

# Opportunities of Livelihood to Check Migration From The Hills



**A Study of Indian Himalayan Region (IHR)**

*assigned by*

NITI AAYOG, New Delhi

*funded by*

UGC, New Delhi



*Submitted by*

Indian Himalayan Central Universities Consortium (IHCUC)

Feb, 2022



(Thematic Study – IV)

## **Opportunity of Livelihood to Check Migration From the Hills**

**A Study of Indian Himalayan Region (IHR)**

*assigned by*

**NITI AAYOG, NEW DELHI**

*funded by*

**UGC, NEW DELHI**

*Submitted by*

**Indian Himalayan Central Universities Consortium  
(IHCUC)**

**February, 2022**

---

*Consolidated and prepared by:*

---

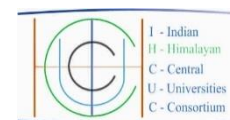
**Prof. R.K. Maikhuri  
and  
Prof. Sohel Firdos**

## Team Members

| <b>Coordinators and contributors Name</b>          | <b>Institution</b>                         |
|----------------------------------------------------|--------------------------------------------|
| Prof. R.K. Maikhuri (Coordinator)                  | HNB Garhwal University                     |
| Prof. Sohel Firdos (Coordinator)                   | Sikkim University                          |
| Prof. Nishamani Kar &<br>Prof. Sailajananda Saikia | Rajiv Gandhi University, Arunachal Pradesh |
| Prof. Komal Singha                                 | Sikkim University                          |
| Prof. J. Longkumer                                 | Nagaland University                        |
| Prof. Uma Shankar                                  | North- Eastern Hill University (NEHU)      |
| Dr. Vinay Kumar & Dr. Nancy Mengi                  | Central University of Jammu                |
| Dr. Firdous Ahmed Sofal                            | Central University of Kashmir              |
| Dr Gino A Sangma                                   | North- Eastern Hill University (NEHU)      |
| Dr. Mary N Odyuo                                   | Nagaland University                        |
| Dr. Avijit Debnath                                 | Assam University                           |
| Dr. Ashun Chaudhary                                | Central University of Himachal Pradesh     |
| Dr. Sanjay Uniyal & Dr. SanatSujat Singh           | CSIR – Institute of HBT Palampur           |



**INDIAN HIMALAYAN  
CENTRAL UNIVERSITIES CONSORTIUM  
(IHCUC)**



Himalaya is the youngest and most sensitive mountain chain, having more than 15 thousand glaciers spread over 12 thousand square kilometers. Himalaya is a unique gift of nature for its freshwater, range of medicinal plants and biodiversity for humanity. Though the Himalayas are strategically important and a natural tool for climatic control, the recent rise in extreme natural events, depletion of natural resources, loss of livelihood, increasing natural disasters, and excessive migration of people to plain regions for livelihood and safety have raised an alarming concern for future generations. The Himalaya itself has been bleeding over the years due to various natural and anthropogenic factors, but the inhabitants living in this large Indian Himalayan Region (IHR) are now also paying the price of this damage. These problems are getting more complex with time. Therefore, to find a more humanistic solution, the concept of Indian Himalayan Central Universities' Consortium (IHCUC) was propagated by the HNB Garhwal University, Srinagar, Garhwal, Uttarakhand, in 2019 in the presence of India's National Security Advisor, Shri AjitDoval, Kirti Chakra, Former Union Minister of Education, Shri Ramesh Pokhriyal "Nishank" and the Chancellor of the HNB Garhwal University, Dr. YogendraNarain. The aim was to form a multi-institutional forum to develop joint multidisciplinary research and share knowledge and experiences on migration, employment, agroecology, tourism, and other common problems and resolution. In December 2019, in a meeting of four Vice-Chancellors, Professor AvinashKhare, VC Sikkim University, Professor S.K. Srivastava, VC NEHU, Professor D.C. Nath, VC, Assam (Silchar) University and Professor Annpurna Nautiyal, VC, HNB Garhwal University with the Vice Chairman of NITI Aayog Dr. Rajiv Kumar, the IHCUC formalized its aims and objectives by agreeing to work on five thematic studies on '*Enumeration and Valuation of the Economic Impact of Female Labour in the Hills*', '*Agroecology in the Himalayan States with special emphasis on Marketing*', '*Development of Eco-Friendly and Cost-Effective Tourism in Hills*', '*Opportunities of Livelihood to check Migration from Hills*', and '*Water Conservation and Harvesting Strategies*'. After a meeting with the Vice-Chancellors of 12 Central Universities of IHR and the Director of CSIR-IHBT in January 2020, under the chairmanship of Dr. Rajiv Kumar, Vice Chairman, NITI Aayog, the IHCUC was officially launched by the NITI Aayog. With the sponsorship of NITI Aayog and the Ministry of Education, Government of India a grant of Rs. 2

Cr was allocated by the University Grants Commission, New Delhi, to work on the above thematic areas under the coordinator ship of Professor Annpurna Nautiyal, Vice-Chancellor, HNB Garhwal University, Srinagar, Garhwal, Uttarakhand. Her vision, sharing thoughts on each report with the teams, constant interest, dialogue, leadership role and a good coordination with all the Vice Chancellors as institutional partners and their team coordinators and members as well as the officials of the NITI Aayog and UGC helped immensely in the finalization of these reports. The inputs and suggestions provided from Dr. V.K. Saraswat, member NITI Aayog, CEO Shri Amitabh Kant and senior advisors Dr. Neelam Patel and Shri Avinash Mishra and others were very helpful in preparing the final report. The COVID-19 Pandemic hampered the pace of work, but now the five reports on the five thematic areas which have been consolidated and compiled by the team members of the HNB Garhwal University, are being presented to the NITI Aayog. This marathon exercise of submission of productive reports in each area became possible only with the support and inputs of the team members of the partner institutions representing their institutions and also on account of their Vice Chancellors' active interest in motivating their team members in the capacity of the main institutional Coordinator for each institution of the IHCUC.

---

## Structure and Main Institutional Coordinators of IHCUC

| Name                            | (IHCUC)                               | Designation             | Institution Represented                            |
|---------------------------------|---------------------------------------|-------------------------|----------------------------------------------------|
| Professor Annpurna Nautiyal     | Convener & Chief Coordinator of IHCUC | Vice Chancellor         | H.N.B. Garhwal University, Uttarakhand             |
| Professor Avinash Khare         | Coordinator                           | Vice Chancellor         | Sikkim University, Sikkim                          |
| Professor V. K. Jain            | Coordinator                           | Vice Chancellor         | Tezpur University                                  |
| Professor Saket Kushwaha        | Coordinator                           | Vice Chancellor         | Rajiv Gandhi University Arunachal Pradesh          |
| Professor Pardeshi Lal          | Coordinator                           | Vice Chancellor         | Nagaland University                                |
| Professor G.P. Parasin          | Coordinator                           | Vice Chancellor         | Tripura University                                 |
| Professor K.R.S. Sambasiva Rao  | Coordinator                           | Vice Chancellor         | Mizoram University                                 |
| Professor S.K. Srivastava       | Coordinator                           | Former Vice Chancellor  | North-Eastern Hill University, Meghalaya           |
| Professor Prabha Shankar Shukla |                                       | Present Vice Chancellor |                                                    |
| Professor Mehraj-ud-Din Mir     | Coordinator                           | Former Vice Chancellor  | Central University of Kashmir                      |
| Professor Farooq A. Shah        |                                       | Present Vice Chancellor |                                                    |
| Professor Ashok Aima            | Coordinator                           | Former Vice Chancellor  | Central University of Jammu                        |
| Professor Sanjiv Jain           |                                       | Present Vice Chancellor |                                                    |
| Prof. Kuldeep Agnihotri         | Coordinator                           | Former Vice Chancellor  | Central University of Himachal Pradesh, Dharmshala |
| Professor Sat Prakash Bansal    |                                       | Present Vice Chancellor |                                                    |
| Professor D.C Nath              | Coordinator                           | Former Vice Chancellor  | Assam University Silchar                           |
| Professor R.M. Pant             |                                       | Present Vice Chancellor |                                                    |
| Shri Jarnail Singh              | Coordinator                           | Former Vice Chancellor  | Manipur University                                 |
| Professor N. Lokendra Singh     |                                       | Present Vice Chancellor |                                                    |
| Dr. Sanjay Kumar                | Coordinator                           | Director                | CSIR-IHBT- Palampur, Himachal Pradesh              |

## Foreword

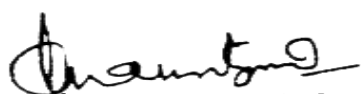
---

Over the decades, many of the states of the Indian Himalayan Region (IHR) has made significant progress in achieving food and livelihood security which is close to self-sufficiency in food dietary energy available to the people, however, it lacks uniformity due to the variation in topographic, socio-economic, and physical conditions. The challenges of ensuring livelihood security across the IHR are more daunting in hills/ mountainous region due to limited and small land holdings, harsh climate, difficult terrain, and unfavourable biophysical conditions characterized by inaccessibility, fragility, and vulnerability. As a result, these areas are experiencing an increase in outmigration, more feminization of agriculture, increasing human-wildlife conflict, climate change impact, biodiversity loss and conflicts over shared resources are some of the most pressing problems faced by the people of this region.

The Indian Himalayan region has immense potential for a wide variety of food and non-food products such as fruits, nuts, off-season vegetables, seeds, medicinal and aromatic plants and other bioresources. The increased connectivity, through mobile phones, social media and the Internet, has allowed hill regions to assimilate with national, regional, and global markets where the demand for Himalayan products is growing. This offers new opportunities not only for harnessing the potential niche products but also enhancing the livelihood and income of the traditional/marginal communities of the region. However, with better processing and marketing facilities for high-value niche products and the sustainable use of natural resources the short- and long-term livelihood opportunities can be increased. The livelihood sustainability of the Himalayan rural landscape is also determined by the development of human resources, capacity to determine priorities for plans and programmes, mobilizing resources and ensuring an effective implementation system to fulfil demands according to different skills and capacities. The past experiences, need to be considered while identifying appropriate options for development.

Reducing out migration from the rural hill areas, ensuring livelihood and income security are overarching goals for the Government of India which is committed to inclusive and equitable socio-economic development and eradicating poverty. It is, therefore, essential to enhance and diversify the livelihood and income source of people to go beyond farm production for improving the socio-economic conditions of the people. Indian Himalayan Central University consortium (IHCUC), in association with the NITI Aayog and the University Grants Commission (UGC), Govt. of India have made an effort to understand the special issues of livelihood and out migration in the IHR to find out appropriate strategies and priority actions to overcome this problem. I hope the findings of this report will bring some important new insights into livelihood improvement and income generation based on the locally available farm and non-farm resources in minimizing the migration in the IHR.

I wish to thank the team members for contributing to this timely and relevant study.



**Prof. Annpurna Nautiyal,**

**Vice-Chancellor,**

**HNB Garhwal University, Srinagar, Garhwal**

**Coordinator IHCUC**

## Acknowledgements

---

The team members of the thematic area-4 would like to extend heartfelt thanks to Professor Annpurna Nautiyal, the Coordinator of Indian Himalayan Central Universities Consortium and Hon'ble Vice Chancellor, HNBGU for her tireless efforts, constant support, continuous suggestions, guidance and encouragement during the period of this study. We also extend our gratitude to all other Hon'ble Vice Chancellors of the IHCUC consortium for keeping their teams charged and taking keen interest in the thematic studies assigned by NITI Aayog and UGC (Govt. of India). We are deeply grateful to the team of experts of NITI Aayog, Dr. VK Saraswat, Member, Shri Avinash Mishra, Senior Advisor and Dr. Neelam Patel, senior experts for providing their valuable comments and suggestion. We would also like to acknowledge the support and guidance of Ms. Saloni Goel and Dr. Ashok Jain from NITI Aayog in this study. Our thanks to Prof. K.S. Rao, Head, Department of Botany, Delhi University, Delhi, and Dr. LS Rawat, GBBPNIHE, Garhwal Regional Center, Srinagar Garhwal, for providing valuable inputs/suggestions to improve the report. This report would have been impossible to produce with the limited resources and time available during COVID-19 had it not been for the generous and dedicated efforts of Dr. Girish Bhatt, Priyanka Badoni and Harendra Rawat, research assistants of the project and did a commendable work of data collection, compilation and shared valuable inputs for report writing. Thanks, are also due to Dr. Laxman Kandari, Department of Forestry and Natural Resources, Dr. Vidhu Gupta, Mr. Ravindra Singh, Dr. C.P Semwal, Mr. Akash Deep, Lalita Bisht of Department of Environmental Sciences, HNBGU for their support. Last but not least, our greatest thanks go to the friends and villagers of the Indian Himalayan Region where the studies carried out as without their support and active participation this study could not have been completed. We would also like to express our sincere gratitude to the University Grant Commission (UGC) for the financial support to this study.



## Abbreviations

---

|              |                                                                  |
|--------------|------------------------------------------------------------------|
| APL          | Above Poverty line                                               |
| BPL          | Below Poverty line                                               |
| CPR          | Common property resources                                        |
| EDII         | Entrepreneurship Development Institute of India                  |
| EDP          | Entrepreneurship Development Programme                           |
| ENVIS        | Environmental Information System                                 |
| ESD          | Education for Sustainable Development                            |
| ESDPs        | Entrepreneurship Skill Development Programmes                    |
| FAO          | Food and Agriculture Organization                                |
| GSDP         | Green Skill Development Programme                                |
| HARC         | Himalayan Action Research Centre                                 |
| HH           | Household                                                        |
| HHs          | Households                                                       |
| HIMAP        | Himalayan Monitoring and Assessment Programme                    |
| IHR          | Indian Himalayan Region                                          |
| IIE          | Indian Institute of Entrepreneurship                             |
| ISDS         | Integrated Skill Development Scheme                              |
| LIFE-MGNREGA | Livelihoods in Full Employment under Mahatma Gandhi              |
| MAPs         | Medicinal and Aromatic Plants                                    |
| MDP          | Management Development Programme                                 |
| MGNREGA      | Mahatma Gandhi National Rural Employment Guarantee Act           |
| MIDH         | Pradhan Mantri Fasal Bima Yojana                                 |
| MoEF&CC      | Ministry of Environment, Forest & Climate Change                 |
| MoRD         | Ministry of Rural Development                                    |
| MOVCDNER     | Mission Organic Value Chain Development for North Eastern Region |
| MSDE         | Ministry of Skill Development and Entrepreneurship               |
| NGO          | Non-government Organization                                      |
| NITI AAYOG   | National Institution for Transforming India                      |
| NSDA         | National Skill Development Agency                                |
| NTFP         | Non-timber Forest Produce                                        |
| NTFPs        | Non-timber Forest Products                                       |
| NULM         | National Urban Livelihoods Mission                               |
| PIS          | Production Incentive Schemes                                     |
| PKVY         | Paramparagat Krishi Vikas Yojana scheme.                         |
| PM-YUVA      | Pradhan Mantri Yuva Udyami Vikas Abhiyan                         |
| RPVY         | Rastriya Pashudhan Vikas Yojana                                  |
| RSETIs       | Rural Self-Employment Training Institutes                        |
| SDGs         | Sustainable Development Goals                                    |
| SDGs         | Sustainable Development goals                                    |
| SDI          | Sustainable Development Indicators                               |
| SEWA         | Self Employed Women's Association                                |
| SFURTI       | Scheme of Fund for Regeneration of Traditional Industries        |
| SGSY         | Swarnjayanti Gram Swarajgar Yojana                               |
| SHGs         | Self Help Groups                                                 |
| SSDM         | State Skill Development Missions                                 |
| WG           | Working Group                                                    |

## **Lists of Tables**

---

- Table 1.1: Important Features of the IHR states**  
**Table 1.1: Important Features of the IHR states**  
**Table 2.1: Tools used and step followed for data collection**  
**Table 4.1: Profile of the Household Survey**  
**Table 5.1: Percentage of Households involved in agricultural practices & cultivation of diverse crop**  
**Table 5.2: Percentage of Households by Purpose of Cultivation and the Crop Insurance**  
**Table 5.3: Population of Livestock and Poultry in IHR**  
**Table 5.4: Percentage of Households by major output from livestock & livestock by-products in IHR**  
**Table 6.1: Migrants classified by place of last residence in the place of enumeration, 2011**  
**Table 6.2: Inter-State Migration**  
**Table 6.3: Number and Percentage of out-migrants**  
**Table 7.1: List of potential non-timber forest products (NTFPs), Medicinal and aromatic plants (MAPs) & Biomass for fuel**  
**Table 7.2: State specific priority intervention and action for harnessing the potential livelihood & income opportunities in IHR**  
**Table 7.3: New skilling as desired by covid-19 returnee migrants in the IHR for their livelihood improvement**

## **Lists of Figures**

- Figure 4.1: Coverage of field work and Sex Ratio in IHR**  
**Figure 4.2: Distribution of Population by social Category**  
**Figure 4.3: Distribution of Population by major Religious Groups**  
**Figure 4.4: Educational Levels of Population**  
**Figure 5.1: Percentage of Households by Primary source of Income**  
**Figure 5.2: Occupational Structure of the Population**  
**Figure 5.3: Distribution of Households by Landownership**  
**Figure 5.4: Households having Livestock/Poultry**  
**Figure 5.5: Number of Household (HH) involved in non-Farm activities (Values in %)**  
**Figure 6.1: Major Streams of Inter-State Out Migration from Uttarakhand, 2011**  
**Figure 6.2: Major Streams of Inter-State out Migration from Himachal Pradesh, 2011**  
**Figure 6.3: Major Streams of Inter-State Out Migration from Jammu and Kashmir, 2011**  
**Figure 6.4: Two Major Streams of Inter-State Out-migration from the North-Eastern States, 2011**  
**Figure 6.5: Percentage of Male Migrants by Destination**  
**Figure 6.6: Percentage of Male Migrants by Destination**  
**Figure 6.7: Types of Migration**  
**Figure 6.8: Distribution of Migrants by Types of Job at Destination**  
**Figure 6.9: Number of Reverse Migrants**

## Contents

---

|                                                                                                                                                        |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Executive Summary.....</b>                                                                                                                          | <b>1-6</b>   |
| Approach of study                                                                                                                                      |              |
| Demographic and Social Profile of Surveyed Households                                                                                                  |              |
| Livelihoods                                                                                                                                            |              |
| Addressing issues and challenges related to livelihoods in the IHR                                                                                     |              |
| Migration in the Indian Himalayan Region                                                                                                               |              |
| <b>Chapter-1 Introduction.....</b>                                                                                                                     | <b>7-8</b>   |
| <b>Chapter 2: Methodology: Framework of data collection and analysis.....</b>                                                                          | <b>9-12</b>  |
| Objectives                                                                                                                                             |              |
| Sample selection                                                                                                                                       |              |
| Secondary Data Analysis                                                                                                                                |              |
| Primary Data collection and Analysis                                                                                                                   |              |
| <b>Chapter-3: Review of literature.....</b>                                                                                                            | <b>13-15</b> |
| <b>Chapter 4: Demographic, Social and Economic profile of surveyed households.....</b>                                                                 | <b>16-19</b> |
| <b>Chapter: 5. Present livelihood scenarios in IHR &amp; future potentials &amp; Opportunities.....</b>                                                | <b>20-34</b> |
| Primary Source of Income of the Households                                                                                                             |              |
| Occupational Distribution of Population                                                                                                                |              |
| Land Ownership                                                                                                                                         |              |
| Agricultural Scenario in Indian Himalayan Region                                                                                                       |              |
| Purpose of Cultivation                                                                                                                                 |              |
| Livestock and Poultry                                                                                                                                  |              |
| Purpose of Livestock                                                                                                                                   |              |
| Non-Farm Activities                                                                                                                                    |              |
| Addressing issues and concerns related to livelihoods in the IHR                                                                                       |              |
| Discussion on Livelihood                                                                                                                               |              |
| <b>Chapter 6: Migration Pattern In The IHR.....</b>                                                                                                    | <b>35-50</b> |
| Migration in the Indian Himalayan Region: The Macro Scenario                                                                                           |              |
| Migration in the Indian Himalayan region: a Micro Level Analysis from the Field Data                                                                   |              |
| <b>Chapter 7: Major recommendation; Sustainable livelihood opportunities, policy analysis and planning for future, conclusion and way forward.....</b> | <b>51-68</b> |
| Strategies for harnessing potential livelihood opportunities to minimize out-migration                                                                 |              |
| Policy analysis and planning for future                                                                                                                |              |
| Policy imperatives/policy focus for future                                                                                                             |              |
| Potential non-timber forest products (ntfps), medicinal and aromatic plants (maps), value-addition, marketing and skill up gradation                   |              |
| New skills required for covid-19 returnee migrants in the IHR                                                                                          |              |
| Mechanism to track and check Migration through suggested interventions                                                                                 |              |
| <b>Conclusion.....</b>                                                                                                                                 | <b>69-70</b> |



## Executive Summary

---

**The Indian Himalayan Region-** The Indian Himalayan Region (IHR) spans over 5.37 lakh km<sup>2</sup> (0.537 million km<sup>2</sup>) and covers nearly 16.2% of the total geographical area of the country. Administratively, the ten states i.e., Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya are fully covered in IHR, while West Bengal and Assam are partially covered.

The IHR has a rich forest cover with more than 41.5 % of its geographical area under forest cover. The region also covers a large portion of the Himalayan biodiversity hotspot and about 8,000 species of angiosperm, 1748 species of medicinal plants with traditional and modern therapeutic uses, 675 species of wild edible plants and many shrines and places of tourist interest. The IHR also provides innumerable ecosystem service benefits like fresh water, food, life - saving medicinal products, energy and biodiversity for all.

The IHR is often referred to as a cultural landscape, with each valley or plateau having distinctive ethnic/cultural groups as 25% of India's indigenous groups are inhabiting the Himalayan region. These groups exhibit uniqueness in their languages, social structures, and livelihood traditions including agriculture, arts and crafts. The sensitive and fragile Indian Himalayan ecosystem is now facing threats of unscientific development, implying a reduced availability of natural resources for subsistence and economic growth, and likely threats to human wellbeing in the region.

Region's marginal, traditional and ethnic diversity is a major consequence of migration of people for livelihood options. The extent of migration in the region varies depending on local socio-economic and environmental conditions. The linkages between migration and livelihood are debated at various fronts. Multiple approaches and solutions have been suggested to curb the intensity of out-migration but these have largely been insufficient as there are still gaps in empirical findings, impact of developmental or policy interventions on this issue. In view of this the issue of migration and improved livelihood for overall human-wellbeing and sustainability deserves greater attention of researchers, policy-makers, practitioners, and development planners.

### Approach of study

In this study to specify and probe the trends, patterns of migration and livelihoods we have used mixed methods. After a review of available literature, reports etc on the trends and patterns of migration and livelihood a primary field survey in the selected sample villages across the IHR (99 blocks in 150 districts) was done from March 2021 to November 2021 to fill up the gaps as well as for a realistic assessment of the problem. It also included check font interviews with key informants using structured questionnaire to identifying and discussing key social challenges and potential solutions.

### Demographic and Social Profile of Surveyed Households

- Conducted household survey among 14195 households having a total population 74,770 in 44 districts of the IHR.
- In Uttarakhand, more-than three-fourth of the surveyed households belong to the General category population while in Nagaland, Meghalaya and Arunachal Pradesh most of the

households belonged to the Scheduled Tribe (ST) category. In Nagaland and Meghalaya, a large number of households are Christians dominated while in Uttarakhand, Himachal Pradesh, Sikkim and Jammu, Hindus predominate.

- Sex ratio is very encouraging and favourable in Meghalaya and hill districts of Assam. In both these states, the sex ratio is more than 1000 but it is low in Jammu (901).
- The illiteracy is very high in Kashmir, about 55% of the population is illiterate. The highest literacy rate recorded was for Nagaland (97.8%), Assam (88.6%) Uttarakhand (86.1%) and West Bengal (84%). The percentage of population with secondary level of education (class X) hovers in between 15 to 18 percent in states, like Jammu, Ladakh, Uttarakhand, Himachal Pradesh, Sikkim, West Bengal, Assam and Meghalaya. The higher levels of education are very prominent in Nagaland as 18.1 percent are post-graduates.

### **Livelihood**

- Primary source of income is mostly farming but landownership is below 1 acre in almost all states of IHR. A very large number of the households grow food crops in Jammu, Kashmir, Ladakh and Nagaland while in Uttarakhand, Sikkim and Assam, one-half of the households grow a blend of food crops and fruits and vegetables
- In Kashmir, almost all the households are having livestock/poultry. More than one-half of the households in Jammu, Kashmir, Ladakh and Uttarakhand keep livestock for milk. About one-half of the households in Sikkim keep livestock for both milk and meat whereas in Nagaland and Meghalaya three-fourth of the households keep livestock for meat.
- The non-farm activities are very diverse among the states of the IHR. Handicraft is an important non-farm activity in Assam, Kashmir, Nagaland, Sikkim and the hill district of West Bengal and Arunachal Pradesh while large number of households in Ladakh, Jammu and Nagaland are involved in product development. Activities like agro-processing is an important activity in Jammu and small business in Arunachal Pradesh and Uttarakhand. In Uttarakhand about 35.46% of the households are involved as a worker in mechanical sector whereas in Himachal Pradesh about 28% of the households involved in hospitality/tourism sectors.

### **Addressing issues and challenges related to livelihoods in the IHR**

- The key challenges include small and fragmented holdings, high rates of poverty, food insecurity, low income, limited skill and capacity of people, deterioration of local food systems, changing dietary habits, climate change impacts, increased rates of outmigration, abandonment of cultivable land, rapid urbanization, inadequate infrastructure and market access, depletion of natural resources, barriers to food movement and trade, and gaps in existing policies and programs.
- **Disillusioned Youth:** - Youth in hills/ mountains is distracted due to the smart technology (like smart phones, TV, etc.) and education which has broadened their mindset and because of which they don't consider farming and livestock as an appealing future. Hence, it's vital to understand their mindset as to motivate them to take traditional and newer venture so that they can generate income and employment opportunities in the rural set-up.

## **Migration in the Indian Himalayan Region**

Migration is a global phenomenon as people have been moving from one place to another in order to live, shelter or other reasons. In the Himalayan region, migration is intensively practiced for centuries in view of limited livelihood options, economic opportunities and amenities. Though the trend and extent of migration in the Himalayan States varies from region to region depending on local socio-economic and environmental condition, but now migration's social and political ramifications have emerged as an issue of concern at national and regional levels. The growing debates on impact of migration on socio-economic, cultural and environmental set up makes it not only academically viable but also politically a pertinent issue.

### **Trends and patterns of Migration in the Indian Himalayan Region: A Micro Level Analysis from the Field Data**

- The highest number of out-migrants is reported from Kashmir where more than one-third of the surveyed population is of out-migrants, followed by Uttarakhand (16.51 %), Arunachal Pradesh (13 %) and West Bengal (12%).
- More than 50% of the migrants go either district headquarter or the State capital in Arunachal Pradesh while Nagaland and Assam it is 43.10 and 41.54 % respectively.
- More than one-third of the male out-migrants move to such destination in Kashmir and Ladakh, one-fourth in Himachal Pradesh, Sikkim and Meghalaya.
- An overwhelming majority (69%) of female in Kashmir move to the district/State capital whereas in Ladakh, about two-third of the females migrate to the cities in other states

### **Types of Migration**

- The highest number of seasonal migration is reported from Kashmir while the lowest number is reported from Sikkim.
- The out-migration for private regular jobs is very striking in Uttarakhand (50.50 percent), followed by Assam and West Bengal (40.16 percent). The lowest figure is reported from Ladakh (2.17 percent).

### **Distribution of Migrants by Types of Job**

- The migrants with a government job at the destination is the highest in Himachal Pradesh (44.78 %) followed by Jammu (38.18 %) and Arunachal Pradesh (35.25 %).
- A very significant numbers of out-migrants (36.17 %) are employed as casual daily workers at the destination in Meghalaya followed by Nagaland (30%). Majority of the migrants (59 %) in Meghalaya work in non-technical activities followed by Ladakh (39.13%), Kashmir (37.59 %) and Jammu (29.84 %). Only 5% of migrants work on rural farming except Kashmir (14.47 percent).
- The largest number of COVID-19 returnee migrants was reported from Kashmir in the surveyed population, followed by Jammu, Arunachal Pradesh, Uttarakhand and West Bengal. However, the lowest number of returnees was reported from the hill districts of Assam.

### **Major drivers of the out-migration in the IHR**

- Natural hazards/disaster, extreme events, landslides, cloudburst and flash-floods, etc.
- Economic remoteness, with higher transaction and input costs and few investments



- No employment opportunities in the region for youth retention in the villages
- Low capacity/skill among local people for income generation from farm and non-farm sectors agriculture/wild bioresources
- Lack of small-scale industries and poor micro-macro-economic condition of the region
- Increase in human wildlife conflicts
- Poor infrastructural facilities particularly roads, health, medical and transportation facilities
- Increasing social disintegration among the village communities.

### **Strategies for Harnessing Potential Livelihood Opportunities to Minimize Out-migration**

- The sustainable livelihood opportunities and strategies need to be promoted to improve quality of life in rural areas to curtail out-migration. The success stories/ cases of progressive farmers or model villages those who have transformed the village economy through diversification of the farming systems (horticulture, apiculture, floriculture, animal husbandry and livestock farming, medicinal plants and bamboo cultivation) and enhanced the livelihood and income of the households/rural landscape need to be replicated/ demonstrated and youth should be motivated to take up farm-based livelihood as a remunerative vocation, and to create a conducive ecosystem to minimize out-migration from the region.
- To reduce women's drudgery in the Himalayan villages, livelihood diversification around woman-centric services is required and it can be performed and facilitated by women led self-help groups (SHGs) with the support of government and its line departments or Panchayati Raj institutions in coordination with R&D institutions and NGOs. Therefore, women need to be trained in extension services, technical services, and in monitoring, evaluation and execution of on-going farming and rural development schemes and program activities.
- Introduction and promotion of affordable, simple and hill/mountain specific appropriate technologies i.e., protected cultivation, organic compost, bio-fertilizer and vermin-composting, biomass/fuel saving technologies (bio-briquetting and bio globule), bioprospecting of non-timber forest products (NTFPs) and medicinal and aromatic plants (MAPs) and slopping watershed environmental engineering technology (SWEET) for rehabilitation/ ecosystem restoration of degraded land/watershed
- Need to develop alternative sources of income and corresponding value chain in farm and non-farm-based product development (Wood/bamboo/fibre handicrafts, embroidery, shawl, food products i.e., squash, pickle, jam, bee keeping, mushroom pulses/spices, organic and health foods).
- Promotion of small-scale industries or village or household level cottage industries based on locally available agro and wild bio-resources, footloose industries /IT/knowledge-based industries in selected locations to provide job opportunities to educated or unemployed youth.
- There is a need for consolidation of village land into one farm unit and diversification of farming with agroforestry and horticulture integrated with medicinal plants, potential wild edibles and floriculture as the dominant land use, which can offer a viable solution to the twin problems of livelihood and outmigration.
- The skilling of the local people needs to be up-graded particularly in the areas of cultivation and sustainable harvesting of the wild bio-resources (NTFPs/MAPs) and related activities such

as Product development, processing, value addition, post-harvest management and marketing of the products/resources.

- It is imperative to take that multi-dimensional action (social, cultural, ecological, economical and institutional) on priority basis for conservation, sustainable utilization and product development through appropriate science and technology intervention.
- Appropriate policy initiatives, governance mechanism and regulatory approaches for conservation and sustainable use of bio-resources including NTFPs/MAPs within and across forestry, livestock and agricultural sectors, providing the best practices and successful models for livelihoods.
- Scaling-up of the interventions/best practices in farm and non-farm sectors to have broader positive impact in livelihood improvement and income generation of the local people across the region.

### **Policy imperatives/policy focus for future**

1. Rural settlements displaced due to construction of strategic infrastructural development/army cantonments/dam sites/ disaster or landslides are usually allocated land for rehabilitation in plain/terai or semi urban areas, need to be rehabilitated in the hills/mountains following the approach of smart village (enhancing productivity of rural ecosystem through best practices/smart solutions)/rural landscape development to maintain the socio-cultural fabric.
2. Incentivize absentee landlords and willing stakeholders to develop depopulated villages/ghost-villages to home stay or rural tourism, cultural tourism destination.
3. Indian Himalaya region are reservoir of some high value niche products such as medicinal and aromatic plants and Keedajadi (*Cordyceps sinensis*, as the case of Uttarakhand) is one of them having huge potential for improving the livelihood and income of the local people. Therefore, the collection and trade of such high value product to be legalized and regulated in a way that local people can earn better economy.
4. The whole Himalayan rural landscape is highly prone and susceptible to human wild-life conflicts (HWC). The management program should provide economic incentives for people to stay in the region which is possible only through strong coordination with the forest department and best land management practices or agroforestry on their land.
5. Promotion of high value horticulture crops, spices and health food of agro and wild bioresource (NTFPs/MAPs) offers an exciting opportunity for engaging with youth and entrepreneurs in the mountain areas. Developing policies favouring livelihood-tech start-ups, incubation centres and dedicated programmes for engaging Himalayan Mountain youth in farming and non -farm sector would not only improve livelihood and income but also reasonably address the issue of outmigration.
6. Consolidation of village land into one farm unit and diversification of farming, which can offer a viable solution to the twin problems of livelihood and outmigration.
7. There is an urgent need of policies (i) safeguarding economic interests of local people from tree planting for industrial purposes in degraded lands and (ii) enhancing scientific knowledge on multipurpose tree species to strike a better coupling and trade-offs of direct and indirect, short term and long term and local and global benefits from land rehabilitation/ecosystem restoration.

8. Need for low interest loan options, suitable finances and fiscal policies for rapid rural development.

### **Way Forward**

Following few priority actions are required to achieve livelihood security to curb the outmigration from the Indian Himalayan Region (IHR)-

- Landscape approach may be an efficient way to improve land productivity and sustain it. Quality seeds suitable for hill farming and mixed-cropping systems combined with animal husbandry through cattle rearing, goat, fisheries, rabbit, bee-keeping, etc. as a source of income and employment to revamp the rural economy.
- Education and other non-farm technical support service to rural traditional artisan's, e.g., blacksmith, carpenters, mason, basket weaving, tailoring for better earning/reduced drudgery through innovative skill development, training program and adaptive R&D.
- There is a need to explore and provide the geographical markers/GI tag/s to niche crops/lesser-known crops of the Himalaya. This will enhance the acceptability of the Himalayan products nationally and internationally.
- Harnessing the economic potential of under-utilised horticultural crops/wild fruits (NTFPs/MAPs), traditional crop varieties and local food systems through local value addition
- Develop rural landscape/ remote villages / ghost villages as nature tourism/ eco-tourism/ rural tourism destination with the active involvement of youth and rural women and promote local arts/craft, souvenir, and cuisine, etc., to maximize economic benefit to the local communities
- Introduction and promotion of hill/ mountain specific appropriate, affordable and cost-effective technologies in diverse sectors relevant to rural livelihoods such as farming/livestock food processing, water conservation, etc.,
- Need to harness the potential of solar energy through solar panel, Solar Water heater, Space Heating Systems and solar dryers, etc.,
- Need to develop mountain specific courses and skills in schools, universities, institutions, training centres, especially in the IHR
- The unexplored niche in agropastoral system-based livestock products, especially sheep and goat for organic mutton and wool, Zanskari organic butter, yak cheese of the higher Himalayas, Ladakhi Changpaas -Pashmina wool, honey of the valley of flowers and vegetables are waiting for upscaling and can be a new agribusiness-enterprises for the people of the region.

## Introduction

### The Indian Himalayan Region

The Indian Himalayan Region (IHR) lies between 21° 57'-37°5'N and 72°40' - 97°25'E and encompassing more than 2,500 km in length and 250 Km in width and consist of 11 Indian states and two Union territories: i.e., Uttarakhand, Himachal Pradesh, West Bengal, Sikkim, Meghalaya, Manipur, Arunachal Pradesh, Assam, Nagaland, Tripura, Mizoram and two Union territories Jammu and Kashmir and Ladakh. It has a total geographical area of approximately 5.37 lakh km<sup>2</sup> (17% of India) and inhabited by about 4.86 million people which is about 4% of the total population of the country. Over 171 diverse ethnic communities with distinct socio-cultural milieu live in the IHR (total 573 reported scheduled tribes in India).



The IHR has a rich forest cover with more than 41.5 % of its geographical area under forest cover. This represents one - third of the total forest cover in India and nearly half (47%) of the very good quality ' forest cover of the country. The region also covers a large portion of the Himalayan biodiversity hotspot, representing 1748 species of medicinal plants with traditional and modern therapeutic uses, 675 species of wild edible plants and 118 species of essential oil - yielding medicinal plants. The innumerable ecosystem service benefits provided by the IHR such as fresh water, food, life - saving medicinal products, energy and biodiversity are not only important to the people living in this region but also to those living downstream within and outside the country (GBPNIHE, 2017). The sensitive and fragile Himalayan ecosystems are now facing the threats of unscientific development and climate change, manifested as general degradation of environment, melting of glaciers, increased intensity of extreme events, deforestation and loss of biodiversity etc., implying a reduced availability of raw material/resources for subsistence and economic growth, and likely threats to development and human well-being. The hill specificities, non- remunerative agriculture, and outmigration are also adversely affecting the ecosystem conservation interests and development. In recent years, incidences of recurring floods, landslides and forest fires causing huge loss to life,

property and natural resources have become a regular phenomenon and pose a constant threat to inhabitant and downstream economies and civilizations.

**Table 1.1: Important Features of the IHR states**

| S.No. | States/<br>Regions   | Geographical<br>area-GA<br>(Km <sup>2</sup> ) (year<br>2013) | Decennial<br>population<br>(year<br>2011) | Sex<br>ratio<br>(2011) | Literacy<br>rate (%) | Forest<br>cover<br>Km <sup>2</sup> (%<br>of GA)<br>(year<br>2011) | Forest<br>cover<br>Km <sup>2</sup> (%<br>of GA<br>year<br>2013) | Decadal<br>growth<br>rate<br>(2001-<br>2011) |
|-------|----------------------|--------------------------------------------------------------|-------------------------------------------|------------------------|----------------------|-------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------|
| 1     | Jammu &<br>Kashmir   | 222,236                                                      | 12,540                                    | 889                    | 68.74                | 22,539<br>(10.14)                                                 | 22,538<br>(10.14)                                               | 23.64                                        |
| 2     | Himachal<br>Pradesh  | 55,673                                                       | 6,864                                     | 972                    | 83.78                | 14,679<br>(26.37)                                                 | 14,683<br>(26.37)                                               | 12.94                                        |
| 3     | Uttarakhand          | 53,483                                                       | 10,117                                    | 963                    | 79.63                | 24,496<br>(45.80)                                                 | 24,508<br>(45.82)                                               | 18.81                                        |
| 4     | Sikkim               | 7,096                                                        | 608                                       | 890                    | 82.2                 | 3,359<br>(47.34)                                                  | 3,358<br>(47.32)                                                | 12.89                                        |
| 5     | Arunachal<br>Pradesh | 83,743                                                       | 1,383                                     | 938                    | 66.95                | 67,410<br>(80.5)                                                  | 67,321<br>(80.39)                                               | 26.03                                        |
| 6     | Nagaland             | 16,579                                                       | 1,980                                     | 931                    | 80.11                | 13,318<br>(80.33)                                                 | 13,044<br>(90.38)                                               | -0.58                                        |
| 7     | Manipur              | 22,327                                                       | 2,772                                     | 992                    | 79.85                | 17,090<br>(76.54)                                                 | 16,990<br>(76.10)                                               | 24.50                                        |
| 8     | Mizoram              | 21,081                                                       | 1,091                                     | 976                    | 91.58                | 19,117<br>(90.68)                                                 | 19,054<br>(90.38)                                               | 23.48                                        |
| 9     | Tripura              | 10,486                                                       | 3,671                                     | 960                    | 87.75                | 7,977<br>(76.07)                                                  | 7,866<br>(75.01)                                                | 14.84                                        |
| 10    | Meghalaya            | 22,429                                                       | 2,964                                     | 989                    | 75.48                | 17,275<br>(77.02)                                                 | 17,288<br>(77.08)                                               | 27.95                                        |
| 11    | Assam hills          | 19,153                                                       | 5,517                                     | 954                    | -                    | 12,985<br>(67.80)                                                 | 13,024<br>(68.00)                                               | NA                                           |
| 12    | West Bengal<br>hill  | 3,149                                                        | 1,847                                     | 970                    | -                    | 2,289<br>(72.69)                                                  | 2,378<br>(75.52)                                                | 14.77                                        |
| India |                      | 32,87,263                                                    | 12,10,193                                 | 943                    | 74.04                | 6,92,027<br>(21.05)                                               | 6,97,898<br>(21.23)                                             |                                              |

**Source:** Economic Survey 2012-13, Government of India; India State of Forest Report, 2013, population data (**census, 2011**).

### Methodology: Framework of data collection and analysis

---

The socio-economic assessment of livelihood & out-migration has been carried out in 54 districts and about 20,000 households from the Indian Himalayan region. Primary data, findings, household survey in selected villages, social mapping, interviews, stakeholder's consultations as well as secondary data has made this study a conclusive one.

The reliable information & data base of social-ecological dimensions (socio-economic status of the people and their dependence on agriculture, livestock, forest & non-farm activities, social practices and perceived positive and adverse impacts, consultations, focused group discussions allowed us to know the reality and include these inputs in the study design.

#### Objectives:

Within the socio-economic context of the IHR, the following objectives were envisaged.

- To map the existing livelihood practices and their sustainability in different parts of IHR.
- To examine the reasons of shifts in livelihood practices in the IHR.
- Identification and documentation of region/ area-specific potential livelihood opportunities based on locally available sustainable resources.
- To identify ways for expansion of non-farm activities for employment and higher income.
- To examine the patterns, factors and corridors of migration from the IHR.
- To understand the socio-economic impact of reverse migration.
- To identify capacity building/skill development training programmes for rural youth particularly women for sustainable utilization of locally available resources for alternative livelihoods and employment to reducing drudgery and out-migration.
- To prepare an evidence-based policy document by analysing inter-connections between agriculture, horticulture, livestock, water, tourism, forestry, and non-farm sectors.

#### Sample Selection

Sample selection was done in consultation with the PI of the thematic area. While selecting development blocks and villages, overall representation of the area was ensured. The first stage of sampling involved selection of development blocks from each districts of the IHR states. In the next stage, villagers were selected from each selected development blocks. Sample selection was done keeping in view following factors:

- Geographical spread of development blocks within the district and villages Development profile/status of the blocks in the district
- Demographic and socio-economic composition of population in the village.
- Settlement pattern,
- Availability of SHGs and their working specially with women, and
- Accessibility to district headquarters).

Selection of household was done after preparing the village list. Fifteen percent of household from the total households as listed out were administered survey questionnaire giving due representation to all sections of society (SC, ST, Women headed households, and others).

## **Secondary Data Analysis**

To assess the socio-economic context of the study area its demographic, social, economic, cultural, land use, livelihood & migration related information were collected and analyzed.

The secondary data also included census reports, annual reports, human development index, five-year plans, as well as studies carried out by research organizations/academic institutions and non-governmental organizations (NGOs), articles and research papers. However, the teams involved in the collection of data related to Livelihood and out-migration relied mostly on the information provided by the villagers/head of the household/local people of the sampled households.

## **Primary Data collection and Analysis**

Primary data and information were collected by visiting all sampled households/villages in the selected blocks of the selected districts village Pradhan helped in this work. Data collection process included administration of household questionnaire, social mapping, observation, focused group discussions, interviews, etc. Help of local people conversant in local language and culture was solicited to ensure smooth entry in the village and conduct of surveys. On-site observation was also a part of the study. Focus group discussion were held in every village which included the participation of all sections of the society A transparent and participatory data collection process was immensely helpful. The data on demography and socioeconomic status of the population dependent on agriculture for livelihood was collected through stratified random sampling using questionnaire. Field observation, group discussion and interviews, compilation of best practices, coping mechanism using traditional ecological knowledge, affordable, simple and cost-effective science and technological interventions and case studies related to this formed the part of this study. The past trends of agricultural production and contribution to livelihood, changes in agricultural practices, natural resource availability, dependency and crop production patterns were also assessed by interview with elderly and informed persons of the sampled villages and officials from block development office (through structured interview) to obtain the reliable information. The household survey data was collected for livelihood assets, natural resource flow and natural resource management practices. The main variables considered in the biophysical component were farm and non-farm activities which play an important role in maintaining food security-sovereignty and enhancing cash income generation in the rural landscapes. To categorize and analyze the livelihood, farmers were asked to describe their main livelihood activities and prioritize them, starting from the activity which generated the highest cash income. The prioritized livelihood activities represented the key data for the identification of the main livelihood categories. Complementary to the livelihood activities analysis, farmers were also asked contribution on - farm and off - farm income activities to the household economy. As on-farm income activities are related mostly to the marketing of farm products and dairy products, while off - farm income activities are linked to wages obtained from off-farm work. Therefore, different tools were used for data collection which is being presented with their purpose in the following table.

**Table 2.1- Tools used and step followed for data collection**

| Tools                                                                                                                            | Purpose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transect Analysis                                                                                                                | <p>To ascertain the configuration of the villages and the distribution of the natural and the man-made resources with respect to the different communities in the village.</p> <p>After introducing study team to village head and other villagers, transect walk was undertaken to familiarize themselves with villagers and also for overview of the village topography.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Villages Mapping                                                                                                                 | <p>To know the general topography and settlement pattern of the village, connectivity with main road, location of school, drinking water facility, water resources for irrigation, forest area, etc. Sample Village mapping was done in all the sampled villages and Village summary has been recorded.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>Informal village level discussions (in small homogeneous groups) and Meeting with village elders and knowledgeable people</p> | <p>The purpose of conducting village level meetings was to identify different social and economic groups in the village and to enumerate the characteristics and features of the village communities.</p> <ol style="list-style-type: none"> <li>1. To collect basic information about the village, with the help of village Pradhan.</li> <li>2. To understand the social structure and dynamics of the village community.</li> <li>3. Rapport building with the villages, especially with Knowledgeable people, women and vulnerable groups of the community.</li> <li>4. To know the traditional practices related to their livelihood status of women in the village and to gain an understanding of the gender related issues.</li> </ol> <ul style="list-style-type: none"> <li>• To understand the problems faced by village community and to ascertain the salient issues specific to the village and perceived expectations from the govt. Socio-economic and cultural characteristics of different villages.</li> <li>• Documentation of social institutions in the selected villages with respect to different social groups</li> <li>• Migration and livelihood issues.</li> <li>• Potential economic activities (income generating activities) in the area.</li> <li>• Encouraging villagers to spell out their needs &amp; perception for development options.</li> <li>• Stimulate village communities/people about their role in decision making process.</li> <li>• Constraints and opportunities within the existing institutions with respect to implementation capacity.</li> </ul> |
| Household Survey                                                                                                                 | <p>Sample household survey was conducted using a structured questionnaire which was representative. Household questionnaire was pre-tested. The questionnaire covered social, economic, institutional dimensions of rural life and livelihoods and migration related issues and potential option of livelihood enhancement and diversification in the selected villages. the studies team</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |



|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | included persons well versed in local language and social and cultural aspects of the area. The questionnaire is given as (Annex).                                                                                                                                                                                                                                                                                                                                                 |
| Institutional Analysis   | To assess the villagers' perception of the services received from various government and the non-government institutions.                                                                                                                                                                                                                                                                                                                                                          |
| Livelihood Analysis      | To identify the livelihood options available with the villagers round the year.                                                                                                                                                                                                                                                                                                                                                                                                    |
| Interview                | Interview were conducted with key informants/stakeholders viz., Gram Samitis, members of Self-Help Groups, members of Community Based Organizations, NGOs in the project area, Govt. project beneficiaries, women and youth Groups from targeted populations including poor & weaker sections of the society. Intensive discussions were held with Gram Panchayat and MNREGA workers and beneficiaries for their suggestion and views on the program/activities being implemented. |
| Stakeholder Consultation | The study team conducted stakeholder consultations with stakeholders' including representatives from local government, block office, local community groups, representatives of NGOs, etc.                                                                                                                                                                                                                                                                                         |

### **Data Analysis**

For data analysis of the collected data key qualitative and quantitative variables were chosen within the biophysical and socioeconomic components of the farm & non-farm system activities. The bulk of the data collected through interviews were based on people/farmers perceptions and observations. The perceptions were related to the main characteristics that maintain, enhance and diversify the livelihood of the village people inhabited in the study blocks/districts through farming and locally available bio-resources.

## Review of Literature

---

In Indian Himalaya Region, livelihood of over 60 percent population is centred on agriculture, livestock and bio-resources collected from forest (Maikhuri et al., 1997,2011) but many parts form a pocket of poverty where people are still subsisting on farming systems. These parts have neither benefited from the 'Green Revolution' technologies nor the fruits of Asia's recent market-oriented economic growth. Despite growth in various sectors of India Himalayas continue to remain as less favoured areas and consequently the inhabitants of the region, often traditional/ indigenous people, remain at the fringes of society – geographically, politically and economically. Moreover, they are exposed to growing physical, social, and economic risks and vulnerabilities affecting adversely the livelihood, of the poor and marginal population (DIFD-World Bank, 2002; Banskota et.al. (2000); bans Sharma, 2004). Urbanization and male migration have not only led to feminization of the Himalayan rural landscape but increased drudgery of women and induced gendered changes in the social fabric. Therefore, actions are needed to reduce vulnerability of the Himalayan societies to growing physical, social, and economic risks by enhancing their adaptive capacity and resilience (Maikhuri et.al. 2013; 2017).

Securing local livelihood through environmental/natural resource management is not a new concept or goal. Successful case studies of natural resource management illustrate how to build resilience in rural poor settlements (Rao, et.al., 1999; Rawat *et al.*, 2010; Maikhuri *et al.*, 2011). The community-based forest enterprise on Tassar silk by Appropriate Technology India (ATI), Guptakashi, Uttarakhand is an example of a successful incentive-based conservation approach for improving livelihood of local communities. In 2004, around 750 male and female members of Chamoli Tassar Private Ltd (CTPL) earned modest income of Rs. 20,000/- per person/year from cocoon rearing, spinning, and silk yarn reeling and weaving (ATI, 2009). This provides an example of how NTFP protection, regeneration, and harvesting through community-based enterprises can help sustainable resource use and conservation of mountain biodiversity while enhancing the livelihood of marginalized communities (Rais, et.al., 2009; Negi *et al.*, 2011).

In Uttarakhand, the efforts have also been made by the High-Altitude Plant Physiology Research Centre (HAPPRC), HNB Garhwal University to promote cultivation of *Picrorhiza kurroa* ('Kutki'), a high-value medicinal plant among the village communities of the Dewal Block in Chamoli Garhwal District. Linking it to with a private enterprise has allowed the villagers involved into the production of Kutki for good economic returns (Maikhuri et.al.2017).

Similarly value-added products from medicinal and aromatic plants, wild edible plant species and protected cultivation for employment and income generation were demonstrated to 157 households in the villages of Upper Kedar valley. With market links these villagers started small scale income-generating activities based on locally available bio-resources and added an additional income of about Rs.26400 per farmer per year. (GBPNiHE-GRC, Srinagar-dst.gov.in, March, 2020).

Technological change is an important instrument for socio-economic development but poor access to suitable technologies is also one of the main causes of poverty, drudgery and natural resource degradation in the Himalaya. Unfortunately, very few organizations in the Indian Himalayan region are involved in testing, developing, upgrading, validating, demonstrating and disseminating appropriate technologies through action and participatory research (Maikhuri *et al.*,2010;2011).

Therefore, cost effective, suitable and affordable technological intervention has been considered essential for enhancing livelihood, generating employment to reduce out-migration (Saxena et.al.,2012). Technological support/ backing was carried out across Assam, Manipur, Meghalaya, Mizoram and Tripura with the help of partner NGOs (PNGOs) covering 8 districts, 12 development blocks, 47 villages and more than 11 tribal communities. The technologies like vermi-composting, bio-briquetting, weed composting, and mixed cropping in home gardens increased additional income by Rs. 8000 to Rs. 10000 annually of large number of tribal farmers (Samal & Lodhi, 2013).

The shift from Jhum cultivation towards home gardens where productivity in traditional agriculture has declined like in Cherrapunji region in Meghalaya is indicative of adaptations to cope up with environmental uncertainties, Jhum is also replaced by multi-story home garden systems in many places (Saxena,et al,2012). The livelihood improvement activities through crop diversification in agriculture, value addition of farm and non-farm resources and other non- land base activities were carried out in 18 villages covering more than 375 households in selected protected areas of Assam (Baksa), Arunachal Pradesh (West Kamang) and Sikkim (west Sikkim). This benefitted and increased average income per households to Rs. 45000/yr. (WWF India and DST-SEED, 2018).

Sharma et al., 2004 has highlighted that large cardamom (*Anomum subulatum*) is the most important cash crops in the eastern Himalayan region and Sikkim is the largest producer of large cardamom in India and second largest in the world, after Nepal. It is cultivated in all districts of Sikkim at an altitude of 600-2,400 masl and of the total 1,11,830 households in Sikkim, 16,037 households (14.34%) have large cardamom plantation on their farms for cash income generation. Ramakrishnan al., 2005 highlighted that the Apatanis tribe of Arunachal Pradesh for restoring soil fertility in their rice agro-ecosystem synchronized it with pisciculture.

Owing to its beautiful landscape and sundry forests, the Bangus Landscape is one of the relatively unexplored forests situated at an altitude of 2500masl, and it has a unique opportunity to offer NTFPs based sustainable livelihood to more than 50 per cent household dependent on it.

In the Himalayan region, migration is intensively practiced for centuries in view of limited livelihood options, economic opportunities and amenities. The extent of migration for the Himalayan States varies from region to region/state to state depending on local socio-economic and environmental condition (Jain, 2010; Hoermann and Kollmair, 2009). There has been a debate at regional, academic, and political sphere on impact of migration on socio-economic, cultural and environmental surrounding. However, migration from rural to urban areas is still a growing concern (Hoffman, et.al.,2019; Mamgain and Reddy,2015). Outmigration has resulted in multiple gender issues and increased workloads for women in migrant households (Srivastava, 2011; Joshi, 2018 as mostly men migrate living behind women, children and the elderly (Hoermann and Kollmair, 2009). In the High-altitude villages of Garhwal, animal husbandry is declining due to labour shortages, and also job opportunities in the government sector, trade, tourism, and non-agrarian occupations, e.g., migration and children's school attendance. The out- migration is one of the major issues in Uttarakhand state. Due to disparity in the development between hills and plains, lack of livelihood and employment opportunities as well as education and health facilities the pace of out-migration could not be slowed down from the hill districts of the states even after its formation. This is well reflected in the population census of 2011. The trend of the out migration is so huge that many of the villages are now left with a population in single digit. (Hoffmann et.al 2019; Mamgain and Reddy,2015). Interestingly Hoffmann et.al (2019) has highlighted that in Uttarakhand the major reasons for migration have been education, health and employment not the environmental or agriculture related

issues. In a field survey in 2013, which included 18 villages and a total of 217 households from Pauri, Garhwal and Almora districts (Mamgain and Reddy, 2015) reported that 88% of the sampled households had at least one member who migrated for employment. In Uttarakhand, as in the majority of other Indian states, 80% of the migration flows were intra-state (Vinayakam et.al. 2013). The interim report on the status of migration in revenue villages of Uttarakhand, published by the 'Rural Development and Migration Commission, Uttarakhand (2018) highlighted unemployment as the major problem for 50% of out-migration.

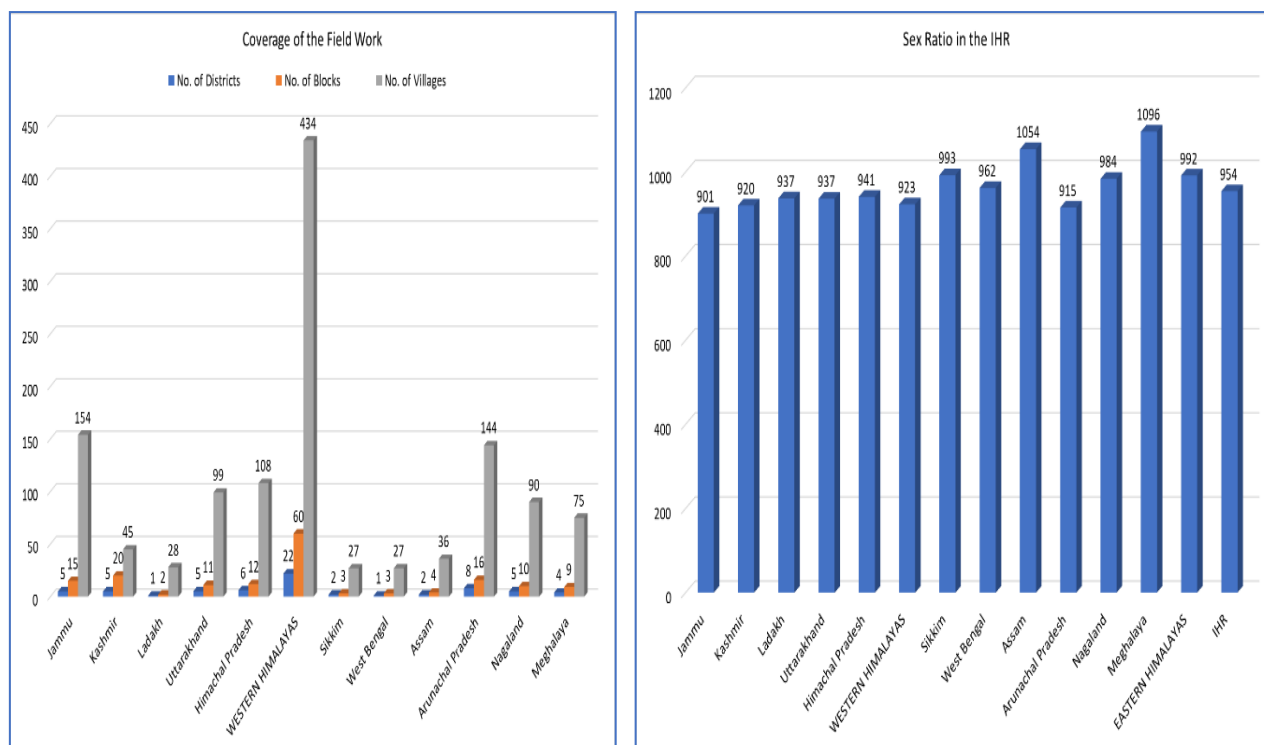
The north-eastern parts of India also have a history of migration. There has been a consistent flow of migration in this region because of employment opportunities in tea garden, availability of cultivated land and other related factors (Bandyopadhyay and Chakraborty, 1999). While short distance migration continues to dominate the migration streams of northeast, it is found that contribution of inter-state migration is significant in the states of Arunachal, Meghalaya and Nagaland. Moving for work is significant, especially among the states of Arunachal and Mizoram. (Lusome and Bhagat, 2010). However, on the contrary different districts of Himachal Pradesh have experienced different change in volume of in-migrants. Total volume of interstate in-migrants in Himachal Pradesh increased from 0.23 million to 0.35 million during the period 1991-2001. Magnitude of migration is still quite low in absolute numbers, but change in out-migration that has been seen over the past census years is incredible (Sharma, 2015). On the other hand, state of Jammu and Kashmir has experienced various types of migration which has been taken place due to number of reasons mainly terrorism that existed in the state and forced people to migrate (Raj et al. 2014). In the Changthang region in the Trans-Himalayan area of Ladakh, it is difficult for some households to sustain pastoralism as a way of life because of the reduced labour force, mostly caused by men's outmigration (Namgail et al. 2007). A lack of labour force in rangelands can affect pastoralism and ultimately reduces income and the indigenous knowledge of pastoralist communities.

## Demographic, social and economic profile of surveyed households

The research team conducted household survey among 14195 households consisting of 44 districts, stretching from western to eastern Himalayas. The largest number of villages were represented from Jammu (154), followed closely by Arunachal Pradesh (144). The total population covered by the survey was 74,770 (Table 4.1.) The sex ratio is very encouraging and favourable in Meghalaya and hill districts of Assam. In both these states, the sex ratio is more than 1000 but it is low in Jammu.

**Table 4.1: Profile of the Household Survey**

| Name of the State/UT/Area     | No. of districts | No. of Blocks | No. of Villages | No. of Households | Population |       |        | HH Size |
|-------------------------------|------------------|---------------|-----------------|-------------------|------------|-------|--------|---------|
|                               |                  |               |                 |                   | Total      | Male  | Female |         |
| Jammu                         | 5                | 15            | 154             | 2177              | 11850      | 5698  | 5134   | 5.44    |
| Kashmir                       | 5                | 20            | 45              | 2186              | 11349      | 5205  | 4791   | 5.19    |
| Ladakh                        | 1                | 2             | 28              | 373               | 2384       | 1116  | 1046   | 6.39    |
| Uttarakhand                   | 5                | 11            | 99              | 1485              | 6656       | 3437  | 3219   | 4.48    |
| Himachal Pradesh              | 6                | 12            | 108             | 1620              | 8067       | 4156  | 3911   | 4.98    |
| WESTERN HIMALAYAS             | 22               | 60            | 434             | 7841              | 40306      | 19612 | 18101  | 5.14    |
| Sikkim                        | 2                | 3             | 27              | 405               | 1909       | 958   | 951    | 4.71    |
| West Bengal                   | 1                | 3             | 27              | 407               | 1880       | 958   | 922    | 4.62    |
| Assam                         | 2                | 4             | 36              | 536               | 3222       | 1381  | 1456   | 6.01    |
| Arunachal Pradesh             | 8                | 16            | 144             | 2154              | 11000      | 5743  | 5257   | 5.11    |
| Nagaland                      | 5                | 10            | 90              | 1360              | 6999       | 3528  | 3471   | 5.15    |
| Meghalaya                     | 4                | 9             | 75              | 1492              | 9454       | 3910  | 4285   | 6.34    |
| EASTERN HIMALAYAS             | 22               | 45            | 399             | 6354              | 34464      | 16478 | 16342  | 5.42    |
| Indian Himalayan Region (IHR) | 44               | 105           | 833             | 14195             | 74770      | 36090 | 34443  | 5.27    |

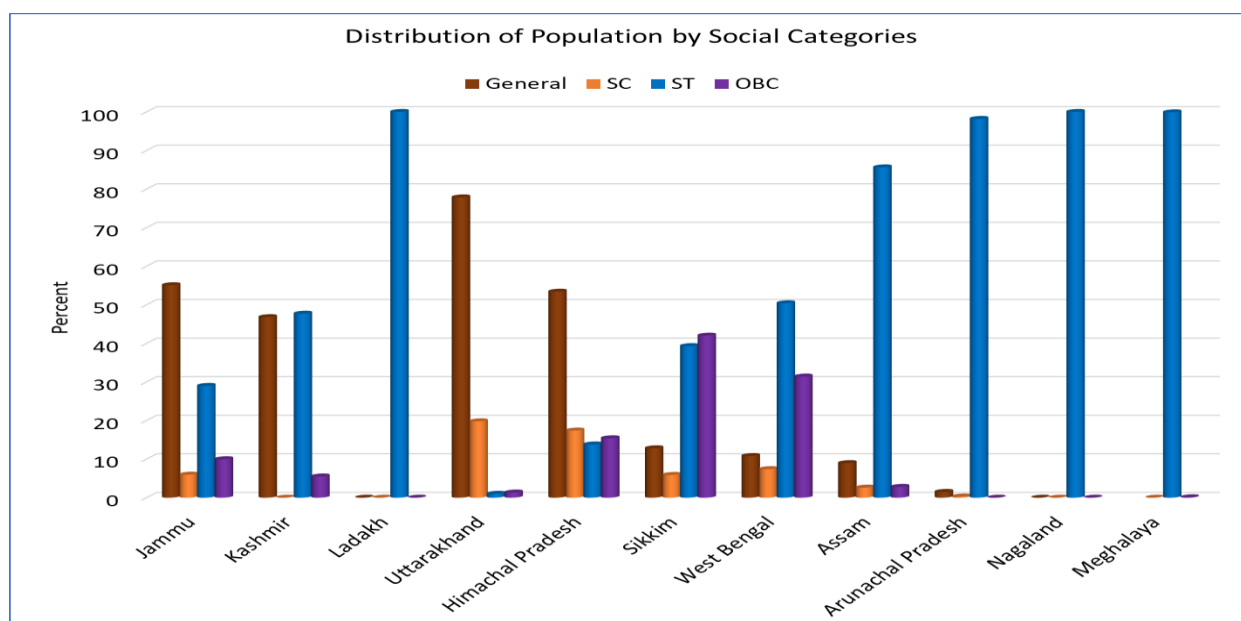


**Figure 4.1 Coverage of field work and Sex Ratio in IHR**

Source: Field Work, 2021

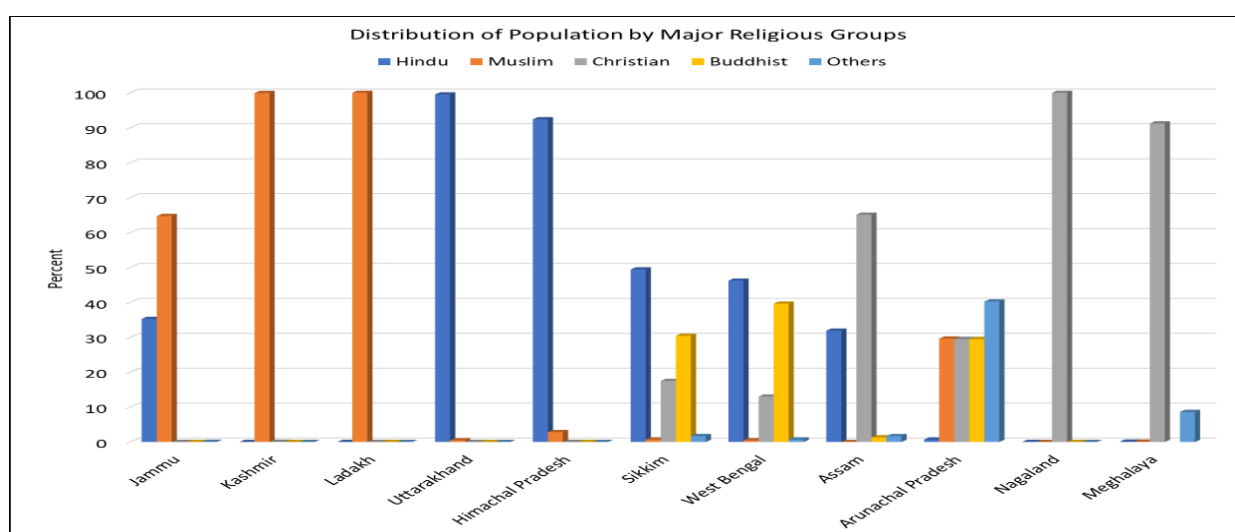
### Socio-Religious Composition of Households

A perusal of the Figure 4.2 reveals that there is a wide variation in the social composition of households across the IHR. In Uttarakhand, more-than three-fourth of the surveyed households belong to the General category population while in Jammu and Himachal Pradesh, one-half of the households were from this category, in Kashmir, a little below than one-half population belonged to general category. In all the North-Eastern states and the hill districts of West Bengal, the share of the general households is comparatively much lower. The sample households were very homogenous in terms of social composition in the states of Nagaland, Meghalaya and Arunachal Pradesh where most of the households belonged to the Scheduled Tribe (ST) category. The ST households constituted about 85 percent in the hill districts of Assam, 50 percent in the hill districts of West Bengal, 47 percent in Kashmir and 40 percent in Sikkim. The share of the ST households was fairly high in Jammu (29 percent). On the other hand, the share of the ST households was very low in Uttarakhand, (1.01 percent). As compared to ST households, the share of the SC households is significant only in Uttarakhand and Himachal Pradesh, where the percentage is 19.8 and 17.4 respectively. The share of the OBC households is very striking in Sikkim (42 percent) and the adjoining hill Districts of Darjeeling in West Bengal (31.4 %). In Himachal Pradesh, 15.4 percent of the households were OBC while the corresponding figure in Jammu was about 10 percent.



**Fig 4.2: Distribution of Population by social Category**

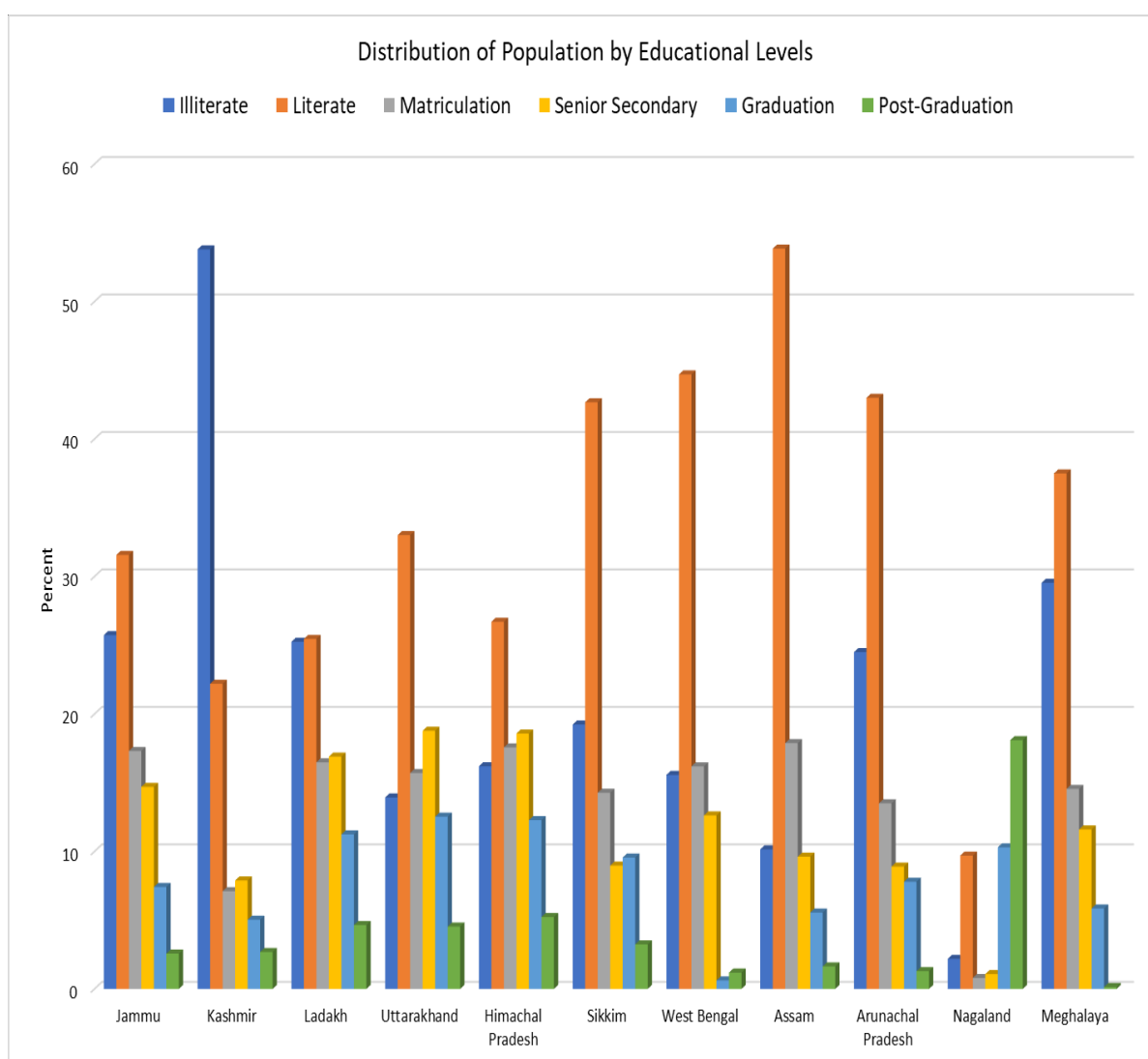
The Hindus are the predominant religious group among the surveyed households in Uttarakhand and Himachal Pradesh while in Sikkim about one-half of the households belong to this religious group. In Darjeeling, the only hill district of West Bengal, about 46 percent of the households are reported to be Hindus. In the Union Territories of Jammu, Kashmir and Ladakh, this religious group has a sizeable presence only in Jammu (35.23 percent). There is a complete absence of Hindu households in the surveyed households in Kashmir and Ladakh. In the North-Eastern states, the Hindu households were reported only from Assam (32 percent). The entire surveyed households are of Muslims in Kashmir and Ladakh while in Jammu, their share is 64.68 percent (Figure 4.3). Interesting, about 29 percent of households surveyed in Arunachal Pradesh were reported to be Muslims. The Buddhists are in a sizeable presence in Darjeeling District (40 percent), followed by Sikkim (30 percent) and Arunachal Pradesh (30 percent).



**Fig 4.3: Distribution of Population by major Religious Groups**

## Educational Levels of Population

The educational levels also reveal striking variations in the different states in the IHR. The incidence of illiteracy is very high in Kashmir where more than one-half of the population is illiterate. The percentage of illiterates is also very high in Meghalaya, Arunachal Pradesh, Jammu, Ladakh where more than one-fourth of the population is reported to be illiterate. Nagaland with a percentage of just 2.19 illiterates is well ahead of other states in the IHR in achieving full literacy. The share of illiterates is very low in Himachal Pradesh, hill district of West Bengal, Uttarakhand and Assam. The percentage of population with secondary level of education (class X) hovers in between 15 to 18 percent in a large number of states, like Jammu, Ladakh, Uttarakhand, Himachal Pradesh, Sikkim, West Bengal, Assam and Meghalaya. The percentage of population with secondary level of education is lowest in Kashmir (7.11 percent). Graduates have a significant presence in Uttarakhand, Himachal Pradesh, Ladakh, Sikkim and Nagaland. In all these states, the percentage of graduates is around 10 percent. People with higher levels of education are very prominent in Nagaland as 18.1 percent are post-graduates (Fig 4.4).



**Fig 4.4: Educational Levels of Population**



## **Present livelihood scenarios in IHR & future potentials & Opportunities**

---

The marginal and traditional communities' and poor people of the vast Indian Himalayan region have been historically dependent on a mix of subsistence agriculture, animal husbandry, forest resources and seasonal migration for their livelihoods. These traditional systems are characterized by low productivity, diverse use of available natural resources (largely for home consumption), limited markets, and some aversion for innovation. The potential to generate income through unique Himalayan resources has largely remained untapped and undervalued in local, regional and national economies. However, an increasing body of evidence demonstrates that with the use of appropriate technologies the unique resources of the hills/mountains do provide viable bases for households to rise above poverty. Bio-resources of agro & wild origin such as medicinal plants and herbs, essential oils, fibres and silks, natural dyes and organic products, off-season vegetables, bamboo and bamboo products, bees and bee products, and enterprise –based pollination services provide the basis for increasing incomes and improving livelihoods. Some of the Indian Himalayan states have demonstrated the capacity to become drivers of local economic growth and empowering local communities and poor households through a meaningful use of these resources. As Harnessing Himalayan niches appropriately through better management of natural resources and application of technologies and new methods of production and exchange do generate employment and income opportunities in the region.

Unfortunately, most of the region/areas of the Indian Himalaya have not been able to adequately harness their unique resources to improve livelihoods because of inadequate and unfavourable policies. Though there are evidences that the Himalaya natural resources and environment is degrading in many areas. Thus, such changes need to be envisioned in the development process so that it must ensure that communities, especially disadvantage groups, women and geographically excluded areas are not left out of main stream. The policies need to be inclusive and should be addressing the inequalities across regions and groups of people. In many parts of the Himalayan region, though local governments and communities are being empowered through the Panchayati Raj and decentralization of power and social mobilization paradigms however, the development policies still are neither inclusive nor area specific. This can be ensured with the participation and addressing the concerns of all segments of society, regardless of their status and geographic area. As the policies are not very helpful therefore, over the years to overcome their vulnerabilities people in the IHR are finding new and secure livelihoods through generating new and diverse opportunities in non-farm sectors.

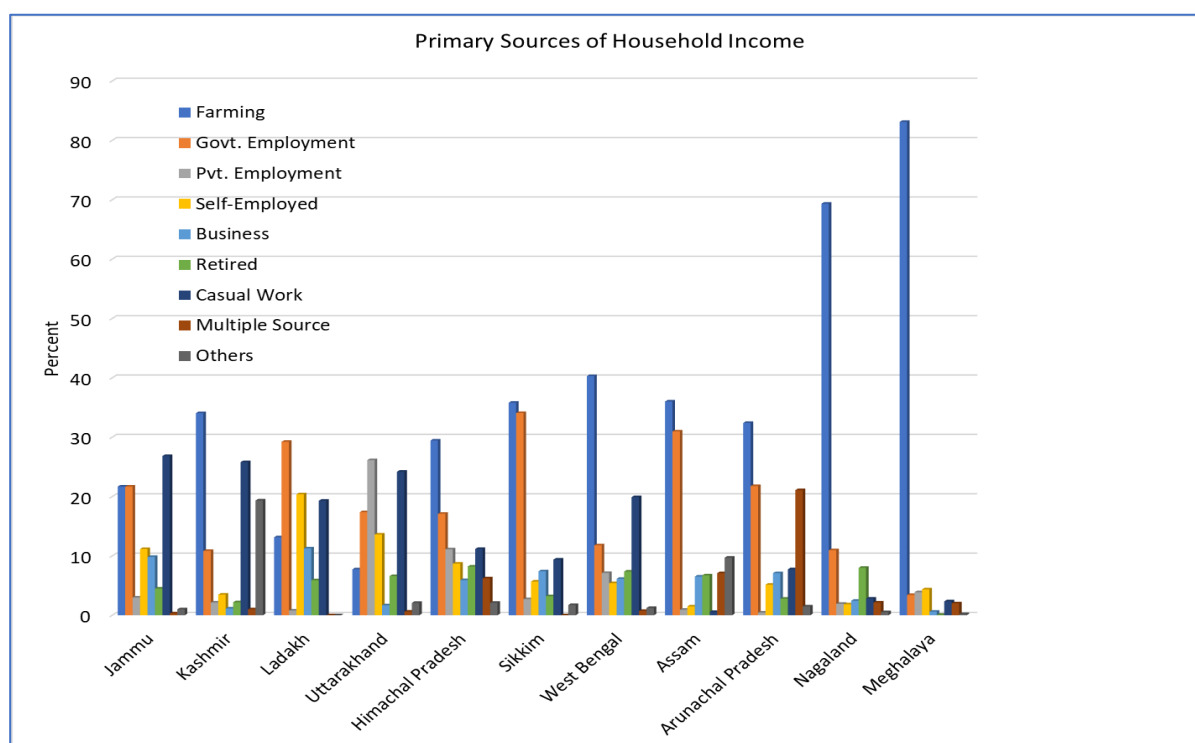
Besides this the limited accessibility and the lack of infrastructure support to overcome the barriers of terrain and altitude also creates hindrances in generating opportunities in mountain areas. The limited access to markets for many Himalayan products and resources and the ability to harness Himalayan niches also affects the capacity and indicates the gaps in delivery of development inputs and services to the communities. As a result, marketable surpluses and mountain niche resource remain grossly underutilized and undervalued. Technologies provide help not only in value addition of products but also improving livelihoods by raising productivity, quality of product, its diversity, and reducing the cost of raw materials and energy requirements which can lead to improved sales of

hill/mountain products and an increase in incomes. Technologies can develop the capability within farm and non-farm sectors supporting institutions to respond to the changing needs of the markets or to new opportunities. Technology thus plays a key role in generating opportunities in traditional as well as non-traditional fields. On the other hand, markets play a significant role in realizing economic opportunities for the poor and marginal communities' by enabling them to increase the quantity of their produce according to the comparative advantage of their regions as well as diversification from traditional to market demand led production. Apart from conventional agricultural products, the rich bio-resources of the Himalayan region also open scope for marketing niche products and services. Internationally Organic eco-labelling and other forms of certification are tools that enable consumers to differentiate between products based on their social and environmental qualities. Actually, market opportunities have been a driving force in promoting sustainable management practices in both forestry and agricultural products worldwide. Under the current system of illegal trade and adulteration of many mountain products, especially NTFPs, certification ensures that the chains of custody' for NTFPs comply with acceptable norms and standards and not only discourage the unsustainable and unethical practices but also fetch a premium price over non-certified products. Making the markets work for the poor is an essential strategy to make businesses more responsible to environmental and social concerns, for generating livelihoods in poor rural mountain communities.

### **Primary Source of Income of the Households**

Primary data was collected on source of income of the households in sampled villages to identify the vocations of the people for their economic sustenance. The data reveals that farming plays an important role in providing income to a sizeable percentage of households all across the states of the IHR except Uttarakhand. The percentage of households deriving income from farming is the highest in Meghalaya (83.11 percent), followed by Nagaland (69.33 percent). The lowest percentage was reported from Uttarakhand (7.74 percent). About one-third of the households are dependent on farming in the states of Arunachal Pradesh, Assam, Sikkim and the UT of Kashmir. In the hill district of West Bengal, about two-fifth of the households are dependent on farming. Government employment is another important source of income for a considerable number of households, though the proportion varies widely among the different states of the IHR. The highest percentage of household's dependent on government employment is reported from Sikkim (34 percent), followed closely by Assam (31 percent) and Ladakh (30 percent). The lowest percentage is reported from Meghalaya where just 3.42 percent households derive income primarily from government employment. The percentage is relatively low in Nagaland, West Bengal and Kashmir where one-tenth of the households' primary income is government employment. Private employment is considered to be very significant in deriving income in Uttarakhand and to some extent in Himachal Pradesh while in the remaining states of IHR it does not play a vital role. More than one-fourth of the households in Uttarakhand reported Private employment as a source of primary income while the corresponding figure in Himachal Pradesh is 11 percent. Business has been cited as a source of primary income by about one-tenth of households in Ladakh and Jammu. A sizeable percentage of households are self-employed in Ladakh (20.38 percent) and the corresponding percentage in Uttarakhand and Jammu is 13.60 and 11.16 respectively (Figure 5.1). Casual work is reported to be the source of primary income for a significant percentage of households in the UTs of Jammu, Kashmir and Uttarakhand where more than one-fourth of households depend on this source of

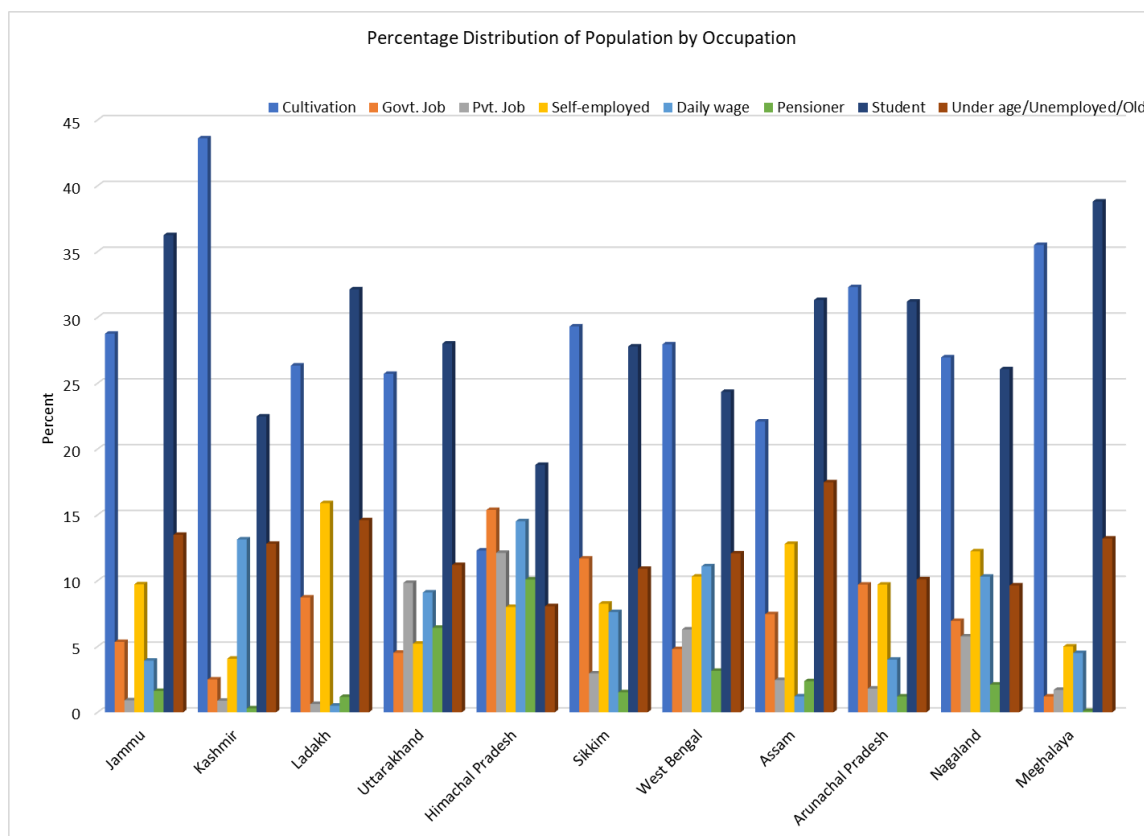
income. The percentage is also high in Ladakh and West Bengal (20 percent). Himachal Pradesh 15 percent. The higher dependency on casual work for household income indicates relatively insecure and lower income in all these states for a sizeable percentage of households. Besides, it may also lead to a higher propensity to migration.



**Fig 5.1: Percentage of Households by Primary source of Income**

## Occupational Distribution of Population

Though there is a great diversity in the occupational categories of the population across the IHR. However, farming remains a major occupation in most of the states, ranging from 12.29 percent in Himachal Pradesh to 43.6 percent in Kashmir. About one-third of the population is engaged in farming in Meghalaya and Arunachal Pradesh. In Nagaland, West Bengal, Uttarakhand, Jammu and Ladakh, more than one-fourth of the population is involved in farming. In Sikkim 30 percent population and in Assam is 22 percent is involved in farming. The share of the daily wage earners is the highest in Himachal Pradesh (14 percent), followed very closely by Kashmir (13 percent). In Assam, Nagaland and Uttarakhand, about one-tenth of their respective population is daily wage earner. This constitutes the lowest percentage in Ladakh (0.5 percent) followed by Assam (1.21 percent). Self-employment is another activity in which a number of people are involved but there is a considerable variation in the percentage of population across different states. Ladakh with about 15 percent of its population as self-employed is the leading state in the IHR, followed by Assam and Nagaland (12 percent). The share of the self-employed population is about 5 percent, in Kashmir, Uttarakhand and Meghalaya.



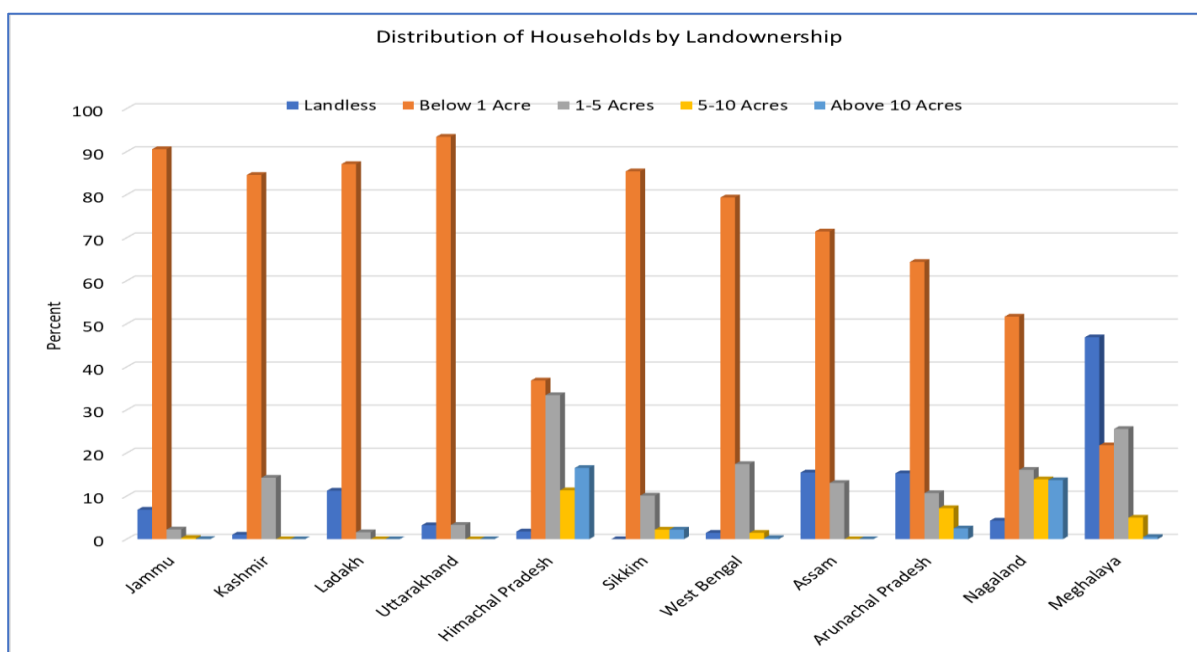
**Fig 5.2: Occupational Structure of the Population**

The percentage of the population in Government job is highest in Himachal Pradesh (15.37 percent), followed by Sikkim (12 percent). Arunachal Pradesh with about 10 percent of its population in Government job is relatively better placed. Similarly, about 8 percent Government employed population is reported from Ladakh, Assam and Nagaland (Figure 5.2). In Meghalaya, the percentage of population in Government job is the lowest (1.2 percent). The share of the population in private jobs is considerable only in Himachal Pradesh (12 percent) and Uttarakhand (10 percent).

The participation of women in paid work is considered to be one of the important indicators for the socio-economic empowerment. However, a vast majority of women are engaged in the unpaid work like household chores in a large number of states in the IHR. But there are wide variations in the percentage of females involved in household chores across the states in IHR. The highest percentage of females in such activities is reported from Kashmir (63.77 percent) while the lowest is from Himachal Pradesh (23.93 percent). More than one-half of the women are involved in unpaid work in Jammu, Ladakh and Uttarakhand. The percentage is very significant in the states Sikkim, West Bengal and Arunachal Pradesh, where more than two-fifth females are engaged in household chores. In Meghalaya also, more than one-third of the females are reported to be engaged in household chores (Figure 5.2). The share of the daily wage earner is not significant in the states of IHR except in Himachal Pradesh (10.22 percent). The percentage of females in government job is not considerable except in Himachal Pradesh (12.22 percent) and to some extent in Sikkim (7.55 percent). Though there is a presence of females as self-employed, the share of such females is prominent only in Nagaland (14.3 percent) and Himachal Pradesh (8.41 percent).

## Land Ownership

Land ownership is considered to be a valuable asset in rural areas as it not only provides the owners with the capability to produce agricultural commodities but also financial security and also as a means to secure loans from the formal financial institutions. Through the field studies, an effort was made to examine the distribution of farmers by different land holding sizes across the IHR. One of the striking features across the IHR is that the share of the landless households is very small except in Meghalaya. In other words, it may say that most of the households own some land but holding's size may be very small.



**Fig 5.3: Distribution of Households by Landownership**

There is a complete absence of landless households in Sikkim. As opposed to this, about 47 percent of the households are landless in Meghalaya. It may be mentioned that in Meghalaya there is a provision of community ownership of land rather than individual ownership and it might be the reason for reporting a large proportion of landless households. A vast majority of households (more than 90 percent) own less than one acre of land in Jammu and Uttarakhand-around 85 percent in Kashmir, Ladakh and Sikkim. In Nagaland, about one-half of the households belong to this category while in Arunachal Pradesh, the figure is 64.4 percent and almost one-third of the households in Himachal Pradesh have holdings of less than one acre. Considering that there is a heavy concentration of households in the category of small land holding size, the share of the households with large holding is very limited except in Himachal Pradesh. The households belonging to 1-5 acres of land holding category constitute about one-third of the households in Himachal Pradesh and one-fourth in Meghalaya. The share of this category of households is considerable in West Bengal, Nagaland and Kashmir. In the next higher land holding category of 5-10 acres, a sizeable percentage of households are in the states of Nagaland and Himachal Pradesh. The share of the households belonging to this category is 13.9 percent in Nagaland and 11.35 percent in Himachal Pradesh. Similarly, the share of the households owning more than 10 acres of land is only in Himachal Pradesh and Nagaland. There are 16.54 percent of the household in Himachal Pradesh that belong to this category while the corresponding percentage in Nagaland is 13.7 percent (Figure 5.3). This leads us to conclude that,

firstly, the incidence of landless is absent but an overwhelming majority of the households belong to small land holding category, the only exception being Himachal Pradesh. Secondly, large holding sizes are not significant except in Himachal Pradesh and Nagaland.

### Agricultural Scenario in Indian Himalayan Region

Table 5.1 reveals that almost the entire households in IHR are engaged in agricultural practices among the surveyed households of Jammu, Ladakh, Kashmir and Nagaland. However, in the two North-Eastern states of Assam and Arunachal Pradesh, about one-fifth of the households were not involved in agricultural practices.

The distribution of households in terms of the different types of the crops grown such as food crops, horticulture, cash crops and mixing of different crops, a great diversity is observed among the states. In the states/UTs like Jammu, Kashmir and Nagaland, food crops dominate, where more than 85 percent of the households grow such crops while in the hill districts of Assam and West Bengal, Sikkim, Himachal Pradesh and Uttarakhand, food crops are not grown by a very large majority of households. Horticultural crops are grown by a significant percentage of households in Ladakh, Himachal Pradesh, Sikkim, Arunachal Pradesh, Meghalaya and the hill district of West Bengal. The blending of food crops with horticulture is reported by more than one-half of the households in Sikkim and hill districts of Assam. Cultivating a blend of these two crops is reported by a substantial percentage of households in Arunachal Pradesh and the hill district of West Bengal (Table 5.1)

**Table 5.1: Percentage of Households involved in agricultural practices & cultivation of diverse crop**

| Name of the State/UT/Area | HH not involved in agriculture | Food crops grown by HH (maize, rice, wheat, millets, pulses) (1) | Horticulture (fruits and vegetables) (2) | Cash Crop | Blend of 1 & 2 | Total |
|---------------------------|--------------------------------|------------------------------------------------------------------|------------------------------------------|-----------|----------------|-------|
| Jammu                     | Nil                            | 95.49                                                            | 4.51                                     | -         | Nil            |       |
| Kashmir                   | 1.05                           | 91.53                                                            | 0.73                                     | -         | 6.67           |       |
| Ladakh                    | Nil                            | 79.08                                                            | 20.91                                    | -         | Nil            |       |
| Uttarakhand               | 7.81                           | 27.88                                                            | 11.31                                    | -         | 53.00          |       |
| Himachal Pradesh          | 14.44                          | 26.60                                                            | 20.00                                    | -         | 38.95          |       |
| Sikkim                    | 2.46                           | 12.09                                                            | 23.45                                    | 11.85     | 50.12          |       |
| West Bengal               | 7.12                           | 12.28                                                            | 22.60                                    | 20.39     | 37.59          |       |
| Assam                     | 23.38                          | 8.45                                                             | 18.47                                    | -         | 49.75          |       |
| Arunachal Pradesh         | 20.46                          | 29.75                                                            | 20.03                                    | -         | 29.78          |       |
| Nagaland                  | 0.37                           | 87.04                                                            | 7.56                                     | -         | 5.04           |       |
| Meghalaya                 | 16.2                           | 30.8                                                             | 22.1                                     | -         | 23.8           |       |

Source: Field Work, 2021

### Purpose of Cultivation

The households engaged in farming activities cultivate either for self-consumption or for selling the produce in the market while there are a number of households who cultivate to consume a part of it

and selling the remaining part in the market. We have examined the purpose of cultivation of the households in the different states of the IHR in the following paragraph.

An overwhelming majority of the households produce crops for self-consumption in Nagaland, Jammu and Uttarakhand. Interestingly, in the hill districts of Assam and West Bengal, only about one-fifth of the households cultivate their land for self-consumption, one-half of the households in Himachal Pradesh produce their crops for self-consumption (Table 5.2 and more than one-half of the households produce crops for selling in the market. The share of the households producing crops to selling in the market is significantly high in Kashmir (41 percent) and Himachal Pradesh (34.51 percent). In the hill district of West Bengal, about two-third of the households grow crops both for self-consumption and marketing while in Sikkim, one-half of the households do so.

When asked a question about the crop insurance, an over-whelming majority of the households in the IHR responded that they are not having crop insurance except in Himachal Pradesh where one-fifth of the households have crop insurance (Table 5.2)

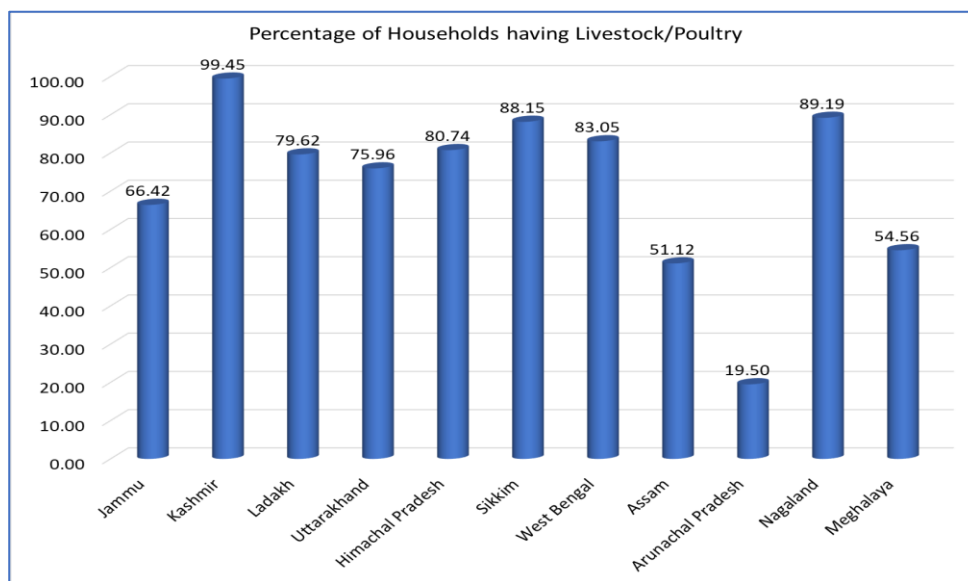
**Table 5.2: Percentage of Households by Purpose of Cultivation and the Crop Insurance**

| Name of the State/UT/Area | HH not involved in agriculture | Purpose of cultivation |           |       | HH Crop insurance       |                     |
|---------------------------|--------------------------------|------------------------|-----------|-------|-------------------------|---------------------|
|                           |                                | Self-Consumption       | Marketing | Both  | No crop is insured (HH) | Crop insurance (HH) |
| Jammu                     | Nil                            | 75.60                  | 4.77      | 19.61 | 92.0                    | 7.99                |
| Kashmir                   | 1.05                           | 58.05                  | 40.89     | -     | 98.30                   | 0.64                |
| Ladakh                    | Nil                            | 79.08                  | 19.57     | 1.34  | 83.10                   | 16.89               |
| Uttarakhand               | 7.81                           | 68.22                  | 23.97     | -     | 91.99                   | 8.01                |
| Himachal Pradesh          | 14.44                          | 51.05                  | 34.51     | -     | 65.62                   | 19.94               |
| Sikkim                    | 2.47                           | 39.01                  | 8.89      | 49.63 | 97.03                   | 0.49                |
| West Bengal               | 7.13                           | 19.66                  | 8.85      | 64.37 | 89.92                   | 2.94                |
| Assam                     | 23.38                          | 23.63                  | 52.98     | -     | 99.75                   | 0.25                |
| Arunachal Pradesh         | 37.8                           | 46.5                   | 15.6      | -     | N.A.                    | N.A.                |
| Nagaland                  | 0.37                           | 87.55                  | 11.1      | -     | 96.51                   | 3.11                |
| Meghalaya                 | 16.2                           | 0.9                    | 18.6      | -     | 92.2                    | 7.8                 |

Source: Field Survey, 2021

## Livestock and Poultry

The rearing of livestock and poultry play a very important role in the economy of the rural households. It not only helps in generating income but also provides with essential protein and nutrition. Figure 5.3 reveals that a large majority of households in all states except in Arunachal Pradesh either rear livestock or poultry or both. As compared to other states, the percentage of households having livestock/poultry is low in Assam and Meghalaya, where one-half of the households reported to having it. The percentage is lowest in Arunachal Pradesh (19.50 percent), but the average number of cattle per household is the highest (9.49) in this state. In the hill districts of Assam, the average amount of livestock/poultry per household is 3.38. In Ladakh, on an average the number of cattle per household is 2.29 while the corresponding figures in Jammu and Uttarakhand are 2.44 and 2.12 respectively (Table 5.3)



**Fig 5.4: Households having Livestock/Poultry**

**Table No. 5.3: Population of Livestock and Poultry in IHR**

| Name of the State/UT/Area | Total No. of Cattles<br>(In No.) | Average No. of Cattle Per household | No. of Sheep /Goat (in No.) | Average No. of Sheep per household | No. of Poultry & Pigeons (in No.) | Average No. of Poultry per household |
|---------------------------|----------------------------------|-------------------------------------|-----------------------------|------------------------------------|-----------------------------------|--------------------------------------|
| Jammu                     | 3533                             | 2.44                                | 2892                        | 2.00                               | 1912                              | 1.32                                 |
| Kashmir                   | 2971                             | 1.37                                | 15732                       | 7.24                               | 2119                              | 0.97                                 |
| Ladakh                    | 680                              | 2.29                                | 840                         | 2.83                               | 375                               | 1.26                                 |
| Uttarakhand               | 2392                             | 2.12                                | 716                         | 0.63                               | 1474                              | 1.31                                 |
| Himachal Pradesh          | 1499                             | 1.15                                | 1004                        | 0.77                               | 88                                | 0.07                                 |
| Sikkim                    | 645                              | 1.81                                | 602                         | 1.69                               | 3006                              | 8.42                                 |
| West Bengal               | 514                              | 1.52                                | 615                         | 1.82                               | 2237                              | 6.62                                 |
| Assam                     | 927                              | 3.38                                | 738                         | 2.69                               | 1644                              | 6.00                                 |
| Arunachal Pradesh         | 3984                             | 9.49                                | 870                         | 2.07                               | 2114                              | 5.03                                 |
| Nagaland                  | 136                              | 0.11                                | 39                          | 0.03                               | 10504                             | 8.66                                 |
| Meghalaya                 | 1152                             | 1.42                                | 795                         | 0.98                               | 9835                              | 12.08                                |

Source: Field Work, 2021



## Purpose of Livestock

A large number of the households in the western Himalayas keep livestock for milk while in Nagaland and Meghalaya, a large number of households keep livestock for consumption of meat. In the hill district of Darjeeling, about 46 percent of households keep them both for milk and meat (Table 5.4)

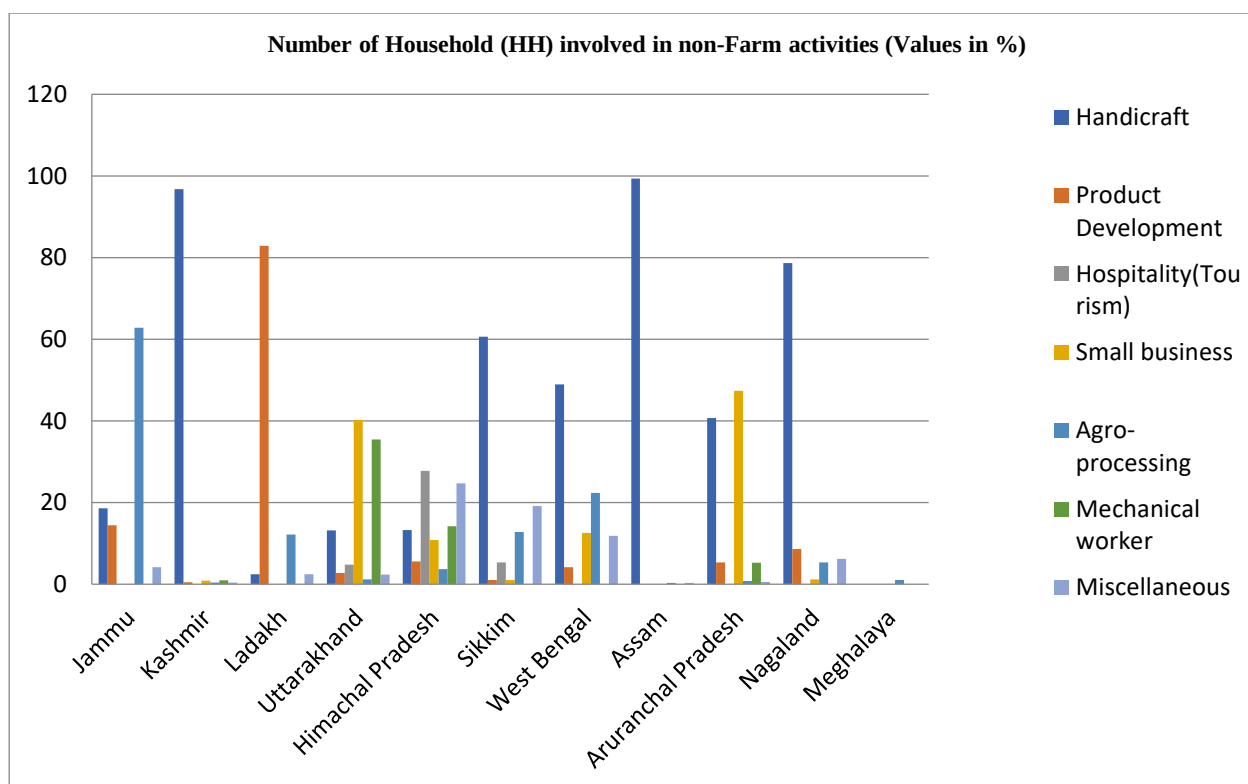
**Table No. 5.4: Percentage of Households by major output from livestock & livestock by-products in IHR**

| Name of the State /UT/Area | HH not involved in Livestock rearing | Milk  | Meat  | Blend of milk and meat | Draught animal |
|----------------------------|--------------------------------------|-------|-------|------------------------|----------------|
| Jammu                      | 21.91                                | 55.35 | 1.93  | 14.52                  | 0.96           |
| Kashmir                    | 0.54                                 | 55.85 | 3.52  | 27.72                  | 0.27           |
| Ladakh                     | 20.38                                | 63.54 | -     | 16.09                  | 2.41           |
| Uttarakhand                | 24.31                                | 54.01 | 0.54  | 7.27                   | 0.34           |
| Himachal Pradesh*          | 19.26                                | 44.57 | 7.04  | 15.93                  | 0.93           |
| Sikkim                     | 11.85                                | 12.10 | 22.96 | 50.37                  | 1.98           |
| West Bengal                | 16.95                                | 12.2  | 20.15 | 46.44                  | 0.49           |
| Assam                      | 31.84                                | 2.49  | 23.13 | 1.00                   | Nil            |
| Arunachal Pradesh          | 8.97                                 | 5.87  | 20.5  | 20.50                  | -              |
| Nagaland                   | 10.15                                | 0.52  | 76.59 | 1.85                   | 0.52           |
| Meghalaya                  | 31.2                                 | 0.3   | 52.6  | 15.6                   | Nil            |

\* 21 households in Himachal Pradesh are involved in wool

## Non-Farm Activities

Several households in the rural areas are involved in non-farm activities either to supplement their farm income or for independent source of income. In order to understand the role of non-farm activities in the states of IHR, a list of 25 activities in the household schedule was prepared and grouped under seven major categories (handicraft, product development, hospitality/tourism, small business, agro-processing, mechanical worker and miscellaneous activities) to elicit data on it (Fig. 5.5). The non-farm activities are very diverse among the states of the IHR. The region has a high potential for the products development such as woodcarving, shawls, carpets, embroidery, baskets, blankets, furniture's and many others. Handicraft is an important non-farm activity in Assam, Kashmir, Nagaland, Sikkim and the hill district of West Bengal and Arunachal Pradesh. Activities like agro-processing is an important activity in Jammu and the hill district of West Bengal, small business in Arunachal Pradesh and Uttarakhand. In Uttarakhand about 35.46% of the households are involved as a worker in mechanical sector whereas in Himachal Pradesh about 28% of the households are involved in hospitality/tourism sectors.



**Figure 5.5: Number of Household (HH) involved in non-Farm activities (Values in %)**

Note: - 1- Handicraft (Carpentry, Weaving/tailoring/handloom/handicraft/woollen work, Basket/cane industry, Pottery, Gold/black smith, Leather, Rope making)

2- Product Development (Pickle/fruit processing, Bakery/sweet, Candle making)

3- Hospitality (Restaurant/fast food, home stay)

4-Small Business (Beauty parlour, Photography/printing/Xerox, Stationery/toy/paper bag/plastic/flower/puja material work, Shop/Barber/cobbler)

5- Agro-Processing (Bee Keeping, Flour making/Agro-processing)

6-Mechanical worker (Fuel operated taxi/machine, Animal operated transport/tools, Repairing & Servicing)

7-Miscellaneous (Education/Health practices, Money lending, Iron & steel work, Stone/sand & Mining)

#### Box-Items-1

Appropriate Technology India (AT India), Guptakashi, Rudraprayag, Uttarakhand is promoting livelihood and conserving biodiversity through creation of community-owned certified organic honey and oak tasar silk, dairy and certified organic spices-based enterprises. Over the last 20 years, it has developed a range of novel livelihood activities enabling steady returns to almost 13,558 stakeholders. AT India is currently managing five (5) livelihood program in about 655 villages of 5 districts (Chamoli, Pauri, Rudraprayag, Tehri and Uttarkashi) of Uttarakhand. It has established commercial production of oak tasar based sericulture in the Garhwal Himalaya (first in India) and more than 826 families are employed in the whole cycle from silkworm rearing to weaving with income from Rs.3500 per rearing season for cocoon rearers to Rs.2500 per season for home-based spinners and Rs.4000 per weavers per month. The oak tasar silk wool blend design prototypes is currently catering to bulk demands in up-market stores of major Indian cities and abroad. The Devbhumi Organic honey is being supplied to 250 stores in India through improved technology and training for Beekeeping wall hive and bee box to stakeholders in remote villages. Interventions in the dairy sector have created the network of 4794 women dairy producers in 319 villages, by linking them to micro-finances services along with marketing outlets for milk products and over 210 youth are working as business service providers in dairy production and value chain system. The dairy sector has been generating revenue of Rs.26 million per annum for the local community. The organic spice cultivation has been introduced in more than 350 hill villages across five districts and about 4733 women have been organized into over 237 producer groups and are involved in cultivation of ginger, turmeric, garlic, chilli and large cardamom. The spices sector has been generating revenue of Rs.0.65 million per year for women groups involved in it.

Source: ATI, Guptakashi, Rudraprayag, 2018

### **Box-2 Local Resource based Livelihoods & Hill Specific Technologies bring new Hope for Disaster hit Kedar Valley**

Kedar valley's, economy to a larger extent is based on pilgrimage tourism. But, floods of 2013, damaged many hotels, lodges and shops got at Kedarnath, Rambara, Gaurikund, Sonprayag including human settlements and agricultural land downstream. Besides, people lost their livestock particularly ponies and buffaloes affecting their livelihoods.

The G B Pant National Institute of Himalayan Environment, Garhwal Regional Centre (Srinagar Garhwal), initiated technology led skill development programs for local people at Rural Technological Centre (RTC), Triyuginarayan in Uttarakhand with the support from the Department of Science and Technology (DST) to address local livelihoods challenges by harnessing potential of locally available bio-resources by adding value to local resource and skill for mini and micro enterprise creation. In this process, need based hill specific technologies were delivered with strong social engineering component, which were effectively adopted and replicated by the people for their livelihood gain and income generation.

The technologies, for increasing yield such as protected cultivation through polyhouses increased about 4-5-fold production of vegetables and ornamental flowers.

It has been estimated that cultivation of off-seasonal vegetables under polyhouse condition provided a monetary return of around Rs. 28,809 as an additional income per household in a year and benefited more than 456 households. Besides, value addition of locally available agro and wild bioresource based edible product development, and value-chain addition of the produce helped 10-12 local youth to start small micro-enterprises and now are earning a profit of Rs. 375985 to Rs.5,67,000 per year. ``

The action research project has addressed the livelihood and socio-economic development-related challenges. It has also explored the suitable and affordable technology options and opportunities for sustainable development of disaster-affected rural landscapes of Kedar valley in Uttarakhand.

### **BOX items-3**

Himalayan Research Group (HRG) led by Dr Lal Singh, Himachal Pradesh, uses scientific knowledge and skills, to build a unique model of a business cum social enterprise, that he runs with his colleague scientist.

#### **Box-Items-3**

Mushroom cultivation along with the local households of June valley and trained them in mushroom farming, and helped them set up their own mushroom farming facilities. HRG managed and provided both supply of mushroom spawn and compost to the farmers, with no charges. Input costs are deducted later from the earnings made. In these 20 years, HRG's mushroom agribusiness, essential oils and medicinal plants farming has changed lives of many households. The combination of non-conventional options for local farmers would not be possible without technical and marketing help of HRG.

**Source: (State of the Himalayan farmers and farming, Integrated Mountain Initiatives by Dr. Tej Partap,2020).**

#### **Box-Items-4**

Organic Kiwi wine Co. "NAARA-AABA" of Rita Tage, the daughter of Apatani tribal farmer of Arunachal. She returned to the village after agriculture engineering degree and planned for organic Kiwi wine "NAARA-AABA". Her village was full of Kiwi orchards and fruit was available in abundance and it came at a very low price. Farmers were not able to sell their whole produce. She worked on the plan and her efforts bore fruit when finally on October 26, 2017, she launched her organic kiwi wine "NAARA-AABA". She calls her NAARA- ABA organic kiwi wine, a farmers pride and consumers delight". Her concerns include lack of skilled service providers, assistance in export promotion and cold chain. Additional issues of concerns are lack of technological assistance for managing kiwi orchards well, including managing pollination for enhancing fruit quality and production.

Source: (State of the Himalayan farmers and farming, Integrated Mountain Initiatives by Dr. Tej Partap, 2020).

#### **BOX-5 Mushroom, Cut Flower Farming and Poultry Farm, Sikkim**

Tila Ritu Rai, 35 years old unmarried lady lives with her family at Phali Dara, Namchi Block, South Sikkim. Having a big family of 11 members, she studied till class 10 and then she decided to help her parents in agriculture farm and household chores. It was after some time, that she got an opportunity to go for some vocational training. Initially, it began with mushroom cultivation training program conducted by the Government of Sikkim where she successfully completed the training program. She vividly remembers the moment when they were asked that “how many of them (trainees) would like to start mushroom cultivation?” in fact, she narrated that she wasn’t planning to start like everyone else but having an interest and all the required factors of input. She decided to give a try and started a mushroom cultivation. It was after a year that she successfully sold her first mushroom at Rs 200 per kg. She informed that she extracts 22 kg of mushroom every forth night with an average income of around Rs 60,000 a season.



**Plate 1: Mushroom cultivation at Tila Ritu Rai farm.**

However, opportunities knock the door for Tila Ritu Rai once again. It was in the form of cut flower farming and training program where she learnt how to grow and do business of cut flowers especially Carnation and Anthurium. Looking at her keen interest and passion towards mushroom cultivation and cut flower business, she was further encouraged by the Government by providing basic help and support like making polyhouse, providing organic fertilizers, medical assistance, subsidized loans and seeds. Beside this, she takes care of 2 acres of agricultural land along with her parents. They grow Buck wheat, Maize, seasonal vegetables and Ginger which is either used as a fodder or self-consumed. Her busy life gets much busier with the livestock that they have. Having four cows, two pair of Oxen and a poultry farm, all invested with household savings provided them a good source of income for her and the family to send other sibling for university education. Lastly, she is a model in her village where she has successfully managed to grow mushroom, do cut flower business, raise cows and poultry and generate good income from farm-based sector with technical support from the Government.

#### **BOX-6-Shifting from agricultural practices to Diary and Broom Plant cultivation, Sikkim**

The villagers of Raigoan, Chakung, Soreng Block, West Sikkim are mutually facing two major challenges in regards to their livelihood. Their agricultural crops are either being attacked by wild animals or are destroyed by some new hybrid diseases, be it ginger, maize, cardamom or any other crops - narrated Navin Gurung, 44 years old farmer.

Looking into this major livelihood crisis, Farmers like Navin Gurung has stopped growing agricultural crops and rather shifted their land use into Broom Plant (Amiliso) cultivation. Out of his 3 acres land, he has planted Broom Plant (Amiliso) in around 2 acres and further plans to add more. It was evident that Amiliso was neither attacked by the wild animals nor affected with diseases. Further, he earned around Rs 50,000 by selling 8 quintals of Broom last year. However, having the abundance of broom plant eases his problem of fodder in the winter and made him bought more cows and draws more milk. Currently, he is supplying 10 liters of milk which helps him generate income of around Rs 21000 per month.

## Addressing issues and concerns related to livelihoods in the IHR

- Most of the growth due to industrialization has taken place in plain areas of the IHR. The hill/mountain regions are less developed in terms of infrastructure, i.e., electricity, roads and irrigation, leading to increasing disparity in income and livelihood.
- The need to address diverse concerns of migration and livelihood and overall updating of socio-ecological and cultural set-up of the Himalayan region is earnestly felt. However, the challenges like marginal communities, small and fragmented holdings, poverty, food security, low income, and limited capacity of people to face these challenges is big impediment. The key challenges include deterioration of local food systems, changing dietary habits, climate change impacts, high rates of poverty, increased rates of outmigration, abandonment of cultivable land, rapid urbanization, inadequate infrastructure and market access, depletion of natural resources, barriers to food movement and trade, and gaps in existing policies and programs. climate change-induced hazards and biophysical constraints are further adding to the overall problems of inaccessibility and fragility in the region.
- The traditional livelihood comprised of agriculture (+ allied activities) and handicrafts; has unfortunately, deteriorated considerably due to various reasons which includes high poverty, natural resource degradation, climate change, low level of market development, uncertain food support, and inadequate policy and institutional support. The change in the nature of economy from 'in kind' to 'in cash' has also brought changes in the socio-economic perceptions. Since the small land holding is not enough to meet the food demand of increased population hence people are moving to urban areas in search of employment but with limited capacity and qualifications, they end up doing petty-jobs.
- The existing efforts and interventions addressing the issues of migration and achieving sustainable livelihoods in most of the rural areas are not enough and conversant with the expectations of the people. An integrated and holistic approach for development of livelihood in rural areas can be helpful.

**Disillusioned Youth:** - Youth in hills/ mountains is distracted due to the smart technology (like smart phones, TV, etc.) and education which has broadened their mindset and because of which they don't consider farming and livestock an appealing future. Hence, it's vital to understand their mindset so as to motivate them to take traditional and newer venture so that they can generate income and employment opportunities in the rural set-up. Promotion of high value horticulture crops, revitalizing local food systems, spices and health food of agro and wild bioresources, non-timber forest products (NTFPs), medicinal and aromatic plants, mountain niche cash crops, and organic agriculture offers an exciting opportunity for engaging with youth and entrepreneurs in the hill/ mountain areas. Needful training and credit/funding should be made available to them for this purpose.

- Climate change has adverse impact on the livelihoods based on forestry, agriculture, livestock husbandry, Non-Timber Forest Products and medicinal plants. The changes in key climatic phenomena are also likely to result in more frequent droughts, increased incidence of high intensity rainfall, and more frequent floods, all of which lead to increased vulnerability and uncertainty in food and livelihood security in the region. The climate-induced extreme events,

including floods, erratic rainfall patterns, high variations in temperature, dry spells and droughts are directly and indirectly affecting livelihoods and increasing food insecurity through reduced water availability for agriculture, forest and pastureland production that further impoverishes the transhumance pastoral communities.

- The concern of migration and livelihood need to be addressed in a systematic manner by integrating livelihood with capacity building, institutional development, financial and other resources, and environmental conservation.
- Marketing remains a major challenge for agro-produce and wild bioresource (NTFPs/MAPs) collectors/gatherers as they have little or no access to market information and channels, existing price and value of the produce/products. Therefore, there is a need to strengthen linkages and to make market information available to the gatherers. It is important to improve transportation and marketing systems and to organise farmers into groups to help strengthen their bargaining power, increase the efficiency of marketing, and enhance economies of scale in marketing of agricultural and horticultural produce. Developing economic corridors and promoting trade and business of Himalayan products should also be considered. Besides, the market information needs to be strengthened through the use of ICTs such as mobile phones, local FM radio, e-information systems, and other mechanism to improve farmer access to market information.
- The natural habitats that harbour potential bioresources are under major threat therefore, urgent steps to restoring/rehabilitating/ conserving the degraded sites through appropriate science and technology interventions and people participatory approaches is earnestly required.

### **Discussion on Livelihood**

Opportunities do not come by chance in the hill areas rather they are created and facilitated by human and natural capital, bio-physical conditions, human resources, institutions, and also by an appropriate and empowering and enabling policy environment. Most mountain areas have not been able to adequately harness their unique resources to improve livelihoods because of inadequate and unfavourable policies towards mountain areas. Low level of access to and rights over natural resources and crop damage /depredation of livestock by wild life/carnivores remain major concerns between govt authorities and local communities. Mainstream development approaches, strategies, and policies often have little relevance in generating new opportunities in the mountain areas as these are not made as per the requirement and needs of the local people. A policy environment needs to be created to mitigate mountain vulnerabilities, and harnessing mountain niches, diversity and human adaptation skills to generate and sustain opportunities in mountain areas. Despite all the development rhetoric and significant development expenditures poured into it, mountain people, especially minority caste, and ethnic groups and women, continue to be marginalized. For them the enabling environment is still missing despite the policies, which also indicates lapses in implementation. The central goal of development of the hill/mountain region of the IHR should be to strengthen human resources through education, health, skill development to harnessing the potential of the diverse resources and improving productivity, to overcome existing inequities and exclusionary processes that prevent women and especially socially excluded groups, from developing their full potential. Promoting decentralized planning within agencies and governments and involving communities are prerequisites for enhancing the livelihood and sustainable development in regions. Ways and means

have to be explored to overcome problems. Good governance is essential for generating and sustaining Himalayan Mountain niche opportunities to minimize the outmigration.

As elsewhere in mountains, the long-lasting legacy of geo-political, economic and social marginalization have made the Himalayan communities vulnerable to consequences of economic growth and vagaries of climate change. The prevalent multiplicity of ethnic and cultural diversity and their inherent shyness presents a serious challenge in reflecting people's view point in developmental planning for the Indian Himalayan Region. Therefore, hill/mountain perspective in policies and programmes is essentially needed, so as to maintain the uniqueness and richness of cultures, and improve the quality of life. Finding ways of innovative livelihoods within the region seems a viable solution to curb the intensity of out-migration.

A mix of strategies needs to be implemented for poverty alleviation, income generation and livelihood enhancement. Promoting income generating schemes, enhancing social and physical infrastructure, and developing income generating skills among local residents are potential options for the region. The potential income-generating schemes include the processing of animal products; off-season vegetable production in situ and in greenhouses; fruit cultivation; value addition to products, beekeeping, and employment opportunities in development project programmes such as road and railway line construction, etc. On the other, tourism presents one of the highest potentials for income generation. Sustainable community-based tourism, with a focus on adventure, rural tourism, agro-tourism, nature tourism and cultural tourism need to be promoted so that the community at large can benefit economically. Opportunities provided by the rich heritage of understanding the Himalayan landscape, traditional transhumance and pastoral systems, traditional skills in local craft making, and the diversity of ethnic culture need to be harnessed for optimal benefits. Besides, there is a need to explore and provide the geographical markers or GI tag/s (certificates of origin) to specific or niche crops/products and lesser-known crops or unique products of the Himalaya. This will enhance the acceptability of the of the Himalayan products nationally and internationally. Identification and development of markets should be an important component of income-generating schemes.

#### **BOX 7 Saffron Cultivation in Sikkim: An Initiatives of Sikkim University**

Sikkim University has initiated efforts to explore possibility of saffron (kesar) cultivation in Sikkim since 2020 and presently, trials are being conducted in high altitude locations of the State. The Vice- Chancellor Prof. Avinash Khare and a team of researchers from the university held several online meetings with the director, Agriculture department, Kashmir and several saffron experts to discuss diverse aspects of saffron cultivation. Subsequently, a team from Sikkim University visited Kashmir to gain understanding of saffron cultivation practices through visits to several farms and the centre of excellence for saffron in Kashmir and elaborate interactions with the farmers.

The research team surveyed several high-altitude locations taking into account the climatic and soil conditions required for saffron cultivation. In all, eight sites were selected in consultation with saffron experts from Kashmir for conducting the cultivation trials. It was observed that nearly eighty percent of the saffron corms sprouted, and the flowers are being picked these days. The flower samples are transported to Sikkim University for detailed observations and measurements of diverse parameters, the release informs. The results obtained so far sufficiently indicate the possibility of saffron cultivation in Sikkim. The research team has observed that the high-altitude areas with prolonged chilling conditions during winters and well-drained soils are conducive for saffron cultivation.



## **Migration pattern in the IHR**

---

### **Introduction**

Presently development which is symbolic with growth and progress in all sectors is the main requirement of all societies whether living in rural or an urban set up. These societies aspire for improvement in their surroundings according to their local character, appropriate to their socio-ecological context. If this satisfaction is not available to the people living in these set ups, they use migration as a strategy to solve their problems as well as also as a tool of their sustenance. Migration is a global phenomenon as people have been moving from one place to another to live, to find out suitable shelter or other reasons like living in conflict zone, human rights violation, natural disasters, environmental concerns, financial crises, food insecurity, climate change, globalization, and escalating income disparities (Jain, 2010). Though the reasons of migration are various and vary from region to region, however, most of the migration takes place for better livelihood and employment and (Bodvarsson & Berg, 2009; Usher, 2005; van Dalem et al., 2005; Zachariah & Rajan, 2004; GOI, 2008). As migration is a very popular strategy therefore it has led to enormous urbanization, mainly in developing countries as per the need of growing people (Remi and Adeyoke, 2011).

The trend towards globalization, urbanization, and commercialization in recent decades has also facilitated out- migration flow. In developing countries, rural-to-urban migration is the most widespread form of migration because of pronounced disparity between rural and urban areas and it has conventionally been looked upon as a strategy to escape the poverty by the rural poor. Migration is an integral feature of any society and is a dynamic process of population change. It is not merely a process of mobility from one place to another but it is a dynamic process of changing the demographic pattern, socio-economic profile, political scenario, health, education, life style, cultural & traditional, religious, as well as environmental aspects. While considering human and social capital, lack of capacity of many rural systems to generate adequate job opportunities results in higher rates of outmigration, especially among the younger generation who are often highly educated and economically and socially active members of the population (Bock, 2016). Interactions between demographic, economic, environmental, political, and social drivers shape migration patterns (IPCC, 2014). However, migration as an outcome is not ensured by mere existence of these migration drivers but also by household and personal characteristics (Black et al., 2011). Migration occurs when various push and pulls factors in rural and urban ecosystem come together and motivate individual or family to migrate (Bhagat & Mohanty 2009). It plays an important role in changing a socio-economic profile and demographic pattern of both rural and urban ecosystems (Khan, 2010). The Social and Economic factors have been identified as major attributes and responsible for it (Sati, 2016).

In the Indian Himalayan region, migration is intensively practiced for centuries due to limited livelihood options, economic opportunities and amenities. The extent of out migration for the Indian Himalayan States has been estimated 20.5 million (census 2011), which varies from state to state due to various reasons depending on local socio- cultural, economic and environmental condition. In the whole IHR, the economic disparities between the states as well as hill and plain areas are quite prominent. Several scholars have opined that migration, mostly of youth (educated and



uneducated) from the mountainous/hill areas, is an adaptive measure (Leduc and Shrestha, 2008; UNEP, 2004; Sherpa, 2007). Though, migration improves economic conditions and ensures food security but it also (Hoermann and Kollmair, 2007; Kollmair et al., 2006) causes depopulation and agricultural land abandonment and deterioration of the structural and functional attributes and social fabric of the hill/mountain rural ecosystems.

The perspective of sustainable livelihoods and migration is often debated in forums dedicated for Himalayan Mountain development but without any solution. Therefore, issue of migration and improved livelihoods with an aspiration of overall human-wellbeing and sustainability deserve greater attention of researchers, policy-makers, practitioners, and development planners to address the context, linkages of migration with sustainable livelihood, quality of life, and environment is urgently needed. The IHR cannot over-look the adverse impact of migration especially when the overall development of the several parts/regions has been confronting the trap of low growth and therefore, is the case to be studied in future under varied conditions. However, migration from rural to urban areas is still a growing concern and most importantly the whole IHR is strategically very important as its border touches with China, Pakistan, Bangladesh, Bhutan, Myanmar and Nepal. The empty villages along the border areas present a scary sight particularly in Uttarakhand where the Chinese aggression is increasing. The people usually belonging to the shepherd community used to be ears and eyes of the armed forces but increasing difficulties of the areas the villages are largely being abandoned by this community also. Same is being repeated in other areas also. This is posing a security threat not only from China but also illegal immigrations, smuggling of drugs, arms and other contraband as well as threat of terrorist attacks particularly from the border areas of Myanmar, Pakistan, Nepal and Bangladesh etc. This indicates a need to investigate the problems of the inhabitants as well as create an enabling atmosphere so that people can easily stay in their villages.

### **Major drivers of the out-migration in the IHR**

Migration has many reason /causes with no simple solution. An integrated, multi-sectoral approach to development is critical, with different but complementary activities. Some of the main causes are:

- Adverse bio-geophysical conditions, steep slopes resulting in low agricultural production.
- Natural hazards/disaster, extreme events, landslides, cloudburst and flash-floods, etc.
- Economic remoteness, with higher transaction and input costs and few investments
- No employment opportunities in the region for youth retention in the villages
- Deterioration of quality education at all levels from primary to post graduation
- Low capacity/skill among local people for income generation from farm and non-farm sectors agriculture/wild bioresources
- Lack of small-scale industries and poor micro-macro-economic condition of the region
- Depleting natural and bioresources making it harder to acquire basic products
- Increase in human wildlife conflicts
- Inclusion of more forest areas under protected area network (PAs) and eco-sensitive zones without taking local communities into consideration
- Poor infrastructural facilities particularly roads, health, medical and transportation facilities
- Large scale abandonment and fallowing of agricultural land due to out migration of entire families.
- Increasing social disintegration among the village communities.

## Section I

### Migration in the Indian Himalayan Region: The Macro Scenario

In this section we have examined both the intra-state and inter-state migration patterns by analysing the data of 2011 Census that was released in 2020. Though this data is ten years old, but this is the only source of migration data at the state and district level. Table 6.1 provides total migrants enumerated in the states, number of intra-state migrants, no. of intra-district and number of inter-district migrants and the percentages of the last three categories. It reveals that an overwhelming majority of migrants move within the state (intra-state migration) in all the states of the IHR. In terms of persons, about 29 lakh people were enumerated as intra-state migrants in Uttarakhand, followed by Jammu and Kashmir (26 lakh) and Himachal Pradesh (21 lakh). If we exclude Assam, the number of intra-state migrants is relatively low. In the North-Eastern states because of the lower size of population. The number of intra-state migrants is the highest in Tripura (close to a million) among the North-Eastern states, followed by Manipur (6.64 lakh) while the lowest is reported from Sikkim (1.67 lakh). While considering the percentage of intra-state migrants, we found that more than 90 percent of the migrants did not cross the state boundary in Jammu & Kashmir, Assam, and Manipur. In the remaining states, the percentage share of the intra-state migrants ranged from 67.65 in Sikkim to 86.86 percent in West Bengal. Importantly, it is apparent from the data presented in Table 6.1 that a vast majority of the intra-state migrants take a short distance migration as they move within a district (intra-district migration) rather than moving to other districts within a state (inter-district migration). The highest percentage of intra-district migrants out of the total intra-state migrants is reported from Meghalaya (88 percent) while the lowest is reported from Mizoram (65 percent), another state from North-East. Conversely, the highest percentage of inter-district migrants is found in Mizoram (35 percent).

**Table 6.1: Migrants classified by place of last residence in the place of enumeration, 2011**

| State/UT                                | Number    | %     |
|-----------------------------------------|-----------|-------|
| <b>Jammu &amp; Kashmir</b>              |           |       |
| Total Migrants                          | 28,09,629 |       |
| Intra-State Migrants (within the State) | 26,18,467 | 93.20 |
| Intra District Migrants                 | 20,28,506 | 77.47 |
| Inter-District Migrants                 | 5,89,961  | 22.53 |
| <b>Himachal Pradesh</b>                 |           |       |
| Total Migrants                          | 26,47,067 |       |
| Intra-State Migrants (within the State) | 21,84,176 | 82.51 |
| Intra District Migrants                 | 18,34,106 | 83.97 |
| Inter-District Migrants                 | 3,50,070  | 16.03 |
| <b>Uttarakhand</b>                      |           |       |
| Total Migrants                          | 43,17,454 |       |
| Intra-State Migrants (within the State) | 29,83,115 | 69.09 |
| Intra District Migrants                 | 22,05,881 | 73.95 |

|                                         |           |       |
|-----------------------------------------|-----------|-------|
| Inter-District Migrants                 | 7,77,234  | 26.05 |
|                                         |           |       |
| <b>SIKKIM</b>                           |           |       |
| Total Migrants                          | 2,47,049  |       |
| Intra-State Migrants (within the State) | 1,67,125  | 67.65 |
| Intra District Migrants                 | 1,25,999  | 75.39 |
| Inter-District Migrants                 | 41,126    | 24.61 |
|                                         |           |       |
| <b>ARUNACHAL PRADESH</b>                |           |       |
| Total Migrants                          | 6,30,831  |       |
| Intra-State Migrants (within the State) | 4,83,725  | 76.68 |
| Intra District Migrants                 | 3,85,814  | 79.76 |
| Inter-District Migrants                 | 97,911    | 20.24 |
|                                         |           |       |
| <b>NAGALAND</b>                         |           |       |
| Total Migrants                          | 5,49,618  |       |
| Intra-State Migrants (within the State) | 4,35,046  | 79.15 |
| Intra District Migrants                 | 2,72,959  | 62.74 |
| Inter-District Migrants                 | 1,62,087  | 37.26 |
|                                         |           |       |
| <b>MANIPUR</b>                          |           |       |
| Total Migrants                          | 6,86,935  |       |
| Intra-State Migrants (within the State) | 6,64,018  | 96.66 |
| Intra District Migrants                 | 5,28,293  | 79.56 |
| Inter-District Migrants                 | 1,35,725  | 20.44 |
|                                         |           |       |
| <b>MIZORAM</b>                          |           |       |
| Total Migrants                          | 3,87,370  |       |
| Intra-State Migrants (within the State) | 3,30,584  | 85.34 |
| Intra District Migrants                 | 2,12,063  | 64.15 |
| Inter-District Migrants                 | 1,18,521  | 35.85 |
|                                         |           |       |
| <b>TRIPURA</b>                          |           |       |
| Total Migrants                          | 12,99,623 |       |
| Intra-State Migrants (within the State) | 9,89,623  | 76.15 |
| Intra District Migrants                 | 8,50,428  | 85.93 |
| Inter-District Migrants                 | 1,39,195  | 14.07 |
|                                         |           |       |

| <b>MEGHALAYA</b>                        |             |       |
|-----------------------------------------|-------------|-------|
| Total Migrants                          | 7,59,554    |       |
| Intra-State Migrants (within the State) | 6,43,823    | 84.76 |
| Intra District Migrants                 | 5,68,122    | 88.24 |
| Inter-District Migrants                 | 75,701      | 11.76 |
|                                         |             |       |
| <b>ASSAM</b>                            |             |       |
| Total Migrants                          | 1,06,44,234 |       |
| Intra-State Migrants (within the State) | 1,00,35,507 | 94.28 |
| Intra District Migrants                 | 78,99,487   | 78.72 |
| Inter-District Migrants                 | 21,36,020   | 21.28 |
|                                         |             |       |
| <b>WEST BENGAL</b>                      |             |       |
| Total Migrants                          | 3,34,48,472 |       |
| Intra-State Migrants (within the State) | 2,90,52,806 | 86.86 |
| Intra District Migrants                 | 2,28,35,703 | 78.60 |
| Inter-District Migrants                 | 62,17,103   | 21.40 |

*Source: Compiled from Census of India, 2011, Table D-2: Migrants Classified by Place of Last Residence, Sex and Duration of Residence in the Place of Enumeration*

### **Inter-State Migration**

Table 6.2 presents a picture of inter-state migration arriving to a particular state from other states (in-migrants), migrants from a state going to another state (out-migrants) and net migrants measured in terms of in-migrants minus out-migrants. It reveals that all the states receive migrants as well send migrants to other states, though in some of the states, the number of in-migrants is higher than the out-migrants while the reverse is true for other states. Interestingly, there are seven states, namely Uttarakhand, Sikkim, Arunachal Pradesh, Nagaland, Mizoram, Tripura and Meghalaya where the number of in-migrants exceed out-migrants. Uttarakhand receives 12.50 lakh in-migrants from other states while it sends 9.93 lakh migrants to other states, having a net migration of + 2.57 lakh. On the other hand, the number of out-migrants exceeds in-migrants in Himachal Pradesh and Jammu & Kashmir, recording a negative net migration. The census 2011 data reveals that close to a million-population out-migrated from Uttarakhand while the corresponding figure in Himachal Pradesh and Jammu & Kashmir was 5.35 lakh and 3.28 lakh respectively (Table 6.2). From the North-eastern states, the highest out-migration is reported from Assam (6.59 lakh) while the figure is less than a lakh in the remaining states of the region. In fact, the lowest number of out-migrants are reported from Sikkim, 21 thousand. As the out-migration from states has become a subject of close attention in recent times owing to Covid-19 pandemic because of socio-economic and political concerns, therefore it becomes essential to focus on the volume of inter-state out-migration from the different states of the IHR.

**Table 6.2: Inter-State Migration, 2011**

| State             | In Migrants (from other States) | Out Migrants (to other States) | Net Migrants (+/-) |
|-------------------|---------------------------------|--------------------------------|--------------------|
| Jammu & Kashmir   | 1,55,187                        | 3,28,919                       | -1,73,732          |
| Himachal Pradesh  | 3,95,504                        | 5,35,823                       | -1,40,319          |
| Uttarakhand       | 12,50,575                       | 9,93,570                       | +2,57,005          |
| Sikkim            | 61,163                          | 21,459                         | +39,704            |
| Arunachal Pradesh | 1,36,010                        | 37,368                         | +98,642            |
| Nagaland          | 1,08,020                        | 45,734                         | +62,286            |
| Manipur           | 20,100                          | 75,751                         | -55,651            |
| Mizoram           | 41,380                          | 30,365                         | +11,015            |
| Tripura           | 87,378                          | 85,862                         | +1,516             |
| Meghalaya         | 1,07,915                        | 70,268                         | +37,647            |
| Assam             | 4,95,699                        | 6,59,694                       | -1,63,995          |
| West Bengal       | 23,81,045                       | 24,05,522                      | -24,477            |

*Source: Compiled and computed from Census of India, 2011, Table D-2: Migrants Classified by Place of Last Residence, Sex and Duration of Residence in the Place of Enumeration*

These tables make it clear that there is considerable out-migration from the states of IHR therefore it is worthwhile to examine the streams of such migration in terms of destination. Figures 6.1 to 6.4 depict the five major streams of migration from each of the states. Fig 6.1 reveals that highest number of migrants from Uttarakhand move to the neighbouring state of Uttar Pradesh (3.93 lakh), next option is Delhi (2.94 lakh), then Punjab, Chandigarh and Maharashtra in small numbers. In Himachal Pradesh, out-migration is largely to Punjab, Delhi, Haryana, Chandigarh, and Uttarakhand. Out of these designations Punjab is most preferred, with about 2.14 lakh people moving there. The next is Delhi which recorded about 79,000 migrants.

From Jammu & Kashmir people largely move to Punjab, Delhi, Uttar Pradesh, Maharashtra, and Rajasthan. The number of migrants moving to Punjab from J&K were 79,000 while around 40,000 people moved to Delhi.

As discussed earlier, the volume of out-migration from the North-eastern states to other states is not high except in the case of Assam. Moreover, Assam also receives migrants from other states in North-east. From Arunachal Pradesh to Assam, West Bengal, Karnataka, Delhi and even to Uttarakhand.

In Manipur it is within North-East India mainly to Nagaland, Mizoram, Assam, Meghalaya and Delhi.

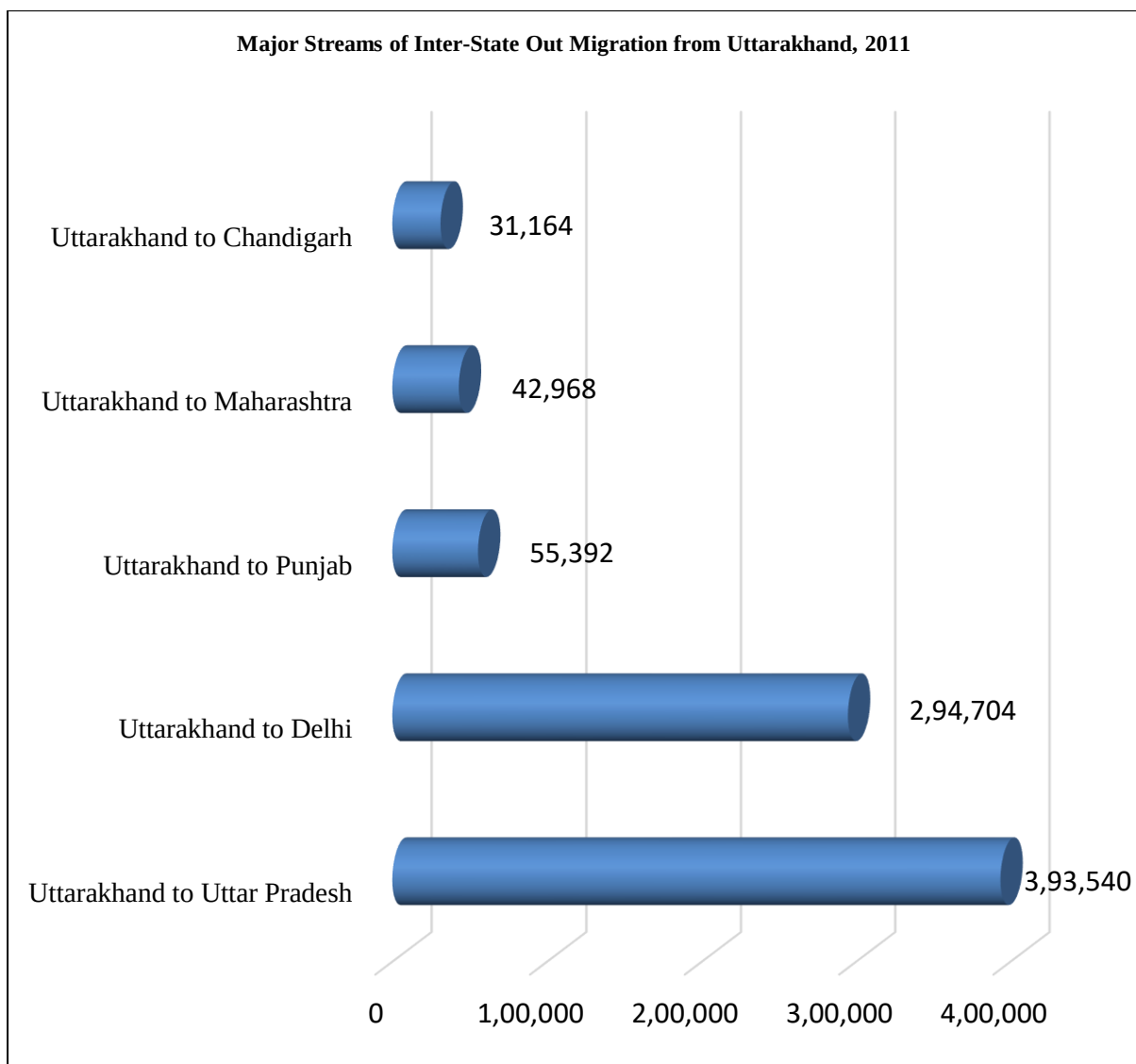
It is the same in Mizoram also as people generally migrate to Tripura, Assam, Meghalaya and Manipur but sometimes people migrate from Mizoram to Delhi also.

From Meghalaya they migrate to Assam, West Bengal, Delhi, Mizoram and Karnataka.

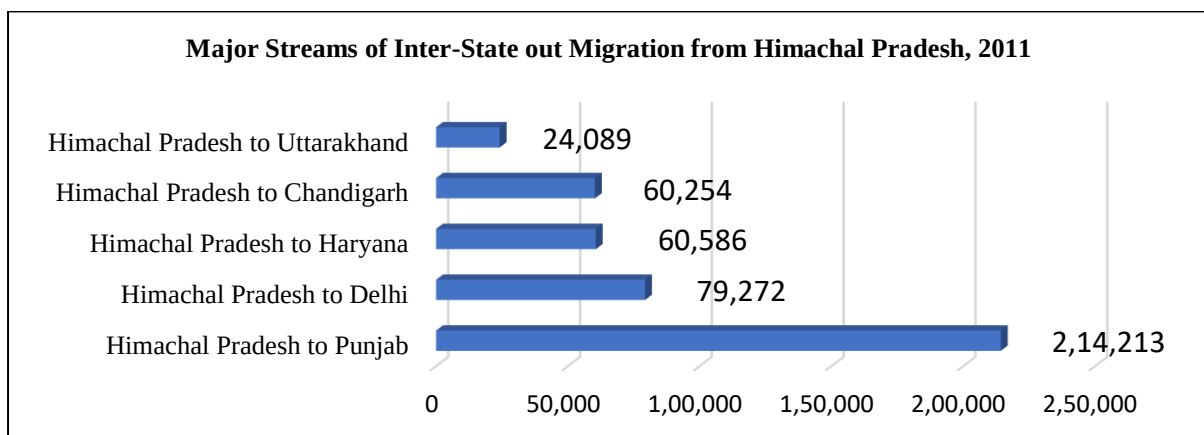
From Nagaland it is towards Assam, West Bengal, Delhi, Meghalaya and Manipur.

From Sikkim out migration is to the neighbouring state of West Bengal, Karnataka, Assam, Delhi and Himachal Pradesh.

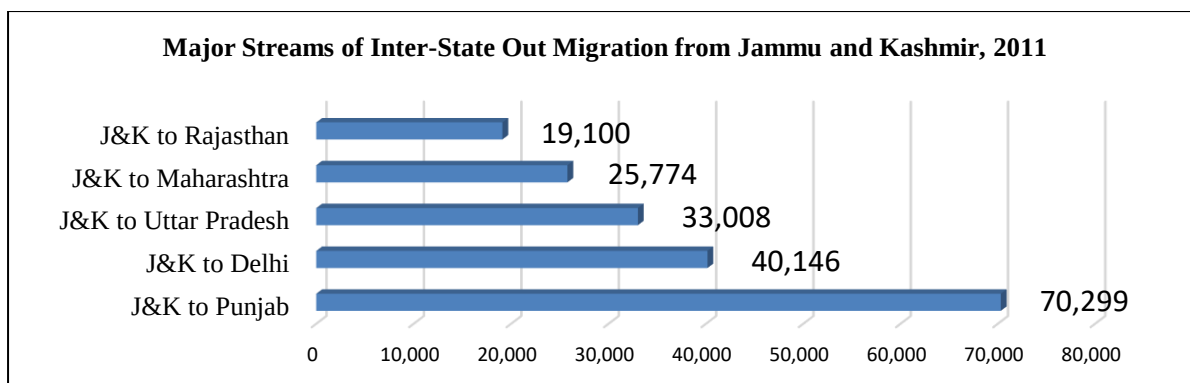
From Tripura it is to Assam, West Bengal, Mizoram, Nagaland and Meghalaya.



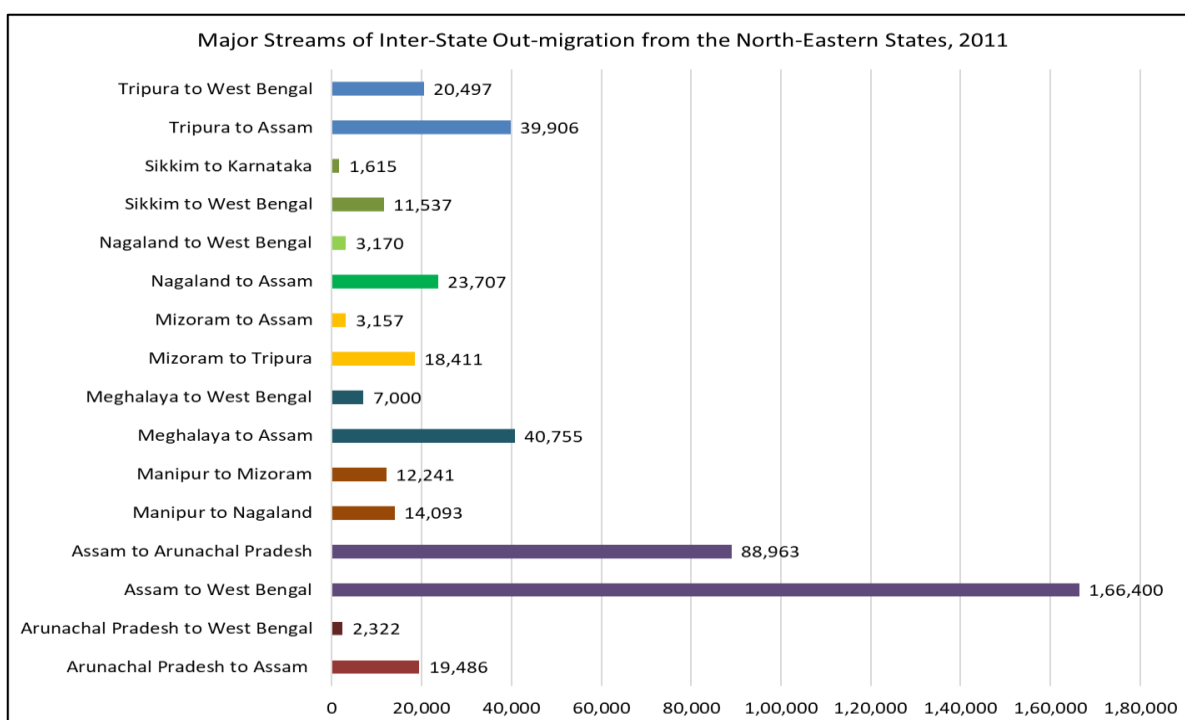
**Figure 6.1: Major Streams of Inter-State Out Migration from Uttarakhand, 2011**



**Figure 6.2: Major Streams of Inter-State out Migration from Himachal Pradesh, 2011**



**Figure 6.3: Major Streams of Inter-State Out Migration from Jammu and Kashmir, 2011**



**Figure 6.4: Two Major Streams of Inter-State Out-migration from the North-Eastern States, 2011**

## **Section -II**

### **Migration in the Indian Himalayan region: a Micro Level Analysis from the Field Data**

The household survey reveals that out-migration is a common phenomenon in all the states of the Indian Himalayan Region. However, the number of total out-migrants out of the surveyed population varies significantly across the different states. The highest number of out-migrants is reported from Kashmir (4049), followed by Arunachal Pradesh (1424) and Uttarakhand (1099). In terms of the percentage of the out-migrants out of the total surveyed population, the incidence of out-migration is strikingly very high in Kashmir where more than one-third of the surveyed population is reported to be out-migrants, followed by Uttarakhand (16.51 percent), Arunachal Pradesh (13 percent) and West Bengal (12 percent). It is also relatively high in Sikkim and

Nagaland, about 9 percent. The share of the out-migrants is comparatively lower in Jammu, Ladakh, Himachal Pradesh, Assam and Meghalaya, where the percentage is less than 5. As is observed elsewhere in the country, the out-migration is male driven in the Indian Himalayan region also. In like Kashmir in Uttarakhand also more than 58 percent of the males among the surveyed population are reported to be out-migrants. The percentage of the female out-migrants also high in Kashmir (21.23 percent) while in Arunachal Pradesh the corresponding figure is 11.28 percent but the percentage of female out-migrants is abysmally low in Jammu and Ladakh (Table 6.3).

**Table 6.3: Number and Percentage of out-migrants**

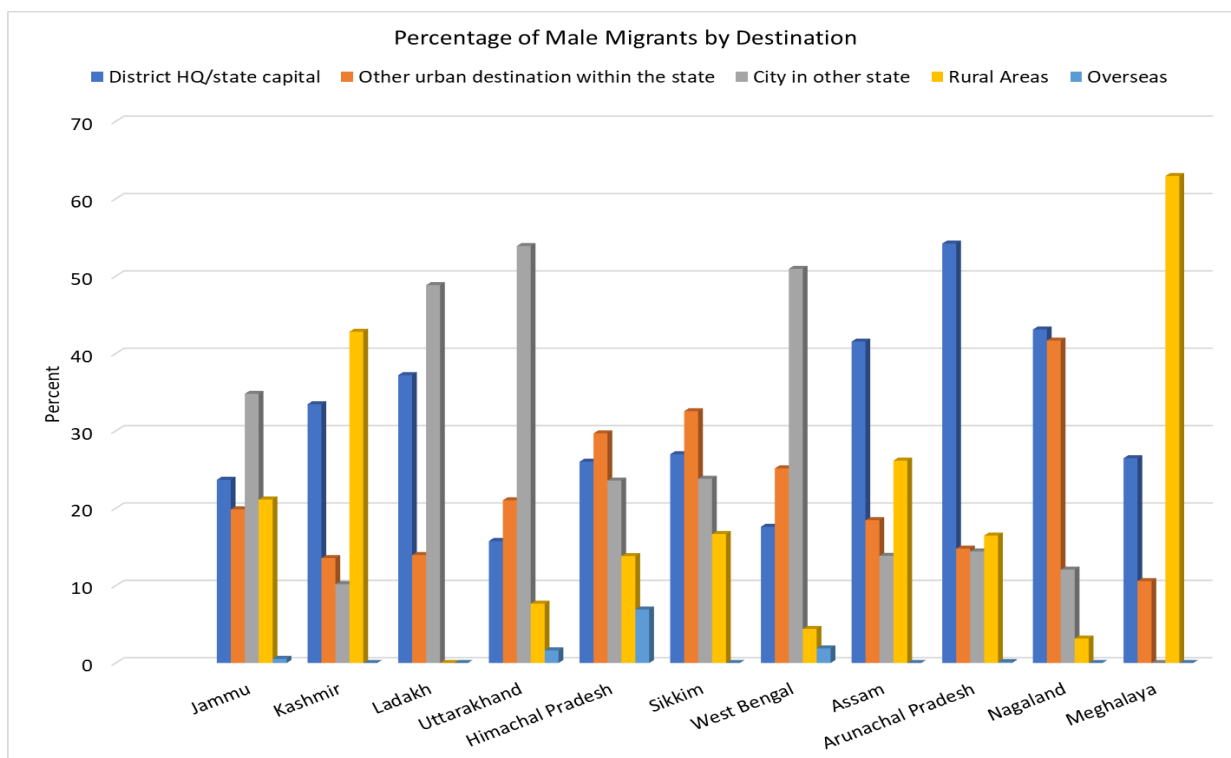
| Name of the State/UT/Area | No. of Outmigrants |      |        | Percentage |       |        |
|---------------------------|--------------------|------|--------|------------|-------|--------|
|                           | Total              | Male | Female | Total      | Male  | Female |
| Jammu                     | 570                | 545  | 25     | 4.81       | 9.56  | 0.49   |
| Kashmir                   | 4049               | 3032 | 1017   | 35.68      | 58.25 | 21.23  |
| Ladakh                    | 138                | 129  | 9      | 5.79       | 11.56 | 0.86   |
| Uttarakhand               | 1099               | 913  | 186    | 16.51      | 26.56 | 5.78   |
| Himachal Pradesh          | 422                | 246  | 176    | 5.23       | 5.92  | 4.50   |
| Sikkim                    | 182                | 126  | 56     | 9.53       | 13.15 | 5.89   |
| West Bengal               | 222                | 159  | 63     | 11.81      | 16.60 | 6.83   |
| Assam                     | 98                 | 52   | 39     | 3.04       | 3.77  | 2.68   |
| Arunachal Pradesh         | 1424               | 831  | 593    | 12.95      | 14.47 | 11.28  |
| Nagaland                  | 587                | 348  | 239    | 8.39       | 9.86  | 6.89   |
| Meghalaya                 | 341                | 165  | 176    | 3.61       | 4.22  | 4.11   |

Source: Field Survey, 2021

### Place of Destination of Migrants

A perusal of Figure nos. 6.5 and 6.6 reveal interesting patterns in the destination of male and female migrants. In Arunachal Pradesh, more than one-half of the migrants go to either to the district headquarter or the State capital while in Nagaland and Assam it is 43.10 and 41.54 percent respectively practice this. More than one-third of the male out-migrants move to such destination in Kashmir and Ladakh, one-fourth in Himachal Pradesh, Sikkim and Meghalaya. The share of the male out-migrants going to other urban centres within the state is very high in Nagaland (41.67 percent). Intra-state migration account for more than 80 percent of the male out-migrants in Nagaland and in Sikkim one-third of the male migrants move to the other urban centres, in Himachal Pradesh also this is high (29.67 percent). The tendency of male-migrants moving to the cities in other states, typically inter-state migration, is very striking in Uttarakhand, Hill district of West Bengal and Ladakh. More than one-half of the male migrants from Uttarakhand move to the cities in other states, followed closely by West Bengal (50.94 percent) and Ladakh (48.84 percent).



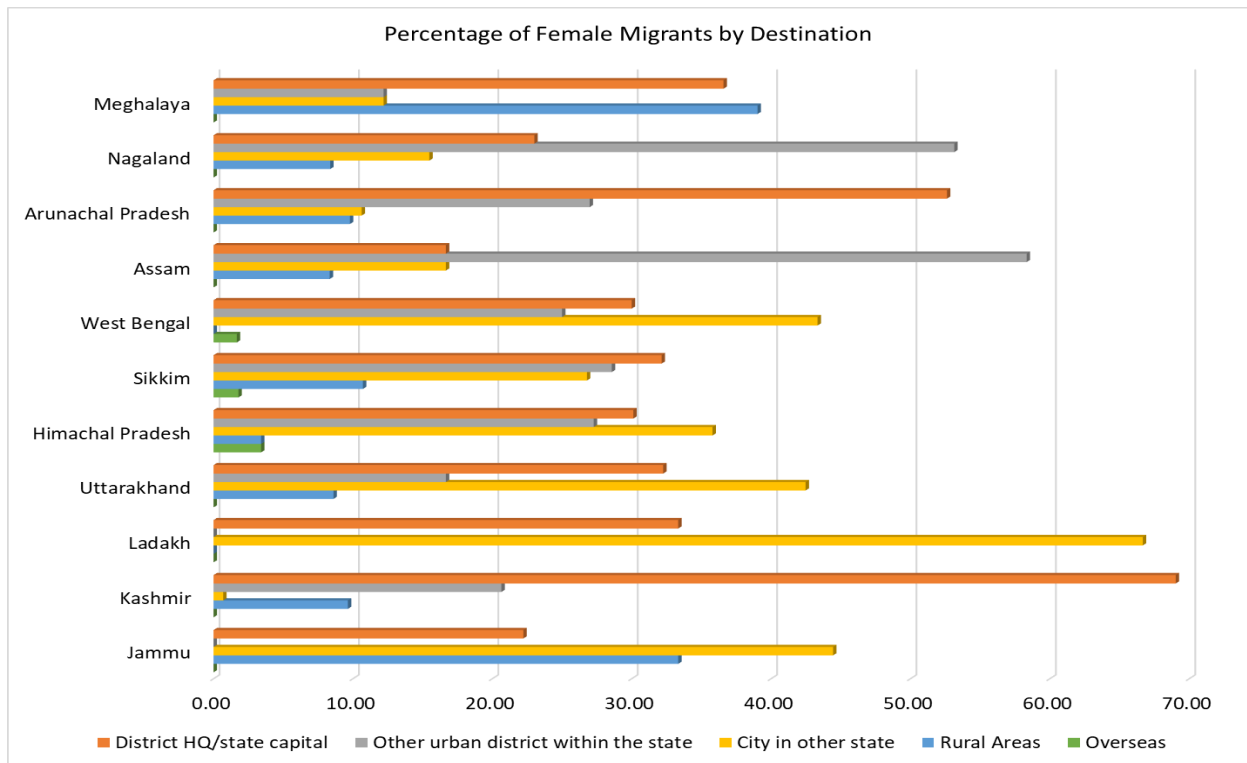


**Figure 6.5: Percentage of Male Migrants by Destination**

In Jammu, more than one-third of the male migrants go to the cities in other states while the corresponding percentage in Himachal Pradesh and Sikkim is about 23 percent. In comparison to all other states in the IHR, Meghalaya is an exception where not even a single migrant moved to a city in other states. Interestingly, rural areas also attract migrants in sizeable numbers in several states such as Meghalaya and Kashmir. The percentage of male migrants going to the rural areas is significantly high in Meghalaya (62.94 percent) while the corresponding figure for Kashmir is 42.81 percent. In Assam, more than one-fourth of the migrants move to rural areas while the corresponding figure in Jammu is 21.13 percent.

### **Place of Destination of Female Migrants**

In states where females out-migrate in sizeable numbers like in Kashmir, an overwhelming majority (69 percent) of them move to the district/State capital. More than one-half of the females migrate to the District/State capital in Arunachal Pradesh. About one-third of them migrate to such destinations in Ladakh, Uttarakhand, Himachal Pradesh, Sikkim and West Bengal. It is evident from the data that a large number of females migrate to the district/state capital within a state as compared to the males who usually take long distance migration to the cities located in other states. However, there are exceptions to this, like in Ladakh, where about two-third of the females migrate to the cities in other states. In the states like Uttarakhand and West Bengal, a very significant proportion of female migrants go to the cities in other states. On the other hand, one-third of the females migrate to rural areas in Jammu at times individually or with the family to work.



**Figure 6.6: Percentage of Male Migrants by Destination**

## Types of Migration

In this section, the micro-sources obtained from the field studies conducted in the eleven states of the Indian Himalayan Region (IHR) are being discussed to identify seasonal migrants.

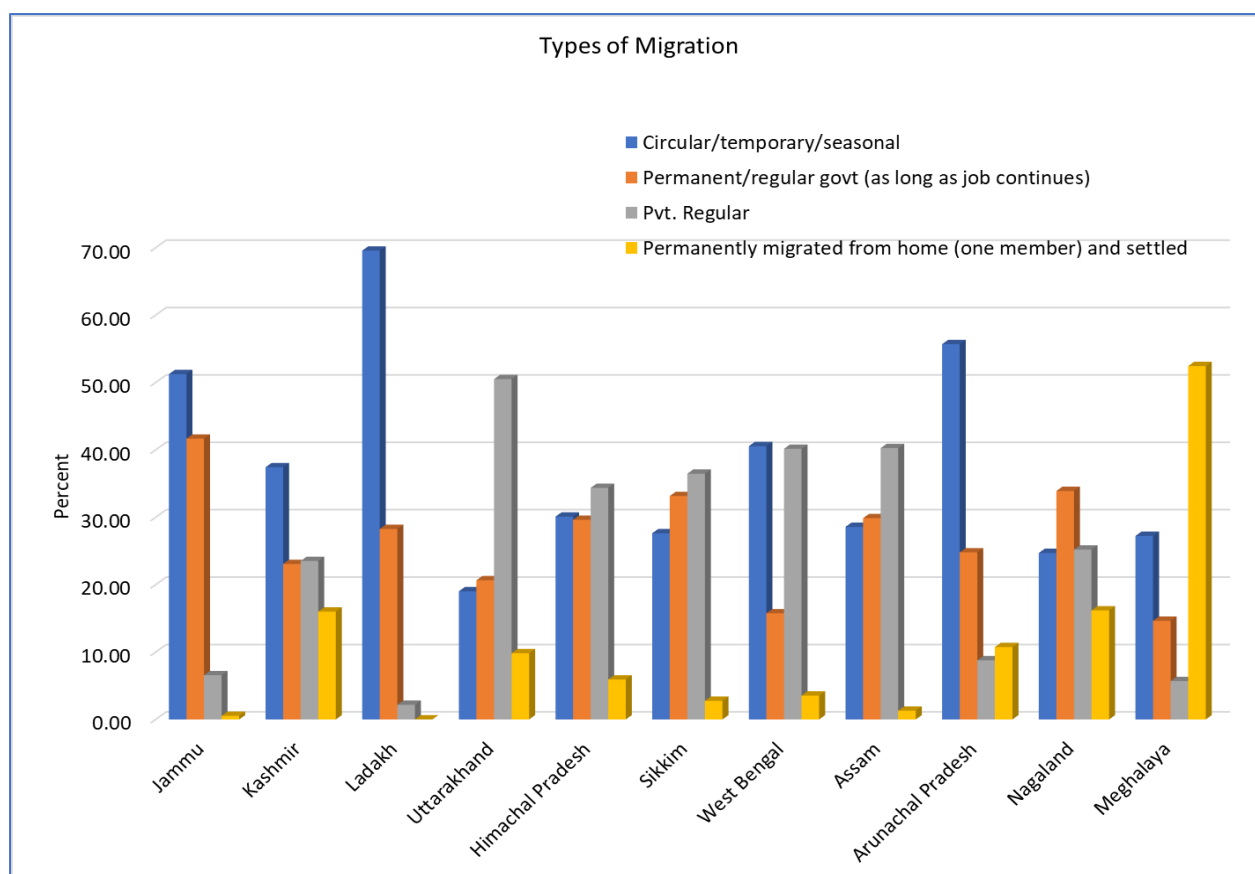
Characteristics of seasonal migration emerging from field studies have been extensively examined by as well as by other authors (Deshingkar et al. 2003). Both macro-data and field studies show that seasonally migrant labour belong to the most poor and deprived sections of society such as the Scheduled Castes (SCs) and Scheduled Tribes (STs) and Other Backward Classes (OBCs). These migrants are a product of individual and household livelihood deficits as well as regional resource and livelihood deficits. Migration provides subsistence to the workers and their families, but exposes them to a harsh and vulnerable existence, in which working and living conditions are poor. In the process of migration not only are families, including children, are uprooted from their homes year after year, but they also at times end up disenfranchised. Families lose the benefits of state Welfare facilities of the public distribution system in the villages, access, the public health system and the immunization drive for young children. It was also informed by the respondents that a large proportion of migrant labour do not have their entitlement papers like caste certificates, election cards, BPL cards, old age pension cards and so on. In the entire process, the lives of children are adversely affected. They are forced to drop out from school or never get to enrol in one. One has to remember that a child out of school is an important indicator of child labour in the country. Seasonal migrants migrate alone (male only, only female, or child only) or quite often in family units (husband, wife, children). When migration takes place as a family unit, each part of the family unit, excluding infants, contributes to family subsistence in one way or another – in work or as part of the household 'care' economy. For children, the work environment means unusual harshness and deprivations.

All studies show that seasonal migrants are in the prime working ages (15–45 years). Since these migrants come from the poorest and economically the most vulnerable sections of the working population, their own educational attainment is nil or negligible. A majority of those who are married in this age group have young children therefore migration of either one or both the parents has the potential of reducing the child's probability of being educated. There is large diversity in migration situations in seasonal or, short-term circular migration among the states of the IHR. Migration cycles range from a few weeks to a few months (7–9 months), and depending upon their length, may occur once or several times during the year. The migration is individual or family based, organized through recruiters, destination (proximity, rural/urban, intra- or inter-state, and type of work) etc varies according to migrants' experience about the place, area, their cultural/linguistic commonalities; the type of work, nature of employers, terms and conditions. If children are essential part of the labour process; the degree of isolation, fragmentation, and segmentation that the migrant labour force is subjected to, etc. In the following sections the magnitude and characteristics of short period migration from the field studies has been analysed.

The highest number of seasonal migrants is reported from Kashmir while the lowest number is reported from Sikkim. But the scenario changes when we take into account the percentage of seasonal migrants out of the total out-migrants in each of the states (Fig 6.7). In Ladakh 69.57 percent of the out migrants are seasonal migrants in Jammu and Arunachal Pradesh. more than one-half of the out-migrants are seasonal migrants while in West Bengal; the corresponding figure is 40.55 percent. The share of the seasonal migrants is also prominent in Sikkim, Nagaland and Meghalaya, where about one-fourth of the migrants are reported to be seasonal migrants. The share of the seasonal migrants is the lowest in Uttarakhand (19.02 percent).

As opposed to the short-duration seasonal migration, the share of the migrants moving out for permanent/regular job is remarkably higher in a number of states/UTs. In Jammu, about two-fifth of the out-migrants are in permanent/regular job about one-third of the out-migrants in Sikkim and Nagaland, about 30 percent in Himachal Pradesh and in Arunachal Pradesh and Kashmir, about one-fourth are in permanent jobs. The lowest percentage of out-migrants in permanent/regular jobs is reported from Meghalaya (14.63).

The out-migration for private regular jobs is very striking in Uttarakhand (50.50 percent), followed by Assam and West Bengal (40.16 percent). In Sikkim and Himachal Pradesh also one-third of the out-migrants are in private regular jobs. The lowest figure is reported from Ladakh (2.17 percent).



**Figure 6.7: Types of Migration**

The distribution of migrants by type of job varies significantly across the different states in the IHR. The migrants with a government job at the destination is the highest in Himachal Pradesh (44.78 percent) followed closely by Jammu (38.18 percent) and Arunachal Pradesh (35.25 percent). In Arunachal Pradesh, Assam, Nagaland and Sikkim, about one-third people migrate for government job. About 29 percent of people from Uttarakhand migrate. The out-migration owing to government job at the destination is lowest in Meghalaya (4.25 percent). On the other hand, a very significant percentage of out-migrants (36.17 percent) are employed as casual daily workers at the destination in Meghalaya in Nagaland it is 30 percent. In Himachal Pradesh, about one-fifth of the migrants work as casual daily worker at the destination and in Uttarakhand only 4.0 percent. The scenario of job at destination of the migrants in Uttarakhand is different from the other states as more than one-half of the migrants in Uttarakhand are employed in technical/skilled jobs such as tailoring, electrical work, plumbing, mechanical work, driving and in hotels at the place of their destination. This percentage is also high in West Bengal (40.65 percent) and Sikkim (32.94 percent). On the other hand, not even a single migrant works in these activities at the destination in Meghalaya. In contrast to this, an overwhelming majority of the migrants (59 percent) in Meghalaya work in non-technical activities such as security guard, sweeper, office boy, and factory work and construction activities at the place of their destination. The percentage of migrants working in these activities at their destination is also very striking in Ladakh (39.13 percent), Kashmir (37.59 percent) and Jammu (29.84 percent). Migration due to trade/business at the destination is prominent in Ladakh (13 percent) and to some extent in Sikkim (7.51 percent). The figure hovers around 5 percent in Jammu, West Bengal, Arunachal Pradesh and Nagaland (Fig 6.8). Rural farming sector is not very prominent

in attracting migrants in the states except in Kashmir where about 5 percent of the out-migrants work in this sector at their destination. It is pertinent to mention that even the rural non-farm sector is not capable of attracting any considerable number of migrants except in Kashmir (14.47 percent).

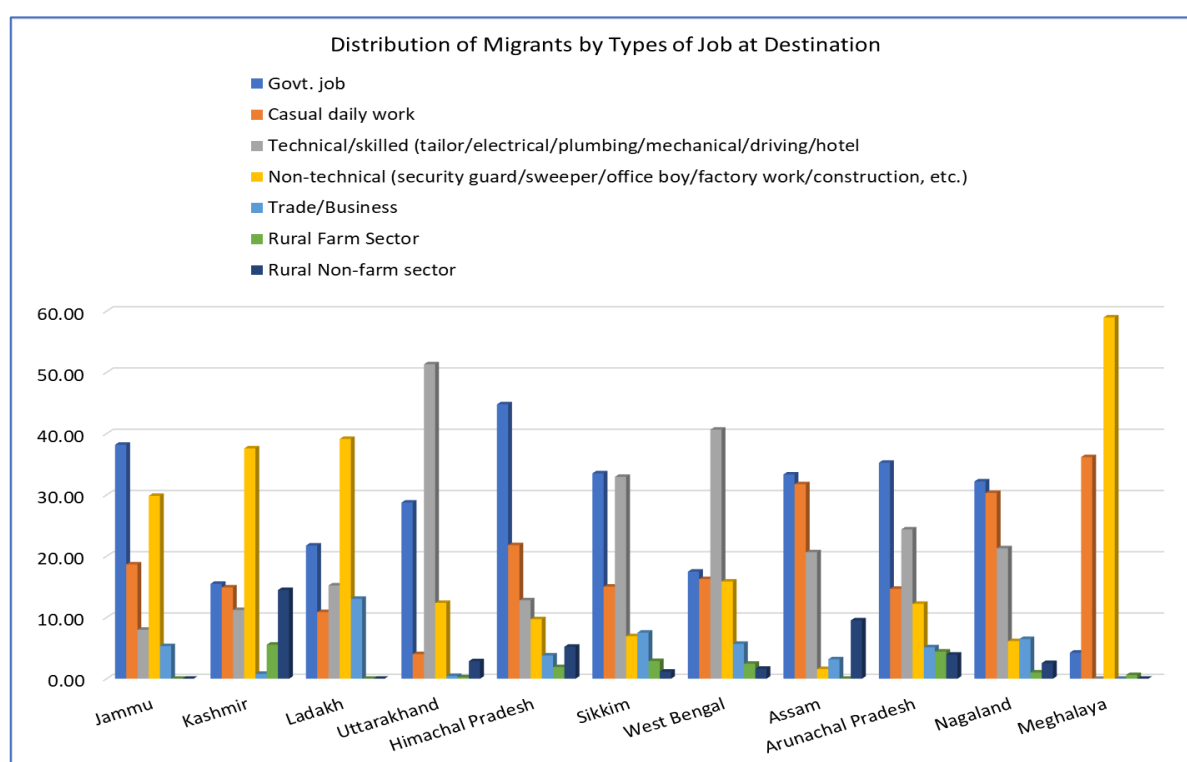


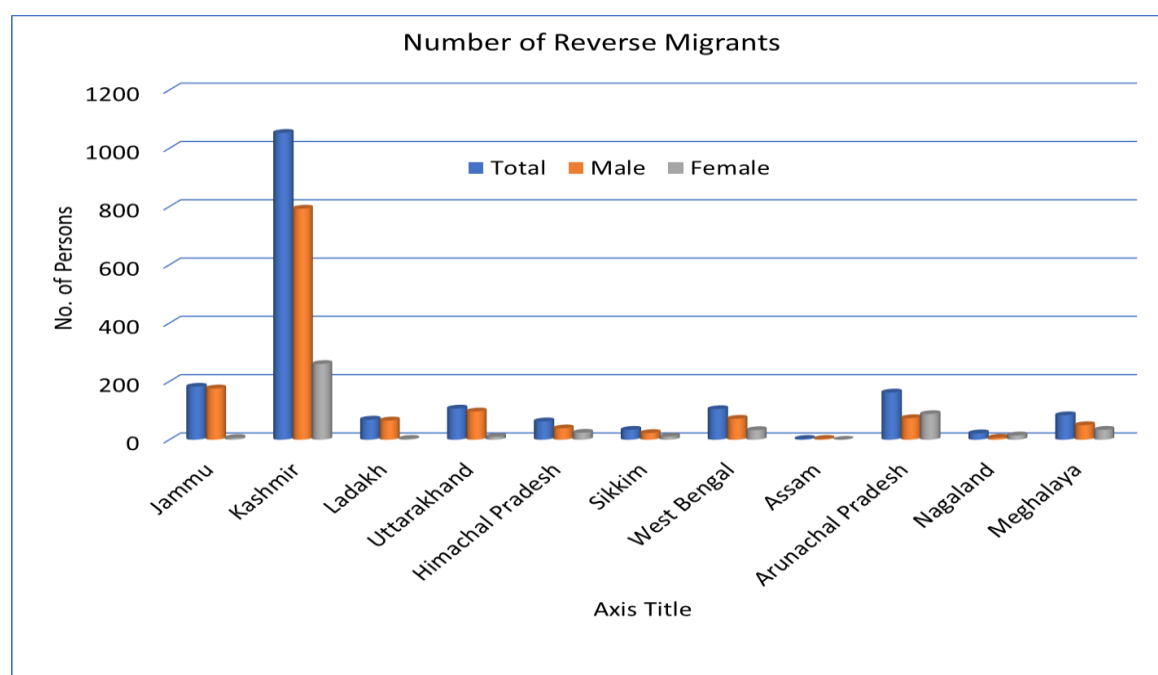
Figure 6.8: Distribution of Migrants by Types of Job at Destination

### Reverse Migration during COVID-19 Pandemic

Reverse migration drew considerable attention both from academics, policy makers, activists and the public in general as a number of migrants in different cities either lose their jobs, income, livelihood during the Covid-19 pandemic. A large majority of reverse migrants are informal workers with no enforceable contracts between the worker and the contractor. They are not united or backed by trade unions, less educated, lack knowledge of the job market and good social networks to rely upon in urban areas and foreign countries. This makes them dependent on their contractors and contributes to their lack of bargaining power in case of exploitation (Srivastava, 2013). Describing the work condition of internal migrants, the Periodic Labour Force Survey (2017–18) revealed that for more than 70% of the workers in the non-agricultural sector with a regular salary, consisting of mostly migrants, lacked any written job contract and 50% were not enrolled for any social security benefits (Sengupta & Jha, 2020). Also, there is unavailability of affordable housing or rental options for the migrants (Iyer, 2020). In cases of wage theft, most workers are unable to file complaints due to the lack of awareness of their rights and costly judicial process. Therefore, the lack of minimal social and economic protection afforded to migrant workers pushed them back to their village. It can be deduced from our findings that if workers can receive a safety cover such as a place to live with food, water, free electricity, payment of wages and job security, there possibility of their staying back in their work destination during pandemic could have increased but as this did not happen therefore pathetic scenarios were witnessed in all parts of India about the returnee migrants.

If proper arrangement of their return could have been arranged it would have contributed to a relatively smoother process of their reverse migration and ensured control over the spread of the virus. However, the rampant unemployment even amongst the general population during the lockdown reduce the bargaining power of the migrant workers in the post-COVID economy. An attempt was made through the field study in the states located in the IHR to examine the extent of reverse migration, reasons for such migration and how they have been impacted by such reverse migration.

A perusal of Figure 6.9 reveals that reverse migration has taken place in all the states in the IHR. The largest number of returnee migrants was reported from Kashmir in the surveyed population, followed by Jammu, Arunachal Pradesh, Uttarakhand and West Bengal. However, the lowest number of returnees was reported from the hill districts of Assam.



**Figure 6.9: Number of Reverse Migrants**

In response to the reason for reverse migration, a vast majority (over 85 percent) cited loss of job due to Covid-19 in Jammu, Ladakh, and Meghalaya. In Uttarakhand 66.36 percent and almost one-half of the returnee migrants cited Covid-19 as a reason in Kashmir and West Bengal. In Nagaland and Sikkim, about one-third of the returnee migrants cited the same reason. About one-fifth of the returnee migrants came back due to Covid-19 in Himachal Pradesh. However, it is pertinent to mention here that some of the returnee migrants gave other reasons also such as retirement, expiry of contract period, personal/family problems, and better opportunity at home. For example, in Himachal Pradesh, about 40 percent of the returnee migrants gave retirement/superannuation as a reason for their return to their place of origin. Similarly, in Arunachal Pradesh, 72 percent of those who returned cited the expiry of their contract period as a reason.

### **Process of economic reintegration of reverse migrants**

The short-term and long-term measures taken by the central government to reintegrate the migrant workers in the post-COVID-19 economy is also important to mention. The central government

announced a Rs 1.70 lakh crore relief package for the vulnerable sections which included categories of people who are migrants (Ministry of Finance, 2020). The central government urged the state governments to mobilize the Building and Other Construction Workers (BOCW) Welfare Fund to provide benefit to 35 million construction workers registered under the Act (Ministry of Labour and Employment, 2020) but the estimated registered workers was 56 million in the construction sector therefore it was not sufficient (Nag and Afonso, 2021).

Additionally, several state governments such as UP, Bihar, Andhra Pradesh and Rajasthan announced one-time immediate cash benefits of Rs 1000 to 5000 and free rations through the Public Distribution System (PDS) (Anand and Thampi, 2020). Subsequently, after immense media attention, another relief package was announced of Rs. 20 lakh crores to benefit the migrant workers, self-employed and small traders. (Ministry of Finance, 2020a). The scheme ‘One nation one ration card’ was announced to be implemented across India in 2021 to enable migrants to access ration from any fair price shop in India using a digital card. Between April 1 and May 20, 2020, there was a sudden increase in the registrations (around 3.5 million workers) for MGNREGA, a rural employment scheme promising 100 days of work, pointing to increased need for employment as well as increasing number of seasonal and other migrants (Chauhan, 2020).

#### **A case of Reverse Migration at Timburbong, Soreng Block, West Sikkim**

Tek Bahadur Pradhan is a 57 years old farmer from Timburbong, Soreng Block. His eldest son, Abhishek Pradhan was working at Bangalore before COVID-19 emerged. It was after the completion of class 12 that he decided to work. And since there was a limited opportunity of jobs at home that made him migrate to Bangalore and work in a hotel as a driver. While he was away, his two sisters were also away working in beauty parlours at Gangtok. But the lockdown forced them all to come back home. However, Abhishek was lucky in returning home because he got a govt job under the flagship government program of “one family one job” initiated by the Govt. of Sikkim. But the other two sisters were left jobless for some time. As an adaptation, they helped their parents in farming and raising cattle. Two sisters narrated that how life at their village is boring while Abhishek also holds same opinion despite working at government office where he gets Rs 9000 as a monthly salary.

Besides, the family of 9 members have 25 decimals of land where they grow different food crops like rice, maize, millets, pulses, ginger and seasonal vegetables, all for self-consumption. These agricultural crops are escorted by the number of cattle they own- 2 cows and 4 goats wherein they have 3.5 litres of milk supply in a local diary which gives them an income of Rs 57600 per year.

As a long-term measure for the labour market integration of both internal and international reverse migrants, the central government announced a Rs 50,000 crore ‘Garib Kalyan Rozgar Abhiyan’ which involved skill mapping of migrant workers and connecting women with self-help groups for enhancing employment opportunities. (Ministry of Rural Development, 2020). In view of the lack of data on internal migrants, the government also announced to conduct an All-India Survey on Migrant Workers and develop a National Database of Unorganised Workers (NDUW), which would include details of the migrants such as name, occupation, address, educational qualifications and skill type, etc. in order to secure employability and social security benefits for the inter-migrant workers (Ministry of Labour and Employment, 2021).

## **Major recommendation; Sustainable livelihood opportunities, policy analysis and planning for future, conclusion and way forward**

---

### **Strategies for harnessing potential livelihood opportunities to minimize out-migration**

- The sustainable livelihood opportunities and strategies need to be promoted to improve quality of life in rural areas to curtail out-migration. The success stories/ cases of progressive farmers or model villages those who have transformed the village economy through diversification of the farming systems (horticulture, apiculture, floriculture, animal husbandry and livestock farming, medicinal plants and bamboo cultivation) and enhanced the livelihood and income of the households need to be replicated/ demonstrated and youth should be motivated to take up farm-based livelihood as a remunerative vocation, and to create a conducive ecosystem to minimize out-migration from the region.
- To reduce woman drudgery in the Himalayan villages, livelihood diversification is around woman-centric services is required and it can be done and facilitated by women led self- help groups (SHGs) with the support from govt. and its line departments or Panchayati Raj institutions in coordination with R&D institutions and NGOs. Therefore, women need to be trained in extension services, organizing group meetings, extending technical services, and in monitoring, evaluation and execution of on-going rural development program activities.
- Introduction and promotion of affordable, simple and hill/mountain specific appropriate technologies i.e., protected cultivation, organic compost, bio-fertilizer and vermi-composting, biomass/fuel saving technologies (bio-briquetting and bio globule), bioprospecting of non-timber forest products (NTFPs) and medicinal and aromatic plants (MAPs) and slopping watershed environmental engineering technology (SWEET) for rehabilitation/ ecosystem restoration of degraded land/watershed.
- Need to develop alternative sources of income and corresponding value chain in manufacturing of wood/bamboo/fibre handicrafts, embroidery, shawl, food products agro and wild origin (i.e., squash, pickle, jam, bee keeping, mushroom cultivation, processing of pulses/spices and traditional grains as organic and health foods).
- There is a need for consolidation of village land into one farm unit and diversification of farming with agroforestry and horticulture integrated with medicinal plants, potential wild edibles and floriculture as the dominant land use, which can offer a viable solution to the twin problems of livelihood and outmigration.
- Integrated approach and strategies to develop capacity to manage human, natural, social, financial, and physical capitals to check outmigration is highly required. For example, increasing farm production from existing crop fields using better farming techniques and approaches and it requires coordination, interrelation, integration of policies and programmes among interacting sectors i.e., forestry agriculture, livestock and rural development for enhancing livelihoods.
- Livestock component need to be paid due attention in terms of better breed, nutritive feed material and disease control to make them productive in terms of milk, meat and other products.



- Scaling-up of the interventions/best practices in farm and non-farm sectors to have broader positive impact in livelihood improvement and income generation of the local people across the region.
- Look for opportunities to develop corporate social responsibility for generating funds for vulnerable groups. In this regard business sector or corporate sector may be approached to support and provide generous grant to the marginal/ethnic communities inhabited in difficult terrain/ remote and isolated areas of the Himalayan region for natural resource-based entrepreneurship development and also for honing the skills of artisans and young people in order to provide quality services such as that of electrician, carpenter, mason, fitter, and in most recent time, micro Hydel, and solar power related services at local level.
- There is a need to bring the policy planner, researchers, academicians and implementing departments on a common platform, so that livelihood and income generation interventions are implemented on a landscape approach. It is suggested that at government level, a nodal agency may be set-up to develop the cross-sectoral linkages for sharing and replication of experiences and technical expertise to implement livelihood improvement activities.
- Many of the Himalayan states have been declared organic and this provides the opportunity of looking into the potential of organic farming as a means of enhancing income through diversification of farming system with the inclusion of fruit trees, floriculture, bee-keeping, sericulture, medicinal and aromatic plants, pisciculture, etc.
- Promotion of small-scale industries or village or household level cottage industries based on locally available agro and wild bio-resources, footloose/IT/knowledge-based industries in selected locations to provide job opportunities to employed or unemployed youth.
- Introduce sustainable mountain development early in the academic curricula and vocational education in order to build the confidence, pride and creativity of youth.
- The skilling of the local people needs to be upgraded particularly in the areas of cultivation and sustainable harvesting of the wild bio-resources (NTFPs/MAPs) and related activities such as Product development, processing, value addition, post-harvest management and marketing of the products/resources.
- Develop appropriate policy initiatives, governance mechanism and regulatory approaches for conservation and sustainable use of bio-resources including NTFPs/MAPs within and across forestry, livestock and agricultural sectors, providing the best practices and successful models for livelihoods.

### **Policy analysis and planning for future**

Livelihoods of majority of poor/ marginal and traditional communities of the Indian Himalayan region are heavily dependent on farming, livestock and forest resources and they are inextricably connected with each other. In order to enhance food security, provide social stability and curb outmigration, the government needs to strengthen efforts to remove existing constraints and challenges and convert potentials into opportunities in the region through policy, institutional, and technical support. Outmigration from the IHR cannot be minimised without secured livelihood options, and livelihoods cannot be improved unless the productive resources, such as water, land, forest, rangeland, biodiversity, and the natural environment are conserved and their access and

optimal utilization ensured. Thus, from Himalayan Mountain perspective, it is necessary to take holistic and integrated approach. At the same time, in formulating strategies for livelihood and socio-economic development, it is necessary to take into account the Himalayan Mountain specificities, including the ecological and environmental conditions and the challenges, needs, and opportunities for mountain communities.

In most of the studies only mountain specificities and various social factors were seen as the reasons behind out-migration. While various agricultural, rural development, education, health, energy, industry and other infrastructure development policies are framed by all the IHR states for the overall employment generation within the state but they were found to be falling short in providing secure livelihoods, income and jobs to the people because there is a wide gap between the aspirations of the local communities and the opportunities created. Thus, people migrate from the region in search for better opportunities. The hill/mountain policy had an objective of strengthening the agriculture sector by emphasizing on high-yielding varieties, use of pesticides and insecticides but it resulted in decline in traditional agricultural practices and soil fertility. Moreover, crop depredation by wild herbivores is quite common throughout the IHR. Apart from this, loss of livestock and human lives antagonizes the local population and thus oppose the conservation area programmes which diminish their livelihood options. Sometimes they resort to retaliatory killing of the carnivores as well as crop raiding herbivores. Generally, local communities feel that the govt. policies are high-handed and obstacle in their socio-economic development rather than a partner. Besides, the Public Distribution System (PDS) providing cheap food grain ration to the households below poverty line (BPL) and above poverty line (APL) classes has diminished the interest in farming. However, these policies instead of making people work hard make them lazy by creating a comfort zone for them which is directly /indirectly responsible for the abandonment of hill/mountain agriculture.

The majority of the out-migrating people in the IHR mainly belongs to the working age-group (i.e., 22-45 years) and field analysis shows that the people of this age group have energy and capacity and usually contributes much in livelihood and income generation activities of the household. However, due to changing scenarios, youth in hills/ mountains don't consider farming and livestock an appealing future and hence they prefer to migrate. It is now vital to understand their mindset so as to motivate them to take traditional and newer venture so that they can generate income and employment opportunities in the rural set-up. Therefore, there is need to create training in skill-based subjects in the curriculum right from the school level so that after completing school if a student cannot afford higher studies, then should be capable enough to get self-employment without leaving the village. It is seen that most of the policies framed are meant to control, regulate or limit the mobility but as Himalayan region have number of mountain specificities and challenges which demand for separate hill/mountain specific policies to support micro-development strategies for the region.

The Special Hill Area Development Programme was initiated in Sixth Plan period for the development of Himalayan region in the country and it continued in subsequent plans. Many of the IHR states come under special category status and several policy measures and programmes were initiated by the Planning Commission of India but it has not yielded the intended results. On similar lines the industrial development policy of the central and states governments intended to set up industries in the states under Factories Sector Act to provide employment and wages to the local

people. Unfortunately, these policies remained confined to the plain/or semi urban areas thus failed to stop outmigration.

For improving employment opportunities, programmes namely, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was implemented by the central government but its focus remained on limited employment opportunity generation to those requiring it. Though 60% of the agricultural work activity is mandatory under MGNREGA but it seems missing in many of the hill states. So, again a shortfall of the programme implementation was observed. Therefore, government need to focus more on providing agricultural employment through MGNREGA as it will meet out employment need of the rural people and will also be helpful in improving the status of agricultural sector in the region. The experience of Swarnjayanti Gram SwarojgarYojna (SGSY) and its recent format National Livelihood Mission (also called Aajivika Mission) in creation of self-employment and income improvement to rural areas to curb the out-migration is yet to show intended results. Such interventions are not widespread and could hardly make major impact on improving income levels of rural households in the Himalayan Region. The policy framework for Himalayan region has almost remained least effective for attracting investment to hill/mountainous areas of the IHR, needs to be relooked and to be made more effective for industrial growth of the region.

More recently, the state government initiatives have also been supported by several central government schemes under the National Mission for Sustainable Agriculture (NMSA), such as the **Paramparagat Krishi Vikas Yojana (PKVY) scheme**. This is a centre and state government partnership scheme in which organic clusters are provided financial assistance of INR 50,000 per hectare during the conversion (from conventional farming land to organic farming land) period of three years. Under another scheme of the central government, the Mission Organic Value Chain Development for North Eastern Region (MOVCDNER), assistance is provided for cluster development, input production, supply of seeds and planting materials, setting up of functional infrastructure, for the development of the organic value chain in north- eastern states including Sikkim. Most governments of the Himalayan states have been implementing several national programme/schemes such as **Pradhan Mantri Fasal Bima Yojana, Mission for Integrated Development of Horticulture (MIDH), PM-Kisan Samman Nidhi, Rainfed Area Development and Climate, National Food Security Mission** and in some Himalayan states where they have been implemented at the ground- positive impact is visible on the food and livelihood security. The small holders and marginal farmers of the IHR considered these national programs/schemes as great opportunity to improve their livelihoods and income from subsistent farming and also encouraged them to diversify the farm production.

In addition, food and nutritional security of the marginal and small holders' farmers of the IHR is a national priority of the central government and many of the Himalayan states very recently implemented the schemes such as **Rastriya Pashudhan Vikas Yojana (RPVY) under national livestock mission** and **Rashtriya Gokul mission** an initiative to develop and conserve the indigenous bovine breeds for improving the milk production while providing livestock, subsidies and insurance services.

Indian Himalayan region is very sensitive and fragile ecosystem which requires extra attention to promote existing policies like forest policy, agricultural policies, MSME related policies, Hydropower generation policies etc., and amendment accordingly to the grass root level for the

betterment of the people in the rural landscape. For achieving higher levels of economic development and secured livelihoods human capital development has been found to be a major contributor. No other approach to development based either on physical infrastructure development, capital investment or induction of technology has been found to be successful unless accompanied by the development of human capital, particularly education with a focus on the development of technical skills, enterprise and organizational capabilities, and the introduction of health improvement measures. Some of the IHR states enjoy the advantage of high level of literacy and education of its population, which has tremendously improved as compared to the national average. But the economic backwardness of Himalayan states has resulted in a growing outflow of human resources resulting in a drain of human skills from the region. Therefore, the programmes or policies should be such that can utilize the untapped potential of the IHR for the development of the region and could also check the prevailing problem of migration.<sup>1</sup>

### **Policy imperatives/policy focus for future**

1. Certain region/parts in the IHR where human out migration (net reduction of population) is very high need to be given top priority to meet the development aspirations of the people while providing proportional share of resources for livelihoods enhancement through special schemes or development packages.
2. Rural settlements displaced due to construction of strategic infrastructural development/army cantonments/dam sites/ disaster or landslides and they are usually allocated land for rehabilitation in plain/terai or semi urban areas, need to be rehabilitated in the hills/mountains following the approach of smart village (enhancing productivity of rural ecosystem through best practices/smart solutions)/rural landscape development to maintain the socio-cultural fabric.
3. Villages/ rural landscapes those with disadvantageous/unfavourable situation (difficult terrain, severe weather conditions, poor connectivity & inadequate general infrastructure) particularly located in geo-strategically region/border areas of the IHR states need to provide better livelihood and income through improved farming/cultivation of cash crop such as rajma, amaranth, buckwheat, potato, integration of medicinal plants cultivation with horticulture, sheep/goat rearing and revitalizing traditional wool based cottage industry & infrastructural facilities so as to reduce the out migration from these areas.
4. Incentivize absentee landlords and willing stakeholders to develop depopulated villages/ghost-villages to home stay or rural tourism, cultural tourism destination.
5. Indian Himalaya region are reservoir of some high value niche products such as medicinal and aromatic plants and Keedajadi (*Cordyceps sinensis*, as the case of Uttarakhand) is one of them having huge potential for improving the livelihoods and income of the local people. Therefore, the collection and trade of this high value products to be legalized and regulated in a way that local people can earn better economy.
6. The whole Himalayan rural landscapes are highly prone and susceptible to human wild-life conflicts (HWC). The management program should provide economic incentives for people to stay in the region which is possible only through the strong coordination with the forest

---

<sup>1</sup> Papola, T.S. (1996) Integrated Planning for Environment and Economic Development in Mountain Areas, Discussion Paper Series No. MEI 96/2. Kathmandu: ICIMOD.

department and adopt best land management practices or agroforestry on their land, rather than migrate to urban areas.

7. Establishing a local relief fund and insurance program for crop and livestock loss to HWC, rather than using a national overly-bureaucratic mechanism, would give confidence to the local community should they ever incur future damages, and this would greatly improve the co-existence of people and wildlife.
8. Promotion of high value horticulture crops, spices and health food of agro and wild bioresource offers an exciting opportunity for engaging with youth and entrepreneurs in the mountain areas. Developing policies favouring livelihood-tech start-ups, incubation centres and dedicated programmes for engaging Himalayan Mountain youth in farming and non -farm sector would not only improve livelihood and income but also reasonably address the issue of outmigration.
9. Farming in the IHR region remains traditional and subsistence-oriented and therefore, it should be promoted an eco-friendly sustainable production system while providing adequate incentives for conservation and management of traditional agrobiodiversity and opening avenues of marketing hub of the niche-based products.
10. There is a need for consolidation of village land into one farm unit and diversification of farming, which can offer a viable solution to the twin problems of livelihood and outmigration.
11. Need to revitalise the traditional irrigation systems to increases local food production system so as to improve the livelihoods and income of the local people.
12. The IHR is rich in forest and bio-resources, however, where land holdings as well as area of degraded lands available to local people are small, income from timber is prohibited, natural regeneration of degraded lands is ineffective and people remain economically marginal, there is an urgent need of policies (i) safeguarding economic interests of local people from tree planting for industrial purposes in degraded lands and (ii) enhancing scientific knowledge on multipurpose tree species to strike a better coupling and trade-offs of direct and indirect, short term and long term and local and global benefits from land rehabilitation/ecosystem restoration.
13. Need for low interest loan options, suitable finances and fiscal policies for rapid rural development

### **Potential non-timber forest products (NTFPs), medicinal and aromatic plants (MAPs), value-addition, marketing and skill up gradation**

The Himalayan forests and sub- alpine and alpine region are reservoirs of wild bio-resources that include non-timber forest<sup>2</sup> products (NTFPs) and medicinal and aromatic plants (MAPs). Nearly 1748 species of MAPs and 675 species of wild edibles have been enumerated from the IHR and for centuries, these resources have played a vital role in the subsistence economy of the traditional/marginal communities of the region. The raw products from wild bioresource (NTFPs/MAPs) are processed into a variety of value-added products such as juices concentrates, pulp, canned, dehydrated products, jams, jellies, sauce, pickles and chutneys etc. some of the medicinal and aromatic plants are processed and value added locally by drying, grinding into power,

---

<sup>2</sup> Negi, Vikram, **R.K. Maikhuri** and Lakhpat Rawat (2011). Non-timber forest products (NTFPs): a viable option for biodiversity conservation and livelihood enhancement in Central Himalaya. *Biodiversity Conservation*, 20: 545-559.

mixing, flavouring, preserving, packaging and labelling of products into powder, liquid concentrate, pulp (**Table-7.1**). While the contribution of wild bio-resources to food, nutrition, medicines, wood fuel, livelihood, employment and income is enormous and provides a comparative advantage for producing a variety of niche products both for local consumption and for market. However, the reality is harsh as the gatherers/growers of NTFPs/MAPs lack facilities to sell their products directly therefore they sell the products through middleman in a comparatively low price which discourages them to make it their regular livelihood option. This calls for developing an appropriate value chain through strong market linkages for providing opportunities to the bio-resource collectors/producers or MAPs growers to improve and increase their share of benefits and income. Up-gradation of skills in plant propagation, sustainable harvesting, harvesting techniques of the wild bio-resources, value addition and post-harvest management (sorting, grading, washing, pulping, drying, grinding is also must for making these livelihood options viable. Management of NTFPs and medicinal plants through village or community level cooperatives, removal of difficult regulations (**such as restriction imposed on wild collection and easy marketing of *Cordyceps sinensis*** locally called Keedajadi, as the case of Uttarakhand), introducing simple and affordable technologies for **processing and value addition of the raw produce, business linkages with** assured buy-back arrangement (evolve a pricing mechanism with partner industry under public-private partnership) with an industry or exporter or big businessmen could be helpful. The micro-and small-scale enterprises and private sectors can be roped in for investment for livelihood and income generation of the rural people through development of small and cottage industries around the tourist and pilgrim circuits.

**Table 7.1 - List of potential non-timber forest products (NTFPs), Medicinal and aromatic plants (MAPs) & Biomass for fuel**

| States/UTs       | Non-timber forest product (Niche species)                                                                                                                                  | Medicinal and aromatic plants (Niche species)                                                                                                          | Biomass yielding species (Niche species)                                                                  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Jammu            | <i>Rhododendron arboreum</i> , <i>Bauhinia purpurea</i> , <i>Prunus armeniaca</i> , <i>Rubus</i> spp., <i>Berberis</i> spp.), Bamboo species                               | Harad, Amla, Ashwagandha, Baheda, Arjun, Banafsha, Gilo, Tulsi, Saffron                                                                                | Pinus species, <i>Pinus wallichiana</i> , <i>Abies pindrow</i> , <i>Cedrus deodara</i>                    |
| Kashmir          | <i>Prunus armeniaca</i> , <i>Rubus</i> spp., <i>Juniperus indica</i> , Anardana                                                                                            | Saffron, Tulsi, Banafsha, Atish                                                                                                                        | Oak, Chir pine, Deodar <i>Salix</i> spp.                                                                  |
| Ladakh           | <i>Waldheimia tomentosa</i> , <i>Juniperus indica</i>                                                                                                                      | Sea buckthorn, Hatha Jari, Allium Mentha, Potentilla                                                                                                   | <i>Juniperus polycarpo</i> , willow <i>Salix</i> spp. and poplar <i>Populus</i> spp.                      |
| Uttarakhand      | Rhododendron, Cheura (Indian butter tree), wild apricot, Indian gooseberry (amla), box myrtle (kaphal), seabuckthorn, wild plum, Rosehip, Indian cranberry, Bamboo species | Kutki, Kut, lemongrass, Choru, kalajeera, Jimbafaran, Tejpatta, Keedajari                                                                              | Pinus (Chir), <i>Alnus</i> , <i>Cedrus deodara</i> (Deodar), Lantana,                                     |
| Himachal Pradesh | Honey, Burans flower ( <i>Rhododendron arboreum</i> ), Anardana ( <i>Punica granatum</i> ), Citrus fruits (Galgul, Malta), Amla, Bamboo species                            | <i>Aloe vera</i> , <i>Bauhinia variegata</i> , <i>Albizia lebbek</i> (sirin), <i>Curcuma longa</i> (laong), <i>Acacia catechu</i> (Khair), Ashwagandha | <i>Cedrus deodara</i> (Deodar), <i>Pinus roxburghii</i> (Chir), <i>Eucalyptus</i> (Safeda), Teak (sagwan) |
| Sikkim           | Jungali Piyaj ( <i>Allium wallichii</i> ), Bikhuma ( <i>Aconitum ferox</i> ), Bamboo species, Bojho ( <i>Acorus</i>                                                        | Gobresalla ( <i>Abies wabbiana</i> ), Lalgeri ( <i>Abrus precatorius</i> ), Bikh, Atish ( <i>Aconitum</i>                                              | Argeliand Lokta ( <i>Daphne cannabina</i> ) used for fibers, papers, thread                               |

|                   |                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                   | <i>calamus</i> ), Sunpati ( <i>Rhododendron anthopogon</i> )                                                                                                                                                                                                                                                                                 | <i>heterophyllum</i> ),), <i>Sinchona</i> ( <i>Cinchona officinalis</i> ), Chairaita                                                                                                                                                                                            |                                                                                                          |
| West Bengal       | Choyabans ( <i>Dendrocalamus hamiltonii</i> ), Bet ( <i>Calamus</i> spp.), Tarul ( <i>Dioscorea prazeri</i> ), Manjita ( <i>Rubia cordifolia</i> ) and Khair ( <i>Acacia catechu</i> )                                                                                                                                                       | <i>Cinchona</i> , <i>Ipecac</i> , <i>Dioscorea</i> , <i>Rauvolfia</i> and <i>Catharanthus</i>                                                                                                                                                                                   | Ghas, Amliso, Bamboo species, Lantana                                                                    |
| Assam             | Gooseberry (amla), Heartleaf drymary, Black Galangal, Kenidai, Bamboo species                                                                                                                                                                                                                                                                | <i>Abroma augustum</i> (Korai), <i>Azadirachta indica</i> (Neem), <i>Capsicum annuum</i>                                                                                                                                                                                        | Black alder, <i>Macaragadenticulata</i> , <i>Duabangagrandidiflora</i> , Lantana, <i>Eupatorium</i> spp. |
| Arunachal Pradesh | <i>Panax pseudoginseng</i> , <i>Calamus inermis</i> , <i>Phoenix rupicola</i> , Bamboo species                                                                                                                                                                                                                                               | Chirata, Centella, <i>Taxus baccata</i> , <i>Dioscorea composita</i> , <i>Litsea</i> Rudraksha ( <i>Elaeocarpus</i> )                                                                                                                                                           | Bamboo, <i>Callicarpa arborea</i> , <i>Macaragadenticulata</i> , <i>Duabangagrandidiflora</i>            |
| Nagaland          | Common Buckwheat, Mechinga leaves, Fern, Fig, goose berry, Naga Tenga, Wild apple, Tree tomatoes, Mushrooms. Fan palm, rattan palm, tiger grass, Akarkara, Bamboo species, wild fig,                                                                                                                                                         | Indian Pennywort, Lhinetta ( <i>Swertia chirayita</i> ), Mejanter ( <i>Litsea citrata</i> ), roselle ( <i>Hibiscus sabdariffa</i> ), gooseberry ( <i>Ribes uva-crispa</i> ), sumac ( <i>Rhus coriaria</i> ), Naga garlic, Mountain flax, Spiny gourd, Cherry, tomato, orchids,  | Bamboo, Alder, local Oak trees, Indian Siris,                                                            |
| Meghalaya         | <i>Erythrina stricta</i> , <i>Eurya acuminata</i> , <i>Ficus hispida</i> , <i>Flacourtia jangomas</i> , <i>Flacourtia cataphracta</i> , <i>Garcinia cowa</i> , <i>Gmelina arborea</i> , <i>Grewia microcos</i> , <i>Imperata cylindrica</i> , <i>Lasia spinosa</i> , <i>Phyllanthus emblica</i> , <i>Polygonum chinense</i> . Bamboo species | <i>Solanum khasianum</i> , <i>Dioscorea composita</i> , <i>Artemisia nilagirica</i> , <i>Taxus baccata</i> , <i>Gaultheria fragrantissima</i> , <i>Potentilla fulgens</i> , <i>Smilax glabra</i> , <i>Swertia chirata</i> , <i>Centella asiatica</i> , <i>Aristolochia</i> spp. | Bamboo, <i>Callicarpa arborea</i> , <i>Macaragadenticulata</i> , <i>Duabangagrandidiflora</i>            |

## Bamboo and biomass products and marketing

The large number of bamboo species and biomass yielding plants are growing naturally in the forests and village community lands in the IHR. Bamboo is a fastest-growing perennial and resourceful species with huge regeneration potential. The use of bamboo has a long tradition among the different communities and a wide range of products are made locally for different purposes such as **Craft and Lifestyle Products, Furniture, Utilities, Food, Fabric and Fashion**. With rapid urbanisation, the demand for scaffolding materials, furniture, partition boards, bio-briquettes, charcoal, Bamboo fibres/ textiles and flooring material is increasing. As bamboo has bio degradable properties therefore for becoming a beneficial commodity appropriate product need to be developed at reasonable prices. This is unfortunate that despite production and demand the lack of appropriate technologies to the producer's bamboo stick-based products (curtains, toothpicks, incense sticks, barbeque sticks) and bamboo flooring material, are still being imported. If such timely interventions are made, besides catering to the domestic market, bamboo products can also be exported to neighbouring countries from IHR. Promotion of local use of bamboo in scaffolding, construction of rural dwellings, houses and eco-tourism resorts is important, as it helps to increase the resource base and makes bamboo a part of the farm landscape. To tap the opportunities in bamboo sector, promotion of small-scale enterprises and support to the private sector for industrial production is required as the small-scale enterprises can operate with a small volume of raw materials. Handicrafts

and furniture can be product lines of small-scale enterprises. Likewise, private sector involvement in the value chain is important for harnessing the economic potential of the bamboo sector and significantly contributing to the regional and national economy. The private sector can be involved in production of bamboo stick-based products, bioenergy products, timber substitute products and textiles. In addition to this, farmer groups, micro- and small entrepreneurs generating bamboo waste from processing, and youth groups could be organised to establish micro-enterprises and produce charcoal and bio-briquettes at the local level. Entrepreneurs, large and small, individual and institutional are important for the sustainability of this sector as they take risk and create opportunities for all. For successful model of enterprise development, support from the other actors like government agencies, programmes, producer networks, research institutions, business development service providers and training institutes amongst others is desirable.

### **Biomass**

The biomass of *Pinus roxburghii* (chir pine), *Lantana camara*, *Eupatorium adenophorum* (exotic weeds) and many other woods plant species have huge potential for livelihood enhancement and income generation for poor and marginal communities. In this context, the use of chir pine needles locally called Pirul which is highly prone to forest fire with wide ranging ecological, economic and social impact can be turned into a highly useful forest product that can address the issues of socio-economic development and environment protection. The techniques of making Pirul based products, particularly smokeless bio-briquettes and paper for preparing fire covers, file folders, envelops, note pads, marriage card, carry bags, etc. Similarly, the biomass of Lantana is processed for bio-energy products i.e., fuel gasifiers, bioethanol, bio-briquettes, charcoal, paper pulp, furniture, stick based products and manure. The biomass of other species may have huge potential for various product development like Pine needles<sup>3</sup>, bamboos, and Lantana.<sup>4 5</sup> The value addition and marketing strategies for harnessing the future use of the biomass yielding plants may be developed on the similar line as developed for the bamboo and other plant species.

### **State specific priority intervention and action for harnessing potential livelihood and income opportunities in IHR**

The livelihood of rural people in the IHR is mostly dependent upon marginal agriculture, horticulture, animal husbandry, forests, pasture, water and various wild bio-resources (NTFPs/MAPs). In most of the states the farm produce meets only about half of the food demand of the people, triggering migration of youth to plains for better livelihood opportunities. At this juncture when socio-economic development is constrained by resource depletion and environmental degradation in the region, the role of locally available niche resources of farm and forest origin and non-farm (handicrafts) product development is indispensable. There is a great potential for enterprise development based on niche species/or niche resources in medicinal and aromatic plants, horticulture, floriculture, off-seasonal vegetable cultivation, livestock, forest resources (i.e., agro and wild bio-resources, spices and condiments), organic farming and rejuvenation and improvement

---

<sup>3</sup> G.C.S. Negi, D.S. Chauhan, D.S. Bisht, H. Pant, S. Arya & M. Deorari. 2020. Use of Pine Needles for Making Environment-Friendly Products and Avoidance of Forest Fire. Technical Manual, G.B. Pant National Institute of Himalayan Environment, Kosi-Katarmal, Almora (Uttarakhand), 1-26 pp.

<sup>4</sup> Girish C. S. Negi, Subrat Sharma, Subash C.R. Vishvakarma, Sher S. Samant, **Rakesh K. Maikhuri**, Ram C. Prasad and Lok M. S. Palni. 2019. Ecology and Use of *Lantana camara* in India, The Botanical Review (Springer) 85:109–130 <https://doi.org/10.1007/s12229-019-09209-8>

<sup>5</sup> Nidhi Chaudhary, 2011. Lantana a menace or friend? Science Reporter (Feature Article), 54-57 pp.



of traditional crops for regional/national consumptions etc. However, strategic interventions to help local people/ farmers by including new innovations/techniques that can increase profit margins by value addition in the product and services, pre and semi processing units in rural areas are required earnestly. This will provide opportunities to create ‘win-win’ situation and reduce risks of exploitation from middlemen or diverse stakeholders from marketing chain, thereby improving income. The cash crop economy is successful in areas with effective value chains and appropriate government intervention. For instance, cardamom is one of the important cash crops of Sikkim but the crop was affected in recent times due to certain diseases. The Spices Board of India’s Mangan division recently conducted an awareness program and quality improvement training on large cardamom and other crops grown in Dzonghu area of the State. The Board has also taken initiatives for GI registration of DzonguGolsey cultivar. Similarly, the Krishi Vigyan Kendra (KVK), Mangan is promoting cultivation of Quinoa as an alternate cash crop in Gyalshing and Namchi. Although in a small scale, rural markets (village markets) ‘hats’, has good potential for providing income to smallholders but there is a huge potential for development of small and cottage industries mainly of agro and wild bio-resources and handicrafts around the tourist and pilgrim circuits for providing full benefit to local people. Hence, we need to formulate a policy for the Indian Himalayan Region that is economically ambitious, technologically progressive and climate resilient. In this direction **Natural Farming** can play a transformative role in the IHR. The main aim for promotion of Natural Farming is elimination of chemical fertilisers and pesticides usage and promotion of good agronomic practices. Natural Farming also aims to sustain agriculture production with eco-friendly processes in tune with nature to produce agricultural produce free of chemicals. Soil fertility & soil organic matter is restored by natural farming practices. Natural farming systems require less water and are climate friendly. Natural farming in India is being promoted through a dedicated scheme of Bharatiya Prakritik Krishi Paddhati Programme (BPKP). The scheme promotes on-farm biomass recycling with major stress on biomass mulching, use of on-farm cow dung-urine formulations, period in soil aeration and exclusion of all synthetic chemical inputs. Under BPKP, financial assistance of Rs 12200/ha for 3 years is provided for cluster formation, capacity building and continuous hand holding by trained personnel, certification and residue analysis. In order to harness the benefits of the scheme, awareness programmes should be conducted among the farmers in the IHR by the respective State governments.

**Table 7.2- State specific priority intervention and action for harnessing the potential livelihood & income opportunities in IHR**

| States/UTs | Farm based niche species/resources   |                                           |                                                                      | Forest based niche species (NTFPs & Medicinal plants)                                       | Handicrafts (niche resources)                         | Product development agro/wild niche resources                                                   |
|------------|--------------------------------------|-------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|            | Agriculture                          | Livestock                                 | Horticulture                                                         |                                                                                             |                                                       |                                                                                                 |
| Jammu      | Basmati rice, saffron, mustard maize | Crossbred cattle, Poonchi and Gaddi sheep | Stone fruits (Peach, Plum, Apricot) Almond, Pears, Pecan Nut, Olive, | Allium stracheyi, Rhododendron, Bauhinia, Box myrtle, wild plum, Rubus spp., Berberis spp.) | Kashmiri Carpets, Shawls, Wood Carving, Chain Stitch. | Nettle soup, herbal tea, Nettle cookies, Postul chai, Maize silk tea, Amla juice, Tinbru sauce, |

|                     |                                                                                                                                     |                                                                                            |                                                                           |                                                                                                                                                                                                 |                                                                                                                             |                                                                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                                                                                     |                                                                                            | Kiwi,<br>Mushroom                                                         |                                                                                                                                                                                                 |                                                                                                                             |                                                                                                                                           |
| Kashmir             | Rice,<br>maize,<br>barley,<br>pulses,<br>rapeseed,<br>mustard,<br>peas                                                              | Sheep,<br>goat,<br>poultry                                                                 | Apple,<br>Almond,<br>Plum,<br>Apricot,<br>Peach,<br>Walnut,<br>Saffron    | Kuth, Kala<br>Jeera,<br>Mushroom                                                                                                                                                                | Wood work,<br>wool-based<br>Shawls, Scarf<br>carpet                                                                         | Pulses, Walnut,<br>Apricot, Apple,<br>Almond etc.                                                                                         |
| Ladakh              | Barley,<br>Pea, green<br>vegetables<br>, Mustard                                                                                    | Yak, two<br>hump<br>camels,<br>zanskari<br>horses,<br>Sheep/go<br>at                       | Grapes,<br>Prunes,<br>Apricots,<br>Apple,<br>Walnut                       | Allium,<br>Juniperus, Sea<br>buckthorn                                                                                                                                                          | Carpet,<br>Embroidery,<br>Pashmina wool,<br>Fresco Painting                                                                 | Oregano tea,<br>Hawthorn cookies,<br>Hazelnut cookies,<br>Yak cheese,<br>Zanskari organic<br>butter                                       |
| Uttarakhan<br>d     | Millets,<br>red rice,<br>quinoa,<br>buckwheat<br>, pulses,<br>off-season<br>vegetables<br>, ginger,<br>garlic,<br>floricultur<br>e, | Cow<br>(Badri<br>breed),<br>poultry,<br>sheep,<br>goat, fish<br>farming,<br>bee<br>keeping | Mango,<br>litchi,<br>peach,<br>citrus,<br>walnut,<br>temperate<br>fruits, | Rhododendron,<br>Cheura (Indian<br>butter tree),<br>Amla, Kafal, sea<br>buckthorn,<br>cranberry<br>Kutki, Kut,<br>lemongrass,<br>Choru, Kala<br>jeera,<br>Jimbufaran,<br>tejpatta,<br>Keedajari | Wood/bamboo/fib<br>er handicrafts,<br>embroidery,<br>Shawl, wool<br>scarves,<br>traditional dress,<br>bags, carpets, etc.   | Juice, Pickle, Jam,<br>herbal teas, peach<br>oil,<br>processing/packagi<br>ng of organic<br>products, millets,<br>buckwheat and<br>pulses |
| Himachal<br>Pradesh | Beans,<br>Horse<br>gram,<br>Sesame<br>seeds,<br>Ginger,<br>Peas                                                                     | Buffalo,<br>Cow,<br>Horse,<br>Sheep,<br>Goat,                                              | Apple,<br>Papaya,<br>Litchi,<br>Peach,<br>Pear,<br>Strawberry<br>,        | Fenugreek<br>(methi), Kala<br>jeera, Amla,<br><i>Rhododendron</i> ,<br><i>Cannabis sativa</i><br>(Bhaang),<br>Brahmi,<br>Guchi( <i>Morchell<br/>a</i> )                                         | Bamboo<br>handicrafts, Wool<br>production,<br>Carpet weaving,<br>Himachali cap,<br>Woodwork,<br>Chamba Pullas<br>and Shawls | Sugarcane (Jaggery<br>and juice), Tea<br>leaves, cereal<br>product                                                                        |
| Sikkim              | Finger<br>Millets,<br>Soyabean,<br>Large<br>Cardamo<br>m<br>Turmeric,<br>Ginger,<br>Iskus,<br>Kiwi fruit                            | Cow,<br>Goat, Pig                                                                          | Mandarin,<br>Banana,<br>Passion<br>Fruit,                                 | Gobresalla<br>( <i>Abies<br/>wabbiana</i> ),<br>Lalgeri, Bojho<br>( <i>Acorus<br/>calamus</i> ), Bikh,<br>Atish, Chairaita                                                                      | Handloom and<br>carpet weaving,<br><i>thanka</i> painting,<br>wooden mask<br>making, wood<br>carving,                       | Dalle, Large<br>Cardamom                                                                                                                  |
| West<br>Bengal      | Iskus,<br>ginger and<br>cardamom                                                                                                    | Cow,<br>Goat,<br>Poultry                                                                   | Oranges,<br>Kiwi fruit                                                    | Cinchona,<br>Ipecac,<br>Dioscorea,<br>Rauvolfia and<br>Catharanthus                                                                                                                             | Bamboo and cane<br>craft                                                                                                    | Bamboo pickle,<br>bio-fertilizers                                                                                                         |
| Assam               | Green<br>chilli,<br>Ginger,<br>Tea,<br>Garlic,                                                                                      | Cow,<br>Poultry,<br>Sheep,<br>Goat.                                                        | Pineapple,<br>Orange,<br>banana,<br>papaya.                               | Neem tree,<br>tejpatta, Amla,<br>lemongrass,<br>tulsi.                                                                                                                                          | Wood/bamboo/fib<br>er muga silk,<br>handicrafts,<br>embroidery,<br>Shawl, wool<br>scarves,                                  | Juice, Pickle, Jam,<br>herbal teas, peach<br>oil,<br>processing/packagi<br>ng of organic<br>products.                                     |

|                   |                                                                                |                                                        |                                                                                                                                                     |                                                                                                                                                          |                                                                                                               |                                                                                                                                            |
|-------------------|--------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|                   |                                                                                |                                                        |                                                                                                                                                     |                                                                                                                                                          | traditional dress, bags, carpets, etc.                                                                        |                                                                                                                                            |
| Arunachal Pradesh | Rice, Maize, Millets, Pulses, Seasonal vegetables, Ginger, Yam                 | Mithun (wild cow), Poultry, Piggery, Goat, Fishery     | Kiwi, Tea, Pineapple, Arecanut, Black pepper, Broom grass, Apple                                                                                    | Ginseng, Chairaita, Coptisteeta, Dioscorea, Tejpata, Rudraksha                                                                                           | Bamboo and cane-based handicrafts, wood work                                                                  | Herbal Tea, Bamboo-pickle, Kiwi product and agro-product                                                                                   |
| Nagaland          | Paddy, maize, cucumber, soyabean, chilli, ginger, yam, Tapioca, gram, Turmeric | Piggery, poultry, Dairy farming, fishery, bee farming. | Banana, lemon, pineapple, Kiwi, passion fruit, plum, rice bean, millets, wild cardamom, Naga chilli                                                 | Alder, Hollong, Makai, Indian Trumpet flower tree, Nahor, Hollock, bamboo, Gamari, MAPs: Basil, chives, air plant, perilla, tiger grass, mountain pepper | Wood, cane & bamboo handicrafts, carpentry, embroidery, traditional shawls/bags, traditional attire.          | Pickle, jam, processing/ fermentation of organic products and packaging of indigenous wild edible vegetables, spices and fruits            |
| Meghalaya         | Maize, Sticky rice, Mustard, Sesamum, Castor, Sweet potato                     | Cow, Poultry, Piggery, Goat, Bee keeping               | Citrus Species, Ginger, Turmeric, Pineapple, Banana, Jack-fruit, Litchi, Cherry, Black pepper, Arecanut, Tea, Coffee, Cashew nut and large cardamom | Bamboo shoots, Tejpatta, <i>Ficus spp</i> , <i>Elaeagnus</i> , Broom grass, <i>Lasia spinosa</i> , Cane Mushroom, Box myrtle                             | Bamboo baskets/ Cane Containers, Winnowing Trays & Fans, Mud Shovel, Bamboo Comb, Handloom traditional dress, | Bamboo shoot Pickles, Bamboo Furniture, Banana Chips, Juice, Pickle, Jam/sauce, herbal teas, agro products, Arecanut Processing and winery |

Following major steps required for value added product development and market linkages.

- Mobilization of the farmer groups/producers' groups/ SHGs, NGOs, Panchayati Raj Institution/village cooperatives to initiate local value addition and processing jointly at village level and marketing.
- Production Incentive Schemes (PIS) on different crops may be initiated by the different State Governments.
- Bi-resources (NTFPs/MAPs) harvested/collected from wild or cultivation and yield enhancement on sustained basis and post-harvest management (demonstration of appropriate, cost effective, and best practices at each level of value chain).
- Promoting and/or developing rural micro/macro enterprises (by improving technical skills, capacity building needs, developing package of practice).
- Developing mutual understanding and partnerships in the chain between collector/ growers/

producers and buyers based on ethical and moral values.

- Information and knowledge sharing and exchange (information on price, market demand, quality and trade requirements, weather prediction and forecasts, and others).

### **New skills required for covid-19 returnee migrants in the IHR**

Majority of the COVID-19 returnee migrants possess skilling in the field of hospitality followed by technical field (such as electrical, plumbing, driving etc.) and non-technical field (daily wage worker and Mali etc.). Returnees those who stayed back in the villages showed their interest and willingness to obtain new skilling in diverse fields so as to generate their livelihood and income (Table 7.3). Most of the returnees emphasized that they required skilling in the field of agro-based and handicrafts product development followed by animal husbandry particularly poultry and goat rearing and tourism sector.

**Table 7.3- New skilling as desired by covid-19 returnee migrants in the IHR for their livelihood improvement**

| States           | Farming sector                                                                                                                                               | Non-farm sectors                                                                                           | Tourism/hospitality                                                                       | Value addition/ Products development from Agro& wild Niche bioresources                         |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Jammu            | Basic Tractor Services, Seed production, Mushroom cultivation, Apiary, goatry                                                                                | Craftsmen, food production, Preservation of food and Vegetable, Vocational training, Entrepreneurial skill | Adventure/ Mountaineering sports, trekking, winter sporting activities and river-rafting. | Nettle herbal tea, Nettle cookies, Horticultural products.                                      |
| Kashmir          | Seed production, nursery raising of high value-crops, MAPs cultivation, Mushroom cultivation, Apiary, Poultry                                                | Preservation of food and Vegetable, Vocational training, Handicraft's wool and fiber based.                | Adventure/Mountaineering sports, Homestays, local cuisine                                 | Nettle herbal tea, Nettle cookies, Machran chai, Postul chai and Food/product and horticultural |
| Ladakh           | Landscaping and floriculture, Cultivation of cereal, forage, oilseed, pulses, vegetables                                                                     | Cane, Willow and Bamboo work, Preservation of food and Vegetable, Entrepreneurial skill.                   | Guide workshops, camel riding, and trekking/Yoga and religious tourism.                   | Yak-cheese Zanslen butter, Fruits Hawthorn cookies, Hazelnut cookies, Mawal cookies             |
| Uttarakhand      | Protected cultivation, off-season vegetable and medicinal and aromatic plant cultivation, Floriculture, bee-keeping, poultry, fish farming, water harvesting | Handicrafts(wood/bamboo/fiber), bakery, low-cost polyhouses, bio and vermicomposting, vocational training. | Home stays, Bird guides, nature guide, trekking guide, heritage and cultural tourism      | Juice, Pickle, Jam/sauce, herbal teas, peach oil, agro& wild products for marketing             |
| Himachal Pradesh | Medicinal and aromatic plants cultivation, mushroom and, heeng cultivation, organic farming.                                                                 | Handicrafts, bakeries, Poultry farming, Apiculture, Pisciculture and Sericulture                           | Heritage and cultural tourism                                                             | Vegetables and fruits, herbal tea, Tulsi, fafdi, pudina, products                               |
| Sikkim           | Operation of power tillers, garden hand tools, spices grinding,                                                                                              | Electric wiring and fittings in construction                                                               | Training in home stays, demonstration of organic farming                                  | Dalle, Ginger, Large Cardamom                                                                   |

|                   |                                                                                                                                         |                                                                                                          |                                                                                  |                                                                            |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------|
|                   | mini rice mills, low-cost green house                                                                                                   | activities, plumbing work                                                                                |                                                                                  |                                                                            |
| West Bengal       | Mushroom cultivation and Horticulture                                                                                                   | Carpentry, plumbing work, Blacksmith                                                                     | Training in operating home stays, financial management of home stays             | Jam, chilli sauce and pickle.                                              |
| Assam             | Protected cultivation, off-seasonal vegetable and medicinal and aromatic plant cultivation, Floriculture, poultry.                      | Handicrafts (wood/bamboo), bio and vermicomposting, bio-fencing                                          | Home stays, Nature guide                                                         | Juice, Pickle, Jam/sauce, herbal teas for marketing                        |
| Arunachal Pradesh | Medicinal plants, spices, home garden, modified jhum, horticulture, bee keeping, poultry/piggery, gayal/mithun animal, fishery          | Handicrafts (bamboo/fiber), low-cost polyhouses, bio and vermi-composting, energy/fuel saving technology | Nature tourism, Community based tourism, Eco-tourism, community conserved areas. | Bioprospecting of agro and wild resources for marketing                    |
| Nagaland          | Cultivation medicinal plants, Floriculture, horticulture, cultivation of plantation crops, bee keeping, piggery, poultry, Naga chillies | Carpentry, handicrafts, tailoring, electrician, mason, plumber.                                          | Trekking guides, home stays, rural and nature guide, Bird guide                  | Fermentation, packaging of agro& wild products and spices.                 |
| Meghalaya         | Piggery, Floriculture, bee-keeping, poultry, fish farming and multi-story home gardens and plantation crops                             | Handicrafts (wood/bamboo/fiber), low-cost polyhouses, bio and vermicomposting,                           | Hikes and Treks, Caving, Rural tourism, Nature tourism, Festival Tourism         | Banana Chips Processing, Juice, Pickle, Jam/sauce, herbal teas and spices. |

The skills can be provided by utilising the following schemes of the Government of India:

**(i) Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**

**(ii) Jan Shikshan Sansthan (JSS) Scheme**

**(iii) National Apprenticeship Promotion Scheme (NAPS)**, for providing short term Skill Development training

**(iv) Craftsman Training Scheme (CTS)**, for long term training, to the youth.

### **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**

PMKVY has two training components, viz., Short Term Training (STT) and Recognition of Prior Learning (RPL). RPL's objectives are (i) to align the competencies of the unorganized workforce of the country with the standardized National Skill Qualification Framework; (ii) to enhance the opportunities for employment and provide alternative means for higher education; (iii) to provide opportunities for reducing inequalities. According to the Economic Survey, 2021-22, PMKVY provided training to Shramiks (migrant labourers) affected by COVID-19. This component covered 116 districts of 6 States, viz., Assam, Bihar, Madhya Pradesh, Odisha, Rajasthan and Uttar Pradesh. As on 15.01.2022, 1.26 lakh migrants have been trained / oriented (0.88 lakh in STT and 0.38 lakh

in RPL). ***We are recommending that this scheme should be implemented in all the states of IHR and/or may be scaled up as per the requirement of the states.***

Several micro-programmes under PMKVY have also been formulated for targeting artisans' clusters in partnership with private sector, also to ensure employment to all artisans. Special project has been launched to revive the traditional Namda craft of Jammu & Kashmir and upskilling of Weavers & Artisans of traditional crafts of Nagaland and Jammu and Kashmir. The micro-programmes under PMKVY should be extended all the states of IHR as per the crafts of the specific states.

### **Jan Shikshan Sansthan (JSS) Scheme**

JSS aims to provide vocational skills to non-literate, neo-literates, persons with rudimentary level of education up to 8th and school dropouts up to 12th standard in the age group of 15-45 years. The priority groups are women, SC, ST, minorities, divyangjan and other backward sections of the society. The Jan Shikshan Sansthans work at the doorstep of the beneficiaries with minimum infrastructure and resources. Under the scheme grant is released to Jan Shikshan Sansthans (NGOs) for Skill Development. ***The JSS, which is usually located in the districts may be tapped to providing skills to the migrant workers.***

### **National Apprenticeship Promotion Scheme (NAPS)**

This Scheme promotes apprenticeship training and the engagement of apprentices by providing financial support to industrial establishments undertaking apprenticeship program under The Apprentices Act, 1961. As on 31 October 2021, 4.3 lakh apprentices engaged under the scheme.

### **Craftsmen Training Scheme (CTS)**

CTS is for providing long-term training in 137 trades through 14,604 Industrial Training Institutes (ITIs) across the country. ***We recommend that the states in the IHR should make use of the scheme.***

### **Aatma Nirbhar Skilled Employees Employer Mapping (ASEEM) portal**

ASEEM, a digital platform, created to match supply of skilled workforce with the market demand, acts as a directory of skilled workforce. As on 31.12.2021, 1.38 crore candidates have been registered on the portal including candidates registered on Skill India Portal (SIP). As on 31.12.2021, around 26.7 lakh migrant's data/profile are also available on the portal (Economic Survey, 2021-22). ***We recommend that the different State Government in the IHR should take initiative to organise awareness programme about the portal and provide the necessary support to the migrants for their registration in the portal.***

### **Mechanism to track and check Migration through suggested interventions**

#### **I. Mechanism to track migration**

As we have discussed in chapter 6 of the report, in terms of the number of migrants, the intra-state migration is much higher than the inter-state migration in the Indian Himalayan region. However, with respect to migrant workers, inter-state migration is a major area of concern as such migrants' usual place of destination is a metropolitan or big cities like Delhi or Mumbai. In this context, it may be appropriate to track the migrant workers through an institutional mechanism so that a data base of such migrants is created at all India level for an effective policy intervention aimed at their socio-economic betterment and occupational mobility.

In order to track the migrants both at the place of origin and destination, the central online repository namely 'National Migrant Information System (NMIS)' developed by National Disaster Management Authority (NDMA) during the Covid-19 pandemic in 2020 should be scaled up in its scope. The NMIS was created for tracking the movement of migrant workers, moving by Shramik Special trains and buses to reach their native places. It facilitated their seamless movement across states and help the sending and receiving states use the 'National Migrant Information System (NMIS)' dashboard for better coordination, movement monitoring and contact tracing.

We recommend that the existing NMIS may be expanded further in its scope and function if the Ministry of Labour & Employment works in coordination with the NDMA. It will help in creating a robust and dynamic database of migrant workers. In the post-pandemic phase, this portal may be centrally developed further, administered and managed by Ministry of Labour, Govt. of India.

However, as collection of such demographic data of individual migrants, at times appear to be sensitive, there is a need for awareness of such data among the migrant workers. We are of the view that local Panchayats may play a very critical role in making awareness among the migrant workers about the necessity of such data.

The key data pertaining to the persons migrating needs to be standardised for uploading such as name, age, educational level, mobile no, aadhaar number, originating & destination district, persons accompanying, may be collected at the place of origin while the type of accommodation at the place of destination (whether rented or staying at the place of work), occupation, Monthly Income etc. may be collected at the place of destination. In this way, data needs to be collected both at the place of origin and destination for each of the migrant workers. Each of the gram panchayat office may have a data cell for storing data about each of the out-migrant workers falling within the jurisdiction of each of the gram panchayats. As the gram panchayat members are in direct contact with the villages, they will play a very important role in convincing the migrant workers to give their data to panchayat office before leaving their villages.

Once all information relating to migrant workers is stored, each to whom should be allotted a unique ID to be used for all transactions on a single online platform. In this way, each of the states will be able to visualise the places/districts of both in-migrants and out-migrants and place of destination of out-migrants. The mobile numbers of people can be used for movement monitoring. States can upload batch file of individual migrants' data on the portal.

In addition to this, provisions should be made for accessing the data of migrant workers stored in NMIS at the district level by the district administration. In case there is a high out-migration from a district, the district administration may make the migrant workers aware of the local employment opportunities available in order to check/restrict out-migration.

Further, the Ministry of Labour & Employment, Government of India has developed eSHRAM portal for creating a National Database of Unorganized Workers (NDUW), which will be seeded with Aadhaar. It will have details of name, occupation, address, occupation type, educational qualification, skill types and family details etc. for optimum realization of their employability and extend the benefits of the social security schemes to them. It is the first-ever national database of unorganised workers including migrant workers, construction workers, gig and platform workers, etc. The eSHRAM portal may be mapped with NMIS for tracing both horizontal and vertical employment mobility of migrant workers.

## **II. Mechanism for checking migration at the place of origin through suggested interventions**

### **a) Agro-forestry**

Agroforestry offers a potential sustainable land - use solution, which could be re-established forests, restore ecosystem services and stabilize local livelihoods in the Himalayan Mountains. Through the integration of trees on farms and within the agricultural landscape is essential for increased social, economic and environmental benefits. Besides, agroforestry with intercropping with off season agricultural crops need to be promoted in hilly region to enhance productivity and farm income. Concerted efforts need to be made to draw benefits from diversified agro- farming system by adopting mushroom cultivation, animal husbandry, poultry farming, fish farming and by promoting traditional food markets and local crafts. Institute a mechanism involving govt. line departments to subsidies, grants, credit, or low-interest loans to marginal and small farm holder in order to promote and strengthen agro-forestry. Identifying and fostering opportunities for private sector and public-private partnerships these have a considerable role to play in financing and developing supply chains and fair-trade partnerships between communities, government and others' which need to be forged to ensure that the interventions are demand-driven and client oriented. Development agencies can play a supportive role by fostering reliable institution support systems that can initially help provide the components that farmers find difficult to access.

### **b). Promotion of Non-Timber Forest Products (NTFPs), medicinal and aromatic plants (MAPs), value-addition, marketing and skill up gradation**

Non-Timber Forest Products (NTFPs), medicinal and aromatic plants (MAPs), bamboo and other biomass resources will continue to remain the most important bio-diversity resources for socio-economically marginalised communities in the Himalayan region and for the herbal industries. MAP development in the state therefore has to be comprehensive and must consider its links with nutraceuticals, pharmaceuticals, and traditional medicines (like Ayurveda) while aiming to promote and strengthen the MAP sector in order to impact on all the three pillars of sustainable development – ecological, economic and social. Integrated and systematic development of the MAPs and NTFP sectors can be good examples of how the green economy can work in the mountains. However, a partnership with private sector that can facilitate value addition close to the production areas and better linkages to markets through buy-back guarantees will be necessary to promote the green economy. Multi-sectoral and multi-disciplinary approaches are necessary because cultivation of rare and endangered MAP species is required to allow regeneration in the natural habitats. This explains the state policy of promoting cultivation, processing, marketing, and research in a holistic manner. The Forest Department in coordination with state/district govt. line department/agencies has to play a major role and to develop an appropriate mechanism and suitable provision for improved access of local communities to NTFPs/MAPs, Bamboo and other biomass-based resources.

#### **Value-addition and marketing:**

Most natural resource rich/unique areas, being far from the mainstream, are also far from technologies and from markets, and hence are totally primary produce-based economies; while some do trade this primary produce to distant markets, most tend to trade internally and are closed local economies. A move up the value chain, would imply that Himalayan communities would need to include at their point, some or all processing that the primary produce undergoes before purchase by the end-buyer. These processes would enable retention of greater share of revenues on the final products within the Himalayan region, and enable some of the Himalayan people to move out of



the farm-based activities to working on or managing these processes. A likely spin-off of value-addition is the development of secondary industries to support it, which in turn generate additional employment. A direct access to buyers or even an enhanced strength through cooperatives and the like, could also help reduce channel losses in terms of margins to middlemen, and enable the Himalayan producers to retain more of the margins.

Forward linkages with regional techno-economic networks involving government line departments/govt. schemes would ensure product-market compatibility for these clusters and help them maintain pace with ongoing development in the region while contributing to balanced regional growth. Area-specific produce such as NTFPs, medicinal plants, bamboo made resources and crafts, as well as ecotourism and culture-based products, can be developed as niche sector clusters with a high income and employment-generating potential.

### **Skill development/ Skill up-gradation through Science and Technological interventions for livelihood enhancement**

Over a period of time, Himalayan traditional/indigenous communities developed some simple techniques those were eco-friendly and efficient as per the requirement of the local needs and services. With the course of time, new technologies replaced the older ones, but the new technologies were often not tested for the Himalayan environment, people lacked capacity for adopting these and sometimes they were not in consonance with the socio-cultural context of the region. Therefore, there is a need to develop and internalize the use of appropriate and affordable technologies for the proper utilization of the natural resources particularly NTFPs, MAPs, bamboos of the Himalayan region. This will add value to provide better livelihood opportunities and basic services by building local capacity and skills with appropriate technology interventions. This can only be achieved by innovative thinking and human resource development at local level through partnership approach by involving S & T knowledge institutions, govt. line departments, field agencies and community at large with local institutional arrangement and hand holding. There is a crying need for rolling out a massive capacity building exercise focusing on livelihood enhancement/enterprise building in the identified sectors in the Himalayan rural landscapes and introducing the farmer or youth entrepreneurs to new package of practices in the technology. These trainings need to be conducted at village cluster level to empower the youth in micro-macro enterprise development. Developing policies favouring agri-tech start-ups, incubation centres and dedicated programmes for involving Himalayan youth (particularly living in rural and remote areas) in agriculture and other areas would not only provide a boost to the entire sector but also reasonably address the issue of outmigration, jobs, livelihoods, income generation as well as conservation of natural resources.

## Conclusion

Himalayan Mountain people are increasingly exposed to growing physical, social, and economic risks and vulnerabilities and it has directly affected the hills/mountain livelihoods, particularly of the poor. Increased urbanization and male migration lead to feminization of the mountain rural areas, which increases women's drudgery and changes the social-cultural fabric.

The priority interventions on livelihoods enhancement and diversification in the Himalayan region are still mid-stream. It is expected that we would learn more and need to develop newer strategies and modify processes as we progress into future stages in the interventions and when we upscale and replicate these as well. The capacity of local communities and areas must be developed to enable them to engage effectively in healthy competition in the larger economy of the nation. There is a great potential for enterprise development in relation to medicinal and aromatic plants, horticulture, floriculture, off-seasonal vegetable cultivation, forest resources (i.e., wild edible fruits and other plant parts, bamboo, spices and condiments), organic farming and rejuvenation and improvement of traditional crops for regional/national consumptions etc. Harnessing the resources through value addition in ways that could meet both short and long-term subsistence, market, cultural and conservation needs of the people inhabited in the IHR. However, each initiatives need more attention on along the value chain, with systematic efforts being made in backward, forward, and horticultural linkages. Adaptation and poverty reduction need not be treated separately; they need to be brought together under their common goal to secure livelihoods.

Learning lessons from the past experiences, hill/ mountain specificities, such as diversity in livelihood strategies, economic marginalization, isolation, difficult topography, cultural diversity and ecological fragility, need to be taken into account while identifying appropriate options for livelihood improvement. Any future direction for securing the sustainable livelihoods in the IHR must therefore ensure the enhancement of women as agents of change in changing gender roles and in playing a role in community affairs (i, e., rebuilding societies with greater social and economic justice).

We need to strive strategically to shape this local- regional, national and global interest in the best interests of the poor and the marginalized societies. The vulnerability of poor areas and people to different livelihood shocks have never been seriously considered, resulting in inadequate measures to safeguard such people. Therefore, building the capacity of the human resources of the IHR region, to be able to negotiate strategically the public-private-community partnership in the emerging process of globalization, is perhaps the biggest challenge of the coming years.

## Way Forward

Following few priority actions are required to achieve livelihood security so as to curb the outmigration from the Indian Himalayan Region (IHR)

- Landscape approach may be an efficient way to improve land productivity and sustain it. Quality seeds suitable for hill farming and mixed-cropping systems combined with animal husbandry through cattle rearing, goat, fisheries, rabbit, bee-keeping, etc. as a source of income and employment to revamp the rural economy.
- Education and other non-farm technical support service to rural traditional artisan's, e.g., blacksmith, carpenters, mason, basket weaving, tailoring for better earning/reduced drudgery through innovative skill development, training program and adaptive R&D.

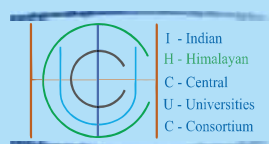
- There is a need to explore and provide the geographical markers/GI tag/s to niche crops/lesser-known crops of the Himalaya. This will enhance the acceptability of the Himalayan products nationally and internationally.
- Harnessing the economic potential of under-utilised horticultural crops/wild fruits (NTFPs/MAPs), traditional crop varieties and local food systems through local value addition
- Develop rural landscape/ remote villages / ghost villages as nature tourism/ eco-tourism/ rural tourism destination with the active involvement of youth and rural women and promote local arts/craft, souvenir, and cuisine, etc., to maximize economic benefit to the local communities
- Introduction and promotion of hill/ mountain specific appropriate, affordable and cost-effective technologies in diverse sectors relevant to rural livelihoods such as farming/livestock food processing, water conservation, etc.,
- Need to harness the potential of solar energy through solar panel, Solar Water heater, Space Heating Systems and solar dryers, etc.,
- Need to develop mountain specific courses and skills in schools, universities, institutions, training centres, especially in the IHR
- The unexplored niche in agropastoral system-based livestock products, especially sheep and goat for organic mutton and wool, Zanskari organic butter, yak cheese of the higher Himalayas, Ladakhi Changpaas -Pashmina wool, honey of the valley of flowers and vegetables are waiting for upscaling and can be a new agribusiness-enterprises for the people of the region.
- The central government in coordination with states governments across the IHR have been implementing several national program/schemes of agriculture and allied sectors for the well-being of the small and marginal farmers. There is a need to includes revitalizing local food systems and local breed livestock, strengthening social safety nets, extension support systems, training and upgrading skills of local communities and enhancing knowledge and awareness about improving livelihood security.

## References

1. Banskota, M.; Papola, T.S.; Richter, J. (2000) Growth, Poverty Alleviation and Sustainable Resource Management in the Mountain Areas of South Asia. Feldafing: Deutsche Stiftung fuer internationale Entwicklung (DSE)/ZEL
2. DFID; EC; UNDP; World Bank (2002). Linking Poverty Reduction and Environmental Management- Policy Challenges and Opportunities. Washington DC: World Bank
3. Hoermann, B. and Kollmair, M. (2009). Labor migration and remittances in the Hindu Kush Himalayan Region, *ICIMOD Working paper*, pp 1-15.
4. Hoffmann EM, Konerding V, Nautiyal S, Buerkert A (2019) Is the push-pull paradigm useful to explain rural-urban migration? A case study in Uttarakhand, India. *PLoS ONE* 14(4): e0214511. <https://doi.org/10.1371/journal.pone.0214511>
5. IDRC/MAPPA (2004) A Study on Marketing Opportunities for Medicinal, Aromatic and Dye Plants in South Asia prepared by Arun Nagpal for the IRDC/IFAD/FAO/Ford Foundation MADP Project, October 2004.
6. Jain, A. (2010). *Labour Migration and Remittances in Uttarakhand*. Kathmandu: International Centre for Integrated Mountain Development.
7. Jain, A. (2010). *Social development consultant, discussion on consequences of migration*, Mussoorie Hill Station, Dehradun, Uttarakhand.
8. Joshi B. (2018). Recent Trends of Rural Out-migration and its Socio-economic and Environmental Impacts in Uttarakhand Himalaya. *Journal of Urban and Regional Studies on Contemporary India* 4(2): 1–14
9. Kandpal SD, Kakkar R, Aggarwal P, Roy D. Socio-demographic determinants in urban ‘in-migrants’ of Uttarakhand. *National Journal of Community Medicine*. 2018; 9: 463–468.
10. **Maikhuri, R.K.**, Annpurna Nautiyal, N.K. Jha, L.S. Rawat, Ajay Maletha, P.C. Phondani, Y.M. Bahuguna and G.C. Bhatt (2017). Socio-ecological vulnerability: assessment and coping strategy to environmental disaster in Kedarnath valley, Uttarakhand, Indian Himalayan region. *International Journal of Disaster Risk Reduction*, 25:111-124.
11. Maikhuri, R.K., K.S. Rao and R.L. Semwal (2001). Changing scenario of Himalayan agroecosystems: loss of agrobiodiversity, an indicator of environmental change in Central Himalaya, India. *The Environmentalist* 20: 23-39.
12. **Maikhuri, R.K.**, L. S. Rawat, Sunil Nautiyal, Vikram S. Negi D. S. Pharswan and P. Phondani (2013). Promoting and Enhancing Sustainable Livelihood Options as an Adaptive Strategy to Reduce Vulnerability and Increase Resilience to Climate Change Impact in the Central Himalaya. In: Nautiyal, S. et al. (eds.), *Knowledge Systems of Societies for Adaptation and Mitigation of Impacts of Climate Change, Environmental Science and Engineering*, DOI: 10.1007/978-3-642-36143-2\_32, \_ Springer-Verlag Berlin Heidelberg, pp. 555-574.
13. **Maikhuri, R.K.**, L.S. Rawat, Vikram S. Negi, Sunil K. Agarwal, K.S. Rao and K.G. Saxena (2011). Managing natural resources through simple and appropriate technological intervention for mountain development, *Current Science*, 100(7): 992-997.
14. Maikhuri, R.K., R.L. Semwal, K.S. Rao, S. Nautiyal and K.G. Saxena (1997). Eroding traditional crop diversity imperils the sustainability of agricultural systems in Central Himalaya. *Current Science* 73 (9): 777-782.

15. **Maikhuri, R.K.**, Vikram S. Negi, L.S. Rawat and D.S. Pharswan (2017). Bioprospecting of medicinal plants in Nanda Devi Biosphere Reserve: Linking conservation with livelihood. *Curr. Sci.*, 113(4): 4-25.
16. Mamgain RP, Reddy DN. Outmigration from hill region of Uttarakhand: Magnitude, Challenges and Policy Options. Final Report. 2015. National Institute of Rural Development (NIRD), Hyderabad.
17. Namgail et al., (2007), Pastoral nomads of the Indian Changthang : Production system, land use and socioeconomic changes, *Human Ecology* 35: 497-504 12.
18. Peerzada, I.A. 2020. Contribution of NTFPs in livelihood and household income of forest fringe communities in Bangus landscape of Kashmir Himalayan forests In: (Eds. Sivadas, D., Dhyani, S. Basu, O. &Karki, M.), *Harnessing Nature* 2(2), 59p.
19. R.Lusome and R.B.Bhagat, 2010. Migration situation in northeast India in James et al.(eds) *Population, Gender and Health in India: methods, processes and policies*, Academic Foundation, New Delhi, 2010, pp.167-190.
20. R.P. Mamgain and D.N. Reddy, 2015. Outmigration from hill region of Uttarakhand: Magnitude, challenges and policy options, NIRD&PR, Hyderabad.
21. Rais M, Pazderka B, Vanloon G. Agriculture in Uttarakhand, India—Biodiversity, nutrition, and livelihoods. *Journal of Sustainable Agriculture*. 2009; 33: 319–335.
22. Ramakrishnan, P.S. et al., 2005. *One sun, two worlds: An ecological journey*. Oxford and IBH publishing co. Pvt. Ltd, New Delhi, 281pp.
23. Rao, K.S. and Saxena, K.G. 1994. Sustainable Development and Rehabilitation of Degraded Village Lands in Himalaya. Himavikas publication No. 8, Bishen Singh Mahendra Pal Singh, Dehradun, India
24. Rao, K.S., R.K. Maikhuri and K.G. Saxena (1999). Participatory approach to rehabilitation of degraded forest lands for sustainable development: a case study in a high-altitude village of Indian Himalaya. *International Tree Crop Journal* 10: 1-17.
25. Rawat, L. S., R. K. Maikhuri, Vikram S Negi, Abhay Bahuguna, K S Rao, Sunil K Agarwal, and K G Saxena (2010). Managing natural resources with eco-friendly technologies for sustainable rural development: A case of Garhwal Himalaya, *International Journal of Sustainable Development and World Ecology*, 17(5): 423-430
26. Samal, P.K. & Lodhi MS et.al, 2013. Technology backstopping for entrepreneurship development in the north east region. In 25 glorious years of GBPIHED, translating research into action (Eds), Amora, Uttarakhand, GBPIHED, 136pp.
27. Sati VP, 2016. Patterns and implications of rural-urban migration in the Uttarakhand Himalaya, India. *Annals of Natural Sciences*. 2016; 2: 26–37.
28. Sati VP. Patterns and implications of rural-urban migration in the Uttarakhand Himalaya, India. *Annals of Natural Sciences*. 2016; 2: 26–37
29. Saxena, K.G., Liang, L., Tanaka, K. and Takahashi, S. (Eds) 2012. *Land Management in Marginal Mountain Regions: Adaptation and Vulnerability to Global Change*. Bishen Singh Mahendra Pal Singh, Dehradun, 349 pp.
30. Sharma, A. (2015). Changes in Patterns of Migration in Himachal Pradesh since 1991. Panjab University, Department of Geography. Chandigarh: Unpublished Ph. D. Thesis.

31. Sharma, E. (2004) ' Biodiversity and Livelihoods in the HKH Region. Participatory Biodiversity Management Approaches in the HKH.' In ICIMOD Newsletter, 45(Autumn 2004)
32. Srivastava, R. (2011). Internal migration in India: An overview of its features, trends, and policy challenges, paper presented at UNESCO-UNICEF National workshop on internal migration and human development in India, December 2011, New Delhi.
33. Vinayakam K, Sekar SP. Rural to urban migration in an Indian metropolis: Case study Chennai city. IOSR Journal of Humanities and Social Science. 2013; 6: 32–35.
34. WWF India and DST-SEED, 2018. People and protected areas network programme. WWF, India, Lodhi Estate, New Delhi.



# **Indian Himalayan Central Universities Consortium (IHCUC)**