manufacturing and Automobile sector. As per the nature of rubber the job roles have two very distinct categorizations, namely,

- Plantation
- Manufacturing

Plantation activities are not undertaken in Uttarakhand, hence the same is not covered for the purposes of the report. Manufacturing includes the following:

- Manufacture of Tyres & Tubes
- Rubber Gaskets
- Lathes and Conveyor belts
- Carpets and Rugs
- Footwear

These items have varied uses across the industrial sector. The aforesaid manufacturing companies comprise of a substantial number of all-pervasive accessories for the capital goods and automobile sector. Hence, it is evident that Rubber will continue to play an important role in the industrial sector of the state.

5.15.1 Rubber Sector Current Status

As per the current estimates 6346 people are employed in the rubber sector under various job roles in the sector. Some of the common job roles available in the sector are:

JOB CATAGORIES	JOB ROLES
Bead Preparation	Bead Room Operator
Footwear	Assembling & curing Operator - Footwear & Sports Good
Building	Building Operator - Hoses
Building	Building Operator-Cables
Building	Building Operator-Rubber Roller
Building & Curing Operator	Tyre Retreading - Building & Curing Operator
Building	Building Operator-V belts for Transmission
Moulding /Curing	Autoclave Operator
Moulding /Curing	Solid Tyre Moulding Operator
Tyre Servicing/ Maintenance	Tyre Balancing Operator
Tyre building	Radial Building Operator
Moulding /Curing	Pneumatic Tyre Moulding Operator

Table No-44: Rubber Sector Job Catagories and Job Roles

The Rubber Skill Development Council is intrinsically linked with the Auto industry and is of prime importance to the state.

As per our current estimates an incremental human resource demand of 5706 is expected by 2022, growing by 90% over the next five years. However the state skilling institutions are currently not providing any training in the sector , which needs to be resolved urgently.

	Rubber	Trained Resources (2016-17)		
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	5	5		
Bageshwar	21	22		
Chamoli	40	41		
Champawat	56	58		
Dehradun	218	225		
Haridwar	3942	5344		
Nainital	30	31		
Pauri	26	27		
Pithoragarh	12	12		
Rudraprayag	16	16		
Tehri	45	106		
Udham Singh Nagar	1908	6137		
Uttarkashi	27	28		
Total	6346	12052	0	0
89.91%	Expected Growth	5706	0	

Table No-45 : Rubber Sector Employed and Trained Manpower Status

5.15.2 Recommendations for training under the SSC

- Urgent training requirement exists in the sector and therefore suitable modules of the above mentioned job roles should be incorporated across all the training institutions
- Tyre Re-threading is a very common job-role which has to be incorporated for Rubber Skill Council.
- Service Professionals for Tyre Repair form a large part of the human resource requirement in the sector, however no job roles under the SSC is currently available on the same.
- The training needs to focus on modern tools and techniques to be able to repair faster and better

5.16 Textile Sector Skills

The Textile Sector has been earmarked as the area of priority of growth by the Government of Uttarakhand. The State has announced the development of a Mega Textile Parks at Sitargunj and Jaspur, Udham Singh Nagar, to promote the sector. The cluster will essentially cater to Cotton and Polyester yarn manufacturing, Cloth weaving and processing.

The announcement has generated a lot of enthusiasm in the industry.

Apart from the above, the State does have presence of some textile companies that manufacture out of the current industrial parks, namely,

- SPNG Indostar
- Innovative Textiles
- Kumaon Textiles
- Mangalam Textiles

Apart from the above, the textile sector will also include a very large fraternity of handloom weavers who are spread across the state in the hilly regions. While handloom fraternity has been discussed at length in the Traditional skills section, the number of practitioners are included in this study.

5.16.1 Textile Sector Current Status

In view of the nature of the sector the most common job roles in the sector are:

JOB CATEGORY	JOB ROLES
Spinning	Speed Frame Operator – Tenter & Doffer
Spinning	Fitter – Post Spinning
Spinning	Fitter – Ring Spinning
Weaving	Shuttle less Operator -Air jet, Projectile, Rapier
Weaving	Fitter – Spinning/Weaving Preparatory
Weaving	Powerloom Operator
Weaving	Shuttle less Weaver – Air jet, Projectile, Rapier
Knitting	Fitter - Knitting Machine
Knitting	Knitting Machine Operator – Circular,
Handloom	Two shaft Handloom Weaver
Handloom	Jacquard weaver Handloom
Handloom	Handloom Entrepreneur

Table No-46: Textile Sector Job Catagories and Job Roles

The sector currently has a human resource requirement of 29317 and is expected to growat a fast pace (34.8%) to reach human resource requirement to the tune of 39518. While an incremental growth of 10201 is expected in the next 5 years, at the current pace of training a skill gap of 7081 can be expected for the sector

	Textile	Trained Resources (2016-17)		
Districts	2017 (Current)	2022(Future)	ITI	PMKVY
Almora	1753	2185		
Bageshwar	632	788		
Chamoli	1679	2093		
Champawat	660	823		
Dehradun	3733	5832		
Haridwar	5961	7455		
Nainital	1161	1511		
Pauri	333	461		
Pithoragarh	2443	3049		
Rudraprayag	168	210		
Tehri	313	404		
Udham Singh Nagar	8814	12633		
Uttarkashi	1665	2075		
Total	29317	39518		624
34.80	Expected Growth	10201	624	

Table No-47 : Textile Sector Employed and Trained Manpower Status

5.16.2 Recommendations for training under the SSC

- With a rapid growth of the textile sector, urgent training requirement exists in the sector and therefore suitable modules of the above mentioned job roles should be incorporated across all the training institutions
- Modernization in the sector , especially amongst the traditional practitioners strongly required
- A large number of practitioners in this segment are self-employed and should therefore be trained on managing business as well as on selling skills

5.17 Tourism and Hospitality Skills

Uttarakhand is blessed with one of the most beautiful landscapes in the World. We have the mighty Himalayas which is the source of the holiest rivers of India. More than 65% of our State is covered with forests home to a variety Exotic Plants and Animals. We have a rich and vibrant culture of the pahadi people who are known for their hospitality.

We have world renowned tourist destinations like Haridwar, Nainital, Mussoorie, Corbett National Park, Gangotri, Yamunotri, etc. Rishikesh is known globally as the "Yoga Capital of the World". The State has one of the lowest crime rates in the country. Accessibility is available by all three popular modes like Road, Rail and Air. The hilly districts of the State are well served by a wide network of National and State Highway.

5.17.1 Tourism & Hospitality Current Status

Despite these Assets and Advantages, the State has not been able to realize the full potential of Tourism. As per the Tourism Statistics published by the government for the year 2016, Uttarakhand received around 3 Cr Domestic and International Tourists. As per the Relative Performance among the States, Uttarakhand is Ranked 13th for Domestic Tourist Arrivals and 20th for Foreign Tourist Arrivals. This is abysmally low in comparison to the vast potential of the State..

The importance of tourism is alleviated by the fact that it is a very human intensive industry. It is the people who shall deliver services at every point. This makes a very strong case for investment in the training and development of manpower. The most common job roles in the sector are:

JOB CATEGORIES	JOB ROLES
Food & Beverage Service	Food & Beverage Service - Steward
Food & Beverage Service	Multi-Cuisine Cook
Food & Beverage Service	Street Food Vendor - Standalone
Food & Beverage Service	Front Desk Officer - QSR
Housekeeping	Room Attendant
Housekeeping	Housekeeping Attendant (Manual Cleaning)
Tourism Services	Heli - Ski Guide
Tourism Services	Hot-Air Balloon Guide
Tourism Services	Mountaineering Guide
Tourism Services	Rafting Instructor
Tourism Services	River Rafting Guide
Tourism Services	Trek Coach
Tourism Services	Para-gliding Coach
Tourism Services	Water Sport Vehicle Operator
Tourism Services	Tour Guide
Tourism Services	

Table No 48- Tourism Job Catagories and Job Roles

It is important to note that the Honorable High Court of Nainital banned para-gliding, white water rafting and other water sports until the administration puts in place a policy to regulate them in a move aimed at safeguarding both the environment and people engaging in these activities.

Tourism sector is the second largest employer of the state with over 307743 human resource employed. Another 10432 human resource requirement is expected to develop over the next 5 years. At the current pace of training , a skill gap of 4122 is expected to develop in the sector in Uttarakhand

Tourism & Hospitality			Trained Resources (2016-17)		
Districts	2017 (Current)	2022(Future)	ITI	PMKVY	Hotel Management
Almora	13658	14072			
Bageshwar	3603	3712			
Chamoli	25272	26038			
Champawat	4121	4246			
Dehradun	50594	52127			
Haridwar	58984	60771			
Nainital	35833	38026			
Pauri	15865	16346			
Pithoragarh	7106	7321			
Rudraprayag	23214	23917			
Tehri	32172	33147			
Udham Singh Nagar	6472	6668			
Uttarkashi	30849	31784			
Total	307743	318175	1262		
3.39	Expected Growth	10432	1262		

Table No 49: Tourism Employed and Trained Manpower Status

5.17.2 Recommendations for training under the SSC

- Personality development and soft skills should be available in all front facing job roles
- While nature/eco tourism is a key attraction from Uttarakhand's perspective, suitable training module for the same needs to be introduced
- Introduction of courses and training on special tour guides like wildlife or religion based needs to be arranged

5.18 OTHER SSCs

5.18.1 Construction Sector Skills

Construction activity is one of the principle activities of a growing economy. Uttarakhand has witnessed a massive boom in construction activity both in the hills and in the plains. The hilly saw the replacement of old wood and stone houses with RCC structures with modern amenities.

The plains saw construction of large cities which housed the employees of the massive manufacturing hubs. Cities like Rudrapur, Kashipur, Haridwar and Dehradun have been expanding rapidly to accommodate the rising influx of people.

5.18.1.a The Current Status

The Construction Industry has been growing in an unorganised manner. Some of the Industry practitioners have highlighted that the lack of availability of adequate skilled manpower in the state has led to labour from outside the state gaining employment. Most of the Labour Contractor have been sourcing skilled labour from Uttar Pradesh and Bihar. According to some contractors, the entire trade of Scaffolding and carpentry has been taken over by the people of Bihar and Eastern Uttar Pradesh. Similarly, the jobs of Masonry has also been taken away by people from western Uttar Pradesh. The common job roles in the construction industry are as follows:

Job Categories	Major Job Roles prevailing
Construction Jobs	Bar Bender and Steel Fixer
	Carpenter System
	Mason Concrete
	Mason General
	Mason Marble Granite and Stone
	Mason Tiling
	Reinforcement Fitter
	Scaffolder

Table No-50: Construction Job Roles

5.18.1.b Skill Gap & Recommendations

The construction sector consists of major 3 segments Cement, steel, Brick & Refractory material, and all the segments has strong presence of contract labour, the sector is expected to grow at the rate of 9% nationally. The sector is still one of the human intensive industry, thus requires a huge amount or labour and workforce, and unskilled labour is the biggest challenge over the decades and it still poses the biggest risk, which offers a great opportunity to prepare high number of workers nationally.

5.18.2 Security sector Skills

The people of Uttarakhand have been traditionally opted for the armed forces for more than a century. Despite the fact that the population of the state is around 1% of the India's population, it is home to two Regiments of the Indian Army. Further a large portion of the ITBP is recruited from the state because of the natural advantage of surviving at high altitudes. The service to the armed forces has usually lower retirement ages then the civilian jobs; hence, the number of ex-servicemen in the state is very high.

The government of the state and centre run various skilling programs for the ex-servicemen to help them get re-employed post retirement. Security services come very naturally to them. A large number of ex-servicemen are employed as guards and security consultants by the banks and industrial establishments. There is a strong presence of Security companies in the state namely,

- Group 4 Security (G4S)
- SIS
- Alliance Security
- SS Security
- Hawk Commandos protection

5.18.2.a Security sector Current Status

On January 14, 2018, The government has disbanded the Security Sector Skill Development Council, set up to provide professional certification for private security industry, after an audit found several malpractices, including misuse of funds and serious conflict of interest. The powers of assessing trainees and awarding certificates have been taken away from the Security Sector Skill Development Council (SSSDC) and it has been subsumed into the management sector skill council.

5.18.3 Gems and Jewelery Sector Skill

This section of the Gems and Jewelery is dedicated to the popular and all pervasive skill which is practiced in markets across Northern Parts of India. As per the estimated of Jewelery associations in the State approximately 4000 Shops of all sizes are operating in the State form various Small and Mid-sized towns and cities.

We have discussed in detail the markets of the Hills in the previous section. In the Plains the main centres for the trade are Dehradun, Haridwar and Haldwani. New centres like Rudrapur, Kashipur, etc. are upcoming centres owing to the large influx of young populations coming to these cities. The Branded Stores have a higher acceptability in these locations.

5.18.3.a Skill Gap & Recommendations

We have interviewed various Jewelery Associations and Retailers on the status of the Trade and the skilling requirements. Our discussions have yielded the following observations:

- Skills for the Sector broadly comprise of the following Activities:
 - * Casting of Jewelery
 - Diamond/Gemstone Processing
 - * Handmade Gold Jewelery
 - * Jewelery Retail
- In Uttarakhand, majorly three activities are prevalent, namely, Casting Jewelery, Handmade Gold Jewelery and Jewelery Retail.
- As discussed in the traditional segment, the entire Skilled Labour of the State comes from Bengal. The Associations claim that thousands of Bengali workers are currently employed in the trade in the State.
- The Associations have identified the following training requirements in the following job roles:

JOB ROLES

Cast and diamonds-set jewelery - Hand sketch Designer (Basic) Cast and diamonds-set jewelery - Metal Setter (Basic) Cast and diamonds-set jewelery - Wax Piece Maker Cast and diamonds-set jewelery - Wax Setter (Basic) Handmade Gold and Gems-set Jewelery - Goldsmith - Components Handmade Gold and Gems-set Jewelery - Goldsmith - Frame Handmade Gold and Gems-set Jewelery - Polisher and Cleaner Handmade Gold and Gems-set Jewelery - Setter Jewelery Retail - Appraiser and Valuer Jewelery Retail - Jewelery Retail Sales Associate (Basic)

Sectoral Conclusion

5.19 Sectoral Conclusion An incremental demand of 3, 68,943 across 17 Sectorial Skill Councils within the state is expected to emerge. The following table shows the contribution of these SSCs to the overall job creation.

Table No. 51 : SSC Contribution to Incremental Manpower Demand

SSC	Contribution to the Incremental demand
Agriculture Skill Council of India (ASCI)	34%
Automotive Skills Development Council (ASDC)	24%
Capital Goods Sector Skill Council	10%
Food Industry Capacity and Skill Initiative	6%
Electronics Sector Skill Council of India	5%
Handicraft & Carpets Sector skill council	3%
BFSI Sector skill council	3%
Tourism and hospitality Skill Council	3%
Textile Sector Skill Council	3%
Retail Sector Skill Council	3%
Life sciences Sector skill development council	3%
Rubber Skill Development Council	2%
IT-ITES Sector Skill Council	1%
Beauty and wellness sector skills council	0%
Healthcare Sector skill Council	0%
Furniture and fittings skills council	0%
Apparel made ups and home furnishing sector skills council	0%

Agriculture which offers the largest number of jobs in the state will have the highest contribution to the incremental demand. This will be followed by Automotive and Capital Goods.

The Supply projections for each of the districts have been calculated based on the decadal growth rate for the Districts. These numbers have been arrived at using the 2011 Census. The Districts in the plains display non-linear growths owing to migration from various parts of state and the rest of the country.

From the supply perspective a total of 1319877 human resources are expected to be added to the labour force. The contribution of districts to the labour force is as shown below

District Contribution to the incremental supply 19% Haridwar Dehradun 17% Udham Singh Nagar 16% Nainital 9% Garhwal 7% 6% Almora Tehri Garhwal 6% 5% Pitthoragarh Chamoli 4% 3% Bageshwar Champawat 3% Uttarkashi 3% Rudraprayag 2%

Table No. 52 : Districtwise Incremental Supply of Manpower

The state of Uttarakhand has a supply surplus, which will continue till 2022. The state faces a dual challenge of supply surplus but with a large number of unskilled/minimally skilled labour force. This will lead to both inward and outward migration in the state.

SECTION 6: Traditional Skills Overview

्यता में वृद्धि किया जाना श्रापना में वृद्धि किया जाना

6.1 Classification of the Traditional Skills

While there is no definition or list of traditional skills available, the study tried to define the same for the state of Uttarakhand basis the inputs received during the course of the study. The word 'Traditional' is defined as Handed down by tradition (the handing down of statements, beliefs, legends, customs ,information, etc., from generation to generation, especially by word of mouth or by practice.) . On the other hand 'Skill' is defined as the ability, coming from one's knowledge, practice, aptitude, etc., to do something well.

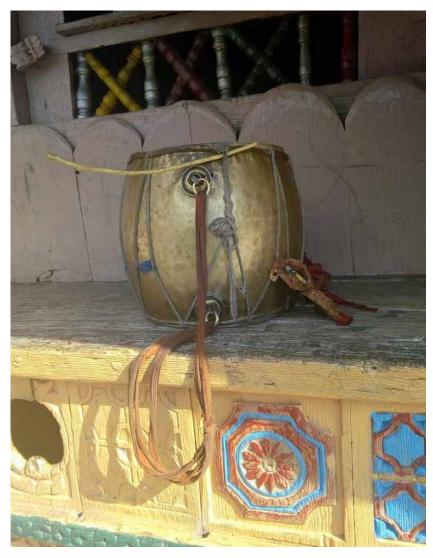
Therefore 'Traditional Skill' is the ability to do something well, coming from one's knowledge and practice which has been handed down by tradition. Key attributes :

- a. Age old systems of instruction and apprenticeship
- b. Creative solutions to a problem
- c. Sourced from locally available resources
- *d. Usually community based practices*

A study on India's artisans by Satyanand and Singh (1995), (henceforth, SRUTI Report)indicates that an individual who displays all the essential attributes given below is considered as an artisan:

"The essential characteristics of an artisan are as follows:

- He/she makes goods, and/or provides services to others;
- He/she uses his/her own skills and labour for the purpose;
- He/she makes goods and provides services which use traditional skills, i.e., skills that have been historically associated with a particular artisanal activity, even though they have been adapted over time to evolving technologies, materials and products.



The incidental characteristics of an artisan are as follows:

- He/she is self-employed, in the sense that such a person enjoys the whole produce of his/her own labour, or the whole value which it adds to the materials upon which it is based.
- He/she functions individually, or at a household level." (SRUTI Report, pp.8-9)

Traditionally these skills have been practiced by different communities in Uttarakhand and these skills have been practiced as family businesses, wherein the skills of the trade have been passed on from generations. These craftsmen are also often marginalized and run their businesses in an unorganized and unplanned manner.

The state of Uttarakhand has been very rich in traditional skills, however a lot of these skills have been lost over time, while some others are gradually fading away. During the course of this study we learnt of approximately 50 skills that are available or have existed in the state in the recent past. Some of these skills are still practiced regularly and have higher potential as well as higher chance of survival than the others.

The skills identified can be broadly classified under the following categories.

TYPE OF SKILL	DEFINITION
Craft & Handloom	These essentially refer to things 'hand-made' for the daily use. The skills required to make them are traditionally transferred from gener- ation to generation. These skills are usually guided by customs and traditions rather than Standards of Performance. Further, each unit is fashioned separately and care is taken to make it unique in-keeping with the traditions.
Art and Music	Merriam-Webster defines Art as something that is created with imagi- nation and skill and that is beautiful or that expresses important ideas or feelings. Traditionally, Music and Arts are transferred through fam- ily tradition but also to seekers by masters. The community and re- gional influences are more pronounced in the traditional sense; how- ever, the caste barriers co-exist.
Horticulture & Agro Skills	Horticulture and Agriculture in the hills is the primary skill of the people critical to their survival. These groups of skills are essentially aligned to making the agriculture possible. They include tilling, sow- ing, irrigating, cutting, harvesting, etc.
Others:	This category refers to all indigenous skill sets that were the life blood of hill people but do not fall under any of the categories specified above. These include agriculture, medication etc.

6.2 Craft & Handloom

The primary medium of the items created can be classified into Earth, Fiber, Metal, Wood, Stone, Leather, and Ivory, Bones, Horns, and Shells. The medium of earth includes clay, ceramic and glass, fiber includes mainly textiles and wood includes cane and bamboo, papier-mâché items as well. Though an artist may work with one primary or principal medium there are products which combine two or more mediums, e.g., jewelery which is a mix of gold (metal) and precious stones; similarly toys also fall in this category.

During the process of the research, mentions of the following crafts were found in Uttarakhand. This is a comprehensive list of Uttarakhand specific crafts and handloom which have been present.

EARTH					FIBRE	LEATHER
Cane & bamboo	Wood/Stone	Metal	Grass/ Straw	Clay	Textile	
Tokri & basket making	Agricultural instruments	Copper craft	Plates	Utensils	Aipan	Bags
Sack making	Statues	Sword and arrows			Pichora	Shoes
Mat,Hat etc.	Utensils	Hukka			Carpets	
	Wood craft	Jewelry			Cleaners	
		Blacksmith			Tailors	
		Mining Brass craft				

6.3 Art & Music

The state of Uttarakhand has been blessed with beautiful topography which has served as an inspiration to many artists from diverse fields. Therefore it has a rich tradition of various arts and crafts like painting, wood carving, and decorative temples as well performing arts like music and dance.

Despite its diversity, the popularity of most of these forms has been limited to the locals and the state of Uttarakhand. Low awareness of the exquisite art forms like local painting forms, leads to limited market availability. The impact of migration has been high on these forms of traditional skills; therefore some of these are declining rapidly. An example of this is the Aujis who are rapidly moving out of playing Dhol Damau in some of the districts. During the process of the research, mentions of the following art and music forms were found in Uttarakhand. This is a comprehensive list of Uttarakhand specific art and music forms which have been present.

Painting	Music	Dance	Instruments	Literature
Kumaon Painting/Aipan	Folk	Jhora-Chanchri (Kumaon)	Bagpiping	Story telling (Nath Jogi)
	Devotional	Chaufla - Thadiya	Turahi/	
		(Garhwal)	Mochang	
		Tandi (Jaunsar)	Bhankhora	
		Barda Nati		
		Hurka Baul		

6.4 Horticulture & Agro Skills

The diverse agro-climatic nature of Uttarakhand makes cultivation quite difficult in the state , especially in the hills where only 10% of the land is cultivable. Despite this approximately 75% of the population is dependent on agriculture for their livelihood. The limited cultivable area with small holding patterns makes it imperative to come up with innovative agricultural skills and practices in this state

Table No-56: List of Traditional Horticulture and Agro Skills in Uttarakhand

	SKILL 1	SKILL 2
Produce	Tilling	Organic Farming
Process	Traditional fruits & plants	Honey bee keeping

6.5 Other Skills

The terrain of Uttarakhand as well as its climatic condition gives rise to distinctive architecture patterns and art. Similarly the pristine environment also provides relaxation and serenity, which has helped develop Rishikesh as the yoga capital of the world. Several other decorative and culinary activities have also been present in Uttarakhand.

Table No-57: List of Traditional Horticulture and Agro Skills in Uttarakhand

	SKILL 1	SKILL 2	SKILL 3
Architecture	Koti banal	WoodCarvings/Door in- scriptions /Tevadi Art	
Theraputic	Yoga	Naturopathy & Ayruveda	Medicinal plants
Culinary	Bal methai		
Decorative	Candle making		
Personal Grooming	Cosmetics	Nai	

However not all of the above-mentioned skills are scalable. In some cases the practitioners have moved out, due to low earning potential, in other cases due to channel issues. Basis the inputs received during the discussions with stakeholders the following 11 skills seem to be scalable, has a potential market and can be formally trained in:

Table No-58: List of scalable skills in Uttarakhand

CRAFT	ART	HANDLOOM	ARCHITEC- TURE	HEALTH & WELLNESS	CULINARY
Bamboo & Ringal	Aipan	Weavers	Household & Temple	Yoga	Bal methai and other local food
Copper Wood				Medicinal Ayurveda & Naturopathy	
Jewelry					

A few other skills like Decorative candles , stone craft may also have potential to be revived , but are currently practiced in very small numbers and in selected pockets . Therefore have been mentioned in the relevant districts/areas only.

6.6 Potential for Growth

The potential for growth for the traditional skills is dependent upon a lot of factors. However for the sake of Simplicity, we have identified the following factors:

- **Degree of Awareness:** Awareness helps people to take informed decisions. Traditional Skills have a very high degree of awareness at the local level, however, beyond their areas of influence there is negligible to no awareness of these Arts & Crafts. Hence, in the contemporary world, awareness is one of the keys to understand the growth potential.
- **Degree of Substitution:** As discussed earlier, the Traditional Arts & Crafts evolved as a solution to primal human needs and Aspirations. With rapid improvement in Technology and Infrastructure, the access to human settlements across the mountains has increased manifold. The people are today free to choose from a variety of opportunities available to them. The Traditional Crafts today have to compete with options from around the world. Hence, Degree of Substitution assumes primary importance.
- Availability of Raw Material: Traditional Arts & Crafts evolve using resources easily available. The growth potential and scalability of all forms of Arts & Crafts primarily depends upon the quantum of resources available.
- Availability of Financial Support: The Financial Support for Traditional Skills is very critical. The Financial & Credit support for Traditional Skills has to be tailored as per the existing practices of the Skill. The flexibility of financial infrastructure is key to Growth Potential.
- **Other Factors:** The aforesaid factors identified are a macro level grid to identify the growth potential. However, all skills have unique dynamics which have a very high degree of impact on their growth potential.

6.7 Employment Generation

The Traditional Skills are highly individualistic skills. The Growth Potential of a skill is directly linked to the expansion of employment opportunities in the sector. The barometer for the success of any intervention will clearly reflect in the number of new people joining the skill. In the ensuing section on the findings of Traditional Skills, we have estimated the employment generation for each of the skills under two scenarios, namely,

- Without Intervention: This projection is based on the premise of Ceteris paribus, all things remaining equal. In our case, it is assumed that if the current state of affairs continue what will be the status of employment in 2022.
- With Intervention: These Projections have factored in the assumption that recommendations made for Growth and Enhancement of each of the Traditional & Relevant skills are implemented. The resulting impacts of these implementations have been studied and presented.

6.8 Trade Enhancement

Trade Enhancement is one of the most important Outcomes of interventions recommended. For the Traditional Skills, the Trade Enhancement would be reflected under two metrics:

- Growth in Market Size: The Expansion of the Market Size will indicate the success of the Interventions. These will be reflected in the rise in the turnover of the sector measured periodically.
- Rise in Individual Practitioners Incomes: The rise in the Income Levels of Practitioners income will also capture the qualitative aspects of trade enhancement. Assuming Ceterus Paribus, there can be two trends which lead to trade enhancement at the practitioner level:
 - Wherein the existing State-of-the-art is maintained but the number of projects, products, performances, etc., increase;
 - Wherein higher levels of consumer surplus is captured by the Art & • Crafts, by significantly increasing the quality of the projects, products, performances, etc;

6.9 Investment Attraction

The various Components of Investment Attraction activity is as follows:

- Mapping the Status Quo Traditional Skills are essentially Personal Skills. The practitioners usually deliver the outcomes individually. However, in some cases, they come together for a project and work together. The Scope & Scale of the work is bounded by to capacity of the individual. The Skill is learned and Transferred as a family tradition from generation to generation. The Outcomes are unique and can be personalized to an extremely high degree to suit the requirements of the customer.
- **Understanding the Desirable State:** The Traditional Skill Types of Uttarakhand have been categorised as per Table No. 53. However, to understand the desir-97

able state for a skill it is important to identify a Suitable & Successful Surrogate Skill. The Surrogate so chosen should qualify the following tests:

- → The Nature of Skill required of the Practitioners should be similar; Like Hand Embroidery
- \rightarrow The Raw Material Used should be similar; like Copper and Brass
- → Geographical/Cultural/Traditional Aspects needs to be similar; like arts Practised in the Himalayan Regions
- → The Outcomes/Outputs/Products should be Similar and Substitutable;
- **Current Practices and Resources:** The Major trends witnessed about the Traditional Skills of Uttarakhand are as follows:
 - \rightarrow The Current Practitioners are individualistic due to evolutionary reasons;
 - \rightarrow The production capacity is bounded by the capacity of the individual;
 - → The Practitioners gather the raw material using their own resources. They are completely exposed to market volatility of the prices of their raw material.
 - → The Working Capital Required by the Artisans is arranged through informal sources;
 - → The Inventory Carrying Cost has to be borne by the Practitioner till the product is sold;
 - → The Products usually compete as "Utilities" rather than "Expressions". The Products that have made the transition have been able to generate higher incomes for their practitioners;
- Investments Attraction: Based on the various traditional skill findings discussed in section 7, we may broadly outline the following areas wherein investment is required to be made:
 - → **Quality Skilling:** The Skilling Needs are immense for the Current Practitioners of Traditional Skills and to bring them at par with the practitioners of the chosen surrogate. The Details are discussed in Section 7.
 - → Capital Support: Capital Support both for better tools and working capital is urgently required.
 - » The Capital Cost for machines can be financed through MUDRA Loans and various schemes of the government.
 - » The Working Capital Loans is usually difficult to obtain as the Working Capital Cycle of most of the Traditional Skills is highly erratic. During the Study, most of the practitioners failed to provide the duration of the working capital cycle with reasonable accuracy. However, we have provided some estimates based on the information shared by the Practitioners.
 - → Branding Support: Most of the Practitioners have informed that they have not been able to build uniqueness of their offering due to lack of identity with the end consumer. They end up becoming cheaper substitutes of products manufactured by other State Practitioners.

6.10 Perceptual Map: Traditional Skills

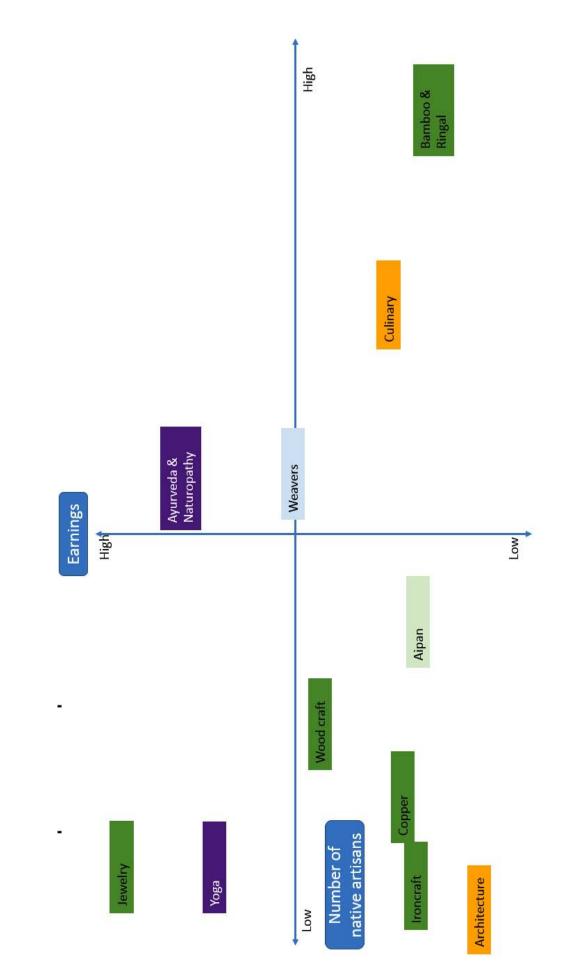


Figure 11: Perceptual Map: Traditional Skills

The scalable skills identified can be plotted basis their earning potential and the number of native (local) artisans working on the skill, in the following manner:

The perceptual map plots the skills against current earnings and the number of local (native) artisans in the trade. The High-High quadrant has the least number of skills and that too is tending to move out of the quadrant. The skills in the Low-Low quadrant, on first glance may seem to lack potential; however going forward with the right kind of intervention these skills can be revived. These skills are still being discussed because either they are unique in nature or the raw material is available in large quantities.

The other cause of concern for the state is the High Earning-Low native artisans category, wherein migrants from other states (even countries) are exploiting the traditional resources and earning well from it, while the natives are abandoning it.

While all of these skills are distinctive in nature and fall under very different clusters, all of these skills share some common values. Most of these traditional skills have been evolved around *'Utility' and therefore not exotic nature*. This is in contrast to the more expressive traditional skills which are centered on entertainment, fun or style. The traditional skills of Uttarakhand are therefore priced at the mass level with little scope for charging a premium.

This keeps the earning potential low, triggering a need to look for employment outside the skill. The utility driven designs also make it relevant for the region and may not appeal to customers outside Uttarakhand, For most of these skills therefore, there is a need to integrate a form of expression/beauty to be able to cater to a larger as well as modern customers.

Most of these practitioners are also not sales oriented and not very skilled on this critical attribute. They are heavily reliant on others for **selling and marketing**. The practitioners are looking forward to the government to create a platform to help them sell. A wider exposure from sales meets and melas should help in the development of these skills in becoming contemporary and relevant.

Other skills like *language training,* especially to the remote tribal practitioners as well as basic business courses will help gain newer perspectives and a wider exposure with re spect to their trade.

To address the aforesaid aspect, the movement has introduced the scheme of **Recognition** of **Prior Learning (RPL).** The Scheme aims to impart competencies that enhance the employability of artisans working in the unregulated market. These competencies are aligned to the NSQF framework. As per the Guidelines issued by the government, the Scheme help recognize the competency of the artisans by testing and certifying through outcome based approach for the depth and range of the skilled possessed. Project Implementing

Agencies (PIAs), such as Sector Skill Councils (SSCs) or any other agencies designated by MSDE/NSDC, shall be incentivized to implement RPL projects in any of the three Project Types (RPL Camps, RPL at Employers Premises and RPL centres). To address knowledge gaps, PIAs may offer Bridge Courses to RPL candidates

While tourism is a focus area for the state, there is a need to integrate these skills with the sector, to make them popular thereby reviving these traditional skills. Rajasthan is a prime example of this where some of their key traditional skills like music, dance, food and architecture have been well integrated with tourism. These skills therefore have a larger audience and are not endangered.

SECTION 7: Traditional Skills based findings

7.1 Aipan

Aipan is a traditional folk art specifically made by women of Uttarakhand. This art is done on floor over brick red background with white paste made out of rice flour. The typical art is done on all special occasions and household ceremonies and rituals. It is believed that these motifs evoke divine power which brings good fortune and wards off evil.

Figure 12 : Popular Aipen Designs



Uttarakhand Aipan painting has its unique identity which is always done on the empty walls and on the ground which is a symbol of fortune and fertility. The art form is used to decorate floors and walls at the Puja room (place of worship) and entrance of homes and practiced by many other communities of different region. The traditional motifs are also used in designing new household products like souvenirs, Coasters, Shawls & Stoles, Wall hangings, Wall paintings, Bookmarks, Photo frames, Table-mats, Cards, Stickers, Jewelry boxes, Key chains, bookmarks and wall tiles etc.

Though it can be said that Kumaon is the origin of the Aipan but now the whole of Uttarakhand practices it. A lot of individuals have helped this art to revive and thrive by displaying the Motifs on items and dress material. Some have been able to successfully integrate block printing methodology on cloth using Aipan design.

Since every girl in the region of Kumoan knows Aipan, number of potential practitioners is very high. However, the commercial earnings from sale of Aipan arts and artifacts is low.

7.1.a The basic challenges with Aipan are as follows:

• Identity: Aipan is known only in Western UP and Uttarakhand. The Art needs recognition amongst a wider audience. A brand dedicated to Aipan will go a long way in establishing a universal appeal of the Art

- » Wider application of Aipan needs to be sought out, in order to make the art form more relevant. Chikan is a prime example of the route Aipan can take in the long run
- » In order to make the art form more relevant promotions around the same need to be looked at
- Aipan centric fashion shows and tie up with Fashion institutes for the same
 Integration and scaling up: the range of products which display Aipan motifs can be increased to more popular bases like Bed Sheets, Bed Covers, Cushion Covers, Suit Designs, etc.
 - » As per the established Indian Traditions, It is considered inauspicious to sleep on White bed sheets and pillow covers. White Sheets are used only to wrap the dead body on its final journey to cremation. Despite these beliefs, we have blindly accepted the general hospitality standards established in the western countries where hotel guests are made to sleep on white linen and pillow covers. It would be true to our culture and in-line with the spirit of Atithi Devo Bhava (Guest is equal to God, and should be attended to accordingly), to do away with this practice and introduce small designs and motives made in the traditional patterns like Aipan across all the Hotels in Uttarakhand. This will bring Aipan in the mainstream and provide livelihood opportunities to Local women across Uttarakhand.
- Credit: Since Aipan is done by women of the villages, their financial status does not allow them the require flexibility to start a business. If the Seed capital for the small businesses can be provided, it will help incubate their business.

Economic Potential To assess the economic potential of Aipan we may look at the craft of Chikankari which is practiced near Lucknow. The Cluster has an economic turnover of over INR 12000 Crs and employs over 250,000 women artisans. The average production per artisan is INR, 480,000.

In comparison, if we look at the average productivity of Aipan artisans it is a meager 120,000. Currently the market is pegged at Rs. 64.5 cr in Uttarakhand. However with right promotion of the skill, it can scale up to a turnover of Rs. 258cr, with the current strenght of commercial practitioners, similar to Chikankari. Over the next five years, with right skilling initiatives, Aipan has the potential to go beyond Rs. 360 cr and add more full - time practitioners.

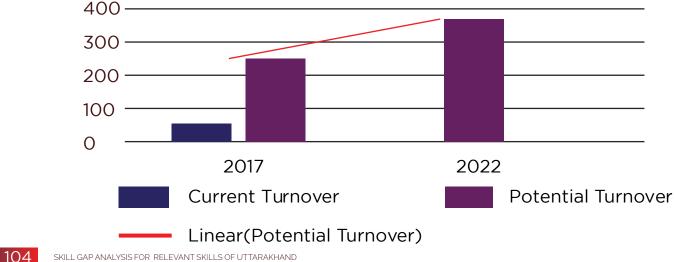


Figure 13: Aipan Category Estimates

Table No. 59: Economic Potential of Aipan

Annual Estimates	20	2017-18		
	Without intervention	Potential With Intervention	Future Projection	
No. of practitioners	5,374		7,537	
Average Productivity	1,20,000		4,80,032	
Income from Practice (per Person)	48,000		1,92,013	
Market Size	65.4Cr.	258 Cr.	360 Cr.	
Trade Enhancement (In % Terms)			450%	
Estimated Working Capital Cycle	3 month			
Working Capital Requirement per Artisan	18000		86400	
Working Capital Requirement for the Industry	9.67 Crs		65.12 Crs	

At the highest level of throughput, the number of practitioners could go up from 5374 to 7537. However most of the existing practitioners would also need to be trained on products and materials to render higher output and premium renditions of the craft form

The skill will fall under the Handicraft & Carpet SSC and the following job roles and complexities exist in the practice of the skill

Table 60: Aipan Job Roles

Job Role	Lev- el	Process Required	Profession- al knowl- edge	Profes- sional skill	Core skill	Responsi- bility
Aipan - Helper	1	Prepares the work area by Arrang- ing Tools and Blocks, preparing the Cloth for Aipan Work, cleaning of the area.	Helper is familiar with the Cloth specifica- tions, Blocks, colors, and pastes that are used in Aipan Work	Supports the Head Artist on various activties involved in Aipan	She can read write and make basic mea- surements.	She is not responsible for any ac- tivity at any stage of the Aipan Art

Aipan - Appren- tice Block Printing	2	Prepares Blocks as per the specifica- tions of the Shead Block Printer. She does block printing on cloth under supervision of the Shead Block Printer.	Learnt to prepare col- ors for block printing. She is also aware of the processes to clean the blocks after work and disposing of the color wastes. She does block printing on cloth under supervision of the Shead Block Printer	Block print- ing done by the apprentice is basically is of ba- sic nature and may not involve complex multi-co- lour block printing.	She can read, write and make basic arithe- matic opera- tions. Is fully aware of the religious sig- nificance of Aipan Paint- ings and the restrictions on its usag- es	The Ap- prentice may per- form the basic func- tions in Block print- ing under the close supervision of the Head Block Print- er
Aipan - Appren- tice Paint- er	2	Prepares Colors and Pastes as per the specifica- tions of the Head Aipan Painter. She does Aipan on cloth under super- vision of the Head Block Printer.	Prepare Colors for Aipan paint- ings. Does Aipan on Cloth under the Supervi- sion of the Head paint- er. Knows the process of dispos- ing of Color and Material Waste	Aipan Painting done by the Ap- prentice is of basic nature with established design pat- terns	She can read, write and make basic arithe- matic opera- tions. Is fully aware of the religious sig- nificance of Aipan Paint- ings and the restrictions on its usag- es	The Ap- prentice may per- form the basic func- tions in Ai- pan Paint- ing under the close supervision of the Head Aipan Print- er.

Aipan - Hand Block Printer	4	Prepare for block print- ing by hand as per given specifica- tions. Carry out block printing by hand as per given spec- ifications. Contribute to achieve qual- ity in hand block print- ing	She per- forms All ba- sic Activities of a Aipan - Block Printer.	Performs the tasks of prepar- ing colors, blocks and spreading the cloth for printing and then removing the cloth after print- ing without allowing the colors to staining.	The Block Printer is able to en- gage with the Head Block Printer on tasks as- signed with reasonable degree of proficiency .	The Block Printer is able to de- liver prod- ucts work- ing in team.
Aipan - Artist	4	Prepare for painting by hand as per given spec- ifications. Carry out painting by hand as per given spec- ifications. Contribute to achieve qual- ity in hand block print- ing	She per- forms All ba- sic Activities of a Aipan - Painter.	Performs the task of preparing the colors, spreading the cloth. Marking and design tracing and then ap- plying the paints. He knows how to remove the cloth without spoiling the painting.	The Aipan painter is able to en- gage with the Head Aipan Paint- er on tasks assigned with reason- able degree of proficien- cy .	The Aipan Painter is able to deliver products individu- ally and in teams.

Designer (Aipan)5Conceptual- ize the Aipan design and its presen- tation on various items and fabrics according to customer's requirementComplete Knowledge of the Ai- pan Art and its Possibil- ities with Fabric and Non-Fabric Bases	to make to order Con- ventionalsired level of Mathemat- ical Skillsble Wor UeaDesigns and Makeunderstand- ing of read- justing the specifica-and dele itor of the Aipan	ponsi- for own rk and rning can egate mon- the k of eagues
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Table 61: NSQF Codes for Aipan

Job Role	Lev- el	NOS Avail- able	NOS Name	NOS Proposed
Aipan - Helper	1	HCS/N9908 HCS/N 9912	Working in a Team Maintain work area and tools	-
Aipan - Apprentice	2	HCS/N9908	Working in a Team	Rules related to Aipan
Block Printing		HCS/N 9912 HCS/N 7201	Maintain work area and tools Prepare for block printing by hand as per given specifications	
Aipan - Apprentice Painter	2	HCS/N9908 HCS/N 9912	Working in a Team Maintain work area and tools	Hand Painting Rules related to Aipan
Aipan - Hand Block Printer	4	HCS/N 7202 HCS/N 7203	Carry out block printing by hand as per given specifications Contribute to achieve quality in hand block printing	Marketing and Selling skills
		HCS/N9908 HCS/N 9904 HCS/N 7204	Working in a Team Basic business management Carryout and supervise the preparatory processes of hand	
		HCS/N 7205	block printing Carry out hand block printing as per given specifications	

Aipan - Artist	4	HCS/N9908	Working in a Team	Marketing and Selling skills
		HCS/N 9904	Basic business management	
		HCS/N 7351	Carry out tracing of designs on the given material as per given requirements	
		HCS/N 7206	Supervise the printing and post printing processes	
Designer	5			
(Aipan)		HCS/N 7352	Carry out finishing of embroi- dered products	Marketing and Selling skills
		HCS/N 9912	Maintain work area and tools	Innovation and experimentation with newer for- mats and forms
		HCS/N 9913	Maintain health, safety and security at workplace	
		HCS/N 9915	Supervise hand embroidery production	

In addition to the above mentioned NOS codes , we propose a NOS specific to Aipan for level 4 and above as highlighted below

Table 62 : Optional NOS codes for Embroidery patterns

HCS/N 7301 Prepare and carry out Phulkari embroidery as per given specifications
HCS/N 7302 Prepare and carry out Chikankari embroidery as per given specifications
HCS/Q 7303 Prepare and carry out Zari-Zardozi embroidery as per given specifications

Recognition of Prior Learning (RPL) Opportunity

The Art of Aipan Painting and its Artisans have a unique situation. **The NSQF till now does not recognize Aipan as a Job Role or NOS** like Chikankari, Phulkari and Zaridozi. Similar to the aforesaid Handicraft Traditions, an Aipan Artist faces the same constraints with regard to basic Business and Marketing Skills.

The following benefits are expected to come to the existing artisans who join the RPL program.

- The Artisans will be able to better **negotiate their earnings** with the buyer citing the certification.
- The RPL Certification will endorse the level of the artisan and his ability to deliver **the expected level of sophistication** desired of the products produced by him.

The Program can cover an estimated 5000 Artisans currently at different levels of the RPL Program.

7.2 Jewelry – Traditional Jewelry

Uttarakhand has a very evolved and unique style of jewelry. Women here are quite fond of Silver and Gold Jewelry. The wearing of jewelry has not been limited to special occasions but is a part of the everyday attire. Traditionally jewelry used to have a preference of silver over gold and women would wear 500g to 700g of silver daily while attending to their daily chores. This trend has changed in recent years and women are choosing gold over silver now and much lighter in weight

7.2.a Designs of Pahadi Jewelry are:



Figure 14: Traditional Jewelry

Nathuli- Nathuli or Nath worn by the pahadi women is a distinct and recognizable ornaments. It is an extremely large, exquisitely designed nose ring. Every region of Uttarakhand has a variable design for the nathuli which can easily distinguished by the trained eye. The nath or nose ring of a bride is the star attraction during the wedding. The weight and number of pearls inserted in a nath indicate the status of the family of the bride.

Galobandh- Galobandh also known as 'Galabandh' is another prominent jewelery of Kumaoni culture. This elite neck piece is donned by Kumaoni, Garhwali, Bhotiya and Jaunsari women. The Galobandh as the name suggests is tied around the neck and is only worn by the married women. The uniqueness of Galobandh is that it is designed on a red belt, on which the golden square shaped jewelery pieces are beautifully arranged with the help of a thread. Though being an elegant jewelery it is getting out of fashion as modern jewelery has captured the market. While the ornament is highly liked by the rural women it is not much popular among those who reside in the cities. **Hansuli-** Hansuli also known as 'Khagwali' in Garhwali is a popular ornament which is clutched around the neck. This gorgeous neck piece which is preferred in gold by rich people and silver by the less affluent or poor. Hansuli is worn by Garhwali, Kumaoni, Jaunsari and Bhotiya women. This priceless jewelery is sported during festivals, weddings, fairs, social gatherings and important family functions. Hansuli is considered to be a classic jewelery piece that brings out the beauty of Pahari women. But in this modern era, the charm of Hansuli is fading as people are getting attracted towards the modern jewelery.

Bulaq- Bulaq is an exquisite jewelery which is worn at the nasal septum. It is peculiarly designed by the skillful goldsmiths who carve intricate motif designs on it. In the yester years, it was worn by the women of Garhwal, Kumaon and of Jaunsar belt. But nowadays the craze for Bulaq is over and now it is considered as an old trend.

Dhagulu- Dhagulu or Dhaglu is a round shaped bangle which is made out of silver. It is a common piece of jewelery in Nepal and is worn in some places of Kumaon since it shares the borderline with Nepal. Today, a few old women of Kumaon can be seen daintily carrying this exclusive jewelery.

Pahunchi- Pahunchi is basically bangles that are made out of gold and is quite popular in both Garhwal as well as Kumaon region of Uttarakhand. In Kumaon, Pahunchi is considered to be an auspicious jewel for the married women and is worn at the time of festivals and important family functions. Pahunchi is generally made in 1 tola or more which depends on the status of the bride's family. A red coloured cloth is used as the base material on which the pure gold pearls are studded. The colour red is used as it is considered to be propitious for married women.

Pauje- Pauje is basically an anklet that is made out of silver or copper and is slightly different from payal or pazeb worn by the Indian women. A complex web-like design is made in payal that is accentuated with Indian motifs. While in Pauje a lot of ghunghroos or metallic bells are used. Though the designs of pauje may differ in Kumaun, Garhwal, and Jaunsar but it is one of the most commonly worn ornaments of Pahari culture.

Bichhuwa- Bichhuwas are toe rings that are worn by Garhwali, Kumaoni, Jaunsari and Bhotiya women. It is made out of silver and is decorated with intricate designs consisting of Indian motifs, peacocks, flowers, and petals.

Kundal or Balis- In local language Kundals are known as 'Munad', Murkhli, Munda, Balli, Tugyal etc in different regions of Uttarakhand. Kundals are earrings that can be seen decorating the ears of the Pahari women. They are either made in gold or silver and its shape and size may differ according to the preference of the woman and her status. Nowadays the traditional designs have been replaced by new and fancy designs. On the other hand, balis are referred to the mammoth size gold earrings, having a circle shape. They are made out of gold and are donned by most Pahari women.

Kamarbandh (Tagdi or Tigdi)- Kamarbandh is worn around the waist line which is garnered by the women of different communities of Uttarakhand. There are two types of Kamarbandh one is made out of cloth the other is made out of silver. It is worn over the traditional attire and tied around the waist to make it appear more feminine and delicate. Many Garhwali and Kumaoni women still sport this unique jewelery that adds five-star to their beauty.

7.2.b The challenges of the Jewelry in Uttarakhand are:

- Hallmark Kumaoni and Garhwal jewelry are made in 24-Carat gold, however, the jewelry in the plains is made of 22-Carat. Further, the BIS (Bureau of Indian Standards) Hallmark for purity of Gold Jewelry is given on 22-Carat Gold. If to implement the Hallmark Standards the Kumaonis shift to 22-Carat they will lose the customers who prefer 24 Carat.
- Skilled Workers The skilled workers for the jewelry trade in Kumaon and Garhwal are usually from Bengal. There are hardly any workers from Uttarakhand. This reflects the gap in skill training opportunities for the unemployed youth.
 - » Training incentives and other motivation for younger women in the hilly regions for jewelery designs need to be looked at
- Marketing and Selling skills: As is evident, several of the traditional jewlelery forms are gradually fading away. These need to be revived by making them more popular outside of Uttarakhand and also amongst the locals. Training on how to effectively sell and market these products will help alleviate a key challenge for this category

There is high potential for the skill in this state. The State has approximately 4000 Jewelery Shops spread across most of the towns and cities. There are two kinds of job roles available, namely,

Retailers - These job roles are concerned with interaction with customers, understanding their requirments and then selling. Most of the jobs are done by the Jeweller himself and through trained Salespersons. Women have been taking over these job-roles in a big way. We estimate that around 8000 sales persons are employed for retail of Jewelery.

Jewelery Makers/Workers - The second category of job-roles is Jewelery Workers. They are involved purely in the Jewelery Making jobs . As per the estimates provided by the industry practitioners, approximately 10,000 - 12000 workers from Bengal are employed in these Job-Roles. Most of the respondents claimed that none of the workers are from the State. These claims, however, could not be satisfactorily verified using the triangulation methodologies.

Given the steady demand for jewelery, emplyment in this sector is expected to grow at 9% annually. The employment number is expected to grow up to 30772 over the next 5 years. However in the absence of any strong intervention, locals are unlikely to get attracted to the Jewelery Making skill. DIC, Uttarakhand has arranged a few workshops on jewelry designing for the local youth in the past.

Further, we would like to caution the reader that the Jewelery trade is not very transparent and the respondents showed substantial reluctance in sharing the financial details of their trade. The workforce numbers specially on jewelery workers also could not be cross-referenced as no reliable sources of data were available. The jewelry workers in Uttarakhand are employed in an unorganized sector, wherein they work on a contractual basis depending the work load. They are paid in cash as well as metal waste, which has also been considered as a part of their earnings. On an average they earn between Rs. 30000-40000 a month

Table No. 63: Economic Potential of Jewellery Workers

Annual Estimates	2017-18	2021-22
No. of practitioners	20000	30772
Market size	854.8cr	1011 cr
Trade Enhancement (In % Terms)		18%

7.2.c Jewelery RPL Opportunity

The Jewelery Industry is a business of trust. To get gainfully employed the Artisan has to have a very high level of integrity. Usually new artisans enter the trade based on reference of established and experienced senior artisans. Their career progression is at the mercy of the Senior Artisans. The RPL Program has a huge potential with the Jewelery Community as it will open the industry to meritocracy. The existing artisans can qualify the NSQF levels to get certified for their existing skills. They can also go for courses that they want to specialize into.

The following benefits are expected to come to the existing artisans who join the RPL program.

- The Workers can negotiate their earnings with the Jewellers based on their certification.
- The RPL program will greatly improve labour mobility as artisans can move to any part of the country and the world and apply based on their certification.
- The Artisans become empowered to choose their career progression paths and will not have to depend on their community and geographical constraints.
- Currently the program has the potential to cover around 20,000 Jewelery Workers under the RPL Program.

The skill will fall under the Gems and jewelery SSC and the following job roles and complexities exist in the practice of the skill



Figure No. 15: Famous Nath Designs of Uttarakhand

Table 64: Jewellery job roles

Job Role	Level	Process Required	Professional knowledge	Profes- sional skill	Core skill	Responsi- bility
Goldsmith: Component Maker	3	Draw wire or strip from precious metal or alloy bar. Make ball from pre- cious met- al or alloy. Stamp on the gold sheet. Make gold chain	Has an under- standing of the nature of Pre- cious metals including their malleability and ductility of Pre- cious Metals	Demon- strate Skill of making various kinds of de- signs out of metals us- ing various processes	Has the under- standing to interpret what the customer wants and make ad- justments using arith- metic cal- culations on weights and nature of metals	Has to work in close co- ordination with the shop own- er/Jeweller
Polisher and Clean- er	3	Polish, clean and finish the jewelery	Has the under- standing of how the final work- pieces should look and feel. He makes the Workpieces market ready	Demon- strates dexterity in cleaning and pol- iching of the Work- pieces	Has the ability to understand and com- municate with the customers and Jewel- lers	Has to work in close co- ordination with the shop own- er/Jeweller
Setter	3	Set gem- stones on jewelery frame	Has the knowl- edge and skill to set and precious stones in vari- ous metal work- pieces	Demon- strates Dexterity in Setting Stones to Metal Workpieces	Has the ability to understand and com- municate with the customers and Jewel- lers	Has to work in close co- ordination with the shop own- er/Jeweller
Goldsmith: Enameler	4	Paint with enamel colours on jewelery frame	Has an under- standing of Jewelery Design and appearanc- es.	Demon- strate very fine skill of applying paint on metal to enhance the look of the work- piece	Has the ability to understand and com- municate with the customers and Jewel- lers	works inde- pendently and engag- es with the Jeweller on contractual basis

Goldsmith: Frame Mak- er	4	Make the jewelery frame of gold or alloy	Has an under- standing of Jewelery Design and appearanc- es.	Demon- strates the ability to make jewel- ery frames out of met- al sheets	Has the ability to understand and com- municate with the customers and Jewel- lers	works inde- pendently and engag- es with the Jeweller on contractual basis
Master Maker (Hand)	5	Draw jewel- ery designs. Draw wire or strip from precious metal or alloy bar. Make ball from pre- cious met- al or alloy. Stamp the gold sheet. Make gold chain. Make the jewel- ery frame of gold or alloy. Set gemstones on jewelery frame	Has an under- standing of Jewelery Design and appearanc- es.	Demon- strates the ability to cast, Stamp, embross and En- grave Metal Sheets with the Designs and pat- terns	Has the ability to communi- cate with the Jew- eller, Cus- tomer and co-workers on all as- pects of the Craft.	Holds the primary re- sponsibility of the work and deliv- ery of the workpieces. Engages with the Jeweller on employ- ment and contractual basis but is the final authority on possibil- ities
Jeweller	6	Owns and Runs the business of Jewelery	A great deal of Knowledge and experience on the possibilities of the metal and Designs. He also understands the trends that emerge in the market and pre- pare to ride it.	He is ca- pable of conducting the trade in precious metals, gemstones	Has the ability to price the efforts undertak- en on the workpiec- es, engage with con- tractual ar- tisans and schedule the works	He is fully responsi- ble for the business and the re- lations with customers, Employees and Con- tractual Artisans

Table No-65 : NOS Codes for Jewelery

Job Role		NOS Available	NOS Name	NOS Proposed
Goldsmith:	3	G&J/N9916	Communicate with colleagues	OS unit on
Component			and seniors	Uttarakhand
Maker		G&J/N9911	Coordinate with others	traditional
		G&J/N0601	Draw wire or strip from precious	designs
			metal or alloy bar	
		G&J/N0602	Make ball from precious metal	
			or alloy	
		G&J/N9912	Coordinate with others	
Polisher and	3	G&J/N0701	Polish, clean and finish the jew-	
Cleaner			elery	
	_	G&J/N9911	Coordinate with others	
Setter	3	G&J/N0801	This OS unit is about selecting	OS unit on Ut-
			gemstones for setting in a jew- elery as	tarakhand tradi- tional designs
			per design in terms of shape,	tional designs
			size, weight, colour and type	
Goldsmith:	4	G&J/N0902	Paint with enamel colours on	OS unit on Ut-
Enameller			jewelery frame	tarakhand tradi-
				tional designs
Goldsmith:	4	G&J/N0702	Supervise the cleaning and pol-	OS unit on Ut-
Frame Mak-			ishing department's functions	tarakhand tradi-
er	_			tional designs
Master Mak-	5	G&J/N1402	Draw jewelery designs	OS unit on Ut-
er (Hand)				tarakhand tradi- tional designs
		G&J/N0601	Draw wire or strip from precious	-
		G&J/10001	metal or alloy bar	tomer handling,
		G&J/N0606	Supervise frame making	torner narialing,
		G&J/N0607	Supervise components making	
		G&J/N0702	Supervise the cleaning and pol-	
		000/110/02	ishing department's functions	
		G&J/N0805	Supervise gemstone setting	
Jeweller	6	G&J/N9915	Interact with colleagues, cus-	OS unit on Basic
			tomers and vendors	business skills
		G&J/N9914	Maintain safe and clean work	
			environment	
		G&J/N0303	Procure raw materials for jewel-	
			ery manufacturing	
		G&J/N9910	Maintain IPR and respect copy-	
			right	
		G&J/N0101	Plan and manage production	
			process	

7.3 Health and Wellness Industry

The Indian wellness industry was estimated at close to Rs 85,000 crore in financial year 2014-15 and is expected to grow at a compounded annual growth rate (CAGR) of nearly 12% for the next 5 years. The industry can achieve about Rs1.5 trillion by FY20, according to a recent report by Ficci and EY. The wellness and preventive health care sector as a whole is expected to nearly double by 2020, some sub-segments will outperform others. While beauty care and nutritional care would retain their share, fitness and rejuvenation would significantly increase their market share.

The major areas which are expected to see major growth are Yog, Ayurveda, naturopathy, Cosmetics and care products based on natural extracts. Traditional healing techniques, Medicinal herbs supplements and Rejuvenation procedures are expected to gallop ahead in the industry.

Health and wellness is one of the most promising sectors for the state of Uttarakhand. The state has been attracting health enthusiasts from around the world for a very long time. The primary draws to the state have been Yog and Ayurveda.

The State also attracts visitors who want to experience nature in all its magnanimity. A lot of traditional skill have evolved in the state which focus on health and wellness. One just area is Medicinal plants, extracts and healing techniques employed by the indigenous people of the state. The legendary medicinal values of Hot Water Springs of the State also require mention. An estimate made Uttarakhand Tourism Development Board (UTDB) and Geo thermal Institute of University of Aucland and Geological Survey of India (GSI) identified around 62 Hot water Springs which have the potential to attract health enthusiasts regularly.



7.3.1 YOG

Rishikesh is widely recognized as the "Yog capital of the World". World renowned Yog Practitioners like Swami Ramdev, Acharya Balkrishna, Swami Chidanand Saraswatiji, Yogrishi Vishvketu, etc. have made Uttarakhand their home.

The Uttarakhand State Tourism Development Board Estimated that around 5,92,000 tourists came to Rishikesh in the year 2016. There is a high probability that a majority of them would have taken up various duration courses at yoga centers dotting the city. Another 2,00,00000 + visited Haridwar in 2016. Despite this large number of potential yoga students as well as the reputation of the place , only approximately 224 practitioners are registered with different bodies in Uttarakhand.

However those unregistered are expected to be in excess of 17000.

A large number of youth who have completed the Yoga Courses get employment at Yoga Schools Abroad. There is a huge demand for Indian Yoga Teachers abroad.

Yoga is a body of knowledge which is free for interpretation by different practitioners. The multitude of schools have evolved their own techniques of practicing yoga.

7.3.1.a Yog RPL Opportunity

As discussed above, Uttarakhand is the Yoga Capital of the world but has no Registered Yoga Instructors/Trainers. The only register of Instructors/Trainers is available on Yoga Alliance, a US based organization. They classify the practitioners based on the feedback received from practitioners and enthusiasts who attend courses with them.

NSQF provides a robust mechanism to identify and certify the skill of Instructor/Trainers. The Job Roles created by the Beauty and Wellness SSC comprehensively maps the competency of the Instructor/Trainers.

The RPL Program can have the followed pronounced benefits for the Enthusiasts and Instructors:

- It can give an assurance to the Practitioners and Enthusiasts that the Instructor/Trainers has the required theoretical & practical knowledge and has been tested for outcomes.
- The Instructors can gain an understanding of the outcomes that their participants expect out of the courses they undertake.
- The Instructors can enter the framework at their current levels and they move

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to higher levels of competency.

- Joining the scheme will increase their mobility across the country and overseas.
- All the current Instructor/Trainers, students at the various State Colleges learning Yoga can join the Scheme.

For certification in Yog, the following courses are recognized and taught:

Gurukul Kangri	Kumaon	Garhwal	Yoga Alliance Foundation
Vishwavidyalaya	University	University	
Vedalankar (Equivalent to 3 Years B.A.) course, with Yoga as an Elective course is offered Certification of Yoga: as a 6 months course is also offered, inde- pendently	1- P.G.Diploma in yoga 2 - Master degree in yoga	BACHELOR OF SCIENCE (B.Sc.) IN YOGIC SCIENCE - 3 Years Degree Course Post Graduate Diploma (Yoga) - 1 Years Diploma Course Masters of Arts (Yoga) - 2 Years Degree Course Doctorate in Philos- ophy (Yoga)	Yoga Alliance Foundation, based in Arlington, USA, has become one of the largest aggregators of Yoga. There are some 340 Schools and Ash- rams which have taken affilia- tion with it. Most of the interna- tional yoga enthusiasts refer to them for choosing their Yoga destinations. 580 Yoga Teach- ers have registered with Yoga Alliance and get frequently appraised by their students online. The Yoga Courses range from 200 Hrs to 500 Hrs curriculums

Table No.-66 : Yoga certification courses

The Yoga Calendar of the State has some major events which are visited by people from across the world:

- International Yoga Festival: Organized in the month of March every year, at the Parmarth Niketan Ashram, Rishikesh, Uttarakhand. More than 2000 people register for this event form across the world. Various Seminars, Workshops and Events are organized to discuss the proliferation of Yoga across the world. A Multitude of National and International Celebrities also join the event in various capacities.
- International Yoga Day: The United Nations, declared 21st June as the International Yoga Day. All the Yoga Schools in the State organize various programs on the International Yoga Day. The biggest celebrations are organized at the Patanjali Yogpeeth. Very large gatherings of Yoga enthusiasts converge on to the Yogpeeth to simultaneously perform the Yoga Asanas, under the Guidance of Swami Ramdev and Acharya Balkrishna.
- There are 224 registered practitioners in Uttarakhand (as per Yoga Alliance and other bodies). According to a recent survey published in the Indian Express, the increase in the yoga practitioners in the recent past has been 30% within Indian metros. This is a reflection of the demand for the skill, however this may not translate into increase in the numbers in Uttarakhand in the recent future. The demand outside the state is likely to trigger outmigration of the practitioners who are not doing too well in Rishiskesh. The actual reg-

istered number is quite low as compared to the several actual practitioners in Uttarakhand. The number of registered practitioners is likely to grow to 609 in the next 5 years. The earnings are usually seasonal, however a single yoga instructor on an average earns approximately Rs. 10000

Table No-67 : Economic Potential for Yog Practitioners

Annual Estimates	2017-18	2021-22
	Current Estimate	Future Projection
No. of practitioners	224	609
Average Productivity	1,20,000	1,93,000
Market Size	2.7 Crs	11.7 cr
Trade Enhancement (In % Terms)		333%
Estimated Working Capital Cycle	1 month	
Working Capital Requirement per Artisan	10000	16000
Working Capital Requirement for the Industry	0.224 cr	0.974 cr

Despite the high number there are several unregistered outfits which are operating and fulfilling the market potential. This has therefore led to a lopsided development of the sector in Uttarakhand , where several practitioner also claim that they are not getting enough students across the year to sustain their school/ashram. This is true primarily for the small and individual teacher

7.3.1.b Challenges of Yog

- Standardization and Accreditation of Schools: There is a huge body of Knowledge of Yoga available. Multiple experts have interpreted these texts as per their own understanding. This has caused a wide variety of practices to emerge which might seem to be in conflict. An urgent need to identify the practices which are consistent with the ethos of yoga is required. This can bring in consistency and authenticity to the Yoga Discipline in the state.
- Identification and Recognition of Yoga Practitioners: It would be interesting to note here that a simple Google search on Yoga Practitioners does not throw a single name of an Indian based out of Rishikesh. The Yoga Space on the Internet has to be reclaimed and Yoga Practitioners have to be recognized. A directory has to be built which acts as the principle point of reference for Yoga Shopping worldwide is required.
- Various focused short duration course have to be devised keeping in mind the goals of the consumer segments that come to the city for Yoga Shopping
- Presentation and Language course have to be introduced for existing Yoga Teachers.
- Courses on Internet Marketing are the need of the hour for Yoga Teachers to help them get students from distant places.

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- The native yoga practitioners are facing stiff competition from the international practitioners who have learnt and stayed back and attract the foreign tourists/ students easily. The native practitioners will have to be trained in selling their skills better to the potential customers.
- Ombudsman of Yoga: The state is in need of an Ombudsman of Yoga to help regulate the Yoga experience of Yoga Enthusiasts. The regulator will ensure that the schools teaching Yoga adhere to established guidelines on teaching and practicing Yoga. They also provide tight security and Hygiene for residential students.

The skill will fall under the Beauty and wellness SSC and the following job roles and complexities exist in the practice of the skill

Table No-68: Yoga Job Roles **Professional Core skill** Job Role Level Process Professional **Responsi-**Required knowledge skill bility Yoga He has clear Has the clear Has the Abili- He is able He Inde-4 Instructor understandunderstandty to perform pendently to instruct ing the esing on the the various conducts the particisentials for a benefits of Asanas and pants in the Yoga class-Yoga Session everv Asana also knows Sessions es. with and Breathing the variawhile perreasonable **Techniques** tions across forming proficiency the various the Yoga Asanas in a Schools of simple and Yoga Practiced explanatory language Has the Abili-Yoga Yoga Trainer Has a clear He is able Fully Func-Trainer is required to Understandty to perform to prepare tioning as know the folthe various ing of the asanas Yoga Train-Benefits for Asanas and routines for er. Able to lowing Yoga Practices: the Asanas also knows Bal, Mahila guide yoga Hatha Yoga and Breathing the variaand Vridha Instructors Ashtanga Vin- Techniques Clients tions across on the varyasa Yoga the various ious As-Schools of pects and Yoga Prac-Practices. ticed Senior 6 Able to Con-Aware of the Conduct the Commu-Fully Re-Yoga duct Sessions Advanced Advanced sponsible nicate and Trainer on Advanced Levels of Yoga sessions Clear the for advis-Levels of Ashtanga and train the Queries of ing Yoga Yoga and Ha-Yoga Instruc-Enthusi-Ashtanga Yoga En-Yoga and Haasts on the tha Yoga tors thusiasts and Stu-Choice od tha Yoga dents tak-Asanas and ing Courses Breathing of becom-Techniques. ing Yoga Has the Trainer & ability to Yoga Intrain Yoga structor Trainer & Yoga In-

structor as per the NSQF.

2 SKILL GAP ANALYSIS FOR RELEVANT SKILLS OF UTTARAKHAND

Table 69 : N	os c	odes for Yoga		
Yoga 4 Instructor		BWS/N9001 BWS/N2201 BWS/N9002	Prepare and maintain work area Conduct the basic Yoga sessions Maintain health and safety at the work place	OS unit on Business prac- tices and log maintenance OS unit on Internet mar- keting OS unit on foreign lan- guages and interaction with foreigners
		BWS/N9003	Create a positive impres- sion at the work place	
Yoga Trainer	5	BWS/N9001	Prepare and maintain work area	OS unit on Business prac- tices and log maintenance
		BWS/N2204	Conduct the Advanced Yoga sessions	OS unit on Internet mar- keting
		BWS/N2202	Conduct Hatha Yoga ses- sions	OS unit on foreign lan- guages and interaction with foreigners
		BWS/N2203	Conduct Ashtanga Vinyasa Yoga Sessions	
		BWS/N9002	Maintain health and safety at the workplace	
		BWS/N9003	Create a positive impres- sion at the workplace	
		BWS/N2208	Conduct the Bal Yoga ses- sions	
		BWS/N2209	Conduct the Mathila Yoga sessions	
		BWS/N2210	Conduct the Vridha Yoga session	
Senior Yoga	6	BWS/N9001	Prepare and maintain work area	OS unit on Business prac- tices and log maintenance
Trainer		BWS/N2207	Conduct the Advanced Yoga sessions and train the Yoga Instructors	OS unit on Internet mar- keting
		BWS/N2206	Conduct Advanced Ashtang a Vinyasa Yoga sessions and train the Yoga Instructors	OS unit on foreign lan- guages and interaction with foreigners
		BWS/N2205	Conduct Advanced Hatha Yoga sessions and train the Yoga Instructors	
		BWS/N9002	Maintain health and safety at the workplace	
		BWS/N9003	Create a positive impres- sion at the work place	

7.3.2 Ayurveda

Ayurveda is an ancient science of Health and Wellness structured by the Rishis of India 5000 years ago. They wrote various texts offering advice on the optimal way of life. They include commentaries on eating, drinking, exercising, sleeping, thinking, etc. Similarly they discuss at length the various common diseases that people contract and how to cure them using herbs. There is rich text on the medicinal properties of various plants in Ayurve-da. Ancient Ayurveda texts also taught surgical techniques, including rhinoplasty, kidney stone extractions, sutures, and the extraction of foreign objects.

Uttarakhand has been the hub of Ayurvedic practitioners since ancient times. This traditional healing system was pervasively practiced as a variety of medicinal plants mentioned in the texts were found in the Himalayas.

For a very long time, the western medical fraternity regarded Ayurveda as Shaman and Placebo healing. However, it became increasingly evident that Western medicine had a lot of damaging side effects which play havoc with the human body. This realization caused a tectonic shift in the mindset of the people and respect for Ayurveda and other Naturopathy practices gained momentum.

The Indian Ayurvedic Market is poised to grow at a CAGR of around 16.0% over the next decade. (Source: Global Newswire ,2016)

Some of the prominent trends that the market is witnessing include growing urbanization & changing lifestyle, adopting as a complementary and alternative medicine (CAM), new innovative product launches and growth opportunities/investment opportunities. Today, the Himalayas are one of the most sorts after destinations for availing Ayurvedic Treatments. A lot of Ayurvedic Hospitals and Spas have come up in the hills.

The most notable of these institutions based out of Uttarakhand are Patanjali Hospital at Haridwar and Ananda Spa at Rishikesh. People from across the country and the world come here to experience Ayurvedic Healing.

The Basic Challenge with Ayurvedic Healing is to find qualified and experienced personnel to effectively administer these procedures.

Uttarakhand Ayurved University was established to cater to this growing need for qualified practitioners. The following courses are being offered:

- Bachelor of Ayurvedic Medicine and Surgery(B.A.M.S.)
- Doctor of Medicine/Master of Surgery (MD/MS)(AY)
- Doctor of Philosophy (Ph.D.)

Similar Courses are offered by Gurukul Kangri Vishwavidyalaya, HNB Garhwal University and Kumoan University.

7.3.2.a Challenges of Ayurveda

 Inadequate Facilities: Ministry of AYUSH, has started registration of Ayurveda Hospitals and Practitioners in the country. There are just 7 registered Ayurvedic Hospitals with a total of 319 beds for the entire state of Uttarakhand.



- Very Low Number of Naturopathy/Ayurvedic Practitioners: The Ministry of AYUSH, data on Registered Naturopathy and Ayurvedic Practitioners has no records of the State of Uttarakhand. Even though there are qualified professionals, the state will not be able to devise interventions.
- Brand: The Branding of Ayurvedic Services is of extreme importance. Ananda Spa that has been able to maintain this brand in this competitive market, other similar
- Ombudsman: A regulator is required to streamline Ayurvedic Initiatives in the state. Standardization of Procedures which are consistent with the Ayurvedic principles have to implemented and regulated.

Economic Potential: The total Ayurveda market of India is pegged at Rs. 4205 cr and is expected to grow to 7000 cr in 2020, as per the Exim Bank report. Two key states play a major role in Ayurveda, Kerela and Uttarakhand. The current turnover of this industry in Uttarakhand is pegged at Rs. 1200 cr and contributes 25% to the national turnover.Projected Growth in the Ayurveda Turnover in the next 5 Years.

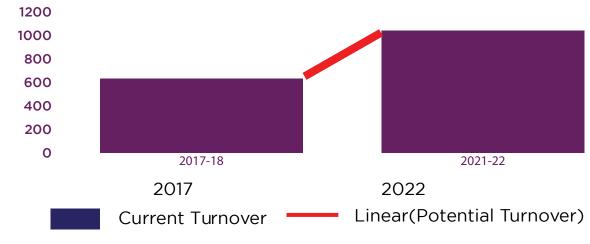


Figure 18 : Ayurveda Turnover Projections for next 5 years

Table No- 70: Welfare Potential of Ayurvedic Practitioners

Annual Estimates	2017-18	2021-22
		Future Projection
No. of Ayurvedic Practitioners	630	1,041
1 Ayurvedic Practitioners for Size of population	1,58,730	96,057
Income from Practice (per Person)	As per Govt. Scale	As per Govt. Scale

This despite the dominant Ayurveda association with the state. States in South India like TN, Karnataka, Kerala ,Telengana and AP have the highest population of registered practitioner , with the Karnataka having the highest number of registered practitioners at 751. The top 3 states also have the best population to practitioner ratio with Karnataka having a ratio of 1/96057 persons.

Uttarakhand Government has opened more than 630 Ayurvedic Health Centers with equal number of doctors. In order to achieve a similar ratio in the next 5 years Uttarakhand needs to train 411 practitioners.

7.3.2.b Ayurveda RPL Opportunity

Ayurveda & Naturopathy will fall under the Beauty and Wellness Sector Skill Council Domain. However, no Job Roles and NOS have been developed till date by the SSC. The growth in the sector warrants urgent attention to help develop a strong base of skilled professionals to address the skill gap.

There are however, some course designed by the Ministry of AYUSH that could be a starting point for the NSQF. Further, there is tremendous awareness & growth in the world in the field of Ayurveda and other wellness practices of India. There is an urgent need to empower our existing practitioners to harness the potential.

The RPL Scheme assumes a great significance in the wake of the growing opportunities in the field. Once the Job Roles and NOSs are established the RPL program can be floated. The skill will fall under the Beauty and wellness SSC and the following job roles and complexities exist in the practice of the skill

Job Role	Level	Process Required	Professional knowledge	Profession- al skill	Core skill
Ayurvedic Therapist	3	Person to carry-out Simple pan- chakarma therapy	Understand- ing the fun- damental principles of panchakarma therapy	Administer the various processes of the Panch- karma Ther- apy	Ability to communicate and explain the funda- mental principles of panchakarma therapy and its Application in healthy state of life to maintain health of an individual person. Further nec- essary knowledge and skill to apply panchakarma therapy convincingly and sci- entifically for the allevi- ation of disorders.
Ayurvedic therapist Dietetics	3	Person to pos- sess skillful knowledge of Ayurve- dic pharma- ceutics and preparation of Ayurve- dic simple dosage	Understand- ing the fun- damental principles of Ayurvedic pharmaceu- tics	Preparation of simple dosage of Ayurvedic Pharmaceu- tics as in an Ayurvedic Hospital	Ability to communicate and explain Ayurvedic dietetics and develop propen- sity to understand the importance of diet/dietary substances in healthy and diseased persons.

Table No-71 : Job Roles for Ayurveda & Naturopathy

While there are no existing NOS for the skill, new NOS units on the following could be designed

Table 72 : New NOS unit for Ayurveda & Naturopathy

NOS Proposed
Ayurvedic practices course
Business practices
Internet marketing
Maintenance of work place safety and cleanliness
Team work
Introduction to allopathic medicines

7.4 Bamboo & Ringal

With 90 Lakh Hectare of Bamboo forests, India captures only about 4.5 per cent of the world market of Bamboo. While China with just 40 Lakh Hectare of Bamboo forests holds about 50 per cent of the world market. Our old law 'Indian Forest Act (1927)' classified Bamboo as 'Tree' and fallen bamboo as 'Timber', contrary to the scientific classification of bamboo as 'Grass'. Hence, many regulatory restrictions applied to Bamboo in cutting and transportation. FRA 2006 also imposes restrictions – It vests the right of ownership and the right to collect, use and dispose of bamboo in Tribals , which further adds to the restrictions. Despite this, Bamboo plays a crucial role in the country and approximately 50% of the tribal population is dependent on it for their livelihood. Bamboo has 1500 identified uses ranging from fuel wood and light bulb. It is also eco-friendly and therefore even more relevant today.

Figure 19 : Ringal Artisan in Tehri Garhwal



In 2018 budget, the allocation of 1,290 crore for a restructured National Bamboo Mission (NBM) has raised hopes for a range of bamboo-based industries. Further bamboo that is grown outside forest areas have been removed from the definition of trees. This makes sourcing of bamboo easier for the bamboo craftsmen across the country.



Source: FSI , India Forest report 2011

Only about 0.3% of the total bamboo area is available in Uttarakhand, however close to 460 villages or approximately 3% of the villages are completely dependent on bamboo for their livelihood. With the regulations on bamboo cutting as well as the other topographical challenges, sourcing of raw material is one of the biggest challenges for these artisans. The entire trade is labor intensive, from raw material procurement to processing and selling and in Uttarakhand is primarily done manually. In some other places, machines are normally used to increase productivity, reduce wastage of raw materials, increase the yield of bamboo strips and remove drudgery in the primary processing of the clums.

Estimates from various studies peg the annual village consumption of bamboo and ringal products in the range of 600-3000 item per year depending on the village size. As per conservative estimates the current market of bamboo and ringal within Uttarakhand is to tune of Rs. 252 cr and is project to grow upto Rs. 268 cr in the next 5 years

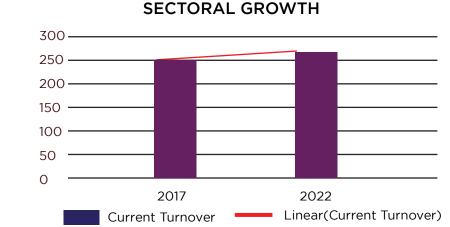


Figure 21 : Bamboo Turnover Sectoral Growth

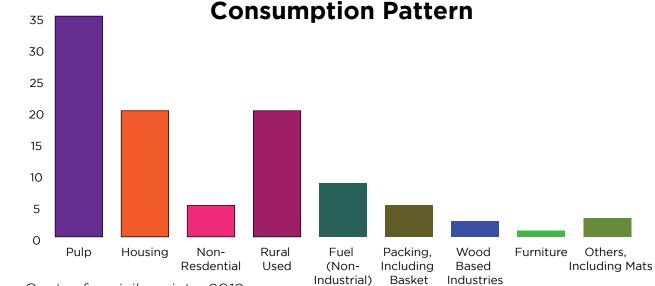
Like most other states, bamboo and Ringal play a crucial role in Uttarakhand and across its 13 districts, however with varying importance. While Bamboo and Ringal have over 1500 documented uses, the artisans in Uttarakhand use the raw material to produce 62 products only 14 products are created produced and consumed dominantly in these villages. Bamboo and Ringal craftsmen informed that most of their products like bamboo roof, baskets and soops were for daily use in the villages. The reason for their popularity is that ringal and bamboo products are low cost and very durable. In the past, bamboo and ringal sheets were used as an insulator below the patal tiles. It was used to manufacture Daalia or Baskets which were very useful for carrying heavy loads in the hills. However, industrial substitutes like Plastic and Asbestos sheets have impacted the sale of bamboo and Ringal products.

Table No-73 : List of dominant bamboo and Ringal products in Uttarakhand

S.No	Baskets	S.No.	Others
1	Big Basket	8	Winnowing Tray
2	Big Basket with Handle	9	Mat
3	Small Basket	10	Hat
4	Small Basket with handle	11	Mouth Trap
5	Round Basket	12	Round sleeping Basket
6	Small round Basket	13	Carrying Basket (Doka)
7	Food grain storage Basket	14	Carrying Basket (Solta)

This is in stark contrast to the national consumption of Bamboo and is concentrated around only 8-10% of the national consumption pattern. This highlights the scope for acquiring newer skills, amongst the bamboo craftsmen of Uttarakhand

Figure 22 : National Bamboo consumption pattern



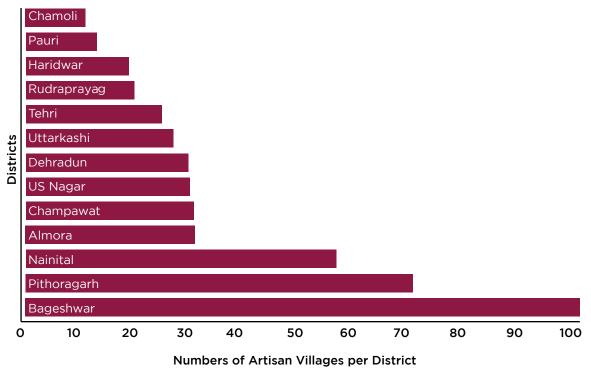
Source: Centre for civil society, 2012

Economic Potential: As per our estimates approximately 75000 bamboo craftsmen are working on bamboo either part time or full time. While Bamboo craftsmen can be found across all districts and their concentration is the highest in Bageshwar, Pithoragarh and Nainital. Looking at the district trends as well as the consistent demand of the category another 7,750 practitioners are likely to join the trade naturally, across the state over the next 5 years.

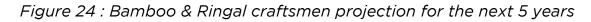
Table No-74: Economic Potential of Bamboo & Ringal

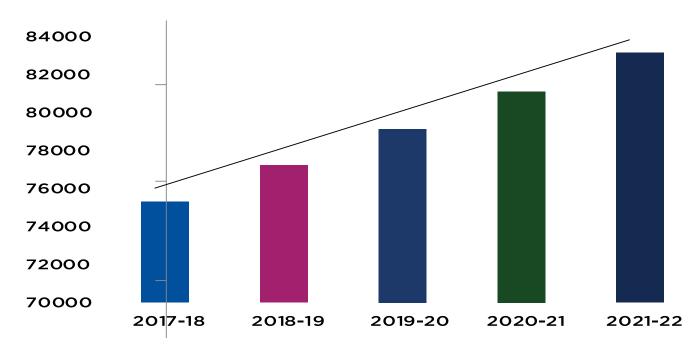
Annual Estimates	2017-18	2021-22
	Current Estimate	Future Projection
No. of practitioners	75,340	83,288
Average Productivity	33,448	32,178
Income from Practice (per Person)	30,000	30,000
Market Size	252 Crs	268 Crs
Trade Enhancement (In % Terms)		6%
Estimated Working Capital Cycle	1 month	
Working Capital Requirement per Artisan	1672	1609
Working Capital Requirement for the Industry	12.6 Crs	13.4 Crs

Figure 23 : Bamboo & Ringal artisan villages per district



Source: E-botany Research & Applications





The following technical stages are involved in manufacturing woven bamboo products:

- Conception and design of handicrafts.
- Strip and split making.
- Weaving skills.
- Methods of coloring, preservation and protection against pests and relevant facilities.

In most cases the craftsmen have acquired the skill over time and from their previous generations, however the craftsmen met during the course of this research claim that a 3-6 months is sufficient to train a new person It is possible for people to weave products such as mat and baskets after short -term training. Much more experience and higher levels of skill are required to weave superior quality handicrafts and these can only be learnt from master craftsmen.

This labour intensive process consumes not only a lot of time but also blocks up the craftsman's money till sale. The income of Bamboo and Ringal workers is anything between INR 3000 to INR 6000 per month. This when compared to industrial workers is a very small percentage and therefore discouraging younger population to enter in the industry. Most of the craftsmen practicing this art are either old men or women. The produce is usually sold easily within the villages or during fairs with very few incidences of stock-up. This reflects the strong potential in the market but at low margins. At conservative estimates a village consumes approximately 600 Bamboo and Ringal articles in a year.

For this industry, the challenges are many; however the potential is also very high. With the recent change in norms the industry can grow further. NABARD, NISBUD and DIC, Uttarakhand have been conducting skill workshops for training the artisans on newer product lines.

7.4.1 Bamboo & Ringal RPL Opportunity

Bamboo and Ringal Arts is one of the most pervasive traditional skills of the state. During our research we found that despite the large number of existing practitioners in the state very few of them have a range and depth in the skill. Usually they make very limited range of items using standard techniques. Very few have the ability to manufacture make-to-order products.

The Handicraft and Carpet Sector Skill council has developed Qualification Packs (QP) with defined National Occupational Standards (NOS) on Bamboo and Ringal Arts. As observed earlier, the Socio-economic Status of Bamboo and Ringal artisans is extremely precarious. The RPL program can be a boon to the artisan community.

The Benefits of the RPL program for the Artisans are stated below:

- The existing Artisans in the state can qualify the QPs and NOSs at their existing competency levels laterally and then progress to high competencies.
- The Certification of their competencies and manufacturing capabilities will help them gain access to bigger markets where they can get a better price for their efforts.
- The NSQF certification will also help in greater labour mobility across the states where the earning opportunities are higher.
- The Incentive of around Rs. 2200 of joining the NSQF could be of great help and encouragement.

There is a huge potential for RPL scheme to cover around 75000 Bamboo and Ringal workers on various Job Roles defined by the Handicraft and Carpet Sector Skill Council for PMKVY.

The current skill gaps that exist for the industry are:

Table No-75: Bamboo & Ringal Skill Intervention Cues

	Skill intervention
Skill Gap	
Sourcing- Availability of raw material as well as the time and chal- lenges with going to forest to extract raw material.	Currently 93% of all Ringal is gathered from the forest. A skill- ing program is required to be undertaken to cultivate ringal on industrial scale on waste lands in the hills. These will help cultiva- tors with additional income from waste lands. The land requirement for setting up the unit is negligibly small
	and the investment required low. However, technical assistance and training is required for this.
Innovation- The prod- ucts are currently catering to rural mar- ket and are only func- tioning at 8-10% of the potential uses.	Newer categories which could be relevance to the urban as well as to outside consumers outside the state and country can help fetch better returns on investment as well as create a more inter- est amongst the younger population. A lot of scope for Innovation and adaption is required to bring back ringal and bamboo in the mainstream. Designers and Prod- uct Craftsmen have to come together to expand the range of products being manufactured. Rather than these items becom- ing souvenirs, they should start competing against the industrial substitutes on the market.
Innovation- The prod- ucts are currently catering to rural mar- ket and are only func- tioning at 8-10% of the potential uses.	Newer categories which could be relevance to the urban as well as to outside consumers outside the state and country can help fetch better returns on investment as well as create a more inter- est amongst the younger population.
Productivity the lack of machines makes the process cumber- some and time con- suming.	The main machines are cross-cutting machine, sliver-making machine, splitting machine and width sizing machine. Providing training and assistance in acquiring these machines could be looked at.
	Division of labour across the various stages from supply to sell- ing can also be looked at as an alternative to increasing produc- tivity and output across the entire chain.
Selling skills	All the bamboo and ringal artisans are involved in the selling of their products. A skilling course on selling these handicrafts based on feedback of various stakeholders will help the artisans generate higher premiums on their products. Especially how to sell Ringal and Bamboo products to Tourists has to be the main- stay of the courses.

The job roles identified, during the Research on Bamboo & Ringal would come under the stewardship of 2 sectoral skill council, namely Handicraft & Carpet skill Council and Agriculture & Allied Skill council, the following job roles and complexities exist in the practice for the skill.

Table NO-7	0.500	Rules IUI Dal	nboo a Ringai	(nanuiciant d	& carpet Skill Col	
Job Role	Level	Process Required	Professional knowledge	Profes- sional skill	Core skill	Responsibility
Bamboo Basket Maker	3	Carry out weaving & twining of bamboo slivers to achieve the final prod- uct as per require- ment	Possess the knowledge of Prepar- ing Bamboo Slivers and Weaving and twining	Possess the Skill of Weaving and Twin- ing on a frame	Ability to weave and twine Bam- boo Slivers to make different shapes and forms of bas- kets. It also requires the ability to pro- vide strength at the same time manage the weight of the basket	The Craftsman works inde- pendently on Basket Making of Standard Dimensions. However, for baskets that are made - to - order require the skills of a Master Crafts- man.
Bam- boo Mat Weaver	3	Carry out Weav- ing and Twining of Bamboo Slivers to make Mats and sheets	Possess the knowledge of Prepar- ing Bamboo Slivers and Weaving and twining	Possess the Skill of Weav- ing and twining of Bam- boo slivers without the use of looms	The Craftsman can commu- nicate the processes followed in the making and price the ma- terial used & the efforts put in.	The Mat Weav- er works in- dependently using on stan- dardised mats. However, may not possess the ability to un- derstand and deliver Made- To-Order items.
Master Bamboo Crafts- men	6		and possible utilities items made of	He has the required Cognitive and Prac- tical Skills required to provide conven- tional and Made-To- order solu- tions.	Reasonably good under- standing on the amount and quantity of raw materi- al required to deliver con- ventional and made-to-order jobs. Ability to understand the quality of bamboo and ringal to de- liver in various forms and gauges.	Fully Function- ing as a Mas- ter Craftsmen. Engaging other craftsmen on various jobs of conventional and made-to- order nature.

Table No-76 : Job Roles for Bamboo & Ringal (Handicraft & carpet Skill Council)

Table NO-77 : NOS Codes for Bamboo & Ringal (Handicraft & carpet Skill Council)

			Ringal (Handicraft & carpet Skill	
Job Role	Level			NOS Proposed
Bamboo Bas- ket Maker	3	HCS/N8711	Carry out preparation of bam- boo slivers	
		HCS/N8712	Carry out weaving & twining of bamboo slivers to achieve the final product as per require- ment	OS units to understand improvement of material strength, quality and look
		HCS/N8713	Carry out finishing, varnishing, drying & storage of bamboo basket	
		HCS/N 8714	Contribute to achieve quality in bamboo basket making	
		HCS/N 9908	Working in a team	
		HCS/N 9912	Maintain work area and tools	
		HCS/N 9913	Maintain health, safety and security at workplace	
		HCS/N 9904	Basic business management	
Bamboo Mat Weaver	3	HCS/N 9908	Working in a team	OS units to understand improvement of material strength, quality and look
		HCS/N 9912	Maintain work area and tools	
		HCS/N 9913	Maintain health, safety and security at workplace	
		HCS/N 9904	Basic business management	
		HCS/N 9912	Loom and Tools for Bamboo Mat Weaving	
		HCS/N 8705	Preparatory Processes of Bamboo Mat Weaving	
		HCS/N 8706	Bamboo Mat Weaving: Oper- ating a Loom	
		HCS/N 8707	Quality Appraisal	
Master Bam- boo Crafts- men	6			OS units to Maintain safe and clean work environment
				OS units for Su- pervision role
				OS units for design and ex- presssions
				OS for advanced business prac- tices
				OS units to
				understand improvement
				of material strength, quality and look

Another Job role relevant for the skill is Bamboo collector which is part of Agriculture and allied SSC, and will have the following complexity

Job	Level	Process	Professional	Professional	Core	Responsibil-
Role		Required	knowledge	skill	skill	ity
Bamboo Collector	4	Collects Bamboo and Rin- gal from the Forest which is fit for making Utilities and Artifacts	Knows about the Bamboo Plants their Age and their availability in the Forest	Has tradition- al knowledge and Skill to Identifying the right kind of Bamboo and Ringal	Collects Bamboo and Rin- gal from the For- est which is fit for making Utilities and Arti- facts	The Bamboo and Ringal col- lector is entire- ly responsible for his work. However, they often work in teams made up of members of the family or the village.

Table No-78 : Job Roles complexity for Bamboo & Ringal (Agriculture & Allied Skill council)

Table No-79 :	NOS Codes	for Bamboo	Collector
			001100000

Job Role	Level	NOs Available	NOS Name	NOS Proposed
Bamboo Collector	4	AGR/N6101	Prepare and manage nursery in bamboo growing	
		AGR/N6102	Prepare planting material for Bamboo cultivation	
		AGR/N6103	Prepare land and plant the plant- ing material	
		AGR/N6104	Manage soil nutrient in bamboo growing	
		AGR/N6105	Weed management in bamboo growing	
		AGR/N6106	Irrigation management in bamboo growing	
		AGR/N6107	Integrated pests and diseases management in bamboo growing	
		AGR/N6108	Harvest and post harvest manage- ment in bamboo growing	
		AGR/N9901	Basic farm management	
		AGR/N9902	Assimilating market information	
		AGR/N9903	Maintain health and safety at the workplace	

7.5 Hand-Crafted Copperware

Copper production in India is only about 0.2 percent of world production, yet it is amongst the top 20 producers in the world. While 14 states including Uttarakhand have copper reserves, entire copper extraction in India is now concentrated in 3 states, M.P, Jharkhand and Rajasthan. Traditionally copper has been of high importance for people in Uttarakhand and has been a part of several customs and practices including marriage and child birth. Therefore despite having stopped extraction in the state, several copper craftsmen still exist and continue with their trade. However the trade has been under immense pressure in the past few years owing to the machine produced copper ware, which has a better finish and produces higher output.

Copper is used to make household utensils, buckets, lotas, musical instruments, artifacts, etc. People associate the metal with medicinal properties specifically for storing and drinking water. It is said that water stored in copper utensils is good for digestion and blood circulation. Copper Household Utensils are very much in demand in the marriage season. The Bride's family gift copper utensils for her new home. As part of the tradition, the bride's family also gift traditional bathing pans made of copper for the first born which it is believed boosts the immunity of the infant. Since most of these items are traditional in nature the artisans required to fabricate them should be aware of the culture and significance of these items and the roles they play in the rituals.

The Artisans here make the following items: *Figure 25: Copper products*



, ,

skets
nding lamps, aarati (votive lamps), hand lamps – Lighting during religious cere- nies
Ilow dishes circular, hexagonal, octagonal and oval shapes - Household usages
tes are characterized by designs of deities, birds, flowers, and geometric pat- ns beaten out from the back of copper - Decorative and religious purposes
nchpaatra - used in religious rituals and ceremonies
a, Water Filters, Ghadas - Water Storage and purification
al toys - Children engagements
sical Instruments - Bhonkara, Ranasingha, Damau, Dhol, etc.
nding lamps, aarati (votive lamps), hand lamps – Lighting during religious ceremonie
Illow dishes circular, hexagonal, octagonal and oval shapes - Household usages
a a si

es

terns beaten out from the back of copper - Decorative and religious purposes

Tamta is a caste of traditional craftsmen who specialize in copperware.

7.5.1 Major Production centers of Copperware

Almora District: Almora Town: Tamta Mohalla, Tamra Nagri

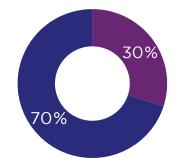
Bageshwar district: Bageshwar, Segare, Choganchina, Binser, Uderkhani, Jashi Gaon, Gair,Banga,Nuplia, Bhatkhola, Khark, Tamta,Jula,Tamture, Bilana,Dawaldhar, Gingori Khola

Chamoli district: Chamoli, Nagrasoo, Badrinath

Further, the currently the craftsmen are under extreme distress because of the mechanization of their craft. A lot of small factories have come up in the plains that are using machines for manufacturing traditional items for the pahadi people with lesser amount of copper using stamping and buffing techniques. The current practitioners believe that the hand-made segment contributes to only 30% of the entire copper craft business.

Figure 26 : Handmade & Machine-made Coppercraft Contribution

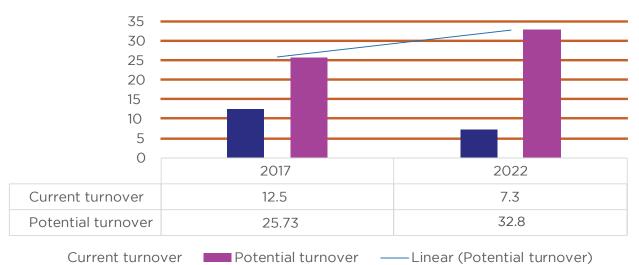
Handmade Machinemade



However, in case of other similar metals, like brass, handmade industry is still flourishing. In fact, some of the handmade copper practitioners have worked in brass manufacturing hubs like Moradabad (one of the key clusters of brass). The average productivity of a master craftsman in Moradabad is around 2.5 lakhs whereas for the copper craftsman is 1.25 lakhs per annum. This requires that massive up-skilling is required for the copper craftsman at these hubs to help them develop items which are better suited for the markets. The market is currently pegged at 12.5 cr, however with higher productivity and sufficient skill and trade interventions, it has the potential to be at 25.7 cr currently and grow upto 32.8 cr. Without intervention it is likely to fall to 7.3 cr

The higher potential is subject to sufficient interventions from government and NGOs to promote and train craftsmen

Figure 27 : Copper Craft Sector Growth Projections



SECTORAL GROWTH

However the number of craftsmen has been declining rapidly and currently most of the craftsmen are above 50 years. Less than a 1000 craftsmen are still working as copper craftsmen and the numbers have been dwindling rapidly, amongst this approximately 70-80% work part time. The skew towards the senior age group is also a concern for the skill and the number of practitioners is expected to fall drastically in the next 5 years. At present there is hardly any new apprentice (young) in the market and the current practitioners are hesitant in inducting trainees because of the high copper prices. Youngsters also get discouraged by the low earning potential in the trade viz-a-viz the effort required to pursue the craft. A craftsman earns between Rs. 7000-10000, in the peak season. Copper Craft is a precious skill of the hills. The Craft is culturally integrated with the Pahadi People. Despite this support the long term survival of the skill is threatened.

7.5.2 Challenges of Copper Craft

• **Rising prices of copper:** The copper rates have shot up over the last decade by almost 3 times. Due to this, craftsmen find it difficult to make the products and sell them. The decline in usage and demand for copper articles has reduced drastically, which renders the artisans unemployed. The current rate of copper fluctuates around Rs. 450 per kg.



- Lack of working capital: The entire trade cycle for the copperware is conducted on cash. The suppliers of copper sheets have to be paid cash; the time cost of making utensils has to be borne by the craftsman. Further, if he employees any helpers or workers they have to pay daily wages. Finally, the cycle gets completed only on realization of sale proceeds from the customer in cash. This increases the hardship and risk for the artisan and reduces his manoeuvrability. Most of the Tamta artisans are economically below the poverty line (BPL); hence, they cannot generate the required initial investment or the working capital to start production on their own. This makes them vulnerable to exploitation by the merchant or trader, on whose mercy and terms these artisans are surviving.
- Low wages for craftsmanship: We have spoken to Uttarakhand Shilp Ratna Awardees about the wages. All have observed that the market is unwilling to provide a premium for the craftsmanship. Even after the government has recognized and rewarded them but they are hardly able to provide for their families. During one of our interviews we found that one of the artisans had worked for a merchant for 20years at Moradabad but had to quit his employment as he was asking for higher wages. Even the award winners mention that the highest potential of earning in this trade currently is about Rs. 10000 a month. This is how much they earn in the peak season
 - Industrial Substitutes: The Handcrafted Copper Utensils have been facing

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the heat from machine made utensils. But, we have to understand that that competition has not just emerged from the factories that manufacture copper utensils at industrial scale but also for copper itself. Today the market is flooded with steel, ceramic, glass, porcelain and the most formidable substitute, Plastic. Even at the Uttarayani Mela'18 the number of stalls selling copperware was just a couple compared to the traders selling utensils made from substitutes.

- Lack of infrastructure and tool upgradation: The artisans are still using ancient techniques and equipment for making their products. Finishing equipment such as buffing machines, and machines to cut and vary the thickness of the metal are not available to most of the artisans. In order to avail of these facilities, the artisan has to go all the way to Almora to get the work done. Innovative tools such as hand-held stamps and cutting machines have not yet been introduced for the benefit of the artisans. The introduction of these equipment will reduce the production time, economize the process and help develop innovative designs for the products.
- Training to improve quality of design and making the metal designs contemporary. Skilling intervention required to acquaint the artisans to Tastes of the Urban Customer.
- Training for use of modern and efficient machinery for buffing and finishing of products.
- New products innovations like flasks and hot water geysers,
- The Artisans have to be provided support to use copper as a medium of expression for Arts and Artefacts. Currently they want to continue surviving by making kitchen utensils which is a shrinking market.
- The Ayurvedic Benefits of copperware need to be communicated through the tourism industry and built upon to make wider and more relevant product in forms like lotas with cover, copper shot glasses, etc.

Despite all their shortcomings and struggles the artisans are more than willing to share their skills with the youth. The entire process of copperware can be learnt by anyone with a training and apprenticeship of 1 year. The training will be able to acquaint the students with the basics of the trade. The finesse of the art will come after years of practice.

However with proper interventions both at the craftsmen level, in terms of training related to new innovations, quality and throughput (at the benchmark of similar metal craft) and with sufficient market creation the trade can potentially employ many more craftsmen. This also means training the current practitioners to improve their skill and throughput as well as inviting new practitioners to the fold

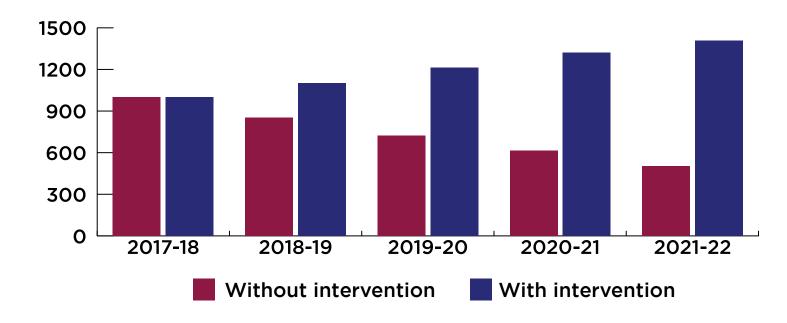


Table No-81: Economic Potential of Copper Craft

Annual Estimates	2017-18	2021-	22
	Current	Future Potential	Future Projection
	Estimate	Without Intervention	with Intervention
No. of practitioners	1,000	500	1,403
Average Productivity	1,25,000	1,00,000	2,33,785
Income from Practice (per Person)	48,000	40,000	93,514
Market Size	12.5 Cr	5 Crs	32.8 Crs
Trade Enhancement (In % Terms)			162%
Estimated Working Capital Cycle	1 month		
Working Capital Requirement per Artisan	6250		11869
Working Capital Requirement for the Industry	0.625 Crs		1.64 Crs

DIC , Uttarakhand has recently distributed copper toolkits to all registered copper craftsmen, however the feedback from the artisans have not been very encouraging as they did not find some of the tools relevant for the trade. Some craftsmen also talk about the challenges with training, since most of the training programs do not provide copper for practice.

7.5.3 Copper Craft RPL Opportunity

Copper Craft is one of the most evolved traditional skills of the state. However, the artisans have failed to keep pace with the changing trends of the market and are on the verge of extinction. There are a handful of master craftsmen left who are the reminiscence of the

prosperous past of the Craft. There is an urgent need to change the product mix of the artisans. Currently they are manufacturing only Utility Items like Copper Pots and other water holding utensils.

They are expected to do better if they shift to products which have more room for Artistic Expression. This would require a massive upgradation of their current skills and put them on a different trajectory.

The RPL program can be extremely useful in this quest. Some of the benefits of joining the scheme are mentioned below:

- The artisans can have a lateral entry into the NSQF at a level which is commensurate to their competency and flair for the skill.
- The Skill Training can give them a greater flexibility in terms of experimenting with new designs and items.
- The Certification can help in greater Labour Mobility across the country.
- The Products manufactured by the NSQF Qualified Artisans may have access to bigger and better markets.
- The Incentive of around Rs. 2200 for artisans joining the RPL Scheme can provide the right encouragement.

Currently, there might be an opportunity to cover around 1000 artisans under the various Levels and Job Roles of the NSQF.

The skill will fall under the Handicraft & Carpet SSC and the following job roles and complexities exist in the practice of the skill

Job Role	Level	Process Required	Professional knowledge	Profession- al skill	Core skill	Responsi- bility
Copper Crafts- man Helper	1	These include Tasks of pre- paring the Metal Sheets, Cutting & Ham- mering Tools, Heating & Welding Appa- ratus	Familiar with common trade Terminology, instructional words mean- ing and un- derstanding	Routine and repetitive, takes safety and security measures.	Maintaing Clean Safe and Healthy Environ- ment while Working with Heated Instruments, Sharp Met- al Cutters, Heating & Welding Ap- paratus	Only Per- forms Tasks that are basic and supervised by the Mas- ter Crafts- man. No Decision making tasks are Assigned.
Copper Crafts- man - Appren- tice	2	Performs Ba- sic tasks Like Weighing and Marking of Met- al Sheets. Metal Cutting, Weld- ing and Joining Metal Sheets. Has started Hammering of Sheets	Understands and Clearly understands the processes involved the preparing the Utensils and other items	Performs independent tasks repeti- tive in nature	The Appren- tice is able to converse	Carries out Tasks assigned, instructed and super- vised by the Master Craftsmen.

Table No-82 : Job Roles & Complexities of Copper craft

Junior Copper Crafts- man	3	Performs the tasks of Mark- ing Metal Sheets, Metal Cutting, Weld- ing and Joining Metal Sheets and Hammer- ing Sheets to Desirable Shapes.	He performs All basic Activities of a Craftsman and deliver utensils	Performs the tasks of Mark- ing Metal Sheets, Met- al Cutting, Welding and Join- ing Metal Sheets and Hammer- ing Sheets to Desirable Shapes.	The Appren- tice is able to engage with the master Craftsman on tasks as- signed with reasonable degree of proficiency .	He is able to make unfinished Utensils. Still re- quires supervision and guid- ance of the Master Craftsman to com- plete the utensils
Copper Crafts- man	4	He inde- pendently fin- ishes his uten- sils and able to make market ready utensils	Has full knowledge of the Craft both theory and practical	He inde- pendent- ly finishes his utensils and able to make market ready uten- sils	The Crafts- man can commu- nicate the processes followed in the making and price the material used & the efforts put in.	Takes the full respon- sibility of the utensils delivered and the function- ality of the Units.
Senior Copper Crafts- man	5	He inde- pendently fin- ishes his uten- sils and able to make market ready utensils. He able to take Specifications from Custom- ers and deliver familiar Prod- ucts according- ly	Complete Knowledge of the metal and process- es involved in delivering marketable units of famil- er Items	He is able to make to order gener- al items and requiring realignment and balanc- ing of uten- sils as per the propor- tions spec- ified by the customer	Has the de- sired level of Mathemat- ical Skills understand- ing of read- justing the proportions of the uten- sils as per the require- ments of the customer.	Responsi- ble for own Work and Learning and can delegate and mon- itor the work of colleagues

Master Copper Crafts- men	6	He can deliver a wide range of utensils, figu- rines and Arti- facts using his knowledge and experience with the metals.	Understand- ing of the Metal and its possibilities reasonably explored by the Crafts- men	He has the required Cognitive and Prac- tical Skills required to provide conventional and Made- To-order solutions.	Reasonably good under- standing on the amount of raw mate- rial required to deliver conventional and made- to-order jobs. Ability to under- stand the strength that the met- al delivers in various forms and guages.	Fully Func- tioning as a Master Craftsmen. Engag- ing other Copper craftsmen on various jobs of con- ventional and made- to-order nature.
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Table No-83 : NOS Codes for Copper Craft

Job Role	Level	NOS Available	NOS Name	NOS Proposed
Copper Craftsman Helper	1	HCS/N9903 HCS/N9901	Importance of Safety, Health & Hygiene Team Work	
		HCS/N 9902	Maintain personal health	
Copper Craftsman -	2	HCS/N 2801	Handicraft material and their handling	
Apprentice		HCS/N 2802	Handicraft material and their handling	
		HCS/N 9904	Basic Measurements	
		HCS/N9903	Importance of Safety, Health & Hygiene	
		HCS/N9901	Team Work	
		HCS/N 9902	Maintain personal health	

Junior Cop-	3	HCS/N 2801	Mold Making	
per Crafts-	5	HCS/N 2802	Mold Making	
man		HCS/N 2802	Mold Making	
		HCS/N 9901		
			Mold Making	
		HCS/N 9904	Basic Measurements	
		HCS/N9903	Importance of Safety, Health & Hygiene	
		HCS/N9901	Team Work	
		HCS/N 9902	Maintain personal health	
Copper	4	HCS/N9903	Importance of Safety,	
Craftsman	4	1103/119903	Health & Hygiene	
		HCS/N2902	Preparation for Engraving	
		HCS/N2903	Engraving Design on Met-	
			al Surface	
		HCS/N9901	Team Work	
		HCS/N 9902	Mold Making	
Senior Cop-	5	HCS/N9903	Importance of Safety,	
per Crafts-			Health & Hygiene	
man		HCS/N2902	Preparation for Engraving	
		HCS/N2903	Engraving Design on Met- al Surface	OS unit on selling and marketing skills
		HCS/N9904	Basics of Business Man-	
		1103/113304	agement	
		HCS/N9901	Team Work	
		HCS/N 2801	Mold Making	
		HCS/N 2802	Mold Making	
		HCS/N 9901	Mold Making	
		HCS/N 9902	Mold Making	
Master Cop-	6	HCS/N2903	Engraving Design on Met-	OS unit on design
per Crafts-			al Surface	skills
men				
		HCS/N9904	Basics of Business Man-	OS unit on selling and
			agement Mold Making	marketing skills
		HCS/N 2801	Mold Making	
		HCS/N 2802	Mold Making	
		HCS/N 9901	Mold Making	
		HCS/N 9902	Mold Making	
		HCS/N 2801	Casting operations	

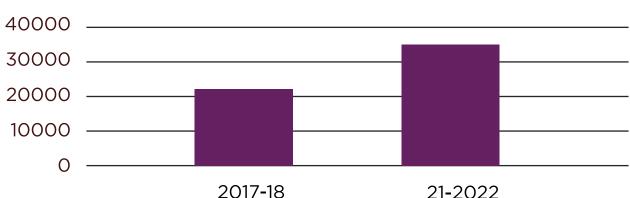
7.6 Weavers

As per the Handloom census of 2009-10, Uttarakhand has over 15,468, handloom weavers in the state. This constitutes for only .3% of the national weaver population. The number is quite low despite the heritage and the variety of fibers available in the state. This number is reflective the weavers commercially working and doesn't include subsistence weaving which forms a large part of the weaving community of Uttarakhand. The Kumaon region and plains have a high number of commercial weavers; however Garhwal region has a high incidence of subsistence weaving. The number of weavers in 2017-18 is estimated to be approximately 22000" *Figure 29: Weavers and produce*



Weaving as a skill has demand in the market and earn between Rs. 3000 – Rs. 10000, depending upon their produce, season and experience. Carpet makers earn the lowest amongst the different types of weavers, while the pashmina and nagora shawl weavers earn upto Rs . 10000 during peak season.

The skill department has a huge challenge to prepare new weavers who are proficient and market ready to harness the opportunities emerging in the handloom sector.



No. of Practitioners

Table No-84: Economic Potential of Weavers

Annual Estimates	2017-18	2021-22
	Current Estimates	Future Projection
No. of practitioners	21988	36534
Average Productivity	2,40,000	2,40,000
Income from Practice (per Person)	96,000	96,000
Market Size	527.7 Crs	876.81 Crs
Trade Enhancement (In % Terms)		66%
Estimated Working Capital Cycle	6 months	
Working Capital Requirement per Artisan	72000	72000
Working Capital Requirement for the Industry	158.3 cr	263 cr

All communities have developed traditions for making cloth and other wearables. A variety of materials are being used to weave cloth like the following:

7.6.1 Plant Fibers

Plant fiber: Plant fibers are extensively used to manufacture cloth. The most types are as follows:

Cotton: Cotton is extensively used to make cloth in Uttarakhand. Khadi Gram Udyog is at the forefront of manufacturing cotton clothing. They make Kurtas, Pyjamas, Shirts, Towels, etc. Most of the districts of Uttarakhand has Khadi Gram Udyog Centres where weaving activity takes place.

Bhimal: It is a popular tree found near agriculture fields in the hills. It occurs naturally in the field bunds and is conserved by the villagers for its multipurpose utility, available to an altitude of about 7000 ft. in the Himalayas. Normally the tree is cut down during winters for fodder; Traditionally Bhimal is grown for fodder, fuel and fiber. Bhimal is a good source of fiber. Villagers extract the fiber by retting process. Branches of the tree are cut during winter season and dipped in water for a month. The soaked branches are beaten and fiber is extracted. The leaves are given to the animals. Extracted fiber is used for making

only ropes. Women also use its bark extract for hair wash but appropriate technique is not available. Awareness and training needed to explore the benefits in the region, only one or two village in Dhanaulti belt is making some use of the tree, therefore the area is untapped and unused.

Bhang (Hemp): Bhang is a male cannabis plant found across India. The plant seeds have been traditionally been used as an intoxicants. Bora Kuthalia community, in kumaon processed hemp fiber grown in valleys. They are now abandoning the craft because of the ambiguous legal framework around the growth of Indian Bhang. Due to the efforts of Organisations like Avani and Panchachuli Women Weavers Ltd., Bhang shawls are catching the fancy of a lot of customers and has been developing its own market. They are manufacturing Bhang Shawls for markets in India and Abroad. They have also developed a variety of shawls, stoles and other products using this fiber.

Himalayan "Giant" Stinging Nettle: Himalayan "Giant" Stinging Nettle (Girardinia diversifolia), also known as Allo or bichu buti is a perennial plant which grows wild throughout the moist mountainous regions of Nepal and India. Himalayan nettle is possibly best known as a source of strong, light-weight, sustainable natural fibers. The Fiber has various variations and mixes that are slowly gaining popularity, namely,

- 100% Nettle : Shawls, Stoles
- Silk Mix with Nettle: 15% to 60% Silk is being mixed to produce various combinations of fabric for manufacturing clothing.
- Nettle Denims: Some companies have recently developed 100% Himalayan nettle denim clothing.

7.6.2 Animal Fibers

Pashmina: The only source of true Pashmina is the Cashmere goat (Capra hircus laniger), native to the Himalayas. Its fine undercoat hair is collected by either combing or shearing during the spring molting season. After sorting and scouring, the fibers are cleaned of coarse outer hairs. Annual yield of under down averages around 150 g per animal. Pashmina is luxurious, rare and expensive: spun and woven, the annual fiber production of six Cashmere goats is enough to make just one Shawl. The fabric is widely used for making other products like Mufflers, caps, scarves, stoles etc.

The Bhotia Community are famed for their pashmina products. They weave a variety of patterns using various natural shades of the wool.

Alpaca: A domesticated member of the South American camelid family, the alpaca (Lama pacos) numbers 3 million head worldwide. Around 80% are found in the Andes, but sizeable herds (totalling around 200 000 animals) have been established in North America, Australia and New Zealand. Shorn annually, an alpaca produces about 3 kg of fibre. Alpacas, usually in herds of less than 50 animals, are the main source of income for an estimated 120 000 families in the highlands of Peru , Bolivia and Chile.





The primary end use is knitwear, but it is also woven into cloth for clothing, accessories such as shawls and stoles - and rugs. The premium alpaca fibre is cria, shorn from young animals and considered lighter, warmer and softer than cashmere.

Panchachuli Women Weavers, have been manufacturing Shawls, Stoles, Mufflers,

Angora: The angora is a variety of the Old World domestic rabbit (Oryctolagus cuniculus) with a special characteristic: the active phase of hair growth is double that of normal rabbits. The angora is intensively farmed in hutches, often in semi-darkness, and its hair is removed usually every three months. An adult angora produces up to 1.5 kg of fibre per year. Light but warm, angora wool is used mainly in knitted clothes, such as pullovers, scarves, socks and gloves, producing a moderate "fluffing" effect.

The Bhotia Community weavers have developed a varity of products using Angora wool. They also taken to rearing of angora rabbits in a big way to keep up with the demand for angora products.

Silk: Silk is produced by the silkworm, Bombyx mori. Fed on mulberry leaves, it produces liquid silk that hardens into filaments to form its cocoon. The larva is then killed, and heat is used to soften the hardened filaments so they can be unwound. Single filaments are combined with a slight twist into one strand, a process known as filature or "silk reeling". A silk filament is a continuous thread of great tensile strength measuring from 500 to 1500 metres in length, with a diameter of 10-13 microns. In woven silk, the fibre's triangular structure acts as a prism that refracts light, giving silk cloth its highly prized "natural shimmer". It has good absorbency, low conductivity and dyes easily.



Sericulture provides income for 700 000 households in India. The State of Uttarakhand had been producing silk in low quantities and sparsely for a very long time. The Silk production received a boost form 2001 with the establishment of the Uttarakhand Sericulture Department under the Ministry of Horticulture. It is the only state in India which is producing all four kinds of cocoons, viz., Mulberry, Oak Tasar, Muga and Ericulture. Because of its high quality Bivoltine cacoons of international grade, Uttarakhand is also known as the "Bowl of Bivoltine Silk in India".

Silk's natural beauty and other properties - such as comfort in warm weather and warmth during colder months - have made it sought after for use in high-fashion clothes, lingerie and underwear. It is used in sewing thread for high quality articles, particularly silk apparel, and in a range of household textiles, including upholstery, wall coverings and rugs and carpets.

Wool: Sheep (Ovis aries) were first domesticated 10 000 years ago. They currently number about 1 billion head, in 200 breeds, worldwide. Sheep are shorn of their wool usually once a year. After scouring to remove grease and dirt, wool is carded and combed, then spun into yarn for fabrics or knitted garments. Merino sheep produce up to 18 kg of greasy wool a year.

Wool has natural crimpiness and scale patterns that make it easy to spin. Fabrics made from wool have greater bulk than other textiles, provide better insulation and are resilient, elastic and durable. Fibre diameter ranges from 16 microns in superfine merino wool (similar to cashmere) to more than 40 microns in coarse hairy wools.

Wool is a multifunctional fibre with a range of diameters that make it suitable for clothing, household fabrics and technical textiles. Its ability to absorb and release moisture makes woollen garments comfortable as well as warm. Two thirds of wool is used in the manufacture of garments, including sweaters, dresses, coats, suits and "active sportswear". Blended with other natural or synthetic fibres, wool adds drape and crease resistance.

Weavers across Uttarakhand use wool to make cloth, shawls, Coats, Bidhis, etc. They extensively use wool for making other finer garments like Pankis, Thulma, Chutka, Dan (Carpets), etc.,

7.6.3 Weaving Traditions of Uttarakhand

To understand the various weaving traditions we need to divide the practices based on cultural lines.

- Kumaoni
- Garhwali
- Bhotia

7.6.3.a Garhwal Weavers

Weaving is an evolved trade in the Garhwal hills. Fiber animals are reared in most of the villages in the high mountains. The Wool extracted is spun at home by the members of the family to make yarn. Spindles are used to spin the wool into yarn ready for the handloom. The Taana and Baana for the cloth to be woven are arranged on the handloom. Different patterns can be woven based on the color and pattern chosen by the Artisan.

Most of the Villages in an around Jakhol in the North Western of Uttarkashi District still weave for themselves. They rarely trade these products. Every house has loom and all the

people in the village know how to weave.

They weave Bidhee, a long cloth made of wool extracted from the mountain sheep and goats. This cloth is fashioned at the local village tailor into coats for women, men and children.

Finer fabrics are woven to make Kurtis, Pyjamas and Pichoras.

When the research team interviewed people at Rekcha and Phitari Villages near Jakhol, the respondents found if amusing to weave for the market. On deeper enquiry we gathered the following trends:

- The Skill of the Garhwal weavers is limited to making utilities with wool
- The local people would not invest in the proper cleaning of the wool before spinning
- The designs they made were very simple and common
- Other Weaving communities like the Bhotias have better craftsmanship



Joshimath is one of the major market for raw wool in the Garhwal region. Traditionally the Garhwali women used natural dyes from tree barks, roots, fruit coverings, flowers and from other natural substances to colour the wool but now they prefer to buy chemical dyed wool from the market. The reason for stopping the natural dyeing they say is that the government has put restrictions on them for taking away the natural resources from the forest and the other reason being that natural dyeing is a long and tedious process which they women are not motivated enough to follow.

The large carpet is known as Dan in local language and the and the smaller version of it is called Aasan. The local people use Dan as bedcover and the Aasan is used as seat covers.

7.6.3.b Kumaoni Weavers

The Kumaoni Weavers have traditionally been subsistence weavers. They would weave simple Shawls, blankets, and finer material for clothing using natural fibers like Cotton and Hemp. They did have certain distinct Kumaoni Patterns. The coloring was usually done using natural agents like roots, flowers, fruits, etc.

But the traditions quickly eroded with the advent of the products from the plains. The Ma-

jority of the people became net consumers of textiles.

However, due to the efforts of Certain Organisations Like Avani and Panchachuli Women Weavers, the traditions are being revived. These organisations have been able to revive the weaving traditions to a large extent.

They have been using both Plant and Animal Fibers for production of various items. Very interestingly they have been importing expensive wool form abroad like Pashmina from Mangolia and Alpaca from Peru to manufacture articles.

7.6.3.c Bhotia – Woolen textiles

Bhotia community has a very strong presence in the upper regions of Kumaon. As a tribe, they have a very distinct ethnicity, culture and religious practices. They are a trader community which prospered on the inland trade route between India and Tibet. Though they are included in the Hindu faith, their religious practices are a mix of Hindu, Buddhist and worship of natural forces.

Their unique culture has evolved over hundreds of centuries and has found expression in their handicrafts and handlooms. They use more of animal fiber then plant fiber to make their cloths. Since the weather is extremely cold and dry the use of animal fiber would have been a logical choice as it was the only thing readily available.

The common fibers used by them are Sheep, Pashmina Goats and Angoora Rabbits. They have a very strong understanding of rearing these animals. The main clusters for Bhotia Textiles are Munsiyari and Dharchula in Pithoragarh district.

The Animal reared for wool is also reared in the same regions. However, the best quality wool is obtained from the breeders staying in the mountains near Milam Glaciers. The sheep and goats have very good quality pashmina wool.

They usually weave the following items:

- **Carpets** Bhotia community call it Dan. It is woven using woolen fibers only. The Designs usually have distinct floral pattern. The dimensions are usually smaller than the other carpets woven in the plains or in Kashmir. It is uniquely durable. The weavers claim that they would last at least 80 to 100 years with colors intact.
- Pankhi Pankhi is the woolen shawl in which the traditional weaving is cherished. It's a long shawl. Usually they are available in the common sheep wool colors and are seldom dyed. But lately they have started dying and printing to meet the demands of the market.
- Gudma Gudma is a long and a very soft blanket. It is woven also in the natural colors of the sheep wool.
- Thulma Thulma is a very thickly woven blanket. It is very course and requires a cover but is very warm. It is so durable that it becomes a family heirloom which moves from generations to generations.
- Pashmina Shawls Pashmina shawls are the most expensive item woven by the bhotia community. It is very difficult as a special breed of sheep give out the Pashmina wool. Since the wool is extremely soft it is very difficult to spin and make yarn. They patterns are woven on the shawl using natural color wool of the goat or the natural dying agents.
- **Angoora** Angoora rabbits were introduced to the Bhotia community which

they readily accepted and integrated it into their crafts. Angoora Sweaters and Shawls have become one of the bestselling products.

Despite the wide range of products manufactured by the bhotias they are facing difficulties in continuing their craft. During our discussions with the artisans we noticed pessimism that had set in them with regard to their craft.



Figure 31 : Woolens Weaves

7.6.3.c.i Challenges of Bhotia Weavers

- **Market** The Bhotia community have been for ages selling their products at a decent margin. However, the market dynamic have changed with increased mobility of goods. They are facing direct competition from weavers of different regions. Goods form Himachal, Kashmirl are eating into their margins.
- Low Wages for weavers Due to the increased completion in the market the wages are experiencing the squeeze. The Youth are getting alienated as they feel that the wages are not commensurate with the effort that it takes to practice the craft.
- **Industrial substitutes** Industrial substitute like Nylon, Acrylic, Rayon and Acetate have been competing with the natural animal fibers as they can be manufactured at industrial scale. They have caused the prices to fall drastically and so woolen items have become expensive in comparison. These synthetic fibers are being used extensively used to manufacture blankets, shawls, sweaters, jackets and carpets.
- Inabilities to harness the internet technology The weavers are aware about the e-marketplaces and would like to harness its potential. The younger generations have been using social media to market their product and designs. But the effort has been few and far between. However, the main problems have been:

- » Cost of logistics: The Artisans usually reside in their villages. Any order they received will have to be first made and then transported out of the hills to the destination. The cost of servicing the order will be far more than the cost of the item.
- » Time of Fulfillment: The e-marketplace has a distinct preference for instant gratification. Most of the portals want the items to be shipped within 24 hrs. Handcrafted items can take days even months to get completed before it could be shipped. The traffic on the internet does not appreciate such timelines.
- *Identity and differentiation of Products:* The Bhotia Community insist that their patterns and designs are distinct from other Himalayan Communities like Tibetan, Garhwalis, Kumaounis, etc. They say that every time they have to explain their patterns and identity to the customer to appreciate the differences.

The art of weaving is passed from generation to generation. The women are the primary practitioners of the art and have been sharing their craft with the Pandit and Thakur women living there. We asked the artisans whether they would be willing to teach their craft beyond their community. They were forth coming and offered to teach the basic of wool extraction, spinning and weaving in a period of 3 months to unemployed youth.



Currently Khadi Gram Udyog , Pancha choli women weavers and Avni are actively engaged in training the weavers associated with them and keep them abreast with the latest trends in the national and international market. However the Bhotia weavers of Dharchula and Munsiyari continue with their conventional practices, designs and raw materials.

7.6.4 Weavers RPL Opportunity

The Weaving traditions of the state have two distinct product lines, namely, textiles and carpets. The Textiles would be covered under the Textile Skill Council and the Carpets will come under the Handicraft and Carpets Skill Councils.

Currently there are around 15,400 handloom weavers in the State of Uttarakhand. The RPL Scheme has the following pronounced benefits for the community:

- Getting into the NSQF framework will help them enter the program laterally at their existing competency levels. It will give them the opportunity to acquire business related skills.
- The Skill Training can give them a greater flexibility in terms of experimenting with new designs and items.
- The Weavers can them apply for various further certifications like, Craftmark, Khadimark, etc. for their products and gain access to larger and better markets.
- Most of the weavers in the state are using only the old looms which have very little flexibility in making designs. With training on better looms the weavers can upgrade the quality of their produce. They can even apply for better financial assistance based on their NSQF qualifications.
- The Incentive of around Rs. 2200 for artisans joining the RPL Scheme can provide the right encouragement.
- The skill department has a huge challenge to prepare new weavers who are proficient and market ready to harness the opportunities emerging in the handloom sector.

Skill Gap	Skill intervention
Modernization The products prepared are standardized and have been similar in form and design for generations	 Skilling intervention required for bridging the gaps in making wool ready for the yarn. Training has to be imparted for cleaning and washing of wool before yarn is made. Washing machines also have to be installed to multiple locations to stream line the process. Installation of metal handlooms and their training for usage has to be provided to the weavers to increase finesse of the produce. Most of the Handlooms are Wooden and very old. Training to introduce new raw material and experiment with mixed materials. Training on modern design and patterns trends to make the product more relevant for newer customers. Cross pollination of weaving traditions from other cul- tures to upgrade current skill levels has to be organized.
Marketing & Selling skills	Creating suitable differentiation in the product designs

Table No-85: Weaver skill intervention cues

•	and pitching the differentiation well to the customers
•	Skills to acquire new customers
	» We propose that a Scholarship be introduced at
	Various NIDs, NIFTS, etc., to work on a project basis
	on the Weaving Traditions of the State. The Projects
	should be such that innovation is infused in the tra-
	ditional weaving systems.

The job roles identified, during the Research on Weavers would come under the stewardship of 2 sectoral skill council, namely Textile skill Council and Handicraft & Carpets Skill council, the following job roles and complexities exist in the practice for the skill.

Job Role	Level	Process Re- quired	Professional knowledge	Professional skill	Responsibil- ity
Hand- loom - Helper	1	These include Tasks of prepar- ing the Yarn of different colors for Handloom Weaving	Familiar with common trade terminology, instructional words mean- ing and under- standing	Ability to Identi- fy different Yarns and arrange them for Hand- loom Weaving	Only Performs Tasks that are basic and supervised by the Master Craftsman. No Decision mak- ing tasks are Assigned.
Hand- loom - Appren- tice	2	Performs Ba- sic tasks Like Weighing and measuring Yarns procured for Handloom Weav- ing	Clearly under- stands the pro- cesses involved in Loom set up. These Include Setting up Warp and Weft for Weaving.	Performs inde- pendent tasks repetitive in nature	Carries out Tasks as- signed, in- structed and supervised by the Master Craftsmen.
Yarn Opener	3	Unreeling the yarn hank, To ply the yarns together from single to several plys (threads) as per requirement and Convert into ball form (pindi) needed for weav- ing	Is aware of the Basic terminol- ogies involved in the process of preparing the Yarns for Weaving	Unreeling the yarn hank, To ply the yarns together from single to several plys (threads) as per requirement and Convert into ball form (pin- di) needed for weaving	The yarn Opener is under close supervision of the Weavers
Two shaft Hand- loom Weaver	4	Run manually operated looms (equipped with very little mech- anization) effi- ciently-so as to get maximum output with mini- mum defects.	He performs All basic Activities of a Craftsman and deliver utensils	Run manually operated looms (equipped with very little mech- anization) effi- ciently-so as to get maximum output with min- imum defects.	The Weaver is Responsible for Weaving various Tex- tiles as per the standard Designs and Specifications

Table No-86: Job Role Complexity for weavers (Textile Skill Council)

Hand- loom Entre- preneur	5	Is able to perform both Conven- tional and well as Made-to-Order Weaving Jobs	Complete Knowledge of the Weav- ing processes. Ability to han- dle Queries of weavers on product and Processes.	He is able to deliver conven- tional Designs as well as Made- To-Order Textile Garments.	Responsible for own Work and Learn- ing and can delegate and monitor the work of col- leagues
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Table No-87 : NOS codes for Weavers (Textile Skill Council)

Job Role	Level	NOS Codes	NOS Name	NOS Proposed
Handloom - Helper	1	TSC/N9008	Comply with work place requirements in handloom Sector	
		TSC/N9005	Maintain work area and tools in handloom sector	
		TSC/N9006	Working in a team in han- dloom sector	
Handloom - Ap- prentice	2	TSC/N9008	Comply with work place requirements in handloom Sector	
		TSC/N9005	Maintain work area and tools in handloom sector	
		TSC/N9006	Working in a team in han- dloom sector	
		TSC/N 7305	Carry out pre weaving activities	
Yarn Opener	3	TSC/N 7202	Carry out dyeing of hank yarn	
		TSC/N 7203	Carry out finishing of dyed yarns	
		TSC/N9008	Comply with work place requirements in handloom Sector	
		TSC/N9005	Maintain work area and tools in handloom sector	
		TSC/N9006	Working in a team in han- dloom sector	
Two shaft Hand- loom Weaver	4	TSC/N9008	Comply with work place requirements in handloom Sector	
		TSC/N9005	Maintain work area and tools in handloom sector	
		TSC/N9006	Working in a team in han- dloom sector	

		TSC/N7502 TSC/N7308 TSC/N7309 TSC/N 7306 TSC/N 7307	Build harness for hand- loom jacquard weaving Undertake pre-weaving activities for jacquard weaving - handloom Operate the handloom for jacquard weaving Operate the loom Contribute to achieve quality in handloom weav- ing	
		TSC/N9008	Comply with work place requirements in handloom Sector	
		TSC/N9005	Maintain work area and tools in handloom sector	
		TSC/N9006	Working in a team in han- dloom sector	
Handloom En- trepreneur	5			OS on Business skills OS on design and innovation OS on Opera- tions manage- ment and pro- duction

Table No-88 : Job Role complexity for Weavers (Handicraft & Carpets)

Job Role	Level	Process Required	Professional Knowledge	Profes- sional Skill	Core Skill	Responsi- bility
Carpet - Helper	1	These include Tasks of pre- paring the Yarn of differ- ent colors for Carpet Weav- ing	Familiar with common trade terminology, instructional words mean- ing and un- derstanding	Ability to Identify dif- ferent Yarns and ar- range them for Carpet Weaving	Maintaing Clean Safe and Healthy Environ- ment while Working yarns and Handlooms	Only Per- forms Tasks that are basic and super- vised by the Master Crafts- man. No Decision making tasks are Assigned

Yarn Opener	3	Unreeling the yarn hank, To ply the yarns together from single to several plys (threads) as per require- ment and Convert into ball form (pin- di) needed for weaving	Is aware of the Basic ter- minologies involved in the process of preparing the Yarns for Weaving	Unreeling the yarn hank, To ply the yarns together from sin- gle to sev- eral plys (threads) as per require- ment and Convert into ball form (pin- di) needed for weaving	Is Able to communi- cate with the Weavers with respect to the yarn	The yarn Opener is under close supervi- sion of the Weavers
Hand Loom Weaver	3	Run man- ually oper- ated looms (equipped with very little mechaniza- tion) efficient- lyso as to get maximum output with minimum de- fects.	He performs All basic Activities of a Craftsman and deliver utensils	Run man- ually oper- ated looms (equipped with very little mech- anization) efficient- ly-so as to get maxi- mum out- put with minimum defects.	Run Hand- looms Effi- ciently	The Weav- er is Re- sponsible for Weav- ing Car- pets as the standard Designs and Speci- fications
Weaver – Knotted	4	Install loom for knotted carpet weav- ing. Prepare warp struc- ture for knot- ted carpet weaving and fix into the loom. Perform advanced knotted car- pet weaving as per a range of designs	Has full knowledge of the Craft both theory and practical	He inde- pendently finishes carpets and makes mar- ket Ready units	The Crafts- man can commu- nicate the processes followed in the making and price the material used & the efforts put in.	Takes the full respon- sibility of the Quality and the Processes followed for Carpet Weaving.

Loom Loom super- Supervisor vision of knot- - Knotted ted carpets Carpet being weaved by the weav- ers.	Complete Knowledge of the Knot- ted Carpet Weaving pro- cesses. Abil- ity to handle Queries od weavers on product and Processes	He is able to deliver convention- al Designs as well as Made-To- Order Car- pets.	Has the de- sired level of Math- ematical Skills under- standing of readjusting the pro- portions of the Carpet based on Customer Specifica- tions	Responsi- ble for own Work and Learning and can delegate and mon- itor the work of colleagues
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Table No-89 : NOS codes for Weavers (Handicraft & Carpets)

Job Roles	Level	NOS Codes	NOS Name	NOS Proposed
Carpet - Helper			Maintain work area, tools and machines	
			Working in a team	
		HCS/N9909	Maintain health, safety and security at work place	
Handloom Weaver (Car- pets)	3	HCS/N5415	Run the hand operated loom efficiently	OS on Designs of DAN Carpets of Uttarakhand
		HCS/N9906	Maintain work area, tools and machines	OS on Various kinds of rungs woven of different dimensions of Uttarakhand
			Working in a team	
		HCS/N9909	Maintain health, safety and security at work place	
Yarn Opener	3	HCS/N5001	Operation of hand oper- ated Charkha	
		HCS/N9906	Maintain workarea, tools and machines	
		HCS/N9907	Maintain Health, Safety and Security at Work- place	
Weaver – Knotted	4	HCS/N5708	Install loom for knotted carpet weaving	OS on Designs of DAN Carpets of Uttarakhand
		HCS/N5709	Prepare warp structure for knotted carpet weav- ing and fix into the loom	OS on Various kinds of rungs woven of different dimensions of Uttarakhand
		HCS/N5710	Perform advanced knot- ted carpet weaving as per a range of designs	
		HCS/N9907	Receive, track and handle payments as per work done	

		HSC/N9908	Use basic health and safety practices while weaving carpets	
		CSC/N1336	Work effectively with others	
Loom Supervisor – Knotted Carpet	5	HCS/N5411	Loom supervision of knotted carpets	OS on Designs of DAN Carpets of Uttarakhand
		HCS/N5412	Maintenance of Knotted Weaving Records	OS on Various kinds of rungs woven of different dimensions of Uttarakhand
		HCS/N9906	Maintain workarea, tools and machines	
		HCS/N9910	Manage and lead a team	
		HCS/N9909	Maintain Health, Safety and Security at Work- place	

7.7 Wood Craft

Indian industrial demand for wood has grown from 58 million cubic meters to exceed 150 million cubic meters by 2018 (source Hardwood export council). As of 2014-15, 82 wood and wood product artisan units are present in the state (source: MSME) and as per the practitioners met, the number of woodcraft practitioners, is around 450. This is the estimate for natives and not the migrants from outside the state. A large number of migrants work in the housing construction business and not practicing any traditional skill and have therefore not been included in this estimate. Like the copper craft, traditional wood craft is also likely to face a decline in number as few new craftsmen are entering the industry. On an average the woodcraft practitioner earns Rs. 6000 per month.

Wood is available in abundance in the hills. The Kumaonis have for ages been using wood to build houses, carts, household utensils, Agricultural tools, toys, etc. The splendor of the Wood Craftsmanship of the region is elegantly on display in the old houses of the region. The intricate designs that are on display on the doors and windows are a visual delight. Different woods are used for different purposes in the hills. The Doors and Windows in the houses are made of Deodar.



Figure 32 : Wood Craft

Household utensils are made of Sanan and Gethia trees. Furniture is made of teak, pine and Deodar Logs. Wood Crafted utensils are also very popular in the local households. Wooden containers are used to store spices and grains. It is believed that they retain their nutritional values longer in wooden containers. Secondly the utensils are very long lasting. Some of the popular utensils made of wood are as follows:

• Paali - (Big sized plate)

- Naali (An instrument used for measuring land),
- Theki (Used for making and keeping curd),
- Hudipya (Used for keeping ghee and other sticky edibles),
- Thaali (which in present era are made of steel),
- Farva (For measuring food grains),
- Raee
- Doukau (Used for making mathha)

The Ordh and Badhaiya Communities have been the traditional wood craftsman for Kumaon. They have evolved their craft over hundreds of years. We can see the influence of other traditions in their designs. Kholi the traditional Kumaoni carvings on the doors and Window facades have reminiscence of the Rajputana Styles. The Utensil markings have strong influence of Aipan designs and carvings that are inherent to Kumaon. One of the highlight of the artisans is their ability to carve our entire utensil from a single block of wood.

During our study we met Artisans from the Ordh community both in Kumaon and Garhwal. They are extremely proud of their skill and legacy. They are however extremely worried about the future of their skill and have expressed their dismay over the apathy of the government and the people towards their craft. They don't see a future of their skill in the next decade.

7.7.1 Challenges of Wood Craft

- Access to Raw Material: Procuring wood for woodcraft is a challenge. The Strict Forest laws do not allow the artisans to have free access to the wood in the forest. The artisans can procure it from the forest department when they auction but it is not feasible as they auction only large logs. These Artisans cannot afford such large logs.
- Access to Working Capital: The entire trade is cash driven. Credit is available from banks but only for capital investments like setting up of a workshop or a showroom. The bank does not finance the working capital requirements of their business. They have employ helpers and pay them on a daily basis. Credit can be availed only if the customers commission any large work and pay advance.
- Wages for Craftsmanship: The artisans usually were well paid when they were commissioned for building construction. They would charge premiums when elaborate Kholi designs were to be carved for doors and windows. But lately such commissions have dried up and they have to live by selling simple household utensils. The utensils are paid on apiece basis and so wages have to be recovered from the sales proceeds.
- **Industrial Substitutes:** The articles manufactured from wood are increasingly being replaced by plastic. Most of the old wooden containers are being replaced by plastic as they are lighter, transparent and much cheaper. Further aluminum and iron frames have become more popular for building doors and windows as they are lighter and convenient.
- Lack of infrastructure and tool up-gradation: One of the primary requirement of the artisans is the access to power tools. Currently they use water mills or Gharat for rubbing and polishing the articles. They would like to have Electric Saws as they currently use axe which consumes a lot of their time and effort. Buffing is a common machine used these days to finish workpieces or articles after fabrication.

7.7.1.a Challenges of E commerce : The Artisans have been unable to harness Internet technology and access larger market for their products. During our interviews with the Artisans we came to know that they were aware of the potential of the internet but could not align with it.

- » **Cost of logistics:** The Artisans usually reside in their villages. Any order they received will have to be first made and then transported out of the hills to the destination. The cost of servicing the order will be far more than the cost of the item.
- Time of Fulfillment: The e-marketplace has a distinct preference for instant gratification. Most of the portals want the items to be shipped within 24 hrs. Handcrafted items can take days even months to get completed before it could be shipped. The traffic on the internet does not appreciate such timelines.

The craftsmen however, are extremely willing to share their traditional knowledge with the unemployed youth. They are sure that within a period of 3 months they will be able to teach the basics of woodcraft to interested pupils. However, finesse and perfection will require at least 3 to 4 years of practice.

However, there are very successful wood craft clusters like Saharanpur which are in close vicinity of the state. A report 'Diagnostic Study Report of Woodcarving Cluster Saha-ranpur/developed by the Wood Craft Design & Development Society, Saharanpur says that there are approximately 52 small and approximately 7000 micro units of Wood Carving in Saharanpur which provide employment to 90,000 people and generate turnover of 1000 crore of which 250 crores comes from the domestic consumption and rest from exports.

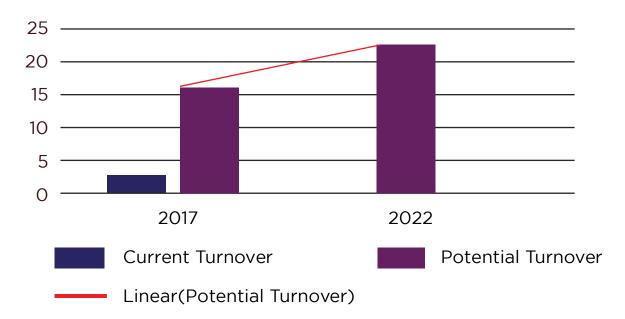


Figure 33 :Potential Turnover of Woodcraft in the Next 5 Years (Figures in Crores)

By comparing the productivity of the woodcrafters of the two regions we can see that there is a potential from increasing the productivity by approximately 300,000 per artisan per annum. This can be done through Up-Skilling programs of the Skill Department. Further joint workshops can be organized to exchange best practices and develop new products. While the current turnover of the industry in Uttarakhand is pegged at Rs. 3.6 cr,



it has the potential of reaching 16.6 cr with the current number of practitioners and grow upto Rs. 23.3 cr in the next 5 years7.

7.7.2 Wood Craft RPL Opportunity

The Wood Craft has been one of the Signature crafts of the State. Though the current status of the skill is unsustainable, the potential for the skill is still their but the product mix needs to change from utilities to Expressions of Arts. The Skill comes under the stewardship of the Handicraft and Carpets Sector Skill Council.

The RPL program is an important step towards are arresting its downward slide and putting it back on a growth trajectory. The Artisans can gain immensely by joining the RPL program. Some of the benefits for the Artisans could be as follows:

- The Artisans can enter the Framework based on their current skill competencies.
- The Woodcraft artisans can get the exposure of other Woodcraft Traditions of the country and present opportunities for cross pollination.
- The Artisans can gain access to better paying markets for the products manufactured by them based on the NSQF.
- The Certification can help in greater Labour Mobility across the country.
- Currently there are some 450 quality Woodcrafters in the state and can be immediately brought under the RPL Regime at various levels.

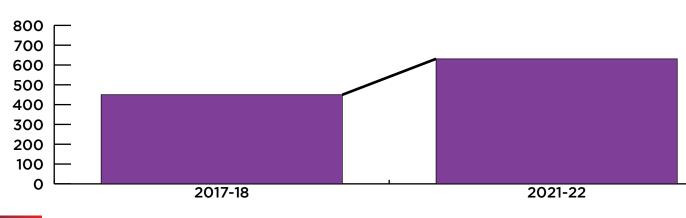


Figure 34: Woodcraft Projections

Table No-90: Economic Potential of Woodcraft

Annual Estimates	2017-18	2021-22
	Current estimates	Future Projection
No. of practitioners	450	631
Average Productivity	80,000	3,70,370
Income from Practice (per Person)	72,000	3,33,333
Market Size	3.6 cr	23.3 cr
Trade Enhancement (In % Terms)		361%
Estimated Working Capital Cycle	1 month	
Working Capital Requirement per Artisan	4000	13154
Working Capital Requirement for the Industry	0.18 Crs	0.83Crs

Table No-91 : Job Roles Complexity for Wood Craft

Job Role	Level	Process Re- quired	Professional Knowledge	Profession- al Skill	Core Skill	Responsi- bility
Woodcraft _appren- tice	2	Prepares the work area by Arrang- ing Tools, getting the wood, clean- ing of the area	He is familiar with the dif- ferent kinds of woods and Plywoods. Un- derstands the various tools employed for the tasks	He supports the Master Craftsman on various activties involved in woodcraft	He can read write and make basic measure- ments.	He is not responsible for any ac- tivity at any stage of the Wood Craft pro- cess
Master Wood Craftsmen	6	He can de- liver a wide range of utensils, figurines and Artifacts using his knowledge and expe- rience with the woods	Understanding of woods and its possibilities reasonably ex- plored by the Craftsmen	He has the required Cognitive and Prac- tical Skills required to provide conventional and Made- To-order solutions.	Reasonably good un- derstand- ing on the amount of raw materi- al required to deliver conven- tional and made-to- order jobs.	Fully Func- tioning as a Master Craftsmen. Engag- ing oth- er Wood craftsmen on various jobs of con- ventional and made- to-order nature.

Table No-92 : NOS codes for Woodcraft

Job Roles	Level	NOS Codes	NOS Name	NOS Proposed
Woodcraft _apprentice	3	HCS/N6608	Use basic health and safety practices in a wood working environment	
		HCS/N7104	Prepare the lacquer	
		HCS/N7106	Apply lacquer for achieving final finish	

Master Wood Craftsmen	6	HCS/N6605	Create samples for client interaction	OS units on business practices including work scheduling
		HCS/N6607	Finalize the raw material quality and quantity for the production process	OS units on selling and marketing
		HCS/N6608	Use basic health and safety practices in a wood working environment	OS units on innova- tion and design
		HCS/N7104	Prepare the lacquer	
		HCS/N7106	Apply lacquer for achieving final finish	
		HCS/N6608	Use basic health and safety practices in a wood working environment	
		HCS/N7102	Complete the final finish	
		HCS/N7103	Ensure that the product gets the final finish as per the approved sample	
		HCS/N6607	Finalize the raw material quality and quantity for the production process	
		HCS/N7102	Complete the final finish	
Optional				OS units on minia- ture designs

Table No- 93: Woodcraft skill intervention cue

Skill Gap	Skill intervention
Innovation Current craftsmen are fo- cused primarily around making utilitari-	Experimentation with different materials like plywood and softwoods to come up with inno-
an products which have limited scope	vative designs and cheaper products
	Create and design new products like shoe horns and hangers, which have higher commer- cial and earning potential
	Miniature wood products are in high demand across the globe and could also be looked
Marketing training	Training to differentiate, position and sell the produce in the market

7.8 Architecture

Architecture is one of the most outstanding human achievements of the people of Uttarakhand. The ancient architects in the regions used all that was available locally to build magnificent structures. We see generous usage of wood, rabble stones, limestone, Reinforcement pastes made out of mud and nature seeds.

To build an understanding on the architecture of the state we need to make the following two distinctions:

- Temple Architecture
- Household Architecture

7.8.1 Temple Architecture

The Temple Construction held preeminence as religion was the mainstay of the lives of the people. Most of the Villages cite the beginning of their habitation in the region with the arrival of their Devta. The Village Devta stay in the Temple constructed most elaborately at the most prominent place in the Village. Usually the village settles in a specific pattern around the Temple. In one direction the higher castes would settle whereas the working castes or Shilpkars would stay in ghettos in other directions but would still be near the Devta Mandir.

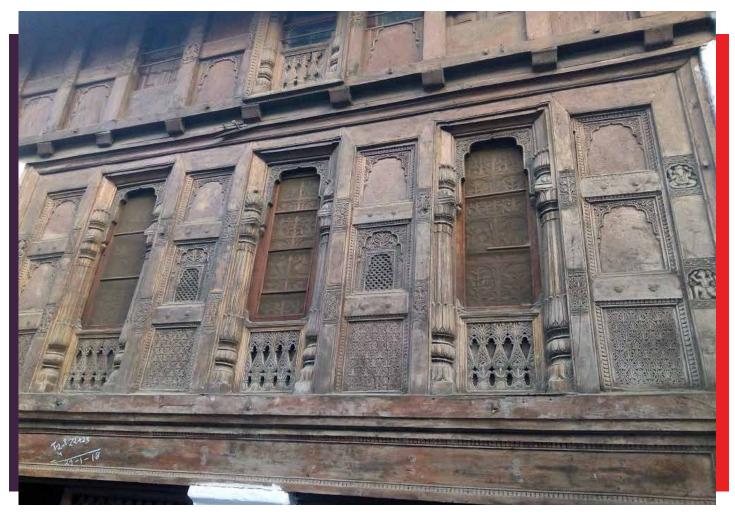
Figure 35 : Architecture & Design



The Temples are a large citadel with walls surrounding it. Large courtyard and open spaces are left around the main temple building. This is where the village assembles during festivals and melas. The main temple is either a simple rectangular cuboid shaped building with canopy roof or can be an elaborate building complete with Vimana (Spire) and Garbhgrih (Sanctum Sanctorum). The temples have large pillars supporting resting panels which are interlocked to provide stability and strength to the structure. Wood and stone are used generously in the construction.

The most remarkable feature of these structures is the carvings and sculptures on the pillar and panels of the temples. Milieus of these expressions differ from temple to temple. Some have elaborate panels showing events from the Puranas whereas some depict the events from the daily lives. However, the most common are the carvings of animals, flowers and random designs.

Figure 36 : Kholi Design



It is of importance to understand the significance of the Devta and his sacramental journeys. During our Visit to Uttarkashi, we came across a group of 22 villages which come under the providence of Someshwar Mahadev (Devta). The Divine Idol of Devta is believed to be spiritually conscious and extremely potent. He is considered a living entity who prevails over the villages. In a period of 12 months he visits all the 22 villages. The days of his visit are pre-decided and preparations are made accordingly for his travel. During his stay in a Village, a specific routine of ceremonies are performed.

Inside the temple, it is a usual practice to keep the Devta behind multiple doors. The entry

to the Garbh Grih is restricted at all times. When the Devta is visiting the Villages elaborate arrangements are made by the villages folks, which includes food and music. However, when he is not in the temple a Namti or a call to the divine is made daily in the mornings and evenings by Bajgees (Local Village Musicians).

Figure 37 : Temple Architecture



The temples were built by local artisans known as Badhai (Woodcrafters) and Mistry (Masons). An interesting practice with regard to Temple construction was that the group of artisans building the temple would not leave the construction site except for their natural callings. They would not cut or shave their hair till the temple construction got over. Non-Vegetarian food and sex was strictly prohibited for the workers to preserve the sanctity of the temple construction.

The Artisans would follow a set of traditional methods, measurements and ratios essential for temple construction which they usually do not share with the persons of other communities. They have an elaborate method of selection the most appropriate place for a new temple. They employ the principles of Vastu – Shastra along topology of the temple site for construction.

The Choice of figurines and other statues that would adore the temple are elaborately dis-

cussed with the community and the Brahmins before curving or sculpting. Every section of the temple is built with the consensus of the community.

The current state of Temple construction skill is very precarious. Very few practitioners are left and the skill is on the verge of extinction.

7.8.1.a Challenges of Temple Architecture

- Location: Unlike the ancient times where the place of the temple was chosen prior to the habitation of the place, nowadays, the temples are being built at the most convenient place available. This is in conflict with the principles of temple construction. The Traditional Artisans lose interest at the inception of the temple.
- **Construction Materials:** There has been a drastic change in the construction material. Earlier only wood and stones would be used but now all kinds of options like cement, steel rods, plaster of Paris, plywood, prefab, etc. are available. The skills to handle new materials are not available with the Traditional Artisans hence they lose out. Further, many restrictions have been placed by the government on the usage of Wood and Stones. This hit a death blow to the Skill as well.
- **Community Participation:** Earlier the community would take a lot of time in temple construction. A lot of discussion and deliberations would happen on every part of the temple construction. These have now been replaced by Pr-approved designs by Architects, hence community participation has vanished.
- **Time:** The Time for construction has also been constrained as the means of engagement of Artisans has changed. Earlier the village would provide everything to the artisans and their families during temple construction. Nowadays wages have to be paid on a daily basis which makes it difficult for the communities to fund such long drawn construction plans.

7.8.2 Household Architecture

Household Architecture in Uttarakhand was traditionally been very scientific and artistically stimulating. There are many outstanding domestic buildings in this region. The Traditional of House building in Kumaon and Garhwal are distinctly different.

7.8.2.1 Koti - Banal Architecture

Buildings of this construction type can be found in the northern



part of the state Uttarakhand and the Northern part of Uttarakashi Districts. The most magnificent examples of the Koti Banal architecture are observed in the valley of the river Tons in Phitari - Jakhol area where many villages have a fair number of these houses. However, buildings of comparable type denoted as 'timber reinforced stone masonry'.

These buildings are typically found in flat, sloped and hilly terrain. They do not share common walls with adjacent buildings. In most cases, Koti Banal structures were erected separately without any buildings in the immediate vicinity. Koti Banal buildings are characterized by very simple rectangular plan Configurations while the lengths and widths are varying. The elevation of these buildings can go to three, four or five levels.

The Ground floor is essentially for keeping cattle and cattle feed. The first and Second Floors are for smaller animals like goats and sheep. Third floor is for human



Figure No.39: Koti Banal

habitation and the final floor on the top is for firewood. The upper two floors additionally have external balconies (wooden verandah) which are constructed with a wooden railing running around the whole building. The balconies are supported by cantilevering wooden logs of the flooring system. It is this projecting balcony which gives the house the false appearance of being top-heavy and unstable.

The Foundation of the buildings has a stone base. The subsequent levels up till the second floor have twin layers. The inner layer is made of wood like cribbage whereas the outer layers are reinforced with stone slabs cut precisely and fitted like tiles. These make the base very heavy and provide stability of to the structure.

These buildings have are resistant to earthquakes. We have come across building from the 17th and 18th Century standing even today with human habitation. There are local legends of how the people living inside these houses were saved during the invasion of the Gorkha Army. Some of the houses even have Khukri marks.

The Team was able to meet some of these Artisans who even today use 'timber reinforced stone masonry' for building houses. The designs have however changed with the changing preferences of the people.

The old and new houses however have one thing in common. They have intricate carvings on all wooden panels. Even the new houses under construction display these panels brilliantly.

The general trend of household construction is changing and all the new construction is brick and RCC structures. The Traditional Artisans have lost out completely to the new trends. They survive by making tools and wooden panels in houses. They rarely get the opportunity build these traditional buildings

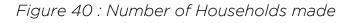
7.8.2.1.a Challenges of Koti - Banal Architecture

- **Space:** The Traditional Kothis usually had one large room for all members of the family. The same room housed the kitchen. There was practically no private space available. Since privacy has become an integral part component of our lives the demand for more space has arisen. This has adversely affected the construction of these Kothis.
- Separate Spaces for Animals: Staying with Animals is very difficult as they litter their places. It gives out a foul smell and requires regular cleaning. In the villages the cattle and animals have been shifted out of the house in separate sheds. This has made these designs irrelevant.
- **Raw Material:** The Raw material for building these houses is essentially stone and wood. Both these materials have become very expensive. Wood is under the control of the forest department and has to be procured, earlier there was no such control and people would just cut a few tree and provide for their construction.

During our visits to the upper regions of Uttrakashi, we found the Koti-Banal artisans still practicing their skills. It was an amazing discovery as it was widely believed that these artisans had ceased to exist even by the World Housing Encyclopedia.

There is merit in investing in this Architectural splendor as it is very unique to the identity of Uttarakhand. Further, if we introduce miniaturized version of these buildings it could provide regular livelihood to the artisans.

As per our estimates, the skill is currently practiced by 200 artisans across 50 Villages in Uttrakashi. The practitioners claim that they do not get work frequently and are currently working on one or two projects in a year, therefore involved in the skill only part time. This is likely to continue in the same manner in the next 5 years, unless an intervention to promote the skill amongst potential audience and incentives to encourage the practitioner is offered in a major way.



Even with conservative estimates of the potential within Uttarkashi itself is high and sufficient to employ practitioners around the year. Looking at the 700+ villages in Uttarkashi and



the household trends, the 71499 households is expected to go upto 75546 households in the next 5 years Even with conservative estimates of the potential within Uttarkashi itself is high and sufficient to employ practitioners around the year. Looking at the 700+ villages in Uttarkashi and their growth trends a potential incremental demand of 200 practitioners exist. This is dependent on the acceptance of the architecture form amongst the home buyers

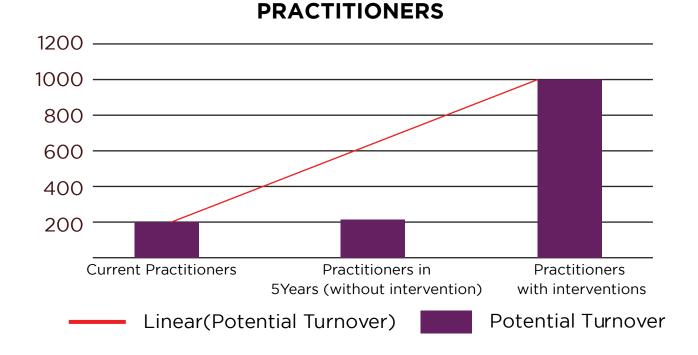


Figure 41 : Architecture practitioners Projections

Table No-94: Economic Potential of Architecture

Annual Estimates	2017-18	2021-22	
		Potential Without	Future Projection
		Intervention	With Intervention
No. of practitioners	200	200	1,012
Income from Practice	24,000	24,000	48,000
(per Person)			
Market Size	71499 households		75546 households

Table No-95 : Architecture skill intervention cues

Skill Gaps	Skill intervention
Innovation Challeng- es with privacy, smell etc.	Most of the Design & innovation has happened in the building techniques in the plains. The convenience of staying in concrete houses scores by a very large margin these traditional houses
	Integrating the convenience of concrete with the utility of tradi- tional design could be looked at in association with the premier engineering institutes and Architecture Institutes

Miniaturization (New Frontiers for growth)

The Souvnier Market is one of the most lucrative markets in the handicraft industry. A course in Miniaturization of the Koti – Banal can be started. Agra Artisans are experts in the art of Miniaturization and could help develop this trend in Uttarakhand.

7.8.2.1.b Banal Architecture RPL Opportunity

The Koti-Banal Architecture has been generated a great amount of interest because of its artistic value and earthquake resistant qualities. International and National universities have been trying to understand the nuances of this style.

There are very few Artisans who are capable of constructing houses on the Koti-Banal principles. We believe that the skill has a lot of relevance for the state given the frequency of natural disasters occurring in the state. The Skill of Koti-Banal Architecture will come under the stewardship of the Construction Skill Council. The Need of the hour is to learn and document the knowledge of the Artisans and introduce it as NOS for the Construction Skilling courses in the state. The RPL benefits will depend upon the NOSs that are included in the Job Roles.

The skill will fall under the Construction SSC and the following job roles and complexities exist in the practice of the skill

Job Role	Level	Process Required	Profession- al Knowl- edge	Profes- sional Skill	Core Skill	Responsi- bility
Koti-Banal - Helper	1	Gathering of the various materials required for construction like gather- ing wood and stones slabs (patal)	Familiar with the ter- minolgy and instructional words used by the Mis- try (Mason)	Assists the Mistry in all the works but does not per- form any specialized activity	Maintaining Clean Safe and Healthy Environment while Working with Sharp Metal instru- ments .	Only Per- forms Tasks that are ba- sic and su- pervised by the Mistry. No Deci- sion making tasks are Assigned.
Koti-Banal - Appren- tice	2	Performs Basic tasks Like cutting wooden blocks and Stone Slabs as per the specifica- tions of the Mistry	Clearly un- derstands the process- es involved the making of Kothis	performs tasks which are regular and require basic skills	The Appren- tice is able to converse with the Mistry and engage with him on the tasks As- signed	Carries out Tasks assigned, instructed and super- vised by the Mistry.

Table No-96 : Job Role Complexity for Architecture

Koti - Ba- nal Mistry	4	He Under- takes the construction of houses on the prnciples of Koti-Ba- nal Architec- ture	Has a an understand- ing on the principles required to be followed for laying foundation, making cribbage structures and tiling of outer walls with stone tiles or Pa- tals	Recall and Demon- strate Prac- tical Skill of Con- struction of Kothis using the Principles of Koti-Ba- nal Archi- tecture	Make Basic Calculation for construc- tion of kothis which would include de- termining the dimensions of the structure, strength as- sessment and load distribu- tion, material required, etc.	Perform all activities under the guidence of the Raj Mistry.
Koti-Banal Raj Mistry	6	He has a lot of ex- perience in construction of Kothis	A great deal of Knowl- edge and experience on nature of wood and stones in relation of construction	He is capa- ble of de- signing and erecting the struc- ture from scratch employing his knowl- edge of Surverying, designing living spac- es and con- struction	Make Basic Calculation for construc- tion of kothis which would include de- termining the dimensions of the structure, strength as- sessment and load distribu- tion, material required, etc.	Responsi- ble for own Work and Learning of Mistries, Apprentices and Help- ers.

Table No-97 : NOS codes for Architecture

Job Roles	Level	NOS Codes	NOS Name	NOS Proposed
Koti-Banal - Helper	1	CON/N8001	Work effectively in a team to de- liver desired results at the work- place	OS unit on Carry- ing Heavy Load on Slopes
		CON/N9001	Work according to personal health, safety and environment protocol at construction site	OS unit on Main- tain Tools of the Mistry
Koti-Banal - Apprentice	2	CON/N8001	Work effectively in a team to de- liver desired results at the work- place	OS unit on Split- ing Wood and Breaking Stones Slabs as the Mea- surements

		CON/N9001	Work according to personal health, safety and environment protocol at construction site	OS unit on Main- tain Tools of the Mistry
		CON/ N0904	Conduct linear measurements us- ing survey instruments and tools	OS unit on Carry- ing Heavy Load on Slopes
		CON/N0116	Apply grouts and sealants for flooring and cladding works	
Koti - Banal Mistry	4	CON/N0133	Allocate, monitor tools, equip- ment and resources for structural execution work and procure ap- provals for relevant work	OS on Koti-Banal Architecture Prin- ciples
		CON/N0113	Build structures using random rubble masonry	OS code on han- dling of Wood and Stone Slabs (Patal)
		CON/N 3603	Build structures using random rubble masonry for rural con- struction	OS Code on Crib- bage Structure of Constructing
		CON/N0119	Carry out cladding works with natural stones	OS units on proj- ect planning
		CON/N0905	Carry out leveling and cross sec- tioning survey	
		CON/N0120	Carry out surface finish like Grit wash / Exposed aggregate plas- tering, Stone-Crete, Cement wash, dry and wet cladding of stones on masonry surfaces	
		CON/N0903	Carry out temporary adjustment of survey instruments by standard methods	
		CON/N0907	Carry out topographic survey	
		CON/ N0904	Conduct linear measurements us- ing survey instruments and tools	
		CON/N0118	Cut, lay and fix natural stones for flooring works as per design pattern	
		CON/N0137	Supervise and monitor execution of Scaffolding works	
		CON/N 9001	Work according to personal health, safety and environment protocol at construction site	
		CON/N8001	Work effectively in a team to de- liver desired results at the work- place	

		CON/N8002	Plan and organize work to meet expected outcomes	
Koti-Banal Raj Mistry	6	CON/N0133	Allocate, monitor tools, equip- ment and resources for structural execution work and procure ap- provals for relevant work	OS units on Cus- tomer handling
		CON/N0113	Build structures using random rubble masonry	OS units on Busi- ness practices
		CON/N 3603	Build structures using random rubble masonry for rural con- struction	OS units on proj- ect planning
		CON/N0119	Carry out cladding works with natural stones	
		CON/N0905	Carry out leveling and cross sec- tioning survey	
		CON/N0120	Carry out surface finish like Grit wash / Exposed aggregate plas- tering, Stone-Crete, Cement wash, dry and wet cladding of stones on masonry surfaces	
		CON/N0903	Carry out temporary adjustment of survey instruments by standard methods	
		CON/N0907	Carry out topographic survey	
		CON/ N0904	Conduct linear measurements us- ing survey instruments and tools	
		CON/N0118	Cut, lay and fix natural stones for flooring works as per design pattern	
		CON/N0137	Supervise and monitor execution of Scaffolding works	
		CON/N 9001	Work according to personal health, safety and environment protocol at construction site	
		CON/N8001	Work effectively in a team to de- liver desired results at the work- place	
		CON/N8002	Plan and organize work to meet expected outcomes	

7.9 The Culinary Traditions of Uttarakhand

Culinary Traditions of Uttarakhand is rich in aroma and exotic flavours. The food grown and gathered in the mountains is very high in nutritional content; this is the primary reason why the general health of the people in the hills is very good. They are extremely fit and athletic which had made them the best choices for the defenses forces of the country. If we take a closure look we can see the undercurrent of the Garhwal and Kumaon traditions flowing through the foods as well. There is not much difference in terms of the dishes between the regions but it is the way in which these are cooked.

Figure 42 : Arsey



A variety of flowers, fruits, roots and seeds are found in the hills with medicinal values. These have been very intelligently integrated in the daily cooking which makes the food of the Uttarakhand dishes very special. Very interestingly the local Ayurvedic practitioners would often prescribe introduction of food items rather than medicines in the foods to cure diseases.

Due to extreme temperatures in these regions, there is a very strong tradition of eating non-vegetarian foods as well. Popular preparations of the region are based on different

kinds of birds, goat, sheep, rabbit and other wild animals. They have developed a unique methodology of preserving the meat by drying it in the sun during the times of abundance. This dried meat is utilized for eating during the long and extremely cold seasons when food becomes scares.

Before we discuss further we should take a moment to discuss the communities that have contributed to the culinary traditions of Uttarakhand. The Mandir or the House of the Devta holds primacy in Village Life. Food is always the mainstay of all religious ceremonies. The Maharaj Brahmin is a community of Temple Cooks and usually takes charge of cooking food for the Devta. Cooking for them is a solemn ritual which is akin to worshipping the divine. The Rajput Cooks were specially skilled in Sweets as they would offer the same to Sun God. The Aboriginal tribes would make various food offerings to gods at various religious occasions. Similarly, every dish cooked at the regular households was also an offering to the gods. It was interesting to find that from traditional sweets to alcoholic drinks, all were an offering to the divine. All communities observe a specific tradition in cooking and serving food. As a guest, one would get overwhelmed at the extent to which an Uttarakhandi host would go share his food.

Despite this rich repertoire and cultural significance, the popularity of the local cuisine is limited only to the households. During the course of this survey we found very few restaurants offering to sell authentic pahadi food, however cuisines from several other states were easily available. Outside the state, cuisine of Uttarakhand is practically unknown despite the presence of such high number of cooks from the region

7.9.1 Popular Dishes of Uttarakhand

Figure 43 : Mandua ki Roti



Mandua is a Local grain extensively grown in both Garhwal and Kumaon regions of Uttarakhand. It is used to make roties and other breads. It has a very distinct taste different form wheat hence might take some time for new communities to get used to. However, the medicinal properties of the roties are immense. They are useful for patients suffering from kidney stones, Sugar, Blood Pressure and TB to name a few.

Jhangora Ki Kheer

Jhangora is the Indian name for millet. It is a very popular cereal of India and has many preparations. In Uttarakhand it is used to make a very popular Kheer. To make the Kheer, first the Jhangore is soaked in water for about an hour. Later, milk is boiled. Jhangore is added to the milk while continuously stirring it. Add sugar and continue mixing it. Once is mixed well add the kewara essence and stir well. The kheer is garnished with cashew nuts and raisins.

Kandali ke Sabji

Kandali is also known as Bicchu Ghass and Siyon in Uttarakhand and Stinging nettle in English and the rest of the world. It is a popular prank in the hills to rub Kandali among the young as the sting and irritation caused by its thorns lasts for days. It is said that the parents often threaten naughty children with Kandali if they do not listen to them. Apart from the mischievous properties, the Kandali is very useful in extremely cold climates. It is used to make Saag that is a major source of nutrients for survival in harsh

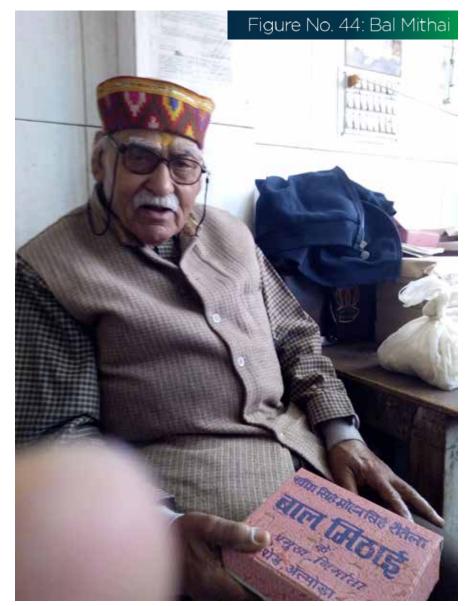
weather. Once boiled it loses sting and becomes a very tasty dish similar to palak but far more potent. It has legendary qualities of improving blood circulation, lactation, arthritis, general debility, etc.

Bal Mithai

Traditionally Bal – Methai is one of the legacy sweets of the Kumaon Region. It is believed to be an offering to the Sun God. The Bal Methai made in Almora is very popular. Some of the shops of Almora making the Bal – Methai are more than 80 years old. Most of the ingredients of the sweets made from Khoya, jaggary, sugar, besan, til, etc. which are also good for people living in cold climates.

Soor

The Tons Valley has traditionally manufactured Soor - a traditional alcoholic beverage to cope with adverse climatic conditions and also on ceremonial occasions as well as festivals. The aboriginal communities in the hilly and



mountainous Tons Valley have evolved a wide variety of Soor using apples, pears, peach, apricot, etc. or cereals mainly rice, barley or finger millet. Soor has a special importance in all occasions, such as birth, marriage contracts, initiations, feasts, hospitality and some magico-ritual ceremonies of the people. These people believe that drinking Soor gives strength to the body, acts as a blood purifier, removes intestinal worms and provides relief in urinary troubles.

The Jadayi are community that have been traditionally manufacturing Soor. They are extremely guarded about secret methods of making Soor. For them the manufacture of Soor is akin to a religious ritual and so the same type of sanity is maintained.

Prohibition of Soor is a challenge for the product, it has the potential to become a legendary drink like feni in Goa. The Medium of cooking is usually firewood. Women usually go into the forest to gather firewood. Modern LPG cooking has also become very popular.

7.9.2 Tourism Potential of Culinary Skills of Uttarakhand

As per the UTDP estimates, 31663278 tourists visited Uttarakhand in the year 2016. As per other industry estimates the domestic tourists on year. are expected to grow by 2% year on year , while foreign tourists are expected to grow by 8% year

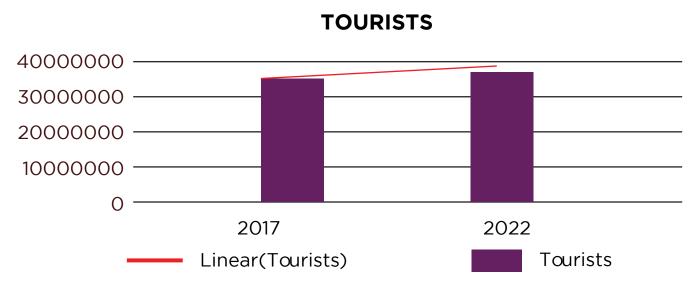


Figure 45 : Tourist Estimates and Projections

As per our estimates 9700 restaurants and hotels operate in Uttarakhand, employing 38800 practitioners, however most of them are not currently cooking their traditional food in these restaurants. The number is expected to grow upto 42892 practitioner in the next 5 years. However even amongst the currently employed , only a fraction is practicing traditional culinary

- The Current Set of Artisans can join the NSQF levels as per their specialization and level of proficiency on the skill.
- The RPL Program can give them the opportunity to learn from experts.
- The Scheme may accord them the required mobility to apply and move to any part of the country and get the best compensation for his efforts.
- RPL program can help the Artisans help set up their own businesses.

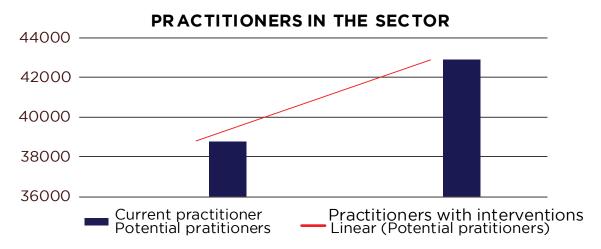


Table No-98: Economic Potential of Culinary Traditions of Uttarakhand

Annual Estimates	2017-18	2021-22
	Current Estimates	Future Projection
No. of practitioners	38,800	42,892
Average Productivity	1,20,000	1,80,000
Income from Practice (per Person)	48,000	72,000
Market Size	465.6 Crs	772 Crs
Trade Enhancement (In % Terms)		65%
Estimated Working Capital Cycle	1 month	
Working Capital Requirement per Artisan	2400	3600
Working Capital Requirement for the Industry	9.3 Crs	15.4 Crs

7.9.3 RPL Opportunity for Culinary Traditions

The Culinary Traditions of the State have been very rich and tasteful. Despite the fact that the people take a lot of pride in their local cuisine, the number of commercial eateries serving Uttarakhandi food is non-existent. The Tourism and Hospitality Sector Skill Council is the responsible for the propagation of culinary practices of the state..

As per our estimates, there are around 9700 restaurants and hotels operating in Uttarakhand and employing 38800 people for various job roles. The RPL program can be very useful scheme to include the traditional cooks of the state for skill up-gradation program. Some of the benefits accruing to the traditional cooks would be:

5	
Skill Gaps	Skill intervention
Lack of awareness, especially outside the region	Alignment with the tourism in order to promote about the cuisine effectively
	Help improve selling and marketing skills Investment in build- ing imagery around traditional cuisine
	Help improve the presentation of local dishes , thereby making it more appetizing

Table No-99: Culinary skill intervention cues

Innovation - to attract the tourists as well as the young population	Imparting training on taste pallets as well on fusion cooking to make the cuisine relevant to a wider audience Position and create fusion of the local cuisine with currently popular items like chocolate, syrups etc.
	Widen the scope of products , for e.g there are few sweet forms like bal methai etc., but the variety is limited

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Table No-100	. JUD KUIES	COMPREXILY	IOI Cuinary

J ob Role	Level	Process Required	Professional Knowledge	Profes- sional Skill	Core Skill	Responsi- bility
Road side Eat- ery	4	Cart the cooked or ready - to - eat food to location of sale. Con- duct entre- preneurial activities required to run the food vending business.	Knowledge and Skill of preparing pallatable food items	Demon- strate prac- tical skill, to maintain a standard taste repiti- tively	Ability to in- teract with the Customers and engage them positively to encourage a repititive buying behavior. Should have the ability to price the ef- forts and materi- al put to make a profit in a com- petitive pricing environment	Responsi- ble for the entire busi- ness and maintaining operations regularly.
Eatery Owner - Manager	7	Set up and manage eatery oper- ations	Knowledge and Skill of preparing palatable food items.	Demon- strate prac- tical skills to maintain standard taste repi- titely. Fur- ther main- tain a Clean & welcom- ing envi- ronment in the seating area.	Undertake ca- shiering, manage accounts and enhance busi- ness. Manage Communication with Customers, Employees, Ven- dors and other stakeholders	Fully Re- sponsible for the Business, operations and Brand.

Table NO-101 : NOS codes for Culinary

Job Roles	Level	NOS Codes	NOS Name	NOS Proposed
Road side	4	THC/N3009	Cart the cooked or ready -	OS units
Eatery	4	1110/113009	to - eat food to location of sale	specific for Culinary Re- cepies Of Uttarakhand Foods
Road side Eatery	4	THC/N3010	Conduct entrepreneurial activities required to run the food vending business	
Road side Eatery	4	THC/N3011	Maintain health and hygiene in vending area	
Road side Eatery	4	THC/N3012	Maintain safety while vending	
Road side Eatery	4	THC/N9902	Maintain customer - centric service orientation	
Road side Eatery	4	THC/N9904	Follow gender and age sensitive service practices	
Eatery Owner - Manager	7	THC/N3013	Set up and manage eatery operations	OS units spe- cific for Culi- nary Recepies Of Uttarakhand Foods
Eatery Owner - Manager	7	THC/N3014	Undertake cashiering, manage accounts and en- hance business	
Eatery Owner - Manager	7	THC/N9901	Communicate with customer and colleagues	
Eatery Owner - Manager	7	THC/N9902	Maintain customer - centric service orientation	
Eatery Owner - Manager	7	THC/N9903	Maintain standard of etiquette and hospitable conduct	
Eatery Owner - Manager	7	THC/N9904	Follow gender and age sensitive service practices	
Eatery Owner - Manager	7	THC/N9905	Maintain IPR of organisation and customers	
Eatery Owner - Manager	7	THC/N9906	Maintain health and hygiene	
Eatery Owner - Manager	7	THC/N9907	Maintain safety at workplace	
Eatery Owner - Manager	7	THC/N9909	Learn a foreign or local language(s) including English	

7.10 Iron Craft

Iron craft is one of the oldest skills of the state. It has evolved owing to the requirement of better weapons for fighting and stronger agricultural tools. The Art grew at the time of Chand Dynesty when the kingdom required quality swords and shields to be made. The Arya were an ironsmith caste which had their roots in plains. This community was given lands and encouraged to come and settle in Champawat, District of Uttarakhand.

Figure 47 : Iron utensils



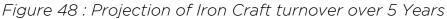
They would regularly provide quality swords, shields, protective garments made of iron to the Army of the Chand Kings. They were particularly famous for making spring swords which could be used to lethally injure the enemy at distances upto 15 meters. Later these people also started minting coins and other household items. When the British took over they made manufacturing of iron weapons illegal. Hundreds of Arya artisans were arrested and their thumbs smashed.

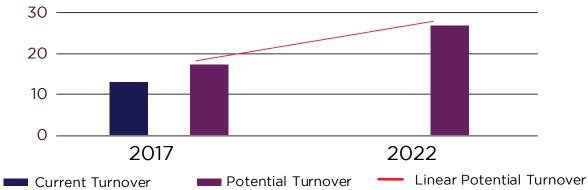
To escape their atrocities a lot of them moved to other villages or changes their identity. As per some accounts they also took titles of Tamta and joined the copper craft industry. The Iron Craft currently in practice is for making Kadhai, Tawa, iron khals, etc. The craft is a particularly difficult because large pieces of iron have to be beaten into shapes of a Kadhi and tawa. The Ironcraft Art is concentrated in both Pithoragarh and Champawat districts. Lohaghat in Champawat district has a general acceptability for quality craft the few artisans are practicing this Art. None of the Artisans want their children to pursue this Art any further.

7.10.1 Challenges of Iron Craft

- Substitutes: The options of aluminum and non-stick frying pans have destroyed the market for iron kadhais and tawas.
- Tough Craft: it requires a phenomenal amount of strength to beat iron into shapes. The wages of these workers are extremely low for the work they do. The working conditions of these workers are also tough.
- Platform: the Artisans complained that there were not enough platforms available to showcase their Art.

As discussed earlier, the iron craft is similar to other metal crafts like copper in their disposition. Both Iron and copper craft artisans have been making kitchen utensils by beating metal into shapes.





The potential demand for hand-made utensils has been seeing a steady decline in the last couple of decades with the advents of industrial substitutes. However, the demand for metal artifacts has maintained and even grown over the last decades.

This opens new avenues for the metal Artisans to shift to other lucrative streams which fundamentally remain in-tune with metal craft. Like copper we estimate that around 700 artisans are practicing Iron craft in Uttarakhand. Without skill intervention we expect their numbers to fall below 400 in the coming 5 Years.

Re-skilling and up-skilling in may help check the fall and may make it lucrative for new persons to join the skill as well.

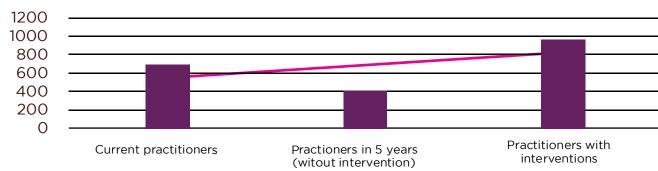


Figure 49 : Iron Craft Practitioners & Growth PRACTITIONERS IN THE SECTOR

Practitioners in the sector _____Linear (Practitioners in the sector)

Table No-102 Economic Potential of Iron Craft

Annual Estimates	2017-18	2021-22		
	Current	Potential With-	Future Projection	
	estimates	out Intervention	with Intervention	
No. of practitioners	686	412	962	
Average Productivity	1,67,638		2,56,757	
Income from Practice (per Person)	67,000		1,02,700	
Market Size	11.5 Crs		24.7 Crs	
Trade Enhancement (In % Terms)			115%	
Estimated Working Capital Cycle	1 month			
Working Capital Requirement per Artisan	8328		12838	
Working Capital Requirement for the Industry	0.57 Crs		1.2 Crs	

7.10.2 Iron Craft RPL Opportunity

Iron Craft has a very pervasive presence owing to the strong agricultural traditions of the state. As discussed earlier, the Artisans essentially make farming tools and Kitchen utensils. Due to stiff competition coming from alternatives the skill have been facing pressures. RPL is a very relevant skill for the Iron Craftsmen of the State as it can have the following advantages for the State:

- The artisans can have a lateral entry into the NSQF at a level which is commensurate to their competency and flair for the skill.
- The Skill Training can give them a greater flexibility in terms of experimenting with new designs and items.
- The Certification can help in greater Labour Mobility across the country.
- The Products manufactured by the NSQF Qualified Artisans may have access to bigger and better markets.
- The Incentive of around Rs. 2200 for artisans joining the RPL Scheme can provide the right encouragement.
- Currently, there might be an opportunity to cover around 400 artisans under the various Levels and Job Roles of the NSQF.

Table No-103 : Iron Craft Skill Gap						
Skill Gap	Skill intervention					
Innovation & Moderniza- tion- The products pre- pared are standardized and have been similar in form and design for generations	 Training to improve quality of design and making the metal designs contemporary. Skilling intervention required to acquaint the artisans to Tastes of the Urban Customer. Training for use of modern and efficient machinery for buffing and finishing of products. New products innovations like flasks and hot water geysers, The Artisans have to be provided support to use copper as a medium of expression for Arts and Artifacts. Currently they want to continue surviving by making kitchen utensils which is a shrinking market. 					
Selling skills	 Catering to only local needs is unlikely to be sufficient in the long run. Therefore newer and urban markets need to be looked at. This would also mean modernization and innovation for the industry Potential customers need to be educated about the benefits of cooper and the selling skills need to be built around these benefits Training in ayurvedic and wellness properties of copper 					

Table No-103 : Iron Craft Skill Gap

Job Role		Process Re- quired	Profession- al knowl- edge	Profes- sional skill	Core skill	Responsi- bility
Iron Crafts- man Helper	1	These include Tasks of pre- paring the Metal Sheets, Cutting & Hammering Tools, Heating & Welding Ap- paratus	Familiar with common trade terminology, instructional words mean- ing and un- derstanding	Routine and repetitive, takes safety and security measures.	Maintain- ing Clean Safe and Healthy Environ- ment while Working with Heat- ed Instru- ments, Sharp Met- al Cutters, Heating & Welding Apparatus	Only Per- forms Tasks that are basic and super- vised by the Master Crafts- man. No Decision making tasks are Assigned.
Iron Crafts- man - Ap- prentice	2	Performs Ba- sic tasks Like Weighing and Marking of Metal Sheets. Metal Cut- ting, Welding and Joining Metal Sheets. Has started Hammering of Sheets	Understands and Clearly understands the process- es involved the pre- paring the Utensils and other items	Performs indepen- dent tasks repetitive in nature	The Ap- prentice is able to converse with a master craftsmen and en- gage with him on the tasks As- signed	Carries out Tasks assigned, instructed and super- vised by the Master Craftsmen.
Junior Iron Craftsman	3	Performs the tasks of Marking Metal Sheets, Met- al Cutting, Welding and Joining Metal Sheets and Hammer- ing Sheets to Desirable Shapes.	He performs All basic Activities of a Craftsman and deliver utensils	Performs the tasks of Mark- ing Metal Sheets, Metal Cutting, Welding and Join- ing Metal Sheets and Hammering Sheets to Desirable Shapes.	The Apprentice is able to en- gage with the master Craftsman on tasks assigned with rea- sonable degree of proficien- cy .	He is able to make unfinished Utensils. Still re- quires supervision and gui- dence of the Master Craftsman to com- plete the utensils

Table No-104: Job Roles Complexity for Iron Craft

IronCrafts- man	4	He inde- pendently finishes his utensils and able to make market ready utensils	Has full knowledge of the Craft both theory and practical	He inde- pendently finishes his utensils and able to make mar- ket ready utensils	The Crafts- man can commu- nicate the processes followed in the making and price the mate- rial used & the efforts put in.	Takes the full respon- sibility of the utensils delivered and the function- ality of the Units.
Senior Iron Craftsman	5	He inde- pendently finishes his utensils and able to make market ready utensils. He able to take Specifications from Cus- tomers and deliver famil- iar Products accordingly	Complete Knowledge of the metal and process- es involved in delivering marketable units of familer Items	He is able to make to order gen- eral items and requir- ing realign- ment and balancing of utensils as per the proportions specified by the custom- er	Has the desired level of Mathemat- ical Skills under- standing of readjusting the propor- tions of the utensils as per the re- quirements of the cus- tomer.	Responsi- ble for own Work and Learning and can delegate and mon- itor the work of colleagues
Master Iron Craftsmen	6	He can deliver a wide range of utensils, figurines and Artifacts using his knowledge and experi- ence with the metals.	Understand- ing of the Metal and its possibilities reasonably explored by the Crafts- men	He has the required Cognitive and Prac- tical Skills required to provide conven- tional and Made-To- order solu- tions.	Reasonably good un- derstand- ing on the amount of raw materi- al required to deliver conven- tional and made-to- order jobs. Ability to under- stand the strength that the metal delivers in various forms and gages.	Fully Func- tioning as a Master Craftsmen. Engaging other Iron craftsmen on various jobs of conven- tional and made-to- order na- ture.

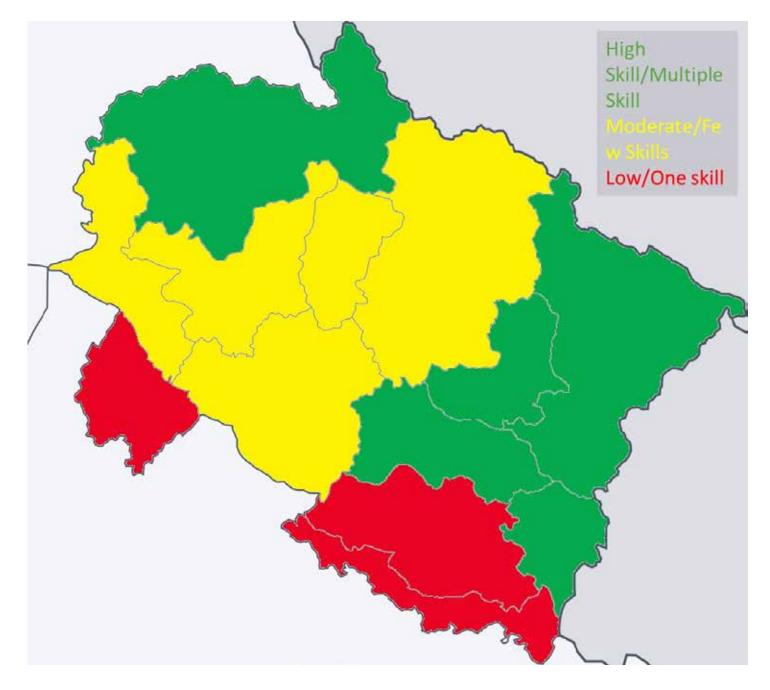
Table No-105 : Nos Codes for Iron Craft

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SECTION 8: DISTRICT OVERVIEW

Figure 50 : District wise Skill Spread



8.1 Almora

Almora is one of the oldest Cities of Uttarakhand. Established in the 15th Century by the Chand Dynasty, Almora has been the heart of Cultural renaissance in the Kumoan Region. Prior to bifurcation of the district, Pithoragarh, Champawat and Bageshwar formed part of the Almora Region.



Table No-106 : Almora District at a glance

Indicators	Almora
District GSDP	660378
Total Population	622506
District Population Percentage of UK population	6.10%
Number of villages	2289
Scheduled Caste population percentage of Total population	24%
Schedule Tribe population percentage of Total population	0.20%
Decadal Growth	-2%

The City is the seat of vibrant kumaoni culture. The Market of Thana Bazar Road is one of the biggest markets in the hills. Dotted with multiple temples the bazar is extremely lively and bustling with people at all times. Most of the Traditional Arts of the Kumoan region have found a place on the road. Small shops selling Wooden stools with Aipan paintings would be easily spotted. Multitude of jewellary shops display Kumaoni Nath and other ornaments in their windows.

The Tamta Mohalla is also very near to the bazar where one could easily hear the hammer sounds of the Copper Craftsman working. Their copper containers can be spotted being sold from the shop of M/s. Anokhe Lal and Sons.

The culinary delight of Bal Methai could be tasted at Kheem Singh Mohan Singh Rautela's shop on the mall road.

Table No-107:The Skill Scape of Almora

Almora	2017 (Current)	2022(Future)
Agriculture	225588	223769
Apparels	459	473
Automotive	2419	3181
BFSI	2904	3833
Beauty & Wellness	452	447
Capital Goods	425	443
Electronics	5350	5519
Food Processing	1224	1375
Furniture	496	511
Handicraft	3010	3564
Health	411	527
IT/ITES	146	209
Life Sciences	0	0
Retail	9057	9021
Rubber	5	5
Textile	1753	2185
Tourism	13658	14072
Total	267358	269134

Based on the population Census of 2011, and application of decadal growth rates for the relevant period, the district will add additional work force of around 80,000 persons. This opens huge possibilities of skilling in the District.

The Job creation during the same period is 4683, this leaves a huge gap for skilling in the district.

Owing to the setting up of Rural Call Centers, the demand for IT/ITES service appears to be rising; followed by banking and automobiles. The Automobile growth is primarily driven by the growing requirement for commercial drivers due to the growing tourism sector. Despite these fast movers, the dominant sectors for the district are Tourism & Hospitality and Textiles. As per our estimates both these sectors will have demand for new as well as replacement employees.

As far as agriculture is concerned, the employment is expected to shrink by around 1% by 2022. There is a substantial opportunity to encourage people to engage in Poultry, Horticulture, animal husbandry, etc.

Sector	Skill Requirement
Agriculture	Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Textile	Two Shaft - Handloom Weaver, Handloom Entrepreneur
IT/ITES	Voice Call, Data Entry, DTP, etc
Automobile	Automobile Service Advisor, Commercial Driver

Table No-108: Almora Recommendations

8.1.1 The Craft Clusters of Almora

8.1.1.a Copper Cluster

Tamta Mohalla: The Tamta Mohalla was one of the most recognized copper clusters. Till very recently more than 72 families were staying in the locality and supplied copper utensils to the Almora Market. However the things have changed for the worse for the people engaged with the copper trade. The main reasons cited are:

- Rising Prices of copper have made the utensils made of copper far more expensive than steel
- Lack of working capital
- Low wages for craftsmanship
- Industrial Substitutes like plastics replacing copper
- Lack of infrastructure and tool up-gradation

More than 200 familes have lost their livelihood and migrated out of Tamta Mohalla to plains. The Art of copper craft is slowly moving towards extinction.

8.1.1.b Jeweler Cluster

Johri Bazar: Johri Bazar in Almora is one of the biggest jewelry clusters in the Kumaon Region of Uttrakhand. It has more 30 shops of Jewelers in and around the Bazar. These Jewelers have been for ages making ornaments for various occasions. A detailed discussion on the products has been done under the Jewelry under Skills section of this report. The Johri Bazar has been facing considerable amount of challenges:

- The 24 Carat Jewelery that they manufactured is not hallmarked in Almora;
- There are no local workers available in Almora. All the Jewelry Workers are from Bengal;
- The Designs and customer preferences are changing in favor of the jewelry of the plains;
- Branded Jewelry has eating into the market share of traditional jewelers very rapidly

The District of Almora is also home to Panchachuli Women Weavers, an enterprise dedicated to the up-liftment of women. Their manufacturing center at Danapani is a treat to visit. One can see the art of shawl manufacture come alive with women making yarn and operating handlooms.

8.2 Bageshwar

Bageshwar is a bustling city at the confluence or Sangam of Saryu and Gomti rivers. Some believe that the spiritual river Saraswati also meets at this point. Piligrims keep congregating in the city to have a holy dip at the sangam. The Bagnath temple celebrates Lord Shiva's Divine appearance in the form of a Lion to lead the river Saryu past the meditation field of Rishi Markandeya. The Temple is the pivot of all activities as it overlooks the bazaar.





Table No. 109 - Bageshwar District at a Glance

Indicators	Bageshwar
District GSDP	326782
Total Population	259898
District Population Percentage of UK population	2.50%
Number of villages	947
Scheduled Caste population percentage of Total population	27.70%
Schedule Tribe population percentage of Total population	0.70%
Decadal Growth	5%

It is important to note here that Bageshwar was a major commercial center on the trade route between India and Tibet. Since ancient times Tibetan traders visited the market to exchange goods with other communities. Until 1962, the trade routes with Tibet were open but after the Chinese invasion and the subsequent war with India, the Boarders closed down and the trade stopped. Despite the closing of the trade route the city retained its vitality. Most of the retired personnel from the Armed Forces chose to build their homes in the city. This created the market for traders as the local consumers did provide critical mass for trade. The city infrastructure got a boost with road connectivity, power, Schools and colleges coming up. Today it is a thriving district center with Hotels, Hospitals, District Court and the City Municipality serving the city.

The city has a strong presence of Kumaoni, Bhotia and people from the plains. This has created a space for the crafts from all three traditions. The Traditional Artisans from the adjoining areas flock to the city to trade their skills and products. The bazaar has shops selling hand crafted and manufactured item side by side.

The Highlight of the Cultural Calendar of the city is the Uttarayani Mela. It is held for a week from Makar Sankranti on the banks of the Sangam. More that 15000+ people visit the Mela daily to indulge in Clothing, Handloom & Handicrafts, Culinary delicacies and Cultural Performances.

The Mela provides a sumptuous platform for the artisans. This is usually the bestselling season for Copper and Brass Utensils, Bhotia Pankhi, Thulma, Chutka and Dan (Traditional Carpets). Apart from the same, Traditional Ringal products and woodcraft items are also in high demand. Every year, communities living at high altitudes also visit the mela to sell medicinal plants, potions, extracts and oils for general wellness and to cure diseases. We conducted extensive interviews in the district as part of the Study. We first identified the principle practitioners in the prevailing skills.

Bageshwar	2017 (Current)	2022(Future)
Agriculture	223769	97647
Apparels	473	280
Automotive	3181	1988
BFSI	3833	973
Beauty & Wellness	447	197
Capital Goods	443	222
Electronics	5519	234
Food Processing	1375	763
Furniture	511	223
Handicraft	3564	7095
Health	527	159
IT/ITES	209	157
Life Sciences	0	0
Retail	9021	3747
Rubber	5	21
Textile	2185	632
Tourism	14072	3603
Total	269134	117941

Table No-110: The Skill Scape of Bageshwar

As per the population Census data of 2011, projected with the decadal growth for 2017 and 2022, the district will add another 40,000 youth to the workforce by 2022. The Job creation during the period is expected to be 6206.

Agriculture is the dominant employer of the district of Bageshwar. Followed by textiles and handicrafts. By 2022, Agriculture is expected to add additional 2500 persons on the existing workforce. Similarly, Textile will add around 1800 people and Handicrafts to add another 700 people over its existing base. Typically, these additions will be on enterprises practicing the traditional skills. Despite its small base, IT/ITES skills are expected to grow the fastest in the districts.

	Table No-111:	Bageshwar	Recommendations
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Sector	Skill Requirement
Agriculture	Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Textile	Two Shaft - Handloom Weaver, Handloom Entrepreneur
Handicrafts & Carpets	Agarbatti, Bamboo Craft, Hand-woven Carpet, Metalware
IT/ITES	Web Developer, Hardware Engineer, DTP

8.2.1 The Craft Clusters of Bageshwar

8.2.1.a Copper Craft: Copper craft is widely practiced in the Bageshwar district. The main areas are Bageshwar, Segare, Choganchina, Binser, Uderkhani, Jashi Gaon, Gair, Banga, Nuplia, Bhatkhola, Khark, Tamta, Jula, Tamture, Bilana, Dawaldhar, Gingori Khola.

The Craftman make a variety of products a detailed discussion is undertaken under the skills section.

8.2.1.b Mining: Bageshwar district is very famous for Extraction Quality Soapstone. Soapstone is very brittle and is the primary source for Talc. This is the raw material for Talcum powder used practically in every household. Talcum has varity of other industrial and commercial uses.

The people in the region have leased out their lands for Soapstone mining. This has become one of the most lucrative occupations for the people.

The mining has however lead to massive reverse on the environment.

- The agricultural land s have been destroyed
- The local communities have lost livelihood
- Disparities in Income levels have increased
- Water pollution and Air Pollution levels have been rising alarmingly as a result of the mining.

8.2.1.c Stone Craft

Stone craft is the art of making Statues, artifacts and useful items of stone. This was very prevalent in Uttarakhand. We see the generous usage of stones in the building of Temples and Houses. Most of the Ancient Temples of the State are built with rubble and large stones. Immaculate Stone Carvings are visible in temple panels of Badrinath, Kedarnath, Tungnath & Bageshwar temples. Various statues of gods and goddesses have been carved out of single piece of stone. These achievements of the ancient craftsmen vouch for the zenith of their arts. Stone was also a major component of household construction in the hills. The Koti-Banal households used stone in their foundations and stone tiles to provide stability and strength to the buildings.

Dry Stone Roofing: this was a common roofing technique in the hills where stone slabs

were extracted from stone mines. Since the Himalayas are made of sedimentary rocks clean and long slabs of stones could be extracted. These would then be broken into pieces to form the roofing tiles for the canopy shaped houses. To add a further degree of insulation Ringal mats would be used from the inside of the house to keep it warm and prevent water from leaking form the roof during rains.

Some of the common Household items made of stone still found in the hills are:

8.2.1.c.i : Common Stone Craft items

Atta Chakki: These are simple round stone slabs placed one on top of the other with a whole in the middle. A wooden handle is fixed at the top to make rotational movement of the slabs. Grain is dropped in the hole while the handle is being rotated. It comes out form the sides of the slabs in the form of Atta. These is the most common forms of grinders available in hills.

Gharat (Watermills): The Gharat (Watermill) is a unique innovation of the hills. They use hydro energy principles to turn stone chakki at high speeds. They are set up near perennial rivers and streams where continuous flow of water is available with decent force. The villagers used these Gharats to grind grains and make atta. Various grains could be grinded without effort within a short span of time. A portion of the grinded Atta was left at the Gharat for the Owner's consumption. In the evening the Gharat owner would come check the working of his apparatus and also collect his fee.

Sil Batta: is a common kitchen stone items where a grinding stone is placed on a flat stone. This tool is used for crushing and grinding water soaked grains. It is also extensively used to make chutaney.

With the advent of modern housing methods the Dry Stone Roofs have ceased to exist. They have been replaced by RCC structures. These are far superior solutions in comparison to Dry Stone Roofing.

However, the household items like Chakki and Sil Batta still are commonly used in every village household.

Potential for Gharat is enormous as the techniques used for Gharat can be very useful to make micro hydroelectric plants. These plants would have the potential to power small villages and also make money by selling excess electricity to the grids.

The Gharat can also be put to use in many other uses as the simple apparatus can act as an engine for many activities. The gharats had become obsolete but recently a few have started appearing in many parts of the state.

The Art of Statue Making has died in the hills. Our research team extensively tried to locate traditional artisans who could curve stone in a traditional style but could not succeed. However, individual enthusiasts with artistic bent of mind did meet us. They have made considerable achievements in stone art but it could not be classified as traditional arts.

Skill Gaps	Skill intervention
Innovation- Wider appli- cation possibilities	Associating with engineering colleges to co create smaller electricity generation units, thereby reviving this traditional form

Table No-112: Stone Craft Recommendations

8.3 Chamoli

Chamoli district is the second largest district of Uttarakhand state of India. It is bounded by the Tibet region to the north, and by the Uttarakhand districts of Pithoragarh and Bageshwar to the east, Almora to the south, Garhwal to the southwest, Rudraprayag to the west, and Uttarkashi to the northwest. The administrative headquarters of the district is Gopeshwar. *Figure 53 : Chamoli Map*



Chamoli hosts a variety of destinations of pilgrim and tourists' interest. Badrinath, Hemkund Sahib, Valley of Flowers and Auli. Chamoli also happened to be a birthplace of "Chipko movement". Chamoli proved itself "the most spectacular in its natural assets; be it scenery, valley aspects, water-edges, floristic varieties, dramatic landform or the climatic cardinalities". The district is also inhabited by Bhotiya ethnic group who adhere to Hinduism.

Table No-113: Chamoli District At a Glance

Indicators	Chamoli
District GSDP	573115
Total Population	391605
District Population Percentage of UK population	3.80%
Number of villages	1270
Scheduled Caste population percentage of Total population	20.20%
Schedule Tribe population percentage of Total population	3.10%
Decadal Growth	6%

Table No-114: The Skill Scape of Chamoli

Chamoli	2017 (Current)	2022(Future)
Agriculture	130321	133376
Apparels	709	730
Automotive	2294	3035
BFSI	1616	2133
Beauty & Wellness	301	310
Capital Goods	225	234
Electronics	220	227
Food Processing	1114	1149
Furniture	601	619
Handicraft	2879	3113
Health	278	344
IT/ITES	233	334
Life Sciences	О	Ο
Retail	6644	6723
Rubber	40	41
Textile	1679	2093
Tourism	25272	26038
Total	174426	180499

As per the population Census data of 2011, projected with the decadal growth for 2017 and 2022, the district of Chamoli will add another 53,000 youth to the workforce by 2022. The expected job creation during the same period is 9755.

In terms of sectorial demand, agriculture continues to be the largest employer with a base employment of 1,40,000 persons. It is expected to add around 4000 persons by 2022. The other important sectors are Tourism, Textiles and Retail.

In terms of growth Automobile, BFSI, IT/ITES and Retail show a lot of promise.

Sector	Skill Requirement
Agriculture	Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Textile	Two Shaft – Handloom Weaver, Handloom Entrepreneur
Retail	Self-Employed Shop owner, Business Builder/Retailer
Automobile	Automobile Service Advisor, Commercial Driver
BFSI	Accountant, Business Correspondents, Insurance Agents

Table No-115: Chamoli Recommendations

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8.3.1 The Craft Clusters of Chamoli:

8.3.1.a Mining

The minerals that are found in the district are the following-

- » Asbestos This is of the amosite variety and can be used for the production of asbestos, cement bricks, laboratory asbestos sheet and paper, but is not considered to be of economic importance.
- » Magnestic This is of an average quality is crystalline in nature, and is found associated with crystalline dolomites and sometimes with soapstone. The Magnesium carbonate found here is also of average quality and its mineralisation has also been reported to occur in the district.
- » Soapstone or Steatite This white saponaceous stone resembling pipe clay is obtained in as lenticular body and is associated with mineral pyrites, which adds a color to it, and in places with magnesite. it can be mined for use as filler in soap and in the cosmetic industries. In the past various utensils were made of it which, when polished, had the appearance of marble.
- » Copper The copper mines in the district are extensive and of reputed during the period of Hindus and The Gorkhas rules. All the rich mines have since being exhausted and at present they do not offer a fair field for the employment of capital.
- » Iron Small and sporadic occurrence of iron are known to occur in several parts of district but are of hardly any economic important. Iron ore, rich in haematite, and magnetic ore, with haematite and siderite, also occur in the district.
- » Graphite In the past this mineral, also known as plumbago, found mostly in patti Lohba, was used as a dye but no large deposits have been noticed for a long time.
- » Gold Although no gold mines has been discovered in the district, the sands of Alaknanda and the Pinddar are said to be auriferous to a limited extent.
- » Gypsum This mineral is found on the bank of some river and was used in the past for the manufacture of saucers and bowls. when ground to a fine powder it is known as Plaster of Paris and can be used for a number of purposes.
- » Lead Deposits of this metal were fairly numerous in the past but it is found in somewhat inaccessible places and has long since ceased to be worked.
- » Slate This dense, fine grained metamorphic rock, which is produced from a fine clay, can be split into thin, smooth plates and is quarried throughout the district. It is suitable for roofing purposes, the thin dark blue slates being somewhat inferior in quality.
- » Limestone By burning this mineral, lime is procured which can be used as mortar. There are two distinct ranges of lime stone hills in the district, the first, north of the Alaknanda in Nagpur, the second, running from Lohba patti to the Pinddar and again to the Alaknanda in patti Bacchansyun in district Garhwal. Reserves of dolomite exists in the district and tufaceous deposits are also found near several Nullahs.
- » Building Stone Stone which can be used for building purposes is available in most parts of the district. Sand stone is found in abundance in the lower hills. Gneiss and chlorite schists which are available throughout the district are frequently used for building purposes.
- » Sulphur This yellow mineral, also known as brimstone is found in the district as green sulphate of iron and is obtainable from iron pyrites and copper mines, its presence being characterised by a small as of rotten eggs. Sulphur springs

also occur in many parts in the district.

- » Bitumen The brownish white natural sulphate of alumina known as Shilajit is found in rocks at a fairly high altitude and occur in small lumps which generally have an admixture of red sand and micaceous stone embedded in them. It is used in Ayurvedic medicine and during the season when there is an influx of pilgrims, it fetches good income to those who deal in it.
- » Some other minerals found in the district are Antimony, Arsenic, Lignite or Brown Marble, Mica and silver.

8.3.1.b Weavers

Most of the Weavers belong to the Bhotia community in Chamoli. Joshimath is the major market in this region for procurement of raw wool. Most of the artisans maintain their herd of wool bearing sheep and mountain goats. However, for any further requirement they get it form the wool market at Joshimath. A detailed Discussion on Bhotia textiles is done under the Weavers skills for your reference.

8.3.1.c Bamboo & Ringal

Chamoli has around 14 to 15 villages that are involved in Ringal Weaving. They produce items of use in daily like tokris, daalia and Soops. The artisans sell all their produce in the local markets. However, recent skilling initiatives by DIC, NABARD and NIESBUD have started yielding results. Some of the Artisans have started manufacturing items for the urban markets. A detailed discussion on the Ringal Arts is covered under skill, for your reference.

8.3.1.d Wooden Masks

These Ramman masks are handmade wooden masks from Urgam valley of Uttarakhand. The Kalpeshwar Temple has been the venue for many Ramman performances since centuries. These Masks depict the various characters played in the Uttarakhandi Dance and Drama. UNESCO has identified Ramman in the Representative List of the Intangible Cultural Heritage of Humanity. Lord Khetrapal(land god) or Bhumiyal god is the character played in Ramman.

The Art of mask making has now become extinct. Most of the Ramman performances are done using masks from the plains. DIC has been trying to revive this Art by encouraging artisans to start manufacturing these masks again.

8.4 Champawat

Champawat- The district of Champawat constituted in the year 1997. The Ram Ganga River acts as a border between Champawat and Pithoragarh in north while Jabgura and Pannar rivers in south and west act as a border between Champawat, Udham Singh Nagar and Almora districts simultaneously. The long chain of mountain in southwestern region acts as a border between the district Champawat and Nainital district. It is important from the defense point of view as in the east Kali river acts the international border between Nepal and India. The geographical coverage of Champawat is about 1613 sq. km. It includes 4 Tehsil (1 Sub Tehsil) and 4 development blocks and 691 revenue villages

Figure 54 : Champawat Map



The district owes its name to King Arjun Deos daughter Champawati. Earlier this district was a part of district Almora. In 1972 the Champawat Tahsil of Almora district was transferred to Pithoragarh. On 15th Sep, 1997 Champawat district was given an independent identity. Since the time in memorial Champawat district is having it's own importance in terms of religious and social aspects.

Table No-116 : Champawat District At a Glance

Indicators	Champawat
District GSDP	187786
Total Population	259648
District Population Percentage of UK population	0.025
Number of villages	717
Scheduled Caste population percentage of Total population	0.182
Schedule Tribe population percentage of Total population	0.005
Decadal Growth	O.15

It is believed that Champawat district is the source and origin of religion and culture of Uttarakhand. In the ancient time this region was the origin of Naga, Kinnar and Khas Raja's. The available historical pillars, manuscripts, archaeological collection and folk-lore describe the greatness of the area during the period of Mahabharat. Barahi Temple of Devidhura, Tarkeshwar Mandir of Champawat, Vanasur Fort of Vishung, Baleshwar Mandir of Champawat, Sapteshwar Mandir of Sipti and Ghatotkasha temples are believed to be of the great period of Maha Bharat. The ample evidence is also available about the Katiyur dynasty, and its prosperity in ancient times. There is a belief that the king Brahma Deo was having his capital at Suie and his contemporary King Raja Arjun Deo with Sam Deo opened a door for Chandra dynasty in this region. In around 1790, with the establishment of the Gorkharaj, the Chandra Vansha came to its end. In 1814, the Britishers forced the Gorkhas to leave the place. In the history of Indian independence, the history of the warriors of this region has been written in golden letters for their sacrifices.

Champawat	2017 (Current)	2022(Future)
Agriculture	71605	75658
Apparels	394	406
Automotive	2176	2822
BFSI	1052	1389
Beauty & Wellness	210	224
Capital Goods	404	422
Electronics	196	202
Food Processing	1427	1739
Furniture	224	259
Handicraft	2504	2876
Health	118	150
IT/ITES	171	245
Life Sciences	Ο	Ο
Retail	5171	5319
Rubber	56	58
Textile	660	823
Tourism	4121	4246
Total	90488	96838

Table No-117: The Skill Scape of Champawat

The projection of population to 2022 using decadal growth suggests that Champawat will add around 40,000 youth to its working age population. The job creation during the same period is expected to be 35310.

If the current employment patterns continue, most of the additional workforce will be absorbed by agriculture. Other stronger segments that could employ the work force are Tourism, Handicrafts and BFSI.

It would be noteworthy to understand that Champawat is one of the most economically weak districts of India. Hence a large part of the agricultural employment figures may be disguised unemployment. In view of this observation, skilling the people of the state in other relevant sectors could provide a decent source of livelihood for the state. We would like to make the following recommendations for the District:

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Table No-118: Champawat Recommendations

Sector	Skill Requirement
Agriculture	Poultry, Horticulture, animal husbandry, etc. Special Mention for
	Dairy as the state has promoted the rearing of Badri Cows.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Food	Fruit and Vegetable freezing, Achar Making, Squash, Jams and
	jelly making, Traditional Snacks and Namkeens
Retail	Individual Sales Professional/ Self-employed Retailer, Business
	Builder
Automobile	Automobile Service Advisor, Commercial Driver

8.4.1 Craft Clusters of Champawat:

8.4.1.a Iron Craft : Iron craft is mostly based out of Lohaghat in Champawat. These Artisans were from Arya Community and were very skilled in making iron weapons. They took up Iron Utensil making after the Britesh Banned th making of weapons. A detailed discussion on the Iron craft is done under the skills section.

8.5 Dehradun

Dehradun, capital of Uttarakhand lying on the Garhwal region is famous for its picturesque landscape and slightly milder climate and provides a gateway to the surrounding region. It is the junction for all the hill stations in Garhwal. It has experienced tremendous growth in recent years, and currently has a population of around 1,250,000.

This district consists of 17 towns and 764 villages. Out of these 746 villages are inhabited; 18 are uninhabited. It is the base for all the migrants from the hills, as it offers them opportunities and livelihood, closer to their homes. Dehradun district has population density of 549 persons per sq.km. which is much more than the state average (189 persons per sq. km). With Dehradun being the gateway to various tourist destinations, It acts as the hub for a lot of aggregates, who have been trying to collect crafts, handloom and produce from various parts of Uttarakhand, to market them nationally and internationally.

Figure 55 : Dehradun Map



Based on the Census 2011, below are some notable references

Table No-119 : Dehradun District At a Glance

Indicators	Dehradun
District GSDP	4057583
Total Population	1696694
District Population Percentage of UK population	16.80%
Number of villages	748
Scheduled Caste population percentage of Total population	13.50%
Schedule Tribe population percentage of Total population	6.50%
Decadal Growth	32%

Dehradun, being in plains, is the hub for many industries and in-region migrants, as it offers employment and livelihood to many, one of the most urbanised district in the state having more than half (55.52 per cent) of the population in urban areas, engaged in Industrial, agricultural and service sectors.

The city/district is the tourism gateway of Uttarakhand, hence offers great opportunity to showcase Art & Craft, Handloom, Music and culture, the state very well acknowledges the fact and organizes several fairs and exhibitions to invite and promote artisans and aggregators from across all districts.

Dehradun is distinguished from most other districts in the state by the existence of very large forests chiefly stocked with sal, besides supplying fuel, fodder, bamboos and medicinal herbs, they also yield a variety of products like honey, lac, gum, resin, catechu, wax, horns and hides.

State Government has several schemes for the development of various industries and have formed clusters to promote and monitor the growth and sustenance. A few, other than mainstream are.

• Forest based products-Lisa, wood carving, Ti,, wax, bamboo

- Herbs & Medicinal Plants
- Fabrication
- Pre cast Building Material
- Wool Based Industry
- Bee Keeping
- Sericulture
- Nursery Development

The government have formed various clusters to promote

The above clusters offer opportunities and livelihood to multiple artisans and practitioners from Uttarakhand and other neighboring states.

The Districts forms a nice portfolio of skills, and have accommodated artisans and practitioners from all sectors, the identified ones are as below.

Table No-120 : Major strengths of Dehradun

Agriculture & Horticulture	Craft & Handloom	Art & Music
Basmati Rice	Bichhu Ghaas (Kandaali), RamBaans	
Traditional Fruits (Timlu, Kilmore, Hisalu, Malta)		

While Basmati Rice is an established brand and produce, others segments are yet to be tapped. Traditional fruits, Bicchu Ghaas, RaamBaans are available in good quantity, and has huge potential (medicinal value – fruits).

The above (excluding basmati Rice) is losing focus and therefore needs awareness and market to encourage artisans and practitioners in the region/state.

Dehradun	2017 (Current)	2022(Future)
Agriculture	142503	158674
Apparels	5075	5229
Automotive	21487	27994
BFSI	8282	10932
Beauty & Wellness	1503	1711
Capital Goods	8227	12467
Electronics	5360	5576
Food Processing	3711	4171
Furniture	2763	2847
Handicraft	17385	19881
Health	434	561
IT/ITES	5256	7527
Life Sciences	3274	3827
Retail	53887	57034
Rubber	218	225
Textile	3733	5832
Tourism	50594	52127
Total	333694	376614

Table No-121: The Skill Scape of Dehradun

8.5.1 The Craft Clusters of Dehradun

Being the capital of the State, Dehradun has become a melting pot of all that Uttarakhand has to offer. However, from the point of view of Crafts the district has the following Craft Clusters:

8.5.1.a Textiles

Bapu Gram is a flourishing craft cluster which caters to textiles. The artisans engaged are essentially from the upper echelons of the Himalayan regions. They weave basically Traditional Bhotia Textiles like Gudma, Pankhi, Thulma, Shawls, Stoles, etc. The nodal agency for Bapu Gram is Bhartiya Gramodyog Sanstha. Similarly, Kamala Mahila runs Aipan based Garments cluster near Prem Nagar. Cotton based textiles and garments have found support in the Sahaspur Craft Cluster.

8.5.1.b Bamboo & Ringal

Bapu Gram Cluster and Pipalkati clusters near Dehradun have a strongly evolved as Bamboo & Ringal clusters. Various kinds of utilities are being prepared with the help of local designers like lampsheds, wall hangings, baskets, etc. The Government has provided support through the Ambedkar Hastaship Vikas Yojna.

8.5.1.c Bakery Cluster

A special mention has to be made for the Bakery Industry. During our Interactions with the industry a lot of people recommended Bakery as the unique and all pervasive skill in the city. As per the popular city directories more than 350 bakeries are present in Dehardun District. They bake various delicacies popular with locals and tourists alike. The government has however not provided any recognition to this Craft in the State.

8.5.2 The Industrial Employment Status of Dehradun

The total manpower projections for Dehradun for 2022, estimate that the population of the district will rise by approximately, 2,24,000 persons. The job creation during the same period is expected to be 58114.

Since, it is the cultural and administrative capital of the state with a very strong economic base, the skilling opportunities across a lot of sectors.

Capital Goods Sector has a very strong outlook for rapid growth in skilling. It is expected employ an additional 4000 people by 2022. This along with BFSI, Life Sciences and textiles also are promising sectors. In terms of numbers, Agriculture shows projected requirement of 14%. These numbers however, indicate the requirements in poultry, Dairy, Horticulture, Agro-forestry, etc. Other prospective large employers are Retail, Handicraft and BFSI which require people in excess of 11,000 persons, 2200 persons and 2600 persons respectively. A special mention has to be made for the Bakery Industry. During our Interactions with the industry a lot of people recommended Bakery as the unique and all pervasive skill in the city.

On the whole the following job roles could be commonly found under each sector:

Sector	Skill Requirement
Agriculture	Organic Farming, Poultry, Horticulture, animal husbandry, Gardener, etc
Capital Goods	Welders, Fitters, CNC Machine Operators, Instrument Technicians, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant, Multi – Cusine Cook
Food	Bakery Products
Retail	Individual Sales Professional/ Self-employed Retailer, Business Builder, Retial Sales Assistant, Cashier
Handicrafts`	Aipan, Copperware, woolen, bamboo and ringal items
BFSI	Accountants, Business Correspondents and Insurance Agents.

Table No-122: Dehradun Recommendations

8.6 Haridwar

The Ancient city of Haridwar is the largest and also the most populated city of Uttarakhand. The district is also named after the city. The district is ringed by the districts Dehradun in the north and east, Pauri Garhwal in the east and the Uttar Pradesh districts of Muzaffarnagar and Bijnor in the south and Saharanpur in the west. Also one of the seven holiest places of Hinduism.

As of 2011 it is the most populous (19.27 lacs) district of Uttarakhand. Important towns in the district are Haridwar, BHEL Ranipur, Roorkee, Manglaur, Dhandera, Jhabrera, Laksar, Landaura and Mohanpur Mohammadpur



Figure 56 : Haridwar Map

Table No-123 : Haridwar District At a Glance

Indicators	Haridwar
District GSDP	5816824
Total Population	1890422
District Population Percentage of UK population	18.70%
Number of villages	612
Scheduled Caste population percentage of Total population	21.70%
Schedule Tribe population percentage of Total population	0.30%
Decadal Growth	33%

Haridwar is also the Survey Instrument, Handloom and Pharmaceutical hub of Uttarakhand and there are industrial cluster working in the region towards managing and promoting them.

Artisans, Practitioners and aggregates crave for promotion and excited to showcase their culture and work nationally and internationally

Amongst various fabric, Tussur is one of the fabric produces and woven in the region, as its cheaper, wearable and affordable. Tussur is a variety of Silk. Regal Tussur is slightly costly than Bhagalpuri Tussur, There are different kind of products made from these Tussur Silk. Used to make shawls, stoles, rugs.

The Handloom and textile segment have improved over the years, and the produce has good market in and outside Uttarakhand.

Despite the focus and market, there is a lack of training and skilled individuals, to be able to bring in innovation and design better.

The unskilled/untrained artisans in the rural area make Rs 150-200 a day by making trays and other items, however if given training, can ear upto Rs. 2000 a day. The biggest threat and challenge to the craft from the region is the availability of Chinese items, which are cheaper and easily available. Haridwar is also an internationally acclaimed producer of herbs, however it attracts more

foreigners than locals or nationals, because of lack of awareness about Ayurveda or herbs. Most of the medicinal plants and herbs are available in the foot hills in the region, rich in minerals and of optimum quality.

More and more farmers need to be educated and a cluster is required to be formed Castor is widely available, which has good herbal remedy for nerves disorder, constipation. Here people sheds off those plants or tree branches due to lack of awareness. white flowers widely available which brings remedy for arthritis.

Haridwar also has good number of Maatikaar (Kumhars, in the areas like Jwalapur and Mohanpura and few other places. They make a lot of items through maati from diyas to pitchers, from Surahis to vessels, from plates to glasses. Depending on the demand in the market. In summers it takes 2-5 days for a product to get ready (Be it small or big) while in winters it takes 7-10 days. The skill is very weather dependent, and the demand is not high, posing them a tough livelihood, hence taking on more sustainable income and practicing this art part time. Haridwar has a lot of non-workers, because of marginal population occupied in unorganized and non-registered vocation like pandits, beggars, etc.

Haridwar	2017 (Current)	2022(Future)
Agriculture	261061	291503
Apparels	2093	2268
Automotive	66914	86116
BFSI	4237	5593
Beauty & Wellness	1884	2572
Capital Goods	41003	52007
Electronics	18732	31575
Food Processing	10954	12840
Furniture	3381	3483
Handicraft	1915	2083
Health	477	592
IT/ITES	659	944
Life Sciences	8520	15920
Retail	50057	53063
Rubber	3942	5344
Textile	5961	7455
Tourism	58984	60771
Total	540774	634130

8.6.1 The Industrial Employment Status of Haridwar

As per the projection of the Population Census 2011, Haridwar will add an additional workforce of 2,50,000 people by 2022. The broader job creation estimates for the period would be around 40,000.

As per the employment demand projections for 2022, the largest job creating sectors would be Life Sciences – 7000 jobs, Electronics – 12000 and Capital Goods – 11000 jobs. These already have a large manufacturing base in Haridwar.

Agriculture continues to be the largest employer, however, there is a degrowth projected for the sector by 2022.

Sector	Skill Requirement
Agriculture	Poultry, Horticulture, animal husbandry, etc. Special Mention for Dairy as the state has promoted the rearing of Badri Cows.
Capital Goods	Welders, Fitters, CNC Machine Operators, Instrument Technicians, etc.
Life Sciences	Manufacturing Jobs for Chemists, Fitters, Machine Operators and Medical Sales Representative jobs for sales
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Food	Fruit and Vegetable freezing, Achar Making, Squash, Jams and jelly making, Traditional Snacks and Namkeens
Retail	Individual Sales Professional/ Self-employed Retailer, Business Builder
Automobile	Welder, Fitters, Automobile Service Advisor, Commercial Driver

Table No-125: The Job Roles commonly found for the relevant sectors are:

8.7 Nainital

Nainital is one of the most picturesque hill stations of Uttarakhand. Surrounded by lush green Deodar trees, the Naini Lake looks like emerald studded in the mountain. Nainital is referred to in the 'Manas Khand' of the 'Skanda Purana' as the Tri-Rishi-Sarovar, the lake of the three sages, Atri, Pulastya and Pulaha who were reputed to have arrived here on a penitential piligrimage, and, finding no water to quench their thirst dug a hole and siphoned water into it from Mansarovar the sacred lake in Tibet.

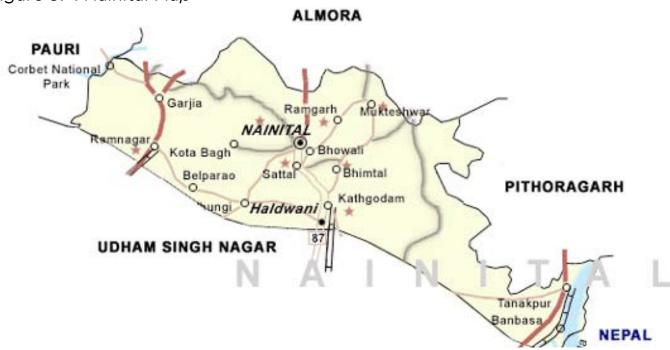


Figure 57 : Nainital Map

The Second important mythological reference to Nainital is as one of 64 'Shakti Peeths'. These centres were created wherever parts of charred body of Sati fell ,when Lord Shiva was carrying around her corpse in grief .It is said that the left eye (Nain) of Sati fell here and this gave rise to patron deity of town Nainital . It is said that the lake is formed in the emerald eye shape. Naina Devi temple is located at the northern end of the lake. Thus name of Nainital derivated from Naina and the tal (Lake).

Table No-126 : Nainital District At a Glance

Indicators	Nainital
District GSDP	1345261
Total Population	954605
District Population Percentage of UK population	9.40%
Number of villages	944
Scheduled Caste population percentage of Total population	20%
Schedule Tribe population percentage of Total population	0.70%
Decadal Growth	25%

The District is dotted with lakes and was a favorite destination of the British in the Kumaon Region. Aftar the creation of the new state, the city receive prominence as the State High Court Bench was set up at Nainital.

Traditionally being a tourist destination, Nainital has a very thriving market for souvenirs. The Streets are dotted with souvenir shops made of various materials.

Nainital	2017 (Current)	2022(Future)
Agriculture	210126	229228
Apparels	463	477
Automotive	3604	4736
BFSI	4099	5411
Beauty & Wellness	815	906
Capital Goods	4761	6722
Electronics	816	2329
Food Processing	2546	4314
Furniture	1313	1380
Handicraft	16477	18810
Health	754	986
IT/ITES	287	411
Life Sciences	0	170
Retail	20438	21389
Rubber	30	31
Textile	1161	1511
Tourism	35833	38026
Total	303523	336836

Table No-127: The Skill Scape of Naintal

8.7.1 Manpower Status of Nainital: The Manpower supply projection for 2022, estimate and additional workforce of 1,18,000 joining the ranks of working population. The job creation during the same period is expected to be around 49000.

Apart form agriculture, major job creation will be expected in retail – 5000 persons, Tourism – 3500 persons, Capital Goods – 2000 persons and handicraft – 2000 persons. The Primary Job Roles that can be identified for Nainital are as follows:

Table No-128: Nainital Recommendations

Sector	Skill Requirement
Agriculture	Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Capital goods	Packaging Industry, Machine Tools
Retail	Individual Sales Professional/ Self-employed Retailer, Business Builder
Handicrafts & Carpets	Decorative Candles. Woodcraft

8.7.2 Craft Cluster of Nainital:

8.7.2.a Decorative Candles - Nainital

Nainital has a unique tradition of decorative candles. The weather of the city is especially suited for candle art. The Decorative candle Art in Nainital has a colonial legacy because

of the presence of the British in large numbers in the region. They had a preference for wax candles over oil lamps.

After Independence, the government had a quota and license system for production of candles. This allowed only a handful of players to manufacture. During the late eighties the quotas were relaxed and a huge number of people took to manufacturing these candles. The Market grew exponentially and till the ninties Nainital became the Largest Decorative Candle market in Asia.

However, the city lost out to the Chinese products. Further, the trade kept slipping and today it is barely surviving.

8.7.2.a.i The Candle art of the city boasts of the following varieties:

Handcrafted – The most defining feature of the nainital candles is that they are hand carved and filled with multicolor waxes. This is different from simply painted candles. These candles have various kinds of motifs on them which can be customized as per the preferences of the customers.

Aromatic – The wax used for preparing these candles are processed in such a way that they give out a fragrance when burnt. Nainital is famous for the variety of fragrances that use in their candles.

Fun Shaped Candles – These are very popular with the kids as they can get candles in the shape of their favouriate animals, cartoons, etc.

8.7.2.a.ii The Challenges of the decorative candles are:

Tariff and tax: The Decorative Candle has not been designated as a handicraft industry. This makes the industry to enjoy the lower GST Slabs. The tariff relief would have provided the required price advantage to compete in the international market.

International Competition: The Chinese have caught up and surpassed the state -of- theart of the decorative candles. Further they have been flooding the market with candles which use cheaper quality waxes which has substantially lowered their price of the products. This has thrown a lot of artisans out of business. The Chinese candle makers invested on the design , look and feel which customers easily.

Presence of fakes: A lot of traders have been using substandard raw material to manufacture candles and selling it cheaply. This has lately given a very bad name to the industry.

Skill Gaps	Skill intervention
Innovation- Presence in only one shape	Need to experiment t and arrive at more shapes
	Design to make the products attractive as sou- venir and for gifting

Table No-129: Decorative candle skill intervention cues

Woodcraft Cluster 8.7.2.b Wood Craft of Nainital:

Wooden souvnier shops are also very dominant in Naintal. A wide varity of wooden Souvniers are available on the streets of Nainital. These include items like:

- » Elephant heads;
- » Lord Ganesh Statues;
- » Bullock carts with a Farmer
- » Various kinds of wooden pots
- » Key chains;
- » Lamp shades
- » Draft wood furniture

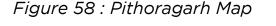
Wood craftsman from the region have made a mark for themselves nationally. The most popular artifact made by them is the bird figurines made of wood and pine fruit. These are sold in hundreds and have become the identity of Nainital Wood Work.

8.7.2.b.i Challenges of Wood Craft

- Quality Craftsman: The best craftsmen in the region have become very old. The new generation is not willing to adopt wood craft for livelihood.
- Old tools: The Craftsmen use age old tools. Use of modern equipment will help them in increasing their quality and save time
- Raw Material: Earlier the craftsman wood was not expensive and could be procured locally. But now the forest laws have become stringent and are enforced. This has made procurement of wood expensive and tedious.
- Substitutes: Most of the wood craft shops in Nainital have started selling items brought form Saharanpur. These Include Vintage items like compasses, Old European Gun Replicas, Sandooks, and toys.

8.8 Pithoragarh

Pithoragarh is a very strategically important district for India. It shares its borders with two countries. On the east it has a natural border with Nepal all along the Kali River, whereas along the northern boundaries we have China. The Northern Boundaries of China are more sensitive owing to the fact that earlier it was Tibet. A lot of Trade routes crisscrossed this regions that till as recent as 1960s were used by the traders from the region. Most of the trade was for spices, salts, metals and wool. Tibetans reared one of the best quality Cashmere Goats and sell pashmina wool. They would also sell a lot of medicinal herbs. The route from Dharchula is the base camp for travel to Kailash Mansarovar.





Pithoragarh was earlier part of Almora district but it was bifurcated in 1960. Once the bastion of the Chand rulers, Pithoragarh town is dotted with temples and forts belonging to that era. The town is set in a valley popularly known as and lies in the centre of four hills Chandak, Dhwaj, Kumdar and Thal Kedar, and stretches in the southern flank to Jhulaghat demarcated by the Kali river adjoining the barren peaks of Nepal Hills. It is snuggled in the folds of four kots Bhatkot, Dungerkot, Udaikot and Unchakot.

Table No-130 : Pithoragarh District At a Glance

Indicators	Pithoragarh
District GSDP	828356
Total Population	483439
District Population Percentage of UK population	4.70%
Number of villages	1370
Scheduled Caste population percentage of Total population	22.60%
Schedule Tribe population percentage of Total population	3.40%
Decadal Growth	5%

Table No-131: The Skill Scape of Pithoragarh

Pithoragarh	2017 (Current)	2022(Future)
Agriculture	152836	155833
Apparels	648	785
Automotive	1560	2058
BFSI	1866	2464
Beauty & Wellness	372	381
Capital Goods	535	629
Electronics	327	337
Food Processing	987	1200
Furniture	308	526
Handicraft	5885	7113
Health	364	463
IT/ITES	142	203
Life Sciences	0	0
Retail	8622	8707
Rubber	12	12
Textile	2443	3049
Tourism	7106	7321
Total	184014	191083

8.8.1 Manpower Status of Pithoragarh

The Population projections of the Pithoragarh Census 2011 for 2022, estimated an additional 66000 young people joining the workforce. The Job creation during the same period is expected to be around 13400.

In Addition to agriculture, the major job creations will happen in textile – 3000 jobs, Handicraft – 1000 jobs, Tourism – 500 jobs and BFSI – 600 jobs.

The Major Job Roles identified for Pithoragarh are:

Sector	Skill Requirement	
Agriculture	Poultry, Horticulture, animal husbandry, etc.	
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant, Multi – Cusine Cook,	
Textile	Two Shaft – Handloom Weaver, Handloom Entrepreneur	
Retail	Self-Employed Shop owner, Business Builder/Retailer	
Handicrafts & Carpets	Bamboo Furniture Maker, Handloom Carpets	
BFSI	Accountant, Business Correspondents, Insurance Agents	

Table No-132: Recommendations Pithoragarh

8.8.2 The Craft Clusters of Pithoragarh: The Craft Clusters in Pithoragarh, are concentrated in the regions dominated by the Bhotia community. Mainly these areas are from Munsiyari, Madkot and uptill Dharchula

8.8.2.a Woolen Garments and Textiles: The weavers of this belt are famed for their shawls and carpets. They have traditional designs which are distinct form any other traditions in India. The Carpets or Dan woven in Munsiyari is different from those woven in Dharchula. Similarly the designs on shawls and other items also have various flavors. A detailed discussion on the Garments woven is presented under the skills.

8.8.2.b Bamboo & Ringal: Ringal items are manufactured near Gandhinagar near Madkot. Earlier they were manufacturing simple items like tokris, daalias, and soops. But with some intervention and training they have started manufacturing other items like flower vases, Dust Bins, Lamp Sheds, Pen Holders, etc., which has resulted in better earning for the craftsmen. During our interactions we found that the Artisans were unable to connect with customers and sell. A training on soft skills will be of great help.

8.8.2.c Fruits and Horticulture: the district has huge potential for growing Himalayan Fruits. The Climate is conducive for the same. Apple Orchids have been coming up in a very big way but the supply chain deficiencies need to be addressed to generate the proposed impact.

8.8.2.d Tea: The Tea Gardens of Chaukori, near Berinag, have been able to carve a niche for themselves. It is one of the most sought after verities of tea in London Houses. They are a variety of Chinese Brick Tea but as per experts it is a far superior quality. The tea estate is in utter neglect and the production has declined.

8.9 Pauri Garhwal

Pauri Garhwal is a district in Uttarakhand state of India, headquartered at Pauri. It is ringed by Haridwar, Dehradun, Tehri Garhwal, Rudraprayag, Chamoli, Almora and Nainital districts from three sides. The southern boundary of Pauri Garhwal district touches with the Bijnor district of Uttar Pradesh. This district falls partly in the Gangetic plains and a major part in the Himalayan North. One of the highly educated district of Uttarakhand, with a population of approx. 7 lacs, best known for its hill station – Lansdowne, which attracts good number of Tourists every year.

Pauri is mapped into 8 Tehsils and 16 Development blocks to run and manage administratively.

Figure 59 : Pauri Garhwal Map



Table No-133: Pauri Garhwal District At a Glance

Indicators	Garhwal	
District GSDP	603799	
Total Population	687271	
District Population Percentage of UK population	6.80%	
Number of villages	3473	
Scheduled Caste population percentage of Total population	17.80%	
Schedule Tribe population percentage of Total population	0.30%	
Decadal Growth	-2%	

Table No-134: Skill Scape of Pauri – Garhwal

Pauri Garhwal	2017 (Current)	2022(Future)
Agriculture	164513	163186
Apparels	1148	1183
Automotive	3280	4284
BFSI	3107	4101
Beauty & Wellness	501	496
Capital Goods	2063	4572
Electronics	2438	2512
Food Processing	2165	2838
Furniture	996	1109
Handicraft	9391	10594
Health	330	418
IT/ITES	521	746
Life Sciences	357	1120
Retail	10462	10420
Rubber	26	27
Textile	333	461
Tourism	15865	16346
Total	217496	224413

8.9.1 Manpower Status of Pauri - Garhwal

As per the population projections for 2022 based on the census data for 2011, Pauri Garhwal will add a workforce of 92000 persons. However, the growth in jobs for the same period is expected to be 28,500.

The major Job Creation sectors would be Retail - 2100, BFSI - 1000, capital goods - 2500 and Tourism - 1000. The relevant Job Roles for the district are:

Table No-135: Recommendations Pauri - Garhwal

Sector	Skill Requirement
Agriculture	Organic farming, Poultry, Horticulture, animal husbandry, etc.
Capital Goods	Welders, Metal Sheet Workers, Packaging
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant, Multi – Cusine Cook
Retail	Self-Employed Shop owner, Business Builder/Retailer
BFSI	Accountant, Business Correspondents, Insurance Agents

8.9.2 Key observations from the District

- 1. Motorable roads available, however need repair, for few parts of the district transport is only available once a day (in the morning, the same returns later afternoon with necessary food stock or grocery)
- 2. Ringal and bamboo is available in abundance in area of Satpuli Block, however is unused.
- 3. Attraction towards the urbanization is one major cause of empty villages, most of the houses are locked, or with 1 or 2 (old) occupants.
- 4. Villages have the upper cast and the lower caste bifurcation which is followed as a tradition, people from upper class are moving towards the cities. The reason understood were as following:
 - Good education for their children is not available in village, and since they can afford it, migration from villages is the result.
 - Good medical facilities (which are one of the key factors for the survival) are not available in the village.
- 5. Due to migration, agricultural lands in the village are barren, with barely anybody to look after or grow crops.
- 6. Animal Human conflict is one of the major issues for the people who are still doing farming. Monkey and wild bore are destroying the entire fruits and crops being sowed, which impacts the produce and yield bigtime.

The count of Non-working individuals is quite high, because of various government schemes and high old age individuals.

Most individuals prefer to spend their post retirement time at their village.

The government through its department is coming with various clusters to grow fruits and cereals in the district, and thus forming cluster for Apple, Kiwi and many more crops or-ganically.

Bironkhal, a remote village/block with good number of farmers and individuals involved in producing fruits, crops, cereals through the year, lemongrass is one of the key produce from the village, along with spices, which are sold in the district and neighbouring cities/ states.

8.10 Rudraprayag

Rudraprayag lies at the confluence of two rivers Alaknanda and Mandakini, It is one of the Panch Prayags of five confluences of Alaknanda River. Rudraprayag is blessed with nature's bounty, and is best described as the Abode of Gods, with majestic Himalayas, gushing water of the sacred rivers, and rich variety of flora and Fauna. Rudraprayag is known as the last stoppage point before pilgrimage treks to Kedarnath and Badrinath. Rudraprayag is dotted with temples which are significant from archeological as well as religious points of view. Internationally Known Shri Kedarnath Temple is at North, Madmaheshwar at east, Nagrasu at southern east and Shrinagar at extreme south. The holy Mandakini originated from Kedarnath is the main river of the district

Figure 60 : Rudraprayag Map



Table No-136 : Rudraprayag District At a Glance

Indicators	Rudraprayag
District GSDP	251040
Total Population	242285
District Population Percentage of UK population	2.30%
Number of villages	688
Scheduled Caste population percentage of Total population	19.60%
Schedule Tribe population percentage of Total population	0.10%
Decadal Growth	4%

20% of the geographical area of Rudraprayag is Forest, with Pine teak, sheesam, sal, tur, banj, burash, khair and ringal. Medicinal plants are also available in the district, efforts are on way to strengthen social forestry and development of plants having medicinal values.

Table No-137: Skills Scape of I	Rudraprayag
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Rudraprayag	2017 (Current)	2022(Future)
Agriculture	88819	90217
Apparels	642	661
Automotive	2632	3466
BFSI	872	1151
Beauty & Wellness	178	181
Capital Goods	412	424
Electronics	285	294
Food Processing	921	951
Furniture	741	763
Handicraft	1946	2193
Health	116	144
IT/ITES	161	231
Life Sciences	0	0
Retail	3233	3259
Rubber	16	16
Textile	168	210
Tourism	23214	23917
Total	124356	128080

8.10.1 Manpower Status of Rudraprayag

As per the population projections for Rudryaprayag for 2022 based on the population census of 2011, the district will add an additional youth population of 26,400 persons. The Job Creation during the same period will be around 5000.

The Major job creators for this period will be Agriculture – 1600, Textile - 1200 and Tourism – 1000.

The Major job roles relevant for Rudraprayag

Table No-138: Recommendations Rudraprayag

Sector	Skill Requirement
Agriculture	Organic Farming, Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Textile	Two Shaft – Handloom Weaver, Handloom Entrepreneur
Retail	Self-Employed Shop owner, Business Builder/Retailer

8.11 Tehri Garhwal

Tehri Garhwal, located on the confluence of rivers Bhagirathi and Bhilangana. The Bhagirathi river divide the district into two halves, and the Bhilangana, Alaknanda, Ganga and Yamuna rivers border it on the east and west. The construction of the Tehri Dam in the recent times has submerged the old Tehri town, and the entire population of the relocated town has been shifted to New Tehri - the present District headquarter of Tehri district. Tehri Garhwal, is one of the largest districts of Uttarakhand and is the land of world famous Tehri Dam. It hosts over 6 lacs Residents, mapped under 9 blocks. Tourism holds great potential for this area as this falls within the "Yatra route" for the Gangotri Dham

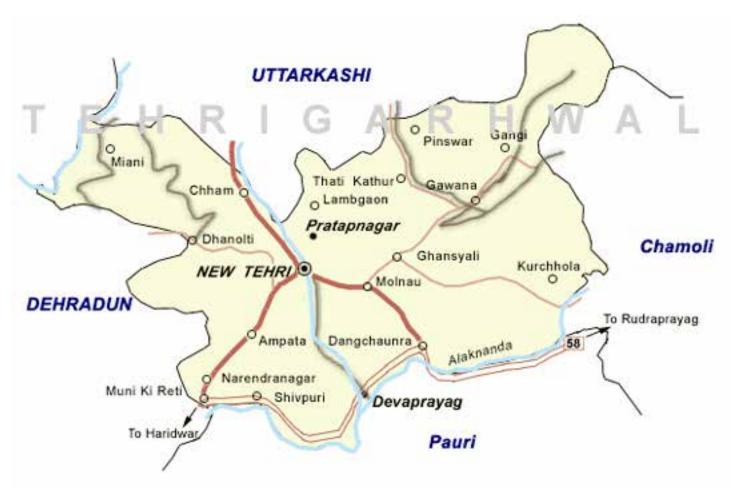


Figure 61 : Tehri Garhwal Map

Tehri is one of the popular districts for its natural beauty. There is very good scope of tourism base. In Tehri district there are some fruit /vegetable cultivation zones. Fruits like apple, apricot, pear, peach, amla, citrus fruits and vegetable like potatoes, ginger, garlic, peas, onion etc. are grown by the people of this district.

Table No-139 : Tehri Garhwal District At a Glance

Indicators	Tehri Garhwal
District GSDP	647262
Total Population	618931
District Population Percentage of UK population	6.10%
Number of villages	1862
Scheduled Caste population percentage of Total population	16.50%
Schedule Tribe population percentage of Total population	0.10%
Decadal Growth	2%

Table No-140: The Skill Scape of Tehri Garhwal

Tehri Garhwal	2017 (Current)	2022(Future)
Agriculture	197937	199508
Apparels	2799	2884
Automotive	4154	5535
BFSI	2247	2966
Beauty & Wellness	461	466
Capital Goods	997	1811
Electronics	638	666
Food Processing	2047	5824
Furniture	1532	1578
Handicraft	2219	2525
Health	158	195
IT/ITES	419	600
Life Sciences	0	13
Retail	7457	7487
Rubber	45	106
Textile	313	404
Tourism	32172	33147
Total	255596	265715

8.11.1 Manpower Status of Tehri Garhwal As per the population projections for Tehri for the year 2022 based on the population Census 2011, 80,000 youth shall join the workforce. The Jobs Generated for the same period in the district would be around 10,000. The Major Job Creators sectors are Food – 4000 jobs, Agriculture – 1300 jobs and Tourism – 1500 jobs.

The major attractive job roles for tehri Garhwal are

Sector	Skill Requirement
Agriculture	Organic Farming, Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Food	Milling, Fruit and Vegetables Processing, Squash, Jam and Jelly Making

Table No-141: Tehri Garhwal Recommendations

The district has huge potential, yet lacks Proper Infrastructure, Market and Innovation, sus-

tainable income and Health, which are prime causes of artisans surrendering the skill and migrating to alternate source of income in neighboring cities and states. The district employs good number of people in the agricultural sector, to grow and sell specific cereals and spices, while is also provides a huge hub to produce various handloom products (woolen and garments)

Migration (Palayan) is the key issue, as more and more families are moving to neighbouring cities and states to join the service sector, it is observed that people living in remote villages and from backward class are the only people left at their homes, because they cannot afford to move to different city (considering the size of their own family) Artisans are quiting their skill to adopt jobs with sustainable daily income, thus working in hotels, or constructions sites (road, house). Below statistics will show you the spread of the workforce in the region.

Table No-142 : Major Strengths of Tehri Garhwal

Agriculture & Horticulture	Craft & Handloom	Art & Music
Cereals (Koda, Jhangora, Ogal, Cholaai, Bhat, Rajma, Til, Naurangi, Lobia, Tor, Udat, Gehat, Mandowa,soyabean)	Ringal	Dhol & Damau
Fruits (Apple, Akhrot, Kiwi, Malta)	Bhimal Angora wool	Tiwadi

Pratapnagar, Devprayag, Shivpuri, Agrakhal are few notable villages and region in the districts with high agricultural produce. The region has rich soil to grow varieties of cereals and fruits. The production of the above is however declining, due to proper packaging and promotion, we noticed some efforts and initiatives by the government and UGVS by forming federations and collection centers to sell the produce, HILANS is one of the consortium helping the farmers.

One of known issues the farmers face is wild bore (Janglee suwar) who comes in herds and spoil the crop, few farmers have been able to construct fencing, however a large number of farmers lacks funds and support to do so. Furthermore, people from backward community have very little or no land to produce a significant quantity to sell.

Women in the remote village still uses gobar as manure in their fields and spends a lot of time and hardship to procure gobar in huge quantity from the hills. Although alternate options are available, yet they are not adopting it, because of lack of awareness and knowhow.

Chakraid ,Anthwal, ghuttu and Gangi being the remotest villages of Uttarakhand, with high occupancy of people from backward community, they lead a tough life in the Himalayas, and still uses old style of farming and irrigation, wherein procurement of raw material is tough and tedious.

Construction work pays 300-500 rupees a day and most of the village youngsters are moving on to that, there used to be at least two weavers per family in a village, but the numbers are fast dwindling. Out of the 150 families in the chakraid village (who knows the skill) only 40 works at the skill center to make ringal products daily and earn 500 rupees daily. If people began cultivating this bamboo along with their regular crops, it would save lot of time effort in the procurement/harvesting process. Training the weavers to create other fancy decorative items— like miniature temples and ships, could also expand the market for ringal.

8.12 Udham Singh Nagar

Udham Singh Nagar District is the food bowl of Uttarakhand State. Prior to its formation, it was part of District Nainital. It was separated out on the basis of physiological conditions i.e. Tarai. It is also well known for the industries as the geographical location is conducive. Udham Singh Nagar district is famous for its agriculture and irrigation on synchronized patterns from the past as garner of popularity for its productivity in paddy crops in the whole Uttarakhand state, and it is rightly called "Chawal ki Nagari".

The district has been divided into 7 developmental blocks and 7 tehsils, viz. Japsur, Kashipur, Bazpur, Gadarpur, Rudrapur, Sitargunj and Khatima with the district's headquarters at Rudrapur The district has 688 villages and 19 towns, with a combined population of approximately 9.25 lacs.

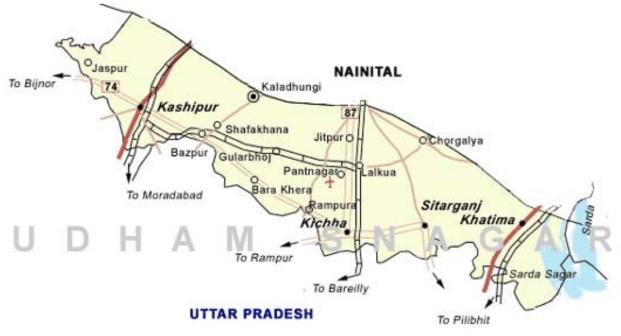


Figure 62 : Udham Singh Nagar Map

Udham singh Nagar is a hub for Automobile industries, Paper Industries, Rice mills & sugar industries. All large scale industries established here have more than 200 vendors.

Most of the produce is exported to other states and countries, earning revenue for the region and country.

Indicators	Udham Singh Nagar
District GSDP	3759811
Total Population	1648902
District Population Percentage of UK population	16.30%
Number of villages	688
Scheduled Caste population percentage of Total population	14.40%
Schedule Tribe population percentage of Total population	7.40%
Decadal Growth	33%

Despite being so industry driven, the districts suffers from insufficient power supply, and infrastructure to match the buddying industries, so does it lacks trained manpower. With so much potential, there is a need to train and employ available youth, helping them develop the skill, earn livelihood and continue in the state, rather than migrating to other cities to work in hotels or service sector.

Udham Singh Nagar	2017 (Current)	2022(Future)
Agriculture	362686	404978
Apparels	0	11
Automotive	187330	240165
BFSI	5273	6960
Beauty & Wellness	264	1667
Capital Goods	42175	59728
Electronics	10994	13206
Food Processing	18395	31178
Furniture	1088	1143
Handicraft	14670	16505
Health	180	233
IT/ITES	1241	1777
Life Sciences	3665	4287
Retail	34789	36878
Rubber	1908	6137
Textile	8814	12633
Tourism	6472	6668
Total	699943	844155

Table No-144: The Skill Scape of Udham Singh Nagar

Manpower Status of Udham Singh Nagar As per the population projections, for 2022 ,based on the 2011 census, the district is expected to add to the labour force with an addition 2,11,000 human resource. As against this the total job creation, in the district during the same period 60650 jobs will be created , excluding agriculture.

The primary job creation sectors would be Capital goods (17533), Food processing (12783), Retail (8684) ,Textile (6450) and Rubber (4229) The relevant job roles for the district

Sector	Skill Requirement
Agriculture	Organic Farming, Poultry, Horticulture, animal husbandry, etc.
Capital Goods	Welder, Fitter, CNC Operator, Packaging
Textile	Two Shaft – Handloom Weaver, Handloom Entrepreneur
Rubber	Tyre Services, Lathe, Foot-ware, Carpets
Automobile	Automobile Service Advisor, Commercial Driver
Food	Milling, Fruit and Vegetables Processing, Squash, Jam and Jelly Making

Table No-145: Udham Singh Nagar Recommendations

8.13 Uttarkashi

Uttarakashi is one of the largest Districts of Uttarakhand. The City of Uttarkashi is situated on the banks of Bhagirathi. It is also known as Shivnagri. Uttarkashi is one of the most sacred lands for the Hindus because of the presence of Gangotri and Yamunotri. It has six Tehsils named after Badkot, Bhatwadi, Chiniyalisaud, Dunda, Purola, Mori. The district is named after its headquarters town Uttarkashi, an ancient place with rich cultural heritage and as the name suggests is the Kashi of north (Uttara) held almost as high a veneration as Kashi of the plain (Varanasi). Both the Kashi of the plain (Varanasi) as well as the Kashi of north are situated on the banks of the river Ganga (Bhagirathi). The area which is held sacred and known as Uttarkashi, lies between the rivers Syalam Gad also known as the Varuna and Kaligad also known as the As.

Figure 63 : Uttarkashi Map



The District is sparsely populated because of the presence of high mountains. A massive Earthquake struck Uttarkashi with a magnitude of 6.8 on the Richter Scale. A total of 300,000 people were affected by the earthquake in more 1200 villages. A lot of people could not rebuild their lives and migrated out of the sesmic zone.

However, with the picking up of tourist and pilgrimage activity in the region the trade has picked up. People have now been shifting to the city of Uttarkashi from the hills owing to better infrastructure and educational facilities.

Table No-146 : Uttarkashi District At a Glance

Indicators	Uttarkashi
District GSDP	361225
Total Population	330086
District Population Percentage of UK population	3.20%
Number of villages	707
Scheduled Caste population percentage of Total population	24.40%
Schedule Tribe population percentage of Total population	1%
Decadal Growth	12%

Table No-147: The Skill Scape of Uttarakashi

Uttarkashi	2017 (Current)	2022(Future)
Agriculture	133818	139947
Apparels	1281	1339
Automotive	2555	3367
BFSI	983	1298
Beauty & Wellness	1460	279
Capital Goods	337	347
Electronics	395	407
Food Processing	941	1326
Furniture	1750	1803
Handicraft	3520	3911
Health	215	261
IT/ITES	277	397
Life Sciences	Ο	Ο
Retail	4183	4280
Rubber	27	28
Textile	1665	2075
Tourism	30849	31784
Total	184255	192848

8.13.1 Manpower of Uttarakashi As per the population projections, for 2022 ,based on the 2011 census, the district is expected to add to the labour force with an addition 40,000 human resource. As against this the total job creation, Uttarkashi during the same period would be 24000.

The primary job creation sectors would be Agriculture (21049), Food processing (12783), Tourism (1286) ,Health. (1150) and Retail (423).

Table No-148: Uttarkashi Recommendations

Sector	Skill Requirement
Agriculture	Organic Farminf, Poultry, Horticulture, animal husbandry, etc.
Tourism & Hospitality	F & B Steward, Standalone – Food Vendor, Room Attendant
Health	Doctors' Assistants, Nurses, Other Medical Services
Food	Milling, Fruit and Vegetables Processing, Squash, Jam and Jelly
	Making

8.13.2 The Craft Clusters of Uttarkashi

The District has a very strong presence of Traditional Skills and Artisans. The Craft Clusters of the district are:

8.13.2.a Architecture: The Western tehsils of Purola and Mori are famed for Koti-Banal Houses. These houses still stand in the mountains and shelter people. They are a magnificent example of the craftsmanship of the local artisans. These houses are built in a combination of wood and stone masonry. They houses are 3 to 4 levels high and are considered the "World's Most Earthquake Resistant Buildings". They have even the Gorkha Invasions and bare the marks of their resistance.

Lately, however, the demand for these houses has become non-existent and the craftsmen have been taking up other professions. A detailed discussion on the houses is undertaken in the Skills section.

8.13.2.b Weaving: Weaving is one of the most common activities of Uttarkashi. Most of the people in the regions of Mori, Jakhol and Purola regions know weaving. They maintain herds of sheep and mountain goats and extract wool from them. The Spinning of Wool into Yarn is done my hand by the family members. The handlooms are still use the old apparatus made of wood. Very interestingly every household has a loom and all the people in the village know weaving. Most of the weaving is done for self-consumption by the people. A detailed discussion on the quality and scaling up aspects is undertaken in the skills section

8.13.2.c Textiles: Woolen Garments: The Woolen Garments cluster of Dunda is an achievement of the Craftsmen ot Uttarkashi and require a special mention It is a predominantly Bhotia tribal area and extremely backward on the parameters of development. Only a few years ago, the weavers of Dunda started adding colours and new designs to their otherwise dull craft under the aegis of a cluster development programme. And now, the demand for the colourful and well-designed Dunda products is slowly picking up in the market. The Dunda cluster covers 381 weavers and provides direct and indirect employment to about 2,000 persons.

From embroidery and block printing to other local crafts like aipan, all are being weaved into a tapestry of colours. The weavers of Dunda mostly show their sleight of hand on shawls, loi (a kind of blanket), muffler, carpet, chutka, sweater and other winter clothes. Only recently, they added new products like Kashmiri phirans and stoles. Thulma and churka are special blankets that are used during the biting cold of the Himalayan winters. The people have leveraged the strengths of coming together under Self-Help-Groups (SHGs). **8.13.2.d Woodcraft:** The Woodcraft of Uttarkashi was famous for its intricate carvings and floral panels. Most of the old houses and temples have exquisite wooden carvings on pillars and panels. The District also had an evolved culture of making toys out of wood. These toys were made on the themes from daily life with some fun element introduced through mechanics. The common toys were male and female figurines, whistles, bullock carts, etc., This Art has totally disappeared. The main reasons cited are:

- Change in customer preferences with children wanting to play with plastics
- The lack of innovation in design and marketing of these toys caused the death of the skill; Collaboration with toy artisans from Channapatna , in Karnataka, could have helped
- Awareness program among customers for benefits of wooden toys could have helped;
- Entrepreneurship training of the artisans could have been of help

8.13.2.e Fruits and Horticulture: One of the upcoming Crafts is Apple Orchids. Since the District shares its borders with Himachal, more and more people are converting their apple farms into Orchids. These Apples are being marketed as Himachal Apples because there is no brand of Uttarakhand Apples. The Farmers prefer to sell their products in the markets of Himachal as they are far more organized and provide a better price for the produce. They even pack their apples in cartons displaying the name Himachal Apples.

SECTION 9: Way Forward

Way Forward

Uttarakhand is at crossroads in terms of development. On one hand the traditional skills have existed through the ages but are fighting for survival as we present this report; and on the other hand the state is seeing rapid economic growth limited to certain regions. It is our endeavour to find the Skill Gap across the relevant skills in Uttarakhand and present a holistic development plan for both Traditional and other Relevant Skills to co-exist. It is important to note here that the goals of Preservation of Cultural Identity and Economic growth of the state will be achieved only when the skilling Initiatives equally focus on both these areas.

Based on our extensive study, we would like to summarize our recommendations for New Job Roles and Occupational Standards (OSs) that need to be instituted under the Uttarakhand Skill Mission pertinent for the state.

Table 149 : List of Job Roles/QPs and Occupational Standards (OSs) Specific to Uttarakhand

List of Job Roles and Range and Depth of Skills Specific to Uttarakhand				
Sector Skill Council	Domain	Job Roles /QPs	Occupational Standards (OS)	Qualification
Agriculture	Apple Farming	Apple Grower	Apple Orchid making	No entry barrier, 5th standard passed preferable Not applicable
			Apple Tree Pruning Technique	No entry barrier, 5th standard passed preferable Not applicable
	Land Preparation		Understanding and choosing the Slopes and Soil that could be used for Agriculture	No entry barrier, 5th standard passed preferable Not applicable
			Digging and Leveling Techniques	No entry barrier, 5th standard passed preferable Not applicable
			maintaining the Farms during various Seasons	No entry barrier, 5th standard passed preferable Not applicable

	Irrigation	Making Irrigation Canals in Hills	Understanding the Flow of Water	No entry barrier, 5th standard passed preferable Not applicable
			Building Canals on slopes (Designing Irriga- tion and Drainage Sys- tems)	No entry barrier, 5th standard passed preferable Not applicable
Apparels Made-up & Home Furnishing	Aipan	Aipan - Block Print- ing	Aipan Block Making	Preferably, Standard XII
		Aipan - Fabric Painting	Aipan Painting on Fabric	Preferably, Standard XII
		Hand Em- broiderer	Aipan Embroidery	Preferably, Standard XII

Automotive	Drivers - Commercial Vehicles	Mountain Driving - in- cluding driving through forests without disturb- ing the wildlife;	Preferably, 8th Standard
		Navigating through Snow tracks and water streams;	Preferably, 8th Standard
		Rescue drills in case of fall of vehicles into Mountain Slopes, Gorges, etc;	Preferably, 8th Standard
		Survival Techniques for both climate and medical emergencies	Preferably, 8th Standard

Banking & Financial

Beauty and Wellness	Yoga	Foreign Language Skills	Graduate Preferably
		Internet Marketing Skills	Graduate Preferably

Capital Goods

Electronics Sector

Food Processing	Fragrances & Flavours	Fragrances Extraction - Specialist	Fragrances Extraction Techniques from Hima- layan Flowers	No entry barrier, 5th standard passed preferable Not applicable
	Fragrances & Flavours	Flavours Extraction - Specialist	Grinding and Storing Techniques for Hima- layan Spices	No entry barrier, 5th standard passed preferable Not applicable
	Brewery	Heritage Wine Brew- er - Soor	Brewery Techniques	Graduate Preferably

Furniture and Fittings

Handicrafts and Carpets	Aipan	Aipan - Purse Maker	Prepare and Carry Out Aipan Embroidery	Basic reading and writing skills, prefer- ably 5th pass
		Aipan - Wall Hangings Maker		Basic reading and writing skills, prefer- ably 5th pass
	Iron Craft		Kadhai Making	Basic reading and writing skills, prefer- ably 5th pass
	Copper Craft		Copper Pot Making	Basic reading and writing skills, prefer- ably 5th pass
	Wood Craft	Household Utensil Mak- er	Curd Churning Utensil	Basic reading and writing skills, prefer- ably 5th pass
			Ramman Masks	Basic reading and writing skills, prefer- ably 5th pass
			Miniaturization Specialist - Wooden Temples & Koti Banal Architecture	Basic reading and writing skills, prefer- ably 5th pass
	Decorative Candle	Decorative Candles maker	Making Multi-Colour Candles using engraving techniques	Basic reading and writing skills, prefer- ably 5th pass
			Making Aeromatic Can- dles	Basic reading and writing skills, prefer- ably 5th pass

			Making Candles in dif- ferent Forms using Wax	Basic reading and writing skills, prefer-
	Stone Craft	Water Mill Mak- er (Gharat Making)	Modeling Making Water Mills using Stones	ably 5th pass Basic reading and writing skills, prefer- ably 5th pass
Health Sec- tor		Ayurvedic therapist	Limited Ayurvedic Edu- cation in Panchakarma Therapy	Graduate, preferably Trained as Physio- therapist
		Ayurvedic therapist	Limited Ayurvedic Edu- cation in Ayurvedic Di- etetics	Graduate, preferably Trained as Dietetic Assistant
		Ayurvedic therapist	Limited Ayurvedic Ed- ucation in Ayurvedic Medicine Pharmacists/ dispensers	Graduate, preferably Trained as Pharmacy Assistant
Information Technology and Enables Services (IT/ITES)		Data Scien- tist	Data Mining Machine Learning	Bachelor's Degree in /Engineering/ Computer Sciences
		SAP Engi- neer	System Integrator ABAP Engineer	Bachelor'sDegree in /Engineering/Tech- nology/ Science/ Computer Sciences
Life Scienc- es	Health & Medicinal Supple- ments	Medicinal Extraction Maker	Medicinal Extraction Techniques to isolate and	Bachelor's Degree with Botany
Retail			Inventory Management - Large Format/Multi- Brand Stores Inventory Management - Self Employed Training program for Handicrafts Sellers	Preferably, Standard XII Preferably, Standard X Preferably, Standard 5th
Rubber	Rubber Footwear	Rubber Footwear		Preferably, 8th Standard

Maker

Tyre Repair - Self Em-	Preferably, 8th Standard
ployed	

Textile	Yarn Making	Bhimal Yarn Making	Preferably, 8th Standard
		Hemp Yarn Making	Preferably, 8th Standard
	Handloom Design	Nettle Yarn Making	Preferably, 8th Standard
		Training on Kumaoni Designs	Preferably, 8th Standard
		Training on Garhwal De- signs	Preferably, 8th Standard
		Training on Bhotia De- signs	Preferably, 8th Standard

Tourism & Hospitality			
	Tourism	Uttarakhand Knowledge/ History Packs for Tourist Guides	Preferable 10thStan- dard passed
		Uttarakhand Flora & Fau- na Knowledge Packs for Tourist Guides	Preferable 10thStan- dard passed
		Survival Techniques in the Mountains	Preferable 10thStan- dard passed
		Medical Response Drills	Preferable 10thStan- dard passed
	Traditional Culinary	Recipes of Culinary De- lights of Uttarakhand	Basic reading and writing skills, prefer- ably 5th pass

Construc-	Koti-Banal	Preferably, Standard
tion	Architec-	XII
	ture - Spe-	
	cialist	

Gems &	Jewellery	Uttarakhandi Nath De-	Preferably:
Jewellery	Designing	signs	10thStandard Passed
		Other Traditional Jewel- lery Designs of Uttara- khand	Preferably: 10thStandard Passed

Outcome Based Approach to Quality Skilling

The National Skill Qualification Framework (NSQF) has been evolved based on the Quality Deliverance of Outcomes for various skills. These have been put in astringent regime which know as National Quality Assurance Framework (NAQF). The trainees on various Job Roles are assessed on the Parameters of laid out in the NAQF for every Occupational Standard forming part of the Qualification Pack/Job Role.

Presently we may use **NSQF & NQAF** towards quality skilling that results in increased Employability & productivity in the State. As per the Frameworks, the following key outcomes are expected from implementation:

- Mobility between vocational and general education by alignment of degrees with NSQF – Please refer to the pre-qualification matrix suggested in table 149 for the unique Skills of Uttarakhand. However, a comprehensive discussion on Vocational and Educational Alignment for the relevant sector skills is presented in the Section 5 and Section 7 of the report.
- **ii. Recognition of Prior Learning (RPL), allowing transition from non-formal to organized job market –** The RPL opportunity for Traditional Skills is the first step towards monitoring the growth and expansion. As per our study RPL opportunity exists in the following Traditional Skills relevant to Uttarakhand:
 - Aipan Designs like Chikankari, Phulkari and Zaridozi
 - Garhwali and Kumaoni based Jewerly unique designs
 - Yoga Trainers & Teachers
 - Ayurveda & Naturopathy based job roles As per Ministry of AYUSH.
 - Copper Ware Markers
 - Weavers can try new designs and certify their Products like Craft mark and Khadi mark
 - Traditional Wooden Utensil Makers
 - Traditional Koti-Banal Architecture Practioners
 - Uttarakhand Culinary Practitioners
 - Iron Craft Artisans
- iii. Standardized, consistent, nationally acceptable outcomes of training across the country through a national quality assurance framework
- iv. Global mobility of skilled workforce from India, through international equivalence of NSQF
- v. Mapping of progression pathways within sectors and cross-sectorally
- vi. Approval of NOS/QPs as national standards for skill training

Long - Term Vision for UKSDM

Skilling will continue to be an extremely important aspect of Human Resource Development and Livelihood securitization process for the State. The Current NSQF & NQAF are very vigorous frameworks that are working towards establishing a regime of Quality Skilling in the Country. They aim to build uniformity of outcomes and modularity of progression pathways to help the youth in getting gainfully employed.

However, we have to be aware of the facts that Uttarakhand is a very rich and vibrant state which has many successful indigenous communities that have successfully inhabited these mountains for centuries. The Traditional Skills evolved by these communities are unique and form part of the Identity of the State and these communities. Since these skills are exclusive to Uttarakhand and would continue to remain relevant only to these geographical regions, the NSQF & NAQF may not be able to accord the attention they require.

We are of the opinion, that it would be prudent for the State to build a State Skill Qualification Framework (SSQF) with a State Quality Assurance Framework (SQAF). The mandate of this framework should be:

- Focused on Skills Specific to the State of Uttarakhand
- Non-overlapping with the National Frameworks
- Modular in a way that progression pathways within sectors and cross-sectorally is possible
- Approval of OS/QPs happen at the State Level
- Mobility of Workforce is un-hindered in India and Across the world

The State may look at the aforesaid suggestion to preserve and propagate the uniqueness of the Traditional Skills of the State.

SECTION 10; Bibliographies

Section :10 Bibliographies

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SECTION 11: Annexure I

Section :11 Annexure I

Sample Covered - 217 interviews

	1	
Interviewed Person	Designation/Unit	Location
Mr. Alok Bhatt	Advisor - Independent worker	Dehradun
Mr. Amol Kalra	Writer, Doonga Central	Pauri Garhwal
Ms. Aayushi singh	Traveler	Dehradun
Shri. K C Chamoli	Accountant DIC	Dehradun
Shri. M P S Bisht	Director - Geology Deptt - University	Dehradun
Shri. Shikhar Saxena	GM – DIC	Dehradun
Mr. Rajeev Singhal/Mr. Kapil Upadhaya	UGVS/Aajivika	Dehradun
Ms. Manjusha Tyagi	Kamala Mahila	Dehradun
Ms. S A Murugesan	DM Dehradun	Dehradun
Ms. Durgpal Chouhan	Samaun	Dehradun
Ms. Amit kumar	Loha Ghat – Lohar	Champawat
Mr. Baha-uddin Siddiqui	Carpet Maker	Bageshwar
Ms. Raina Nautiyal	Kamala Mahila	Dehradun
Mr. Md Kaleem	Handloom - Weaver - Mangloor	Haridwar
Mr. Rahul /Travel Shoppe	Handloom - Woolen - Dunda	Uttarkashi
Ms. Pinki kumari	Garwhal Culinary	Dehradun
Ms. Shelly Dabral	AGM – DIC	Dehradun
Sita Devi	Dhol-Damaun (Family Member)	Tehri Garhwal
Maheshwari Devi	Dhol-Damaun (Family Member)	Tehri Garhwal
Shri. Ramesh Anthwal	Teacher; Social Worker	Tehri Garhwal
Shri. Ajeet Kumar	Auji (Son of Auji)	Tehri Garhwal
Shri. D.P.Juyal	Angoora Artisan and Merchant	Tehri Garhwal
Dr. Hira Ballabh Pant	Manager - UGVS	Tehri Garhwal
Shri. Manohar Lal	Tailor (Ex Auji Practitioner)	Tehri Garhwal
Dr. U.S. Mehra	Project Lead-DIC	Tehri Garhwal

Dr. Mahesh Prakash	General Manager- DIC	Tehri Garhwal
Mrs. Sonika Singh	DM - Tehri	Tehri Garhwal
Mr. C.S.Chauhan	SDM - Tehri	Tehri Garhwal
Mr. Vijay Das	Reporter- Amar Ujala	Tehri Garhwal
Mrs. Anita Sharma	Social Worker- SHG	Tehri Garhwal
Mrs. Sarojini Anthwal	Social Worker- SHG	Tehri Garhwal
Ms. Sumitra Devi	Teacher; Social Worker	Tehri Garhwal
Shri. Jhawar Badola	Ringal Artisan	Tehri Garhwal
Shri. Naresh Gorla	Ringal Artisan	Tehri Garhwal
Shri. Putan lal	Ringal Artisan	Tehri Garhwal
Shri. Basant Ballab Tiwari	Sculptor	Bageshwar
Shri. Dilip Ram Tamta	Copper Craft	Bageshwar
Shri. Govind Singh Mar- tolia	Bhotia	Bageshwar
Shri. Manohar Singh	Bhotia	Bageshwar
Shri. Prem Ballabh Joshi	Medicinal Plant	Bageshwar
Shri. Pushkar Ram	Woodcraft	Bageshwar
Shri. Gopal Sonal	Bhotia	Bageshwar
Shri. Sunderlal Tamta	Copper Craft	Bageshwar
Shri. Tararam	Ringal	Bageshwar
Ms. Ranjana Rajguru	DM Bageshwar	Bageshwar
Shri. B C Pathak	GM - DIC, Bageshwar	Bageshwar
Shri. Rahul Goel	ADM Bageshwar	Bageshwar
Shri. Rajesh Kumar Shah	DIC, Bageshwar	Bageshwar
Mr. Danny	Bhotia	Bageshwar
Ms. Pushpa Rawat/Ms. Kusum Rawat	Culinary - Indira Amma Canteen	Bageshwar
Ms. Taro Joshi	Culinary	Bageshwar
Shri. Raja Verma	Khadi Gram Udyog	Bageshwar
Shri. Chanchal Ram Rikhri	Ringal	Bageshwar
Shri. Arvind Joshi	Certified Yoga Teacher	Rishikesh
Yogi Amrit Raj	Ayurvedic Doctor & Yoga Teacher	Rishikesh
Shri. Rajendra Nautiyal	Yoga Teacher	Rishikesh
Prof. zoran Mitrovic	Jyotish Teacher	Rishikesh

Ms. Shruti Tyagi	Designer & Aggregator	Haridwar
Dr. Swati Gupta	Ayurvedic Doctor	Rudraprayag
Mr. Sanjay K Prajapati	Artisan - Kumhar (Jwalapur)	Haridwar
Mr. S S Rawat	DIC - Manager (Roorkie)	Roorkee
Mrs. Iva Ashish Shrivas- tava	DM -Almora	Almora
Dr. Deepak Murari	GM - DIC, Almora	Almora
Mr. S C Lohani	AGM - DIC, Almora	Almora
Shri. Balwant Tamta	Copperware	Almora
Ms. Bhawna Rawat	Aipan	Almora
Mr. Mahesh Arya	Ringal, Basgaon	Almora
Ms. Geeta Pandey	Culinary	Almora
Mr. Mohan Singh Rautela	Bal Methai/Culinary	Almora
Mr. Saksham Agarwal	Anokhe Lal	Almora
Mr. Manoj Pandey	Textiles	Almora
Prof. Sanjeev Arya	Painting	Almora
Mr. Jaspal Negi	Ringal, Patali Bagad	Almora
Shri. Mahendra Kumar	Textiles	Almora
Ms. Namita Tewari	Aipan	Almora
Mr. Hari Ram	Kholi Craftsman, Dhaula Devi	Almora
Mr. Sanjay Kumar	Textiles	Almora
Shri. Jagdish Verma	Jewelry	Almora
Shri. Arun Verma	Jewelry	Almora
Mr. Sushil Vermani	Candles	Nainital
Mr. Amit Vermani	Candles	Nainital
Shri. Ramlal Arya	Woodcraft	Nainital
Shri. Umesh Arya	Woodcraft	Nainital
Shri. Kailash Joshi	Candles	Nainital
Mr. Anil Bahuguna	Journalist	Uttarkashi
Shri. Prahlad Singh	Pradhan, Village Reckcha	Uttarkashi
Ujali Devi	Weaver, Reckcha	Uttarkashi
Pushpa Devi	Weaver, Reckcha	Uttarkashi
Shri. Surinder Kumar	Weaver/Tracking Guide, Reckcha	Uttarkashi
Shri. Nanda Mistry	Koti-Banal, Architect, Phitari	Uttarkashi

Shri. Rajpal Mistry	Koti-Banal, Architect, Phitari	Uttarkashi
Shri. Bhomdas Mahil	Namti Musician, Phitari	Uttarkashi
Deonee Devi	Weaver, Jakhol	Uttarkashi
Shri. Phulu Lal	Weaver, Jakhol	Uttarkashi
Sublee Kumari	Weaver Jakhol	Uttarkashi
Shri. Jeopal Singh	Weaver, Jakhol	Uttarkashi
Shri. Birendra Singh Kuf- nola	Pradhan, Village Kufnol	Uttarkashi
Shri. Vijaypal Singh Rawat	Village Businessman, Kufnol	Uttarkashi
Shri. P. S Panchpal	DIC, Manager, Pithoragarh	Pithoragarh
Shri. Lakshman Parmar	Ringal, Madkot	Pithoragarh
Shri. Mahindra Ram	Ringal, Madkot	Pithoragarh
Ms. Poonam Martolia	Handicraft	Pithoragarh
Shrimati. Kamala Tolia	Saras Weavers Cooperative	Pithoragarh
Ms. Neha Pangti	Saras Weavers Cooperative	Pithoragarh
Ms. Parvati Pangti	Saras Weavers Cooperative	Pithoragarh
Ms. Deepa Devi	Saras Weavers Cooperative	Pithoragarh
Ms. Minani Khurpa	Himal Nidhi, Weaver Trainer	Pithoragarh
Ms. Lalita Devi Khurpa	Bhotia Tribes Women	Pithoragarh
Ms. Nanda Rawat	Village Weaver	Pithoragarh
Ms. Madhu Nitwal	Village Weaver	Pithoragarh
Ms. Sudha Brijwal	Medicinal Plant	Pithoragarh
Ms. Pooja Brijwal	Medicinal Plant	Pithoragarh
Ms. Surali Khurpa	Medicinal Plant	Pithoragarh
Ms. Devki Devi	Medicinal Plant	Pithoragarh
Ms. Sunanda Devi	Medicinal Plant	Pithoragarh
Ms. Rajrani Khurpa	Village Weaver	Pithoragarh
Ms. Chaaya Martolia	Village Artisan	Pithoragarh
Ms. Shikha Martolia	Village Artisan	Pithoragarh
Mr. Ramesh Pangti	Village Weaver	Pithoragarh
Mr. Rajesh Pangti	Village Weaver	Pithoragarh
Shri. Abhishek Maithani	Khadi Businessman	Rudraprayag
Shri. Pawan Upadhaya	Businessman	U.S. Nagar
Shri. Jeetender Kumar	Auji (Mirchora)	Pauri Garhwal

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Shri. Dinesh Bijalwan	PMO, Program Management Officer	Pauri Garhwal
Shri. Maharaj Singh	Culinary (Mirchora)	Pauri Garhwal
Shri. Praveen Kumar Bhat	Independent Journalist	Pauri Garhwal
Shri. Virendra Singh As- wal	Businessman	Pauri Garhwal
Ms. Geeta Burfal	Culinary	Pauri Garhwal
Shri. Arvind Mudgil	Journalist	Pauri Garhwal
Mr. Virbhadra Ramola	Writer and Cartoonist	Pauri Garhwal
Shri. Virendra Rawat	Farmer	Pauri Garhwal
Shri. Bhola Nath	Trader (Satpuli)	Pauri Garhwal
Shri. Balwant singh Ra- utela	Retired CRPF - Farmer (LemonGrass)	Pauri Garhwal
Mr. Lateef Choudhary	General Manager - E Durables	Dehradun
Shri. Mahesh Sharma	Factory Manager - G P Electrical	Dehradun
Mr.Pawan Gupta	Recruitment Head - Tirupati group	Dehradun
Mr. Deepak Rawat	Factory Head - Flair pens	Dehradun
Mr. Himanshu Bhardwaj	HR - Jai Shree Balaji Industries	Dehradun
Mr. H K Thakkar	Factory In-Charge - ABC Bearings	Dehradun
Mr. Pravha Joshi	HR Executive - Cris Pharmaceuticals	Dehradun
Shri. Satinder Sharma	Accounts - Gurlz Shuz	Dehradun
Mr. Sandeep thapa	Sr. Executive - Zircon	Dehradun
Mr. Harpal Singh	HR Head - Cooper Pharmaceuticals	Dehradun
Mr. Balram Maletha	Supervisor - Surya Hospital	Dehradun
Ms. Anju Negi	HR - Kanishq Hospital	Dehradun
Mr. VP Mishra	Manager - Lifeline Hospital and Urology Institute	Dehradun
Mr. Gaurav Rawat	HR Executive - Drishti Eye Institute	Dehradun
Mr. Neelkamal Singh	Computer Operator - Frontier Jewelers	Dehradun
Mr. Bharat Kumar	Sales Manager - PC Jewelers	Dehradun
Shri .Rajnish Verma	Director - Punjab Jewelers	Dehradun
Shri. Kamalnain Singh Sahdev	Proprietor - New Sahdev Jewelers	Dehradun
Shri. Arjun Singh Rawat	Branch Office Manager - Kotak Mahindra Bank	Dehradun
Shri. Ashok Choudhary	Field Engineer Officer - Reliance Jio	Dehradun
Captain Kuldeep Mall	Owner - Smart Security Services	Dehradun

Shri. Vipin Sisodia	Manager HR - KKG Industries	Haridwar
Ms. Sandhya Joshi	Manager HR - b k print and pack	Haridwar
Mr. Sandeep Nathani	Owner - Hotel Arun	Haridwar
Shri. Vinay Kumar	Owner - Matin Health Care	Haridwar
Mr. Piyush bhasin	General Manager - Gardenia Hotel	Haridwar
Mr. Sunil Gupta	HR - Hyphen Hotel	Haridwar
Mr. L N Sharma	Owner - Deep Packaging	Haridwar
Shri. P. N. Rekhi	Market Association	Dehradun
Shri. Sunil Masson	Jewelers Association	Dehradun
Shri. Tapas Mondal	Swarnkar Kamgaar Sangh	Dehradun
Shri. Dilip Sahu	Swarnkar Kamgaar Sangh	Dehradun
Shri. Lokesh Sah	Jewelers Association	Dehradun
Ms. Chandrakanta	UKSDM	Dehradun
Mr. Shavez Baksh	UKSDM	Dehradun
Mr. Kailash Chandra Trip- athi	DIC	Dehradun
Mr. Anil Marwaha	Pharma Association	Selaqui
Chef Rahul	Bakery	Dehradun
Mr. Varun Gulati	Bakery	Dehradun
Mr. Mudit Gulati	Bakery	Dehradun
Shri. Mukesh Goyal	Hero Motocorp	Haridwar
Shri. Love Sharma	Hero Motocorp	Haridwar
Mr. Sunil Mishra	Mahindra & Mahindra	Haridwar
Mr. Himesh Kapoor	SEVA	Haridwar
Mr. Arun Saraswat	SIDCUL Association	Haridwar
Mr. R M Nautiyal	SIDCUL Association	Haridwar
Mr. U.C. Jain	Orange County	Haridwar
Mr. P S Tyagi	Patanjali Ayurveda	Haridwar
Col. V Pant	India Glycols	Kashipur
Dr. Mudit Saxena	Shriram Institute of Management	Kashipur
Dr. Yograj	Shriram Institute of Management	Kashipur
Mr. Naveen Sharma	Rockman Skill Training Institute	Haridwar
Mr. Satish Sharma	Film Marketer	Dehradun
Ms. Swati	Film Marketer	Dehradun

Shri. Raj Arora	Safeguard Industries	Dehradun
Mr. Ravindra Sharma	India Glycols	Dehradun
Mr. Shubham	K 2 Clothing	Haridwar
Mr. Ajay Tiwari	Shirdi Industries	Rudrapur
Mr. UKK Garg	KSGA & Co	Kashipur
Shri Apoorva Jindal	Jindal Frozen	Kashipur
Mr. Daljit Singh	Havells	Noida
Ms. Jharna Kamthan	SIDCUL	Dehradun
Mr. Ganga Prasad	SIDCUL	Dehradun
Mr. Atul Mishra	Pasupati Acrylon Itd	Kashipur
Mr. Sanjeev Kumar	Surya Roshni	Kashipur
Shri Sharad	Herbal Extracts	Jaspur
Mr. Ashok kr. Banka	Naini Tissues	Kashipur
Mr. Anil Chandel	Dhanya Infomedia	Noida
Mr. Bobby Sheikh	Transporter	Haldwani
Ms. Shalini Kumari	Go9 Cabs	Almora
Mr. Debashish Das	Transporter	Dehradun
Mr. S P Kochhar	Hotel Madhuban	Dehradun
Mr. Hemant Kochhar	Hotel Madhuban	Dehradun
Mr. Awadhesh Kumar	Balajee Sewa Sansthan	Dehradun
Dr. Bir Singh Negi	Horticulture Mission	Dehradun
Dr. Bharat Jain	Evok Lifestyle Furniture	Dehradun
Mr. Amit Srivastava	Director, Chandan Dignostic	Lucknow
Mr. Vijendra Chauhan	CEO, EVON Technologies	Dehradun
Mr. Avinash Mishra	Sr. Manager, HP Sales	Gurugram
Yogesh Kumar Jindal	SPNG Indostar	Kashipur
Mr. Robin Rajput	Taj Corbett and Spa	Ramnagar
Mr. Ramesh Kumar Jadon	Lemon Tree	Ramnagar

SECTION 12: Working Notes

12.1 Agriculture

Secondary Data

The Data for Agriculture has been taken from "Agricultural Statistics at a Glance" and the "Uttarakhand Census data for 2011". Based on these data points a Decadal Growth rate projections have been applied to arrive at the current population projections and the future expected population for 2022.

Sampling Structure

Expert Sampling: The Following set of Experts have assisted us in determining the current trends for the agriculture sector:

Sr. No	Expert/Influencer Name	Description	Location
1	Shri. Chaman Lal Pradyot	Acclaimed Author, Ex-IPS	Dehradun
2	Shri. Rattan Singh Aswal	Businessman	Pauri
3	Shri. Anil Bahuguna	Journalist	Pauri
4	Shri Praveen Kumar Bhat	Journalist	Pauri
5	S A Murugesan	DM Dehradun	Dehradun
6	Dr. Hira Ballabh Pant	Manager - UGVS	Tehri Garhwal
7	Dr. U.S. Mehra	Project Lead-DIC	Tehri Garhwal
8	Mrs. Sonika	DM - Tehri	Tehri Garhwal
9	Ranjana Rajguru	DM Bageshwar	Bageshwar
10	Rahul Goel	ADM Bageshwar	Bageshwar
11	Rajesh Kumar Shah	DIC, Bageshwar	Bageshwar
12	Mrs. Iva Ashish Shrivastava	DM -Almora	Almora
13	P. S Panchpal	DIC, Manager, Pithoragarh	Pithoragarh

Agriculturist Sample:

The following is an indicative list of people interviewed to understand the existing status and trends of Agriculture in the various regions of the state.

Interviewed Person	Designation/Unit	Location
Basant Ballab Tiwari	Sculptor, Farmer	Bageshwar
Dilip Ram Tamta	Copper Craft, Farmer	Bageshwar
Prem Ballabh Joshi	Medicinal Plant	Bageshwar
Sunderlal Tamta	Copper Craft, Farmer	Bageshwar
Tararam	Ringal, Farmer	Bageshwar
Balwant Tamta	Copperware, Farmer	Almora
Mahesh Arya	Ringal,Farmer, Basgaon	Almora
Jaspal Negi	Ringal, Patali Bagad	Almora

Ujali Devi	Weaver,Farmer - Reckcha	Uttarkashi
Pushpa Devi	Weaver, Farmer - Reckcha	Uttarkashi
Surinder Kumar	Weaver/TrackingGuide, Reckcha	Uttarkashi
Deonee	Weaver,Farmer - Jakhol	Uttarkashi
Phulu Lal	Weaver,Farmer - Jakhol	Uttarkashi
Sublee Kumari	Weaver, farmer - Jakhol	Uttarkashi
Lakshman	Ringal,Farmer - Madkot	Pithoragarh
Mahindra Ram	Ringal,Farmer - Madkot	Pithoragarh
Minani Khurpa	Himal Nidhi, Farmer - Weaver Trainer	Pithoragarh
Lalita Devi Khurpa	Farmer- Bhotia Tribes Women	Pithoragarh
Nanda Rawat	Farmer, Village Weaver	Pithoragarh
Madhu Nitwal	Farmer, Village Weaver	Pithoragarh
Sudha Brijwal	Medicinal Plant	Pithoragarh
Pooja Brijwal	Medicinal Plant	Pithoragarh
Surali Khurpa	Medicinal Plant	Pithoragarh
Devki Devi	Medicinal Plant	Pithoragarh
Sunanda Devi	Medicinal Plant	Pithoragarh
Rajrani Khurpa	Farmer, Village Weaver	Pithoragarh
Abhishek Maithani	Farmer, Khadi Businessman	Rudraprayag
Jeetender Kumar	Farmer, Auji (Mirchora)	Pauri Garhwal
Maharaj Singh	Farmer, Culinary (Mirchora)	Pauri Garhwal
Virendra Singh Aswal	Businessman	Pauri Garhwal
Virendra Rawat	Farmer	Pauri Garhwal
Bhola Nath	Trader (Satpuli)	Pauri Garhwal
Balwant singh Rautela	Retired CRPF - Farmer (LemonGrass)	Pauri Garhwal

SWOT Analysis

Strengths	Weakness
Suitable Agro Climatic zones available in the state	Irrigation available only in the plains
Apple and flower orchids flourishing in the hills	Farming exposed to vagaries of nature
94% of Agricultural land in the plains is irrigated	Very small holdings per framers at 0.83 hectares per farmer
High level of Mechanized farming in the plains	Only 13% of farms in the hills have irrigation facilities
	Low level of Mechanized farming in the hills
Opportunities	Threats
Opportunities Medicinal Plants	Threats Natural disasters and climate change caus- ing erosion of top soil and water scarcity for irrigation
	Natural disasters and climate change caus- ing erosion of top soil and water scarcity
Medicinal Plants	Natural disasters and climate change caus- ing erosion of top soil and water scarcity for irrigation Migration of Youth to the plains for better
Medicinal Plants Exotic vegetables (Mushrooms, leutice)	Natural disasters and climate change caus- ing erosion of top soil and water scarcity for irrigation Migration of Youth to the plains for better employment opportunities
Medicinal Plants Exotic vegetables (Mushrooms, leutice) Floriculture	 Natural disasters and climate change causing erosion of top soil and water scarcity for irrigation Migration of Youth to the plains for better employment opportunities Pine Trees making the soil barren

12.2 Apparels Made-up & Home Furnishing Sector Skills

Quantitative Analysis

Aggregation of data from MSME, SIIDCUL and heavy industry sources used to map the current employment rate, these were verified with the current practitioners of the trade. The Secondary data sources for estimation have been compiled through the district wise

Enterprise list published by Directorate of Industries. The List of each district has been scanned and categorized according to the relevant sectorial skill councils.

Further, Projection rates defined basis the MOU signed by the state and also approximated basis the rate expected by the current practitioners to arrive at the expected employment numbers by 2022.

List of Influencers and Experts spoken to:

Interviewed Person	Designation/Unit	Location
Dr. Hira Ballabh Pant	Manager – UGVS	Tehri Garhwal
Dr. U.S. Mehra	Project Lead-DIC	Tehri Garhwal
Dr. Mahesh Prakash	General Manager- DIC	Tehri Garhwal
Ranjana Rajguru	DM Bageshwar	Bageshwar
B C Pathak	GM - DIC, Bageshwar	Bageshwar
P. S Panchpal	DIC, Manager, Pithoragarh	Pithoragarh
Shri. P. N. Rekhi	Market Association	Dehradun

Practitioners Sample

Interviewed Person	Designation/Unit	Location
Manjusha Tyagi	Kamala Mahila	Dehraadun
Durgpal Chouhan	Samaun	Dehraadun
Raina Nautiyal	Kamala Mahila	Dehraadun
D.P.Juyal	Angoora Artisan and Merchant	Tehri Garhwal
Manohar Lal	Tailor (Ex Auji Practitioner)	Tehri Garhwal
Govind Singh Martolia	Trader - Bhotia	Bageshwar
Manohar Singh	Trader - Bhotia	Bageshwar
Danny	Trader- Bhotia	Bageshwar
Raja Verma	Khadi Gram Udyog	Bageshwar
Shruti Tyagi	Designer & Aggregator	Haridwar
Manoj Pandey	Textiles	Almora
Mahendra Kumar	Textiles	Almora
Poonamji	Handicraft	Pithoragarh

Kamala Tolia	Saras Weavers Cooperative	Pithoragarh
Neha Pangti	Saras Weavers Cooperative	Pithoragarh
Parvati Pangti	Saras Weavers Cooperative	Pithoragarh
Deepa Devi	Saras Weavers Cooperative	Pithoragarh
Mr. Shubham	K 2 Clothing	Haridwar

SWOT Analysis:

Strength	Weakness
Organized Manufacturing of Garments has been started by Big Brands	Traditional Designs and patterns have not evolved with time
Woolen Garments is widely manufactured by people in the hills	New Fabrics have not been integrated with Design Traditions
Very Rich and Strong Embroidery Design Traditions existing in the State	Poor forward integration infrastructure ,es- pecially from the hilly regions
Culturally, Society is comfortable with Working Women	
Opportunities	Threats
Women Entrepreneurs can flourish in the Apparel Industry	Demand of Tailor-made products is dropping
Aipan based Garments for the youth	Fashion and Lifestyle choices made by the youth has slowed down the demand for traditional apparels
Boutiques that innovate using local designs and new fabrics	Migration is destroying Apparel traditions in the hills
Embroidery & Block Printing are major opportunities	The Manpower is not adequately trained to cope with changing markets
New Products like Mobile pouches, Cushion Covers, Bed Covers, College Bags are op- portunities	

12.3 Automotive Sector Skills

Sources of Secondary Data

Automotive Sector is one of the primary growth drivers of the state. The livelihood map of the State has two very wide differentials, namely,

- Manufacturing and Allied Activities
- Transportation Sector

Manufacturing and Allied Activities

The numbers have been taken from the SIDCULL, DIC data on Automotive Allied manufacturing units and Industry Practitioners, since It is important to note here that the manufacturing activity is focused only in Haridwar and Udham Singh Nagar Districts. The growth in employment is restricted to Replacement Demand for labour due to death and retirements. The industry practitioners have highlighted that the operations of these plants have started in the last decade and so the average age of the workers is fairly low. The growth projections have factored in growth in Ancillary units of the Automotive Sector.

Transportation Sector

Transportation Sector has registered a healthy growth owing to the growth in Tourism and App-Based Taxi Hiring Services. The Automotive Skill Councils provides certification of Driving Skills which is the backbone of the Tourism and Logistics industry, thus We have used the growth rate of Tourism Sector across districts along with the replacement demand for drivers to arrive at the estimated demand and supply numbers.

Experts List

-		
Interviewed Person	Designation/Unit	Location
Mr. S S Rawat	DIC - Manager (Roorkie)	Roorkee
Mr. Arun Saraswat	SIDCUL Association	Haridwar
Mr. R M Nautiyal	SIDCUL Association	Haridwar
Dr. Mudit Saxena	Shriram Institute of Management	Kashipur
Dr. Yograj	Shriram Institute of Management	Kashipur

Practitioners List

Interviewed Person	Designation/Unit	Location
Shri. Mahesh Sharma	Factory Manager - G P Electrical	Dehradun
Shri. Mukesh Goyal	Hero Motocorp	Haridwar
Shri. Love Sharma	Hero Motocorp	Haridwar
Mr. Sunil Mishra	Mahindra & Mahindra	Haridwar
Mr. Naveen Sharma	Rockman Skill Training Institute	Haridwar
Mr. Sanjeev Kumar	Surya Roshni	Kashipur
Mr. Bobby Sheikh	Transporter	Haldwani
Ms. Shalini Kumari	Go9 Cabs	Almora
Mr. Debashish Das	Transporter	Dehradun

Automotive Skills SWOT Analysis:

SWOT (Strength, Weakness, Opportunities and Threats) matrix is the most commonly used model for Exploratory Research and Gap Assessments. Further, Outcome-Based Assessments are firmly anchored on SWOT analysis as they provide a stable structure to Evaluate Performance.

The In – Depth Interviews taken with the list of respondents provided aforesaid was for triangulation of our findings and cross-referencing the views expressed by the various stakeholders.

Strength	Strengths
Manufacturing Automotive	Transportation
Established Manufacturing Base for Cars and Trucks	The Tourism Industry has grown at 9.27% in Fy2016-17
Strong Presence of Engineering Education in the state	There is a growing demand for Drivers has better road infrastructure is connecting re- mote locations in the hills.
Growing Demand for Automobiles in the country	
Very Little Labour problems in the State	
State Government very Supportive of the Sector	

Weakness	Weakness
The Automotive Manufacturing established only on the basis of Govt. Incentive packag- es. Low Industry Stickiness to the State.	Demand for Tourist Vehicles is seasonal
The Average Age of Workers currently employed is very low. Hence, employment growth in the sector is limited to replace- ment demand	The Hiring/Plying Charges paid by locals is very low compared to the plains
	The Fuel Consumption in Hills is higher hence it becomes difficult to operate
	Since population is sparse, the frequency of Transportation is also very for most of the locations

Opportunities	Opportunities
The Automotive Manufacturing Industry has been attracting Investments From Large Companies as per the MOUs signed	The Domestic and International Travellers are excited about exploring Uttarakhand
Electric Vehicles Production has started in the State	

Threats	Threats
Post GST, Most of the competitive advan- tage of Manufacturing in the State has eroded	Overcrowding of Existing Tourist Destina- tions is lowering profits
The Central Government may provide strong incentives for production in other States and this may lead to most of the brands shifting bases out of Uttarakhand	Climate Change causes major disruption to Tourist Flows

12.4 Banking and Financial Sector Skills

Quantitative Analysis

Banking and Financial Sector have major job roles for Accountants, Insurance Agents, Banking Correspondents. Various Bank Branches spread across every district of Uttarakhand employ thousands of people in the sector. The Estimation for the aforesaid people has been done using published data by the banks. Estimations have been taken to acertain the strength of employees manning the various Branches.

Qualitative Analysis

Banking Respondents

Interviewed Person	Designation/Unit	Location
Shri. K C Chamoli	Accountant DIC	Dehradun
Mrs. Sonika Singh	DM - Tehri	Tehri Garhwal
Shri. Govind Singh Martolia	Sarpanch – Head co-operative societies for weavers	Bageshwar
Shri. Manohar Singh	Sarpanch – Head co-operative societies for weavers	Darkot
Shri. B C Pathak	GM - DIC, Bageshwar	Bageshwar
Shri. Rahul Goel	ADM Bageshwar	Bageshwar
Shri. Raja Verma	Khadi Gram Udyog	Bageshwar
Shri. Birendra Singh Kufnola	Pradhan, Village Kufnol	Uttarkashi
Shri. Arjun Singh Rawat	Branch Office Manager - Kotak Mahindra Bank	Dehradun
Shri. Tapas Mondal	Swarnkar Kamgaar Sangh	Dehradun

The following list of respondents has provided information on Banking:

SWOT Analysis:

Strength	Weakness
Literacy Rate very high	Population in the Hills very sparse, hence critical mass of customers not feasible
Service is preferred in the Hills and business in the plains	Disparity of Incomes in very high among the districts of Plains and Hills
Decent Demand of Insurance products in the Plains	

Opportunities	Threats
Mobile Banking	With Payment apps, wallets and automa- tion the employment for field agents may come down
Insurance	
Cooperative Credit	

12.5 Beauty & Wellness Sector Skills

Quantitative Analysis

The Number of Beauty and Wellness Professionals are very evenly distributed across the state. Their income is directly proportional to the number of people residing in the close vicinity. We have used DIC data and assumed proportional distribution to arrive at our estimates of practitioners.

We have used decadal growth of population projections to estimate the future demand of practitioners.

Qualitative Analysis

The Following respondents have been interviewed for our analysis:

Interviewed Person	Designation/Unit	Location
Mrs. Anita Sharma	Social Worker- SHG	Tehri Garhwal
Yogi Amrit Raj	Ayurvedic Doctor & Yoga Teacher	Rishikesh
Shri. Rajendra Nautiyal	Yoga Teacher	Rishikesh
Prof. Zoran Mitrovic	Jyotish Teacher	Rishikesh
Ms. Shruti Tyagi	Designer & Aggregator	Haridwar
Dr. Swati Gupta	Ayurvedic Doctor	Rudraprayag
Ms. Namita Tewari	Training Center	Almora
Ms. Parvati Pangti	Co-operative, selling wellness products	Pithoragarh
Ms. Sudha Brijwal	Medicinal Plant	Pithoragarh
Ms. Pooja Brijwal	Medicinal Plant	Pithoragarh
Ms. Surali Khurpa	Medicinal Plant	Pithoragarh
Ms. Devki Devi	Medicinal Plant	Pithoragarh
Ms. Sunanda Devi	Medicinal Plant	Pithoragarh
Mr. P S Tyagi	Patanjali Ayurveda	Haridwar

SWOT Analysis

Strenghts	Weakness
Both the people in the hills and the plains are very Beauty & Wellness conscious	The Courses taught for Beauty and Well- ness have very little content on Ayurvedic and Naturopathy practices
Traditional Knowledge of Beauty and well- ness practices very strong among the Hill people	Internet Marketing is very weak for local practitioners
Rishikesh is the Yoga capital of the World	Local Practitioners lack language skills to attract international Clients from Europe, Latin America, Africa, China & Japan
Ananda Spa and Patanjali have emerged as strong Health & Wellness Brands	No Yoga Regulatory authority to control the Instructors

Opportunities	Threats
Growing trends towards Natural Solutions to Beauty and Wellness Products & Practices	Other States in India like Tamil Nadu, Karna- taka and Kerela has established themselves high up in the Value Chain
Traditional Health Practices of the Indige- nous people not documented	Risikesh is dominated by Yoga Practitioners from the Western Countries
International Yoga Day has clearly captured the Yoga Market Worldwide	A lot of fake yoga teachers have crowded out the good Local Practitioners

12.6 Capital Goods Skills

Quantitative Analysis

Capital Goods Numbers have been arrived at by aggregation of data from MSME, SIIDCUL and Heavy Industry sources used to map the current employment rate; these were verified with the current practitioners of the trade.

Further the Industry practitioners have provided the breakup of labour force based on experience over the years. The same has been shared in the write-up in the report. Qualitative Analysis

Following list of people have provided us with the overall growth co-ordinates for the Sector:

Interviewed Person	Designation/Unit	Location
Shri. Shikhar Saxena	GM – DIC	Dehradun
Ms. S A Murugesan	DM Dehradun	Dehradun
Mr. S S Rawat	DIC - Manager (Roorkie)	Roorkee
Shri. P. N. Rekhi	Market Association	Dehradun
Mr. Shavez Baksh	UKSDM	Dehradun
Mr. Arun Saraswat	SIDCUL Association	Haridwar
Mr. R M Nautiyal	SIDCUL Association	Haridwar
Dr. Mudit Saxena	Shriram Institute of Management	Kashipur
Dr. Yograj	Shriram Institute of Management	Kashipur
Ms. Jharna Kamthan	SIDCUL	Dehradun
Mr. Ganga Prasad	SIDCUL	Dehradun

The following list of practitioners have been interviewed for capital goods Sector:

Interviewed Person	Designation/Unit	Location
Mr. Lateef Choudhary	General Manager - E Durables	Dehradun
Mr.Pawan Gupta	Recruitment Head - Tirupati group	Dehradun
Mr. Deepak Rawat	Factory Head - Flair pens	Dehradun
Mr. Himanshu Bhardwaj	HR - Jai Shree Balaji Industries	Dehradun
Mr. H K Thakkar	Factory In-Charge - ABC Bearings	Dehradun
Mr. Sandeep thapa	Sr. Executive - Zircon	Dehradun
Ms. Sandhya Joshi	Manager HR – B K Print and Pack	Haridwar
Mr. L N Sharma	Owner - Deep Packaging	Haridwar
Col. V Pant	India Glycols	Kashipur
Mr. Naveen Sharma	Rockman Skill Training Institute	Haridwar
Shri. Raj Arora	Safeguard Industries	Dehradun
Mr. Ravindra Sharma	India Glycols	Dehradun
Mr. Ajay Tiwari	Shirdi Industries	Rudrapur

Mr. UKK Garg	KSGA & Co	Kashipur
Mr. Atul Mishra	Pasupati Acrylon Itd	Kashipur
Mr. Ashok kr. Banka	Naini Tissues	Kashipur

SWOT Analysis

Strengths	Weakness
Very Strong Capital Goods Base Dehradun, Hardwar and U.S. Nagar	Hill Districts have the presence of Metal Fabricators to the maximum
ITIs have a very elaborate course material to impart Capital Goods Training	The Computer Integrated Manufacturing Systems followed by Modern manufactur- ing are not covered by ITIs
Strong Technical Education Infrastructure available	Most of the new machines like CNC, VMC and DNC are not widely available to train- ing centers.
Labour Problems non-existent	Some jobs like rigger and crane operators require these machines for learning which is not always available
Opportunities	Threats
Large Number of Companies have shown interest in Establishing Manufacturing Units in the state	GST Implementation has eroded the incen- tives for Manufacturers
Lot of Companies have established in- house training centers for youth	Other States may provide lucrative incen- tive plans to lure manufacturers
Tool Rooms have a huge potential in the Industrial Clusters of the State	Technical Manpower from other parts of the Country are taking up jobs

12.7 Construction Skills

The Quantitative Analysis

The Quantitative analysis for the Construction Sector has not been estimated as no credible indicative data source was available. Most of the information, suggested by members of the industry were found unsubstantiated on triangulation. It has been decided by the researchers that the sector be put in abeyance from the list of Scalable Skills till credible data becomes available.

Quantitative Analysis

The Following set of experts/influencers were interviewed:

Interviewed Person	Designation/Unit	Location
Shri. Pushkar Ram	Woodcraft	Bageshwar
Dr. Deepak Murari	GM - DIC, Almora	Almora
Mr. S C Lohani	AGM - DIC, Almora	Almora
Mr. Mahesh Arya	Ringal, Basgaon	Almora
Mr. Hari Ram	Kholi Craftsman, Dhaula Devi	Almora
Shri. Nanda Mistry	Koti-Banal, Architect, Phitari	Uttarkashi
Shri. Rajpal Mistry	Koti-Banal, Architect, Phitari	Uttarkashi
Mr. U.C. Jain	Orange County	Haridwar
Mr. Hemant Kochhar	Hotel Madhuban	Dehradun

SWOT Analysis:

Strengths	Weakness
Govt. Spending on Infrastructure Invest- ments are at an all-time high	Most of the Contractors are from beyond the state
GDP and Disposable income of Middle Class is spiraling	The masons, carpenters, scaffolders are also form beyond the state
Housing and real estate sector is growing rapidly	Most of the labour used are from Nepal, Eastern UP and Bihar
In the Hills the Old wooden houses are be- ing replaced by RCC Structures	The educated youth of the state do not take up construction jobs
	The Traditional Building techniques though relevant have been abandoned due to reg- ulations by the people

Opportunities	Threats
Number of job-roles in the construction industry is very high and decently paying	Migration from beyond the state is taking up most of the jobs in the state
With healthy demand for housing the du- ration of engagement with the sector can be for medium to long term	The Youth from the hills not taking up any job involving physical labour

12.8 Electronics Sector Skills

Quantitative Analysis

The Electronic Sector estimates have been arrived at based on aggregation of DIC MSMSE data, DIC Heavy Industry Lists, NSDM Annual Skills growth estimates, these have been further verified with trade practitioners of the State. Most of the existing companies are based out of Dehradun, Haridwar and Udham Singh Nagar. However, Nainital District has also attracted a lot of investments for the Electronics Sector.

Further the projections have been arrived at by MOUs signed by the state for expansion and new set up for production in the state.

It is interesting to note here that the demand for Electronics Sector is driven by demand for automobiles, Infrastructure and construction sector.

Qualitative Analysis

The following Persons were spoken to, to build an understanding about the sector:

Interviewed Person	Designation/Unit	Location
Shri. Shikhar Saxena	GM – DIC	Dehradun
Mr. S S Rawat	DIC - Manager (Roorkie)	Roorkee
Mr. Shavez Baksh	UKSDM	Dehradun
Mr. Arun Saraswat	SIDCUL Association	Haridwar
Mr. R M Nautiyal	SIDCUL Association	Haridwar
Ms. Jharna Kamthan	SIDCUL	Dehradun
Mr. Ganga Prasad	SIDCUL	Dehradun

Practitioners Interviewees:

Interviewed Person	Designation/Unit	Location
Mr. Lateef Choudhary	General Manager - E Durables	Dehradun
Shri. Mahesh Sharma	Factory Manager - G P Electrical	Dehradun
Shri. Mukesh Goyal	Hero Motocorp	Haridwar
Shri. Love Sharma	Hero Motocorp	Haridwar
Mr. Sunil Mishra	Mahindra & Mahindra	Haridwar
Mr. U.C. Jain	Orange County	Haridwar
Mr. Naveen Sharma	Rockman Skill Training Institute	Haridwar
Shri. Raj Arora	Safeguard Industries	Dehradun
Mr. Daljit Singh	Havells	Noida
Mr. Sanjeev Kumar	Surya Roshni	Kashipur

SWOT Analysis

the State

Strenghts	Weakness	
The Electrical products has large con- sumption by other electronics, automo- biles and construction sectors	Most of the livelihood opportunities are in the districts in the plains and cause migra- tion	
	A large number of workers from States other than Uttarakhand have taken up the jobs	
Opportunities	Threats	
There are a lot of new manufacturing proj- ects been committed by large Brands to	The GST Regime has diluted some of the major incentives for manufacturers in Ut-	

tarakhand

12.9 Food Processing Skills

Quantitative Analysis

The Food Processing Sector Skill Estimates for Uttarakhand have been arrived at by aggregating the DIC MSME data, SIDCULL and DIC Heavy Industries data. Further, the projections have been made for growth based on the national growth estimates published for each sector by NSDC.

It would be pertinent to note here that inorganic growth has been projected for districts of Nainital, Pauri and U. S. Nagar owing to the MOUs entered into by the Government to set up new food processing units.

Qualitative Analysis

The Following List of Experts and Influencers have been interviewed:

Interviewed Person	Designation/Unit	Location
Ms. Aayushi singh	Food Blogger	Dehradun
Ms. Pinki kumari	Garwhal Culinary cook	Dehradun
Shri. Prem Ballabh Joshi	Medicinal Plant	Bageshwar
Ms. Pushpa Rawat/	Culinary - Indira Amma Canteen	Bageshwar
Ms. Kusum Rawat		
Ms. Taro Joshi	Culinary	Bageshwar
Shri. Raja Verma	Khadi Gram Udyog	Bageshwar
Mr. Mohan Singh Rautela	Bal Methai/Culinary	Almora
Shri. Surinder Kumar	Weaver/Tracking Guide, Reckcha	Uttarkashi
Shri. Birendra Singh Kufnola	Pradhan, Village Kufnol	Uttarkashi
Ms. Lalita Devi Khurpa	Farm employee - Munsiyari	Pithoragarh
Ms. Sudha Brijwal	Medicinal Plant	Pithoragarh
Ms. Pooja Brijwal	Medicinal Plant	Pithoragarh
Ms. Surali Khurpa	Medicinal Plant	Pithoragarh
Ms. Devki Devi	Medicinal Plant	Pithoragarh
Ms. Sunanda Devi	Medicinal Plant	Pithoragarh
Ms. Chaaya Martolia	Village Artisan	Pithoragarh
Ms. Geeta Burfal	Culinary	Pauri Garhwal
Shri. Virendra Rawat	Farmer	Pauri Garhwal
Shri. Balwant singh Rautela	Retired CRPF -Farmer (Lemon- Grass)	Pauri Garhwal
Chef Rahul	Bakery	Dehradun
Mr. Varun Gulati	Bakery	Dehradun
Shri Apoorva Jindal	Jindal Frozen	Kashipur
Mr. Awadhesh Kumar	Balajee Sewa Sansthan	Dehradun

SWOT Analysis:

Strengths	Weakness
The Himalayas are the greatest source of exotic fruits, Herbs and Flowers	The youth in the Hills are inclined towards Government Jobs
Government Schemes support setting up of Food Processing Units	Migration in the hills has made availability of Trained Manpower difficult
Proximity to large and high consumption markets of the Gangetic plans like Delhi, Chandigarh, Kanpur, up till Kolkata.	The Logistics Cost of Food processing in the hills is high
Packaging and Cold Chain Technologies available in the State to support Food Pro- cessing	
It is one of the Fastest Growing sectors in the country	
Opportunities	Threats
Growing demand of processed fruits and	Other States like Himachal, Punjab and
juices substituting aerated drinks	Haryana are scaling up quickly to build manufacturing hubs.

Ayurvedic Drinks like Amla, Aloe vera and Rhododendron Juice are driving growth in the sector.

Packaged Food & Instant Foods have huge Potential

12.10 Furniture and Fittings Skills

Quantitative Analysis

The Furniture & Fittings Sector Skills have been arrived at by aggregating the DIC MSME data and SIDCULL data. The projections have been arrived at by incorporating the recommendations made for the growth of the arts.

As a result, we have shown inorganic growth rates for potential districts of Pithoragarh and Champawat.

Qualitative analysis

Experts and Influencers interacted:

Interviewed Person	Designation/Unit	Location
Shri. Shikhar Saxena	GM – DIC	Dehradun
Dr. Mahesh Prakash	General Manager- DIC	Tehri Garhwal
Mr. C.S.Chauhan	SDM - Tehri	Tehri Garhwal
Shri. B C Pathak	GM - DIC, Bageshwar	Bageshwar
Shri. Rahul Goel	ADM Bageshwar	Bageshwar
Shri. Rajesh Kumar Shah	DIC, Bageshwar	Bageshwar
Dr. Deepak Murari	GM - DIC, Almora	Almora
Mr. S C Lohani	AGM - DIC, Almora	Almora
Shri. P. N. Rekhi	Market Association	Dehradun
Mr. Shavez Baksh	UKSDM	Dehradun

Practitioners interviewed:

Interviewed Person	Designation/Unit	Location
Ms. Durgpal Chouhan	Samaun	Dehradun
Shri. Pushkar Ram	Woodcraft	Bageshwar
Mr. Hari Ram	Kholi Craftsman, Dhaula Devi	Almora
Shri. Ramlal Arya	Woodcraft	Nainital
Shri. Umesh Arya	Woodcraft	Nainital
Shri. Nanda Mistry	Koti-Banal, Architect, Phitari	Uttarkashi
Shri. Rajpal Mistry	Koti-Banal, Architect, Phitari	Uttarkashi
Mr. U.C. Jain	Orange County	Haridwar
Dr. Bharat Jain	Evok Lifestyle Furniture	Dehradun

Strengths	Weakness
Very Old and Exquisite Carving Traditions	Wooden Furniture expensive in comparison to Particle Board and Ply board
Raw material is available from the Forest Depts.	Design to suit the modern lifestyles and requirements not developing
	All good practitioners have aged

Opportunities	Threats
Miniatures of temples and Koti-Banal Archi- tectures	Furniture Cluster of Saharanpur very near to the Garhwal Markets
Bamboo Furniture has a lot of potential	Modular Furniture Stores opening
Souvenirs of various kinds can provide the required boost to the Arts	Most of the Building Contractors use Car- penters from outside the state
Koti-Banal Construction revived and inte- grated with modern amenities	

12.11 Healthcare Skills

Quantitative Analysis

The Aggregate numbers for healthcare sector have been arrived at by analysing the NFHS data, DIC data and Aarthik Sarveshan, 2017-18. Further the data points have been independently verified with practitioners for various fields.

The Projections have been arrived at by NSDM mission projections for Healthcare sectors.

It is important

Qualitative Analysis

The Following experts and practitioners have been interviewed for the developing an understanding about the sector.

Interviewed Person	Designation/Unit	Location
Shri. Prem Ballabh Joshi	Medicinal Plant	Bageshwar
Shri. Gopal Sonal	Traditional village Vaidya	Bageshwar
Dr. Swati Gupta	Ayurvedic Doctor	Rudraprayag
Mr. Balram Maletha	Supervisor - Surya Hospital	Dehradun
Ms. Anju Negi	HR - Kanishq Hospital	Dehradun
Mr. VP Mishra	Manager - Lifeline Hospital and Urol- ogy Institute	Dehradun
Mr. Gaurav Rawat	HR Executive - Drishti Eye Institute	Dehradun
Shri. Vinay Kumar	Owner - Matin Health Care	Haridwar
Mr. Shavez Baksh	UKSDM	Dehradun
Mr. P S Tyagi	Patanjali Ayurveda	Haridwar
Amit Srivastava	Director, Chandan Diagnostic	Lucknow

Strengths	Weakness
Healthcare among the Fastest growing sec- tors	Quality Infrastructure is built in the plains and the hills are lagging far behind
Brand value of Ayurvedic Treatments is strong in Uttarakhand	All the Courses offered are to assist Allo- pathic Treatment Procedure
Healthcare needs compassion and caring nature which are hallmarks of the culture in the hills	
Women are allowed to go out and work	

Internationally the world population is aging, so expenditure on healthcare is in- creasing
Hospitals have been running Nursing Courses to shore up the demand for Nurs- ing Staff

Opportunities	Threats
Huge demand in the state and outside of Nursing Staff & Paramedics	Shortage of staff and specialists diminishes the confidence level in the Residents, who prefer to visit neighboring states
Huge Opportunity for Ayurvedic Spa Ther- apists	
Healthcare has a number of job-roles that can employ people	

12.12 Information Technology and Enables Services (IT/ITES) Sector Skills

Quantitative Numbers

The IT/ITES services estimations have been aggregated using DIC MSME, SIDCULL and Heavy Industries data. The results have been triangulated and cross verified with practicing professionals. The existing job-roles have been identified by the professional operating from the state.

The Projections have been arrived at, using the NSDC Sectorial Growth estimates for the country. Further the same have been moderated for the sectorial presence in districts across the state.

Qualitative Analysis

The following persons have been interviewed for the IT/ITES sector:

Interviewed Person	Designation/Unit	Location
Mr. Alok Bhatt	Advisor - Independent worker	Dehradun
Ms. S A Murugesan	DM Dehradun	Dehradun
Ms. Durgpal Chouhan	Samaun	Dehradun
Mr. Shavez Baksh	UKSDM	Dehradun
Dr. Mudit Saxena	Shriram Institute of Management	Kashipur
Dr. Yograj	Shriram Institute of Management	Kashipur
Ms. Jharna Kamthan	SIDCUL	Dehradun
Mr. Ganga Prasad	SIDCUL	Dehradun
Mr. Vijendra Chauhan	CEO, EVON Technologies	Dehradun
Mr. Avinash Mishra	Sr. Manager, HP Sales	Gurugram

Strength	Weakness
Culturally people of Uttarakhand are good for Customer service	Entrepreneurial Spirit has not flourished, with only a very few players in the field
	Tew players in the held
Education Levels are good for IT/ITES sector	
Good Engineering education infrastructure available	
Real Estate is competitive w.r.t. Delhi/NCR	
Electricity and Internet connectivity is good in the state	

Opportunities	Threats
Upcoming IT evolution with Automation, AI	Other cities in the vicinity of Delhi and NCR
and Robotics	have been attracting IT/ITES companies like
	Jaipur and Chandigarh

12.13 Life Sciences Sector Skills

Quantitative Analysis

It is important to note here that Life Sciences Sector has its presence only in the districts of Dehradun Haridwar and U. S. Nagar. The estimates for the sector have been arrived at using DIC MSME, Heavy Industries and SIDCULL data. The same has been cross-referenced with association functionaries and practicing professionals.

Qualitative Analysis

Interviewed Person	Designation/Unit	Location
Shri. Dinesh Bijalwan	PMO, Program Management Officer	Pauri Garhwal
Mr. Pravha Joshi	HR Executive - Cris Pharmaceuticals	Dehradun
Mr. Harpal Singh	HR Head - Cooper Pharmaceuticals	Dehradun
Mr. Balram Maletha	Supervisor - Surya Hospital	Dehradun
Ms. Anju Negi	HR - Kanishq Hospital	Dehradun
Mr. VP Mishra	Manager - Lifeline Hospital and Urology Institute	Dehradun
Mr. Anil Marwaha	Pharma Association	Selaqui

Strength	Weakness
Established Pharma City in Deharadun	The Pharma Companies operate to enjoy growth incentives given by the state
Presence of Large Pharma companies in Dehradun	
Strong Pharma Education Infrastructure	
Dehradun	

Opportunities	Threats
A lot of companies have shown interest in	The GST implementation has eroded a ma-
setting up Pharma units in the state	jor incentives plans for Uttarakhand

12.14 Retail Sector Skills

Quantitative Analysis

The Retail sector today is organised into three major streams, namely

- Self-Employed Owner Retail Stores
- Large Format Retail Outlets
- E-Retail Websites

The data for estimation of the aforesaid categories have been done through 6th Economic Survey Data and DIC MSME data.

Qualitative Analysis

The Following List of Experts and influencers have been consulted:

Interviewed Person	Designation/Unit	Location
Mr. Rajeev Singhal/Mr. Kapil Upadhaya	UGVS/Aajivika	Dehradun
Dr. Hira Ballabh Pant	Manager - UGVS	Tehri Garhwal
Dr. U.S. Mehra	Project Lead-DIC	Tehri Garhwal
Dr. Mahesh Prakash	General Manager- DIC	Tehri Garhwal
Dr. Deepak Murari	GM - DIC, Almora	Almora
Mr. S C Lohani	AGM - DIC, Almora	Almora
Shri. P. N. Rekhi	Market Association	Dehradun

Practitioners List

Interviewed Person	Designation/Unit	Location
Mr. Amol Kalra	Writer, Doonga Central	Pauri Garhwal
Ms. Durgpal Chouhan	Samaun	Dehradun
Ms. Bhawna Rawat	Aipan	Almora
Mr. Saksham Agarwal	Anokhe Lal & Sons Shop	Almora
Shri. Jagdish Verma	Jewelry	Almora
Shri. Arun Verma	Jewelry	Almora
Mr. Sushil Vermani	Candles	Nainital
Shri. Vijaypal Singh Rawat	Village Businessman, Kufnol	Uttarkashi
Shrimati. Kamala Tolia	Saras Weavers Cooperative	Pithoragarh
Ms. Neha Pangti	Saras Weavers Cooperative	Pithoragarh
Ms. Chaaya Martolia	Village Artisan	Pithoragarh
Shri. Lokesh Sah	Jewelers Association	Dehradun
Mr. Varun Gulati	Bakery	Dehradun
Mr. Mudit Gulati	Bakery	Dehradun
Mr. P S Tyagi	Patanjali Ayurveda	Haridwar
Ms. Shalini Kumari	Go9 Cabs	Almora
Dr. Bharat Jain	Evok Lifestyle	Dehradun

SWOT Analysis

Goods and Services

Strength	Weakness
Fastest Growing Sector in the country	Large Format stores only available in Cities
Presence in all the districts, towns, villages	of the state
Training colleges and courses available with Institutes	
Culturally, The People are good at custome	r service
Opportunities	Threats
Various Kinds of retail formats like Single Brand, Multi-Brand, food retail, etc. are coming to the state	Migrations of Students passing out from the state of Uttarakhand to Northern and west- ern states
Last mile connectively and Delivery of	

12.15 Rubber Sector Skills

Quantitative Analysis

The rubber industry is mainly dominated by tyres. Footwear is also one of the prime users of rubber. The Estimates for Rubber skills have been arrived at, by data from DIC MSME, SIDCULL and Heavy Industries. The same have been verified with the industry practitioner.

The Future projections for the skills is based on the MOUs entered with large manufacturers for setting up manufacturing units in the state and the projected employment they would generate.

Qualitative Analysis

The following people have been interviewed:

Interviewed Person	Designation/Unit	Location
Shri. Mukesh Goyal	Hero Motocorp	Haridwar
Shri. Love Sharma	Hero Motocorp	Haridwar
Mr. Sunil Mishra	Mahindra & Mahindra	Haridwar

Strength	Weakness
Demand Dependent on Automobile Indus- try. Heavy presence in Uttarakhand.	No indigenous manufacturer
Strategically located near the large markets of the Gangetic plains	Units established to avail tax Incentives
Opportunities	Threats

opportunities	
A number of large Automobile companies	Highly dependent on automobile industry.
have committed to set up automobile units	
in the state.	

12.16 Textile Skills

Quantitative Analysis

The Textile industry is clearly divided into two segments:

- Handlooms
- Powerlooms

The Handloom sector is majorly present in the hill districts. The Estimation of Handlooms has been done based on the Handloom Census of India 2009-10. The Figures have been projected to the future based on the recommendations made and implemented for the sector.

The Powerloom data has been compiled used DIC MSME, Heavy Industries and SIDCULL data. The same has been triangulated and cross referenced through Industry Practitioners. We have spoken to Industry Practitioners to validate our findings.

Qualitative Analysis

The following set of Experts and Influencers has been interviewed:

Interviewed Person	Designation/Unit	Location
Mr. Rajeev Singhal/Mr. Kapil Upadhaya	UGVS/Aajivika	Dehradun
Mrs. Sonika Singh	DM - Tehri	Tehri Garhwal
Ms. Ranjana Rajguru	DM Bageshwar	Bageshwar
Shri. B C Pathak	GM - DIC, Bageshwar	Bageshwar
Shri. Rahul Goel	ADM Bageshwar	Bageshwar
Dr. Deepak Murari	GM - DIC, Almora	Almora
Mr. S C Lohani	AGM - DIC, Almora	Almora
Shri. Arvind Mudgil	Journalist	Pauri Garhwal

The Following set of Practitioners have shared their responses with us:

Interviewed Person	Designation/Unit	Location
Ms. Durgpal Chouhan	Samaun	Dehradun
Mr. Md Kaleem	Handloom - Weaver - Mangloor	Haridwar
Mr. Rahul /Travel Shoppe	Handloom - Woolen - Dunda	Uttarkashi
Shri. D.P.Juyal	Angoora Artisan and Merchant	Tehri Garhwal
Shri. Manohar Lal	Tailor (Ex Auji Practitioner)	Tehri Garhwal
Mrs. Anita Sharma	Social Worker- SHG	Tehri Garhwal
Shri. Govind Singh Martolia	Textile Trader	Bageshwar
Shri. Manohar Singh	Textile Trader	Bageshwar
Shri. Raja Verma	Khadi Gram Udyog	Bageshwar
Ms. Shruti Tyagi	Designer & Aggregator	Haridwar

Mr. Manoj Pandey	Textiles	Almora
Shri. Mahendra Kumar	Textiles	Almora
Mr. Sanjay Kumar	Textiles	Almora
Ujali Devi	Weaver, Reckcha	Uttarkashi
Pushpa Devi	Weaver, Reckcha	Uttarkashi
Deonee Devi	Weaver, Jakhol	Uttarkashi
Shri. Phulu Lal	Weaver, Jakhol	Uttarkashi
Sublee Kumari	Weaver Jakhol	Uttarkashi
Shri. Jeopal Singh	Weaver, Jakhol	Uttarkashi
Ms. Minani Khurpa	Himal Nidhi, Weaver Trainer	Pithoragarh
Ms. Nanda Rawat	Village Weaver	Pithoragarh
Ms. Madhu Nitwal	Village Weaver	Pithoragarh
Ms. Rajrani Khurpa	Village Weaver	Pithoragarh
Ms. Chaaya Martolia	Village Artisan	Pithoragarh
Ms. Shikha Martolia	Village Artisan	Pithoragarh
Mr. Ramesh Pangti	Village Weaver	Pithoragarh
Mr. Rajesh Pangti	Village Weaver	Pithoragarh
Mr. Yogesh Kumar Jindal	SPNG Indostar	Kashipur

Strength	Weakness
The State has strong Weaving Tradi- tions	Government Interventions have not been able to build impact
Water, Electricity and supporting in- frastructure robust	Selling Skills of Independent Handloom Workers is not professional
	Raw material not available round the year for handlooms
	Two Shaft Looms have not been upgraded
	Market Linkage of our Weavers cloths is weak
	Branding of Uttarakhand products is very weak

Opportunities	Threats
Market for tufted carpets growing fast	Most of the Weavers of the hills are aged, and their next generation is not choosing to inherit/ follow the art
Textile Parks have been announced	Traditional garments have been replaced by modern alternatives like jeans, Quilted clothing
The Current generation is moving to- wards natural fibers especially for New Born	

12.17 Tourism & Hospitality Skills

Quantitative Analysis

The estimates have been arrived at by aggregating the UTDB numbers of Domestic and Foreign tourist footfalls for major tourist destinations of the state. These have been cross-referenced with Industry Practitioners.

The Growth numbers for the sector have been based on Aarthik Sarvekshan, 2017-18 for the state.

Qualitative Analysis

The following list of influencers has been interviewed for the sector:

Interviewed Person	Designation/Unit	Location
Ms. S A Murugesan	DM Dehradun	Dehradun
Mrs. Sonika Singh	DM - Tehri	Tehri Garhwal
Mr. C.S.Chauhan	SDM - Tehri	Tehri Garhwal
Ms. Ranjana Rajguru	DM Bageshwar	Bageshwar
Mrs. Iva Ashish Shrivastava	DM -Almora	Almora

The following list of industry practitioners have been spoken with for the In-Depth understanding of the Sector:

Interviewed Person	Designation/Unit	Location
Mr. Amol Kalra	Writer, Doonga Central	Pauri Garhwal
Ms. Aayushi singh	Traveler & Tourism Blogger	Dehradun
Ms. Durgpal Chouhan	Samaun	Dehradun
Ms. Pushpa Rawat/Ms. Kusum Rawat	Culinary - Indira Amma Canteen	Bageshwar
Ms. Geeta Pandey	Culinary	Almora
Mr. Mohan Singh Rautela	Bal Methai/Culinary	Almora
Mr. Sushil Vermani	Pahari Haat	Nainital
Mr. Amit Vermani	Pahari Haat	Nainital
Ms. Chaaya Martolia	Village Artisan	Pithoragarh
Shri. Maharaj Singh	Culinary (Mirchora)	Pauri Garhwal
Ms. Geeta Burfal	Culinary	Pauri Garhwal
Mr. Sandeep Nathani	Owner - Hotel Arun	Haridwar
Mr. Piyush bhasin	General Manager - Gardenia Hotel	Haridwar
Mr. Sunil Gupta	HR - Hyphen Hotel	Haridwar
Mr. U.C. Jain	Orange County	Haridwar

Mr. Satish Sharma	Film Marketer	Dehradun
Ms. Swati	Film Marketer	Dehradun
Mr. S P Kochhar	Hotel Madhuban	Dehradun
Mr. Hemant Kochhar	Hotel Madhuban	Dehradun
Mr. Awadhesh Kumar	Balajee Sewa Sansthan	Dehradun
Mr. Robin Rajput	Taj Corbett and Spa	Ramnagar
Mr. Ramesh Kumar Jadon	Lemon Tree	Ramnagar

Strengths	Weakness
Natural Advantage of Himalayas and result- ing Landscapes	Branding with International Tourists low
Ayurvedic & Yoga practices	Tourism Spending low
Religiously Significant Assets	Souveniers from the State are non-existent
	Intergarted experience of Tourism not de- veloped
Opportunities	Threats
Himalayan Trekking	Most of the Tour Operators ignore Uttara- khand while show casing Destinations of India
Water sports	Not many trained local guides available to promote tourism
Homestays	
Ayurvedic Culinary	
Wellness & Spa	